

C-mount

Incidentally, it was not initially planned to cover cine and movie lenses in the Vademecum, but they are of increasing interest today and do have some unique design features. As a result some are included. One problem is that commercial 35mm lenses (referred to here as Movie) were made in limited numbers and are hard to find now as they are typically used till worn out. So smaller formats, referred to as Cine, are probably over represented. And the standardization of mounts means that lenses and cameras get matched up when made many years apart so that a modern coated lens may be found on a very old 16mm camera: and of course vice versa. In design, movie and cine lenses are normally expected to reach very high standards of sharpness- typically above still lenses- but are often relatively long focus for the format so the angle corrected is limited. As a result, remounting them even to 35mm still format use can be disappointing as the sharpness may be limited to the centre. And optical designs used for such lenses can differ- note the large apertures obtained from triplets and the 4-glass Tessar for example.

C mount is the standard 25.4mm x 32(?)TPI mount for 16mm cameras, and is used on a wide range of such lenses, exceptions including lenses for some Movikons and Kodak cameras. There was good standardization of the threads and register, but the lens barrels do vary and show a steady increase in diameter with time. The older lenses can be used on an adaptors to M39x26 if one with a deeply sunk flange is made, but there is very little space to spare between the shutter rollers and the rangefinder feeler must be removed. The normal C-mount register is 17.5mm and the M39 is 28.8mm so a sink of 11.3mm is needed. The Leitz Hektor f1.4/25, Schneider Xenon f1.5/25mm and the TTH f2.5/0.7in and f1.9/25mm are possibly useable but not the bigger Kern Switars or Schneider's Xenon f1.9/16mm. The limitation is the internal diameter at the M39 thread, which is about 36.8mm. As with the Arriflex lenses, a Fed 4 may be a suitable budget body. Incidentally it is not at all common to use C-mount lenses for still photography.

CCTV (Closed Circuit TV) is probably the source of many C-mount lenses, often with the remains of micromotor drives for the zoom and other controls which now are coming onto the old lens market. Some of these are of very high quality but there have been comments that others are of rather limited design performance where a shop buys a system on a price basis rather than looking for real sharpness, and this does lead to problems in subsequent recognition. This is obvious from some clips shown on TV after crimes are noted. The police have special units devoted to image enhancement. (M.Downing in B.J.P. 11/06/1997, p18-19).

Cadot, France.

Cadot is listed in FBB as a camera maker with Cadot lenses- possibly bought-in, about 1904-1910. The lenses included RR and Hemianastigmats.

Caltar Scientific Inc. 1590 Touhy Ave., Elk Grove, Ill.60007,USA.

We thank Mr Klaus Huhle of Rodenstock and Mr Ulrich Eilsberger of J.Schneider for unique additional information here. Also Modern Photography 1/1977 and View Camera 1/1996 (L.Jones) p56. Modern could distinguish three periods of Caltars. L. Jones explains their origin as an attempt to produce budget lens supplies to complement the moderately priced Calumet View camera. They seem to have been developed in the 1970's following the end of the Kodak Professional lens programme in 1964, and Mr Jones indicates their origin as Burke and Jones, following discussions with Ilex (M.Kriner) and others. An initial layout considered was the 4-glass Gauss, followed by a triplet series and a Plasmat one.

Thus initial production by Ilex was:

Series 1 4-glass triplet type Q15 f6.3 165, 215, 254, 305, 375mm. These used new optical glasses from England, and updated designs, and were of high quality, only the 375mm being less than perfect. They were supplied from April 1965. This was essentially the Ilex Paragon reborn and some were sold direct from Ilex as Paragons. A Caltar 165mm in Seikosha was \$85 in Modern Photo 11/1971, p38.

Series 1b 508mm This was needed for 10x8in, but was made later as a triplet of 3-glasses. It was initially rather variable in quality, but later of excellent quality. It may be of limited angle of coverage, as this is given as 35°. A 20in f7.0 has been noted secondhand in USA adverts.

Series 2 Wide Field Caltar for up to 103°. This was a 4-glass Gauss type, also updated in design. An example in Modern Photo 11/1971 was 90mm in Seikosha MX shutter at \$162.

Series 3 f4.8 215mm S-Caltar This was described as an excellent lens, of classic air-spaced Q20 type. There was a market for this and Ilex aimed to fill it. However only one size was made and will be scarce as the next item intervened. It was advertised in Modern Photo 11/1971 p38 at \$169 in No3 Acme.

According to Modern, there was another intermediate product planned but not produced. Then **Rodenstock** **offered** their product range to be supplied as a private label. To complicate matters, Ilex sold some lenses direct as Paragons, and Burke and James sold lenses labelled as **Acutar, Acuton, and Acugon**; and later Burleigh renamed them **Acutessar, Acusymmetricon and Acuveriwide**, which continued up to the closure of Burleigh Brooks in 1981, and of Ilex. The group from Rodenstock was as follows:

Caltar 11 (Compact lens) f6.3, 150mm, f6.8, 210mm Triplet type.

This may mirror the Geronar normally sold by Rodenstock., in 150, 210, 300mm.

Caltar 11 Symmetrical f5.6, 135, 150, 180, 210, 240, 300mm.
f6.8, 360mm

These may mirror the Sironar type

Caltar 11 Wide Angle f4.5, 65, 75, 90mm
f6.8, 75, 90, 115mm

These seem to mirror the Grandagon types.

For many years, Rodenstock offered two budget lenses in their own programme. Geronar, f6.3, 150mm, f6.8, 210mm and f9.0, 300mm; and Geronar-WA f8.0 90mm. There may be a relation between these and the American programme, but it is not quite obvious.

An 20in **Acuton** has been noted in adverts.

The next series were from **J. Schneider of Kreuznach** and examination of the original drawings suggests that they included lenses marked as follows:

Calumet Caltar Pro Series 6in (150mm) f5.6, mirroring the f5.6 Xenar series. (Q15)

Calumet Caltar-W 3½in 90mm) f8.0 Multicoated, mirroring the Super Angulon type.
or **Orbit W11** 3½in (90mm) multicoated.

Calumet Caltar S11 5¼in (135mm) f5.6 multicoated, mirroring the Symmar type.
or **Orbit S11** 5¼in (135mm) f5.6 Multicoated.

The latter was made in 210, 150, 240, 300, 360mm as Caltar, and 300mm as Orbit.

Orbit may have been used by another vendor, or as a second version considered by Calumet: it does occur as a secondhand trade name.

All these items were originally very good value as savings were made in the selling costs. Some items noted secondhand are:

Caltar	f5.6	150,300mm
Caltar	f8.0	90mm
Caltar 11	f8.0	90mm
Caltar 11n	f6.8	90mm
Caltar 11	f5.6	240mm
Caltar 11	f6.8	360mm

These were in 1996 lists, and some are noted as Ilex-Calumet Wide Field Caltar.

[**Computar Symmetricon**. Seen as a 5x4 lens, ex-Japan, this suggests still another supplier was involved in this group of products, but it may never have passed through Caltar's hands.]

Cambinox/ J.D.Moller, Wedel, Hamburg, Germany.

Idemar f3.5 90mm

This was said to be built into a binocular/camera assembly, the Cambinox which offered a choice of three lenses. Idemar also occurs as a cine lens, noted as an f3.5 135mm No 322,00x. It may be that they were cine lens suppliers or considered entering this market. Certainly they are unusual lenses in the UK. (See also Moller)

Cambron

Lenses with this trade name seem to be from Cambridge Camera Exchange Inc., 47 7th Ave., N.Y. 10011, USA. They were noted for most SLR's in Popular Photo 04/1977, p209 as:

Cambron	f3.8	85-205mm
Macro Cambron	f3.8	85-205mm

Cameras

Using old lenses can be a very important angle to collecting them: indeed the whole theme of the Vademecum is that lenses of all dates and nearly all types are still usable. But there is some small print, and this may be the cameras. Sadly, the older cameras are almost a barrier to using the old lenses as plate sizes have changed, plates have been replaced by film and the very holders used for the old plates may be lost, worn or just plain unsuitable. Thus the lens collector mainly interested in using the lenses may find it best to concentrate on sound modern cameras and remount old lenses, at least temporarily. And a collection of lenses alone is much more compact than one with an equal number of cameras, and has the advantage of being much cheaper to assemble- though the salability may also be less easy to predict.

One problem is that the majority of really old lenses are for rather large formats, and the smaller examples may sell at a premium. There are really at present 3 formats to consider:

10x8in This is the most flourishing big size. It will use many of the larger old lenses satisfactorily. Thus it is worth finding a camera to handle up to 10x8in format film. It will be expensive, especially if a modern Gandolfi or the like is chosen, but is very useful also in work with smaller lenses to see the area they cover. And a big camera can be used with a reduction back- essentially a square of plywood with the back from a smaller camera mounted over an aperture in the middle of it. On purchase, check that it really is for 10x8, (as 1/1plate can be confused), and that it takes modern cut film holders- it is not sufficient to get some sort of old plate holder with adaptors of doubtful register and poor light tightness. Sadly old woodwork on plate holders seems more at risk than on cameras as they use a lot of thin boards, and the thin wood tends to crack more often. And wood is not itself too good a choice if infra-red sensitive materials are involved. Wood is not a problem to the same extent in the camera as it is thicker and less involved in light shielding- it is a matter of choice and the wooden camera will probably be lighter and easier to handle than a big monorail will be.

5x4in This is the next size smaller to be still in normal use although 5x7in can be considered. A 5x4in camera can be used for work with lenses originally sold for 5x7in, 1/2plate, 1/4plate and 9x12cm for example, though some allowance will be required where a different format lens is in use. Thus a 1/4plate lens may have to be pushed to cover 5x4in and a 210mm lens originally designed for 1/2plate may seem rather clumsy. A major advantage is that this is or has been a major professional format, and many cameras and accessories are available second hand, often quite cheaply. Choose from Linhof, Graphic, MPP (in the UK), Sinar, Deardorff (USA), Wistar (Japan), Plaubel Peco, and many others. But note that many will have had professional use- avoid one which seems hard used or worn or damaged. Spare parts for old ones can be hard to find though Linhof can be an exception here. There can be wide variations in the movements available on them, and in the lens extensions provided for; seek one with a triple extension if possible. Normally, bellows can be replaced if worn, but this can be quite expensive. And there is at least one big division into (a) 5x4 cameras taking only 5x4 materials, and (b) ones with an International back allowing the ground glass to be temporarily removed and replaced with a rollfilm back for 120 size(= 6x9cm) rollfilm. This is cheaper, quicker to use and allows 8 shots to be processed together- which is really valuable when several lenses are being compared or one lens at several apertures. It is possible to find iris type mounts which will close to carry a wide range of lenses of different sizes, but these may not hold the lens too securely or exactly square to the film. It is much better to choose a model where the lens panels are really cheap or can be easily made at home so that a range can be made either for each lens or for each size of shutter or the like. The other useful feature can be a focal plane or other built-in shutter as many old lenses do not have shutters. Modern film is so fast that this can prevent the use of otherwise nice lenses except indoors. Here the best choice might be a Anniversary Graphic with 4in square panels (easy to make) and a relatively reliable shutter, but in the UK these are hard to find and often have been converted to 9x12cm. The shutter should provide Time and 1/25 to 1/1000sec but it is essential to check it is sound, light tight and not stiffened with age- or budget to replace a shutter with some 4 slots and a real long length of material. A UK version might be the MPP MicroPress but here and with the later Speed Graphic, the panels are not quite so easy to make in quantity.

