



OBJECT GLASSES
MIRRORS, Etc.,
for
Astronomical Instruments
PRICE LIST.

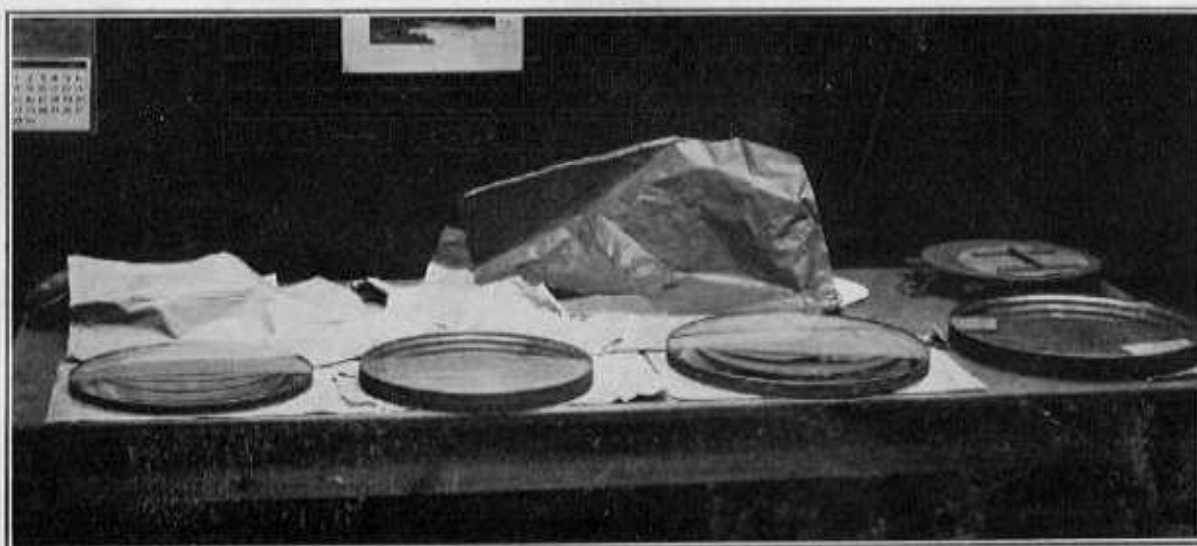


Fig. (1) Crown and Flint glass components for 20 inch (51 cm) and 24 inch (60 cm) aperture type "A" objectives.

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Proprietors: C. A. PARSONS & Co., Ltd., Heaton Works, Newcastle on Tyne.

Astronomical Objectives.

TYPES A, B AND C.

(1). Type A is fully corrected for chromatic and spherical aberrations and also fulfils the sine condition, thus ensuring the largest possible flat field. The inevitable secondary spectrum inherent to this type of objective is due to the images formed by the various colours of the spectrum not being in the same place along the axis. Images which are formed by monochromatic green light, for example, lie appreciably closer to the objective than images formed by monochromatic blue or red light.

