X.135. Stereoscopic binocular microscope, with five built in objectives and six paired eyepieces. Objective powers 0.6, 1, 2, 4 and 7, eyepieces 6, 8 and 12.5 plus 8x micrometer eyepiece Supplied with built in lighting unit and special stage for reflected or transmitted illumination. £195.00.

X.136. As above but with microscope mounted on separate 15½" pillar base with adjustable arm 13½" long with rack and pinion movement. £219.00.

X.137. 50x pocket measuring microscope with swing out graticule. £16.00 with small case.

X.138. PZO spotting telescope in metal case. Very fine portable instrument. £47.75.

X.139. Binocular cases, 8 × 30 size, real black figured hide, with strap. £3.50.

X.140. 30 to 90 × 60 zoom terrestrial telescope, on tubular tripod metal. Good quality new line from Japan. £31.35.

X.141. Accurate hair-hygrometer (air humidity guage), hang up type, attractive appearance, brushed aluminium dial. £5.88.

X.142. 15 × clip-on pocket telescope, blue anodised finish, £1.95.

RUSSIAN PORTABLE RADIOS

X.143. Vega Jade. Medium and long wave, with rechargeable battery and mains charging unit. £7.18.

X.144. Vega Ruby. Medium and long wave, with built in 15 jewel clock and autotimer. £7.46.

X.145. Vega Sapphire. Medium and long plus two short wavebands, tone control and fine tuning. £8.15.

X.146. Vega Zircon. Medium, long plus four short wavebands, tone control. £9.49.

X.147. Nickel Supra 15 to 60 × 60 two draw telescope, with fine focus control. Superlative quality instrument. £89.65.

SHARP CAR RADIOS

X.148. All IC, 5 push button. £25.15.

X.149. AM/FM 5 push button, all IC. £31.45.

X.150. FM STEREO 5 push button all IC. £44.95.

JAP CAR RADIOS

X.151. MW/LW manual switchover. £8.65.

X.152. 5 push button. £12.65.

X.153. Car cassette stereo. £23.19.

X.154. Car radio with 8 track stereo cartridge player. £31.95.

X.155. Cassette recorder with automatic level control. £15.95.

31.5.74

H. W. ENGLISH

Specialists in Optics

Optical Catalogue

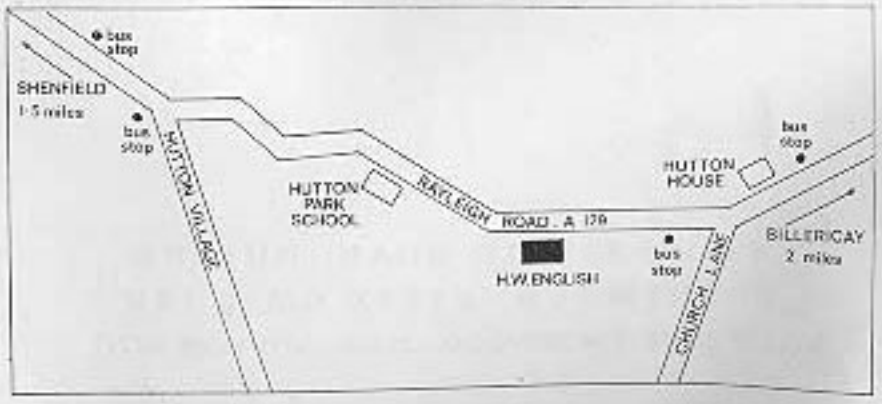
This catalogue takes effect
1st April, 1974 and cancels all previous catalogues
and literature

469 RAYLEIGH ROAD, HUTTON
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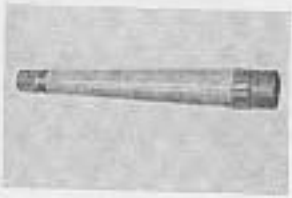
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6. Examination on receipt must be confined to conditions of normal use; the dismantling of any equipment, the removal of any part, and cleaning in any way whatever is undertaken at the purchaser's risk and nullifies any guarantee. This applies to both new and used equipment and also to the intervention of any third party.
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NT.1 25 power. 30mm diameter objective. 1 degree field of view. Bloomed. Erect image. Objective focussing. Length 12". Overall diameter 1½". Weight 10 oz. With tripod bush. £6.60.





NT.2 Zoom 9-30 power. 30mm diameter objective. Maximum field of view 5½ degrees. Bloomed. Erect image. Helical focussing. Length 12". Overall diameter 1¾". Weight 12 oz. With tripod bush. £13.53.

NT.2A Similar to NT.2 but 16 to 50 × 50 £16.83.

NT.3 Panoratic type. Powers 15, 30 and 45. 40mm diameter objective. Maximum field of view 1½ degrees. Bloomed. Erect image. Rack and pinion focussing. Length 24". Overall diameter 2¼". Weight 2 lb. 4 oz. On metal table tripod. £12.37.





NT.4. Power 8 to 25 Zoom. 30 mm diameter objective. Field of view (maximum) 4 degrees. Length 12½". Overall diameter 2". Weight 1 lb. 3 oz. Erect image. Objective focussing. Bloomed. £14.85.



NT.5 Table Tripod. Metal. Height 9". Weight 10 oz. Fits NT.1, 2 and 4. £1.48.



NT.6 Prismatic spotting telescope. 30 power. 60mm diameter objective. 1½ degree field of view. Bloomed. Erect image. Eyepiece focussing. Length 12". Overall diameter 2½". Weight 22 oz. With metal table tripod. £18.48.



NT.8. Powers 30, 48 and 100. 50 mm diameter objective. Maximum field of view 1 degree. Bloomed. Erect image. Rack and pinion focussing. Length 25". Overall diameter 2½". Weight 3 lb. 7 oz. Supplied with 3 eyepieces, prism diagonal and metal table tripod. £24.20. D.N.A.



NT.9. Zoom 9-30 power. 40mm diameter objective. Maximum field of view 3 degrees. Bloomed. Erect image. Insta-focus. Length 14½". Overall diameter 2". Weight 2 lb. 10 oz. On de luxe metal tripod with pan and tilt head. £33.00.



NT.11. Prismatic spotting telescope. 22 power. 60mm diameter objective. 2 degree field of view. Bloomed throughout. Erect image. Eyepiece focussing. Length 15½". Overall diameter 2½". Weight 1 lb. 10 oz. Unusually sharp definition. Complete with shooting-type adjustable metal low level tripod. £44.55.



NT.13. Zoom 30-120 power. 80mm diameter objective. Maximum field of view 1½ degrees. Bloomed. Erect image. Helical eyepiece focussing. Length 27½". Overall diameter 3½". Weight 3 lb. 12 oz. On tripod with pan and tilt head. £52.47.



NT.14. Astro refractor. Powers 35, 70, 117, 234, 60mm diameter objective of 700mm focal length. Maximum field of view 1 degree. Bloomed. Erect or inverted image. Rack and pinion focussing. Length 28". Weight 16 lb. 4 oz. Supplied with 2 eyepieces, diagonal prism, 2× Barlow, finder telescope, adjustable mount on full length wood and metal tripod complete in wooden carrying case. £52.80.



NT.15. Astro refractor. Powers 62, 124, 208, 312, 416 and 625. 77mm diameter objective of 1260mm focal length. Bloomed. Erect or inverted image. Rack and pinion focussing. Supplied with 3 eyepieces, 2× Barlow, erecting prism, diagonal prism, sun diagonal, projection screen, finder telescope, filters, on equatorial mount with setting circles and full length wood and metal tripod, complete in fitted wooden case. £168.30 carriage and packing £3.50 extra.

T.3. Ex-government sighting telescope No. 38 Mark II. Power 7-21 Zoom. 50mm diameter objective. Maximum field of view 4 degrees. Erect image. Eyepiece focussing. Length 30". Overall diameter 2½". Weight 10 lb. In fitted wooden case. £17.60.





T.5. Ex-government sighting telescope No. 9 Mark 1. Power 5-15 Zoom. 50mm diameter objective. Maximum field of view 7 degrees. Erect image. Eyepiece focussing. Length 25". Overall diameter 3". Weight 13 lb. Eyepiece angled at 45 degrees to line of sight. In fitted wooden case. £16.50.



T.24. Angle telescope, eyepiece at 45 degrees to line of sight. 3 power. 12mm diameter objective. Field of view 14 degrees. Erect image. Eyepiece focussing. Length 5¼". Weight 2 lb. 4 oz. Small cross graticule with provision for illumination. In small wooden case. £8.50.

T.70. Angle telescope, eyepiece at 90 degrees to line of sight. Power 7 times. 36mm diameter objective. 8 degree field of view. Bloomed. Focussing eyepiece. Length 12½". Weight 19 lb. Erect image. Fitted with rotating red and yellow filters plus a pair of variable density polarizing filters providing infinite variation from light neutral to deep violet. The whole filter assembly is in waterproof turret on heavy gunmetal casing. A very high grade instrument of the finest optical quality. Would make a superb moonscope fitted with longer focus objective plus Barlow lens for higher power, the variable density filter prooving invaluable for this purpose. £16.50. Ex-government.

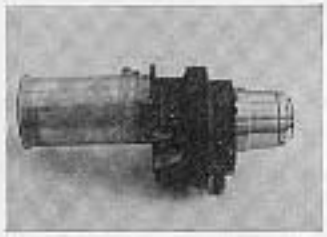




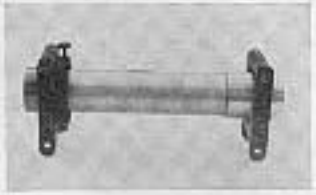
T.28. Prismatic sighting telescope. Ex-government. 1½ power. 9mm diameter objective. 9 degree field of view. Erect image. Fixed focus. Length 5½". Weight 1 lb. 4 oz. Circle and dot or small crossline graticule. £3.50.



T.29. Prismatic sighting telescope. Ex-government. 1 power. 7mm diameter objective. 10 degree field of view. Erect image. Fixed focus. Length 4¼". Weight 1 lb. 3 oz. In adjustable mount which can be aligned in a matter of seconds. Highly recommended. £4.50. Circle and dot graticule.



T.35. Prismatic finder telescope. Ex-government. 3 Power. 22mm diameter objective. 18 degree field of view. Bloomed. Erect image. Fixed focus. Five glass erfle eyepiece with cross line graticule. Length 8¾". Overall diameter 4". Weight 3¾ lb. £16.50 each.



NT.16. Sighting telescope of our own construction, using both new and ex-government components. 4 power. 30 mm diameter objective, fully corrected and bloomed. 10 degree field of view. Inverted image. Wide angle Kellner eyepiece. Fixed focus. Service type graticule with circle and dot and graduated scale. Length 7½". Weight 14 oz. £8.20. Pair of T.77 mounts to suit £3.30 extra.



T.74. Sighting telescope. Ex-government. 3½ power 30mm diameter objective. 7½ degree field of view. Inverted image. Eyepiece focussing. Cross line graticule. Length 10½". Weight 2 lb. Overall diameter 2". Available in green painted ex-government. finish at £6.50



T.75. Sighting telescope by Ottway, London. Ex-government. 1 power. 32mm diameter objective. 35 degree field of view. Erect image. Fixed focus. Length 15". Weight 2 lb. 10 oz. All brass construction. Cross line graticule with three rings, giving 25½ degrees divided into steps of 4½ degrees, the whole divided into twelve equal segments. An instrument of great accuracy for any sighting or collimating purpose. In fitted wooden case. £13.20 each.



T.76. Sighting telescope. Ex-government. 1 power. 20mm diameter objective. 20 degree field of view. Erect image. Fixed focus. Length 15½. Weight 1 lb. 2 oz. Cross line graticule. £4.95.

Any of the above sighting telescopes from T.28 onwards make first class finder'scope for any astro or terrestrial purpose.



T.77. Finder telescope mounts. Specially designed adjustable mounts with four point suspension which will fit any size or shape of tube. Simple 2 hole fixing (2 BA). £3.30 per pair. Fit telescopes up to 42mm outside diameter.

NT.17. Astro Refractor. Powers 41, 62, 82, 150, 225 and 300. 60mm diameter objective of 900mm focal length. Bloomed. Erect or inverted image. Rack and pinion focussing. Supplied with two eyepieces, 2× barlow lens, 1½× erector lens, sun projection screen, moon filter and finder telescope. On fully equatorial mount with setting circles and full length all metal tripod. This telescope is the latest addition to our range and is especially recommended for the high quality of the object lens as well as for the wealth of detail fittings only usually found on telescopes of much higher price, made possible by the use of very high grade thermoplastic material of great strength and rigidity for sections of the mounting etc. £57.75.



NT.17.



NT.18.

NT.18. Prismatic spotting telescope. Powers 20 to 45 zoom. 60mm diameter object lens of 420mm effective focal length. Maximum field of view 2 degrees. Minimum focussing distance 24 feet. Bloomed throughout. Erect image. Length 10½". Weight 32 ounces. This telescope is one of the sharpest that we have ever tested, possessing a triplet objective, eight element zoom eyepiece and built in achromatic barlow lens. It is at present available only in very limited quantities. On shooting-type adjustable all metal low-level tripod. £74.27. D.N.A.

NT.19. Wide-Field Prismatic Monocular with long eye-relief. Adapted by us from the best of new and ex-government equipment, this instrument combines a wide field of view of unusual brightness with ease of use obtained by the provision of a long eye-relief which means that even the spectacle wearer may obtain the full field of view. DEFINITION AND RESOLUTION GUARANTEED TO BE EQUAL TO ANY COMPARABLE INSTRUMENT REGARDLESS OF PRICE. Power 6¼. 30mm diameter objective. Field of view 8 degrees. Bloomed on internal optical surfaces. Erect image. Eyepiece focussing. Length 4½". Weight 11¼ ounces. £13.20. DNA.



NT.19a. The above instrument can be supplied with the eyepiece adapted to screw directly into the filter mounts of SLR camera lenses, allowing photography by the afocal method. With a 58 mm. camera lense an effective focal length of 375 mm. is obtained, aperture f12.5. Available to fit either 49 mm. or 52 mm. filter mounts (state which size required). £2.75 extra.

NT.20. Close focussing monocular. Identical in specification to NT. 19, this instrument can be supplied to focus at any distance from 1 foot to infinity. Merely order stating the focussing distance which you require and we will supply the monocular adjusted so as to focus at this distance. Invaluable in any form of micro-engineering, as well as product inspection and control in all branches of industry. Supplied with lugs for fitting. £16.50. DNA.