120 Film It is likely this will be available for a long time as it is used in many professional cameras such as Hasselblad, Mamiya, and Bronica. To a lens collector, it may be most useful in rollholders on larger cameras. The problem is a certain lack of cameras in this size with focal plane shutters and facilities to easily mount different lenses economically. Matt Wilkinson used a PractiSix camera to some extent, using a bellows unit, and this was a sound unit if lenses were of suitable focus- not too short as they would not pull infinity and not

too long or only the centre would show up. An alternative could be a Baby Speed Graphic, though the aperture on the front standard is rather small and panels a possible problem. Or a 6x9cm Linhof, but here there is no focal plane shutter.

One choice from all this range is a 5x4in camera such as an MPP MkVII or Linhof Mk IV- they take 5x4, or rollfilm with a rollfilm back, the 4in panels are fairly easy to make, and there is a lot of extension, quite generous movements and a strong metal body. Only a focal plane shutter is missing.

35mm The large number and interest of 35mm format lenses means that they justify a camera or cameras of their own size. Normally, this will be chosen by the mount in use- thus a Nikon collector will have Nikon cameras to match lenses and so on. The slimmest body will often win if adaptors are in use and here the rangefinder bodies such as Leica have a big advantage, as the register is only 28.8mm while most SLR's are more like 40mm. But note that focussing can be a problem. It can be done with a exchange ground glass unit such as the Leitz 'Vehig' or imitators, or with a sliding copier such as 'Fuldy', though here the register is increased. There were reflex units made for Leica such as 'Ploot' but at a considerable increase in body register. Really, the choice will depend on the lenses studied. One wild card is the Corfield Periflex with a partial reflex unit and Leica thread and register, which makes a sound example a useful item.

Cameron, Julia Margaret: for lens use see Jamin/Darlot and Dallmeyer.

Canon Inc, 9-9 Ginza 5-Chome, Chuo-ku, Tokyo, Japan.

Canon made several series of lenses for different camera systems as 35mm designs developed. First they were for a rangefinder series, and later for SLR cameras, where at least 5 vintages can be seen. In general they have been a fertile source of new designs.

The very earliest go back to the 1930's, with the B.J.A. 1938, p696advert. listing a Nikkor f3.5 (5cm) lens. There was also in 1938 a series of Hansa enlargers for Vest Pocket with f5.3 lens; for 6x9cm with f6.3 lens; and 4.25x3.25in with f6.3 lens. The maker of these is not stated. By the 1939 advert. there was an f2 5cm Nikkor. Coupling and lens mount was then quite individual, using a geared drive from the focus helix.

Serenar lenses for M39x26 Rangefinder cameras. These are normally in chrome mounts, and most are coated, though a few of the earliest are not and this can be a feature to note. Also that a few early lenses are not rangefinder coupled- this is notable with the 135mm which is among the earliest interchangeable lenses. These were designed in 1944, and are very early for an interchangeable Japanese lens. And such items can still be bought in UK at worthwhile prices in 1996. The **Serenars** replaced earlier Nikkor lenses.

f3.5 28mm

f2.5 28mm

f3.5 35mm It was noted at auction at No64,97x.

f3.2 35mm probably a Q18 Layout

F2.8 35mm Q18 layout

f3.5 50mm Q15 layout. Early examples are coded both by the mount and lens numbers. Thus one on a Pop-Up finder Canon was mount No47x, and others No46,01x in mount No3,71x, No501,83x in mount 1,195, lens No501,90x, and No501,47x in mount No1,66x. It seems the design changed slightly later when the rear 3-glasses were made larger, possible to avoid vignetting and this might be a useful change after coating was fully in use.

f2.0 50mm

f1.9 50mm probably Q18 I. Matanle notes in Am Photo 09/09/2000 that connoisseurs recognize two versions of this, the early ones being fairly poorly corrected ('alarming aberrations') while later in July 1950, the Canon IIC was issued, and the f1.9 with it was of a much improved design- but the serial number of the change is not known. The designer of the new version was Mr Hiroshi Ito, and the new type was normal by 1951 sales.

f1.8 50mm probably Q18 Matanle notes that this is a faster 6-glass Gauss Q18. In fact the curves are quite distinct in the f1.8 with a deeper front curve and a much shallower rear external curve.

f1.5 50mm probably a triplet type.

f2.0 85mm

f1.9 85mm

f1.5 85mm this is a rare type, noted at No10,141.

f4.0 100mm



Fig 012 030 Canon Serenar f4/100mm, and Canon f3.5/100mm in M39.

f3.5 100mm

f4.0 135mm as Ca014



Fig 012 028 Canon versions of the 135mm lenses (l) 2x uncoupled lenses f4/135mm; f3.5/135mm; f3.5/135mm in black.

f3.5 135mm

f4.0 200mm An example at auction was No10,62x.

f8.0 800mm.

Note that these were not exported initially and then not to the UK, so information here is scanty.



Fig 012 026 Canon Standard lenses for c.M39 (from the left) Nikkor f4.5/50mm; Serenar f3.5/50mm; f1.9/50mm; f1.8/50mm; f1.5/50mm; f2.8/50mm; and behind f1.2/50mm and f0.95/50mm Video lens.

Canon lenses, for rangefinder. Here the **lens name is Canon**, and the mounts move to the black and chrome style, and a more modern finish. There was a very detailed review in Brit. Jnl. Photo (ref not available) which praised the lens line fairly late in production, but found that several lenses really had the maximum aperture as a reserve and benefitted from stopping down for real sharpness.

f3.5 19mm Ca001 9 glass fo use deep sunk. These are scarce, especially in the UK due to import restrictions when new. It was noted at auction at No10,096, and No10,507.

f3.5 25mm Ca002 5 glass

f3.5 28mm

f2.8 28mm Ca003 6 glass

f2.8 35mm

f2.0 35mm Ca004 6 glass

f1.5 35mm Ca005 8 glass

f3.5 50mm(?)

f2.8 50mm Q15

f1.8 50mm Ca006 6 glass

f1.5 50mm Probably Triplet type.

f1.4 50mm Ca007 6 glass

f1.2 50mm Ca008 7 glass This was noted on a Canon VT de Luxe in B.J.A. 1959, p247. It was mounted in alloy with some brass for parts subject to wear, and was very well commented on. They also noted a similar 8-glass (?) f1.4 and a 6-glass f1.8, commenting that most users would find the f1.8 the best purchase. Matanle comments that the weight and bulk are not justified in the light of the performance at large apertures- and this has been supported by a number of other reports. There were then 17 other lenses up to an 800mm long lens.

f0.95 50mm Ca009 7 glass. This was bayonet mounted for Canon 7 only as the Canon Dream (though it is not known how official this term was!), and was initially rangefinder coupled. It is one of the very fastest lenses for still work, and at the time was real achievement. Today it must be said to be less sharp than some but the speed is still very high in comparison with any made since. Matanle (loc cit) quotes one suggestion that the Canon dream was like other dreams- 'hazy, ill-defined and not very memorable' but this ignores the fact that the camera is fine with other lenses. But it is always in demand and a popular item at auctions so several numbers are available: eg No10,006, 11,05x, 11,116, 12,879, 13,017, 13,081, 13,396, 13,50x, 13,560,

14,11x, 15,04x, 16,81x, 19,994, 21,570, 22,609, 23,881, 24,069, 24,248, 26,726, and 28,32x. Later examples are marked as **Canon TV Lens**, as at No20,838 and 103,30x, and these are not coupled, but note the numbers do overlap. Also: These last TV lenses do NOT fit Canon 7 unless the rear projecting tube is shortened by about 1.5mm, but the bayonet is the same. Optically alike, the TV lens is often in nicer condition, and may have a C-mount adapter as a bonus!

f1.9 85mm
f1.8 85mm Ca010 5 glass
f1.5 85mm
f3.5 100mm Ca011 5 glass
f2.0 100mm Ca012 6 glass
f3.5 135mm Ca014 4 glass
f2.5 135mm Ca013 6 glass M series
f3.5 200mm Ca015 7 glass M series One was noted at auction at No10,640.
f4.5 400mm Ca016 5 glass M series
f5.6 600mm)
f8.0 800mm) Ca017 2 glass types. M series
f11 1000mm)

The last 6 items are in bayonet mount M for the reflex housing only.

Canonmatic lenses for the Canonflex camera. These are really collectors items, as the auto iris mechanism is unique and they should be only used on these Canonflexes as they can cause later reflexes to jam, even though the bayonets are compatible. As the production of the reflex began, Canon offered some intermediate products to smooth the conversion to the new system. Some of the first lenses thus were preset, not auto iris, as in a **Canon R** f3.5 135mm No 1186x, though such lenses were quickly in auto iris only. And some focusing mounts were made to take the lens heads of rangefinder lenses such as the 85mm f1.9, though no example was available to study.

f2.5 35mm probably Ca021
f1.8 50mm Ca022.

Note there seems to be a change in the curves early on, with a little change to the mount, the early type showing index lines for the apertures, which were later omitted.

f1.2 58mm see Modern Photo., 7/1962.
f2.0 100mm probably Ca012
f3.5 135mm probably Ca014
f2.5 135mm probably Ca013



Fig 033 032 Canonflex lens set f2.5/35; f1.8/50mm, f2.0/100mm, f3.5/135mm, f2.5/135mm.



Fig 033 034 Canonflex lenses with stripes at iris setting.

Various long focus lenses shared the reflex box system on the rangefinder, and the later FL system. These are scarce. There was also at least one zoom.

Canon FL series.

There are really two programmes here, the result of a substantial upgrade about 1966, with better controls and auto iris system coming in. Sadly there can now be problems with the irises sticking on early lenses due to

migration of the grease in the helix. Later FL and FD lenses are free from this problem.

f3.5 19mm Ca018 Retrofocus type, essential for Pellix, and with better resolution and evenness of illumination than the deep sunk type.

f3.5 19mm Ca001 Deep sunk, for use with mirror lift only! It was 'Due' in 10/1964.



Fig 033 006 Canon f3.5/19mm lenses (l) deep sunk and (r) retrofocus for 'mirror down' as FLR.

f3.5 28mm Ca019 A nice early retrofocus lens.



Fig 033 008 Canon f3.5/28mm No11,415.

f2.5 35mm Ca021 A launch item.

f3.5 35mm Ca020 A less costly item in a matt paint finish It sold well.



Fig 033 010 Canon FL 35mm f2.5 and f3.5 lenses.

f2.8 FLP38mm Ca024 Compact lens for Pellix only, now scarce.

f3.5 50mm Ca025 Macro lens, focus to 1:2 alone or 1:1 with tube, an important item to collectors. Note the thick rear glass of this design compared to the 38mm above.



Fig 033 018 Canon FL f3.5/50mm macro lens.

f1.8 (1) 50mm Ca022 Optically fine but the iris can stick.

(11) 50mm Ca023 Improved optically and mechanically, A/M ring for auto-manual selection.



Fig 033 015 Canon FL f1.8/50mm lenses of 2 types.

f1.4(1) 50mm Ca026

f1.4(11) 50mm Ca027 Again much improved



Fig 033 012 Canon Pellix with 2x Canon f1.4/50mm lenses.

f1.2 55mm This replaced the 58mm lens below, and had more rare earth glass.

f1.2 58mm Ca028



Fig 033 016 Canon FL 58mm and 55mm f1.2 lenses.
f1.8 85mm Ca010 Launch item.



Fig 033 026 Canon f1.8/85mm

f3.5 100mm Ca011 Launch item, a excellent lens. Later mounts have more internal baffles.



Fig 033 020 Canon FL f3.5/100mm of nearly the same type! (They differ inside the mount).

f3.5 135mm Ca014 Another lens in matt finish at a lower price.

f2.5 135mm as Ca013



Fig 033 023 Canon FL 135mm lenses as f2.5 (r) and f3.5(l).

f4.5 200mm The longest of the matt finish budget lenses. They were sound items and a good bargain but today the rubber finger grips are now beginning to fail. The problem shows up as the rubber shrinks and cracks.

f3.5 200mm Ca015 Launch item.