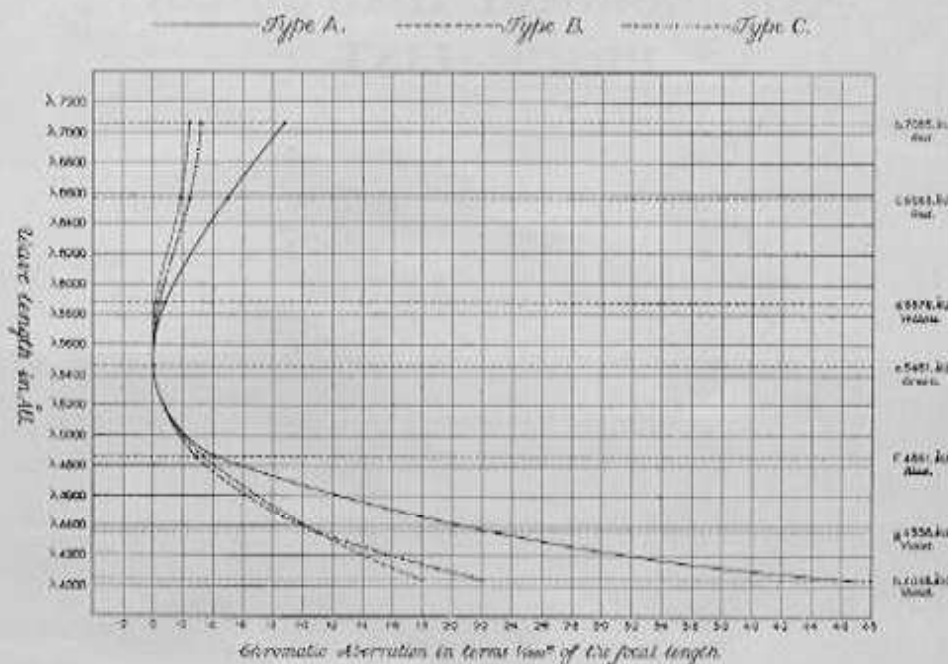


Fig. (2). Colour Curves for Objectives.

The amount of this deviation in terms of 1/1000th part of the focal length, gives a measure of the colour correction of the objective. The chart, Fig. (2), has been prepared to show the amount of this deviation in respect of the focus for the green mercury line e. The fully drawn out curve represents the typical colour correction for the Type A objective. The abscissae are deviations in 1/1000th part of the focus, and are figured accordingly. The amount of spherical aberration in this type does not exceed 1/1000th part of the focal length, and is negligible in comparison with the magnitude of the colour aberration. The aperture ratio of the Type A objective is $f/15$, i.e., the focus equals 15 times the diameter of the objective. Objectives with different aperture ratios can be supplied, and also objectives specially corrected for photography.

(2). Type B follows very closely the specification of Type A objective, in respect of its correction for spherical aberration and sine condition, also aperture ratio; but differs in the most vital item, namely, the colour correction. By the selection of special glasses, and the addition of a third lens it has been possible to reduce the colour aberration to less than one quarter of the amount present in the type A objective. The plain dotted line in the chart shows the colour correction for the Type B objective and its magnitude. These objectives are superior in defining power to the Type A, as the images are almost colourless and much brighter owing to the larger number of rays of different colour coming to the same focus. Objectives of this type can be used without alteration for visual or photographic purposes on the same mounting. They can be made of different aperture ratios.

Astronomical Objectives.—(Continued).

(3). Type C. This type is semi-apochromatic, suitable for visual purposes.

Type C objective is a two lens combination with a relative aperture of not more than F.20, but with colour correction similar to that of the B type objective, as will be seen from the curves of chromatic aberration shown in Fig. (2). The dot-dashed line refers to type C objectives. Where the relative aperture need not exceed F.20, *i.e.*, where the aperture of the objective is not required to be more than 1/20th of the focus, the Type C objective can be advantageously used, as the price is considerably lower than "B" type.

PRICES OF OBJECTIVES. TYPES A, B AND C.

Aperture.		TYPE A. Two-lens Fraunhofer type Objectives. Aperture ratio 1.15.	Aperture.		TYPE B. Three-lens Apochromatic Objectives with reduced Second- ary Spectrum. Aperture ratio 1.15.	Aperture.		TYPE C. Two-lens Apochromatic Objectives. Aperture ratio 1.20.
Ins.	Cms.		Ins.	Cms.		Ins.	Cms.	
		£ s. d.			£ s. d.			£ s. d.
3	7.5	12 0 0	3	7.5	18 0 0	3	7.5	15 0 0
3½	9.0	18 0 0	3½	9.0	28 0 0	3½	9.0	23 0 0
4	10.0	23 10 0	4	10.0	38 0 0	4	10.0	30 10 0
4½	11.5	30 0 0	4½	11.5	50 0 0	4½	11.5	40 0 0
5	12.5	43 0 0	5	12.5	75 0 0	5	12.5	60 0 0
5½	14.0	55 0 0	5½	14.0	100 0 0	5½	14.0	75 0 0
6	15.0	75 0 0	6	15.0	140 0 0	6	15.0	105 0 0
6½	16.5	93 0 0	6½	16.5	180 0 0	6½	16.5	125 0 0
7	18.0	112 10 0	7	18.0	225 0 0	7	18.0	154 0 0
8	20.0	160 0 0	8	20.0	320 0 0	8	20.0	220 0 0
9	23.0	230 0 0				9	23.0	300 0 0
10	25.5	290 0 0				10	25.5	400 0 0
11	28.0	380 0 0						
12	30.5	490 0 0						
13	33.0	600 0 0						
14	36.0	750 0 0						
15	38.0	900 0 0						
16	40.0	1080 0 0						
18	46.0	1450 0 0						
20	51.0	2000 0 0						
22	56.0	2500 0 0						
24	61.0	3200 0 0						

PRICES INCLUDE CELLS.