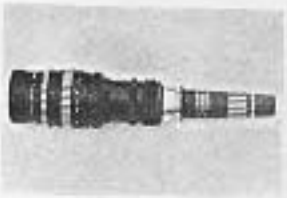


NT.21. 1000 to 4000 mm. zoom telephoto lens AND 15 to 60× telescope combined. Beautifully constructed 14 element optical system gives the ultimate in telephoto power coupled with a really first class telescope. Photographic apertures f16 to f64. 60mm. diameter objective. Maximum field of view 33 degrees. Bloomed. Visual image erect. Central zoom and focussing controls, calibrated visual power and distance in feet and meters, also special calibration for infra red photography. Length 17½". Overall diameter 3". Weight 3¼ lbs. Supplied with special low-level tripod, T-mount adaptor, a de-luxe attache style case. £109.23. DNA.



NT.23. Dual purpose telephoto/telescope. 550mm f8.5 mirror lens, with 42mm screw thread to fit Zenith E/B, Praktica, etc., complete, with angled erecting prism and 35× wide angle erfle eyepiece, enabling use as a telescope of fine quality and ultra compact proportions as well as normal photographic purposes. Field of view of the telescope 2 degrees. Length 8". Diameter 4". Weight 3 lbs. Complete with fitted case for lens, four filters, and adaptor for use with 39mm screw fitting (Leica thread) cameras. £108.82 D.N.A.

The eyepiece and prism unit from the above NT.22 and NT.23 is available separately, for those who already own suitable photographic lenses with 42mm screw threads, price £22.00. This will give very good telescopic results with erect image on any good quality camera lens. The focal length of the eyepiece unit is 15.5mm.



Also, our eyepiece No. E.37 gives excellent results in the same application, providing straight through vision and zoom magnification. It must be used with a suitable adaptor and preferably extension tubes. Although the extension tubes are not always necessary we recommend their use since they prevent the possibility of accidental damage to the rear element of the photographic lens through contact with the front tube of the eyepiece unit. In our illustration the eyepiece is shown fitted to a 135mm lens.

AD.7. Adaptor from RAS to Pentax. Allows zoom eyepiece E.37 to be screwed into standard Pentax fitting photographic lenses, producing a useful monocular via extension tubes. Simply screw normal extension tube set onto lens, screw adaptor into extension tubes, then screw eyepiece into adaptor. Focus by lens mechanism or eyepiece drawtube. Power obtained depends on focal length of lens used, for instance 135mm lens gives powers from 5.6 to 16.8. Final definition depends on the quality of the photographic lens used, with a good lens it is outstandingly good. Adaptor £5.50 each. Extension tubes (Russian) £2.08 set of three. Eyepiece £11.00 each. Complete set £19.08. Any part available seperately.

NT.24. Maksutov type reflecting astro telescope of high quality and very compact dimensions. Powers 50 and 72. 70mm diameter objective of 765mm effective focal length. Maximum field of view one degree. Inverted image. Bloomed. Eyepiece focussing. Length 8½". Weight of telescope 10 lbs. Supplied complete with strongly made altazimuth mount and adaptor bush for fitting to standard photographic tripod, plus sun projection screen and fittings. Several experts we have spoken to consider that this telescope compares very favourably with widely advertised and expensive American instruments of similar type. £99.95.





E7 E6



E3 E4



E12 E13 E14 E15



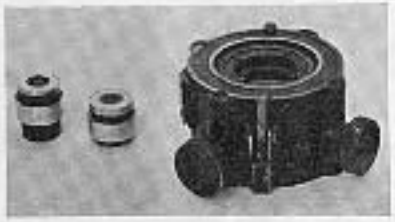
E20



E21 E22



E24 E25



E28 E29 E30



E34 E40



E39 E38



E41 E42 E43

EYEPIECE TYPES

The eyepieces generally available fall into six broad categories;—Huyghens, Ramsden, Kelner, Symmetrical, Orthoscopic and Erfle. Although differing in field of view and distortion factors, ANY of these types will provide satisfactory performance when correctly used, but if the object glass is defective in some way, or misaligned, or if an inferior Barlow lens or erecting system is used, NONE of them will. If your telescope, when correctly focussed, does not show clear definition at the CENTRE of the field of view, no change of eyepiece will improve matters. Furthermore, serious colour defects are unlikely to be due to the eyepiece alone unless this has been incorrectly assembled. The only occasion on which colour defects can be definitely blamed on an eyepiece is when a reflector type telescope is being used. These are normally free from colour distortion, but aberrations do often show up when large aperture mirrors are used with the cheaper types of eyepiece. Otherwise even the Ramsden eyepiece at high power shows no more than slight fringes of colour, which do not seriously impair resolution. Many people spend large amounts of money on unsuccessful attempts to improve the performance of objectives which they are unwilling to admit to be inferior. Also, much money is spent on short focus eyepieces which would be better spent on long focus types. The view through a telescope fitted with a first class low or medium power wide field ocular is infinitely more satisfying than that with any high power type.

(1) Huyghens. Sometimes marked 'H' or 'HM'. This eyepiece type has two simple lens elements. It is the most frequently used eyepiece in microscopes, due to the fact that it can be fully corrected for lateral chromatic aberration (colour fringing). It has a limited undistorted field of view, this being relatively unimportant for microscope use. It is a useful economy eyepiece for telescopes, but suffers from insufficient eye relief at focal lengths less than 8mm. (The eye relief is the distance between the rear lens and the eye of the observer). Most of the low power eyepieces sold with Japanese astro and terrestrial telescopes are of the Huyghens type which do not fully exploit the field of view available. Replacement with true wide field eyepieces often produces a spectacular improvement.

(2) Ramsden. Sometimes marked 'R' or 'SR'. Another two element eyepiece, but differently constructed so as to give a wider field of view, making it better suited to telescope use.

(3) Kelner. Sometimes marked 'K'. This is a three element eyepiece, having a baskally similar form to the Ramsden, but employing an achromatic cyclens to give improved colour correction. The Kelner is probably the best kind of general purpose eyepiece available for a moderate outlay.

(4) Symmetrical. Ideally, this eyepiece is made up of two identical achromat lenses, but in practice most ex-government types have lenses which differ slightly. This type of eyepiece, sometimes called 'Plossl' type, gives high quality results. Since both lenses are achromatic, colour correction is very good, also field of view is wide and very flat. Of the types so far mentioned this eyepiece is the only one to offer a really long eye relief, (about three quarters of it's focal length) making for very comfortable observation.

(5) Orthoscopic. Sometimes marked 'Or' or 'O'. This type is of four element construction, a cemented triplet plus a single element eye lens. It can be computed so as to give almost perfect correction of all aberrations, plus wide angle of view and long eye relief. It is an indispensible type for high power work, it's only drawback being a relatively high price.

(6) Erfle. This has five or six elements, the rear lens always having a concave outer surface. For width and flatness of field this eyepiece cannot be surpassed; it offers all the merits of the orthoscopic type except that the eye relief is somewhat less. It's main use is for moderate power work where the field of view and bright image give a really breathtaking effect.

SPECIALIST EX-GOVERNMENT EYEPIECES

Suitable for use with all good quality reflecting and refracting telescopes, as well as numerous special applications.

R.A.S. thread, 1¼" push in, or 24.5mm push in mounts can be fitted to the eyepieces marked* at £2.20 each extra. In some cases these fittings have the effect of reducing the field of view.

E.3*. 17½mm focal length, 5 lens orthoscopic. Field of view 55 degrees. Weight 8 oz. In all brass focussing mount.

E.4*. 17½mm focal length, 6 lens Erfle. Field of view 55 degrees. Weight 12 oz. In all brass focussing mount with non-rotating optics.

Eyepieces E.3 and E.4 are available only in secondhand condition with some surface marks and scratches at £4.40 each, and may occasionally have small cementing defects. However, they are in very satisfactory useable condition, and readers are reminded that this is probably the last time that eyepieces of this quality will be available at anything approaching this price. We heartily recommend them.

E.6*. 18½ mm focal length, 6 lens Erfle. Field of view 76 degrees. Weight 12 oz. In all brass focussing mount with non-rotating optics. New condition, £11.00.
E.6a. as E.6, but with cross-line graticule. £13.20.

E.7*. 18½mm focal length, 4 lens Kelner (Plossl). Field of view 53 degrees. Weight 3 oz. In brass mount. New condition £4.40. Secondhand condition (as E.3) £3.30.

E.7a*. This eyepiece can be supplied with the rear mount threaded to screw directly into the filter mounts of SLR camera lenses, allowing photography by the afocal method. Available to fit either 49mm or 52mm filter mounts (state which size required). £5.50.

E.12*. 31½mm focal length Kelner. Field of view 46 degrees. Weight 13 oz. In all brass focussing mount with non-rotating optics. Secondhand condition only (as E.3) £3.30.

E.13*. 27½mm focal length Kelner. Field of view 51 degrees. Weight 12 oz. In all brass focussing mount. Secondhand condition only (as E.3) £2.75.

E.14*. 31mm focal length 4 lens Kelner (Plossl). Field of view 53 degrees. Weight 8 oz. In all brass mount. New condition £4.40. Secondhand condition (as E.3) £3.30.
E.14a. as E.14, but with graticule having centre cross and graduations. New condition £5.50. Secondhand condition £4.40.

E.15*. 31½mm focal length Kelner. Field of view 51 degrees. Weight 8 oz. In all brass mount. New condition £3.85. Secondhand condition (as E.3) £2.75.
E.15a. as E.15, but with graticule having centre circle and dot and graduations. New condition £5.25. Secondhand condition £3.30.

E.20. 44mm focal length 6 lens Erfle. Field of view 60 degrees. Weight 2 lb. 4 oz. Of American manufacture, this eyepiece is used on the Mount Palomar telescope. In focussing mount. To obtain maximum field of view requires the use of a drawtube not less than 2" in diameter. New condition £16.50. Secondhand condition (as E.3) £9.90.

E.21. 44mm focal length single lens Kepler. Field of view 44 degrees. Weight 3 oz. In focussing mount. Good condition 90p.

E.22. 39½mm focal length 4 lens symmetrical. Field of view 53 degrees. Weight 13 oz. In brass mount. New condition £4.40. Secondhand condition (as E.3) £3.30. R.A.S. thread can be fitted at £2.20 extra. Makes excellent richest field eyepiece.
E.22a. as E.22, but turned down so as to fit into 2" push fitting tube. New condition £5.50. Secondhand condition £3.30.

E.24. 45mm focal length, special 3 lens Huyghens with achromatic eyelens. Field of view 35 degrees. Weight 1 lb. 3 oz. In focussing mount. Secondhand condition (as E.3) £3.30.

E.25. 44mm focal length 6 lens Erfle. Field of view 49 degrees. Weight 2 lb. 4 oz. This is an exceptionally large eyepiece, having 2½" diameter eyelens but field lens only 1¼". Produces an exceptionally flat undistorted field of view. Can be supplied in pairs marked 'objective' and 'eyepiece' to give field of view of 40 degrees at 1×. Length of the pair 7". Aperture f0.8. Per pair £16.50. New condition, or £8.25 each. Secondhand condition (as E.3) £4.40 each.

E.28. 50× eyepiece for Scout telescope Mark II. 25½mm focal length Huyghens. Field of view 26 degrees. Weight 2 oz. New condition. £3.85.

E.29. 75× eyepiece for Scout telescope Mark II. 17mm focal length Huyghens. Field of view 30 degrees. Weight 2 oz. New condition £3.85.

E.30. Ross micrometer. Two-way movement glass graticules. All brass body. Weight 5 lbs. Can be supplied fitted with E.7 or E.22 eyepieces as interchangeable units. Good condition £3.30 each. Eyepieces extra as listed.

E.34. 29mm focal length 4 lens symetrical. Field of view 59 degrees. Weight 15½ oz. New condition £6.60. An exceptionally high quality eyepiece.

E.34a. as E.34, but turned down so as to fit into 2" push fitting tube. £7.70.

E.38*. 20mm focal length Ramsden. Field of view 28 degrees. Weight ½ oz. Graticule marked in Rontgens. New condition 72p. A handy instrument eyepiece for experimental purposes. ? brass.

E.39*. Bell and Howell viewfinder lens, 25mm focal length in mount. Field of view 15 degrees. Weight ½ oz. New condition 28p. Another useful instrument eyepiece.
E.40. 31½mm focal length 5 lens erfle. Field of view 54 degrees. Bloomed. Weight 14 oz. Good condition £6.60 each.

E.41. 44mm focal length, 4 lens symmetrical. Field of view 54 degrees. Weight 13½ ounces. In all brass mount. New condition £4.00. Secondhand condition £3.30. This eyepice can be supplied with cross-line graticule GR.8 in 30 ounce all brass adjustable mount, giving about 3mm perpendicular lateral adjustment. £1.65 extra.

E.41a. as E.41 (eyepiece only) but turned down so as to fit into 2" push fitting tube. New condition £4.95. Secondhand condition £3.85.

E.42. 50mm focal length 5 lens erfle. Field of view 58 degrees. Weight 16 oz. In aluminium mount. £15.40 each. This is an exceptionally fine optic being in absolutely brand new condition and bloomed throughout; weight is unusually low for this type of ocular. To take advantage of the field of view the largest possible drawtube should be used, as with all erfle types.

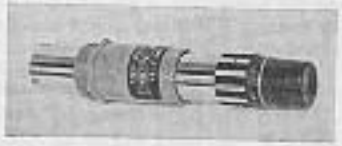
E.43. 30mm focal length, 5 lens orthoscopic. Field of view 64 fegrees. Weight 9½ ounces. In all brass mount. £9.90.

E.44. 20mm focal length, 4 lens symmetrical. Field of view 44 degrees. Weight 1½ ounces. New condition. Can be supplied in either R.A.S., 1¼" push fitting, 24.5mm (Swift), or 23.5mm (microscope) mount at £4.95. (not illustrated)

NEW EYEPIECES

The following high grade imported eyepieces have been tested by us and found to be of very high quality. We recommend them for all general telescopic and microscopic purposes.
E.37. 8-24mm focal length 6 lens zoom. Field of view 12 to 36 degrees. Weight 8½ oz. R.A.S. thread fitted as standard. Self erecting, and therefore eminently suitable for the construction of high quality terrestrial telescopes. Also suitable for astro use if the erect image does not worry you. £11.00. See also item AD.7. Page 9





24.5 mm Fitting Eyepieces

E.50. 4mm focal length orthoscopic. Field of view 53 degrees. Weight 1 oz. £7.42.
E.51. 5mm focal length Ramsden. Field of view 28 degrees. Weight 1 oz. £3.85.
E.52. 9mm focal length Huyghens. Field of view 50 degrees. Weight 1¼ oz. £3.85.
E.53. 12½mm focal length Huyghens. Field of view 45 degrees. Weight 1¼ oz. £3.85.
E.54. 18mm focal length orthoscopic. Field of view 37 degrees. Weight 2 oz. £7.92.
E.54a. 6mm focal length Kelner. Field of view 37 degrees. Weight 1 oz. £7.09.
E.55. 9mm focal length Kelner. Field of view 53 degrees. Weight 1¼ oz. £6.27.
E.56. 12mm focal length Kelner. Field of view 39 degrees. Weight 1¼ oz. £6.27.
E.57. 18mm focal length Kelner. Field of view 46 degrees. Weight 2 oz. £6.27.
E.58. 25mm focal length Kelner. Field of view 44 degrees. Weight 2 oz. £6.27.
E.59. 15.5mm focal length, 5 lens Erfle. Field of view 68 degrees. Weight 1¼ oz. £9.90.