Fig 033 024 Canon 200mm lenses as f4.5 (l) and f3.5 (r).
f3.5Zoom 55-135mm Launch item
f5.6Zoom 100-200mm Matt finish budget type



Fig 033 028 Canon FL zooms f5.6/100-200mm and f3.5/55-135mm.

f5.0 85-300mm A scarce item and nice if rather bulky.

f4.0 300mm

f4.5 400mm probably Ca016

f8 500mm Mirror This was noted in Modern Photo 04/1979 p139 as a new candidate in the mirror department. Very compact, easy to handle, excellent results.

f5.6 600mm)

f8.0 800mm) Probably Ca017 These are rare and not seen.

f11 1000mm)

Speaking in Asahi Camera Mag. in c.1968 the designer, **Mr Jiro Mukai** of Canon said his 'company produced both optical and mechanical correction systems (zooms lenses). The buyers prefer the mechanical since it is cheaper but I would recommend that zooms be refocused at every different focal length.' Further discussion indicated that high R.I. glasses then still tended to give a yellowish caste but were essential, and in fact newer glasses were really needed for the correction of some colour aberrations. The prestige Canon FL zoom was:

Zoom f5.0 85-300mm This is bulky, heavy but a decent performer all the same. It is also quite a collector target as a premium item. Note chrome cap and leather case.

Zoom f3.5 55-135mm This was an FL series zoom in full quality finish to match the 85-300mm but less ambitious in range. Zoom is by a setting ring next the focus scale.

Zoom f5.6 100-200mm This is a push-pull action zoom and has a duller finish to the tube as if part of the budget range.



Fig 033 028 Canon FL zooms f5.6/100-200mm and f3.5/55-135mm.

Canon for Mamiya **Reflecta SLR.**

f1.9 50mm This was noted at No10,459, 10,52x, 11,863, and 11,08x and was said to be part of a limited production of some 600 items. It may be unique as an example of Canon making a lens for another camera maker. The mount uses a Exakta flange but with a different auto iris and has no compatibility with other cameras. Optics seem to be close to the Canon FL f1.8(1) lens, with the top aperture limited in use to f1.9. There were two other lenses for the system, both from Mamiya.

Canon FD Series

These lenses had the same bayonet as the earlier FL series, but with full aperture metering. They set a very high standard, and experts notice they match better for colour when used under studio conditions. About 1980 the series changed from a breech lock mechanism to a twist-on one, though the inner coupling part was in fact static and applications were unchanged. (see B.J.P. 13/07/1979, p661) This certainly is easier to change consistently. Dealers usually code the older type as BL in adverts., and are likely to down price them. The first were 2.8/35mm; 2.8/135mm; f4/200mm; f4/35-70mm. One group some collectors seek is the very first FD issue which had filter threads finished in bright chrome- attractive but slated in reviews as possible causes of flare, though it is doubtful if this would in fact be detectable. Probably most of the launch items were made in this form, and they certainly included 35mm f2, f3.5, 50mm f1.8, and 135mm f3.5.

f5.6(fish) 7.5mm Circle image type, for stopped down metering only! Noted at No10,555, these are rather desired today.

f2.8 (fish) 15mm full frame type.

f4.0	17mm	
f2.8	20mm	
f2.8	24mm	
f1.4	24mm	Review in Modern Photo.,3/1977 excellent.
f3.5	28mm	
f2.0	35mm	Two types were made here, the early one with a concave front surface. Both are excellent but the first is more distinctive.
f3.5	35mm	
f1.4	50mm	These were the high quality standard lens on the FD series mount cameras. They also found other users due to this quality. Thus Cinema Products used the Canon f1.4 as the prime lens with Todd Anamorphots for wide screen use. The 50mm was the first, to be followed by 35mm and 24mm lenses. (The supplier was Cinema Products Corpn, 2037 Granville Ave., Los Angeles, Cal. 90025, USA. Quoted in B.J.P. 27/10/1978, p935.)
f1.8	50mm	
f1.2	55mm	
f1.2(AL)	55mm	Review in Modern Photo 3/1977, they liked it!
f3.5(Macro)	50mm	Optically a new type.
f1.8	85mm	
f2.8	100mm	
f2.5	135mm	
f3.5	135mm	
f4.0	200mm	
f2.8	200mm	
f5.6	300mm	
Zoom f2.8-3.5	35-70mm	in older FD fitting This was redesigned when the mount was modified.
Zoom f4	35-70mm	in new FD fitting

The following are for stopped down metering only. (add f5.6 7.5mm above).

f2.8 Tilt +shift	35mm	
f4.0	100mm	bellows
f5.6	400mm	
f4.5	400mm	This was later (about B.J.P. 11/05/1979 p436) and was one of the first internal focusing lenses [cited along with a Sigma and a Nikkor].
f5.6	600mm	
f8.0	800mm	
f11	1200mm	

With fluorite glass, or crystal fluorite.

f2.8	300mm	
f5.6	300mm	This certainly used pure calcium fluorite in Modern Photo 07/1971 p87 when it was reviewed, though not new- it was then some time since it was first seen but still a novel product as the introduction was cautious. CaF ₂ was used for 2 of the 7 'glasses' due to its low R.I. with low partial dispersion and Canon stated even one 'glass' was very valuable in a design. One useful property was its compactness- more like a 200mm lens. It worked very well but they made a point that it was made to focus well beyond infinity to allow for the problems of making consistent foci and it also varies in focus more than usual with temperature.
f5.6	500mm	

EOS Series Cameras

A series of lenses was needed and developed for the **Autofocus EOS** series of cameras. It must be stated that there is no compatability here with the older mount and customers had to make a new start here. (The small print is that converters were made by others using a weak negative lens to correct for the increase in register.)

A group of new lenses was noted in B.J.P. 21/02/1996, p6 and they included:

f2.8L	400mm	This was an EF series lens at £7,500 in an improved form with fluorite glass to join the 2 UD elements.
f2.8	20-35mm	Zoom
f2.8	17-35mm	Zoom This was 'new' in the review and surpassed the above lens.
f2.0	135mm	for indoor and portrait work.
f2.8	135mm	This was an older, softer focus version.

There was also an extended range of macro lenses, eg 180mm macro working to 48cm.

f2.8 200mm This was updated as an L version.

Lenses for **Canon EX Auto**SLR with interchangeable front components:

f3.5 35mm Ca035

f1.8 50mm Ca032. This seems to be the same Gauss type as the FL lens.

f3.5 95mm Ca034

f3.5 125mm Ca033

These components change on a M39x26 thread. Performance closely matches ordinary lenses and Modern Photo rated the 50 and 90mm lenses highly. The main problem in living with them can be the bulk of the long one. And it is a rather limited system.

Some other items

f2.8 48mm for Canonex 3-glass in ?leaf shutter. Prototypic.

f2.8 40mm for Canon AF35F (1982) Ca029

f1.9 40mm for Canon AF35ML Ca030

f1.7 40mm for Canon G111 Ca031

Canon f2.0 26mm 5g/4c This was on the Canon 110ED which was reviewed in B.J.P. 26/12/1975 p1163 by T. Hughes. His results seem very good indeed.

Many **TV and movie** lenses, including TV Zoom f2.0 15-150mm.

f2.8 135mm Variable soft focus Review In Amateur Photo. 25/08/1990, p29.

Canon **Zoom Lens** for C8, f1.2/8.5-42.5mm on 1964 Canon Camera.

Canon **Zoom C-8** f1.8 9.5-47.5mm on Canon 518 Single 8 movie, with 14 glass, 11 component. This was used on all previous models of the 518 and was noted on April 1970. (This was a single 8 version of a normally Super 8 camera.) "Lens performance was first class".

Canovision EX1Hi

Canon Zoom Lens f1.4/1.8 for 8.7-69.6mm (8x zoom) this was a 14g/12c lens for the EX1Hi 8mm Video Recorder fl. 1991 on the new VL mount. This mount was jointly developed by Canon, Sony, Hitachi, and Matsushita(Panasonic). It was the less ambitious of two for this camera, the other being as follows:

Canon Zoom Lens CL f1.4 for 8-120mm This was a 15g/12c zoom with extensive multicoating and high performance. The layout has much in common with the above lens.

The EX1Hi was extended by the use of a Canon EOS lens adapter- these acted as 5.4x longer focus due to the small format. And by an 5g/5c **extender** to double the focal length of any lens fitted, especially the above zooms.

At least one Sony CCTV lens has been noted as made by Canon.

The Canon body codes were explained in Photographica Spring 1999, **88** p2 as a combination of factory code eg F for Fukushima, O for Oita, with year of manufacture coded by letter from A=1986 followed by the month so that 03 is March followed by a factory batch code. An earlier series was from 1960 (=A) to 1985 (=Z), but not all bodies seem to be stamped. The numbers here are in gloss black inside the supply cassette chamber. The codes for the lenses were not discussed and note that the above is not the body serial number so that this also is still not described.

Several sets of Canon lenses eg **Super Canon** lenses in BNCR mount were noted in a Panavision rental list of 1992 and would be for 35mm movie use, as follows:

T1.5 as 18, 24mm; T1.3 as 35mm, 50mm, 85mm.

also: Canon High Speed (BNCR) T1.6/24mm; T1.4/35mm; T1.4/55mm; T1.4/85mm.

They also rented Canon long lenses in BNCR and other fittings in T1.8/200mm, T4.5/300mm, T2.8/300/600mm; T2.8/400mm; T4.5/600mm; T5.6/800mm. In fact, Canon seem to be their option of choice for really long lenses.

Millenium List

The Canon list in the Am Photo in October 2000 (but abbreviated details) was as follows:

f2.8 14mm 14g/10c

f2.8 15mm 8g/7c This is a fisheye type lens.

f2.8 17-35mm 15g/10c

f2.8 20mm 11g/9c

f3.5/f4.5	20-35mm	12g/11c	
f4-f5.6	22-55mm	9g/9c	
f2.8	24mm	10g/10c	
f1.4	24mm	11g/9c	
f3.5	24mm	11g/9c	This is a shift type lens.
f3.5-f4.5	24-85mm	15g/12c	
f1.8	28mm	10g/9c	
f2.8	28mm	5g/5c	
f2.8	28-70mm	16g/11c	
f3.5-f5.6	28-80mm	10g/10c	
f3.5-f5.6	28-80mm	10g/10c	A silent version
f3.5-f4.5	28-105mm	15g/12c	
f3.5-f5.6	28-135mm		
f1.4	35mm		
f2.0	35mm	7g/5c	
f4-f5.6	35-80mm	8g/8c	
f3.5-f5.6	35-350mm	21g/15mm	
f2.8	45mm	10g/9c	
f1.0	50mm	11g/9c	
f1.4	50mm	7g/6c	
f1.8	50mm	6g/5c	
f2.5	50mm	9g/8c	A macro lens.
f4.5-f5.6	55-200mm	13g/13c	
f2.8	70-200mm	18g/15c	
f4-f5.6	75-300mm	13g/9c	This is made in normal, quiet and stabilized versions, the last being a
		15g/10c	possibly due to the stabilizer components.
f4.5-f5.6	80-200mm	10g/7c	
f1.2	85mm	8g/7c	
f1.8	85mm	9g/7c	
f2.8	90mm	6g/5c	
f2.0	100mm	8g/6c	
f2.8	100mm	19g/9c	A macro for 1:1 use.
f4.5-f5.6	100-300mm	13g/10c	
f5.6	100-300mm	15g/10c	Two versions, in different mounts.
f2.8	135mm	7g/6c	
f2.0	135mm	10g/8c	
f3.5	180mm	14g/12c	
f1.8	200mm	12g/10c	
f2.8	200mm	9g/7c	
f2.8	300mm	10g/8c	
f4.0	300mm	15g/11c	Image stabilized lens.
f2.8	400mm	11g/9c	
f5.6	400mm	7g/6c	
f4.0	500mm	8g/7c	
f4.0	600mm	17g/13c	
f4.0	600mm	9g/8c	
f5.6	1200mm	13g/10c	

The main impression is of the sheer complexity of the designs and the need to supply the same design in different mounts for different uses.

