Kaftanski, F., Germany.
He was the maker of the Minifex (1932) with f3.5 25mm Meyer Trioplan or f0.95 Astro lenses. A Trioplan was noted at No570,105 as a front cell focusing lens with stops to f8 only. He also made or used Sida and Helur 3-glass lenses, of unknown make.

Kaginon.
These were a range of enlarging lenses sold by J.J. Silber of Northburgh St, London EC1 in 1966-1972, etc. They do not seem to have changed over the above period, and all were 3 glass (triplets) designs, with click stops to f22. They were finished in white with a stripey finish to the setting ring. The focal lengths were as follows:
f3.5/50mm for 24x36mm; f3.5/75mm for 6x6; f4.5/90mm for 6x7; f4.5/105mm for 6x9.

Kalimar Inc., Japan.
We thank R. Gilcreast, USA, for additional information here.
Some of the 35mm SLR lenses at least were from P. Piesker, of Berlin as shown by a f3.5/135mm lens for Exakta.

M39x26 lenses
<table>
<thead>
<tr>
<th></th>
<th>40, 100, 135mm.</th>
</tr>
</thead>
<tbody>
<tr>
<td>f3.5</td>
<td>85mm.</td>
</tr>
<tr>
<td>f2.8</td>
<td>100mm.</td>
</tr>
<tr>
<td>f5.5</td>
<td>180, 240mm.</td>
</tr>
</tbody>
</table>

Front accessory lenses These were made in wide angle and long focus, and sold with adaptors to mount on the customer’s camera. Performance can be useful if they are properly matched to the taking lens.

Monocular A close-focus device, for use as a 7x40 monocular, sold with a camera adaptor. It focused to 2.1m.

For rollfilm cameras
Kalimar f8.0 on 1966 Kaliflex.
Kaligar f8.0 60mm on Kalimar 44 for 4x4 (1960).

35mm use
In 1955 the following Kalimars were from an unknown German source, the USA agent being Arel Inc., St. Louis, Missouri, USA.
f2.0, 85mm; f3.5, 100mm; f2.8, 100mm; f3.5, 135mm; f5.5, 180mm; f5.5, 250mm; f3.5, 40mm.
These were all for SLR cameras. These just might be the Piesker series.

Lenses for Kalimar 6x6 Reflex.
The reflex body was by Fujita Optical Industries, exports being as the Kalimar Reflex (1956-1969). But these may be compared with the Fujita lenses listed under Fujita.
Kaligar f3.5 52mm This had a preset iris, and was one of the very earliest retrofocus lenses for medium format, and a definite milestone if not a landmark. It is said to be quite sharp but not be fully rectilinear and was a unique wide lens at its time. (Modern Photo. Sept. 1957 p111). It was noted at NoFT30,81x
Kaligar f3.5 80mm Preset, this is described in the Modern note. Kaligar f2.8 80mm Preset, This was a later lens. It was noted at Nos FT 83,56x and FT 87,02x.
Kaligar f4.0 150mm This was a 5-glass telephoto type, and was also a launch item. It was noted at NoFT 18,73x.

Kalimar for 35mm SLR’s.
Kalimar f2.8 28mm 7g (1972)
Kalimar f2.8 35mm 6 glass (1972)
Terionon f3.5 45mm on Kalimar A camera, in 1955.
Taikor f2.8 45mm on Kalimar B3 camera- this was a different type of product.
Kalimar f1.7 50mm
Kalimar  f2.0  55mm (on Kalimar SR200).
Kalimar  f3.5  135mm
Kalimar  f2.8  135mm 5 glass (1972)
Kalimar  f3.5  200mm 5 glass (1972)
Kalimar  f2.0  240mm
Kalimar  f5.6  300mm
Kalimar  f5.0  300mm 5 glass (1972)
Kalimar  f8.0  500mm with matched 2x extender.

Zooms: also 9 zooms from 28-70mm to 80-200mm.
Zoom f3.8  70-215mm Noted at Chicago Show in c.1971.
Kalimar  f8.0  500mm T-mount mirror.

A later group seems to be:
Kalimar  f2.8  25mm Auto
Kalimar  f2.8  35mm Auto.
Kalimar  f2.8  135mm Auto.
Kalimar  f3.5  200mm Auto
Kalimar  f5.5  300mm Auto.
Kalimar  f6.3  400mm Auto

also listed were 500 and 1000mm MTO mirrors, and these were presumably from Russia.

Kalos CameraBau, Karlsruhe, Germany.
They are noted for a Mikro- Anastigmat f4.5/120mm on a Kalos 9x12cm camera.

Kaprelian, E.J. (1913-1997)
American lens designer whose designs included an f0.6 Petzval derivative (US Pat. 2,424,827/1947, B.J.A. 1949, p171) while head of the Squier Signal Laboratory. (The B.J. author adds this is near to the f0.5 which is said to be the ultimate due to correction barriers for coma). It was developed by the US Army Signals Corps and was made as 54 and 33mm, the latter for 16mm cine. It is related to the older R-Biotar by having an extra glass- and more speed. (See JSMPE, 53, p86,1949: This is an excellent study of high speed lenses, with some 20 examples of designs of which some 6 had been commercially sold at that date.) Kaprelian also wrote on the famous Zeiss collection, and its fate after removal to the USA (Kaprelian, J. Opt. Soc. Amer., 37 466-471, (6/1947), also Photographica USA.)

Kengott, P. Paris, France.
The name seems to be visible on some advertising engravings of lenses sold under other trade names in the UK, and they may have been one of the sources of "label" lenses around the turn of the Century. There is only one mention of Kengott in FBB, when they supplied a pair of RR's on a stereo camera in 1906: so they were not major camera suppliers in France under their own name, but could have been active suppliers of unnamed lenses rather as in these exports. [It may actually be spelled Kenngott.]
RR These were supplied in 1906 on a stereo camera Le Prisma for 12x4x4.5cm exposures on Kodak 121 film.
Medio  f6.8  135mm This was seen in a shutter, without a makers name on the lens. It seems to be by Kengott, and probably uses the original "anastigmat" layout, probably being made after the patents ran out about 1905. The reflections do seem to rule out other types. It is in too poor order to be very informative.
Fig 008 061 Kengott Medio Anastigmat f6.8/135mm.

Medio  
f7.7  Another version of it was noted at auction as an f7.7 in a Koilos shutter on a Lizars Challenge 1/2plate camera.

Simili  
f7.7  This was also on a 1/2plate. It was noted as an anastigmat.

Anon  
f7.0  This was on a Ganzini camera. (Italy, 1906).

Euryscope  
f6.0  This was supplied to City Sale and Exchange, possibly with other products.

W.Kengott, Eugenstrasse 4, Stuttgart, Germany.
They stocked a wide range of cameras, and one lens name is unfamiliar- Vidar, f2.9 and f4.5/?5cm on a Vinco 3x4 in 1934. Other items included Vidanar lenses as on Balda cameras.

Kenlock
Agent or supplier was R.J.Farley, 67, Mill Lane, London NW6.
These were an independent brand noted in May 1972 as long lenses for most SLR cameras.

Auto Kenlock  
f5.6  300mm £47.5
Auto Kenlick  
f6.3  400mm £57.25

Kern, Aarau, Switzerland.
In 1926, from Photographic Supplies Co, 41, Charterhouse Chambers, London EC1.
In 1927, from Kern and Co, Ltd 2, Langham Place, Regent St, London W1.
Later: UK from Cinex Ltd, 65, Chancery Lane, London WC2, UK.
They are a distinguished Swiss instrument maker, supplying lenses for their own cameras, the Bijou, rollfilm and Kern Stereo. These were often merely called Kern Anastigmats. (B.J.A. 1924, p726) Initial production was from 1918, and this list really should be in 3 parts. Kingslake says Walther Zchokke (1870-1951) founded the optical department here in 1920 and worked until 1925, when he left to work as an optician ie prescribing spectacles, and Frek confirns this, and says the Kern lenses were rather after the fashion of the Dogmars [which Zeiss were discontinuing]. These Kern f4.5 and f6.3 lenses were in production by 1926 when his book came out.

Original Lenses Series.
Apo-Repro  
f6.6  Dialyt, Q26.
Special Objective

f7.7 105mm also f7.8, 185mm as aero lens.

ApoRepro

f9.0 300mm Listed by B&J in the 1960's, this may be the short focus speed of the next item.

Apo-Repro

f10 Dialyt, Q26.

Kern Portrait

f4.5 180-360mm Triplet, Q14.

Kern Anastigmat

f6.3 85-480mm Q26 type for large format use.

Kern Anastigmat

f4.5  105mm (4.25in) This was on the Bijou small plate camera typically for 6x9cm, (3.5x2.5in); and also for 1/4 plate with 4.75in lens; in B.J.A. 1924, p727; 1926, p753advert.; 1927, p727; 1928, p719 advert.

One was noted at auction as an f4.5/105mm Anastigmat at No108x and also No114x on a Bijou plate at Body No14x, also No178x in a dialset Compur on body No110x. These suggest either limited production or early cameras- or both! A bigger version was a f4.5/150mm No318x on a Bijou 9x12cm. In 1925 (B.J.A. 1925, p728advert.) and 1927 there were also rollfilm Simplo 2x3in and Rollka 3.25x2.25in cameras- lenses not stated.

Kern Anastigmat

f3.5 100, 150mm, also 35mm on Bijou 6x9, 9x12 (1925) This was a dialyt, Q26, later Q15.

Kern Anastigmat

f3.5 35mm This was on a Kern Stereo SS (1930) Q15.

Kern Anastigmat

f3.5 35mm This was the lens on the Compass camera, originally for miniature plates, c. 35mm.(1938) See advert. in B.J.A. 1939, p651, probably Q15. It was coded CCL 3B Anastigmat. The first version was 'poor' and was withdrawn and used as 'hard core', and replaced ie. Compass 1 is very rare, and Compass in general is scarce.

Kernon

f3.5, 35, 100, 150mm This may be the Compass lens in origin. Q15 type.

f4.5 80-150mm for about 65° and also a Q15 type.

f3.5 35mm this was used on the Kern Stereo camera in 1920, and later in the 1930's on the Super Stereo.

Cine Taking Lenses = Kino Objective:

f1.8 in 30-75mm; f2.5, 25-75mm; f3.5, 25, 35mm; f4.5, 18-36mm. These are Q21 and triplet type designs.

35mm Still Lenses

A few types of lens were made for Alpa reflex cameras.

Switar=

PhotoSwitar

f1.8 50mm This was a complex 7-glass Triplet derivative. Ker001. It was normally in silver, as in B.J.A. 1958 p230 when it was reported as 'remarkably fine' and reputed to resolve 200l/mm at full aperture. Lens No972,113 was shown in black finish in an advert, in May 1964. "It focussed to 0.33 life size.... Then Alpa had 24 superb lenses... from European makers, from 24-5000mm focal length". It had 7 components.

Macro-Switar

f1.8 50mm This was the same lens in a deep throw mount.

Macro Switar

f1.9 50mm  This was a new design, giving improved sharpness, 1970.

Cine Lenses

Kern provided lenses for the Bolex 8, 9.5 and 16mm cameras as the main supplier. It is not obvious when this arrangement began but late prewar, the American Annual listed Bolex H16 with Leitz Hektor Rapid f1.4/25mm and Meyer Primoplan f1.5/25mm lenses, in an advert. from American Bolex, Inc., 155 East 44th St., N.Y., and in the UK a Dallmeyer f1.5 was listed only by W. Heaton in 1938 and 1939. And a Cinex/Paillard advert. in B.J.A. 1939, p623 lists only Dallmeyer, Meyer and Leitz lenses. This suggests they were not fully established suppliers as was to be later. The Kino Objective group above may have been aimed at commercial movie users rather than 16mm users.

For Paillard Bolex, they were in several mounts, as:

(a) normal D mount for 8mm, then (b) H8RX for 8mm reflex, with C-mount thread but 1.5-2.0mm different (deeper?) register, (c) normal C mount for 16mm, then (d) in normal C-mount for 16mm H16 Reflex, but the lenses up to 50mm were new computations and fit all H16 cameras, and (e) bayonet mount lenses for late H16 reflex cameras, where normal C-mount lenses can fit if an adaptor is used. Some of these variations are engraved on the thread mounts, which sometime can be changed if the grub screws are removed and the end unscrewed using a two point tool. There was a preference for advanced triplet designs, and Lotmar is a designers name at least for the famous f1.4 Switar. In general Switars were the premium lenses with Pizars and then Yvars as lower cost items.

Yvar These were normally a 3-glass triplet, often with a very thick centre glass as in Ker010. It was made in 12.5-150mm at least postwar, and was the normal lens where a narrow angle was covered. It should be sharp
and contrasty. A very distinctive triplet of this type is shown in USPat. 2,736,234 to H. Schlumpf and this may just be related. But some Macro-Yvars for H16 reflex are very light and seem to have 8 reflexions suggesting a 4 glass design, such as Q26 was also used. This can be close to Q14 if the centre glass is designed very thick and then "the middle sliced out" of the layout.

An early example may be:

- **Kern Anastigmat** f2.8 25mm on a 1929 Bolex 16mm.
- **Kino Objective** f1.8 30-75mm these may be 35mm movie lenses Q21 type, Ernostar-4.
- **Kino Objective** f2.5 25-75mm Triplets
- **Kino Objective** f4.5 25-75mm Triplets Q14.

### 8mm use, D mount.

The Bolex L-8 cine was new in B.J.A. 1947, p177, and had a Yvar f2.8/12.5mm lens. It was sold in parallel to the bigger H-8 camera (which was essentially a version of the H-16), and took the same lenses as the H-8.

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A selection of lenses is shown in Fig 026 028 on an 8mm Bolex with Kern Yvar f2.5/25mm; Switar f1.5/12mm and Switar f1.8/36mm.

- **Pizar** f1.9 5.5mm This is a non-focusing lens, with scale for nearest point in focus from 20in at f1.9 to 3in at f22. The design seems to be a moderate retrofocus one. This was seen at No 690,59x on a Bolex 8mm camera. It may be one of the less easy to find.
- **Switar** f1.8 5.5mm 8-glass
- **Switar** f1.5 12.5mm 8-glass
- **Switar** 10.9 13mm 8-glass This was seen on a 1962 Bolex. It was noted in the B.J.A. 1960, p200, of 10 glass construction, and owing to the aperture, Paillard required to match it to the individual camera on sale. It was D-mount for 8mm cameras, and the mount closely followed other Kern lenses. The iris was just in front of the rear glass, and independant tests were quoted to show that performance was well up to others in the series. Cost was £60.00 + £9.75.
- **Pizar** f2.0 12.5mm 8-glass
- **Pizar** f1.9 12.5mm
- **Yvar** f1.9 13mm 3-glass This is a very common, compact lens for the Bolex 8mm and was seen in a focusing mount at No881,96x. It focuses to about 9in and iris is to f22.
- **Yvar** f2.5 12.5mm 3-glass This was also sold as a fixed focus lens at lower cost.
- **Yvar Filtin** f2.8 12.5mm 3-glass This was with a mount with 4 filters in a revolving
mount.
Some of the apertures of 12.5mm Yvars seem uncertain, several in the range f1.8- f2.8 being listed.

<table>
<thead>
<tr>
<th>Lens Type</th>
<th>f</th>
<th>mm</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yvar</td>
<td>2.5</td>
<td>25mm</td>
<td>3-glass</td>
</tr>
<tr>
<td>Yvar</td>
<td>2.8</td>
<td>36mm</td>
<td>3-glass</td>
</tr>
<tr>
<td>Switar AR</td>
<td>1.8</td>
<td>36mm</td>
<td></td>
</tr>
<tr>
<td>Macro-Yvar</td>
<td>2.8</td>
<td>100mm</td>
<td>3-glass, this was a late lens in H8 Reflex mount.</td>
</tr>
<tr>
<td>Vario Switar</td>
<td>1.3</td>
<td>12.5-28mm</td>
<td>about 1964 for Bolex H8</td>
</tr>
<tr>
<td>Vario Switar</td>
<td>1.9</td>
<td>8-36mm</td>
<td>about 1964 for Bolex H8</td>
</tr>
</tbody>
</table>

**Kinotel** This has been listed as Kern-Paillard f2.5/1.5in but may be described wrongly.

**16mm, C mount.**
Note that while most of these lenses are in C mount, some do not suit the Bolex reflex, and Rx lenses are needed here, and that there was a late bayonet mount series for reflex which do not fit C mount cameras, unless a C mount is adapted to bayonet. The reflex was 'new' in B.J.A. 1958, p534, and was probably a late introduction, since it is not mentioned in the text. One point is that the Pizar seems to be a little scarce and less easy to find. Most owners seem to have chosen the Switar if possible.