Available soon, orthoscopic types 6 and 9mm (£7.42) and 9 and 12mm (£7.92) in addition to those above.

23.5mm push fit Microscope Eyepieces. Adaptors to R.A.S. thread or 1¼" push fit are available at £1.10 each.

E.60. 36mm focal length Huyghens (7×). Field of view 26 degrees. Weight 1 oz. £3.00.
E.61. 25½mm focal length Huyghens (10×). Field of view 26 degrees. Weight 1 oz. £3.00.
E.62. 17mm focal length Huyghens (15×). Field of view 30 degrees. Weight 1¼ oz. £3.00.

REFLECTOR TELESCOPE MIRRORS

In common with other leading suppliers of optical instrumentation we do not quote figures as to the accuracy of our telescope mirrors, since it is practically impossible for anyone, amateur or professional, to state definitely just how accurate any particular paraboloid may be. The only worthwhile criteria are practical ones as to resolution given in actual performance. All of our mirrors are guaranteed to give a performance equal to that of any other comparable mirror on the market. In order to keep our prices to a minimum commensurate with highest quality we restrict our range to those sizes for which we find that there is the greatest demand. We will however be pleased to quote for other sizes, focal lengths and specification to special order.

AM.1. 6" diameter telescope mirror, 48" focal length, of low expansion glass worked to an extremely accurate paraboloid figure. Supplied with matching flat, both mirrors aluminized and hard silica coated. £22.28.

AM.2. 8½" diameter telescope mirror, 64" focus, of low expansion glass worked to an extremely accurate paraboloid figure. Supplied with matching flat, both mirrors aluminized and hard silica coated. £47.00.

AM.4. 4" diameter telescope mirror, 31" focal length, accurately figured and supplied with matching diagonal mirror, both mirrors aluminized and hard silica coated. £9.49.

MIRROR MAKING KITS

These kits contain a low expansion glass blank with the correct spherical curve pre-ground on the better face, a glass tool plate, which also has the correct positive curve pre-ground on its surface, a diagonal mirror blank, sufficient pitch, netting, polishing medium etc. to complete the mirror, and full instructions. The pre-formed mirror blank and tool mean that only smoothing, polishing and final figuring need be carried out, and there is no need to check the radius of curvature of the mirror during work.

AMK.1. To make mirror 6½" dia., 48" focal length. £11.14.
AMK.2. To make mirror 8½" dia., 51" focal length. £21.45.

CONCAVE ALUMINIZED MIRRORS

AM.5. 47mm diameter, 15" focal length. Unedged. £2.20.
AM.5a. 47mm diameter, 20" focal length. Unedged. £2.20.
AM.6. 3¼" diameter, 2" focal length. £6.60.
AM.7. 3¼" diameter, 6" focal length. £6.60.

SUPER BARLOW LENSES

As a result of an unrelenting search of all possible ex-government sources we are now able once again to offer a very limited quantity of these world famous optics, in secondhand condition only, at £4.95 each. Our own tests and the glowing tributes of our customers have long ago convinced us that these are the finest barlow lenses ever to have been produced in quantity, and it is unlikely that lenses such as these will ever again be available to the general public. Unlike most commercial barlow lenses, Super Barlow lenses are not limited to one amplification factor, and power can be increased up to five times with no loss of resolution. Fully achromatic at all powers. Supplied complete with our special simplified instruction sheet 'The Barlow Lens and How to Use It'. Available in two types, both in brass mounts.

SB.1 25mm diameter, 3" negative focal length.
SB.2. 15mm diameter, 1" negative focal length.
Both secondhand condition, £4.95 each.

LENSES

The majority of these lenses are ex-government stock, in unmarked condition. Any which are in secondhand condition are marked and priced accordingly.

Lenses from new sources are marked † after list number.
Lenses marked * after diameter are uncemented.
Lenses marked ** after focus are in mount.

TELESCOPE OBJECT LENSES. ACHROMATS.

List No.	*Dia. mm.*	*Focus inches*	*Price*
73	32	6½	£1.50
82	45	19	£2.50
83	45	27	£3.00

This lens can only be supplied in secondhand condition. Any slight surface marks and scratches are guaranteed not to affect definition, which is first class.

88	48	18	£3.00
89	50	15	£4.50
93	56	25	£5.50
101	75	45	£51.00
102	100	47	£70.00
105	50	10½	£3.50
106	36	7½	£2.50 in brass mount **bloomed £1.65
109	30	5½	

Supplied in aluminium mount and tube 6½" long.

210	48	15	£5.50

This lens is supplied in a black anodised aluminium tube 7½" long with a screwed extension giving 1½" additional focussing movement.

1600	38	12 bloomed	£3.50
1601	38	10 bloomed	£3.50
1602	35	6** bloomed	£3.50

Supplied in black anodised alumium mount 2½" long with built-in light stop.

1603	50	7½** bloomed	£3.50

Supplied in aluminium mount 3½" diameter × 1½" long.

TELESCOPE ERECTOR LENSES

Specially corrected achromatic aplanats in screwed brass cells.

List No.	*Dia. mm.*	*Focus inches*	*Cell dia.*	*Threaded*	*Price*
230	13	1½	24mm	48 T.P.I.	£2.00
231	15 (triplet)	2	24mm	48 T.P.I.	£2.75
232	18	1¾	24mm	36 T.P.I.	£2.00
232a	16	2	23mm	48 T.P.I.	£2.00

232b 4½" brass tube 1½" diameter fitted with nosepiece to suit above tubes. Please state which type when ordering. 66p extra.

233 Two 4" focus achromatic doublets in seperate cells which screw together to make a complete erector 2" focus and 1" diameter. £2.85 complete.

233a 4" brass tube 1¼" diameter to fit Number 233 above. Fitted with light baffle and nosepiece to suit. 66p extra.

See also photographic lens number PL.27.

The above erector lenses are also suitable for macro photography in conjunction with a bellows unit or extension tubes. Shorter effective focus may be obtained by mounting two together, and greater depth of field by placing a stop cut from black card or thin metal in front of or between them.

ACHROMATS (positive focus)

List No.	*Dia. mm.*	*Focus inches*	*Price*
2	32	7**	£2.00
7	40	3	£2.90
8	39	4¼	£2.90
8a	39	4¼	£2.90
15	15	2** Triplet	£2.90
17	22	2	£2.00
18	82 *	8	£3.72
46	20	2 **	£2.00
47	25	4 **	£2.00
53	26	5¼ **	£2.00
76	25	5	£2.00
77	31	5¼ **	£2.00
112	18	1¼ **	£2.00
113	13	1¼ **	£2.00
1280	30	5 **	£2.00
1284	32	4	£2.00
1285	48	6 **	£2.75
1286	12 *	1½	£2.00
1287	32	6	£2.00
1296	28	4 **	£2.00
1297	22	2¼ **	£2.00
1298	21	2 **	£2.00
1299	17	3 **	£2.00
7a	42	3¼	£2.90
1500	14	1¼ ** bloomed	£2.00
1501	10	¾ ** bloomed	£2.00
1502	26	5¼ ** bloomed	£2.90

Most of the above lenses can usually be supplied secondhand with some small marks and scratches, but in worthwhile useable condition, at half price.

NON-ACHROMATS

Double Convex (positive focus).

List No.	*Dia. mm.*	*Focus inches*	*Price*
21	18	¾	66p
23	33	2	66p
24	39	2	66p
25	44	1¾	66p
27	82	3½	£1.25
28	92	9	£1.25
55	16	1	66p
59	13	½	66p
60	13	⅜	66p
164	103	5½	£2.00
170 †	47	40	66p
177	38	8½	66p
180 †	44	3½	66p
181 †	63	6½	83p
182 †	75	9	£1.25
183 †	87	10½	£1.65
184 †	101	10½	£2.00
185	21	¾	66p
186	6	3/8	66p
187	13	½ ** bloomed	83p
188	8	¼ ** bloomed	83p
2189	37	2½ bloomed	83p
2190	39	4½ bloomed	83p

Plano-Convex (positive focus)

List No.	*Dia. mm.*	*Focus inches*	*Price*
61	16	1¼	83p
71	18	1¼	83p
190 †	95	5½	£2.00
Condenser lens for 2¼" square film size.			
191 †	114	7½	£2.45
Condenser lens for 3¼" × 2¼" film size.			
192 †	57	3½	£1.38
Condenser lens for 35mm film size.			
198	8	1	66p
1300	28	7	66p
1301	11	1	83p
1302	11	¾	83p
1303	15	2	66p
Has engraved cross line on plane surface.			
1304	37	2¼	83p
1305	39	4½	83p
197	13	¾	£1.00
30	33	2	£1.00
200	25	2½	83p
201	25	4	63p
251	7	¼	66p
252	16	¾	66p

120 one each of lenses Nos. 252 and 185 in plastic mount, producing a condenser unit. 10mm focal length f0.7. £1.40

253 22 1¾ 62p

Meniscus (positive focus)

List No.	*Dia. mm.*	*Focus inches*	*Price*
40	60	4½ Deep curve	£1.75
66	15	1¾	66p
68	20	2¾	66p
70	14	4½	33p
260	6	½	66p

Meniscus (negative focus)

List No.	*Dia. mm.*	*Focus inches*	*Price*
34	34	4	99p
35	17	1	99p
36	20	3	99p
38	12	1¼	99p
67	18	1½	99p
69	20	2	99p
175	50	7	99p

Plano-concave (negative focus)

List No.	*Dia. mm.*	*Focus inches*	*Price*
1400	40	9	82p
Bloomed with engraved cross line.			
176	52	12	£1.12

Double Concave (negative focus)

List No.	*Dia. mm.*	*Focus inches*	*Price*
39	85	4 Chipped 50p	£2.00
41	20	1	99p
1401	10	1 ** bloomed	82p
1402	8	½ ** bloomed	82p
1403	6	¼	66p

Rectangular Lenses, for slide viewers etc. Brand new, optical quality white glass.

RL.1. 2¼" × 2¼". 5" positive focus. £1.25 each. May be used as condenser lenses where space is limited.

RL.2. 3¼" × 2½". 7" positive focus. £2.00 each.

RL.3. 3½" × 4½". Approx. 8" positive focus. 83p each. One surface is flat ground glass, used as viewing screen for back protection etc.

Cylindrical Lenses

CL.1. 3/8" dia., 10" negative focus. In brass mount 83p each.

CLOSE-UP LENSES FOR PHOTOGRAPHY

High quality glass close-up lenses in standard screw-in mounts to add on to your existing camera lens. New and bloomed.

1 Dioptre positive (40 inch focus).
CU.1. 52mm mount. £2.50
CU.2. 55mm mount. £2.50

2 Dioptre positive (20 inch focus).
CU.3. 52mm mount. £2.50.
CU.4. 55mm mount. £2.50.

3 Dioptre positive (13.3 inch focus).
CU.5. 52mm mount. £2.50.
CU.6. 55mm mount. £2.50.



TELESCOPE ACCESSORIES

24.5mm (Swift type) push-in fitting, standard on most imported astro telescopes. These accessories have all been tested by us and found to be first class.

TA.1. Star Diagonal Prism. Turns light path through 90 degrees. Useful for comfortable observation of the sky with astro telescopes. £5.77 each.

TA.3. Erecting Prism. Uses two Porro prisms to enable astro telescopes to be used for terrestrial observation. £8.25 each.

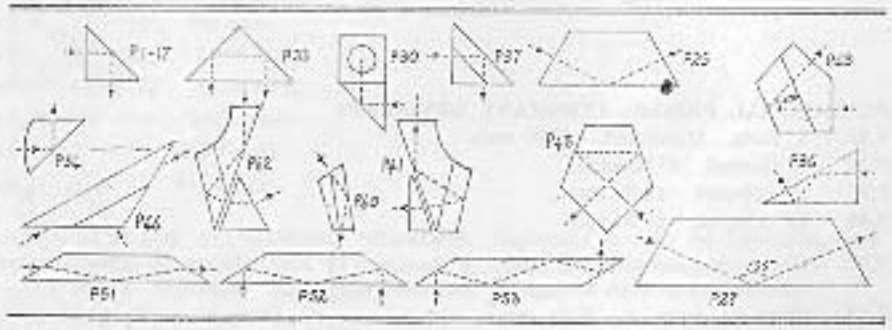
TA.5. Sun Filter. £1.48 each (not for use without the correct sun diagonal).

TA.6. Moon Filter. £1.48 each. Both these filters screw directly into eyepieces numbers E.50–58.

Expected soon, sun diagonal wedge (£5.77)

PRISMS

Mint condition unless otherwise stated.



Right Angle Prisms, 90 × 45 × 45 degrees.

P.2. ⅝" square faces. Silvered in mount. £2.00 each.

P.3. 18mm faces in mount. £2.00 each.

P.5. 25mm × 23mm faces. £2.00 each.

P.9. 1½" square faces. £3.72 each. imperfect £1.50

P.11a. Elliptical prism diagonal. 2" diameter clear aperture on each face. £5.50 each.

P.14. 2½" square faces in mount. £6.20 each.

P.25. 60 degree prism. Truncated, faces ⅞" square in mounts. £2.50 each.

P.26. Ditto, 1½" square faces in mount. £3.30 each.

P.9 Purchased Friday May 31st £3.72.

Binocular (Porro) Prisms

P.30. Ross type (2 cemented) prisms, Faces 1⅛" square. In brass mount 3" in diameter. £6.60 each.

P.33. Normal binocular type 15mm wide. 90p each.

P.34. Ditto, ¼" wide. Ex-government 6 × 30 type. £1.10 each.

P.35. Ditto. ⅜" wide. £2.40 each.

We can usually match most types of binocular prisms up to ½" wide from used stock in fair condition at £1.10 each.

P.36. 90 × 60 × 30 degree prism. Small face 1⅛" square. £1.65 each. Imperfect only.

Roof Prisms

P.37. 90 × 45 degrees. ⅝" faces. £2.00 each. Imperfect 30p each.

P.38. Ditto, 1" faces. In mount £5.00 each. Imperfect £2.75 each.

P.38a. Ditto, faces 25mm × 27mm. £5.00 each.

P.39. Ditto, 1¼" × 2" faces. £7.50 each. Imperfect £2.75 each.

P.40. 45 degree faces. One end ⅜", the other ¾". £1.50 each.

P.41. Pair in mounts as shown. Faces 1" × 1½". Zeiss made. £5.00 each.

P.42. Similar type unmounted. Produces 60 degree angle as shown. £4.00 each.

P.44. Faces angle 120 degrees, gives 0-180 degree coverage with complete reversal. Parallel rays only (i.e., before an object glass). Width 1½". Effective aperture over the arc approximately 1" diameter. In mount with ball races £4.00 each. Unmounted £3.00 each.