THESE PRICES ARE SUBJECT TO ALTERATION WITHOUT NOTICE.

Object Glasses, Astrographic.

These objectives are specially designed for celestial photography where critical definition is required over a large field. They can be made of different relative apertures, from F.4.5 to F/7, according to requirements.

PRICES ON APPLICATION.

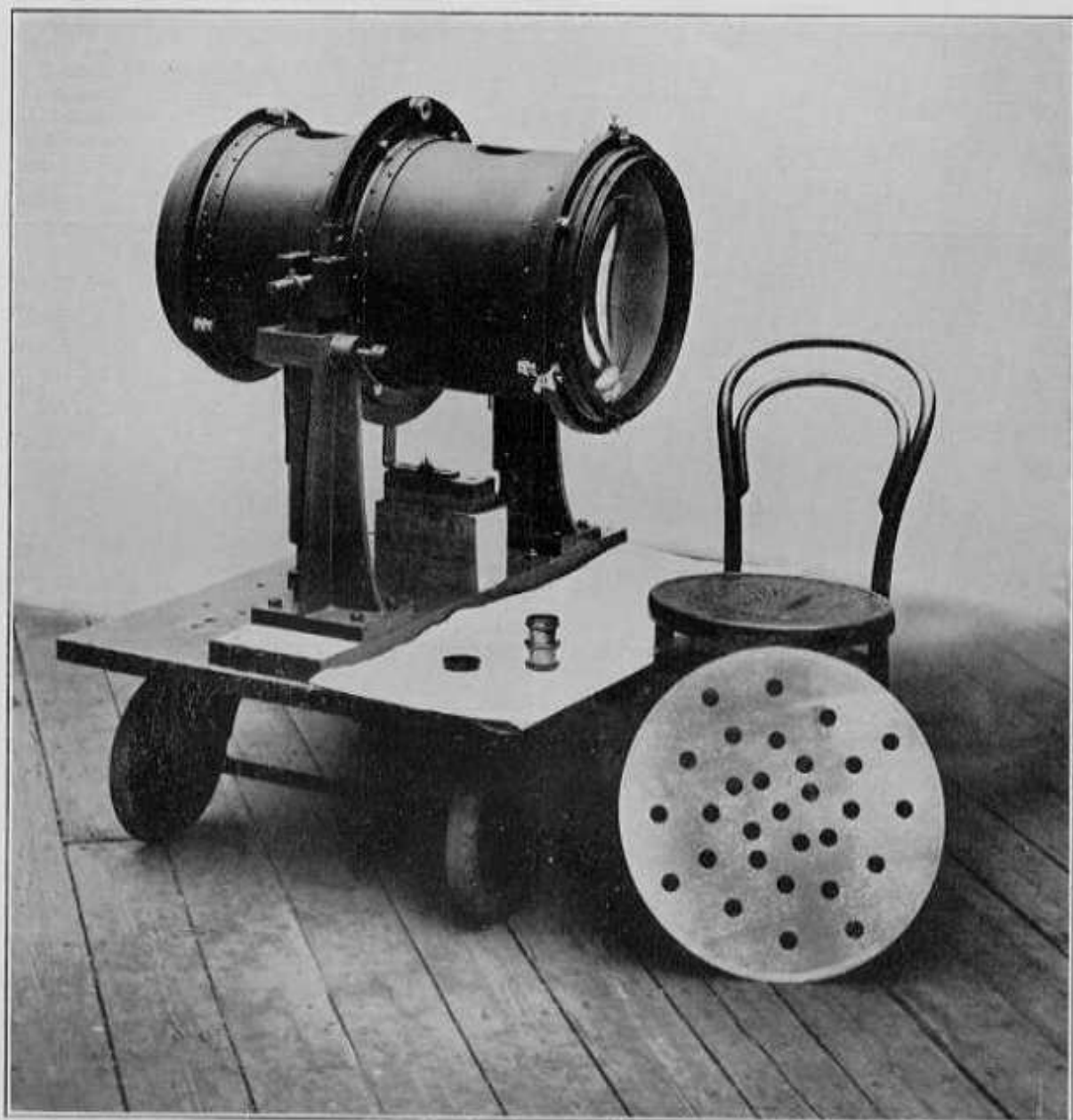


Fig. (2). One of two 16 inch (40 cm) aperture triple lens astrographic objectives for Leiden University twin equatorial.

