Ilex lenses, primarily post-1965

by Daniel W. Fromm

Ilex opened for business in 1911 as a shutter manufacturer. Some time after WW I (1921 according to Kingslake, see http://bvipirate.com/Kodak/Rochester.html) the firm expanded into lens manufacturing. Their lenses are poorly documented and catalogs are scarce.

Ilex made lenses for large format cameras; for at least a few 35 mm cameras, among others Ansco, Realist and Univex; for long roll cameras used by school photographers; for process cameras; and for specialized applications such as oscilloscope and CRT recording cameras.

Kingslake reports that the firm changed hands in 1963. Not long afterwards Manuel Kiner, one of the new owners, designed convertible six elements in four groups plasmat type normal lenses and six elements in four groups Super Angulon type wide angle lenses for large format cameras. Although their new lens line was fully competitive with comparable lenses from Rodenstock and Schneider, Ilex seems to have sold few of them. Contemporary German lenses are much more common on the used lens market. Mr. Kiner also designed f/6.3 Commercial Paragon lenses, all Tessar types, that were intended as replacements for Kodak's discontinued Commercial Ektars.

If the information I have about Ilex' history is correct the firm closed in 1985. See https://bestbusinessny.com/company/161878/ilex-optical-co-inc.html. Melles Griot, which still exists as a subsidiary of Idex Health & Science, made Ilex shutters under their own name. Melles Griot acquired Ilex' manufacturing facilities around 1981. See http://ieeexplore.ieee.org/stamp/stamp.jsp?arnumber=7242479.

The late H. Lynn Jones (1931 - 2012) made numerous posts about Ilex' post-1963 lenses on photography web sites. They aren't always consistent with other information or with each other. I fear that Mr. Jones' memory deteriorated as he aged. Mr. Jones worked for Burke & James, Burleigh Brooks Optics, and Calumet Photographic. He's said that he induced Manuel Kiner to design modern lenses for Ilex.

Ilex had close business relationships with all three firms, who sold Ilex lenses under Ilex' and their own trade names. This is one of the reasons that there's confusion about which lenses the names refer to.

This article is primarily about Kiner era Ilex lenses. I see Ilex' pre-Kiner lenses as nothing special. They seem to be mainly Tessar types much like contemporary Tessar types from Bausch & Lomb, Kodak and Wollensak in the US and from many foreign lens makers. However, Ilex catalogs say little about most of their lenses' design types so I could be mistaken about this. I don't mean to denigrate old Tessar type lenses. Within their limits (lowish coverage) they're usually quite good.

Ilex' Kiner era lenses are generally well-regarded in the US. H. Lynn Jones and some happy users assert that they're better – have greater coverage, are sharper – than similar contemporary lenses from German makers. I'm not convinced. Comparable to the Germans is probably closer to the truth. These lenses and Wollensak's two large format Pro Raptar taking lenses, which are even less well documented, were Rochester makers' last attempt to compete in the market for large format lenses.

Pre-Kiner era Ilex lenses

For readers who are interested in pre-Kiner Ilex lenses, primarily pre-WW II, here are annotated links to catalogs. I've tried to list the catalogs in chronological order, earliest first.

> http://web.archive.org/web/20170123114531/http://cameraeccentric.com/html/info/ilex_3.html (no date) lists: Acme Anastigmat Series D F. 7.5; Acme Anastigmat Series C F. 6.3; and Symmetrical F. 8 ("*a rapid symmetrical convertible type*.")
>
> http://web.archive.org/web/20170123185120/http://cameraeccentric.com/html/info/ilex_4.html (no date, perhaps 1922) lists: Ilex Portrait f 3.8; Ilex Portrait F.5; Ilex Anastigmat Series A F:4.5; Ilex-Acme Anastigmat Series "C" F. 6.3; Ilex-Acme Anastigmat Series "D" F. 7.5; and Ilex Symmetrical Series "S" F.8
>
> http://web.archive.org/web/20170123202942/http://cameraeccentric.com/html/info/ilex_2.html (no date) lists: Ilex-Paragon Anastigmat F:4.5, probably a Tessar type; Ilextigmat F:6.3, a convertible lens; Ilex-Anastigmat Series "D" F:7.5; Ilex Convertible Rapid Rectilinear F:8; Medium Wide Angle F:16 (cover slightly more than 90°); Photoplastic F:4.5 (soft focus); Ilex Portrait F:3.8 (soft focus); and Ilex Portrait F:5 ("*renders that beautifully rounded field so desirable in portraiture*.")
>
> http://web.archive.org/web/20170123131058/http://cameraeccentric.com/html/info/ilex_5.html (no date) lists: Ilex Anastigmat F 6.3; Rapid Convertible F.8; Medium W. A. lens – Angle of View 79° to 80° (f/16); Extreme W. A. Lens – Angle of View 90° to 100° (f/16).