P.44a. 1.4" faces. In superb brass mount and flange fitting. Top grade. Bloomed £9.90 each.

PENTAGONAL PRISMS. CONSTANT DEVIATION

P.45. ⅝" faces. Unsilvered. £2.00 each.

P.46. 1" silvered. £3.00 each.

P.47. 1¼" silvered. £3.00 each.

P.48. 1⅜" silvered. £4.00 each.

P.51. Dove, or one-way reversing prism. ⅝" square × 2⅜" long. Gives 180 degree rotation when turned through 90 degrees. In mount £2.00 each. Imperfect £1.00.

P.52. Constant deviation. Rays return without reversal. Faces ⅝" × ¾". £2.00 each.

P.53. Rhomboid. Faces 2" × 1⅛". Special type, see diagram. Also serves as top grade parallel plane 1⅜" × 1⅛" × ½". £2.50 each.

P.54. Amici prism. Right angle, faces 1¼" square. Lens focus approximately 3". £1.65. each, imperfect only.

BEAM SPLITTER PRISM CUBES. 50/50 transmission. Ex-government.

P.61. 18mm. £6.60.

P.62. 35mm. £9.90.

P.63. 54mm. £19.80.

OPTICALLY FLAT GLASS. Ex-government. New and unused unless otherwise stated

PP.1. 4" × 4" × ¼". £1.50 each. Scratched or chipped 66p each.

PP.3. 5½" × 1¼" × 7/16". 80p each.

PP.8. Circular 80mm diameter × 6½mm thick. £3.30 each.

PP.11. Circular 27½mm diameter × 7mm thick. 80p each.

PP.13. Circular 40mm diameter × 4mm thick. Bevelled edge. 80p each.

PP.14. Circular 50mm diameter × 6mm thick. £1.20 each.

PP.16. Circular 45mm diameter by 6mm thick, bloomed. In brass mount threaded 2 3/16" dia. × 32 T.P.I. £1.25 each.

OPTICAL QUALITY NEUTRAL TINT FILTER GLASSES. Ex-government. New condition. Ground edges

NF.1. 2½" × 4¼" × ⅛". £2.10 each.

NF.2. 4" × 3" × ⅛". £2.50 each.

OF.2. 5" × 2¾" × 4mm thick. £2.90 each.

OF.3. 5½" × 2⅜" × 4mm thick. £3.30 each.

OF.4. 5¼" × 2⅜" × 2.7mm thick. £2.10 each.

OPTICAL QUALITY CLEAR GLASS. Ex-government. Ground edges

OF.5. 4⅜" × 4⅜" × 7mm thick. Give 4" square clear surface. £3.30 each.

OF.6 5½" × 3" × 5.3mm. £3.30 each.

SURFACE ALUMINIZED FLATS. ¼" thick. Unground edges

AF.3. 5¼" × 2⅜". £3.20 each.

AF.5. 1" × 1½". 99p each.

AF.7. 1½" × 2¼". £1.75 each.

AF.9. 1¾" × 2⅜". £2.48 each.

AF.11. 2⅜" × 4". £3.72 each.

AF.20. 2" × 3". £2.50 each.

AF.21. 3" × 4". £4.10 each.

LARGE SURFACE ALUMINIZED MIRRORS. Especially suitable for Episcopes, back projection, etc.

LAM.1. 6" × 4" × ¼" thick. £4.10 each.

LAM.2. 6" × 4" × ½" thick. £5.78 each.

SEMI-SILVERED MIRRORS. ¼" thick. 50–50 transmission.

SM.1. 1" × 1½". £1.65 each.

SM.2. 2" × 3". £3.30 each.

SM.3. 3" × 4". £4.95 each.

SM.4. 6" × 4". £7.42 each.

SEMI-SILVERED MIRRORS. ¼" thick. 50–50 transmission

SM.5. 3" × 4". £7.42 each.

SM.6. 4" × 6". £9.00 each.

ELLIPTICAL FLATS. For reflector telescopes

EL.1. 6mm thick, surface aluminized, 1¼" minor axis, £2.50 each.

CIRCULAR ALUMINIZED FLAT

CA.1. 2¼" diameter × ¼" thick, on circular aluminium backing plate 4 3/8" diameter. £5.85 each.

GLASS BLANKS. Annealed plate for easy grinding. Ground edge and polished both sides.

GB.3. 4" diameter × ½" thick. 90p each.

GB.4. 6" diameter × 1" thick. £2.60 each.

GB.5. 8" diameter × 1" thick. £5.50 each.

GB.7. 16½" diameter × ¾" thick. £5.00 each. Due to it's fragile nature this item can only be sent at purchaser's risk. We recommend personal collection wherever possible.

BACK SILVERED MIRRORS

AM.7. Microscope substage mirror. First grade. 2" diameter, 3" focus (positive). 99p each.

AM.8. Microscope substage mirror. First grade. 2½" diameter, 3" focus (positive). £1.24 each.

AM.9. Microscope substage mirror. First grade. 2" diameter plane. 83p each.

AM.10. Microscope substage mirror, First grade. 2½" diameter plane. £1.24 each.

AM.12. 2½" × 3¼" plane mirror. First grade. 60p each.

AM.13. Microscope substage mirror. First grade. 40mm. diameter. 2" focus (positive). £1.25 each.

AM.15. Various small mirrors with ground or bevelled edges. Average size about 1¼" × 2". Unused, but may have minor imperfections of no practical consequence. Many uses in optical setups and experiments as well as general decorative purpose. 85p per dozen assorted.

GRATICULES. Engraved on glass flats. Ex-government.

GR.1. Crossline. 1" diameter, in brass mount. £1.25 each.

GR.2. Rifle sight type. Crossline and vertical, in brass mount ½" diameter and 1" long. £1.25 each.

GR.3. Grating, useful for microscopy and for telescopic purposes. Divided over entire surface into 1/25" squares. Unmounted. 66p each.

GR.4. Crossline. 33mm diameter, unmounted. 99p each.

GR.5. Eccentric cross lines, horizontal line divided into millimeters at centre. 40mm clear diameter, 3mm thick. In brass mount 2" overall diameter. 66p each.

GR.6. Engraved line 4mm long divided into fifths of a millimeter, plus two other scales. 26mm clear diameter, 3mm thick. In brass mount 1.8" overall diameter. 66p each.

GR.7. Engraved cross lines, 45mm diameter. In brass mount 55mm diameter, 22mm long, threaded 32 T.P.I. £1.12 each.

GR.8. Cross lines, 31mm diameter, in brass mount 46 mm diameter. £1.12 each.

POLARIZING FILTERS

PF.5. 46mm diameter discs. Material sandwiched between glass. Total thickness 2½mm. At maximum extinction these produce a deep violet image. 44p each.

Neutral colour linear polarizers in 0.035" thick plastic material. High transmittance type (32 per cent). Suitable for variable density filter systems using two polarizers with axes crossed (minimum transmittance 0.005 per cent) all and general purpose uses. Cuts easily with hobby knife to any desired shape.

PFT.1. 1½" square 30p.
PFT.2. 2" square 55p.
PFT.3. 3" square £1.20.
PFT.4. 4" square £2.15.
PFT.5. 6" square £4.80.

Neutral colour linear polarizers in 0.030" thick plastic material. High extinction type (0.0005 per cent) transmittance 22 per cent. Specially suitable for microscopes, sextants, and instruments where extreme extinction density is required. Cuts easily with hobby knife to any desired shape. Numbers PFE.1. to 5, same sizes and prices as PFT.1. to 5.

Circular polarizers, neutral colour, in 0.030" thick plastic material. Used for suppression of unwanted reflections on tubes and screens of all types. 35 per cent transmittance.

PFC.1. 3" square £1.20.
PFC.2. 6" square £4.80.

Larger sizes of any of the above polarizers available to special order at 13p per square inch.

PHOTOGRAPHIC POLARIZING FILTERS

High quality glass polarizing filters in standard screw-in rotating mounts for cameras. New.

PF.85. 49mm mount. £4.45.
PF.86. 52mm mount. £4.95.
PF.87. 55mm mount. £5.28.
PF.88. 58mm mount. £5.77.

PHOTOGRAPHIC FILTERS

High quality glass filters in standard screw-in mounts for cameras. New.
Nos. CF.60 to CF.84 are all £2.20 each.

Medium Yellow
CF.60. 40.5mm mount.
CF.61. 43mm mount.
CF.62. 48mm mount.
CF.63. 49mm mount.
CF.64. 52mm mount.
CF.65. 55mm mount.
CF.66. 58mm mount.

Skylight
CF.73. 43mm mount.
CF.74. 48mm mount.
CF.75. 55mm mount.
CF.76. 58mm mount.

Soft focus filter.
CF.79. 49mm mount.
CF.80. 52mm mount.
CF.81. 55mm mount.

Medium Red
CF.67. 49mm mount.
CF.68. 52mm mount.
CF.69. 55mm mount.

Green
CF.70. 49mm mount.
CF.71. 52mm mount.
CF.72. 55mm mount.

85B Filter.
CF.77. 52mm mount.
CF.78. 55mm mount.

Cross Diffraction Effect Filter.
CF.82. 49mm mount.
CF.83. 52mm mount.
CF.84. 55mm mount.

COLOUR FILTERS

For optical instruments. First grade Optically Flat glass filters, ex-government.

F.1.	19mm dia. neutral	66p	F.32.	60mm yellow	£1.25
F.1a.	14mm dia. Neutral	66p	F.34.	60mm neutral yellow	£1.25
F.2.	22mm dia. neutral	66p	F.42.	34mm dark neutral green	66p
F.3.	28mm dia. neutral	66p	F.50.	52mm neutral	83p
F.3a.	28mm neutral yellow	66p	F.51.	52mm medium neutral	83p
F.4a.	34mm neutral	66p	F54.	52mm neutral yellow	83p
F.5.	38mm neutral	66p	F.54a	34mm U.V.	66p
F.6.	61mm neutral	£1.25	F.55.	35mm light blue	66p
F.7.	60mm neutral yellow	£1.25			
F.11.	12.5mm red	66p			
F.13.	25mm red	66p			
F.20.	9mm red	66p			
F.24.	32mm red	66p			



F.52. Brass disc as illustrated, accepts filters F.50 and F.51. 5¼" diameter. £1.50 each.



VF.1. Variable density filter unit. Optically flat filters, red, yellow and clear, 35mm dia., plus polarizing filters 40mm dia. in contra-rotating mounts giving variable density effect for control of image brilliance. Seperate knobs for density control and filter selection. All brass, weight 5 lb. £7.50 each.
This unit can be supplied with eyepiece No. E.34 in focussing mount if ordered at the same time. £6.60 extra.

REFLECTOR SIGHTS (ex-government)



RS1



RS2



RS3

R.S.1. A small sight, consisting of a 4 lens projection system projecting an electrically illuminated image of a circle and dot graticule which is reflected back to the eye from a first class optical flat. Can be used as telescope sight or finder. The original lamps are no longer available, but can be replaced with a small torch bulb, with suitable modifications to the lamp holder and wiring. Or car type lamps can be adapted. Makes an excellent collimator for projecting parallel rays. As a break down unit it yields a three glass lens that is suitable for many purposes (See PL25), also No. 197. The flat which is approximately ¼" thick, and about 1½" × 3" makes an excellent diagonal if surface silvered. The hinged neutral approx. 1½" dia. is suitable for astro use. Brand New and Boxed. £2.50 each. Post and Packing 25p.

R.S.2. AMERICAN S8. Contains a 2½" dia. by 5" focus achro. O.G. plus S.S. mirror and lamp-house. Makes useful collimating target for parallel rays. £4.40 each. 24v. lamps to suit. 28p each.

R.S.3. BRITISH Mk. III. 3½" dia. 4 glass achromatic lens system. If dismantled yields lens No. 28, No. 40 and No. 18. Also PP1. Complete with lamp-house and in wood box with hinged lid. Unused. £8.80 each.

GEARED DRIVES. Ex-government

GD.1. 5" diameter circles, divided 0-360 degrees. One is adjustable and calibrated in opposition to the other. 72-1 geared drive fitted with micrometer and calibrated to 10 minutes of arc. Quick release lever to disengage drive is incorporated. These units are from precision optical equipment, unused but store soiled. The gears and circles are brass or gunmetal, the cases mainly steel. Weight 5 lb. £3.25 each.





GD.2. As above, but case brass or gunmetal, larger bearing surfaces, and fitted with electric contact rings from base to moveable head. Weight 6 lb. £4.75 each.

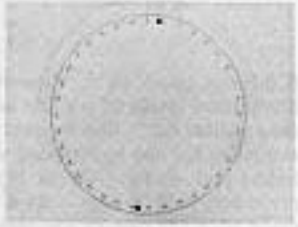
Both these units will accept a shaft approximately 1" in diameter. One of each of the above geared heads may be quite simply fitted together as shown to form a very useful altazimuth or equatorial head for telescopes of up to about four inches aperture.



GD.3. A similar unit to GD.1. but constructed from solid brass throughout, and slightly heavier. £5.25 each.

POSTAGE EXTRA ON ALL GEARED DRIVES 50p per Item.

DIVIDED CIRCLES



DV.1. 11½" diameter slightly concave discs of ¼" thick perspex, graduated 0–360 degrees in black. £3.30 each.

STANDARD FITTINGS FOR OPTICAL INSTRUMENTS

Telescope Eyepieces.

There are two main fittings for telescope eyepieces, and three others which are occasionally used.

The two most frequent sizes are:—

(1) RAS (Royal Astronomical Society) thread. This has an external diameter of 1¼" (31.75mm) and a thread of 16 t.p.i., (turns per inch). This size thread is used on the vast majority of British manufactured telescopes and accessories, and is in every way a most suitable and convenient fitting for the majority of normal purposes.

(2) 24.5mm push-in fitting. This has a plain tube having an outside diameter of 0.965" (24.5mm). This fitting is used on most astro telescopes produced in Japan. It is sometimes called 'Swift' fitting after the American firm which has it's products manufactured using this size fitting. Many of the plain tubes used to accept eyepieces with this fitting have knurled screws, other split sleeves, to stop the eyepieces from slipping; others rely merely on a precise push fit. This fitting is satisfactory for a large number of relatively small astro (and terrestrial) telescopes, but it's small size makes the provision of low power/wide field eyepieces difficult and produces a fair degree of corner cut-off with most methods of photography.

The less frequent eyepiece fittings are:—

(1) 1¼" diameter push fitting. This has a plain tube 1¼" (31.75mm) in diameter. Formerly the standard for American produced, as well as many British telescopes, this fitting has become less common, although it is still used on some imported Japanese equipment, intended primarily for the U.S. market. This fitting is as useful as the RAS type, but less positive due to the lack of a thread for locking and alignment.