![Image of a camera with lenses](image)

A selection of lenses is shown in Fig 026 029 Kern lenses on Bolex 16mm: Switar f1.4/25mm; f1.525mm; f1.8/16mm; and Fig 026 030 Kern lenses for 16mm reflex: (left to right, l) Macro-Yvar f2.8/100mm, f3.3/150mm; Macro-Switar f1.1/26mm and (r) f1.9/75mm.

<table>
<thead>
<tr>
<th>Lens Type</th>
<th>f</th>
<th>mm</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Switar</td>
<td>6.6</td>
<td>10mm(B)= bayonet Ker003, This was a retrofocus type. This may be the &quot;Wide Angle Switar&quot; shown in App014.</td>
<td></td>
</tr>
<tr>
<td>Switar</td>
<td>1.8</td>
<td>16mm</td>
<td>6-glass (Ker004)</td>
</tr>
<tr>
<td>Yvar</td>
<td>2.8</td>
<td>16mm</td>
<td>3-glass (Ker005) It was seen at No380,09x.</td>
</tr>
<tr>
<td>(anon)</td>
<td>1.6</td>
<td>20mm</td>
<td>This was at auction at No197,27x, but no further details are available. This may a projection lens. (1936)</td>
</tr>
</tbody>
</table>

Switar f1.4 25mm 6-glass (Ker002, App015). It was seen at No324,89x. It was an early one in the series, appearing in the advert. in B.J.A. 1949, p523 where the high correction for spherical aberrations was stressed as well as for colour. It was in a new mount with a compass scale, automatically indicating the depth of focus. In the B.J.A. 1947 p157 the writer calls it one of a new series. These were particularly recommended, and the Switar was then coated, in a well made mount with standard thread and matched with a f2.8/15mm Yvar and f2.5/3in Yvar. It is still one of the prestige 16mm lenses.
Switar f1.5 25mm 6-glass This was a lower cost option. Seen at No333,42x.
Genevar f1.9 1in = 25mm This was listed in the B.J.A. 1952, p179, at £15 below the f1.5/1in Switar, so it was a budget priced lens, and seems not to have survived long- it has not been seen.
(Note: This just may not be a Kern lens at all- the maker was not given.)
Macro Switar f1.1 26mm(B)
Pizar f1.5 25mm
Pizar f1.9 25mm 5-glass This again was a lower cost option, (Ker006.)
Switar f1.4 50mm 6-glass Designer Lotmar.
Switar f1.8 50mm Layout Ker007
Pizar f1.4 50mm Layout Ker008
Switar f1.9 75mm Layout Ker009, App016
Yvar f2.8 75mm 3-glass Layout Ker010
Yvar f2.5? 75mm This seems to be a slightly faster alternative.
Yvar f3.3 100mm 3-glass Layout Ker011
Yvar f2.8 100mm 3-glass, these were in mounts for H16 series as well as H8 series cameras. Note that the registers do differ so the correct type is needed! It may be possible to convert one to the other by remachining.
Yvar f4.0 150mm 3-glass Layout 012
Macro Yvar f3.3 150mm(B) 3-glass.

The lenses for the H8 reflex are coded Rx and are C-mount size, but different register, ie unique and do not fit older cameras. (B) denotes lenses in Bayonet mount for late 16mm cameras. Adaptors are made to take C-mount lenses to bayonet H16 reflex cameras, but special lenses are needed for the focal lengths up to 50mm used on reflex cameras. This is an area where care is needed on purchase. Thus there are:
Switar Rx f1.6 5.5mm
Switar Rx f1.3 12.5mm
Switar Rx f1.4 36mm for a review of Rx lenses, see Modern Photo 04/1963, p78.

These later lenses can be too bulky to use with others on the turrets of early cameras, and have a slip ring rear screw flange to allow fitting without rotation of the lens. Serial numbers of Rx lenses seen were in the No 1.0-1.1 million region. In general Switars are the most sought after C-mount lenses at present but some care is needed to ensure compatability of camera and lens parts. This does seem to include critical focuser units for example.

Zooms
Vario-Switar f1.9 16-100mm This was noted at No1,109,19x.
Vario-Switar f2.5 18-86mm This was noted on H16 Reflexes at No 1,068,01x.
Vario Switar f2.0 12.5-100mm This was shown with a new wide angle aspheron attachment for 6.5mm up and 72° without distortion. It is normally a macro zoom and the aspheron is used with the zoom in the macro position. (B.J.P. 17/11/1978, p999).

There was a new series of Kern lenses in B.J.P. 21/09/1979, p912, but they were not detailed but merely noted as 'multicoated'.

Projection Lenses.
Kern made a full series of projection lenses for the Paillard Bolex projectors, and the most sought-after may be one of the last:
Kern f1.1 12mm focus This is fast, wide angle and was fitted to the 'exotic-but-hard-to-sell-due-to-cost' late projector for 2 formats with autochanger for up to 10 films.
Aspheron Kern/Paillard/Bolex International were certainly the Agents for this wide angle item (B.J.P. 26/12/1980, p1301). It is highly divergent (-12.5D) and with a strongly positive external aspheric surface, both multicoated and when mounted in front of a camera lens, which is set for close up, and forms the image. An example is the 110mm Kern Switar. Other Aspherons were noted for Eumig Super 8 etc. and the one for the 110mm Switar seemed to be adaptable to a Zeiss lens set for 35mm use. The Aspheron was largely plastic which then caused some interest. There was also a big version for the TTH f3.1/20-100mm Cooke Varotal where it works at all foci, but as a 12-60mm lens.
Kern T1.8 10mm Kern lens This was used on the NASA Maurer camera in 1981
Kern T1.0 18mm This was the other used (with a Fairchild f2/5mm) (B.J.P. 10/04/1981, p374).
**Kershaw, UK.**

Also known as Amalgamated Photographic Manufacturers Ltd., London from 1921, and later as Soho Ltd. Kershaw often used TTH lenses and eventually amalgamated in the Rank Organization. Kershaw was responsible for the manufacture and polishing of Cinemascope lenses (Jan. 1954). After the closure of the site, it was found to be contaminated with radioactive waste, dating from lumenizing dials in WW2 and was decontaminated before sale. (April 1987). Binoculars were an important item (B.J.A. 1936, p46 advert.) and included low power opera glasses and 8x models. They made the Army No 2 binocular in WW2 with TTH and Watson of London. They put their own name on some lenses, of which these are known.

**Kershaw Anastigmat**

- f/7.7 This aperture was noted on several Kershaw/APeM cameras in B.J.A. 1924, p56 advert. such as the VP, the Altrex, Beltrex, and Celtrex. This was above the meniscus and RR models in price.
- f/4.5 4in This was on a Raven folder.
- f/6.3 This was fitted to a 'Soho’ Altrex 6x9cm camera in 1932 (B.J.A. 1932, p36 advert.) There were also APEM anastigmats on some Kershaw large format Focal Plane and rollfilm cameras in 1924, and it will be hard to say who made them or how they differed from the Kershaw lenses.

**British Etar**

- f/4.5 This was noted as an 80mm/f4.5 in Velio shutter on the 450. (Amateur Photo. 20/06/1956, p594)

**“Otar”**

- f/6.3 This just may be a misspelling of Etar, but it was used on a 6x6 camera, Kershaw 630 of 1954.

**Annar**

- f/8.0/6cm This was on a Soho collapsible 127 camera, No220x.

**Kershaw Soft Focus**

- f/4.5, 9in, f/5.6, 10.5in, f/6.0, 12in. These had an achromatic meniscus in an aluminium mount. The iris was rather prominent in front of the lens. An example seen at No33x, f/4.5/9in was very like a Spencer Portland No209x f5.6/11.5in- allowing for the different foci, the styling of the mounts was so close as to make the lenses apparently from the same source. (When it is considered how little room there was for design differences in what was a simple achromat, it may be that one maker was a source for several brands, greatly to the satisfaction of all concerned, especially the customers!)

**“Apem” Cooke**

These were typically Cooke lenses with an APEM label. They were usually Triplets. This was a common fitment to large format reflexes.

**Projection Lenses**

- **Super-T** f/2.8 This was a slide projector lens. There was a "Standard 4in f2.8" on the Model 250 projector in B.J.A. 1953, p36 advert. It was hard coated.
- **Super B** f/1.8/f2.8 This was for movie projection.
- **Super C** f/2.2 This was for movie projection.

Late on, a major effort was on Rank-TTH copier lenses and TTH engraving machines.

**Kestrel** A programme of SLR lenses sold in the UK, seen as a f/2.8 35mm No600,086 Kestrel MC. This seems to be a medium price item, in a FD mount.

**Kiev** lenses for and from Kiev are listed under Russia.

**FIG 18 Russian Lenses for Kiev.**

- **Back Row** Jupiter f/2.0/50mm + Kiev 111
Kilfitt was a gifted designer, described as very jolly, pleasant and especially imaginative, developing a flow of new ideas and a gifted constructor, who was involved in the design of the Robot and later the Mecaflex and Fujita/Kowa 6 in Japan, as well as confidential military equipments. He may have dealt in lenses, choosing optics of high quality and designing special mounts, often with much longer focus travel than was then normal. Thus the Macro Kilars were a favourite of nature photographers at the beginning of the 35mm SLR era, especially on Rectaflex, Alpa and Exakta. The 90mm was the preferred item as the distance from the mount to the subject becomes inconveniently small with the 4cm at 1:1, so lighting is difficult. It is of interest that J. Adams offered "no repair" to the inside of the rear component of a 90mm as it was aspheric, then a very rare feature.

Kilfitt also offered very long lenses especially for sports photography, often of meniscus design for lightness and high contrast. The serial numbers tend to be in two blocks of digits, and the first may indicate the product type. In the UK the first note in MCM was May 1950 of short head lenses for a reflex housing some 2mm thicker than the Leitz "Ploot" called the "Repriscope" with f3.5/6in; f5.6/12in and f5.6/24in lens heads. The Repriscope had M39 rear mount but bayonet or screw front mounts were at choice. M.J. Small describes these and refers to 3 types of mounting. These were by M39 screw, as KI series; as a flange ring mating system, as AN series and finally using a locking ring as the WE series. These are not too familiar in the UK as these do not seem to be common here, or less so than the competing Novoflex series. Kilfitt was described as the West German 'manufacturer' in 06/1963 adverts. and users mentioned were A. and M. Denis, natural history photographers.

**Macro Lenses**

**Kilar**
- f3.5 40mm This non-macro version was for the Metz SLR at No222.216x. It may be the same lens head as the next item.

**Macro Kilar**
- f3.5 40mm This is the early type, supplied for Mecaflex, Alpa, and Rectaflex. It is probably less common and less desired, seen at No 209-3885 for Rectaflex, 211-314x for Exakta and No209-790x elsewhere; and engraved "Made in Leichtenstein" on rear of optic ie. Vaduz as on the lenscap.

**Macro Kilar Model E**
- f2.8 40mm A rather faster version, Q15 type, again in a deep throw mount, with good performance, improving on stopping down. (See Amateur Photo. 17/06/1964, p912; Modern Photo. 09/1964, p12) Kil001. It was supplied to fit all types of camera including movie and cine, especially Arriflexes. the price was £75 in 1966.

**Macro Zoomatar**
- f2.8 40mm This seems to be the USA version of the above.

[Berthiot] It seems the Macro Kilar (or a replacement) was also made by Benoist Berthiot for the Mecaflex, possibly under licence.

**Macro Kilar Model D**
This was the same optic in a double throw helix to focus to 1:1. It was a more costly lens then and now.

**Macro Kilar**
- f3.5 90mm A Q15 type in a long throw mount to 1:1.

**Macro Kilar**
- f2.8 90mm Noted 1968, at No219-0414, this seems to be a new optic in the same philosophy of mount. Perhaps it was also supplied as the next item? There is some implication it was...
optimized for 1:6 ratio. As with the 40mm, this was listed with adaptors for most cameras, including cine, movie and with Arriflex adaptor it cost £67.90 in 07/1965.

**Super Macro Kilar**  f2.8  90mm This was noted 1969, Q15, Kil002.

**Kilars**
- f3.5  150mm
- f3.8  135mm) noted with Macro Kilar 90mm. Some of these were noted as "for Leica" eg at No206-422x, but they may be short heads with M39 threads.

Kilfitt seems to have sold in USA through the Zoomar Corp. and items sold there may have both names (as Kilfitt/Zoomar) or may be renamed as the next item.

**Macro Zoomatar**
- f2.8  40mm This seems to be the USA version of the above.

**Macro Zoomatar**
- f4.0  50-125mm A 17-glass zoom lens. See below for one from Munich.

**Kilars and TeleKilars** seem to be basic Kilars in some adverts., possibly as they were long lens heads without special lens mounts which were sold as an extra item. A listing in USA of **Basic Kilars** for M39, Exakta etc. was as follows:

- f3.5, 90mm; f3.8, 150mm; f3.5,150mm f5.6, 300mm; f5.6, 400mm; These were made in W. Germany. A short and early example may be the f4.5/105mm TeleKilar for Kilfitt's own Mecaflex about 1953.

**Zoomatar**
- f1.3  75mm It is 6glass, and was probably made in USA and here listed in Europe, for cine.

**Zoomatar**
- f1.3  180mm This was again from Zoomar Inc.

**Macro Zoomatar**
- f2.8  90mm This had a double focusing helix for focussing to about 1:2, and was seen at No301-02x. This may be a movie version, as the back focus was very limited when purchased. It seems to be a 90mm MacroKilar in a new garb for USA, and a very nice item. It seems to correspond with one in D.W.Samuelson, "Motion Picture Camera and Lighting Equipment", Focal Press, p61, 1997. This may explain the acute flare as found- as the mount needed a movie adaptor to shield some shiny finish in the version found which lacked the adaptor. When new, these are or were a very costly item, so it was worth salvaging and was refitted with an adaptor for 24x36mm use.

**Sport Fern Kilar**
- f4.0  400mm Meniscus, 2-glass

**Sport Fern Kilar**
- f5.6  500mm 4-glass

**Sport Fern Kilar**
- f5.6  600mm Meniscus, 2-glass.

The 400 + 600mm could be had with a common lens barrel and focussing and iris and used with a common 2x converter for 400, 600, 400, and 1200mm foci. (D.W.Samuelson "Motion Picture, Camera, and Lighting Equipment", Focal Press, 1997.

**TeleKilar**
- f5.6 and f4.0  eg as 150mm tele type Layout Q24.

**TeleKilar**
- f5.6  300mm for Alpa (Layout 003), etc. An example seen at Nr 208-6712 seems to be a 2+2 tele, coated and in a focussing mount for M39/Ploot reflex housing. It is coated, now rather worn, and marked with 3 colour engraving as if for apo correction perhaps. It focusses to 3meters. A nice one was auctioned, at No274-11x, also 208-646x (here in a reflex housing), 250-073x for Contarex, and another at No208-514x, and 208-151x. Some have different types of numbers such as No2,080,14x. Where they are for an interesting SLR or M39, they hold their price well, but the condition, especially of the coating, needs to be checked as these can be old Press items with severe wear.

**Fern Kilar**
- f5.6  400mm

**Kilar Achromat**
- f5.6  300mm on a reflex housing. This seems to be an older version of the Basic Kilar, 2-glass meniscus.

**Reflectar**
- f8.0  1000mm mirror unit from Zoomar (?)

**Reflectar**
- listed as 2000, 2540, to 3810mm at f25.

**Pan Tele Kilar**
- f4.0  300mm 4-glass 2+2 tele type.

This is a standard optic, probably a "Tele Kilar", impressively well made, and in a "Pan" focusing mount with both rack focus with quick action lever, and helical focus with >2 turns to give overall 1:2 ratio. This gives exceptional quick focusing and is still fully acceptable. A rather special item, it was seen at No271-04x. It was noted in MCM3/1959, as well as a Sport Fern Kilar in reflex housing for Leica. A rather select Pan-Tele Kilar, at No250-065x and 250-073x, was for Contarex and was auctioned in London. Note that both groups of digits changed in these lenses and the f5.6/300mm above so the first was not just a product designation for the lens. These take standard 2in sq. gelatine filters. By June, they also saw the telephoto lenses for 35mm and cine at 300, 400, and 600mm (at f4/f5.6) and Makro Kilars f2.8/40mm to 2 and 4in near focus and the f2.8/90mm for 35mm and 6x6 formats. The f2.8/90mm was sold for Alpa by 1/1958. This lens covers 6x6, but the f5.6 TeleKilar type may really be for 35mm only.

**Mk XB1**
- f2.5  15-150mm cine lens, 15 glass zoom.

**Kilar**
- f1.4  65mm 6g/4c possibly another movie lens.

Kilfitt-Zoomar, Muenich, Germany.
Macro Zoomar  f4.0  50-125mm for Exakta Varex. Reported at No276-050x.

Multi-Kilar  This is thought to be an extender, but no details are available. Noted at No267-017x.