Canon introduced a **Multi-Layer Diffractive Optical Element** in Sept 2000 (Am. Photo., 23/09/2000, p7) in a new f4/400mm lens at Photokina- This uses concentric diffraction units for high transmission, lightness and shorter optics. It was due on sale in AD2001.

Capi, Nijmegen, Nederlands

Plasticca Soft Focus Lens f4.0 eg 400mm "finest and cheapest" Amateur Photo. 02/04/1924, Suppl.p9.

(This may be ex-Zweirzina, Dresden.?)

Casket Set

In the early days, enlarging negatives was impossible, or at least less easy than later, so that the photographer was keen to set the camera at the optimum point and produce a direct picture to match the final requirement. They must often have wished for a variable focus (zoom) lens and quite early makers and books discussed the solution to the problem. The Victorian answer was to use one brass lens barrel with a number (set or Satz in German) of different glasses to screw into it. These could be of different focus to suit different angles- and since a large number might be involved, they were supplied in a fitted box ('casket') to carry the outfit. The early ones might be built around a Petzval lens (see Derogy) but later faster processes/plates encouraged the use of slow lenses and the softer focus image became fashionable. Thus the collector/user can look for sets based on plain meniscus lenses (eg. Monokel, by Rodenstock) and periscopic pairs (Busch Vademecum, Anachromatique, by Darlot) as well as RR and anastigmat cells. Most of these seem to be from the early dry-plate years, eg 1880-1910, and probably sets with a few RR cells predominate, and do not always have a makers name. Typically the owner was encouraged to use them as pairs for the shorter foci and then use single cells as longer focus lenses. Later anastigmat sets gave a higher sharpness than the old types allowed, and were used in rather the same way.

For the collector, they do have problems. The caskets were often made rather lightly and have not stood up well to use, and the sheer complexity often means that parts are missing- or lenses have balsam failures. (There is a suspicion that quality was not maintained in quite the same way if a series of six or eight RR cells were supplied as if just two were sold.) And repair can be difficult or at least time consuming. Items have been met from Darlot, Rodenstock, Busch, Hermagis, Suter, Bertiot and TTH but many other makes were available. Most are based on a plain barrel, but shutters do occur- sadly these are often with badly worn barrels due to frequent lens changes. Note that irises are a problem as the f value is different for each focal length and instructions can be a real help here.

For use today, they are often of rather long focal length. Thus a typical set has a wide-angle RR pair of 6in, and then provided cells of up to some 18in. It would thus be ideal for a 5x7in plate user, but only satisfies a 6x9cm user in longer foci- and then with rather soft lenses which will not be very useful! This is due to the progressive decrease in plate sizes and little can be done about it. The compiler has noted one rather early Darlot set which is more useful today as it offered a very wide range of foci from about 3in up, and this was possibly as it was initially made to supply the need for cartes de visite in the 1870's, before most such sets were made. One idea can be to provide a separate wide angle lens for the set, and this was originally done by TTH with a purpose made WAR and later by Bausch & Lomb with a Series V Protar as the wide angle lens in a Protar VII set. It could still be a nice idea today, but an adapter to match the flange threads of the casket and Protar V will probably have to be made.

Another problem is that few have shutters. Here a mounting in front of a big shutter such as a Day or Luc could be useful and might meet a long term use if the foci were useful. This is likely to be the choice if an RR or other 1880's set is chosen especially if this is wanted for the softness of image of meniscus or periscopic lenses. One advantage can be that these are relatively slow so that a big shutter may not be required. Later, the anastigmat lenses do come in early shutters, though the majority were still sold in plain barrel mountings for large professional cameras. However here the cost of the cells was higher and it is more common to find just a shutter with perhaps 3 cells to fit, giving a choice of some 6 foci, but not always well spaced apart. Here a limitation can be that Goerz were apparently unwilling to compromise with corrections of the Dagor, so that the cells of this important early anastigmat lens are normally of the same focus. Thus the most versatile and best sets tend to be based on Orthostigmat/Kollinear 3-glass or are of 4-glass designs such as the Zeiss Protar VIIa. This can lead to problems today with balsam failures due to the complex designs used. But the increasing use of standardized shutter threads can occasionally allow the assembly of cells from different purchases to form one set. This has been noted for Protar Series VII cells in N&G shutters and for Dagors in a few Compur sizes, but is usually limited to lenses of not very different original foci such as 135 and 150mm, or 100 and 125mm.

Thus there is a large element of luck in collecting casket sets for use, but also a real feeling of satisfaction when a good set is found or assembled.

They were still in general use in the 1920's as indicated in B.J.P. 04/07/1980 p650, citing 09/07/1920, where ones from 5 or 7.5 for wide angle to 12, 20 or even 30in are suggested but without saying whether he refers to anastigmat sets or RR's.

Carena

This was a trade name noted in Amateur Photo 12/10/1977, p39 for an SLR with lenses:

Automatic Iris Lenses

f2.8 28mm
f2.8 35mm
f2.8 45mm with the camera Carena Micro RSD.
f2.8 55mm also on the Carena SRH 760 camera.
f2.8 135mm
f3.5 200mm
f4.5 85-210mm

Multicoated Lenses

f2.8 28mm
f2.8 35mm
f2.8 135mm
f3.5 200mm
f5.5 300mm
f3.8 85mm-210mm

CCTV see note under C-mount above.

C.de V.

In Victorian times, **print sizes** were named and these turn up in old adverts. many years later. Some are:

Carte de Visite or Visiting Card 3 1/2 x 2 5/16in (about 89 x 66mm)

Cabinet 5 5/8in x 4 1/16in (about 142 x 103mm)

Boudoir 8 x 5.25in (200x 131mm)

Panel 11.5 x 7in.

Celestron, USA

Mirror telescope sold with camera adaptors, as a catadioptric system. Adverts. in Modern Photo. 1/1977 show f6.0 750mm and f10 1250mm systems, also a large type Celestron 5 with clock drive, and a Celestron 10 with 10in aperture and 3400mm focus. It is of Schmidt-Cassegrain type. They advertised regularly in Modern Photo, an example is 06/1980, p70 of C14, C90 and C8 types.

One account was that they amalgamated with an Oriental firm in the 1990's.

Century Optics, North Hollywood, USA.

They are listed for a 3.5mm f1.8 Fish lens for movie(?) which just may overlap the Pacific Optics item. They were noted in Heuel and Koshof, B.J.P. 24/11/1978 p1033 for a StereoVision prism lens system for a 1969-1970 3D system.

An old item seems to be a **f3.5** of about **130mm**, possibly for a 35mm or 16mm camera with a small 3-tab bayonet c24mm ID. It is in a fine alloy mount but has very early pale blue engraving- and the mount has absolutely no indication of the maker though the cap says 'Century' and seems original. Of its period, it seems a fine but rather simple item but is now in serious need of cleaning!

They were later noted for Tele Athenar lenses for the Arriflex of f2.8/230mm to f6.8/1200mm with resolutions of 100l/mm in B.J.P. 17/11/1978 p999

Certo, Grosszschachwitz, Dresden, Germany.

Certo bought in lenses but at least one was called **Certar** an f6.3/105mm on a Certix A in c.1941 and there

was a f4.5/75mm on an SS Dolly. They are of unknown source.

Chadburn, Lord St., Liverpool, UK.

He advertised as a lens maker in 1858 but no details are available.

W.I.Chadwick, St. Mary's St. Manchester, UK.

Chadwick was a maker and designer and lecturer and apparently shopkeeper: but probably not a lens maker. (Channing and Dunn note him as flourishing about 1885-1896.) He engraved his name and address on a brass lens pair for stereo at Nos 4614/4615 and wide angles No4703/4704; and on a brass Taylor, Taylor and Hobson lens No13,068.

Chalier

Chalier seems to be the maker of an f4.5 85mm lens for 24x36mm in an American list. There are no further details but he may be the same maker as the next entry.

Challier de Rueil

He made a few lenses for the Celtaflex under the name Opticolor f3.5, but the normal items sold were Semflex cameras with normal lenses.

Chance Bros. (Now part of Pilkington plc., St Helens, Lancs, UK.

Founded by R.L. and W. Chance in 18/05/1824, Chance made optical glass from 1848 after hiring G.Bontemps from France, and were the sole UK makers. By 1914 they listed 26 types of glass, the range being limited by Schott's dominating position in patents and sales, and especially on price. In WW1 Chance initially produced glass for conventional products, such as binoculars, but in 1917 began the manufacture of glasses for aerial lenses for the Air Board eg light barium crown, 2 light barium flints, 2 dense barium crowns, and an extra light flint. Some 235,000 lb was produced in 1918, which was some 4 or 5x the prewar production. In 1926, some 112 types were available and special furnaces and anti-corrosion materials were devised. (W.H.S. Chance and W.M.Hampton, Proc. Optical Convention Aberdeen, 1926,p1)

Chevalier, C. France

Chevalier supplied a Wollaston type meniscus lens to M. Niepce (whose Father had used both condenser lenses and a lens from an early Solar microscope previously). von Monckhoven (1867, p115) writes that the very first images were with a plano-convex lens but the image with the plano to the subject was so curved that even at f20 or f30 that it had limited use, and the lens did not work to visual focus. Niepce used a number of Chevalier lenses (according to Eder, *History* p198.) including a pair in biconvex external form but without success. He says Niepce then used an opera glass objective, plano side to the subject and at f15-f30. Later only did he use the form with a concave surface. It is thought that some cross-fertilization with Ross and the Wollaston concave meniscus design occurred then. Niepce, through Chevalier, was also in contact with M. Daguerre during the development of the processes. Niepce and Chevalier were aware of the advantage of stopping down the condensers and later pioneered the iris diaphragm (1816) and developed the Achromatic Landscape lens (Ch001) as supplied on the official A. Giroux Camera of 1839, and engraved Giroux- the number was very limited. It was of 15in focus, 3.5in aperture and was stopped down to 1in for use, ie. f15. The stop was about 3in in front of the lens, for whole plate size approximately. Iris diaphragms were used- a very early use!- and were shown in public by 1840. The glass was flint and crown. By 1841, there was a reversing prism with a silvered hypotenuse to correct for the mirror imaging. Chevalier also tried to design a Portrait lens (not very successfully) and was using rotating disc stops in microscopes and camera lenses by 1841.

Photograph a' verres combine(PVC)

This was essentially an early casket set in which a single achromat might be used alone for landscape or in combination with other achromats mounted behind it, to shorten the focal length and increase the speed for portraits. This seems to date from about 1840, though it may not then have been used owing to limitations in

camera design. In design the lens approached the achromatized periscopic type. It offered apertures of up to f5.6 or even f4.9 for portraits but lacked sharpness. A stop was available, in front of the glasses. It rather unfairly won the Prize of the Societe D'Encouragement of Paris in 1841 where a Voigtlaender Petzval was in competition. Performance of the PVC was later improved but was never excellent. It was made roughly from 1841-1859 and is scarce but desirable as a collectable. Hasbroeck shows an early example with three lens cells which could be used independantly or combined, even as a triple. Fox Talbot seems to have been an early user of the PVC.