(2) 2" diameter push fitting. This has a 2" (50.8mm) diameter plain tube. It is occasionally used on larger telescopes to allow the provision of large, low power, wide field eyepieces, so important for the observation and photography of star fields, nebulae, comets, and similar faint objects of large angular size. It is often provided as a separate, additional fitting, only attached to the telescope (usually a reflector) when needed.

(3) Microscope fitting. This has a plain tube, 0.912" (23.165mm) external diameter. It was formally employed on a few telescopes making use of microscope eyepieces, but has now practically disappeared from use on telescopes.

Ex-government eyepiece fittings do not normally conform to any of the above descriptions, since they usually fit into purpose made mounts which are unique to the units for which they were designed. They can often, however, be adapted to fit into standard mounts (see our eyepiece lists) and even when this is not possible it is well worth the trouble of making a special mount to fit onto a particular telescope, since the quality of ex-service optics is so extraordinarily high.

Microscopes.

The British Standard sizes for microscope optics are termed RMS (Royal Microscopical Society) fittings. There is less variation than among telescope optics, but there is still some difference between manufacturers, expecially as regards substage condensers.

Eyepieces. Standard RMS eyepiece (ocular) fitting is given as 23.3mm (0.9173") diameter plain tube. However, we have measured examples from manufacturers of various nationalities and most modern eyepieces appear to conform to a slightly smaller diameter of 23.165mm ((0.912"). This is the size which we refer to as standard fitting.

Objectives. Standard RMS fitting is given as 19.822mm (0.7804") diameter, 36 t.p.i. thread. However, as for eyepieces the objectives found on modern instruments appear to differ slightly, although we have yet to find one which will not fit into the standard mount. Threads are always 36 t.p.i. The usual diameters are:—

External diameter of objective thread 20.2mm (0.795")

Internal diameter of mount 19.5mm (0.768")

These sizes are the ones which we refer to as standard fitting.

Substage Condenser Mounts.

The standard RMS size is given as 38.786mm (1.527") but there is considerable variation between manufacturers here. Not all makers use a plain push-in mount. Of those that do the most usual size is 37.0mm (1.456") diameter. This is the size which we refer to as standard fitting.

PHOTOGRAPHY THROUGH OPTICAL INSTRUMENTS

In general photography through instruments such as telescopes and microscopes is not as difficult as many people believe, but it does need considerable patience, a fair amount of experience by trial and error, and some basic equipment. For instance, although it is possible to use a camera which does not have reflex focussing, nor a detachable lens, the purchase of a camera with these features makes the whole procedure so much simpler, and opens up so many new possibilities that we consider it to be essential for serious work. On the other hand ultra sophisticated photographic equipment will not eliminate all of the difficulties; focussing and exposure determination at high powers is always tricky regardless of what equipment is used, and experience is the only sure teacher in these matters. There are always likely to be a fair proportion of wasted shots under any circumstances.

(1) Telescopes.

There are three methods of photography used for producing an image on film using a telescope.

(a) The Afocal method. With this the camera, complete with lens is used to take a picture through the telescope set up exactly as for visual observation. The telescope is focussed on the object to be photograped, then the camera with lens focussed at infinity is placed behind the eyepiece and the exposure made. The camera itself does not have to be physically attached to the telescope, but if this is done it makes the whole procedure rather more simple to operate. The camera lens should be set wide open, at it's largest aperture setting (the largest aperture setting being that of the lowest f number).

The exposure time depends on the object being photographed. Firstly the effective aperture of the afocal system must be determined; this is done by (1) dividing the focal length of the camera lens in mm by the diameter of the objective, also in mm, then (2) multiplying the result of this by the power of the telescope. Thus for a 6" (150mm) telescope used at 48 power, with a camera having a 50mm lens, the effective aperture of the afocal system works out at f.16. Once this has been determined for the particular combination in use, the camera shutter can be set accordingly. If the object to be photographed is in daylight a normal exposure meter can be used and the shutter speed set which corresponds to the effective aperture—i.e. if the effective aperture is f.16 as in the example above, the shutter speed to use is the one shown against f.16 on the meter. For pictures of astronomical subjects requiring generally longer exposures a great deal more trial and error in the form of trial exposures at various different speeds will be required. It will be most useful to keep a detailed note book of these experiments for future reference.

The afocal method is the only one which can be made to work using a non-reflex type camera with a fixed lens. Even so it is very easy to obtain an out of focus or misaligned picture, and the single lens reflex camera, whether fixed or interchangeable lens, offers very great advantages.

(b) The Direct Method. With this method the camera lens is removed and the camera body alone is used at the prime focus of the objective. No eyepiece is used in the telescope, thus some form of reflex focussing must be provided on the camera. The only problem with this method is that with some types of telescopes it may not be possible to place the camera body near enough to the objective (lens or mirror) to get the the picture into sharp focus, thus necessitating modifications to the focussing tube or even to the objective mount. With most telescopes, however, this method works very well. It is certainly the simplest to operate and almost always gives the sharpest image resolution. Unfortunately it will not provide enough power for small astronomical objects such as planets. There will usually be some cut-off at the edges of the field of view, depending on the diameter of the focussing tube which is used. The effective aperture by the direct method is simply that of the objective itself, given by dividing it's focal length in mm by it's diameter, also in mm. The f number obtained is then used to set the shutter speed by the same proceedures described for the afocal method.

(c) The Projection Method. With this method the primary image formed by the objective is projected onto the film using another lens or lens system. This may be a positive lens system such as the telescope eyepiece itself, or an enlarging lens, or the camera lens, or it may be a negative (Barlow) lens. In either case the projecting lens will be separated from the camera by a distance which varies according to the magnification required. The Barlow lens will give the greatest power increase for any given extension, and also probably the sharpest resolution, but the use of the eyepiece itself for projection is obviously the cheapest and simplest method. The characteristics of lens systems such as this are fully covered in our book *How to use Lenses and Mirrors*, and we will not go into more detail here.

The projection method offers the advantage of high powers and better film coverage, but since the effective aperture falls off as the power is increased, focussing is often difficult and exposures are considerably lengthened.

(2) Microscopes.

To an even greater degree than with telescopes, successful photography through a microscope depends on experience, and a great deal of practice is required to achieve really good results. Reflex focussing is an absolute necessity for the camera, and high intensity illumination plus a good substage condenser are almost as important. Basically, the first thing to master is really good visual adjustment of the instrument, providing even illumination and the sharpest possible delinition. Although all three methods of photography as described for telescopes are possible with a microscope, the method most likely to give good results is the projection method using the standard microscope eyepieces. Although exposure can be determined by trial and error, there is always considerable uncertainty and especially for colour work a camera with through-the-lens metering will rapidly pay for itself in terms of film costs.
Altogether, microphotography is one of the more expensive pastimes. If a great degree of magnification is not required, less than about ten times (this can of course be increased by subsequent photographic enlargement) it is much cheaper and simpler to make use of a macro lens, with bellows unit and/or extension tubes. The photograph on page 55 shows how impressive these low power shots can be. Also, by this method both transparent and opaque objects may be successfully photographed.

TELESCOPE TUBING. Dismantled from ex-government equipment. Useful to the home constructor of telescopes and other optical instruments.

FT.1. Brass drawtube, 4" extending to 7". 1⅛" overall diameter. Inner tube is a ground in sliding fit. 83p each.

FT.2. Ditto, 6" extending to 11". £1.25 each.

FT.3. Ditto, 10" extending to 15". £1.65 each.
The above three drawtubes can be supplied with RAS female thread fitted to the inside tube at an extra charge of 83p.

FT.4. Brass drawtube, 4" extending to 7". 1" outside diameter. Inner tube is a ground in sliding fit. 66p each.

FT.6. Plain brass tube, 36mm inside diameter 38mm outside diameter. 9½" long. 99p each.

FT.10. Hard Paxolin tube, 45mm inside diameter. Fits lenses numbers 82 and 83. Can be supplied in up to 3' lengths at 33p per foot. Postage 15p extra.

FT.11. Brass tube 16½" long. 2½" outside diameter. 2⅜" inside diameter. Weight 3½ lb. Ground finish. Fitted internal light baffle. £2.10, postage 25p.

FT.12. Split collars. 1" wide (fit over FT.11). With two screws. 99p each.

FT.13. Brass drawtube, 4½" extending to 6½". 1¼" overall diameter. ¼" inside diameter. Very precise sliding fit. Can be supplied with 'Swift' type 24.5mm internal fitting at £1.25 each, or with RAS female thread at £2.00 each. Extra inside drawtube with ground in sliding fit to give 3" extra extension, 42p each.

FT.14. Brass tube 1⅛" inside diameter with aluminium outside sleeve and flanged base, 2" × 3¼". 42p each.

FT.15. Light brass tube, 0.9" outside diameter, flanged one end. Flange 1.05" diameter. In two lengths, 1.4" and 1.95". 26p each.

FT.16. Plain brass tube, 3.28" long. 1.38" outside diameter, 1.25" inside diameter. 26p each.

FT.17. Aluminium tubing, 2" outside diameter, 1.85" inside diameter. 42p per foot. Lengths up to 3 foot sent by post, up to 16 foot lengths available if collected.

FT.18. Brass tube 55mm diameter × 260mm long. Collar one end 60mm diameter. Four internal light baffles. Weight 2 lb. £1.65 each.

ADAPTORS

Please note, regarding all telescope camera adaptors, that these are only intended to attach the camera to the eyepiece mount and to assist in alignment, they are NOT intended to carry the weight of the camera, etc. Many eyepiece mounts are not strong enough for this, and for security the camera should always be separately supported, either by a support fixed to the telescope itself or on a separate stand.

AD.1. 24.5mm (internal thread) to RAS (external thread). Used to fit 'Swift' fitting eyepiece (E.50 to 59) into RAS threaded telescope focussing mounts. £1.65.

AD.2. Microscope eyepiece (internal) to RAS (external thread). Used to fit RMS microscope eyepieces (E.60 to 62) into RAS threaded focussing mounts. £1.65.

AD.3. Pentax (42mm dia. x 1mm pitch) external thread to RAS (external thread). Used for photography by the direct objective method for telescopes with RAS eyepiece fitting and cameras having Pentax type screw thread. £4.95.

AD.5. Microscope objective (internal thread) to Pentax (external thread). Used for attaching RMS microscope objectives to extension bellows or tubes with Pentax type screw thread, thus enabling macro or microphotography to be undertaken by the direct objective method. £4.95.

AD.7. RAS (external thread) to Pentax (internal thread). Used for attaching RAS threaded eyepieces to Pentax photographic lenses for telescopic purposes. See details on page 9. £5.50.

AD.8. Leica (internal screw thread) (39mm dia. x 1mm pitch) to Pentax (external thread). Converts Leica fitting camera or enlarging lenses to Pentax fitting. £1.30.

AD.9. Pentax (external thread) to Biolam 70 Russian microscope head fitting. Used for all methods of photography with Pentax fitting cameras through Biolam series microscopes. £7.37.

AD.10. 24.5mm (external) fitting to RAS (internal thread). Converts 24.5mm telescope mounts to accept RAS eyepieces. It should be noted that the use of RAS eyepieces on smaller tubes will often entail an inevitable decrease in the field of view. £2.20.

AD.11. 24.5mm (external fitting to Pentax (external thread)). Used for photography by the direct objective method with 24.5mm eyepiece fitting telescopes and cameras with Pentax type thread. £3.30.

AD.12. RAS (external thread) to Pentax (external thread) with RAS (internal thread) inset. Same use as AD.3 above, but RAS eyepieces can also be used allowing photography by eyepiece projection. Extension tubes will be required in addition, to give clearance over the eyepiece. Suitable eyepieces are E.7, 14, 15, and E.37. (plus E.50 to 59 if used with AD.1.). £5.50.

AD.13. Reverse camera adaptor. Pentax (external) thread to 49mm x 1mm pitch (external) filter mount thread. Used to fit camera lenses back to front in their mounts; screw into filter mount of lens. Often used for macrophotography. £2.20.

AD.14. Reverse adaptor, Pentax to 52mm filter thread. Use as for AD.13. £2.20.

AD.15. Reverse adaptor, Pentax to 55mm filter thread. Use as for AD.13. £2.20.

AD.16. Three screw holder to Pentax (external) thread. The holder has three clamping screws enabling it to be fitted over any eyepiece or tube having a diameter of 20 to 40mm. Used for photography by the direct method (adaptor on eyepiece mount and camera) or the projection method (adaptor on eyepiece itself and camera with extension tubes). £2.75.

AD.17. Three screw holder to Pentax (internal) thread. As above, but used with AD.13, 14 or 15 for photography by the afocal method. This combination may also be used for photography through our microscope units T.68 and 69. £2.75.

AD.18. 'T' mount to external microscope tube fitting. This adaptor may be used for all methods of photography through microscopes having RMS size microscope tubes. It is especially useful for cameras having odd-sized or bayonet fitting mounts, since adaptors to 'T' mount are usually readily available. Enquire from the importers of your particular camera for details. £5.50.

AD.19. 'T' mount to Pentax (external) thread. £2.20.

AD.20. 1¼" push fitting (external) to 24.5mm (internal). Converts 1¼" telescope eyepiece mounts to accept 24.5mm fitting eyepieces. £1.65.

BRASS SLIDE MOVEMENTS (Ex-government)



V.33. 12" long with carriage running on four ball-races. Adaptable for focussing movements, optical benches, and various other optical gadgets. £1.10 each, post 25p.

BRASS RACK AND PINION GEAR

RP.1. ⅜" × ¼" flat rack. 8p per inch, in up to 12" lengths. Pinions to suit, about ⅝" diameter, ¼" hole, 55p each. ¼" brass rod, about 4" long, 11p each. Plastic knobs, ¼" hole, 17p per pair.

RP.2. ¼" × ¼" rack, geared on narrow edge. Approx. 10" lengths, 60p each. Pinions to suit, about ⅝" diameter, 55p each.

RUBBER EYESHIELDS

Sizes to fit most eyepieces available at 28p each.

EYEPIECE HEATERS

A handy gadget for those cold winter nights; stops misting up of eyepieces.

EH.1. 12 volt, 0.2 amp. 26½mm inside diameter, 43mm outside diameter. 10mm wide. 44p each. (ex-government).



DOZALL MULTIPURPOSE OPTICAL SYSTEM

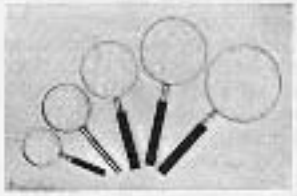


This unit is constructed entirely from parts adapted from unused ex-government equipment. By the use of an eight element optical system in three inter-changeable groups we are able to guarantee first-class results in each of the following applications when used as directed.