Fig 31 Kilfitt Lenses.


<table>
<thead>
<tr>
<th>Back</th>
<th>Kilfitt Pan Tele Kilar f4.0/300mm.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Right</td>
<td>Kilfitt MacroZoomatar f2.8/90mm.</td>
</tr>
<tr>
<td>Front</td>
<td>Kilfitt Macro Kilar Ef3.5/40mm.</td>
</tr>
</tbody>
</table>

Fig 32 Kilfitt and Novoflex Lenses

Kilfitt Pan Tele Kilar f4.0/300mm.
Novoflex f4.5/300mm in pistol grip.

**R. Kingslake (1903- )**

He trained under Prof Conrady and later moved to the USA to work to the University of Rochester and in 1937 became the Head of lens design for Eastman Kodak. Thus he will have been responsible for the strategically important WW2 lenses as well as the new generation Ektars with the new glasses. He was a prolific writer on lenses and their design, and with Mrs H.G. Conrady Kingslake, edited the last volume of Prof. Conrady's *'Applied Optics and Optical Design'* and also was responsible for instrument design such as the lens testing equipment based on the Twyman (1912) interferometer. (Modern Photo 02/1968, p20) This gained new importance when the lasers gave better illumination and Itek Corporation developed commercial instruments based on it. And Kingslake's *'History of the Photographic Lens'* must be the classic on the subject.

**Kinn (Kinax), Paris, France**

They are noted for just 2 items but these may be a small part of the output.

**Bellor**  a Q15 type.

**Kior**  This was a 10cm lens, coated and front cell focus to 6ft, on the Kinax Cadet, a fairly budget priced camera for 6x9cm from Kinax listed in B.J.A. 1951, p213. See also B.J.A. 1949, p186. There was a Kinn anastigmat f4.5/105mm on the Kinax II (?) which was noted in B.J.A. 1948, p197.

**Kinoptic, 41, Rue de Tlemcen, Paris, France.**

USA Agent: K. Heitz, POB 427, Woodside, New York 11377, USA.


Kinoptic was founded in 1932 by G. Grosset and G. Perthuis, and developed steadily till 1940. The original factory was destroyed in 1942, but the company was refounded at Rue de Tlemcen and remained there till 1992, when it moved out of Paris. It now employs some 70 workers. Products are warranted uniquely for "life plus reincarnation" and advanced colour correction has always been a feature. There have been almost no lenses for still cameras, the only item in FBB being a f3/90mm Kinoptik lens on a rare 61.7mm film camera Perfo 608 Mecila in 1952, probably normally a movie lens. This makes their products something of a challenge for collectors. It is increased by the use of some rather exotic Kinoptic lenses on the Alpa cameras, probably initially intended for the 24x18mm versions which were quite an important part of the output. A letter in Am. Photo 12/02/2000 p21 mentions a 'brass' finish lens so the earliest lenses may be in that finish.

One feature of early post-WW2 developments was the use of digital computers by Edgar Hugues (optician), Andre Marechal (Professeur at L'Institute d'Optique), and Pierre Givaudon (Polytechnique Engineer) which resulted in optical designs made at the Institute and then put into production by Kinoptik. This was one of the very early (earliest?) computer designs. And just may have lead to their early production of advanced items such as Tegea.

**a/ Prewar Items.**

**Apochromats**  for 18x24movie: f2.0 25, 28, 35, 40, 50, 75, 100mm; f2.5, 150mm. A f2.0/50mm on a 1930 Debrie may be an early lens retrofitted.

An Eclair Cameflex at auction was equipped with a complete set as follows:
f2/40mm, No2448x; f2/35mm, No3416x; f2/50mm, 1170x; f2/100mm, No948x.

A Morigraf Paris movie camera had:
f2/25mm, 516x; f2/50mm 496x; f2/75mm 506x; f2.5/150mm 495x.
This suggests the use of complete sets to match colour, etc.

b/ Postwar Items
For 16mm: f1.5 in 9.0, 12.5, 18mm.
Long lenses for all formats; f2.8, 210mm; f3.5, 300mm; f5.6, 500mm.

Stigmar Microfile lenses: 5 types in 40-75mm.
Aerial Photography: f1.8, 75mm.

Radiology Lenses: f6.0, 400mm; f6.3, 500mm.

Apochromats for Alpa: f2.0, 100mm; f2.5, 150mm (Kin001,002).

Peri Apollar: f4.0, 25mm a 360° Panoramic lens.

Image Intensifier Lenses: f1.3, 35, 50; f0.7, 60mm (Lynxar); f1.1, 75mm; f1.3, 100mm.

Extreme Wide Angles: 197° for 15mm film, f1.9 for 1.9mm focus.
110° for Super 16mm film, f1.8, for 5.7mm focus.
108° for 35mm movie film, f1.9 for 9.8 mm focus.

Extreme Telephoto: f8.0, 1000mm

Macro Apochromats for focus to 1:1: f2.0, 50, 75, 100mm, f2.5, 150mm.
For 35mm still SLR's: f2.8, 210mm; f3.5, 300mm, f5.6, 500mm, f8.0, 1000.
Recent additions have been: f1.8N 9.8mm for Super 35mm film.
f1.5N 9.0mm for Super 16mm film.

These are extreme quality low production items, and both scarce and sought after.
The above list was based on a list from Mssrs K.Heitz and is definitive, and for which thanks are due.

A price list from Mssrs J.A.Sinclair in 06/65 was as follows:
f1.8 18.5mm £68 Apochromat
f2.0 35mm £43
f2.0 40mm £43.50
f2.0 50mm £47.50
f2.0 75mm £54.50
f2.0 100mm £76.50
f2.5 150mm £90.00
f3.5 300mm £98.50 Special Cine
f5.6 500mm £98.50 Special Cine

These prices were without the camera mounts, in 'neutral' barrel mount. The Tegea was also listed as 108° and 197° but not priced.

The following is based on adverts and leaflets, to cross check the availability of the items. It may be of interest to compare! One point may be that the same product may be named in rather different ways.

Erase; f1.9 32mm cine lens , 6g/4c Gauss.
(anon) f1.9, 1.9mm for Alpa, this may be a rarity, and for cine format?
Actually this seems to cover 8.7mm dia., for 8 or 16mm cine and only gives a centre patch on the Alpa.
It was "new" in Modern Photo, Sept 1961, p14.

Tegea, for Alpa f1.8, 9.8mm? or is it 1.98mm more like, covers a 27mm circle, and is NOT a fisheye, 110°, 9g/6c. It may be that the 197° is on movie as maximum angle covered, and the 108° is on 16mm cine. The makers drawing gives 'Champ objet =197°' et 'Champ image=8.7mm'. It is notable that it has a maximum diameter of 105mm and a back focus of only 9.2mm.
see Camera 35, 04/05/1967. It ? gives full coverage of 18x24mm, and is described as "Excellent", especially stopped down. (Layout Kin005) It must be noted that Alpa was sold both for 24x36 and 18x24mm and lenses were worth supplying for both formats. Dr S. Bell noted one on a Bolex 16mm camera. (see below). ?In fact there may be confusion of 2 different types here in 1.98 and 9.8mm sizes? See extreme wide angles above.
The drawing is certainly 'Super Tegea f1.9/1.98mm'

Apochromat f1.8 18mm, This was also a movie lens but one covering most but not all of 24x36mm.
Apochromat f2 35mm This was seen at No1108x, mounted for Cameflex.
Apochromat f2.0 75mm This was seen as a black finished lens in barrel at No507x removed from a big movie mount. It is uncoated with stops to f16 and a red dot on the iris scale at about f3.5. It seemed to be uncoated and was regarded with extreme respect by an experienced movie photographer.
Apochromat f2.0 100mm for Alpa. (Kin002)
McIlar N f3.0 90mm This was used on the Paul Lachaize Perfo 608 Mecila camera about 1952 at
No274.17x (?) in the illustration. This used long lengths of 61.7mm film and variable formats up to 6x8cm. It is one of the few uses of a fixed Kinoptic lens on a still camera.

"Foyer"  f2.0  25mm This was noted at No3.37x on a Newman Sinclair 35mm movie camera.

*Apochromat*  f2.8  150mm for Alpa.  (Kin001)

*Apochromat*  f1.5  9mm  80°  (Kin003)

Alpa also used a Macro Apochromat of f2.0, 50, 75, 100mm; f2.8, 150mm. Apochromar f2/40mm has been noted dismantled from movie equipment.

**Kinoptic**  f2.8  210mm; This is a lens which is especially sought after.

  f3.5, 300mm These were noted for Alpa as well as movie use. A movie example is No 22,005, supplied to the MoD about 1956 for shot recording, and used on a Cameflex camera. It is marked "Special Cine", and '317.3mm focus'.

Also:
  f5.6, 500mm,
  f8, 1000mm

**Aquilar** eg 260mm, Q15 type(?)

**Apochromat** This was a 6-glass retrofocus type for Alpa, Erax. 6-glass Gauss.

**Fulgior** same. Dr S. Bell mentions one of these as a 6 glass asymmetric double Gauss mounted for Alpa and this just might mean the name was used on the longer f2 Gauss lenses as well as the 50mm below.(Am Photo 12/02/2000 p21).

**Fulgior**  f1.3  50mm This was seen as a black finish barrel optic with a near 38.5mm thread at No12,746, 10,875, 10,876. It seems to be a 6-glass Gauss with fine sharpness over 18x24mm approx- ie a movie lens. The central curves are very deep. It is purple coated but may be early enough not to have all surfaces coated. A complete example was in a bulky, black focusing mount for ?Cameflex which is hard to adapt to eg. M39 or Arriflex. It was actually refitted successfully to fit M39x26 for reuse.

Fig 027 005 Kinoptic Fulgios f1.3/50mm (a) lens head No10,875 and (b) a complete lens in barrel No10,876. Several examples of these lenses had suffered mold due to very poor storage conditions. Another point is that the iris must work easily: if stiff, the blades, which are of fairly soft steel, will bend and the ends pop from the rings. It is fairly easy to unscrew the optic with the shade from the focusing mount, then remove the iris control pin and unscrew the lens forwards from the shade assembly, then unscrew the lens cells from and back and wash the iris with light petrol to degrease it. Otherwise the whole will need to be dismantled completely, and the blades straightened: and in bad cases the iris may be beyond economic repair. Considering the storage conditions, they had actually survived very well due to the initial fine quality of the materials.

**Lynxar** f0.7 60mm This was for X-ray recording. (Vidicon) Kin004.

**Grand Angle Special**  f2.5  12.5mm for Arriflex at No43,29x, 49,97x. These vary in the colour of the coatings and may indicate the use of a new coating process in the early 1960's. This does raise one point noted from buyers that they seek lenses of similar age as they say this is needed for accurate colour matching. But then this can be said of many makes as some of the best of the early postwar optical glasses were off-white, often being warm in shade.

It is interesting that a fair number of the lenses in the definitive list actually were found in the random search for the lower set.

**Chronology**

A very useful table of serial numbers year-by-year is given by P-H Pont in his booklet "Chiffres Cles" for the years 1953-1993, and this is a shortened version since these lenses are not often seen in the UK and the number produced is relatively limited, which underlines that this is a really prestigious, desireable make. The number given is the last for the year.

<table>
<thead>
<tr>
<th>Year</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1952</td>
<td>13,000</td>
</tr>
<tr>
<td>1955</td>
<td>19,000</td>
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<td>1960</td>
<td>35,000</td>
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<td>1965</td>
<td>49,000</td>
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<tr>
<td>1970</td>
<td>54,000</td>
</tr>
<tr>
<td>1975</td>
<td>64,551</td>
</tr>
<tr>
<td>1980</td>
<td>98,515</td>
</tr>
</tbody>
</table>

Lenses made at serial numbers above 40,000 seem to be especially sought after, possibly due to improved coating. In about 1962 this will not be multicoting in the modern sense but at that time improved coatings were coming into use.

**Kirn Engineering**, Glasgow, UK.

Kirn made prototypes of lenses for a still camera to use 16mm film. There was no commercial production of this. There was a Kirn optical finder for 35mm use, using a series of white on black frames for 5.0, 8.5, 9, 10, 10.5, 13.5cm seen in one eye while the other viewed the scene direct, also for 75mm on 6x6cm negatives. It was noted about March 1951 at £4.30. (see B.J.A. 1953, p232) and it may have been agented by Corfield or the project adopted by them.
Kirsch Instrument Co, 54 Merrion St, Leeds LS2 8JH, UK.
They sold a viewfinder for camera lenses to use them as a telescope called the ‘Teleskope,’ made in the UK, giving 2x alone or 25x with a 135mm on the front. Later it was sold with a lens as part of the package.

Koch, France
FBB note a Koch lens on a Korsten camera in 1899.

Kodak = Eastman Kodak Co., Rochester, NY, USA
Initially a film maker, Kodak expanded quickly into supplying a wide range of products, including lenses. These were often bought in items though this seems not always to have been shown on the lens. Quality was uniformly high, in line with the product and it is likely that these are really an underated line.
It is worth noting that Kodak were innovative in introducing Kodachrome film in 1935 for movie use and for still use in 1937, and later in 1941 Minicolor and Kotavarchrome, and Kodacolor in 1942. These were high resolution color processes and demanding on lens quality in a way some of the earlier colour processes were not. As a result Kodak will have been interested in improving the quality of lenses they supplied in this respect. Major items are the Commercial Ektars, AeroEktars, Ektar for the Medalist (etc) and the f7.7 Anastigmat series, which was continued until well postwar. Here the second and third are certainly in the Landmark class for reasons below. In comparison, it is worth pointing out that some of the early cameras were of very high quality but came with RR lenses and there seems to have been a trade in Europe in replacing these with early anastigmats by TTH, Voigtlaender and others. This certainly complicates the field.
And that later many Kodak lenses can be dated from the letter code in the serial number. The clue is the word:

C A M E R O S I T Y, which represents the following last two digits in the year as:
1, 2, 3, 4, 5, 6, 7, 8, 9, 0 so that ER represents (1945).
About 1940, WW2 supply problems lead Kodak to introduce a professional lens series, often with new glass and hard coated from about 1942. Up to about 1930, they were said to have agented Bausch and Lomb lenses, and this may have continued after that. Ektar was normally the Trade name on the top range of lenses, but did not represent a particular design. But the early Kodak Anastigmats were excellent without being called this. The most valued are probably the Commercial Ektars, large format studio lenses, which are still recognized as 'use' items even though often not coated, and the Ektra lenses. The Commercial Ektars seem to be made in f6.3, of Q15 type. In the UK the modern large format lenses only trade occasionally and in general this list wil be only a beginning.
Designers included C.W.Frederick, (1870-1942, retired 1938). It is not at present clear which lenses he was responsible for, but he certainly fostered Kodak's interest in the new glasses developed by Morey (Herzberger, Appl. Optics, 2, p554 1963) and Kodak issued many lenses in the period 1914-1938 when he was in charge. R.Kingslake who succeeded Frederick as Head of the Dept. Kingslake is known as a fluent author (see Bibliography). He was a trained designer under Conrady at Imperial Coll. London, and joined Kodak in 1937 after holding teaching posts at University of Rochester, and was the head of Dept. after Frederic retired, and therefore responsible for the WW2 effort on new-glass lenses among other fields, as well as new designs for the 16mm movie camera and Ektra. Kingslake names the following as co-workers of Frederick.
F.E.Ross
G.W.Moffitt
G.S.Dey.
Max Zwillinger.
F.E.Altman (1893-1964, joined Kodak 1916) His designs included aerial lenses in both World Wars, and a 4-glass designs.

Kodak UK Ltd
An advert. in the 1931 BJA p21 indicates that up to 1914, most of the UK cameras were fitted with imported lenses, but that from 1930, large numbers of lenses were produced in the Harrow, Middlesex factory, using English optical glass. Thus it is likely that professional lenses such as the 203mm Ektar were made at Harrow, though to a well established design.
Behind all this activity, Kodak did purchase wide angle Zeiss Protar f18 lenses for the Kodak wide angle ‘pancake’ cameras- almost flat wooden cameras for architectural work. Some noted are:

1/2plate, f18/85mm, Protar 54,76x  Later, they seem to have used a wide angle Dagor as:
1/2plate, f9/100mm, Dagor No2,062,89x.
1/1plate f18/85mm Protar No1,154,75x; and 1,125,76x.

Early Items
Rapid Rectilinear  f7.7 typically, on many early cameras, often ex-Bausch & Lomb.
A most important example is the string pull Kodak of 1888-9, which used a f9/57mm rapid rectilinear.
Hasbroeck illustrates a good example and says that of the 5,200 made only a few survive due to the film being discontinued. (Note they were returned to Kodak for reloading and may have been scrapped by them, or the lenses and other parts reused .)
Kodak were still fitting RR lenses in the late 1920’s as on the VP and Junior Autographic Kodaks and Brownies but this will be rather the end of the line for the design. It was not the performance which was at fault but the cost, as the RR was not cheap to make, and the triplet design really offered more for less cost. A typical early item might be:Fig 030 025  RR in Kodak TBI shutter.