http://antiquecameras.net/softfocuslenses3.html discusses Ilex' old soft focus lenses. Paragon Anastigmat F:4.5 Series A, Photoplastic, Portrait F:3.8

One of Ilex' post-WW II pre-Kiner lenses, the 150/3.5 Seminat, is somewhat of a mystery. It was sold in barrel mounts for cine and LF cameras and in shutter for LF cameras. Some owners believe it is a soft focus lens, note that it is quite sharp when stopped well down.

Kiner era lenses

I have two catalogs, one from the late '60s published by Ilex and one from around 1973 published by Burke & James, and a set of data sheets roughly contemporary with the second catalog. The information they offer is sketchy, they don't present information on the lenses in quite the same formats and they don't always agree with each other. I use lens names as they were in the catalogs. On the evidence of the used lens market – many more used lenses with names as in the 1973 catalog come to market than do lenses with the original names – the new names used in the 1973 catalog were introduced not long after the lenses were first offered.

Late '60s catalog:

f/4.5 Commercial Paragon

All Tessar types; the cross-section is shown. Nine focal lengths from 3½ inches to 12 inches. Coverage given as recommended format. For example, the 3½ incher covers 2¼ x 3¼, the 12 incher covers 8 x 10. No mention of dimensions. I believe these are old designs.

f/6.3 Commercial Paragon (= Acutar)

"*a completely new version of the widely accepted Paragon lens especially re-designed for the industrial, commercial or studio photographer.*" Tessar types, but cross section not shown. Six focal lengths, 6½ inches to 20 inches. The 20 incher is f/7. Again, coverage is indicated by recommended format. The 12 incher is recommended for 8x10, the 20 incher for 11 x 14. No mention of dimensions.

Wide Field Paragon (= Acugon)

Six elements in four groups Super Angulon types; the cross section is not shown. Three focal lengths, 47, 65 and 90 mm, all f/8. Recommended, respectively, for 2¼ x 3¼, 4 x 5 and 5 x 7. "*These six-element lenses cover a full 100° field angle even at their maximum aperture of f/8.*" One has to wonder.

Enlarging lenses

All f/4.5, all Tessar types, twelve focal lengths from 2 to 12 inches. Mentioned for completeness. I believe these are old designs.

Process Paragon

A cross-section shows a six elements in four groups plasmat type, a footnote remarks that the 10½" f/8 is a "*four element apochromatic type*." The others are not claimed to be apochromats. The catalog says "*they are all six-element symmetrical type lenses optimized for the magnification range noted in the chart above*" but I'm not sure that all are the same design type. There's more than one type of six element symmetrical lens. Recommended range of magnifications for all is 25% to 400%. Claimed coverage varies considerably. These may be Kiner designs.

Whether they're apochromats or not, the few user comments I've found on them are very positive.

Process Paragons	
Focal length (inches) and maximum aperture	Coverage (degrees)
8¼" f/6.8*	80°
9½" f/10*	the catalog says 71°, the price list says 68°
10½" f/8	51°
10½" f/10*	71°
12" f/6.8*	the catalog says 54°, the price list says 68°
12" f/9	46°
13" f/9	46°
15" f/9	46°
16" f/9	46°
19" f/10	46°
21¼" f/10	46°

* In the price list that came with the catalog these lenses are called Wide Angle Process Paragons

Wide Field Process Paragon

Six elements in four groups plasmat types. Optimized for 1:1.