1. 2½× tele-converter, focusing from 2ft to infinity. Effective aperture when used with 12mm, 25mm and 50mm lenses, f1.25, f2.5 and f5 respectively.
2. 6× tele-converter lens for macrophotography of objects at 12" distance.
3. 16× microscope unit with 3" working distance, also suitable for photographic work.
4. 6× viewer or magnifier for 35mm slides.
5. 2½× screen magnifier of exceptionally high quality and wide field of view.
6. Simple 2½× magnifier. (Additional to 5).
7. Stereoscopic viewer.
8. 1½" (38mm) focus achromatic projection lens.
9. 2 × 4" (100mm) focus achromatic projection lens.
10. 2" to 3" (50 to 75mm) variable focus achromatic projection lens.
12. 5× 4 glass magnifier of high quality.

The entire unit can also be used to construct a telescope of high power using an additional long focus lens which can if desired be a photographic lens, telephoto or normal type. Metal parts are of solid brass construction throughout. Supplied with full instruction sheet including exposure guide for photographic applications. Due to the use of ex-government components we are able to offer this unit for only £7.70.

HAND MAGNIFIERS (READING GLASSES)



HM.1. 2" diameter round lens. 66p each.
HM.2. 2½" diameter round lens. 92p each.
HM.3. 3" diameter round lens. £1.28 each.
HM.4. 3½" diameter round lens. £1.55 each.
HM.5. 4" diameter round lens. £1.84 each.



HM.7. 1¾" diameter pocket reader, with pen type clip. 44p each.

HM.8. Penscope (*right side of illustration*). Described by the makers as useable either as 8 power telescope or 30 power microscope. We do not strongly recommend the telescope but the microscope section gives worthwhile results and is very useful for jobs such as the examination of gramophone style for wear, etc. £1.65 each.

HM.88 (*left side of illustration*). High power version of HM.8. 50× microscope plus 10× telescope. £2.75.



HM.89. High resolution pen microscope. 16 to 32 zoom magnification. Beautifully made instrument of European manufacture. With screw on covers for objective and eyepiece. £4.95.

HM.9. 10× achromatic magnifier, in folding metal holder. 14mm clear aperture. 83p each.

HM.10. Rectangular lens 4" × 2". £2.25.



HM.11.



HM. 12 to 15.



HM. 16.

HM.11. 5× Achromatic Magnifier. Of ex-government origin, this four element unit gives a virtually distortionless field of view 2" in diameter when used as a magnifier close to the eye. Colour distortion is completely eliminated. In brass mount, total weight 6 ounces. £4.95 each.

HM.12. Pocket folding magnifier with 10× and 20× two-element lenses. All metal mount. £1.81.

HM.13. Pocket folding magnifier with three single element lenses, 3×, 4× and 5×, which may be used seperately or together, giving powers 3, 4, 5, 7, 8, 9 and 12×. All metal mount. £1.81.

HM.14. Pocket folding magnifier with triplet 8× lens for minimum distortion. All metal mount. £1.90.

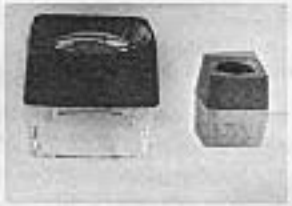
HM.15. Pocket folding magnifier with 8× and 15× two-element lenses. All metal mount. £1.98.

HM.16. Illuminated magnifier, 2½" diameter lens, 3× magnification. Ideal for map reading, document work, etc., uses two SP.11 batteries. £2.25.



HM.17. Folding linen tester, 10 × magnification, ½" square aperture with ¼" scales. £1.39.

MM.18. Ditto, 6 × magnification, 1" square aperture with ¼" scales. £2.31.



MG. 1 and 2.



MG.4

STAND MAGNIFIERS

MG.1. Beck 4× aspheric bright field magnifier. Acrylic mount facilitates intense illumination of the object being observed — no extra illumination needed in daylight. £3.63 each.

MG.2. Beck 8× achromatic bright field magnifier. Higher power version of MG.1., fully colour corrected. £1.88 each.

MG.4. Stand magnifier with swan-neck flexible arm. 2½" diameter lens. £2.47 each.

MG.5. Stand magnifier with heavy duty swan-neck flexible arm. 4" diameter lens. £6.60 each.

MG.6. Single lens stand magnifier/eyeglass. 3.3 × magnification, wire mounted. 60p.



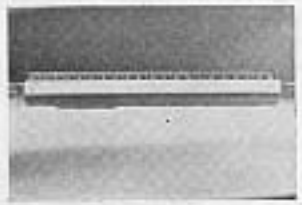
MG.7.



MG.9.

MG.7. Double lens stand magnifier/eyeglass. 10× magnification, wire mounted. 89p.

MG.9. Double lens watchmaker's eyeglass. 10× magnification. Plastic mounted. 59p.



MG.19. Cast acryllic print reader, 10" × 1¾", with 20cm scale. £2.05.



MG.20. Spectacle attachable eyeglass, wire frame, 3.3 x magnification. £1.39.

MG.80. Single lens watchmaker's eyeglass, plastic mounted, 4" focus, 2.5x magnification. 30p.

MG.81. ditto, 3" focus, 3.3x magnification. 35p.

MG.82. ditto, 2½" focus, 4x magnification. 40p.

MG.83. ditto, 2" focus, 5x magnification. 45p.

MICROSCOPES



NM.3. Full size. Height 11½". Weight 3 lb. 12 oz. With 2 objectives, 3 eyepieces, all standard fitting and fully corrected. Powers 56, 80, 120, 140, 200, 300. Rack and pinion focussing. Four position aperture control. 55mm diameter mirror/white plate. In wooden case. £20.79. DNA.



NM.4. Miniature type. Height extended 11½". Weight 2 lb. 6 oz Fits into portable case only 5½" diameter and 6¼" high. With 3 fully corrected objectives, giving exceptionally fine image quality. Powers 33, 67, 200. Rack and pinion focussing substage. £21.45 D.N.A.



NM.5. Full size. Height 12". Weight 9 lb. 4 oz. With 2 objectives and 3 eyepieces, all standard sizes and fully corrected. Powers 50, 100, 125, 200, 400, 500. Rack and pinion focussing with coarse and fine adjustment. Five position aperture control. Double sided mirror. In wooden case. £39.60.



NM.6. Full size. Height 12". Weight 6 lb. 3 oz. With 2 objectives and 3 eyepieces, all standard sizes and fully corrected. Powers 56, 80, 120, 200, 300. Rack and pinion focussing with coarse and fine adjustment. Three interchangeable diaphragms. Double sided mirror. In metal case. £29.59. DNA.



NM.7. Stereoscopic binocular model. Height 12". Weight 5 lb. Magnification 8.75. Field of view 25mm. Working distance 140mm. Rack and pinion focussing. In wooden case. £31.86. D.N.A.



NM.8. Full size. Height 12½". Weight 9 lb. 2 oz. With 3 objectives, 3 eyepieces, all standard sizes and fully corrected. Powers 30, 50, 60, 75, 100, 150, 198, 630, 945. Abbe condenser with varisble aperture diaphragm and swing mount filter holder. Rack and pinion focussing with coarse and fine adjustment. Round stage with revolving and centering adjustment. Double sided mirror. In wooden case. £57.75.

NM.10. Full size microscope with inclined rotateable monocular head. Fitted with quadruple nosepiece, rack and pinion focussing substage, abbe condenser, variable iris diaphragm and swing mount filter holder. Coarse focussing adjustable plus fine adjustment with safety ratchet and 0.002mm engraved divisions. Blue and ground glass filters. Double sided substage mirror. Supplied with two eyepieces and two objectives giving powers 80, 120, 400 and 600. Supplied in fitted wood case. £44.00 DNA



NM. 10–12

NM.11. Specification as for NM.10, but supplied with three eyepieces and three objectives giving powers 56, 80, 120, 140, 200, 280, 400 and 600. £54.23 DNA.

NM.12. Specification as for NM.10, but supplied with higher power optics, three eyepieces and three objectives giving magnifications 56, 80, 120, 280, 400, 630, 900 and 1350. £59.02 DNA.



NM. 13–14

NM.13. Specification of stand same as NM.10, but fitted with circular rotating, centring stage. Supplied with two eyepieces and two objectives giving powers 56, 120, 280, 600. £48.46 DNA.

NM.14. As NM.13, but supplied with three objectives and two eyepieces giving powers 56, 120, 280, 600, 630 and 1350. £61.44 DNA.

NM.15. Specification as for NM.10, but supplied with special square stage and narrow base, so as to fit into compact metal case supplied, suitable for field work. Supplied with three eyepieces giving powers 63, 90, 135, 140, 200, 280, 300, 400, 600. £59.84 DNA.



NMA.1. Binocular head. Fits microscope NM.10–15. With matched eyepieces ×7 and ×10. Variable interocular adjustment. In wooden case. £46.20. DNA.

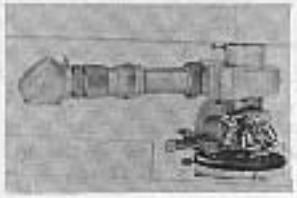


NMA.2. Mechanical stage. Fits microscope NM.6. and NM.10-15. Scales and verniers reading to 0.1mm, with movements of 30mm in the vertical and 80mm in the horizontal directions. £14.19. DNA.

NMA.3. High intensity lamp unit, for use with any microscope.

Gives sufficiently high intensity for phase contrast or dark field microscopy, as well as providing perfect (Kohler) illumination for all normal purposes. 8 volt 20 watt lamp, with rheostat controlled step-down transformer. Two element lens, iris diaphragm and filter holder. DNA. £23.37. Spare lamps 52p each.





NMA.4. Projection and camera lucida attachment for microscope NM.10-15, used with high intensity lamp NMA.3. Also used as drawing attachment, when the observer sees simultaneously the object being drawn and the pencil. May be used with either monocular or binocular head. £37.12. In wooden case with full instructions. DNA.



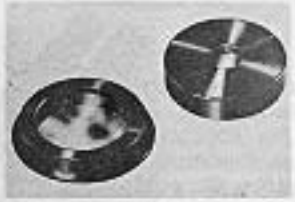
NMA.5



NMA.6



NMA.7



NMA.8



NMA.9

NMA.5. Aplanatic Condenser. Numerical Aperture 1.4, in 37mm substage mount with iris diaphragm and filter holder. Rotating rack and pinion mount allows oblique illumination. Supplied with low power additional condenser N.A. 0.03, all in fitted wooden case. £11.44.

NMA.6. Light and Dark Field Condenser. Light Field N.A. 0.6, Dark Field N.A. 0.7. 37mm diameter substage mount. Supplied in fitted wooden case. £12.98.

NMA.7. Dark Field Oil-immersion Condenser. N.A. 1.25. May be used with both dry and oil-immersion objectives. 37mm diameter centring substage mount with iris diaphragm. Supplied in fitted wooden case. £11.00.

NMA.8. Polarizer and Analyser. Two glass mounted discs, polarizer fits into filter holder of microscope condenser, analyser, fits over eyepiece. £4.34.

NMA.9. Phase Contrast Apparatus. Consists of four special objectives, ×10 (N.A. 0.30), ×20 (N.A. 0.40), ×40 (N.A. 0.65), and ×90 (N.A. 1.25), special condenser unit 37mm diameter fitting, N.A. 0.9, with four fdiaphragms, plus one clear aperture or normal illumination, and auxiliary telescope for setting up the condenser. The apparatus is designed for a tube length of 160mm and cover glass thickness of 0.17mm. Phase contrast is especially advantageous for the study of biological specimens due to the great clarification of cell structure which it confers. Supplied in fitted wooden case with green filter. £86.29.

NMA.10. Abbe condenser. Numerical aperture 1.2., in 37mm diameter push mount with iris diaphragm and filter carrier. £3.85.
(not illustrated)



NMA.11. Substage lamp. Fits into microscopes NM.10-15 in place of substage mirror mount. Supplied with 15 watt mains bulb and six feet of cable. £4.95.

NMA.12. Substage lamp. Fits into base of microscopes NM.10-15 after removal of mirror mount. Supplied with 15 watt mains bulb and six feet of cable. £8.03.





NMA.13. Camera adaptor for microscopes NM.10-15. Fits in place of monocular or binocular head. Accepts any Pentax fitting camera. £7.37.

T.68. Microscope unit adapted by us from ex-government components. Power 8× (12× with object lens reversed) working distance about 3", length 9". Optical performance up to our usual high standard. A useful unit for engineers, watchmakers, and for any purpose requiring plenty of working distance below the objective and wide field of view. £7.70 each.





T.69. Similar unit to T.68 but in simple telescopic tube giving powers variable between 32 and 52. Indispensible in many commercial applications. £9.90 each.

Either T68 or T69 can be fitted with a graduated graticule having a centre cross for £2.20 each extra.

NM.10. Measuring microscope, designed for the accurate measurement of small component parts. Uses standard size (RMS) eyepiece and objective. Variable magnification by means of extendable graduated drawtube. Objective magnification 3.7×. Eyepiece magnification 7×. Graticule finely divided into 100 divisions. Weight 12 oz. In wooden case with full instructions. £10.51 each. DNA.



MICROSCOPE OBJECTIVES. Standard (RMS) fitting

These objectives have been extensively checked by us and are in our opinion of first rate quality, representing value well above that indicated by the asking price.



MO.1.	×5	N.A. 0.10	£3.96 each
MO.2.	×10	N.A. 0.25	£5.28 each
MO.3.	×20	N.A. 0.40	£5.94 each
MO.4.	×40	N.A. 0.65	£6.93 each
MO.5.	×60	N.A. 0.85	£9.24 each
MO.6.	×100	N.A. 1.25	£13.53 each

MICROSCOPE EYEPIECES. Standard (RMS) fitting

See eyepieces list numbers E60–65 under eyepiece section.

MICROSCOPE SLIDES

A new range of high quality microscope slides, boxed in dozens at £1.15 per box. Available in the following types:—

MS.1. Insects.	MS.8. Bacteria.
MS.2. Animals.	MS.10. Structure of Blood.
MS.3. Micro-organisms.	MS.11. Plants.

MS.13. Plain Slides. 3" × 1". 99p per hundred.

MS.14. Cavity Slides. 3" × 1". £1.35 per ten.

MS.15. Cover Glasses. Square or round. 99p per hundred.

MS.16. Canada Balsam. 12cc bottle. 33p each.

MS.17. Dissecting kits, in plastic wallet. £1.49 each.

CHOOSING BINOCULARS

The ideal way is without doubt to select your own after making direct comparison with others of different types. In order to do so you need a shop which carries a very wide range of different types (with a wide price range for each size and power), a patient assistant who can offer expert guidance in the light of experience, and above all a good view over open country to check with.

We have all these facilities, including an eight mile view with all intermediate distances and plenty of test objects.

From 25 years experience in selling binoculars we have learned that there is no particular instrument, however good or expensive, which will satisfy everyone. From this it is obvious that there is no real alternative to personal selection as outlined above. The buying of binoculars on approval is clearly no answer; we find that the average customer needs to compare some eight or ten binoculars before he is sure of which he prefers; to do this by any method other than direct personal selection by comparison is time wasting, expensive, and is unlikely to prove successful. We do not sell binoculars on approval, because every new binocular sold by us is just that; genuinely new, it has not been in the possession of any other purchaser.