B&L/Kodak Anastigmat  f6.3  no details.
Kodak Anastigmat f6.3 and f7.7 These were the replacements for the RR and were on most models by the mid or late 1920's at £1 or so extra. (B.J.A. 1927, p324, 328, 344). The specification was used on enlargers in B.J.A. 1925, p35 advert. on the manual focus units, as well as the f4.5 on the Autofocus; but later the f4.5 seems to predominate, at least in the adverts.

Meniscus Lenses on simple cameras of all types, especially box cameras. These are of several types as follows.
A. With the meniscus mounted with the hollow facing outwards. This is optically the best but does not stop dust reaching the shutter, and does not sell well as the customer cannot see the lens.
B. Subsequently the meniscus was reversed and mounted with the hollow facing inwards, doubtless with a redesign. This was more satisfactory in most ways and was the norm from the 1920’s.
C. Initially an achromatic meniscus was used for better colour correction, but the advantage of this was slight, and not noted by the customer. Later single glasses were therefore used. They did have an advantage, as the design of the achromat actually could upset the spherical correction of the plain meniscus. But with the introduction of more colour sensitive films or with colour film, the use of single meniscus lenses must have become less desirable.

Kodak Anastigmat This group is the classic dialyt lens used on Kodaks early in the 20Century. It was famous for the sharpness of the negatives, and seems to have survived as a speciality product into the 1950’s. It is a dialyt type.
Series 1  f8.0 initially in 1914.
Series 11  f7.7 from 1915, eg in 170, 203mm.
It was used on the Pony Premo and well into the 1920’s. The example seen and used was No152,42x in Kodak ball bearing shutter, patents to 1913. The design may vary, but a VPK with f7.7 in B.J.A. 1925, p368 will probably be the classic type.
Fig 030 007 Kodak Anastigmat f7.7/170mm No152.423 in ball bearing shutter.
(It is not obvious just how the f7.7 Anastigmat evolved into the later f7.7 Ektar, or if it was really a policy of renaming as well as updating. There is room for confusion here.)

**Hawkeye** (Eastman)  
- f6.0 508mm  
- f4.5 500mm  
This looks to be an older professional series well before the Commercial Ektar but in the same market slot. Listed by B&J.

Kodak Diffusion discs and Portrait (close-up) lenses were noted in B.J.A. 1925, p343. They were available in quite large sizes such as 2.375in which suggests professional use.

**Kodak Ektar**  
- f7.7 Dialyt  
The practice was to use 78mm for VP; 108mm for 120mm; 130mm for 116; 152mm for 2C; 170mm for 3A; and 203mm for up to 5x7in.
There was good performing front cell focusing on the three shortest lenses and in general these lenses were so good that it was many years before a better Kodak lens could appear. (see Ed Romney, Camera Shopper, May/June 1989, p27) They were convertible and excellent in close-up, and are still valued today. (Sadly customers in popular sizes began to look for faster lenses in the late 1920’s and the sharpness inevitably suffered as the speeds rose, even though new designs were used).

Late examples were sold in the UK coated and in Kodamatic (prewar) or Epsilon (1940’s?) or Prontor shutters on the 5x7 Clinical (B.J.A. 1934, p37) and 1/2plate Specialist cameras. (Post WW2 see: B.J.A. 1951, p222; 1960, pAd 11) These are not all numbered, possibly when made in the UK, but one was NoEO44x (1946) on a 5x4 Graphic.

**Ektar Wide Field**  
- f6.3 This was a 4-glass Gauss rated as excellent for up to 70° (Layout Kod001). It was made in 80, 100, 135mm, 190mm, usually in Kodak Supermatic shutters, and in larger sizes at least to 250mm so it was a range for all large formats. It was a lens designed to be used stopped down well. The later examples are certainly factory coated, perhaps all were.

**Commercial Ektar**  
- f6.3 This was made in 8.5, 12, 14in It was "Excellent", and is believed to be a Q15 type for 60°, and this includes dealers handling it. In B.J.P. 20/02/1976, p150 Mr Cole Weston remembered that Kodak sent his Father, Edward Weston a 14in Ektar about 1947 since it was colour corrected and this helped the son to move into colour work. It just could be one of these. Edward Weston gave up negative work in 1948. In line with this, at least some are factory coated and these command a premium price.

**Wide Angle Camera**  
This camera was a special offered after the idea came to Mr David Charles and the Kodak Company (B.J.A. 1932, p149). It was a very slim, flat camera taking a 8.5x6.5in plate but only a 3.5in
(88.9mm) lens, probably an f18 Protar V from Carl Zeiss, for 110°. It was set so that no focusing was needed, all being sharp from 4ft. It could therefore go into a corner or against a wall. There is no finder, the field included being found by looking at the lens from the subject through a mask positioned in front of the lens to outline it. It seems likely that many of the 80 and 89mm Protars found originated from such cameras or the like, the camera now being in a derelict state. (See also B.J.A. 1928, p234 where a rather similar idea is produced by Mr J.N. Pearce.)

**Special Ektar**

| f6.3 | 1500mm This was for 9x18in, and this was probably an aerial lens in an ex-Defense sale. |

**Kodak Ektar**

| f4.5 | This was a general purpose professional large format lens. An example might be: |

---

Fig 030 027 Kodak Anastigmat f4.5/7.25in lens No334,968 ‘made by Eastman Kodak, Rochester’.

**Kodak Ektar**

| f4.7 | This was made in 127mm for 3¾x4¼in, or 5x4 without movements, or 152mm as standard for 5x4 (no 135mm was made). These have been rated as the best and most consistent USA lenses for 5x4. |

**Kodak Anastigmat Special**

| f4.5 | Many of these were made, especially in 101mm, and were probably of Q15 type. There is incidentally an interesting patent to Kodak Pathe, France for a Q15 type lens with the internal curve in the rear component reversed (French Pat 838,237/1938) but it is not known how far it was used. |

**Enlarging Version**

| f4.5 | Some big sizes of the Anastigmat must have been made as they were used on the Kodak Auto-Focus enlarger which was for up to 7x5in in a large vertical model and to 5x4i in a smaller one. It was used over a long period, eg in B.J.A.1928, p41, and into the 1930’s. |
This may be as Fig 031 025 Kodak Projection f4.5/75mm (NoNo).

(Enlarging Version) f6.3 this was noted in B.J.A. 1927, p41 and seems to be the version used before the f4.5 above and may be related to the next item.

**Kodak Anastigmat** f6.9 This aperture was an option to the f7.7 Anastigmat on the VP Autographic in B.J.A. 1922, p26.

**K.S.Anastigmat** f6.3, f4.5 These were noted on Six-20 and Six-16 Kodaks in 4.25x2.5in in B.J.A. 1935 p23, and may be a version of the 'Special'.

**Kodak Anastigmat Special** f3.5 These were normally Q15 type. These seem to have been as 50mm for 35mm use (while the f4.5 below was a 51mm).

**Kodak Anastigmat**

This description could and did cover a wide range of normally excellent products, but it is not very helpful today in listing them. Thus in B.J.A. 1931, p27 Kodak advertise a Kodak with f6.3, f5.6, f4.5 Kodak anastigmats, but they may have been revised in later models.

- f4.5 This was noted on a Graflex camera in the B.J.A. 1924, p29 advert., one of the rather few times they were listed in the UK.
- f4.5 50mm on Kodak 35, Bantam (?), Vigilant, Monitor. In fact, the Kodak 35 was advertizes in the UK in B.J.A. 1941, p16 with f3.5, f4.5, f5.6 lenses, and this just may have lead on to the production of recording cameras below. It is uncertain where they were produced.
- f4.5 47mm This may actually be the normal or only one for the Bantam Special.
- f6.3 There was a f6.3 version also. For example, a f6.3/72mm Anastigmat was used on a Graphlex Finger Print camera Type PH-503/PF Order No11,902.

**Anastigmat (Kodak)** f5.6 50mm in 3-speed Kodex shutter. This was the economy version on the Kodak 35. It was about 1938-1946, but was then discontinued when the range was revised. It would be this as one option on the 'Kodak 35' in Min Cam World 06/1939 with f4.5 and f3.5 as higher price options. It was the f4.5 seen and 'definition was excellent, compares with much more expensive instruments'.

**Kodak Ektar** f2.0/f1.9 in 45/47/50mm This seems to be a group of newly designed high quality lenses possibly some using the new glasses. There seem to be a range of foci here, not very far apart but possibly significantly. The oldest may be the one for the Bantam Special. Others in the group include the lenses for the Kardon (47mm) and Ektra (50mm). The increase to f1.9 may offer an indication of the use of new glass.

(a) **Bantam Special**, etc. This was 8-glass Gauss and covered the 28x40mm format of the Bantam film-something of an achievement then. The camera was noted in B.J.A. 1939, p257.
(b) The Kardon version was later applied to the Kardon camera, an M39x26 clone, where two versions are recognized: (a) some were civilian, and (b) others were for military use and these differ. (Or was it? The Kardon had a 47mm f2 when introduced in Feb 1947 (MCM Feb 1947 p126, and this was noted at auction at NoEO20,49x. )
(c) The Ektra f2/50mm This was a later lens and most likely to have the new glasses. There will also be progressive introduction of coating to these lenses.

The basic Kodak Gauss Ektar f2.0 dates from 1936, so the Bantam lenses do not all have letter codes for the year. Also they may have been made from classic glasses rather than the new heavy ones used on the Ektra, but it is another research topic just when the glass types came into use.

**Ektar f2/45mm for Bantam Special** The 45mm Bantams were Body, No144x, Ektar, No115x; Body 415x, Ektar No450x, body No565x, Ektar No713x; Body, No872x, Ektar No9622; body No1727x, Ektar No1722x; body 19,77x, Ektar 17,98x; body No2517x, Ektar, EE60x (1944).

Other Ektar Nos noted are No803x, 933x, 13,15x, 16,84x.
The last EE 1944 is late wartime. (If there is a disagreement here over focal length of 47 v. 45 etc., it is probably that the author meant that all the f2 Ektras of this time were closely related by the use of new designs or glasses or coating, even though they did vary in exact focal length.)

**Reomar** f4.5 50mm on Retinette I Type 012 (bought-in?)
**Reomar** f3.5 50mm on Retinette I Type 012 (bought-in?)
**Reomar** f2.8 45mm on Retinette type 035, 037, 044 in Compur Rapid, Prontor 250S, Pronto LK shutters. The makers were Rodenstock, Schneider and others.

**Ennatar** f4.5 50mm on Retinette Type 012, ex-Enna?
**Kodak Ektar** f3.5 This was a black finish cine lens from the 1930's. An early postwar version was on a Retina camera at NoEO 769x. (1946). It does seem some were sent to France to restart Retina production and this could be one of these.
**Kodak Ektar** f1.9 Also in black.

Note that they may be listed as Cine Kodak as well as Ektar at this time.

**Aviation** f4.5-f6.0 These were made in 24-46in for aerial survey work. These are Q15 type but the date of introduction is not known. There seem to be foci here not used in WW2 and these may be civilian lenses from the 1930's.

**Kodak Aerial** f8.0 36in This has been reported as one of the lenses used on 9x9in WW2 cameras.

**Kodak** f4.5 254mm No011x. this may be the same as the above, and was fitted as a

**Eastman Kodak Co Hawkeye Aerial lens** on a Aero Camera NoA11.

**Kodar** f7.9 This was an important product on folders in the 1920's and priced between the achromat and anastigmat, and where there was an RR on the Autographic Junior there was no Kodar—and vice versa! Thus it was a budget but probably really competent lens. Most models offered it as an option in B.J.A. 1926, p22advert., etc. 111mm for No1 pocket Kodak for 3.25x2.25in so it was probably of limited coverage. It still was sold in 4 sizes in B.J.A. 1931, p26. and was also used on a X-ray reduction camera advertised in B.J.A. 1933, p26. But probably was phased out at about that time.

**Bimat** f11}
**Twindar** f11}
This type of lens was patented by D.L.Wood for Kodak, USPat., No1,954,340, 1933). It was a periscop (the adverts. said 'doublet') but with the front glass split in two to allow front cell focusing so that 3 glasses in all were used. It was noted in B.J.A. 1935, p22. on the Six-20 and Six-16 Junior Kodaks.

**WW2 recording Camera Lenses**
A series of lenses on Kodak 35's for instrument recording:

**Kodak Anastigmat** f4.5 47mm Special on Mk 1 A.S.R.
**Kodak Anastigmat** f5.6 50mm Special on Mk11 A.S.R.
**Kodak Anastigmat** f2.0 1.5in (38.1mm) on F60 camera, no shutter was fitted as it was for cathode ray tube recording.

**Kodak Anastigmat** f2.0 26mm on F65 camera This was mounted at the rear of a Kodak No 1 Supermatic shutter, set at about infinity but with a heavy glass filter in the front of the shutter to exclude dust and this was probably replaced by a close up lens of choice for recording. Seen at No ER190, (about 1945), and probably a Q18 type lens. Conyers Nesbit in his book lists a Dallmeyer version (Nov 1944) for recording Radar H2S screens, and this is the USA version for H2X screen recording, the camera being swung into line with the screen on a pivot. Even in 1945, it was NOT coated.
Fig 030 020 Kodak Anastigmat f2/25mm in Kodak 35mm camera.

Fig 030 023 Kodak Anastigmat f2/25mm in Kodak 35mm camera. (from back).

M.B. f5.0 1in These were fitted to the "Match Box" spy camera for information gathering in WW2 and distributed in 1944-1945. They covered about 45° and could stop to f11. Fixed focus, they covered from 8ft to Inf. The design was by J.L.Boon, J. Stoiber, and H. Hood of Kodak but they will have been mainly camera designers. (B.J.A. 1948, p154; International Photography, 04/1947).

"Anastigmat" 4in This was used in a Dakar shutter for a "Identification Camera" for taking
up to 1,000 passport pictures per day. It consisted of a substantial box body housing two film rolls for 35mm film, 100ft load = 800 exposure ?24x36mm, with a lens and shutter in the front. It could also be used for X-Ray recording. (B.J.A. 1942, p185).

**Cine Lenses**

Kodak developed a large business in cine cameras in the 1920's and 1930's especially due to having introduced 16mm film. And naturally there were lenses to match them, though other firms also offered lenses to fit. One feature was the **Kodak f1.9** which was a low cost fast lens of good performance, and it was suitable for the lenticular Kodacolor process which initially was a major growth point. Today it is difficult to establish contact with the detail of this period as the lenses were often listed as just Kodak or Anastigmat but this is an attempt.

**16mm Film**

Kodak launched 16mm film as a complete novelty to the Royal Soc. of Arts on 03/10/1923 when the film, cameras and projectors were first shown in England by Dr C.E.K.Mees on a 12ft screen, and including film shot at the lecture. It offered a real reduction in cost as the film was half width and the format was small at 10x7.5mm= 40 images per ft. But also the film was reversal, a process developed by Mr Capstaff at Kodak, so that no print was needed- and unexpectedly, grain was much smaller, and it seems to have been the first safety film based on Cellulose acetate rather than the unstable and highly inflammable nitrate used in 35mm stock. The result was for Kodak a major new market, and for other makers, a challenge. The Kodak camera at launch was the Cine-Kodak with f3.5 anastigmat for a 25° angle at £30 + £5, and the Kodascope projector at £40 matched it. A new cine Kodak followed almost immediately with an f6.5 lens at £18.90

[It must be added that the 9.5mm Pathe Baby cine with f3.5 and the Bell & Howell Filmo with f3.5/25mm Cooke THH lens at £54 were also discussed in the same B.J.A. article. These were important in setting the start point for a mass of cine lenses made for the new market. At the same time there were budget 35mm cameras such as the Ensign with f3.1/2in Aldis-Butcher, the Debrie Sept with f3.5/2in Stylor, the ICA Kinamo with Dominar f3.5 or f3.5/1.625in Tessar, the Kinette with Ernemann f3.5 or f2 Ernostar, the Bol with f3.5 Bol Solar.]

**Kodak f6.5** This was the budget option on the Model B 16mm Kodak in B.J.A. 1930,p32advert. The faster options were the next two lenses.

**Kodak Anastigmat** f3.5 This was noted as a fixed focus lens on a Cine Kodak 8-20 for 8mm film.(B.J.A. 1936, p23) It was to be replaced largely by the f1.9 as more saleable and probably little more costly to produce. Both were in the 1936 advert.