He also showed the lens with a lateral reversing prism, to correct for the mirror image inherent in the Daguerre process: the reflective surface was achieved by mercurization. [Other makers were offering mirrors for this purpose.] Chevalier claimed that the Petzval was derived from his design- and the controversy made his design better known than perhaps it deserves. [Certainly the bulk of the French makers went over to "Systeme allmand" Petzval copies with no delay.] Chevalier had previously worked on a telescope objective where he had replaced one lens with two to reduce the aberrations, in 1834. ("R" in B.J.A. 1900, p824, B.J.Photo. 23/06/1899). Layout Ch002/3. FBB lists a 'verres combinees' on an 1865 camera and a probable on an 1859 one. And several meniscus lenses as from 1840-1845. A Chevalier lens was still listed in the 1890's on a "Papigny Stereo" camera as a Chevalier f6.5 100mm, and FBB lists 3 cameras with Chevalier lenses including an RR in 1902 and an anastigmat in 1905 from 1902-1905, but distinguishes the anastigmat as made by F.L. Chevalier.

Chevalier is said by von Rohr (History and Theory) to have used zinc borate glass from Maes of Clichy about 1851. "Maes tried to replace the flint with zinc crown glass and replace the crown with fluorine/silicon/aluminium hypothetic glass, the latter being made in only small quantities" This is one of the very very few cases where new types of glass were actually tried in the period 1840-1880.

Chinaglia Domenico, Belluno, Italy

The UK agent was A.I.C.O., about 1950-1964.

Producer of M39x26 cameras with two proprietary lenses of unknown origin. The camera was called the Kristal.

Kristal	f3.5	50mm
Krinar	f3.5	50mm

China

The classic book "Cameras of China" by St Denny, 1989, shows that Chinese lenses are going to cause a problem for lens collectors as they are not named or typed in the normal fashion to allow their inclusion here. Some are as follows:

Red Flag	f1.4	35mm
Dalai	f3.5	50mm
Shanghai	f3.5	50mm on Shanghai camera. A number of these have come up for auction but no lens numbers are quoted.
Chang Chiang	f2.8	50mm
Red Flag	F1.4	50mm
Shanghai	f3.5	50mm
Type 1	f3.5	90mm
Type 1	f4.0	90mm
Red Flag	f2.0	90mm
Iston	f5.6	200mm for large format.
Haiou-64	f2.0	58mm Seen at Nr SB-2,060,066, this seems to be the classic lens for the Seagull SLR based on the Minolta. It is in a fairly heavy auto mount. It was fitted as a C.R.T. lens on a 35 DFAB CRT camera at No213,57x, as a Haiou-64 540.

Fig 009 012 Haiou (China) Haiou f2/58mm NoSB-2060066 for Minolta type mount.

SZ f2.8/45mm No388,378 on Great Wall SZ-2 camera No1121

Great Wall f3.5/90mm No24,665 on Great Wall DF-2 camera No31,847.

Movie lenses noted at Photokina 1980 included a set for the S35-LB camera- still slightly prototypic. They were 28, 40, 74mm all at f2.0, and reputed f2/16mm to f10/2000mm though these were not shown; as well as f2.8 20-100mm and f3.2 18-180mm zooms. These used Arri(flex) 35-III mounts.

Chinon,

Two Chinon lenses were noted on a Chinon SLr in B.J.P. 29/06/1979, p614, as follows:

Chinon f1.4 55mm on the CE-Memotron It was noted to give first class results.

Chinon f1.7 55mm on the Chinon CM3 Also very good.

There was a hint that these were not from a traditional lens maker as the image quality was very good but not quite of the type normally chosen by the normal makers, and suggesting the power of modern computers to even up standards throughout the industry.

Chiyoda Kogako Seiko Co Ltd, Osaka, Japan

see Minolta

Chretien,H.

Chretien (1879-1956) was primarily an astronomer, with a general interest in optics, designing the Remy-Chretien telescope and the anamorphic system used in wide screen processes.

Hypergonar 1929. This is an Anamorphic lens, essentially the beginning of the Cinemascope idea. (1952, 20C/Fox) (Chr001 It uses drum shaped surfaces, not spherical ones and only these are suggested in the layout. A very impressive example was made for the Bolex H16 reflex. He also designed an early zoom projection lens.(Brit. Pat. 440397/1934).

Chromtar,

Chronostar

These trade names seem to be related to Keystone and Wittnauer respectively.

Alvan G. Clarke.(1832-1897)

An American telescope designer who first tried the use of two Gauss doublets as a camera lens design. (Photo.News 1/11/1889, p273). The result covered 100°. The lens was made by Bausch and Lomb under USPat. 399,499 (see above). It was probably not fully corrected for astigmatism, so the Planar of Zeiss is usually classed as the first Gauss anastigmat. His interest probably came from a search for better refractors as his father, Alvan Clarke (1804-1887) made his business as an astronomical telescope maker from resolving star pairs which previously had not been separated, and the firm was active in large size lenses up to 26in dia and 40ft long in the 1870 unit for the US Naval Observatory. He later made a 36in refractor for the Lick in 1888 and a 40in for the Yerkes Observatory in 1895. These were still about the largest *refracting* telescopes in 1975.

Cimako

Agents 1972 Bush and Meissner, 275, West End Lane, London NW6.

These were a series of auto iris SLR lenses, for Pentax M42, with Nikon and Minolta fittings at extra cost. They seem to have been new for the 1971 season and continued unchanged in 1972.

Cimako f3.5/25mm; Cimako f2.8/28mm; Cimako f2.8/35mm; Cimako f2.8/135mm; Cimako f3.5/200mm and a Zoom converter for 2-3x focus.

City Sale and Exchange, 90, Fleet St., London,UK.

They were dealers and importers with their own Trade Names such as Salex. They seem to have imported the Blitz lenses, possibly from Schulze and Billerbeck, but this is not definite though a Blitz lens was noted on a City Sale & Exchange camera. An example seen is an Series 111 f6.8 8.25in lens of Dagor type (Ci001). They also sold a f4.8 series as Series 1 in about 1910-1914.

Lenses sold under this trade name included several Kengott items about 1900.

There was a long list of Salex versions of a focal plane camera in B.J.A. 1927, p556; 1926, p553) and it is possible that some of these or their lenses were from Koristka in Italy.

Salexon f4.5 or f3.5 was a later version on a Salexon Focal-Press camera for 1/4plate in B.J.A. 1930, p346.

Salexon f3.8 This was seen at No135,80x in a rimset Compur No2,418,82x and probably came off

a 6x9cm folder: it looks to be a triplet.

Texor f4.5, 7in This is labelled merely City Sale and Exchange, London, and this seems to be a solidly made 3 or possibly 4 glass triplet, but with a weak iris and was from an unknown source. This type of lens was listed in City's advert. B.J.A. 1927, p553, fitted to a Thornton-Pickard reflex in 3.5x2.5in or 1/4plate sizes, where the 3.5x2.5in camera cost £7.87 with Texor f4.5; £9.87 with Zeiss Triotar f4.5; or £13.37 with an f2.9 Anticomar. Texor was advertised as having 'great depth of focus and covering power' where the former suggests a degree of softness.



Fig 009 022 City Sale and Exchange Texor f4.5/7in.

(Blitz) f6.8 This has been noted as an 8.25in lens as well as ?135mm on a City Sale camera, where the owner said it seemed to be only a moderate performer- but it may well have suffered with time, eg. in the body adjustment.

Euryscope f6.0 Layout Sal001. Here the engraved illustration in the B.J.A. advert. about 1900 shows Kengott partly obliterated in the corner.

Koristka Salex These were triplet type large format lenses sold in the 1920's, and here they carry both firms names, as on a f4.5/210mm at No98,92x and f4.5/5.4in at No99,60x. At auction, a Salex 12.5in (310mm) f4.5 was on a 10x8in Gandolfi camera.

Salex also sold off old stock of C.P.Goerz in 1917, probably due to the War.

Antoine Claudet (1797-1867)

He was in business with Mr Houghton as importers of French domestic glass when he learned of the Daguerre process and was instructed by Daguerre himself and set up as the English licensee with the Adelaide Gallery opposite St Martins in the Field, London. Initially the exposure could be 15min, but he reduced it some 100x by adopting the use of chlorine+iodine mixture and noted the Voigtlaender Petzval lens on a visit to Paris, and introduced it to London, with a further 10x gain in speed to give exposures of a few seconds. He made a 3D gadget as a lens test subject ("**The Focimeter**"), and suggested (Compt. rend. Mai 20, 1844, XV111, p954) the lenses ie Petzvals(?), were overcorrected for colour, focussing the blue light further from the plate than the yellow. [This was also suggested by Townson; by Cundell; and Martin, the original tester.] This may have lead to the redesign in 1840 by Lerebours *qv*. Later he commissioned a lens of **Topaz** and used it, one of the few cases of a photo lens made of novel 'glass' before 1880.(MCM, Nov. 1961, p461). Topaz is a complex silicate, $Al_2O_3[SiO_4]$ cyanite, with sheets of $Al[OH,F]_3$ interspersed between the silicate layers, but no further use seems to have occurred.

Clement et Gilmer, 140 Faubourg St. Martin, Paris, France.

This was a well known French name in late 19C with an active export trade to UK, some lenses being engraved by City Sale and Exchange as well. In fact, it has been suggested that they were essentially dealers in lenses for export rather than makers. They do seem to be found on Fallowfield cameras fairly often, eg on an anonymous 1/2plate and on a Billcliff camera. They were in brass at No103,86x. An attractive item is the telephoto outfit "Panorthoscopic" with a brass barrel marked in magnifications, and a "**Euryscope**" anastigmat, at Serial number No103,94x and also at No107,23x. These are moderately common. A problem is to understand some of the structures, where triplet and RR are easy to recognize but the f6.3

Panorthostigmat seems obscure. Several lenses are marked Successors "A. Laverne" at No 102,66x, and this may be an interim marking as older and newer looking lenses are just "Clement et Gilmer". (Laverne was not listed in FBB as a maker).

But there is a question here. In FBB there is only one example of an C&G lens, and it is a achromat on a popular camera in 1900. And there is a Panorthoscopique, and RR but on Clement et Faller cameras. The reason is that the cameras may be C&F or C&G, but the lenses are listed merely as RR, meniscus, or in one case anastigmat. Thus superficially they seem to be camera makers putting their name on bought-in lenses, though the truth is impossible to determine at present. The suggestion above that they were specialist exporters of French lenses does explain all these facts. It might explain any surprises in serial numbers however.

Anon f8.0 c.10in RR

One of these in black paint lacked name and serial number.

Panorthoscopique f8.0 10in RR



Fig 029 003 Three RR lenses, 2 by Clement et Gilmer at NoNo and No103,86x and 1 by Sharp and Hitchmough, ? from CetG as it is a 'Panorthoscopique'.



Fig 029 006 Clement et Gilmer 2 RR lenses in black paint

Anon f6 c.6in RR The iris is graduated seemingly in mm to 25mm max.

Rapid Euryscope f6.0 RR

Euryscope Anastigmat f8.0 c.8in

This seems to be an RR but perhaps one with reduced astigmatism. at No103,94x.

Rapid Symmetrical f8.0 This is an "aplanatic" and probably RR.

Eagle Combination Set (1892) For the report of this item, see Photography, 24/03/1892. It was made in 3 sizes, each with 4 or 6 lenses. These were for 1/2, 1plate and 10x8in., each giving 6 or 8 combinations of lenses.

Panorthoscopique f6 **Euryscope** This was noted on a Tele accessory unit. This is a very impressive and beautiful unit. But some units have a plainer anonymous lens at the front,

Fig 029 010 Clement et Gilmer Panorthoscopique in case and with Euryscope anastigmat (NoNo).

Panorthoscopique f8 which may have been the item sold if a lens was bought with the tele unit, or a cheaper item wanted. The f8 is an RR and was noted at Nos 102,66x, 103,316 and 103,94x. It seems both prime lens and extender can have the same number if they are the original matched pair.