Remember the essentials; a good selection, a good price range, and most important a good viewing range. If you cannot find anyone offering these facilities then come to us. WE CAN. Our opening hours etc., can be found in our terms of business at the beginning of this catalogue. Our showrooms, set in the most attractive part of the Essex countryside, are well worth a visit by car if only for the sake of a day out. Also remember that our special 15 per cent discount offer applies to all personal callers. See terms of business for details.

If a personal call is out of the question we recommend that you study the various notes below about binocular specifications then choose the model which you consider appropriate for your purpose from our ENGLISH SUPERSCOPIC or ENGLISH HYPERSCOPIC ranges, which we confidently state will please the most fastidious of users, since they combine both high quality and reasonable price. We know of no other range of binoculars on the market which offers the same quality at such low prices.

Now a few words about the specifications of binoculars.

First and foremost ALL the binoculars we stock are PRISMATIC binoculars; this is important, as non-prismatic binoculars (sometimes called Galilean, or field glasses) can be made to look like the real thing, and specifications can even sound similar, but the instruments themselves can never give the same performance. They are in fact a completely different type of instrument.

The next factors are the magnification and light grasp of the instrument. These are usually expressed in the form of two sets of figures, i.e., 10 × 50. The figure or figures before the '×' sign gives the magnification, or power. A 7× binocular will make objects 700 yards away appear to be 100 yards distant; a 10× binocular will make the same object appear to be at 70 yards, and so on. The figures after the '×' sign gives the diameter of the front (object) lenses in millimeters (there are about 25 millimeters to an inch). This does not mean very much on it's own, but can best be interpreted by dividing by the power. Thus a 10 × 50 gives a figure of 5. This is the diameter of the exit pupil in millimeters; the larger the exit pupil the more useful the binocular in conditions of poor light.

It is not true to say, however, that binoculars with a large exit pupil always give a brighter picture. This is because the eye itself has a variable aperture which limits the amount of light which can enter. The size of this aperture under normal bright daylight conditions is about 3.5mm diameter. Thus all the light from a 10 × 50 having an exit pupil of 5mm will not pass into the eye, some of it (about half) will be wasted. In fact the image seen through the 10 × 50 will be no brighter than that seen through an 8 × 30 (exit pupil 3.75mm diameter) under these conditions. No decrease in brightness will be observed until a binocular is used whose exit pupil is less than 3.5mm diameter (i.e. 20 × 50, exit pupil 2.5mm diameter). Thus under

normal daylight conditions ALL of the most common popular sizes of binoculars (8 × 30, 8 × 40, 7 × 50, 10 × 50 and 12 × 50) give the same brightness. Note also that even very large binoculars such as 20 × 70 give the same brightness, the extra size of the object glasses being offset by the high power. However, since the brightness falls off in direct ratio to the SQUARE of the exit pupil diameter, even in sunlight conditions a 20 × 50 is only about half as bright as an 8 × 30, a 30 × 50 only a quarter as bright.

Being variable, the pupil of the eye opens up considerably under conditions of dim light. This is where a binocular such as the 7 × 50 really comes into it's own since now the eye can receive all or most of the exit pupil which it supplies. For the popular range of binocular sizes, 8 × 30, 8 × 40, 7 × 50, 10 × 50 and 12 × 50, the relative brightnesses are in the ratios of 14, 25, 51, 25 and 17 respectively. Thus under really dim conditions, a 7 × 50 will be twice as bright as either 8 × 40 or 10 × 50, three times as bright as 12 × 50 and about 3½ times as bright as 8 × 30. Furthermore it will be 8½ times as bright as 20 × 50 and seventeen times as bright as 30 × 50.

A very popular misconception is the one that the diameter of the object lens in some way determines the field of view; this is not so with prismatic binoculars. The factors determining the field of view are the type of eyepiece and the size of prism used. These are fairly standardized on all binoculars at any given price; also as the power increases the field of view drops in direct proportion, so the maximum field of view with any given type of binocular will be obtained with that having the lowest power. Binoculars of normal angle of view are adequate for all general purposes, high priced wide angle binoculars are only required for special purposes, in particular for the observation of fast moving objects. A real wide angle binocular will have the field of view marked in degrees (or sometimes in feet at 1000 yards), and by comparison with a normal binocular this will be found to be appreciably greater. The normal angle of view of binoculars is approximately as follows; the figures in brackets, are feet at 1000 yards. 8 × 30 7½ degrees (390), 8 × 40 7½ degrees (390), 7 × 50 7 degrees (370), 10 × 50 5½ degrees (260), 12 × 50 5½ degrees (260). The purchaser should make sure that he really needs the extra angle of view, for the cost will be about double that of a similar model with normal angle. Also wide-angle binoculars are not generally popular, and form only a small proportion of our sales, since the rather large eyepieces necessary are not found to be comfortable in use by many people, who also find the weight and bulk of these instruments excessive.

The diameter of the object lens does, however, affect the resolution of the optical system, since the resolving power of a lens is a function of its diameter. This does not mean that ANY binocular having a large object lens is necessarily superior to another having a smaller one, but for two binoculars of the same quality of manufacture the one with the larger object lenses is likely to give better resolution of fine detail REGARDLESS OF POWER. Another popular misconception is that bloomed lenses are some indication as to the quality of an instrument. In fact it costs very little to bloom the outside lenses of a pair of binoculars during manufacture, and some of the lowest quality glasses on the market are bloomed (or coated as it is sometimes called). The factor governing the performance of a lens is the accuracy and precision of its manufacture, and no amount of blooming will improve a poorly made lens to any material degree. On the other hand, given good optical quality, blooming will undoubtedly improve the performance of a binocular by reducing unwanted reflections from the lens surfaces, and increasing contrast and general clarity.

It is perhaps worth mentioning that all the new binoculars which we sell are bloomed, but some of the ex-government ones are not.

The final choice of binocular can only be made by the customer since one person will consider nothing less than a 50mm object lens, on grounds of fine resolution and ease of viewing, while another will have nothing larger than 8 × 30 on grounds of weight and portability. The different aspects on which your choice must be made are as follows:

(1) size and weight
(2) power (magnification)
(3) image brightness.

Aspect (1) is going to be of premium importance wherever the binoculars have to be carried continually over adverse conditions of terrain, for instance serious bird watching, hiking, hunting and horse riding. For these purposes the 8 × 30 and 8 × 40 sizes are most likely to be satisfactory. Also, ladies generally favour these small sizes for all uses because they find the larger models cumbersome.

For special purposes such as target spotting, archery, site inspection, etc., where a detailed view of some special feature is desired, power and large objective size are likely to be of paramount importance. Brightness is not so vital since most of these activities are curtailed under dim conditions, but do not choose a higher power than is absloutely necessary. 10 × 50 or 12 × 50 favourite sizes here, up to 20 × 50 maximum if really good lighting can be assured at all times. A firm tripod mount is most helpful for these special purposes.

For yachting there is very little choice; 7 × 50 is almost universally used due to its superiority under adverse conditions. For all marine uses it is unequalled. The same applies to night use. The 7 × 50 is the only night glass in general use, since it admits rather more light to the eye than it can see unaided, thus allowing the observation of objects at night which would be scarcely visible to the unaided eye; no other size of binocular will allow this, from which it follows that the 7 × 50 will obviously be the only choice for the astronomer and sky watcher. There are times when a really large 15 × 70 or 20 × 70 of good quality can be very useful, but this must be firmly tripod mounted whereas the 7 × 50 may be comfortably hand-held.

For sports use, including football and horse racing, power should be kept reasonably high 10 × 50 or 12 × 50 being a good compromise, or 8 × 40 if size is to be kept to a minimum. For general purposes, holidays and as a general standby in the car, 8 × 30 and 8 × 40 are the two most usual types due to compact size and low weight, although many people find that they can accommodate the extra bulk of 7 × 50 or 10 × 50 and gain the better resolution afforded by them.

NEW BINOCULARS

After intensive study of all the available instruments over a period of several years we have found a manufacturer who can supply binoculars of sufficiently high quality and uniformity to meet our very stringent demands. As a consequence we are proud to announce two completely new ranges of binoculars, each of which offers superlative value for money.

ENGLISH SUPERSCOPIC

These binoculars have lightweight alloy bodies of German pattern, with central focussing mechanism of high strength and smooth action plus independent right eyepiece focussing. Optics are from high grade glass, accurately ground and centred so as to give high definition with minimum distortion. Lens systems fully achromatic and hard coated on all air-to-glass surfaces, collimated and aligned so as to eliminate eyestrain and fatigue. Each binocular is supplied complete with four plastic dust covers good quality black carrying case, shoulder strap for case, neck strap for binocular, presentation box and FIVE YEAR GUARANTEE.



ENGLISH SUPERSCOPIC	8 × 30	£18.00
ENGLISH SUPERSCOPIC	8 × 40	£20.00
ENGLISH SUPERSCOPIC	7 × 50	£21.75
ENGLISH SUPERSCOPIC	10 × 50	£22.25
ENGLISH SUPERSCOPIC	12 × 50	£22.75
ENGLISH SUPERSCOPIC	16 × 50	£23.50
ENGLISH SUPERSCOPIC	20 × 50	£24.00

ENGLISH HYPERSCOPIC

These binoculars have one-piece duralumin bodies of American pattern giving extra strength and durability with superior quality central focussing adjustment plus independent right eyepiece focus. Fully coated optics of extra fine quality, giving haze and colour free image of maximum possible brightness and clarity together with very low coefficients of distortion and abberation. Optical alignment of extreme accuracy with all components firmly clamped to minimize risk of accidental shock damage. Sealed optics ensure freedom from interior moisture or dirt. Each binocular supplied complete with two pairs of lens covers, good quality black carrying case, shoulder strap for case, neck strap for binocular, presentation box and FIVE YEAR GUARANTEE.



ENGLISH HYPERSCOPIC	8 × 30	£21.00
ENGLISH HYPERSCOPIC	8 × 40	£24.75
ENGLISH HYPERSCOPIC	7 × 50	£26.75
ENGLISH HYPERSCOPIC	10 × 50	£27.50
ENGLISH HYPERSCOPIC	12 × 50	£28.50

EX-GOVERNMENT BINOCULARS

Taylor Hobson and Kershaw 6 × 30. Individual eyepiece focussing. Used condition Optically sound £8.25. Web cases 75p each.

German Dienstglas. By famous German makers such as Zeiss, Leitz, Hensoldt, etc. Individual eyepiece focussing. Good used condition, optically sound. £16.50 each, complete with original cases. DNA.



OB.1. Orange filters for binoculars, for contrast enhancement under dull conditions. Push fit over eyecups 1.338" (34mm) diameter. £1.65 per pair.

BINOCULAR MOUNTINGS

B.10. Ex-government, made for Ross 7 × 50 centre bar type. Gives horizontal and vertical movements with locking bars and sliding adjustments. 28p each.

B.11 Imported type with standard camera tripod attachment. £2.31.

B.11 will fit binoculars with centre bars up to ⅝" thickness.

SPECIAL PURPOSE EX-GOVERMENT BINOCULARS



T.75. Stereoscopic Binocular Periscopes, by various German makers. For use either in the vertical attitude as a binocular periscope with a lift of approximately 12", or spread out horizontally, when a greatly enhanced stereoscopic effect is obtained, the impression of depth being very much more pronounced than that obtained with normal prismatic binoculars. Power 10×. Field of view 5 degrees. Weight 12 lb. Supplied complete with geared altazimuth mounting in wooden case. The entire unit is built to an amazing degree of precision throughout, several micrometers and divided circles being incorporated in the various movements. For special purposes requiring good stereoscopic depth at great distances this instrument is unlikely to be surpassed. For stand use only. £33 each, carriage £2 extra. D.N.A.



SURVEYING INSTRUMENTS. Ex-government

T.40. Director No. 6 Mk.II. In effect a small theodolite. Sets out or measures any angle. Prismatic optical system, power 3×. Vernier adjustment. Reads to 2 minutes of arc horizontally, 5 minutes vertically. Compass and three levels built in. In good condition, complete with tribak and leather case. £16.50 each. Ball head tripod to fit. £5.50 each.





T.42. Flash Spotters. A high class binocular theodolite, with extra wide angle erfle eyepieces. Scales are on silvered glass internally illuminated by a lamp or mirror reflector. Full circles with verniers on both axes. Scales are read by means of built in compound microscopes. 8 × 40 optics. The entire instrument contains over 40 lenses and prisms, and cost over £300 to produce more than 20 years ago. Complete in metal case with accessories. In good condition £49.50 each. Reads to 1 second of arc horizontally and vertically.

T.43. Balloon Theodolites. Another elbow type instrument of high precision. Dual optical system. Parallel scales with verniers. In case £49.50 each.





T.44. Dial Sights. 4 power periscopic sight on geared head with micrometer drum. With this unit the eyepiece remains stationery while the objective assembly rotates through a complete circle, the image remaining erect by means of a special geared prism unit. Used condition. £8.80 each.

T.45. Similar unit to the above but heavier type, mainly brass. Has contact rocers built in and leads to supply current to the moving head. Unused £17.60 each. Used £11.80 each.





PERISCOPES Ex-government

T.56. Tank Periscopes. Viewing aperture 5" × 1½", approximately 9" lift. New and boxed. £4.40 each. Optics imperfect £2.20 each.

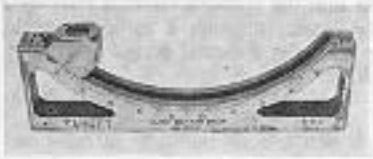
T.57. A similar unit to the above but about 12" lift, and in addition includes an internal telescopic sight with calibrated knobs for elevation and windage. New and boxed £8.25 each.

HELIOGRAPHS Ex-government



T.65. Mk.V. 5" type. Brand new in leather case. Complete but no spares included. £5.50 each.

T.66. Heliograph mirrors, 5" diameter. First grade optical quality glass. Make good flats. Two in metal case, brand new £1.10.



CLINOMETERS Ex-government

I.V.1. Mortar Clino. Mk.IV. Calibrated 0–90 degrees. Slide action. Fitted with circular bubbles. This instrument can be used to lay out any vertical angle to an accuracy of about half a degree. £4.40 each.

I.V.2. Abney Levels. A simple optical sight giving a direct reading of vertical angles. Vernier reading to 10 minutes of arc. Simultaneous reading of bubble and sight by means of split optical system. German made. £3.03 each.





TRIPODS AND INSTRUMENT STANDS Ex-government

TPD.1. Aluminium, heavy duty. 3' 3" extending to 5'. Weight 12 lb. The most rigid of all the ex-government tripods, this will carry up to 2 cwt. £6.50 each. Carriage £1.00.