**Cine Ektar** f1.9 25mm One account is that this was a Q21 Ernostar-4 type. or Kod002. But Kingslake refers to a Kodak f1.9 in 1in from 1923 as being a Petzval derivative with 4 glasses/2 cell design, but with all the glasses separated. It was normally in a focusing mount. This was certainly the best known Kodak design, and 'made' the Kodak cine cameras as it offered an economic way into a faster lens. It was not in the very first 16mm programme, but was in B.J.A. 1927, 27; 1928, p26advert.and note p328, on the Model A and Model B with f6.5 and f3.5 as less expensive options.. Thus in B.J.A. 1934, p23 it was 'now an f1.9 anastigmat is available' for 8mm.

**Long focus** f4.5 On Cine Kodak in 1932.

**Cine Ektar** f2.0 63mm This was designed by W.Schade and van Graefeland

**Fluoro Ektar** This was a high speed lens for fluorography (J.S.M.P.E. 52, 509, (1949), USP at. 2,481,688, Brit Pat.620,634.) It had a 7g/4c design based on triplet, 1+2 +1+ 3. The example in a B&J list is a f1.5 50mm lens.

**Lenses for 8mm**

In 1932 Kodak launched 8mm double run filming, and new shorter lenses were needed. These were:

**Kodak Anastigmat** f3.5, stops to f16. Used on Model 20.  
**same** f2.7 Used on Model 25.

Then for the next model, there were the interchangeable lenses,

**Kodak Anastigmat** f1.9 12.5mm or possibly ?25mm as above. (It was ‘new’ in B.J.A. 1934, p318, and probably a 12.5mm from the context. The 'great speed' was noted as a major feature.

**same** f4.5 1.5in (c.37mm)

Lenses for **Cine-Kodak Special** including Petzval types made under Frederick and Altman/ Kodak USPat. No1,620,337, and later W. Schade/Kodak USPat 2,500,046. Many are 4-glass as shown in Kod007, others
are 5 glass/4 component as in Schade's USPat. 2,158,201, 2,430,587. Some were probably also used on other Kodak cines of the period. The "Special" was noted in the B.J.A. 1934, p325 and seems to have been new and very impressive then. It really could claim to show what 16mm could be capable of, and pave the way to its commercial use. The starred lenses are in the 1934 list, but it did change a bit over the years.

<table>
<thead>
<tr>
<th>Lens Type</th>
<th>f</th>
<th>mm</th>
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</thead>
<tbody>
<tr>
<td>Ektar*</td>
<td>2.7</td>
<td>15mm</td>
</tr>
<tr>
<td>Ektar*</td>
<td>1.9</td>
<td>25mm</td>
</tr>
<tr>
<td>Ektar*</td>
<td>3.5</td>
<td>2in</td>
</tr>
<tr>
<td>Ektar</td>
<td>2.7</td>
<td>63mm</td>
</tr>
<tr>
<td>Ektar*</td>
<td>4.5</td>
<td>3in</td>
</tr>
<tr>
<td>Ektar</td>
<td>2.7</td>
<td>102mm</td>
</tr>
<tr>
<td>Ektar*</td>
<td>4.5</td>
<td>4.5in</td>
</tr>
<tr>
<td>Ektar*</td>
<td>4.5</td>
<td>152mm</td>
</tr>
</tbody>
</table>

The (probably) complete set of 8 lenses are shown in the Heaton Blue Book 1938 p127, with the separate adaptors and viewfinder glasses—there are some here such as the 2 and 4.5in which are absent from other lists and may be early options later dropped. There is a picture in B.J.A. 1939 p30 of a Magazine Cine Kodak (ie not special) with a very large set of lenses—these seem to be in 'lens adaptors' so that it could accept the lenses of a Special.

**Postwar** (These are Lumenized ie coated, and in lighter weight mounts, probably part alloy.)

<table>
<thead>
<tr>
<th>Lens Type</th>
<th>f</th>
<th>mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kodak Cine</td>
<td>2.5</td>
<td>15mm</td>
</tr>
<tr>
<td>Kodak Cine</td>
<td>1.9</td>
<td>25mm</td>
</tr>
<tr>
<td>Cine Ektar</td>
<td>1.4</td>
<td>25mm</td>
</tr>
</tbody>
</table>

This is a 7g/4c Gauss rather as in AeroEktar (Kod003) See Kingslake, J.S.M.P.E. 52, 509, (1949) It was an impressive design, and was continued as the Cine Ektar II into the 1950's eg as NoRS58x, about 1956 on a Kodak K100 16mm Turret camera. It is uncertain if the II suggests a redesign or merely an upgrade eg of the coating which is an impressive one on this lens. It focuses to 12in from the film.
Fig 021 025 Kodak f1.4/25mm Cine Ektar Ser II NoRS581 on Kodak 16mm K100 [with also 2 Wollensak Rochester lenses, f3.5/2in and f2.7/17mm and finder optics (not matched to lenses!)]
Fig 030 028 Kodak Cine Ektar f2/65mm for 16mm use.

Cine Ektar  f1.6  40mm
Kodak Cine  f1.9  50mm
Cine Ektar  f2.0  63mm
Cine Ektar  f2.7  102mm
Cine Ektar  f4.0  152mm

In a post war leaflet HE-1145/ 10-48-CH-AX these last four were sold as short head lenses with separate adaptors to fit direct to Cine Kodak Special 11, or with adaptors Type P or F for Special (1) for lenses of 25, 40, 50, 63mm (P) and 50, 63, 102, 152mm (F). Cine Kodak Magazine 16, Type M, Cine Kodak Model K, Types R and J; Older Bell and Howell Filmo and Victor models, Types R and J, (1in, 32 TPI); Type C mount (1inx32TPI); Cine Kodak Magazine 8, Type M for 40 and 63mm only; and D-mount cameras (5/8in, 32TPI). These were quite an important achievement for the time. The picture in the 1939 B.J.A. suggests that this was not a novel idea postwar but rather a prewar one continued. Hesitantly, there were two or three types of adaptors prewar. Not all are numbered, eg a 15mm f2.7 is a ‘noNo’, and a f2.0 65mm is NoRM286x, suggesting 1953 and with a postwar leaflet, above.

(Equally, others sold lenses for the Special, Burke and James selling lenses by Schneider, Carl Meyer, Bell and Howell, Steinheil and Bausch & Lomb. These were probably some of them remounted by the B&J workshop.)

**Early postwar Cine Lenses.**

**Cine Kodak Ektanon**  f2.7  13mm about 1950, 8mm It was noted as a fixed focus 13mm lens on a Cine-Kodak Eight-55 camera, noted in B.J.A. 1951, p218. It was lumenized and covered from 3.5ft to infinity at f11. Iris diaphragm to f16.

f1.9  13mm about 1949-56. A lens of this specification was noted on the Brownie 8mm in 1959-1960 (B.J.A. 1960, p230) where it was used with a front turret of auxiliary lenses. This gave the user a choice of 9mm wide, 13mm standard and 24mm long focus. The apertures were set by a plastic wheel in the rear lens with 1/2stops down to f16. The turret was also a plastic unit, and the finder used Perspex lenses. In the use of plastics, it was something of a trendsetter. £30 + 4.9 tax.

f1.6  50mm about 1947 ? for projection of 16mm.

**Cine Ektar**  f1.9  25mm for 16mm on 1948 Kodak. This was noted as NoRC55x (1951).

f2.5  15mm about 1955.

**TeleEktar** The specification is not known but it is likely to be a cine lens eg. for Cine Kodak Special.

(App027)
### Some other postwar Lenses

<table>
<thead>
<tr>
<th>Lens</th>
<th>f</th>
<th>80mm</th>
<th>4-separate glass type (Kod006) or it can be a triplet (Q14)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anastar</td>
<td>f3.5</td>
<td>80mm</td>
<td>On 6-20 cameras about 1953. (B.J.A. 1953, p8)</td>
</tr>
<tr>
<td>Anastar</td>
<td>f6.3</td>
<td>80mm</td>
<td>The Anastars were on Kodak 6-20 cameras about 1953.</td>
</tr>
<tr>
<td>Anaston</td>
<td>f4.5</td>
<td>80mm</td>
<td>Most of these are triplets.</td>
</tr>
<tr>
<td>Anaston</td>
<td>f6.3</td>
<td>105mm</td>
<td>This example was noted on a Kodak Junior II camera in Dakon 2</td>
</tr>
<tr>
<td>Anaston</td>
<td>f6.3</td>
<td>105mm</td>
<td>speed shutter with front cell focus, in B.J.A. 1953, p8 advert., 1955, p219. The camera was 'well made and attractive' but there is no mention of coated surfaces.</td>
</tr>
<tr>
<td>Anaston</td>
<td>f4.5</td>
<td>105mm</td>
<td>The Anastars were on Kodak 6-20 cameras about 1953.</td>
</tr>
<tr>
<td>Ektar</td>
<td>f3.5</td>
<td>38mm</td>
<td>80mm for Kodak Stereo, in pairs. (MCM Sept 1954)</td>
</tr>
<tr>
<td>Ektar</td>
<td>f2.8</td>
<td>44mm</td>
<td>Triplet</td>
</tr>
<tr>
<td>Ektar</td>
<td>f2.8</td>
<td>50mm</td>
<td>Triplet Q14</td>
</tr>
<tr>
<td>Ektanon Enlarging</td>
<td>f4.5</td>
<td>7.25in</td>
<td>This was noted as a black barrel lens with click stops made in Great Britain early postwar (?) and with nice coated glasses. It seems to be a 4g/3c design Q15 type and was probably a top quality professional item.</td>
</tr>
<tr>
<td>Ektanon</td>
<td>f2.8</td>
<td>125mm</td>
<td></td>
</tr>
<tr>
<td>Ektar</td>
<td>f3.5</td>
<td>38mm</td>
<td></td>
</tr>
<tr>
<td>Ektar</td>
<td>f3.8</td>
<td>125mm</td>
<td></td>
</tr>
</tbody>
</table>

**Lenses for Ektra (1940, see Modern. Photo. 06/1962)**

A famous product range, all fluoride coated, with new glass. Kodak lenses of this period are of especially interest as very good and showing what could be achieved with the new glass and coating but without computers to help in the design. They are able to show that hand calculation could be excellent. These are scarce in Europe but do trade in USA.

<table>
<thead>
<tr>
<th>Lens</th>
<th>f</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Ektar</td>
<td>f3.3</td>
<td>35mm</td>
<td>Heliar type Q19 This was noted at NoEY118x (1940)</td>
</tr>
<tr>
<td>Ektar</td>
<td>f1.9</td>
<td>50mm</td>
<td>6g/4c Gauss, Q18. This was noted at NoEY55x (1940) on body No461x, also</td>
</tr>
<tr>
<td>Ektar</td>
<td>f3.5</td>
<td>50mm</td>
<td>This was noted at NoEY47x (1940) on body No155x.</td>
</tr>
<tr>
<td>Ektar</td>
<td>f3.8</td>
<td>90mm</td>
<td>This was noted at Nos EC61x and EC26x (1941), YE31x.</td>
</tr>
<tr>
<td>Ektar</td>
<td>f3.8</td>
<td>135mm</td>
<td>This was noted at NoEY25x (1940). Oddly one at auction was engraved 'Television Ektanon' but was also an f3.8/135mm at NoRY 154. It may both indicate a late use for the Ektra lens and a possible exchange.</td>
</tr>
<tr>
<td>Ektar</td>
<td>f4.5</td>
<td>153mm</td>
<td>This was noted at NoEY20x (1940).</td>
</tr>
<tr>
<td>Ektar</td>
<td>f4.5</td>
<td>254mm</td>
<td>This is legendary and sadly probably prototypic.</td>
</tr>
<tr>
<td>Kardon</td>
<td>f1.9</td>
<td>47mm</td>
<td>It is thought that only one lens was made for this body, and dealers distinguish between the civilian and military versions. (see also above)</td>
</tr>
</tbody>
</table>

**Ektar Large format**

These took the advantages of the new technology to the larger format field, a major type being the 100mm f3.5 Ektar for Medalist, noted at NoEc 598, EE4584 (1944), Er1895 (1945) and seen at NoER244x (1945?). Arguably they are Landmark lenses as a result. (Kod005) A lens of this Heliar layout was patented by F.E.Altman for Kodak (B.Pat 547,691/1941; U.S.Pat,2,279,384, Fr Pat, 889,380). It was one of many patents on the updates of old lens designs using new glass, and these included Q15 types patented by Herzberger and Hoadley (U.S.Pat 2308007). The last Medallist cameras seem to have been sold with Astra lenses possibly as a close out when the Ektars were no longer available. (Modern Photo., 2/1960)

Ektar In general by the mid-1950's, it seems that Kodak was selling Ektar as the premium lens, but only the
f3.5/f3.7 was 5-glass, the norm being a 4-glass Q15 type, presumably with rare earth glass which would allow the same high performance to be obtained.

**Ektar**  f3.5    100mm for Medallist. This was a very fine lens, sharp and contrasty. (Q19, Kod 005) It has been noted at EY43x (1940) on Medalist I, EE416x (1944); and on Medalist II  ER244x (1945) body No31,98x and EO370x on 31,99x and ER549x on 41,46x.

---

**Fig 030 008 Kodak Ektar f3.5/100mm NoER2446 in Medallist II**

**Fig 030 010 Kodak Ektar f3.5/100mm NoER2446 in Medallist II**

**Ektar**  f3.7    105mm (or 107mm?) for 6x9 Graphic, essentially the same Q19 type but longer for
more cover, eg for movements, and iris limited by the shutter size to f3.7. It was made in 1941-1955, and it was also used in the Fluorolite enlarger when used for copying. The back focus needed at infinity is 87.5mm. It matches the 100mm in quality. It was noted at an EY No (1940) and at NoEC219x (1941) and ES186x (1947). a 105mm/f.7 was noted at RA305, which just may be a misprint.

Ektar  
**f4.5 101mm** This was in a Synchro 800 shutter for use on medium size cameras. The back focus needed at infinity is 90mm. This has been noted at NoEC334x and EC441x (1941) and ER93x (1945), and RM230x (1953) in a Kodak Synchro shutter on Graphic 6x9. Thus it may have run in parallel rather than replaced the 105mm above.

Ektar  
**f4.7 127mm** This was especially for 3.25x4.25in and 5x4in where it was fitted to Crown Graphics. It had a back focus which needed 113mm. (App024) It has been noted at Nos EC953x, EC119x (1941); EE460x (1944), E71x (1949); and RI47x, RI246x (1958) on a 5x4 Speed Graphics.

Ektar  
**f4.5 152mm** This was especially for 5x4in. Back focus needed 135.2mm. (App024) It was noted at NoES121x (1947).

Ektar  
**f4.5 6.325in** This was noted for Graphlex at NoEM32-398K.

Ektar  
**f3.5 13.5in** This was a big aerial survey lens made prewar in the 1930’s and replaced in WW2 with a new design. This is not one of the well known ex-Defense lenses, possibly owing to the amount of materials used for the aperture. One advert. mentions “no iris” so it was probably designed for use only under adverse lighting conditions.

Ektar  
**f3.5 44mm** This was on a Kodak Signet camera in Kodak Synchro 300 shutter. An f3.5 64mm Ektar is shown in App022.

Ektar  
(App023)  
**f3.5 78mm** This was on a Kodak Chevron camera in Kodak Synchro Rapid 800 shutter.

Ektar  
**f4.5 7.5in (190.5mm)** This was in barrel mount or shutters for large format cameras, such as (?) 5x7in

Ektar  
**f7.7 8in (203.2mm)** for 5x7 in the UK. This was often in a Flash Supermatic shutter. A version in Epsilon was noted in B.J.A. 1951, p222 giving speeds from 1-1/150sec, B, T. [It has been suggested that Kodak used a special version of the Epsilon, possibly incorporating their own parts for superior reliability. This is a lens which has a really excellent reputation among discerning users, but sadly the Epsilon can be a long term weakens. Hence the value of the Prontor version. It should be possible to exchange cells into a Prontor if needed.] This was noted on a Kodak Specialist 3 camera in Prontor SSVS in a Kodak advert. in B.J.A. 1960, pAdvert.11 and this is the desired version in the UK as the Prontor is the best shutter fitting. The Specialist camera also seems to have been a long established product (compare B.J.A. 1941, p16 where a rather similar camera is offered as the View) but the Ektar seems to be a postwar item as the older cameras were sold without a lens or shutter.
Fig 030 012 Koak Ektar f7.7/203mm in Prontor SVS shutter.

Ektar f4.5 12in (304.8mm) (?) for 10x8in format.

Commercial Ektar f6.3 This was made in 8.5in (215.9mm), 10in (254mm), 12in (304.8mm), and 14in (355.6mm). The design was not given but it is thought that it is an f6.3 version of the 4-glass Ektar type Q15. It is still highly valued and sought after. Sadly these are not too easy to find in the UK and command high prices even today.