Fig 029 007 Clement et Gilmer Panorthoscopique, a plainer version noted at No102,66x by Laverne.

Casket set 3 lenses only.

Stereo pair, this was made for a Griffiths camera, c. 1896.

Rapid Portrait Lens 6-16.5in use 14in for 10x8in. Probably a portrait RR

Portrait Lens: sold on a C&G enlarger sold by Mssrs City Photo Stores. It was complete with iris and "canary" (ie yellow), filter.

Anastigmat f7.0 5-14in, use 5in for 5x4, noted 1901. This used Jena glass in its (unknown) design. it was noted also as a NoIA f7 on a 1/2plate at auction.

Panorthostigmat No111 f7.0 This was stated as for 80° coverage. (1906) This was noted at auction on a 1/2plate by Mr Ashford of Birmingham at No107,23x.

f6.3 6in This shows three reflections back and front and these move in just the same way, ie it seems to be an RR but perhaps with reduced astigmatism.

Panorthostigmat f6.3 180mm This seemed to be a later lens, but was engraved No14,58x, which is a earlier number. It seems they went over to a normal design (Q15) when the patent position allowed, and perhaps started a new number series.



Fig 029 012 Clement et Gilmer, 3 examples of the Panorthostigmat Ser III f6.3 inc. No14,580.
f4.5



Fig 029 014 Clement et Gilmer Panorthostigmat f4.5, no serial number.

Anastigmat f6.5 This was fitted as an enlarging lens to a semi-auto 1/4 or 1/2plate enlarger sold by Hodgson, Piccadilly Circus London in B.J.A. 1924, p715.

Fig 47 Clement et Gilmer Lenses.
Exposure: Boyer ApoSaphir 210mm.

In box and back: Panorthoscopique + Euryscope Anastigmat.

Panorthoscopique No0.

Left RR's3x f8.0 at 12, 12, 8in respectively.

Front Right Panorthostigmats:

f6.3/180mm

f4.5/170mm.

f6.3/c.5in.

Ser 111 f6.3/c.5in. possibly Gauss type.

Coating

(a) Surface coating to reduce reflexions can be traced as an idea at least to 1892, when H.D.Taylor found that old tarnished lenses transmitted light better than newly polished ones. His figures were 5% loss from two tarnished surfaces compared with 11% from two new ones. He had some success with tarnish with sulphides but could not get hard reproducible results. An unusual article by A. Harvey of Scunthorpe in School Science Review Vol. 26, p36, 1944 suggests the chemical process was being widely used: this may account for the number of stained old lenses noted and may suggest that natural blooming is less common than often thought. He suggests it was used mainly on the outer surfaces and was carried out with several mineral acids but especially nitric acid. He notes the silica atom network is not disturbed so that the surface remains as hard as before. To avoid further leaching and harden it, the glass was heated to stabilize the surface. He finally points out that this type of process occurs on all glass surfaces, and leads to minute crystals (of metal salt) on the surface which normally can be polished off. Pitting occurs under extreme conditions as in the tropics.

(b) Bausch and Lomb seem to have followed it up during the 1914-18 war but also with little success.

(c) In 1936, Strong was working on vacuum deposition for making aluminium coated mirrors and realized that the work of K. Blodgett with Langmuir at General Electric on soap film deposition could be developed using vacuum coating with calcium fluoride. The soap film actually used stearic acid and barium stearate, a single layer being built up in each cycle of a repeated dipping process from the monomolecular layer on the surface of the tank. The required film was the result of some 44 to 46 dips and then the layer was dipped in benzene to leach out the stearic acid to form a layer of lower refractive index, it falling from 1.5 to 1.23. Better films were later produced from calcium arachidate of R.I.1.3 with transmissions approaching 100%. The key paper seems to be Dr K.B.Blodgett, Phys. Rev. Vol 55, 15/02/1939, p391. Soap films were very soft.

This led to considerable activity and the calcium fluoride process. Incidentally the film is of the order of 0.000,004in thickness or 4 millionths of an inch. Initially the calcium fluoride films were very soft (see Harvey's article, in 1944 hard coating was unknown.) W.C.Miller was quoted by Harvey as producing hard films but by an unknown process. Thus it is interesting that:

'The B.S.I.R.A. produced Brit Pats 538,272; 538,273; 538,274; 538,301 related to the deposition of fluorides of Li, Mg, Ca, and Na as well as Cryolite and Na or K fluorosilicates, where the latter have very low indices of refraction (c1.29). Ideally Blodgett showed the layer should have an R.I. about the geometric mean of the R.I.'s of the two media, [normally air and glass.]

The B.S.I.R.A. procedure involved cleaning and polishing the glass, putting it in a vacuum chamber, at down to 0.001mm of Hg pressure, and evaporating the fluoride from an electrically heated basket till the glass takes on a purplish colour, often after 1minute, noting that the layer thickness is important. This can reduce reflexion from 7.5% to 0.4% at 5,400Ang. The successive application of different layers was envisaged and can be used to isolate particular wavelengths. Successive layering with chromium (thin layer as a stick coat), Al₂O₃ at W/4 and with quartz at just over W/4 gave a layer too hard to scratch with a finger nail, and about 0.6% reflexion. Heating (=baking) the layer also made the film harder, and further improved the transmission, as did treatment with stearic acid to improve waterproofing.' A surprising amount of this can be recognized in later practice in lens making, and could be mirrored in reports eg. from Germany and USA.

In Germany work was carried out at Zeiss and Schott, who also used vacuum deposition. It may be under recorded here. The original work was by Smakula in the early 1930's and is much better known than the USA and other work. Coated lenses were in general use in Germany for strategic purposes during the WW2, but not felt to be suitable then for sale to the public, owing to the softness of the coatings, and while multilayer coatings were also being examined by Schott in the 1940's, these were still at the development stage.

Other **prewar** reports of coating cover some Goerz lenses sold by Burke and James in the 1930's, where the

coating technique is unknown. And a silica deposition method quoted by Leitz to the Military Intelligence postwar and this was seemingly actually used eg. by Old Delft for some Minor lenses. Small in his book suggests it was rather widely used in Germany then and in the early years after the war.

The same note in B.J.A. 1943 that covered the BSIRA results also covered a version by British Thompson Houston Co (Brit Pat. 537,591 where the normal soda glass was given a very thin coat (say 5micron) of high refractive index glass (eg a lead or barium glass) which can later be etched to about 0.1micron to reduce reflexions from say 11% to about 2.5%. It is interesting, as this is nearly what happens in many old lenses where a natural bloom forms, and suggests a decrease in flare of about 4x (ie to 25%) may occur in good cases.

Later multi layer coats were developed. These date back to Schott in the mid-1940's but were then only experimental. Later look for 2 or more layers, and the use of Magnesium fluorides and zirconium oxide. A major commercial development was by OCLI and Pentax and is described under Pentax. This was about 1974. (see:Popular Photography, 04/1974, p78)

In 1889, Capt. Abney coated a meniscus with pyroxyline (collodion) dyed with turmeric and separately with aurine and used this as a filter- with some benefit to the skies from the aurine, but no comment on antireflexion was made. (BJA, 1889, p378).

It is thought one of the first major movies filmed with coated lenses was "Citizen Kane" photographed by G. Toland in 1941. Today it is still classed as a technically advanced movie. And 'Gone with the Wind' was exhibited using coated projection lenses at 20 theatres in USA and with one lens set in London.

L.F.Colas, France.

This was an early maker perhaps 1860-70 as he was a pupil of M. Lerebours (eleve) and the name was noted on a Portrait Petzval. Part no 580 coded "Record Rapid RRS III". (One account was RR but in either case it is an early lens.)

Colmont, France.

Colmont is listed in FBB as supplying the lenses on 4 cameras in the period 1880-1901, two of the examples being RR's. One at auction was by Vivien et fils, Paris for 13x18cm in wood.

Comi, Italy.

A lens noted at auction on a Comi Luxia II camera covered in snakeskin was a **Delmāk** f2.9/27mm lens, at No461,61x but the maker seems obscure.

Compass Camera Ltd, 57 Berners St, London W1.

The lens was a **CCL3B**, made by Kern of Aarau. It was a 4-glass design, Q15 type, mounted in the Compass, a superb miniature body. The initial production seem to have given problems and been replaced, the new batch being fine. As a result the first are extremely rare. (Min. Cam. World. 10/1937, p617advert., B.J.A. 1938, p255, 667 advert; 1939, p653 Advert.) The stops were a rotating disc at f3.5, 4.5, 6.3 and f16; there is a small hood built-in round the lens.

Computar see Caltar for part of the story. also Shutterbug 10/1997

This was a series originated by Burleigh-Brooks as a budget range of 10 enlarging lenses-with a difference, as they were able to be used with a matching range of 16 adaptor rings for copying or macro work including bellows use and adaptors to shutters. After the demise of Burleigh, the line went through at least 4 other agents, and then disappeared. The maker seems to be unknown.

f2.8 30mm covers full 35mm frame. (initially it was a 25mm, later increased to 30mm)

f2.8 50mm 6-glass.

f1.9 55mm The front glass is a floating element to control the image quality.

f3.5 65mm This is a very sharp lens

f4.5 80mm for up to 6x7.

f4.5 90mm for up to 6x9

f4.5 105mm especially for 6x9

f5.6 135mm 6-glass, and still in M39x26 thread.

f4.5-f5.6 50-80mm Zoom

f4.5-f5.6 105-150mm Zoom

Correctly, these 'zooms' are variable focal length lenses and need refocusing after adjusting the focal length.

Some longer lenses were made also, eg. f9 305mm **Computar**, or perhaps there was a complete camera lens range as well.

Concava S.A., Grenchen, Switzerland.

The first production seems to have been from Tessin- hence the name. The lens was a f2.8 25mm **Tessinon**, and are a 4-glass Q15 of high quality, so this is the camera for the fastidious spy. It was used at Watergate. (Review, Modern Photo. 5/1963,p85).

Cone Lenses

These were usually early meniscus lenses mounted in front of a cone shaped mount rather than the normal barrel- for compactness and increased extension. They were made sporadically throughout the 19 Century. One known example is the Policonigraph of M Dubosq of Paris.

Fig 14 Cone type Lenses.

Back Row 2x Anonymous Cone Lenses.

Front Row Beck Cone W/A View about 10.5in.

Wray Cone for 1/1plate.

Congo, Japan

The maker is Yamazaki which is listed separately, but since they are rare in UK, it is easier to use the trade name. Commercial **Congo** was made as f4.5, f5.6 series, that seen being a large solid Q15 type lens. There are also Congo enlarging lenses, seen as a Congo E, apparently an old but well made, uncoated triplet.

Conrady, Prof Alexander Eugen, 1866-1944.

He made notable contributions by designing the Watson Holostigmats (1905) and submarine periscopes, and as Professor at Imperial College, founded a school of optical design in what till then had been a relatively backward country, and his book "Applied Optics and Optical Design" is a classic, though sadly the second volume including photographic lenses was to be finished posthumously by R. Kingslake, his son-in-law. The B.J.A. 1934, p264 notes his part in a colour process worked by Aron Hamburger until his death then.

Contessa-Nettel

Contessa-Nettel was a German camera maker incorporated into Zeiss Ikon in 1926. Prior to this they used trade names such as **Nettar** (a Triplet) and **Sonnar** which were used after the merger, but others were discontinued. Those discontinued included:

Citonar, Teronar, Citoplast, Tessaplast from Dr Staebble, **Conastigmat** (a triplet) and **Hellaplast**. It is not known if any of these were made in-house, but Frerk says H. Meyer Gorlitz and C.A. Steinheil of Munich supplied Citonar, Conettar, Augonar and Teronar lenses.

Examples are:

Nettar Frerk refers to this as the f6.8 and very like the Novar- which may be an informed guess at identity! It is probably always a triplet.