Wide Field Process Paragons, all f/5.6		
Focal length (inches)	Coverage	
	Inches @ 1:1	Degrees
4⅜”	9.25”	55.7°
5½ “	9.25”	45.6°
6.8”	14.29”	55.4°
7.8”	16.37”	55.4°
8¼”	16.11”	52.0°
8¼”	16.50”	53.1°
9”	17.00”	50.6°

CRT and oscilloscope recording systems

Focal lengths from 0.90 inches (23 mm) to 11 inches (279 mm), maximum apertures from f/1.2 to f/4.2 (6 inches) to f/4.0 (11 inches). A multitude of design types, most double Gauss derivatives. Most are corrected for P-11 phosphor, others for P-1, P-16 and P-31. They are not well achromatized.

The used lens market offers three focal lengths of Ilex’ oscilloscope camera lenses that seem useful on large format cameras. 75/1.9; three types with, respectively, recommended magnifications of 1:0.9, 1:0.85 and 1:0.5 respectively; 80/1.3; two types, both for 1:0.5; and 88/1.4 for 1:1. All cover small angles, won’t cover 4 x 5 at their recommended magnifications, let alone at infinity.

Fig. 1 75/1.9 Oscillo Paragon in #3 Ilex Universal. This lens is dusty because I don't use it. It is, for my purposes at least, completely unusable. I bought it for the shutter.

Commercial Paragon Lenses: f/4.8 Series (= Acuton)

Also called Semi-wide field Paragon lenses – convertible. Six elements in four groups convertible plasmat types, focal lengths 6”/10”, 7”/12”, and 8½”/14”. In metric, as calculated by Ilex, 150/250 mm, 180/300 mm and 215/350 mm. All f/4.8 combined, single elements are f/10. Coverage 70° combined, single elements cover 40°.

Data sheets, unknown publisher and date:

The new designs -- f/6.3 Commercial Paragon, f/4.8 Commercial Paragon and f/8 Wide Field Paragon -- were renamed Acutar, Acuton and Acugon. The data sheets add a little information that was not offered in the late ‘60s catalog. Apertures at which full coverage is reached are not mentioned.

Acutars all cover 58°. This is rather less than the equivalent Commercial Ektars, which cover ~ 64°. See http://www.bnphoto.org/bnphoto/KodakEktarsDB1.htm.

Acutons still cover 70° combined, now cover 47-48° separated.

The 47 mm Acugon is not mentioned. The remaining 65 and 90 mm wide angles now cover 102°. My set of data sheets may be incomplete.

Burke & James ~ 1973 catalog:

Acutars' coverage is given in degrees and as the image circle's diameter. The image circles' diameters as published are diagonals of the lenses' recommended formats. All of the lenses are still reported to cover 58°; this gives circles larger than the recommended formats' diagonals.

Acutons and Acugons are as in the data sheets except that the 180/4.8 is replaced by a 7½"(190 mm)/4.8.

Trade names:

Acutars, Acutons and Acugons have been sold under a variety of trade names, causing considerable confusion and disagreement.

Acutar.

Initially Commercial Paragon Lenses – F6.3 Series, later Acutar. Calumet sold them as Ilex-Calumet Caltar and as Caltar, not to be confused with Ilex-Calumet Caltar Series S. All of the ones sold by Calumet should be marked Ilex-Caltar (I think, could be wrong) and "Made in U.S.A." Burleigh Brooks sold them as Acu-Tessar.

Acuton.

Initially Commercial Paragon Lenses: f/4.8 Series and Semi-Wide Field Paragon Lenses - Convertible, later sold as Acuton. Calumet sold them as Ilex Calumet Caltar Series S, not to be confused with jes' plain f/6.3 Ilex Caltar. Also not to be confused with jes' plain Calumet Caltar Series S lenses. These are, I believe, imports. Ilex-made lenses are marked "Made in U.S.A.", the imports were made in Germany and Japan. Burleigh Brooks sold Acutons as Acu-Symmetrical. Some, possibly all Acu-Symmetricals have maximum apertures of f/5.6 instead of f/4.8. See, e.g., http://web.archive.org/web/20170627232351/http://www.ebay.com/itm/ilex-acu-symmetrical-no-181-210mm-f-5-6-/282542719182

Fig. 2 180/4.8 Acuton in Synchro Compur #1. I bought it as a pair of cells with no shutter. The new Compur's aperture is scaled for the cells combined (180/4.8) but not for a single cell.