Kellner Eyepieces.

These Eyepieces consist of an achromatic combination towards the eye and a single field lens.

They are well corrected for spherical aberration and achromatism. The apparent field of view is about 40° and is free from distortion. It is usual to fit a field stop in the plane of the image situated in front of the field lens.

PRICES OF EYEPieces.

Equivalent focus.						Price in plain mounts.		
ins.	m.m.					£	s.	d.
0.2	5	...	...	...	...	1	15	0
0.25	6.25	...	...	...	...	1	15	0
0.3	7.5	...	...	...	...	1	15	0
0.4	10	...	...	...	...	1	15	0
0.5	12.5	...	...	...	...	1	15	0
0.6	15	...	...	...	...	1	15	0
0.75	20	...	...	...	...	1	15	0
1.0	25	2	15	0
1.2	30	2	15	0
1.5	40	4	10	0

(Body diameter 30.8 m.m. = 1.212")

DARK GLASSES EXTRA 10/- EACH.

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Plane and other Mirrors.

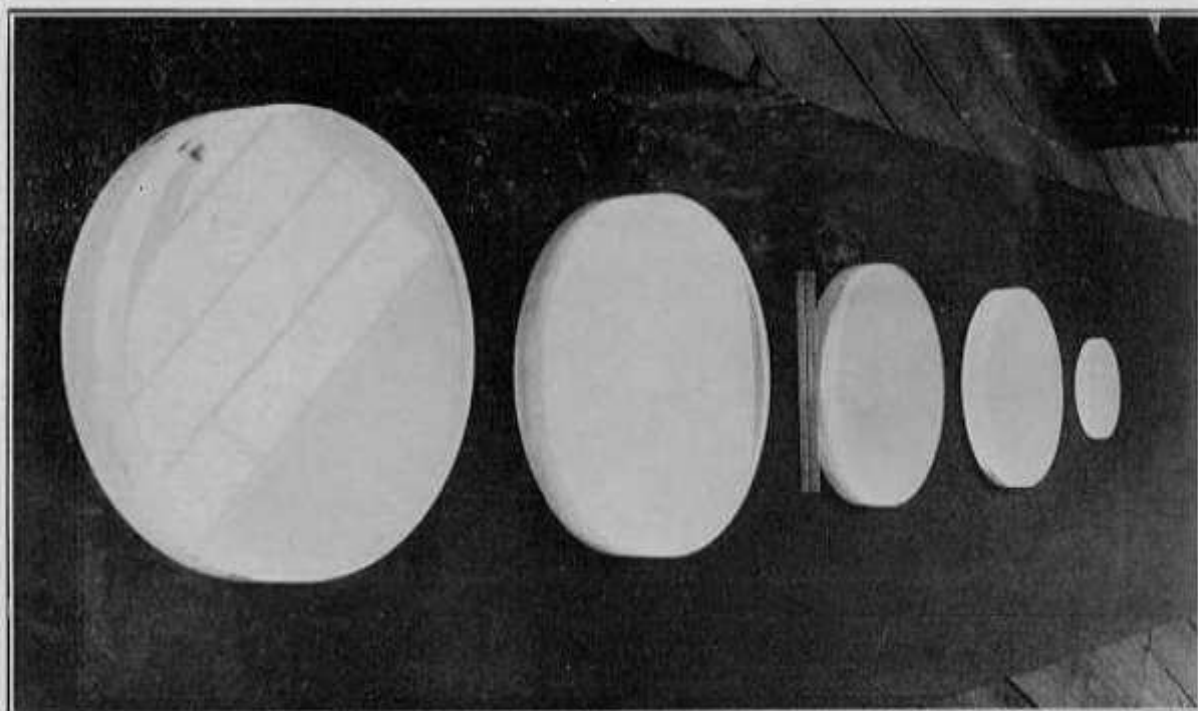


Fig. (1). Group of five fused quartz mirrors ranging in size from 16 inches (40 cm) to 7 inches (18 cm).

Plane and other Mirrors.—(Continued).