Conettar f6.8 This is mentioned by Frerk, and may be a German- sold version.

Citonar f6.3 75mm on Duchessa 4.5x6cm, and stereo, It was a Dialyt. It was also made as a **f4.5 55mm** on Steroco Stereo in 1924.

Citonar f4.5 Convertible This was noted as a convertible in B.J.A. 1925, p685 on a Duroll plate and film camera where it was more expensive than the f6.3 Citonar but less than Sonnar or Tessar. Convertibles at f4.5 were unusual and this just may be a Dogmar but today there is no easy way to test this. The same unusual feature has been noted in several other imported brands of that time and may suggest a common source.

Sonnar The Sonnar was fitted in B.J.A. 1925, p684 to the Cocarette rollfilm, the Duroll plate/film, Picolette VP and the 'new' Tessco 3.5x2.5in plate. It was typically a medium price version, with the Zeiss Tessar above it in

price. Thus on the Duroll there were:

Citonar f6.3 £6.90-8.90 varying with the shutter.

Citonar f4.5 Convertible £10.00

Sonnar f4.5 £10.87

Tessar f6.3 £13.87

Tessar f4.5 £15.00

Sonnar was noted as an f4.5/135mm at No105,34x in a dialset Compur on a 1/4plate Sinclair Unar. Also as No117,86x in dialset No857,714 as a separate lens. It seems to be Q15 type, 1+1+i+2. The example seen seemed an attractive quality item, but is definitely not a Tessar. The front diameter is slightly smaller than a f4.5/135mm Tessar, and the external curves differ. It was used on the Sonnar plate for 9x12cm and 76x9cm, and is post 1919 as the dialset Compur is marked Contessa-Nettel (They merged in 1919 and No857,xxx is a late shutter to be used on a pre-Zeiss Ikon shutter, ie in production at the time of the merger in 1926.)

Dominar f4.5/5cm This was noted as No760,64x on a VP size Contessa-Nettel camera.

Nostar f6.8 Dialyt

Augonar f6.0 Dialyt

Teronar f5.4 Dialyt

Colorplast 60mm

Conastigmat f6.3 135mm

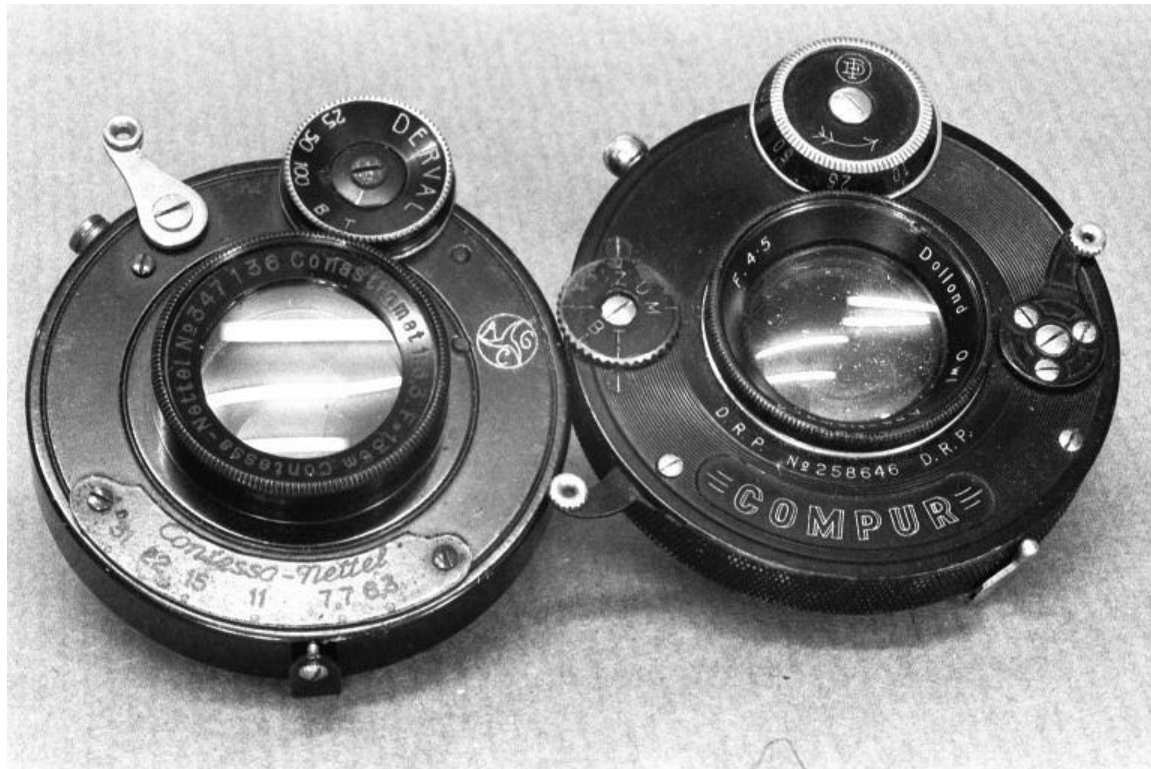


Fig 009 018 Contessa Nettel Conastigmat f6.3/135mm in Derval shutter; and Dollond Owl f4.5/4in in Compur.

Isoplast f5.8, f6.8 used about 1910 on Contessa cameras No32, 722, 23, 533. It was one of the lower price options and was from Dr Steable. It was partnered by **Tessaplast** f5.5, **Medioplast** f7.5/f7.7 from the same source.

Acro f11 This was a low price lens, probably a meniscus, on the Piccolette in 1925.

Piccar This was a low priced lens also on Piccolette, listed in B.J.A. 1924, p696, but above the Acro in price: thus it may have been an RR. Prices with Acro, Piccar and Nettare f6.3 were resp. £1.75, £2.00, £3.25 while with Tessar f4.5 it cost £12.00.

Conley, USA

This seems to be a trade name of Sears Roebuck about 1910. Items listed included:

Rapid Rectilinear f8.0 6.25-8.5in Q5

This gave 3 foci as the cells were of different foci.

Conley Anastigmat Series V	f6.8	5-16.5in Symmetrical anastigmat of 4+4 glasses.
A 13in f6.8 Series V Conley Anastigmat has been noted in an advert.		
Monarch Symmetrical Wide Angle	f16	3.5-8in ?WAR
Conley Portrait	f5.0	Petzval?
Series V11 Anastigmat	f9.5	4.75-9.75in. Here it was suggested to use 6.88 for 10x8in
This seems to be a wide angle.		
Conley Extra Rapid Portrait	f3.8	Definitely a Petzval Portrait lens. (Q3)
Deltar Anastigmat	f4.5	5.75-15in It seems to be unsymmetrical.(Q15)
It was suggested to use 15in for 10x8in.		
Citar Anastigmat	f6.3	5.25-13in possible Q26 type.
It was suggested to use 13in for 10x8in.		
Luxar Anastigmat	f7.7	5.25-13in

Cook and Perkins, London.

C&P were engineers, specializing in lens mounts often for Dallmeyer and became an associate of theirs. They made a range of M39 adaptors for Contax lenses postwar:

(a) rigid; (b) focusing/cpld 5cm; (c) focusing/cpld all foci.

These were available about 1948. Note the 35mm Biogon was not usable in type c. These are now desired collector items. They also made the mounts of Dallmeyer Dallac and Dalrac lenses and some others, including the NOC f2 and ex-WD Panchros to a really high standard. These last look to be alloy mounts but have a lot of brass parts fitted to minimize wear, and were much finer items than a casual glance might suggest. They made a M39 copier and supplied a magnifier to match possibly sourced from Dallmeyer, in B.J.A. 1951, p194.

The fate of the company was noted in Amateur Photographer 19/02/2000 p37, and the suggestion was that they closed owing to the high value of the buildings' site making selling the site more valuable than continuing production. Another factor in London was the high local costs of local taxes, rents, wages and rates which drove many out of existence.

Cooke, T. and Son, York, UK.

(They also traded later as Cooke Troughton and Simms, and an important collection of papers are in the Univ of York Library, Borthwick Institute.

Thomas Cooke (1807-1868) was a extremely well educated man although born into a very poor working class home - his Father James was a shoemaker at Allerthorpe and Thomas was partly self educated, thinking to emulate the famous Capt James Cook (1728-1779, no relation); but he became a teacher, clock maker and telescope maker with his plant at 12, Coney St, York (1844) with his brother Barnard; and later at Buckingham Works, Bishophill, York (1855). His interest was in telescopes but the clockwork drives required resulted in the creation of a business in 'Turret Clocks'- those in church towers and the like. He had shops in York and in London at 30, Southampton St, The Strand (1863-1869). Sadly, he accepted an order for a 25in refractor in 1862 from Mr R.S.Newhall, and the cost to make it far overran the estimate and the Newhall order effectively bankrupted Cooke's firm, the telescope being finished in 1871. On Thomas death, he was succeeded by his sons, Thomas and Frederick (1836-1898) and Mr Harold Dennis Taylor (1862-1943) was employed in the optics side and became Optical Manager. His younger son Edward Wilfred Taylor (1891-1980) joined Cooke's in 1908, and worked at Taylor Taylor and Hobson, Leicester, for a period about 1914, later writing book(s) on optics. During World War 1, Cookes became part of Vickers and in 1920-1921 they tookover Troughton & Simms, then trading as Cooke, Troughton & Simms. One legend at the York end of the relation was that the use of the name 'Cooke' by TTH on lenses of designs other than the Triplet was a source of sadness and trouble between the companies, though this is now a matter of history.

Frederick Cooke (1836-1898, above) retired in 1894 to be replaced by Alfred Taylor (1863-1940, again no relation) and in 1895 they leased premises in Victoria St (as the Southampton St shop was given up in 1869) and just may be listed there in the Vademecum under Taylor.

*(The above is based on information kindly made available by Mr P.Wotton of Kent who refers also to a series of articles by him in **Clocks Magazine**- concentrating on the horological aspects of the business. There is an important Archive at the Borthwick Institute of Historical Research, York University, St Anthony's Hall, Peasholme Green, University of York, YO1 7PW).*

Mr Taylor, the designer of the Triplet, worked for Cooke and as they were not camera lens makers and under

some financial pressure, the design was licensed out to TTH and thence to Balbreck and Voigtlaender. Cooke did produce some triplets as telescope objectives and some specialist lenses including an f2.0 Doublet Petzval type for Mount Wilson observatory, which used a field flattener. One account above was that the firm suffered financial problems due to budgeting problems- telescopes are rare but large items- and would have been glad of the money the licence on the triplet would fetch. There are TTH lens illustrations eg. of a Series II Triplet, among the Astronomical Instrument Catalogue items eg in 1908, and T. Cooke may have been agents for Taylor, Taylor and Hobson Ltd in this respect- it would have been more economical than for them to set up as camera lens makers.

For Cooke lenses, see Taylor, Taylor, and Hobson, TTH.

"Cooke Patent" Patent, 126, Hoxton St., London UK.

This is the engraving on an early(?) 19C lens with old style engraving, no iris and two +,+ components at the rear of a meniscus type barrel, but without further current information being available. It just could be an earlier product from Cooke above but the location seems far distant and any connection unlikely. A Cooke lens for 5x5 was noted at auction on a wood and brass camera.

Corfield, K.G. /Periflex, Merridale St., Wolverhampton, England+ Ballymoney, N.I.

The major product here was the Periflex partial reflex with M39 mount. It was noted in B.J.A. 1956, p166 with an f3.5/5cm Lumar. These Periflex lenses were partly sourced in the UK from British Optical Lens Co, Walsall and partly from Enna of Germany. The notices in the B.J.A. show the Enna sources items coming through in the late 1950's, eg in B.J.A. 1959, p175. Note that BOLCO (q.v.) were separately involved in camera lens making but were not a major maker. The classic account of this is "Its by Corfield- It must be Good" by J.E.Lewis.