Wide Field Ektar f6.3 This was made in 80, 100, 135, 190, 250mm, for 75° at f6.3, 80° at f11 and further close down may be useful for extra sharpness. It was a 4-glass Gauss type introduced probably after the War with new glass and computation.

Enlarging Ektar 2, 3, 4in These seem to be 5-glass versions of the Ektar. (App026)

Enlarging Ektanon This seems to have given good but lower performance and cost in 2, 3, 4in sizes for amateur use. The Ektar series were on the Kodak Precision enlarger- while the series were on the Specialist enlarger. (B.J.A. advert 1953, p10)

Enlarging Ektanon These were professional lenses in 5.375in (136.5mm) up to 10in (254mm). These seem to be slower, with the 254mm at f8.0 max., but of high professional quality.

Kodak were representatives ie. agents for Ross of London for the years up to the war and just after, at least for New Zealand and Australia. The advert. changes little over the years and may in fact have been listing items no longer in production. A typical example is in B.J.A. 1943, p365. This is the sort of pressure which will have lead to alternative sourcing of supplies as supplies from London would have been uncertain during the war.

Cine Ektar f1.9 This was a 16mm lens of quality using a triplet with a split front design.

Projection Ektanon in f3.5/5in and f4.0/7.5in. These were simpler than the next item.

Projection Ektar in f2.3, 5.0 and 7.5in This was a 5-element lenses, 6 air/glass surfaces.

Ektanon f3.9 50mm This was for Kodak Bantam RF camera, in Flash 300 shutter. This was a 3-glass triplet. (App021)

Anaston This was usually a 3-glass triplet.

Anaston f13.5 35mm for Kodak Stereo camera. (App020) is an f3.5 of uknown focus.

Anaston f4.5 51mm on Kodak Pony in Flash 200. 3-glass triplet.(App018)

Anaston f6.3 on Kodak Tourist 3-glass. App019 shows a f6.3/105mm version.

Kodar f8.0 72mm A triplet on the Duaflex 1V camera, and far above the usual f8 fitting.

Kodet This was a fixed focus lens on the lowest price Duaflex and Tourist cameras.
Microfile Ektars
Again with Q19 layout and new glass. (The designer was Altman for Kodak).

f8.0  18mm
f3.3  35mm
f4.5  50mm
f8.0  63mm  (General layout Kod005)

Kardon Ektar  f2.0  47mm  6g/4c Gauss, in M39x26 mount. It was made from 1945, probably for a fairly short time.

Portrait Lens.  f4.5/f4.8 in barrel mount, but these were also sold in Ilex No 5 shutters, and the full aperture is then not always available. This was a late lens, made coated in the 1940’s, for portrait and advertising work. They are colour corrected, and the softness decreases as they are stopped down, till at f22 they are nearly sharp. Made in f4.5,12in; f4.8, 12in; f4.5, 16in, which is for 10x8in. The 12in (305mm) may be the most common.

Portrait Ektar- this may be the same lens.

WW2 aerial Lenses.
Kodak seem to have played a major part in providing equipment for aerial survey work. The lenses used the new technology with excellent results- and the sharper lenses meant that less of the hazardous low level photo-reconnaissance was needed. Equally it must be said that the new cameras were not too reliable at first, and that damaged coating and balsam failure is now common on the American lenses. One cause of balsam damage in aerial lenses is the rapid warming and cooling of the glasses, coupled with differential expansion of the glass- rather as heating destroys balsamed projection lenses. It means the balsam for these big aerial lenses was often left very soft to accommodate the relative movement which also can lead to bubble formation. Actually users say this usually does not affect the performance noticeably.

Aero-Ektar  f2.5 made in 7in (177.9mm) for 5x5 from 1942-1944 approx., and 12in (305mm) for 9x9 approx. Layout Kod003. Glasses 5+6 seem to be thoriated. The 7in was made in enormous numbers, and is quite common at Fairs, and is a really sharp lens, but rather heavy and bulky. The new glass gives it a brown colour and it shoots as about f3.0 max. Original lenses have the name, filter and cap mounted on a front ring, easily removed by loosening a locking screw, and the whole lens was on a stubby cone: the complete item is much scarcer as they were usually remounted for 35mm or 56x56mm use, the latter being more successful. The name ring was usually removed for this and this may seem a pity now. The back focus is good, but too small for most 6x9cm reflexes at infinity.

Coating is better on the later yellow dot lenses, (said to be coated by Kodak themselves) usually from the EE series from 1944, or later, and these can be worth looking out for. It is essential to check the iris on purchase as these are now often stiff, and can pop when turned- this can be terminal as aero lenses are very hard to dismantle, since the threads are often locked to stand up to vibration in flight. They were originally on Fairchild K24 cameras and never on the Williamson F24. The 7in has been noted at EM11,23x, EE6444. One point in reading Conyers Nesbits book is that these did not apparently cause much stir at the time- there is no comment that they were sharper, or more contrasty. Actually much of the USA equipment came late in the War and made less difference than might be expected. (This is not to denigrate US influence- in battle in 1943 and 1944, they were a determining factor. But the postwar sales gave a false impression of the cameras, as the RAF sold off many outdated units in poor or worn out condition.)

Fig 030 014 Kodak AeroEktar f2.5/7in NoEE17,332
Fig 030 016 Kodak AeroEktar f2.7/7in NoEE6444 remounted by C&P for reflex use.

The 12in is much scarcer, and too heavy to be easy to use except perhaps for astronomical photography. Often these new have balsam bubbles, and most have no iris, since they were designed for after-raid records on fast b+w film, often with a short length of colour film spliced in.

CARE! The 12in has a VERY POWERFUL BLADE SHUTTER and this has real guillotine action- do not get fingers near it while even possibly in action!This Aero Ektar was another of F. Aklin's designs. (USPat 2,252,681/2;2,262,985; 2,336,207;2,343,627; Brit Pat. 548,252/1940.) There have been reports of cheaper experimental lenses with part or whole plastic lenses.

Aero Ektar  f2.5  6in. This seems to be a rare version, only known in USA where it does turn up in dealers
lists and not used in Europe.

**Aerostigmat**  
- f4.5, 10in; f4.8, 6.375in; f5.0, 12in. These were a rather compact lens, probably a prewar version of Q15 type, though the example seen was a 12in (305mm) f5.0 EA367 (1942) and seemed to be a 3-glass triplet. It was not coated. It was in a very substantial flat pancake like mount and had no iris. It was ex-Kodak, Rochester, USA.

**Telephoto**  
- f8.0 36in These coated lenses by Kodak [and Bell & Howell] were being sold off in Amateur Photo 28/12/1977 advert p95 at £65, weight about 26lb, original cost over £400.

**Kodak Aerial**  
- f6.3 48in This was advertised postwar in ex-defense sales.

**Kodak Aerial**  
- f9.0 60in Again these are rare and we have no details.

Some anonymous "surplus" lenses noted in postwar adverts were:

- f4.5 6.375in on K20, possible aerostigmat above. (sale: Modern Photo 11/1971, p147) at $64.50. There were also electrically operated K25 cameras, Aero Ektars $79.5, and F56 cameras with B&L f5.6/20in lenses.

**Kodak**  
- f5.6 12in This was on the K-17C camera for 9x9in selling at $369.50 in 1971.
- f5.6 15in on F8.

**Ektar**  
- f4.5 101mm in Kodak 800 shutter.
- f4.5 12in in Ilex shutter.

**Kodak Anastigmat**  
- f4.5 101mm Early postwar (1949) examples seem to be Q15 and were a fitting for 6x9 Graphics of the period. They are well coated, high quality lenses. They were probably replaced by the f4.5 Ektar series with rather similar designs. It is the f3.7 which has the 5-glass design.

**Wide Field**  
- f6.3 80-250mm

**Commercial Ektar**  
- f6.3 8.5-14in
Postwar a long series of lenses was used on the 35mm Kodaks. Thus the Kodak 35 got a:

Anastigmat f5.6/50mm in 1938 at the start. This was extended in a later model to
Anastigmat f4.5/50mm And later an:
Anastigmat f3.5/50mm. These were scattered on WW2 dated cameras and these included some for the military, above. This was also fitted to the rangefinder 35 from about 1940. This ran on till the last were coated as Kodak Anastigmat Special lens.
Anastar f3.5/50mm This was essentially the last, coated version renamed about 1951.
The next model was the Signet, from 1951-1958 with a new:
Ektar f3.5/44mm lens which was rated sharp and contrasty and far in advance of the above. Overall performance at f8 was especially fine. It was also supplied to the Army Signal Corps in black or olive drab.
Later cameras were fitted with Ektanar and Ektanon lenses which were sound performers but without the ultimate quality of the Ektar. Lower price cameras were the Pony series with Anaston and Anastar lenses.

Fluoro Ektar (see W. Schade, U.S.P. 239,756, B.Pat., 595,961)

f1.5 This was a Triplet derivative for radiography. This is shown in App028.
f0.75 This was for x-ray fluoroscopy, ie much the same thing, at $3300.

Ektars for Combat Graphic.

Ektar f4.5 63mm=2.5in.
Ektar f2.8 102mm=4.0in. This was noted at NoRM111x and RM38x (1953).
Ektar f4.0 204mm=8.0in. This was noted at NoRM 52x (19530).

Ektar for Hasselblad 100F/1600F.

Ektar f2.8 80mm
Ektar f3.5 135mm One list gives also a 105mm but this may be a misprint or a different product remounted.

Kodak professional lens production seems to have ceased about 1964. After WW2 the lenses were anti-reflection coated, described as "Lumenized" eg in B.J.A. 1953 p8 advert.
Ektar f3.5 78mm This really good Q15 type (ctd.) was used on the Kodak Chevron in 1953 for 6x6cm on 620 and 828 slide film. The Ektar was in a Synchro-Rapid shutter to 1/800sec attained by a continuously rotating double ended blade set. (see Schneider, J., Modern Photo 06/1978, pp54, 60.

Note that Kodak seem to have made a lot of studies of a 115 film process for a 35mm film for 28x36mm format: it was to be perforated with 4 elongated perforations on one side only which would imply a pull-and-relax type feed- preferable to the normal 35mm which is left under tension while being exposed and is therefore less flat. With then modern f1.2 lenses, the sharpness was said to depend more on film flatness than on lens design.

Plastic Lenses were introduced for taking on the Pocket Instamatic in 1972 and the performance matched the f2.7 glass Ektar on the more costly versions. In fact plastic was used for finder lenses on Kodak cameras from 1952, and for taking lenses on lower cost cameras from 1957. But these will be single component lenses, not the triplets of the Instamatics.

Ektar (?) f1.9 25mm This was probably a triplet with a big rear additional plastic field flattener and the third optic was aspheric on the front side. (Modern Photo 09/1978, p21; 10/1978, p33) It used 110 cartridge film. It must have then been quite an achievement to make the molds to produce these lenses. There must be a long series of slide projection lenses possibly with the 5in lens for the "Kodaslide" projector as an early one and leading on to many on later units. (B.J.A. 1949, p220)
The Kodak disc cameras were issued at PMA /Las Vegas in 1982, and used an aspherical f2.8/12.5mm lens. Others may have been available. Sales were moderate and the product is now historic.

Chronology Note the code word CAMEROSITY based serial numbers used.

E. Koehler, Wetzlar, Germany.

Antracar f3.5 35mm ? on Lucida
Kohno, Japan.
from Steriflex 3D, 125, Parkway, Regents Park, London NW1 7PS
Stellux, Wonderview Optical Industries, UK.
A 300mm f16/f90 Kohno lens was used on a Steriflex camera for lenticular stereo effect pictures where the aperture moves over the interocular distance during the exposure. It gives a 10x8in print of high quality with exposure of 1,2,4,8sec as options. Other lenses are 400mm and 150mm macro. The camera was electrically powered and weighed 26.5lb. Quality was impressive.

A.M.Koken, Japan.
Noted for a f6.3 400mm 'Non Achromat' listed for Novoflex It is actually likely to be an achromat surely?

V. Kola, Modrany and Prague, Czechoslovakia.
Rekolar f6.3 75mm on Box Kolex
Rekolar f4.5 75mm on VP plate. This was noted at No209,50x.

Kol This name is found on postwar Japanese cameras, especially early Canon, Nicca, as in Kol Xebec f2.0 50mm and Sun Xebec. A K.O.L. Special f3.5/75mm lens No66,20x was used on a Mamiya Six camera.

Kollmorgen Optical Co., USA.
USA maker noted for a Process lens f9.0 415mm in a B&J catalogue. They have also been noted as makers of a pair of Curvulon D-150 brass 70mm projection lenses.

Komura (Sankyo Kohkei), Japan.
Later in 1975 as Komura Lens Manufacturing Ltd, 17-3, Kasuga 2-chome, Bunkyo-Ku, Tokyo, Japan. This brand was sold in the UK in the 1960-1970 period, in M39x26 and rather later SLR mounts. It often offered rather high speed designs in mounts of excellent appearance. They are relatively heavy and have brass focusing helices. Note how relatively near the serial numbers are. Review Camera 35, Dec 1966, p48 for a mixed set of M39 and SLR lenses.) There were also a few Contax fit lenses such as the f3.5/135mm listed below.

[The B.J.P. 08/05/1981 p464 mentions the insolvency of Komura in 1980 and the probability that a binocular maker would adopt the plant.]

There seem to be a parallel set of large format lenses as Commercial Komuras as a:
Commercial Komura f6.3/210mm No210,55x was noted fitted to a Hasselblad 500C at auction.

35mm Lenses for M39
W-Komura f3.5 28mm 6g/4c symmetrical, probably Gauss c.1964-69. Seen at No2,930,56x; 2,930,60x; 2,930,64x. This has a black mount with a touch of chrome.
Komura f2.8 28mm 6g/4c symmetrical c.1968.
W-Komura f3.5 35mm 6-glass symmetrical c.1963 This was seen in black, at Nos 2,860,04x, 2,820,64x. This seems to be a ?Gauss type.
Komura f2.8 35mm 6g/4c Gauss c.1963-1968. Black, seen at No2,842,13x
W-Komura f1.8 36mm 6g/4c Gauss Q18
Fig 011 019 Komura Lenses in M39: f1.8/35mm; f2.8/35mm; f3.5/135mm; f2.8/135mm.

Komura f1.8 80mm c. 1965.
Komura f3.5 80mm c.1961-1968.
Komura f1.4 85mm 7g/5c Gauss
Komura f1.8 90mm noted in 1963, possibly an error for the 80mm lens.
Komura f3.5 105mm 3-glass triplet c. 1965-1968.
Komura f2.8 105mm 5-glass 1968.
Komura f2.5 105mm For Exakta at No3,350,19x, 4 separate glasses, ? Q21.
also some are 5g/4c eg for Leica.
Komura f2.0 105mm 5g/4c c. 1963-1968.
Komura f3.5 135mm 5g/4c c.1961-1966. This was seen at No2,236,33x, in black (M39x26).

There were also a series for Contax bayonet. The example seen at No423109x seemed to be disappointing as the bayonet did not fit Kiev and seemed not to couple correctly to a Contax Ila. However it is among the very small group of aliens made for the Contax so it has a rarity interest. It is not known how many other sizes were made if any. Some 135mm lenses for SLR are 3 glass triplets.

Komura f3.5 135mm One of these at No3,233,039 was a preset lens for M42 and was partly dismantled as the inside had got very dirty. It seemed to be a $2+i1+i1$ design, hard coated and the rear glasses were easy to remove with a span tool after the head was unscrewed from the focussing barrel. The helix seemed to be brass/alloy, a good combination, and was still really tight.

Komura f2.8 135mm 5g/4c c.1961-1968. This was seen at Nos 2,235,23x and 2,241,78x, 2,215,37x for M39x26, with finder. These are in black enamelled brass with alloy and some bright finish.
Fig 011 019 Komura Lenses in M39: f3.5/135mm; f2.8/135mm, f1.8/35mm; f2.8/35mm.

Komura  f4.5  200mm 4g/3c Rangefinder coupled- a famous lens as the longest coupled!

There was a special viewfinder and rangefinder magnifier to go with it.

Komura lenses for reflex housing and SLR's was made in longer sizes such as:
  f3.5,200mm; f3.5, 300mm; f6.3, 400mm; f7.0, 500mm; f8.0, 800mm; in c.1961-1968.

Some of these match Viso 111. These are in a shortened tube and adaptable to most SLR's. One seen was a 500mm f7.0, at Nr 1,238,83x, as a short head, which had been removed from the focusing unit. It is a 2+i+2 tele, covering a fairly large field. Sharpness was really good and 6x9cm was covered.

An impressive but undated unit had a focusing mount with scales for 300, 400, 500mm lenses which were supplied to fit the front interchangably. It was relatively bulky and may have been for 6x6cm as well as 35mm use. The lens head at Komuranon f7/500mm No501001x resembles the f7/500mm above, but the unit looks later in date and the front curve is flatter.