Acugon.

Initially sold as Wide Field Paragon, later as Acugon. Calumet sold them as Ilex-Calumet Wide Field Caltar. Burleigh Brooks sold them as Acu-Veriwide.

65/8 Acugons were sold on surveillance cameras as used in banks. Some – I have one – were in Ilex electronic shutters rebadged Opto Dynetics. Mine is not engraved with focal length, maximum aperture, maker's name or lens' designation.

Fig. 3 surveillance camera version of the 65/8 Acugon as received in an Opto Dynetics Syncnetic Model 20C electronic shutter. The late Steve Grimes said that lens and shutter were made by Ilex. Useless as received. The cells are now in a #00 Compur. #00 Compurs and Prontors have the same threading as the Opto Dynetics and a longer tube length. Steve modified the shutter for me to get the right cell spacing.

The 20"/7 Acutar's design type and coverage

There's conflicting information about both. The catalogs all say that the lens is a Tessar type. To the extent that there's an Internet consensus, it is that the lens is a triplet that covers 35°. This means 320 mm, 8 x 10 with minimal movements.

Every such claim that I've been able to trace to the source comes from one interview with H. Lynn Jones. See, e.g., post #2 in http://www.largeformatphotography.info/forum/showthread.php?10107-ILEX-Caltar-508mm-20-Lens and Kerry Thalmann's comment in http://www.largeformatphotography.info/forum/archive/index.php/t-77367.html.
Against this, in the second link above Jan Pedersen reports that his lens is indeed a tessar type. As I was finishing this article the person who posts on the US LF forum as Taija71A kindly directed me to https://groups.google.com/forum/#!topic/rec.photo.equipment.large-format/yhFgb_UW0JM. The discussion contains a report on the lens from Donn Cave, who insists that his is a Tessar type. The catalogs all say that the lens is a Tessar type.

Until proven otherwise I'll believe that the lens is a tessar type that just covers 11x 14, as the catalogs say.

Shutters

Pre-Kiner Ilex lenses were sold in Ilex shutters and in barrel. Kiner-era lenses were sold in Ilex shutters, both clockwork and electronic; Copal shutters; and in barrel. Ilex shutters don't conform to

the Compur/Copal standard. Modern Ilex Acme (cock-and-shoot), Universal (self-cocking) and Electronic shutters of the same size have the same dimensions.

Modern Ilex Shutters' Dimensions				
Size	Maximum Aperture	Threads	Tube Length	Outer Diameter
0[1]	0.750"	1.0625"	n/a	2.0625"
1	1.000"	1.228" x 40 tpi	0.940"	2.480"
2[1]	1.09375"	1.4375"	n/a	2.625"
3	1.375"	1.771" x 50 tpi	1.024"	3.438"
4	1.750"	2.350" x 40 tpi	1.063"	4.070"
5	2.500"	3.000" x 30 tpi	1.314"	5.156"

[1] data for pre-WW II sizes 0 and 2. all other data in this table is from the late 1960s.

http://www.skgrimes.com/library/used-obsolete-discontinued-shutters/ilex#specsheet has a fuller explanation of Ilex clockwork shutters that touches on older versions.

See http://web.archive.org/web/20170123131058/http://cameraeccentric.com/html/info/ilex_5.html for a sketchy account of pre-WW II Ilex shutters' dimensions that includes #0 and #2 sizes. Pre-WW II shutters' dimensions differ somewhat from modern shutters'.