The serial numbers at present do not make much pattern, but it seems that a 4 digit one is a sign of an early lens.

BOLC items were :

Lumar f3.5 50mm Q14 type in leather and alloy mount. They used front cell focusing, were 3 glass and stopped to f16. Performance was genuinely good and much more ambitious lenses from other makers were often put to shame.

(a) The initial lenses were in aluminium finished mounts with gear cut finger grips, and have been seen at No398x and 234x and

(b) these were replaced by a series in alloy with black leatherette bands, seen at No 7120 67 and 5170 18 on Periflex I bodies. These do not have quite the same cachet and frankly the leatherette bands now need sticking down again in many cases. But optically they are more likely to be coated though it is not known just when this came in.

Mr Lewis shows Nos 2,245 (probably very early), and 4,179 (1954). They are of interest as the Pigskin Periflexes are limited to some 75 (or 200) bodies only at the very beginning of production, and serial numbers run from No2000. Thus Body No223x matches lens No230x, body No238x (black) matches No236x, and body 232x (black) matches lens No234x and 2647 matches 2751: but body No226x probably does not match a Lumar-X lens No517x nor body No216x with lens No407x. By body No232x and 312x, the cover is black but No305x is probably the original fitment for the latter.

Lumar-X f3.5 50mm This was a coated version of the above. A typical serial number is No5180-0x. The B.J.A. notice (1956, p167) has a coated lens.

Apo-Lumar Enlarging f3.5 50mm same for enlarging. 3 glass design of high quality by respacing the glasses of the Lumar-X for the flattest possible field in close up. Black and chrome mount, shorter than the Leica register and with click stops, and 6-blade iris marked in exposure increase times to 16x. It seems not to be numbered. Price £6.38 + tax £4.45.

Lumar f4.0 100mm Q14, triplet. This was seen at No7121 42. Dealers note two types of barrel here- the early long type and a later shorter type.

Note that the original BJA notice carries 2 other items. One is the ground glass focusing unit, with 28.8mm register for all M39 lenses, and the other was a Travenar f2.8/85mm lens. This was from A.Schacht (Munich) and seems to be associated with the Periflex- which it would fit if in M39 mount. It also may have been an uncoupled version as there is no mention of coupling. This raises the idea of Corfield considering other German sources before agreeing with Enna to supply lenses for the Periflex.

Corfield Achromats

2, 3¼, 4¼in for enlarging.

Here the designer was Frederick Archenhold. The glass was from BOLC and the assembly was by Corfield's into mounts made by them.

Fred. Archenhold was born in Berlin, Germany, in 1920 and educated privately owing to local ethnic prejudice, but was so successful at it that he could argue maths. with Einstein, a family friend, who visited to play chamber music. Fred was apprenticed to a German optical firm but after a hint, left Germany, and eventually found a job with BOLC which were a subsidiary of E.Elliott, plastic moulders. He was interned as an alien in 1940-1, but ended the War as a Radar and periscope designer, and later became a director and optical designer of BOLC. He was better known among astronomers and there is a fuller obituary in Brit. Astr. Asscn. Jnl. 12/1999.

Enna items were:

RetroLumax f3.5 28mm 6g/6c, Co001 This was another recently introduced Lumax in B.J.A. 1960 p264, which was actually introduced in 1959 (idem, 1959 p175) with the f3.5/135mm, and was a reversed tele for M39 or Exakta mounts. It focused to 16in, with an easily closed down iris. Cost £33 + Tax £5.35.

RetroLumax f3.5 35mm 4g/4c Co002

RetroLumax f2.8 35mm 6g/5c Co003

SuperRetroLumax f1.9 35mm 9g/8c This is a really scarce lens, Co004.

Lumax f2.8 45mm Q15, Co005 this was seen at No7140 32 and 8151 44 (on an Interplan A body, a late camera. The B.J.A. 1958 p172 notes this as a 4-glass lanthanum design on a Periflex III with close focus to 12in from film to subject. In 1958, the lenses available were the f3.5/50mm Lumar-X; f4/100mm Lumar.

Lumax f3.5 45mm Q15 Co006

Lumax f1.9 45mm 6g Gauss, Co007 (see B.J.A. 1957, p235). It focuses infinity to 9in lens to subject, in a smooth working lightweight mount, uses lanthanum glass, coated, and takes 42mm accessories and iris to f16.

Lumar f2.8 50mm Triplet, Q14

Lumax f2.8 50mm Q15

Lumax f2.4 50mm

Lumax f1.9 45mm Some of these are with Wray patent license No.575,076 on lens No8,152 41. There was an inadvertent overlap in the designs.

SuperLumax f1.5 85mm B.J.A. 1960, p179. another scarce item. It was noted in B.J.A. 1960 p179 as a coated 6-glass lens with Lanthanum glass and ideal speed for portraiture etc. Focus to 4ft. Cost £60 + tax £9.75.

TeleLumax f2.8 90mm This is a scarce item.

Lumax f3.5 95mm Triplet, Q14. for Corfield 66 SLR.

Lumar f2.8 95mm Co008, 3-glass triplet

Lumax f4.0 100mm Co009

Note there were 2 types here, with long and short barrels. Was this an optical change or just a mechanical one? It was put on sale later than the camera, as it was noticed in B.J.A. 1957, p255, when it was a 3-glass focusing to 4.5ft, and stopping to f22, at £20.00 + Tax £7.80.

TeleLumax f3.5 135mm 5g/4c Co010 This was 'additional' in B.J.A. 1959, p175, and probably began to arrive that year. It is a short lens only 3.5in long, ie a tele, and focuses to 8ft.

TeleLumax f2.8 135mm Co011

TeleLumax f4.5 240mm 5g/3c Co012 Scarce

TeleLumax f4.5 400mm 5g/3c Co013 These are scarce and one was noted at No2,473,26x. It was noted in B.J.A. 1960 p254, in M39 or Exakta mounts. It is coated and uses Lanthanum glass focusses to 16ft and stops to f32. Cost £49.00 + Tax £7.95.

In addition, a single 150mm **Lumar** was made by BOLC for Corfield but no longer exists.

Early Enna lenses were assembled by Corfield's into their mounts but from 1961 the products were all German assemblies, although the planning would still be done jointly. And sales were under the Corfield name. At this time Enna were using rare earth glass in all their lenses and in general the list was an innovative one.

Some were also sold in M42 and Exakta mounts, as in June 1967:

28mm, f3.5; 35mm f3.5; 50mm f2.8; 50mm f1.9; 95mm f2.8; 105mm f2.5 (06/1967); 135mm f3.5, f2.8; 240mm f4.5; 300mm f5.5; 400mm f4.5. In 1966, there was a Series E for the f2.8/35mm lens.

The **Corfield 66** was a reflex made in small numbers as the firm changed direction, and it was fitted with a Corfield Lumax f3.5/95mm lens noted at Nos 2,212,12x, 2,212,16x, 2,212,403, 2,212,47x, 2,212,66x,

2,212,67x, 2,212,92x and 2,212,97x. It is worth noting how closely these are grouped.

Coronet, UK.

They were not expensive makers, but Mr Burnett reported they got at least some of their lenses from TTH during the depression, as was mentioned during a visit in 1939. (They also supplied lenses for the Woolworth V.P.Twin at the same time.) There was quite a range of Coronet cameras early postwar (B.J.A. 1949, p441) mainly with f11, f10, f16 lenses, but the Coronet Cub for 28x40mm on Coronet 888 film (=Kodak 828) used an f6.3 Anastigmat made in Leicester (though the maker is not named and just may be National Optical Co.) It had stops to f32. There was a Coronet cine new in 1937 with a f3.9 lens on the 9.5mm film body. There was also a matching projector with a lens (no data).

Cosina, Japan

The list in the Am Photographer Oct 2000 is as follows:

f3.5-f4.5	19-35mm	13g/11mm
f3.5-f5.6	28-80mm	8g/8c
f2.8-f3.8	28-105mm	15g/13c
f4.2-f6.5	28-210mm Aspherical	15g/13c
f4-f6.3	28-300mm	17g/15c
f4.5-f5.6	70-210mm	10g/7c
f2.8-f4.0	70-210mm	14g/11c
f4.5-f5.6	70-300mm	12g/9c
f3.5	100mm	5g/4c A macro lens
f5.6-f6.7	100-300mm	10g/8c
f4.5-f6.7	100-400mm	12g/9c

Cosmicar.

A brand name on CCTV/VTR lenses typically in C-mounts. Seen as 25mm f1.4 Macro Cosmicar and 8.5mm f1.5 (?8-glass) **Cosmicar**. These are said to be by Pentax of Japan. The 8.5mm can be used on a camera such as a Bolex H16 but it is sufficiently deep sunk to prevent the turret turning when fitted.

Cox, Arthur

His book 'Photographic Optics' from 1943 is *the* classic on lenses made after 1945- the early editions carried information on some prewar items and the first seems to be based on articles in Miniature Camera magazine. He worked for Bell & Howell, rising to Vice President by Modern Photo 04/1976, and updated the book periodically, though the updating of the later editions were somewhat less full after 1966 than the early ones- the review pointed this out rather plainly. The listing of lens sections was kept up more fully however. Thus a set of different editions is of great use to the collector.

Crouch.H.

A maker active about 1890 at 66, Barbican, London EC and mentioned by Traill-Taylor. He probably offered the normal mixture of RR and Petzval lenses of the 1880's and three items have been noted:

RR f8.0 This has been seen as a 8in No471x in a 1.5in fine thread mount, and noted as a 13in brass barrel lens.

WAR This was probably for 1/4 plate and other sizes.

Cone type Meniscus F11, iris to f64, finished in a rather antic brown colour, at No 442x.

Landscape lenses.

He seems to have retired from trading by 1901.



Fig 009 014 Mr Crouch's lenses (l) RR about f8/8in No4718 (r) Cone for Landscape meniscus

Cross, France

A French brand of the late 1940-50 period, eg. on SEM cameras. The first noted was a Cross f2.9/45mm on a Reyna Cross camera for SEM in 1943/1944, and the same specification was used in 1950 on a Baby Orenac, and on several SEM-Kim cameras (1946, 1947, 1948) while a f3.5/45mm was used in 1949 on a Baby Sem. eg. **Cross** f2.9 45mm on Kim, and Baby-Sem about 1949. (It was later replaced by a Berthiot 45mm f3.5/f2.8 option.)

Cross f3.5 45mm on SEM Kim.

Crown Optical Co. Rochester, USA.

Crown Portrait f5.0 10, 12, 14, 16, 18in Use 14in for 10x8in

This is fairly soft at f5.0, and was sold with a diffusion disc in the price.

Portrait Symmetrical f6.0 4.5, 6.25, 8, 9.5, 12, 14.25, 17, 19, and 23in.

This seems to be an RR perhaps.

There was also an anastigmat and an f8.0 RR series. We have also met a **Marlux** Series V Projection lens, probably a Petzval type.



Fig 009 016 (l) Crown Optical, Projector lens; and (r) Bausch & Lomb Projector lens for Mr Edison.

Crystar, ex Mayfair Supplies, 166 West End Lane, London NW6.

Seen as a f3.5 135mm lens for SLR, it is part of a set with interflex mounts to sell with other Japanese lenses, including a f3.5 200mm one.

Criterion,, USA

Mirror lens maker, active until about 1970, when they seem to have been absorbed by Bell and Howell.

Copernicus, Poland.

Mirror lens maker noted in the 1970's.

Cundell, G.S.

He was responsible for a very early (1844) lens with a stop between two single meniscus lenses. (Philosophical Magazine Oct 1844, Traill Taylor 1892 p54). It was of interest as an early distortion free symmetrical lens.