A 1964 list has:

New  f1.4  85mm  7g/5c
     f2.0  105mm.  5g/4c
New  f2.3  135mm  5g/4c
New  f2.0  135mm  5g/4c

The above seem to need a different Unidaptor mount typeU3.

There were 18 lenses from f3.5, 28mm to f8.0 800mm, all for SLR's and these included the following:
28mm  f3.5  8g/5c Retrofocus
Komura lenses for Bronica
Auto Komura f4.5 45mm
Auto Komura f3.5 50mm
Komura f2.8 100mm
Komura f3.5 135mm
Auto Komura f3.5 150mm
Auto Komura f4.0 200mm
Komura f3.5 300mm
Komura f5.0 300mm Preset
Komura f6.3 400mm Preset
Komura f8.0 500mm
Komura f7.0 500mm

Komura Large Format Lenses
"Komura Fish" A large format fish lens has been mentioned at say 30mm but no details are known. It will be scarce or rare.
Komura f6.8 47mm This was 8 glass in 1972 for 95° in Copal MXV shutter.
Komura f5.6 75mm "Super Wide"
Komura f5.6 90mm
Komura f6.3 90mm "Super Wide"
Komura f2.8 152mm in Copal No3.
Hexanon f4.5 180mm This seems to be a large format lens under the Hexanon name. These were of 6-glass design
Komura f6.3 210mm in Copal No1.
Komura f5.0 300mm.
Komuranon f8.0 400mm

Enlarging Lenses:
Komuranon-E f3.5, 50mm; f5.6, 75, 105, 135, 150mm.
Extenders (Kom001, Kom002)
Telemore Extender 2x for most SLR's in two types.
    Extender 2x for Hasselblad, Bromica for 6x6.
    Extender 2x for Mamiya 67 and for Pentax6x7.
    Extender type 95-11-7MC for Leica M.
Most Telemore converters were 4 glass in the 1975 manual but for 35mm SLR there were both 4 and 5 glass versions. The 4 glass was coded Telemore 95 while the 5 glass was not.

Konishiroku Photo Ind. Co Ltd., Tokyo, Japan.
Later J. Fallowfield to 28/12/1977.
Then Konishiroku UK, at 51, High St., Feltham Middlesex.
European office was: Hamburg, W. Germany.
USA: Agent: Konica Camera, 76, West Chelten Ave., Philadelphia, 44Pa, USA.
also P.O. 1060, Woodside, N.Y. 11377 (1976).
The advert. in B.J.A. 1958, p599 says "since the establishment ---in 1876, we have been introducing constant
improvments in cameras, sensitizers and techniques, and commenced camera production in 1882--.Since
then, we have established an Optical -- Department--." They were then selling the Konica III with Hexanon
f2/48mm lens.

**Optar**

* f3.5 25mm for 14x14mm format this will be on the Snappy camera and has also
been spelled Optar, and there was a Snappy Telelens f5.6/40mm to match it.

**Konica**

<table>
<thead>
<tr>
<th>Lens</th>
<th>f/</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hexanon</td>
<td>2.0</td>
<td>50mm</td>
</tr>
<tr>
<td>Hexanon</td>
<td>2.0</td>
<td>48mm B.J.A. 1958, p599 as above.</td>
</tr>
<tr>
<td>Hexanon</td>
<td>1.9</td>
<td>50mm</td>
</tr>
</tbody>
</table>
| Hexar (?)  | 3.5    | 50mm The maker is uncertain but probably Konishiroku related and it was
fitted as a Q15 type lens on a Chiyoca (1951-2); Melcon(1955). It was also fitted to a Konica 1 in a MCM note
1/1953. |
| Hexanon    | 2.8    | 50mm on Konica, "gave a good account of itself" in MCM 1/1953, 9/1953. |
| Hexar      | 4.5    | 50mm, This was noted at No14,22x as a M.I.O.J. item. |
| Hexar      | 4.5?   | 75mm (A Hexar of unstated source was fitted to a gun camera in WW2. |
| Hexanon    | 1.2    | 50mm (Kon001)                                   |
| Hexanon    | 1.2    | 58mm for SLR.                                   |
| Hexanon    | 1.2    | 60mm 8-glass, this is a sought after lens.      |
| Hexanon    | 3.5    | 50mm Q15 type                                   |
| Hexanon    | 1.8    | 50mm 6g/5c Gauss                                |
| Hexanon    | 1.8    | 48mm 6g/5c Gauss                                |
| Hexanon    | 2.0    | 48mm 6g/5c Gauss                                |
| Hexanon    |        | Hexanon is a respected Trade Name, not a number, and it seems not all are of 6-glass design. |
| Hexanon    | 4.0    | 38mm This was a fixed focus lens on the Konica C35EF-P March 1977. |

**List for M39x26.**

<table>
<thead>
<tr>
<th>Lens</th>
<th>f/</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hexanon</td>
<td>1.9</td>
<td>50mm</td>
</tr>
<tr>
<td>Hexanon</td>
<td>1.9</td>
<td>60mm</td>
</tr>
<tr>
<td>Hexar</td>
<td>3.5</td>
<td>50mm 1951, collapsible.</td>
</tr>
<tr>
<td>Hexar</td>
<td>3.5</td>
<td>50mm 1952-1953, rigid.</td>
</tr>
<tr>
<td>Hexanon</td>
<td>3.5</td>
<td>50mm collapsible.</td>
</tr>
</tbody>
</table>

**Konica Auto**

<table>
<thead>
<tr>
<th>Lens</th>
<th>f/</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hexanon</td>
<td>1.9</td>
<td>47mm (1964) on Auto S (Kon002)</td>
</tr>
<tr>
<td>Hexanon</td>
<td>1.8</td>
<td>45mm (1965) on Auto S2.</td>
</tr>
</tbody>
</table>

**for Koni Omega for 6x7cm**

The origin was an Alfred Simmon/Louis Weissglass Omega camera from 1953-58 with fixed lens, which was
retroed when Simmon joined Berkey Inc in 1962 as Berkey had Japan production facilities. Result was the
Konishiroku built Koni-Omega with interchangeable lenses.

This was tested in Modern Photo 02/1968 p74 with f5.6/60mm and f3.5/90mm lenses at Nos 3,802,897 and
3,763,358 respectively. The review seems to like the lenses especially stopped down a bit, but actually
comments little on them.

<table>
<thead>
<tr>
<th>Lens</th>
<th>f/</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hexanon Wide</td>
<td>5.6</td>
<td>60mm On launch this was a f5.6/58mm.</td>
</tr>
<tr>
<td>Hexanorn</td>
<td>3.5</td>
<td>90mm</td>
</tr>
<tr>
<td>Hexanorn</td>
<td>3.5</td>
<td>135mm</td>
</tr>
<tr>
<td>TeleHexanon</td>
<td>4.5</td>
<td>180mm</td>
</tr>
</tbody>
</table>

It was new in Popular Photography, 04/1974, p102. They noted care was needed to avoid damage to the rear
coupling pins, and especially in quickly changing the lenses from their protective cases. The 80mm (?) and
135mm lenses were noted give excellent results and worked fast.

For Konica Reflex, about 1965.

<table>
<thead>
<tr>
<th>Lens</th>
<th>F</th>
<th>mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hexanon</td>
<td>f2.8</td>
<td>35mm</td>
</tr>
<tr>
<td>Hexanon</td>
<td>f1.8</td>
<td>52mm</td>
</tr>
<tr>
<td>Hexanon</td>
<td>f1.4</td>
<td>52mm</td>
</tr>
<tr>
<td>Hexanon</td>
<td>f2.8</td>
<td>100mm</td>
</tr>
<tr>
<td>Hexanon</td>
<td>f3.5</td>
<td>135mm</td>
</tr>
<tr>
<td>Hexanon</td>
<td>f3.5</td>
<td>200mm</td>
</tr>
<tr>
<td>Hexanon</td>
<td>f4.5</td>
<td>400mm</td>
</tr>
<tr>
<td>Hexanon</td>
<td>f8.0</td>
<td>800mm</td>
</tr>
</tbody>
</table>

Konica Evidence Camera

Hexar f2.8 45mm (Feb. 1963)

Konishiroku Lenses for Konica AutoReflex, AutoReflex T,A,W.

These are pre-1972, for 35mm and perhaps 6x6 cameras.

<table>
<thead>
<tr>
<th>Lens</th>
<th>F</th>
<th>mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Konica</td>
<td>f2.8</td>
<td>15mm Full frame Fisheye 10g/7c, 1980.</td>
</tr>
<tr>
<td>Konica</td>
<td>f4.0</td>
<td>21mm seen in Camera 35, 12/1967.</td>
</tr>
<tr>
<td>Hexanon</td>
<td>f4.0</td>
<td>21mm Auto</td>
</tr>
<tr>
<td>Hexanon AR</td>
<td>f3.5</td>
<td>28mm Auto</td>
</tr>
<tr>
<td>Hexanon ARP</td>
<td>f3.5</td>
<td>28mm Preset</td>
</tr>
<tr>
<td>HexanonAR</td>
<td>f2.8</td>
<td>35mm Auto</td>
</tr>
<tr>
<td>Hexanon ARP</td>
<td>f2.8</td>
<td>35mm Preset.</td>
</tr>
<tr>
<td>Hexanon AR</td>
<td>f1.8</td>
<td>52mm</td>
</tr>
<tr>
<td>Hexanon AR</td>
<td>f1.2</td>
<td>57mm Auto</td>
</tr>
<tr>
<td>Hexanon AR</td>
<td>f1.4</td>
<td>57mm Auto</td>
</tr>
<tr>
<td>Hexanon AR</td>
<td>f1.8</td>
<td>85mm Auto</td>
</tr>
<tr>
<td>Hexanon AR</td>
<td>f2.8</td>
<td>100mm Auto</td>
</tr>
<tr>
<td>Hexanon AR</td>
<td>f3.5</td>
<td>135mm Auto</td>
</tr>
<tr>
<td>Hexanon ARP</td>
<td>f3.2</td>
<td>135mm Preset also in f3.5 version(?)</td>
</tr>
<tr>
<td>Hexanon AR</td>
<td>f3.5</td>
<td>200mm Auto</td>
</tr>
<tr>
<td>Hexanon ARP</td>
<td>f3.5</td>
<td>200mm Preset.</td>
</tr>
<tr>
<td>Hexanon ARP</td>
<td>f5.6</td>
<td>200mm</td>
</tr>
<tr>
<td>Hexanon AR</td>
<td>f4.5</td>
<td>300mm Auto</td>
</tr>
<tr>
<td>Hexanon AR</td>
<td>f6.3</td>
<td>300mm Auto</td>
</tr>
<tr>
<td>Hexanon AR</td>
<td>f4.5</td>
<td>400mm Manual iris.</td>
</tr>
<tr>
<td>Hexanon</td>
<td>f8.0</td>
<td>800mm Manual iris.</td>
</tr>
<tr>
<td>Hexanon Macro</td>
<td>f3.5</td>
<td>55mm Auto</td>
</tr>
<tr>
<td>Hexanon ARM</td>
<td>f8.0</td>
<td>1000mm mirror system, uses filters.</td>
</tr>
<tr>
<td>Hexanon VFL</td>
<td>f2.8</td>
<td>35-100mm Auto Zoom.</td>
</tr>
<tr>
<td>Hexanon</td>
<td>f3.5</td>
<td>47-100mm Auto Zoom</td>
</tr>
<tr>
<td>Hexanon</td>
<td>f4.0</td>
<td>58-400mm Manual zoom.</td>
</tr>
<tr>
<td>Hexanon</td>
<td>f3.5</td>
<td>80-200mm Auto.</td>
</tr>
</tbody>
</table>

Hexanon UC Auto f4.0 80-200mm This was noted in Pop Photo 04/1976 for Konica N-T3 etc.

Hexanon f4.5 70-230mm Zoom

Mr Tadashi Kasahara of Konica said in an interview in Asahi Camera mag. in c.1968 that optical correction zooms were being made with little shift in focus, but seemed to admit that good even correction all through the zoom range was still quite hard to obtain. And coating then tended to give a moderate contrast and yellow caste.

Konica Hexar

Launched in 1999, this is a costly (£1,300) rangefinder camera with a bayonet mount [compatible with Leica M] and its own range of lenses. It was launched with f2.8/28mm, f2.8/90mm and f2.0/50mm M-Hexanon lenses (Am. Photo 22/01/2000 p23), and they were described as 'very sharp, flare free and with well controlled aberrations' but not with the indefinable image quality of some lenses in this fitting.

<table>
<thead>
<tr>
<th>Lens</th>
<th>F</th>
<th>mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hexanon M</td>
<td>f2.8</td>
<td>28mm</td>
</tr>
<tr>
<td>Hexanon M</td>
<td>f2.8</td>
<td>90mm</td>
</tr>
</tbody>
</table>
Hexanon M  f2.0   50mm

**Konitor** - a possible Konishiroku lens.

**Korelle/Franz Kochmann, Dresden A16, Germany.**
They were essentially camera makers, and may never have made a lens, but gave the name to the Enoldar f4.5 on the Korelle 6x6 and the Enolde f6.3 on the Enolde V about 1918.

**Kristall, Italy.**
This Italian camera was sold with a series of lenses, probably bought in. These included Kristal Krinar, (which may be unnumbered), Trixar, Vistor, Tesog (Galileo) Tetragon (Steinheil). These do seem to be associated with Kristall but may be agents fitments as the thread was M39x26 and they could have exchanged lenses or bought supplies on the market. (This can also apply to other like situations.)

**Koristka, Milan, Italy.**
Koristka was (or are!) a (or the) leading Italian lens maker in the 1890's, who was licenced by Zeiss to make the new Anastigmats for them. These are not common but do turn up fairly steadily. The company also made microscopes (see B.J.A. 1925, p577) and other optics. After WW2 production seems to have been as Galileo, which seems to occur in the 1930's first as a trade name. Some Koristka exports were made in the 1920's, and in the UK the City Sale and Exchange Ltd. seems to have been a major outlet, selling as Koristka Salex (B.J.A. 1924, p565). The lenses seen were Triples, and seem well made, high quality items.

The major collectible today is probably the **Ars portrait lens.**

(a) stage 1 the information is:

**Little Ars** Portrait lens  f6.0

**Large Ars** Portrait lens  f7.0

Both are uncorrected meniscus lenses with a front stop.

(b) stage 2;

Lens elements are interchangeable on the same mount. (Amateur Photo. 25/07/1923, B.J.A. 1924, p567).

Diameters of the glasses were:

**Little Ars:** 40mm, 6-9in focus.
A later list shows: f2.2, 90mm for 6.5x9cm; f3.7, 150mm for 5x4; f4.2, 168mm for P.C.; f4.5, 180mm for 1/2plate. (City Sale and Exchange, advert., B.J.A. 1923, p593)
By 1924 this was: f3.7/6in for 1/4plate; f4.2/6.375in for P.C.; f4.5/7in for 6x4in; f5/8in for 6.5x4.75in; f5.6/9in for 7x5in. Note that the 40mm common diameter of these lenses acts as a corset to limit the apertures! This applies in each series.

**Medium Ars:** 70mm, 10-22in focus. This was for 1/2 and 1/1plate.

**Medium Ars**
By 1924, this was: f3.6/10in for 7x5in; f4.3/12in for 7.5x5in; f5/14in for 8x6in; f5.7/16in for 8.5x6.5in; f6.4/18in for 9.5x7in; f7.0/20in for 10x8in; f7.8/22in for 12x10in.

**Large Ars:** 120mm, 16-24in focus.
By 1924, this was: f3.3/17in for 8.5x6.5in; f3.7/18in for 9.5x7in; f4.1/20in for 10x8in; f4.5/22in for 12x10in; f5/24in for 15x12in.

This data for a and b may not be self consistent as it comes from sources of different date and the product may have been modified. One reason to suggest this is the presence of the 'medium' lens only in the later advert.

**Other**

**Zeiss Anastigmat**  f12.5   62mm noted on a very small format magazine(?) box camera.

**Protar V11a** noted as a 337mm f9.0 lens in brass. This is an example of the Zeiss relationship.

**Tessar**  f3.5   50mm for 1918 Zollinger 35mm movie camera.

**Tessar**  f4.5   45mm for 1918 FACT camera.

**Koristka**  f5.5 on Murer Mite camera. This type may be the same as a f5.5 seen with 4
separate glasses, possibly a dialyt. It is an older lens than the others below and has no serial number.