I don't know when Melles Griot stopped making clockwork shutters. They made their IES™ version of Ilex Electronic shutters until at least 2014. Recent production (see http://www.mellesgriot.com/media/b4c4f091-419e-49e5-b1a1-07c193912877/Wr85g/FPDFs/Shutter/Brochure/2014_LR.pdf) has Ilex' dimensions expressed in metric units. Melles Griot Type 1 corresponds to Ilex #2, Type 2 to #3, Type 3 to #4 and Type 4 to #5. Ilex electronic shutters and Melles Griot IES™ shutters are opened and held open by a solenoid and are closed by a spring. Open voltage is higher than hold voltage. There are different pairs of open/holdvoltages so buying an Ilex or Melles Griot electronic shutter and then looking for a speed controller is a little risky. Ilex electronic shutters' speeds are controlled by an Ilex Speedcomputer®. These are quite hard to find used but Melles Griot still sells new speed controllers. Most Melles Griot shutters'open voltage is 48vdc, hold voltage is 6 vdc. http://www.chemie.unibas.ch/~holder/shutter/ gives directions for making a DIY controller for these shutters. Older Ilex electronic shutters may have different hold and open voltages.

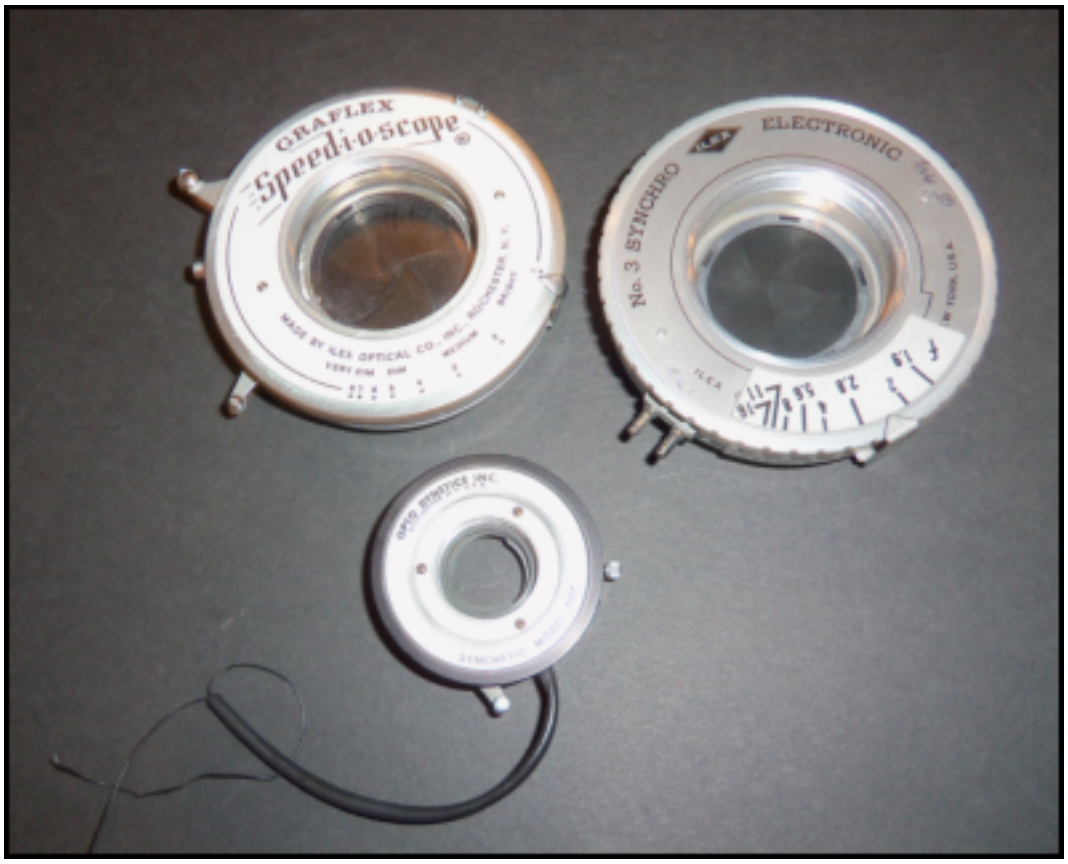

Fig. 4 My useless little Opto Dynetics shutter, an Ilex #3 Universal from a Graflex Speed-I-O-Scope (a tachistoscope) and an Ilex #3 Electronic. The #3 Electronic has an after-market aperture scale.