(Mirrors for special purposes quoted for on application).

These mirrors are silvered on their optically worked front surface and are usually made of glass, but if preferred, can be supplied of fused quartz up to a diameter of 24 inches. Owing to the very small co-efficient of expansion of this material it is particularly suitable for Solar work.

(1). The table below gives the prices of plane mirrors manufactured in either glass or fused quartz. The diameters given are the effective apertures, the actual discs being from about $\frac{1}{2}$ inch to $1\frac{1}{2}$ inches larger, according to size, to allow for mounting.

PRICES OF PLANE MIRRORS.

Aperture.		Silver-on-glass.	Aperture.		Silver-on-fused quartz.*
Ins.	Cms.		Ins.	Cms.	
4	10	£ 7 0 0	4	10	£ 8 0 0
4½	11.5	8 10 0	4½	11.5	10 0 0
5	12.5	11 0 0	5	12.5	12 10 0
6	15.0	15 0 0	6	15.0	18 15 0
7	18.0	20 0 0	7	18.0	26 0 0
8	20.0	26 0 0	8	20.0	35 0 0
9	23.0	34 0 0	9	23.0	46 0 0
10	25.5	43 0 0	10	25.5	57 0 0
11	28.0	52 0 0	11	28.0	71 0 0
12	30.5	62 0 0	12	30.5	86 0 0
13	33.0	72 0 0	13	33.0	101 0 0
14	36.0	84 0 0	14	36.0	120 0 0
15	38.0	95 0 0	15	38.0	140 0 0
16	40.0	107 0 0	16	40.0	160 0 0
17	43.0	122 0 0	17	43.0	185 0 0
18	46.0	140 0 0	18	46.0	212 0 0
19	48.0	158 0 0	19	48.0	240 0 0
20	51.0	175 0 0	20	51.0	270 0 0
21	53.0	192 0 0	21	53.0	300 0 0
22	56.0	210 0 0	22	56.0	335 0 0
23	58.0	230 0 0	23	58.0	365 0 0
24	61.0	250 0 0	24	61.0	400 0 0
25	63.5	270 0 0	*Fused quartz discs are at present available only in sizes up to 25 inches diameter.		
26	66.0	295 0 0			
27	68.5	320 0 0			
28	71.0	340 0 0			
29	73.5	367 0 0			
30	76.0	390 0 0			

Cells are not included in these prices.

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Parabolic Mirrors.

(2). The table below gives the prices of Parabolic Mirrors manufactured in either glass or fused quartz, and for focal lengths from 5 to 8 times the aperture.

Parabolic Mirrors are finished to a standard given by the "Hartmann" test.

PRICES OF PARABOLIC MIRRORS.

Aperture		Silver-on-glass.	Aperture		Silver-on-fused quartz.*
Ins.	Cms.		Ins.	Cms.	
		£ s. d.			£ s. d.
4	10	16 0 0	4	10	20 0 0
4½	11.5	17 10 0	4½	11.5	23 0 0
5	12.5	21 0 0	5	12.5	27 10 0
6	15.0	26 0 0	6	15.0	35 0 0
7	18.0	31 10 0	7	18.0	42 0 0
8	20.0	37 0 0	8	20.0	48 10 0
9	23.0	43 0 0	9	23.0	55 0 0
10	25.5	54 10 0	10	25.5	76 0 0
11	28.0	67 0 0	11	28.0	86 0 0
12	30.5	80 0 0	12	30.5	105 0 0
13	33.0	95 0 0	13	33.0	125 0 0
14	36.0	112 0 0	14	36.0	150 0 0
15	38.0	130 10 0	15	38.0	175 0 0
16	40.0	150 0 0	16	40.0	200 0 0
17	43.0	172 0 0	17	43.0	225 0 0
18	46.0	200 0 0	18	46.0	255 0 0
19	48.0	222 0 0	19	48.0	282 0 0
20	51.0	245 0 0	20	51.0	310 0 0
21	53.0	270 0 0	21	53.0	345 0 0
22	56.0	300 0 0	22	56.0	390 0 0
24	61.0	370 0 0	24	61.0	475 0 0
26	66.0	440 0 0			
28	71.0	530 0 0			
30	76.0	600 0 0			

*Fused quartz discs are at present available only in sizes up to 25 inches diameter.

Cells are not included in these prices.

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