**Koristka Salex**  f4.5  4-glass Symmetrical (B.J.A. 1923, p593, 1924, p565). Not all of these are symmetricals. Thus a lens seen is a triplet or ?Q15 as an 5.66in f4.5 (Q15) in a dialset Compur at lens No99,603/ Compur No744,616 about 1926. Another version seen twice was a 210mm f4.5 Triplet No98,91x and No98,92x (Layout Q14 or Q15) type, a nice solid item in a black brass but optically simpler than the above would suggest. Thus two types may have been made. It was listed as: 5.25, 6.0, 7.0, 8.25, 10in foci. Use 6in for 5x4. Equally other Salex lenses may have originated elsewhere! The 210mm had an iris stuck up with old grease which was freed with solvent after freeing the lens cells.

---

**Koristka Salex** enlarging lenses: eg f6.0 (Amateur Photo., 29/10/1924, p429).

**Victor**  f3.5  50mm for Gamma 1 (Bayonet mount, 1947) at lens No536x on body No00241, and Gamma II at No85,03x on body No10,80x, also on Janua and St Giorgio. Otherwise given as 55mm, collapsible, at No75,47x, 75,6x and 75,48x, 75,65x, and 75,37x on Gamma.

**Median**  f6.3 on Ganzini Nixe.

**Aether**  f3.5  45mm on FACT Autocinephot (1918, =Sept prototype) This was developed by Tartara in Italy and the idea transferred to DeBrie of France when the lens used was the Berthiot Stylor f3.5/50mm, so the original Aether will be rare.

**Meridian**  f6.8 on Murer ML (1918)

**Equator**  f5.5  This aperture was noted as a f5.5/240mm at No4,61x on a Fiamma tailboard camera at auction.

**Aerostigmat**  f4.5  210mm, 300mm, eg on OMI AL 30 aerial camera, (1935).

**Tecnar**  f3.5  50mm on Herman (1950) at No204x, a late product?

**Proximar**  Teleobjective, eg in f6.0, 18in.

**Teleaccessory**, made in Models A and B.

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**Kowa Optical Industries Ltd.,** Tokyo, Japan.

An early item may be the Kowa anastigmat f4.5 on the Peace III for 14x14mm.

**Prominar**  f3.5  45mm  Triplet, Q14

**Prominar**  f2.8  48mm  Triplet, Q14.
Prominar f1.8 45mm 6g/4c Gauss Q18
Prominar f1.9 50mm 6g/4c Gauss Q18
Prominar f2.0 45mm 6g/4c Gauss Q18
Prominar f3.5 75mm Q18

Lens Programme for Kowa 6 and 66 rollfilm SLR.
All lenses with auto iris.
Kowa f4.5 19mm Fish eye, very rare. 14 glass focus to 40cm It was a sensation at the Chicago show in Modern Photo 07/1971 at $2,600 in a leaf shutter- the case and mounting bracket were included free.
Kowa f4.5 35mm. 10 glass focus to 40cm, 98°, 95mm filter.
Kowa f3.5 35mm rare.
Kowa f4.0 40mm 9 glass, focus to 40cm, 95mm filters.
Kowa f3.5 55mm 5 glass, focus to 50cm, 77mm filters
Kowa f2.8 85mm This was reviewed on the Super 66 in Pop Photo 04/1976 p91 and was obviously a good quality lens in a alloy/brass mount, the sharpness improving somewhat on stop down as did the contrast away from the centre.
Kowa f5.6 110mm Macro lens. 5 glass, focus to 80cm, 67mm filters.
Kowa f3.5 150mm. 6 glass, focus to 1.5meters, 77mm filters.
Kowa f4.5 200mm. 6 glass, focus to 4 meter, 67mm filters.
Kowa f5.6 250mm
Kowa f8.0 500mm very rare. 7 glass, focus to 8 meter, 95mm filters.
All these items were in the launch prospectus, but it is not known if all were actually issued.

On fixed lens 35mm cameras.
Prominar f2.0 50mm 6g/4c Gauss for Kowa E (1963), Q18.
Kowa f2.8 48mm Triplet, Q14, in leaf shutter for Kowa H (1963).
Kowa f1.9 50mm about 1967 onward on Kowa SET/SETR.
Kowa f1.8 50mm same
Kowa f3.2 28mm on Kowa SW wide angle camera, fixed lens.
Kowa f4.0 19mm on Kowa 190 a specialist item.

Interchangable Lenses on Kowa SER, SETR (1965-1970 period).
Kowa f3.5 28mm
Kowa f2.8 35mm
Kowa f3.5 100mm
Kowa f4.0 135mm
Kowa f4.0 200mm
Kowa-Graphic f9.0 270mm This seems to be a large format lens.

Kowa enlarging lenses
These were noted in B.J.P. 15/02/1980 p147 as:
f2.8 50mm
f4.5 65mm
f4.5 105mm
f5.6 135mm
They were all of 6g construction with click stops and M39x26 thread and other foci were expected to extend the range.

Kowa were one of the lens suppliers carried by Mitchell for the BNCR system in 07/1976 lists, as follows:
Cine Prominar T3.5 15mm
Cine Prominar T2.6 20mm
Cine Prominar T2.3 25mm
Cine Prominar T2.3 32mm
Cine Prominar T2.3 40mm
Cine Prominar T2.3 50mm
Cine Prominar T2.3 75mm
Cine Prominar T2.6 100mm.
These were the less expensive series on Mitchell but still cost from $1,120 (15mm) to $605 (100mm).

**E. Krauss, Paris, France.**

Krauss were noted as the licencees for Zeiss Anastigmats for France, so that a larger range of these were probably made than is apparent here. They seem to have sold a bigger proportion of anastigmats than others, often on Jumelle cameras from about 1896 and were a major French maker judging from the entries in FBB and the regular appearance of items at auction. For structures, see the Zeiss or B&L sections. One small point is that they continued to make anastigmats at a time when the trade name ‘Protar’ was in use and applied it to their products.

They were taken over by Anciens Etablissements Barbier-Benard et Turenne, Paris in 1934 but Quatryl lenses by Krauss were listed in 1935 and a Spido Press was offered in B.J.A. 1938 p618 with Tessar Zeiss Krauss f4.5, so they were still available then and 1934 is not a cut off useful for dating equipment without reserve. They made the **EKA** 35mm camera for non-sprocketted 35mm film in the 1920-1930 period, esp. 1925 from a leaflet. This was fitted with a f4.5/50mm Zeiss/Krauss Tessar lens, and is now a scarce and valued item.

**Zeiss licensed designs**

**Anastigmat Series 11a f8.0** (B.J.A. 1901). These may be represented by two f8.0 lenses, an 110mm at No5,98x and a 205mm at No7,59x in Decaux shutter at a London auction. f8 was offered:

(a) on a Stereo Box in 1894:
(b) on a Carpentier Jumelle in 1895, etc. eg. an f8/110mm No337x, 13,86x and 22,94x, and on a Joux stereo in 1896.

---

Fig 014 006 Krauss Zeiss Protar Ser Ila f8/110mm No34,143 in alloy in front of the set of Ross lenses
Fig 014 008 Zeiss-Krauss Protar Ser V f18/11cm No156,296- ie 'Protar' was used by this licensee.

Anastigmat Series 112.5 98mm One of these at No777x was fitted as a replacement to a Photosphere and may indicate what was original. Another case No169x for 9x12cm, the Photosphere used a Krauss-Zeiss Protar f8/124mm No42,35x. This is information which is not evident in many pictures of them.

Anastigmat Series 111a f9.0 same. They were noted in 1900 as 75mm lenses on a Boulade Stereo Alpine for 6x13cm.

Protar Anastigmat Series 11

f6.3 50mm no iris, in rack mount A

This may be off a microscope or macro outfit. It is probably not typical of the programme sold. But f6.3 Protars were sold, eg at No32,99x for a 133mm lens on a Gaumont Jumelle No192x.
Fig 027 008 Zeiss-Krauss Anastigmat 50mm no iris

Series V  
18 This was seen as a 110mm at No156,29x in brass. It looks nice!

Series VII  
12.5/6.3 This was noted as a single cell, i.e. at f12.5/c.360mm at No406x in its individual brass mount and without any stops, as if it was one of a pair, originally f6.3/210mm but provided with its own panel for long focus use.

Unar  
f4.5, f5.0 These were offered in B.J.A. 1901, p1514. A 45mm version was used on an early 1918 FACT movie camera. They were listed for a small plate in 1903 as alternate to Protar or Tessar.

Planar  
f3.8 This was noted at No44,55x, as a 160mm on a Sigriste camera. In fact it seems to have been a favourite with this make in f3.6 for 6x9cm and f3.8 probably for 9x12cm, due to the need for speed on this focal plane camera, and the fine correction especially at smaller apertures. Thus a f3.6/110mm No28,92x was noted on an 6x9cm from about 1899.

Tessar  
f3.6 This was noted as a 120mm at Nos 46,71x and 46,71x on a Stereo camera.

f6.3 112, 135, 145, 150, 210, 500mm and others. These were seen at serial No's 87,79x-111,02x. These are fairly common in the UK, often in quite large sizes such as 500mm f6.3. A 54mm f6.3 was (retro?)-fitted to an approx.1895 Lumiere movie camera. But they were listed new by 1902 as f6.3/84mm and later as f6.3/90mm, and were an option on the 1903 Block Notes. Some could be very heavy as the 500mm version. Krauss did make some very big lenses, a f5.0/610mm No28,10x being seen at auction, but of unknown type.

A f6.3/145mm Tessar No55,16x was fitted to a Takyr No1044 thought to be about 1903.

A pair of f6.3/84mm Tessars were fitted on the StereoSpido stereo camera at serial numbers 130,66x and 130,66x.
**Fig 027 010** Zeiss-Krauss Tessar lenses f4.5/210mm and f6.3/112mm (shutter) and 150mm (brass barrel)

**Fig 027 032** Zeiss-Krauss Tessar f6.3/50cm No111,011 This is a very solid heavy lens and just may be an aerial lens.

**Tessars** were offered by Krauss after WW1 [unlike eg. in the UK where Ross renamed their lenses.]

- **Tessar** f6.3 72mm This size was used at No52,36x on a 4.5x6cm Block-Notes.
- **Tessar** f4.5 50mm on EKA. (1924) and as a 58mm on a 1909 Lumiere movie camera. Krauss were offering f4.5 Tessar as an 85mm lens by 1906 on the Stereo Spido, and it was an important
product up to the 1914 war, eg on the Homeos below, also postwar eg in B.J.A. 1925, p576). 55mm lenses were offered on the Cornu L'Aerocop in 1922.

**Tessar** f4.5 4cm for 18x35mm on a revolver camera. (1921) One was noted at auction at No134,20x on a revolver camera.

f4.5 28mm for Homeos It was noted as a pair at No149,61x on Homeos No31x.

This was an early 35mm still camera from 1914-1920 period and other lenses were from Optis (no details) and Zeiss (probably).

**Tessar** f3.5 50mm This was a common fitting on French movie cameras from about 1900 until the 1930's. It was an option on the EKA in 1924.

f3.5 35mm This was noted on an Eclair 35mm movie camera about 1924.

f3.5 20mm This seems to be common on early Pathes from the 1930's. It may be the same used on a disguised camera by Gaumont for 16mm still photography noted at auction.

**Apo-Tessar** f2.7 50mm No154,50x. This was fitted to a Debrie 35mm movie camera.

**Krauss** f10 640mm This was noted in an old B&J list.

Krauss Tessars have a very high reputation today on the used lens market, for sharpness and especially contrast, and are really sought after items.

**Doppel Protar** These were offered singly and in pairs.

### Non-Zeiss Lenses

**Quatryl** f2.7 40mm This was as a movie lens retrofitted(?) on a 1900 Prestwich camera, and eg on Jumelle Sigrist, and is a Q15 type. New applications may have been from the 1930's in place of the Tessar, as it has been noted as a f4.5/105mm then and as a f3.5/165mm lens on a Krauss Manorex aerial camera in 1933. Other aerial lenses noted were just classed as Krauss 'anastigmats' on an 1933 aerial survey camera.

**Triantar** f6.3 80mm on Gaumont Stereo, Triplet, Q14? It replaced some of the Tessar applications, eg on Stereo Spido.

f3.0 25mm on Pathe 16/9.5 cameras about 1933-1935. It was noted at NoRO104x, on a Pathe 16mm hand camera.

**Roller Anastigmat** f4.5 80mm This was noted in a dialset Compur shutter.

**Kalloptal** f7.7, This was a separable anastigmat for 85°, layout 4-glass Gauss. see advert. in B.J.A. 1901.

**Krauss Rexyl** f11.8 25mm for 16mm cine.

### G.A.Krauss, Stuttgart, Germany.

also as Krauss and Pfann for the Polyscop. They were camera makers, probably using bought-in lenses for the Peggy etc. where a Zeiss Tessar f2.8/5cm was noted at No1,336,99x. There were a set of **Krauss Anastigmats** f6.8, f6.3, f5.5, f4.5 on the Krauss Rollette in B.J.A.1928, p717; 1930, p712 advert.) where the advert was almost unchanged in 1927-1930. In 1925, 1926, there was only a **f6.3 Rollar** on the Rollette.

### Dr Krugener, Germany.

They were noted for a Simplex anastigmat f7.7/60mm used as a pair on a 45x107mm Plastoscop. this may be the same as:

**Krugener**, Bockheim/Frankfurt M, Germany. This was an older maker later absorbed in ICA.

**Extra rapid Aplanat** f9.0/13cm on Delta in 1904.

f8.0/12cm as alternative to the above.

**Rapid Periscop** 112 on Delta Periscop (1904)

**Delta Periscop** on Delta camera (1900).

**Euryscop** anastigmat no details, on 1905 Delta.

### K.S., Japan.

Verona Anastigmat f3.5/60mm at No077x on a 127 rollfilm Vero 4 camera.
KW = Kamera Werkstetten, Dresden, Germany.

They were essentially camera makers and these are likely to be bought in items. The source is not known. However they did use a Steinheil Actinar f4.5 on the rollfilm reflex in 1937. (B.J.A. 1937, p115advert.) The best camera was probably the Patent Etui and it came with up market lenses such as Tessar, Eurynar, and others.

Anon

| f6.3 | This was the anastigmat used on the Pilot 6 roll film reflex for 6x6cm in 1937. |

The camera also offered f4.5 and f3.5 alternatives- these were not named, but probably KW anastigmats as in 1936.

Ennatar

| f4.5 | 105mm on box camera. |

KW anastigmat

| f4.5 | 75mm on Pilot reflex. (1936) |

Pilotar

| f2.9 | 75mm on Pilot Super (1938) |

anon

| f2, f3.5, f4.5 | This was the aperture choice in the 1937 B.J.A. for the 3x4cm Miniature rollfilm reflex. |

"Wetzlar Wastar"

| f2.8 | 50mm on Rival Reflex. (1955). |

W.D.Kuhn, Berlin, Germany.

Lomar (or Lomara?) anastigmat f4.5/6cm, in pairs on Lomaraskop stereo 1933. The source of these is unknown.

Kurt Kuhn, Wetzlar, Germany.

The Reka camera for 35mm used Kuhn Rekagon f2.8/50mm and Rekatar f2.8/50mm and these may have been made with the camera, but the earlier Reka IIS used a Reka-Kata f3.5/38mm which sounds as if it was bought in. There was also a Flexameter with a Rekatar f2.8/50mm lens, a sort of clip-on reflex finder.

Kuhnert, Fritz, Freiburg, Germany.

He was a lens and camera maker, best known perhaps for the lenses for the Futura, a rigid bodied 35mm camera with interchangeable lenses from Futura of Freiburg. That seen was an Elor, f2.8 5cm No30,82x, coated. The Elor was also used as a f2.8/40mm lens on the EFKA 24x24mm camera which Kuhnert supplied under his name, where it was noted at No10,69x on body 10,58x.
Kurbi & Niggelooh, Germany.
UK Agent Actina, London, UK.
They made a series of low cost cameras with lenses such as Trinar f2.8/45mm on Bella, Biloskop f8 on Bellalux, and Biloxar f5.6 and f3.5 at 38mm on the 24x24mm Radix- a common import into the UK in the 1950's, through Actina of London. The Radix was probably the most ambitious and adverts spoke of it allowing good 12x10in enlargments. (B.J.A. 1953, p43)

Kyoei, Optical Co,Ltd., Japan.
The trade name seems to be Acall, making lenses for M39x26 as follows:

- **W-Acall**
  - f3.5 35mm
- **W-Acall**
  - f2.8 35mm
- **Acall**
  - f3.5 80mm
- **Acall**
  - f2.8 105mm
- **Acall**
  - f3.5 105mm
- **Super Acall**
  - f3.5 135mm This was seen in black and chrome mounts at No 71,59x, 91,24x and 92,01x. These use alloy-on-brass focus movements, and seem a very solid item. It is probably a Q23 type from the reflexions. These seem to be relatively common.
Fig 011 033 Kyoei Optical Co Ltd Super-Acall f3.5/135mm No92,012 in M39.

Acall f4.0 250mm (Contrary to one report, this is not rangefinder coupled)