TPD.3. Wood type, medium weight (11 lb.). Swivel ball head. Suits directors, list number T.40, as well as general purposes. Good condition £6.50 each, carriage £1.00.





TPD.4. Wood type, non extending, 3' high. Pan and tilt head of brass. Weight 4½ lb. Originally intended for 'scout' telescopes but will suit many other types. Maximum diameter of clamp about 1¾". Brand new with leather caps and sling £1.75 each, carriage 50p.





AE

AEF.3

PHOTOGRAPHIC TRIPODS

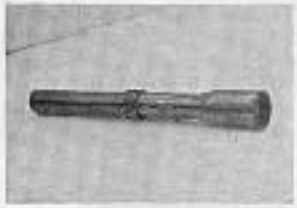
AE. All metal heavy duty tripod with two section legs. Large pan and tilt head with swing over platform and 12" long rising centre column. Length open 55½", closed 27". Weight 5 lb. £17.99. DNA.

AEF.3. All metal h/d tripod with three section legs, lockable umbrella type struts, Heavy duty p & t head, split centre column. Length open 53½", closed 24". Centre column 16". Weight 5¼ lb. £24.92. DNA.

Both these photographic tripods make really first class mounts for binoculars when used with bino. mount B.11. The great increase in clarity and ease of vision affected by a really steady tripod must be seen to be appreciated.

TELESCOPIC RIFLE SIGHTS Ex-government

T.29a. No. 42 Mk. I. Power 3×. Objective 19mm diameter. Field of view 10 degrees. Erect image. Fixed focus. Length 11". Weight 1 lb. Single cross wire. Good condition £4.95 each.





T.30. No. 32 Mk.I. Same specification as T.29a but with full adjustment for elevation and windage. Cross wire and post graticule. Weight 1½ lb. In good condition. £8.25 each. Also avnilable in rusty condition, optically and mechanically sound but graticule needing attention, at £4.95 each.



T.31. M.45. Power 1½×. Objective 15mm diameter. Field of view 7½ degrees. Erect image. Fixed focus. Length 9". Weight 10 oz. Circle and dot graticule. £4.95 each.

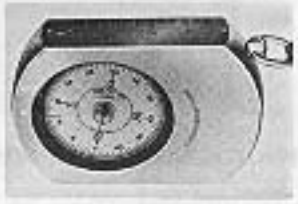


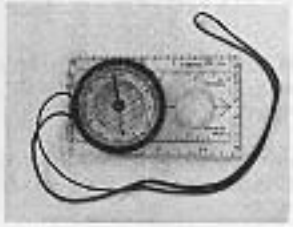
COMPASSES

PC.1. Liquid prismatic marching compasses, Mk. III. Ex-government. In good sound serviceable condition, £8.25 each.

PC.2. Suunto KB.14. Optical Reading Compass. Accurate to ¼ of one degree, this is a modern liquid compass of very robust and compact design, using optical superimposition for dial reading. Overall dimensions 3" × 2" × ⅝". Weight 4 oz. Supplied with leather case and nylon neck cord. £19.00. DNA.

PC.2a. As PC.2 but plastic body instead of aluminium. £10.69.





PC.3. Suunto Orienteering compass. The highly damped movement of this useful pocket compass gives an action similar very to that of a liquid filled model; mounted on a perspex base with magnifier and scales for map reading. £2.48. DNA.

PC.3a. Larger model. £3.65.

INFRA-RED EQUIPMENT Ex-government

T.60. Type 5c/3157. Comprises object glass, image converter cell and eyepiece mounted as one unit and includes H.T. lead. Unused. £1.65 each (sent at purchaser's risk only).





T.61. Monocular, Tabby equipment Mark 1. A self contained unit with built in H.T. supply. For the detection of infra-red sources or extended images lit by infra-red light. Inverted image. Eyepiece focussing. Size 8" × 5" × 2½". Complete with solid leather case and shoulder straps. £1.10 each untested. Carriage 25p



T.63. Image converter cells for the above equipment, £1.65 each, tested O.K.

DUE TO EXTREMELY FRAGILE NATURE OF THESE UNITS THEY CAN BE SENT ONLY AT CUSTOMER'S RISK, AND WE ACCEPT NO CLAIMS FOR DAMAGE IN TRANSIT.



T.64. Zamboni piles, as used in T.61. 28p each untested.

We regret that we cannot supply any further information on the operation of the above Infra-red equipment. This can sometimes be obtained at a good public library.

The equipment was fully described in the October 1948 issue of the magazine *Electronic Engineering*.

NEW PHOTOGRAPHIC EQUIPMENT

PA.1. Ball and socket head for photographic tripod. £1.81.
PA.2. 20" fabric covered cable release with stop. 66p.
PA.3. 10" metal covered cable release with stop. 72p.
PA.4. 20" ditto. £1.15.
PA.5. 20" Heavy duty ditto. £1.71.
PA.6. Neckstrap with safety hooks. 99p.
PA.7. Adjustable neckstrap, 24"-42". £1.48.
PA.8. Flash bracket. 99p.

PA.9. Folding flash bracket. £1.74.
PA.10. Heavy duty dirto. £1.98.
PA.11. 36" Flash extension lead. 55p.
PA.12. Blower brush-large. 62p.
PA.13. Blower brush-small. 56p.
PA.14. 8mm film splicer. £2.97.
PA.15. Film changing bag, for daylight loading. £3.30.
PA.16. Anastigmat enlarging lens, 35mm f3.5. £6.93.
PA.17. Ditto, 50mm f4.5. £6.60.
PA.18. Ditto, 75mm f4.5. £6.93.

All three lenses above have 39mm (Leica) screw mounts.

PA.19. Rubber lenshoods. To fit filter mounts 40.5, 43, 46, 52, and 55mm dia. plus 30mm bayonet (state which size required). 83p each.
PA.20. Metal lenshoods. To fit filter mounts 40.5, 43, 48, 52, 55, 58 and 65mm dia., (state which size required). 83p each.

RUSSIAN PHOTOGRAPHIC EQUIPMENT

The following are our current nett prices for Russian photographic equipment. No extra discount allowable.

Russian photographic catalogue sent on request for 10p in stamps.

RE.1. Zenith E camera, f2 lens, with E.R. case. £37.47.
RE.2. Zenith B camera, f2 lens, with E.R. case. £28.13.
RE.3. Zenith B camera, f3.5 lens, with E.R. case. £20.21.
RE.4. MIR.1. lens, 37mm f2.8. £21.72.
RE.5. Jupiter 9 lens, 85mm f2. £20.70.
RE.6. Jupiter 11a lens, 135mm f4. £19.93.
RE.7. Telemar 22 lens, 200mm f5.6. £38.96.
RE.8. Tair 3a lens, 300mm f4.5. £50.64.
RE.9. MTO 500a mirror lens, 550mm f8.5. £86.82.
RE.10. MTO 1000a mirror lens, 1100mm f10.5. £150.92.
RE.11. Bellows unit, Pentax or Leica fitting. £6.52.
RE.12. Extension tubes, set of three. £2.08.
RE.13. Cosmic Symbol 35mm camera with E.R. case. £7.45.
RE.14. Lubitel 2 twin lens reflex camera with case. £7.23.
RE.15. Etude 35mm projector. £7.50.
RE.16. Zenith 35mm enlarger, complete. £23.33.
RE.17. Leningrad meter. £4.95.
RE.18. ONE ONLY, MTO 500, 500mm mirror lens, f8, NIKON FITTING. £96.00.

F.46



EX-GOVERNMENT CAMERAS

F.46. Aircraft Camera. Fitted 5" focus f4.5 wide angle lens. Takes 2¼" roll film. Frame size 2¼" × 7½". Unused in transit case with magazine. £16.50 each.

V.56. Special long range infra-red camera. Fitted with Taylor Hobson 56" focus f11 lens corrected for infra-red. Plate type. Very long bellows fitted with rack and pinion movement. Camera speeds 1 second to 1/000th second by focal plane shutter. Perfect condition. £132. In transit case, weight about 80 lb.



PL2



PL3 PL4 PL5 PL6



PL9 PL10 PL11



PL20



PL25–29



KPS 5 KWS 6

PHOTOGRAPHIC LENSES. Ex-government. No iris unless stated

PL.2. Aldis 20" focus f6.3 wide angle. This lens will cover any size film up to 24" diameter circle. New condition £33 with iris.

PL.3. Aldis 1.1" focus f2.0, projection anastigmat. New condition £5.75 each.

PL.4. 1" focus f3.5. £2.70 each.

PL.5. 1½" focus f4.0. £3.00 each.

PL.6. 1½" focus f2.0 4 glass anastigmat, gives exquisite definition over a 1" diameter circle. With screwed flange for focus adjustment. £4.00 each.

PL.9. 5" focus f6.3. Back focus 3". For 35mm or smaller film sizes. £3.30 each.

Lenses PL.9, 10 and 11 are especially useful as long focus projection lenses for 35mm film size, giving a long throw without undue extention of the projector — a real advantage for light shows and special effects where a small, bright picture is required at a good distance.

PL.10. 8" focus f5.6. Back focus 4". For 35mm or smaller film sizes. £3.70 each.

PL.11. 10" focus f7.0. Back focus 6". For 35mm or smaller film sizes. £4.20 each.

PL.20. Wray 36" focus f4.0 5 element construction (front element 9" diameter). Film sizes up to 9" square. Weight about 50 lb. Complete with electrically operated shutter but no iris (they were designed for use at full aperture). £49.50 each, carriage £5.50.

This lens can also be supplied complete with the original aero camera body, in which form it is almost ready for use as a really superb astro camera, only requiring mounting and the addition of a suitable film or plate holder. Body is complete with hydraulic shock absorber cradle 18" square, and 9" square ¼" glass flat locating film plane. Total weight about 100 lbs., including lens. Supplied in transit case 45" × 27" × 27" for an extra charge of only £5.50.

PL.25. 35mm focus f1.2 wide angle. 3 element. Originally used in point source projection system. Adaptable for many other applications. 30mm clear aperture, in plain sleeve. No iris. Covers film size 35mm × 24mm for back projection or table viewer, giving 40° picture with screen 42" from the lens. As a photographic lens it will cover 8 or 16 millimeter film with excellent definition and possibly half frame 35mm without serious fall-off at the edges. It will cover full frame as soft focus portrait lens at full aperture if used reversed. Serves as good achromatic condenser for half frame enlargers. As a magnifier it gives 6× magnification with flat field free from distortion and field of view of 35mm. Makes an excellent screen magnifier. Can also be used as a projection eyepiece on telescope or microscope. All the above at full aperture f1.2; improved results are obtained by adding stops for photographic use. Price only £2.00.

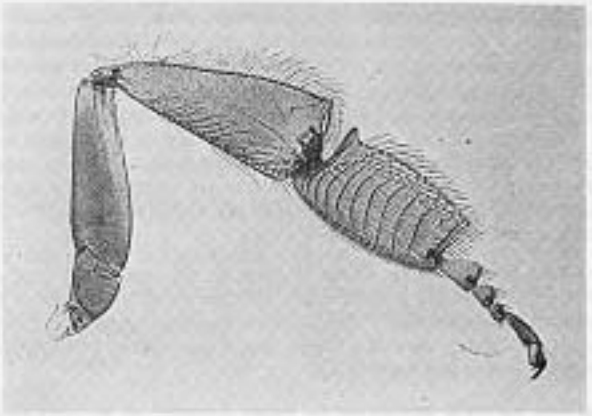
PL.27. 18mm focus f1.4 projection lens for 8mm film size. Four coated elements in brass mount 22⅛mm diameter with focussing thread × 34mm long. Supplied with 22mm long plastic light guard. Due to its short focal length and excellent correction this lens is suitable not only as a projection lens but also for use as a telescope erector lens; by its use in this application the increase in tube length necessitated by the use of an erector lens is kept to a minimum. Also it can be used for macro photography in conjunction with a bellows unit or extension tubes, where the addition of a stop to increase depth of field may prove advantageous. £2.20 each. Fits all Russian 8mm projectors.

PL.28. Projection lens, 9mm. focus, f1.9 four element. Bell and Howell. Size 0.35" long × 0.47" over the thread, 0.40" over the barrel. Ideal for 8mm editors, micro-projectors, microscope objectives, etc. £1.38.

PL.29. 20mm f1.5 four element bloomed projection lens. High quality 8mm optic.

KPS.5. 85 or 100mm anastigmat projection lens, f2.8. Diameter of mount 42.5mm. £3.30 each. Please state which focal length required.

KWS.6. Wray anastigmat projection lens, 85mm f2.8. Diameter of mount 35mm. £3 each.



LEG OF HONEYBEE, approx. 10x, photographed with our macro lens at FULL APERTURE, f1.5, plus standard bellows unit and SLR camera body, using only a domestic hand torch for illumination. Much of the detail is lost in the process of reproduction but enough remains to demonstrate the really good results that can be obtained using modest equipment. The original photographs are on show at our shop.



MACRO LENS FOR SLR CAMERAS

30mm focal length f1.5 four element symmetrical macro lens with ex-government optics complete with Kershaw shutter and variable iris. Shutter speeds 1/25, 1/75, 1/200 and B., flash synchronized, with manual release plus cable release socket. Fitted with Pentax screw thread. £6.60.



VL.2. 135mm f5.6 fixed aperture photographic lens. Push focus from three feet to infinity. Lens resolution (central) 160 lines per mm. Weight 8 ounces. 42mm screw thread to fit Zenith, Pentax, Practika etc. £6.60.

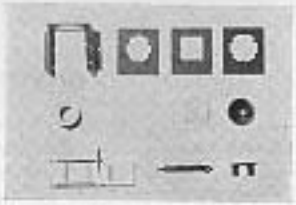
In connection with photographic lenses a few words of explanation may perhaps be helpful. It is popularly believed that any lens giving a larger image size than normal when used with a camera is a telephoto lens, and that any lens giving a wider angle of view is a wide angle lens. Neither of these is necessarily true. For instance a 50mm lens designed for use on a 35mm film camera would give a fairly large image if used on 8mm film size, but it would still not be a telephoto lens. A true telephoto lens is one having a larger effective focus than back focus; these terms are fully explained in our book 'How to use Lenses and Mirrors' but the effect of this is that a telephoto lens is more compact physically than a normal lens. It will not necessarily give better results than a normal lens of the same focal length, but it will definitely give the identical same image size.

Similarly if a 50mm lens from a 35mm film camera is used for 2¼" square film size it will give a fairly wide angle of view, but the picture will probably fall off towards the edges of the film because it is not a wide angle lens. A wide angle lens in the true sense is one which will cover a larger film size than normal. Thus 50mm is the normal focal length for 35mm film size, and any lens of shorter focus than this will have to be a wide angle type if it is to cover the frame properly. There is a further point to consider; lenses of short focal length are usually impossible to use in cameras because they interfere with their mechanical working. For this reason wide angle lenses for single lens reflex cameras are usually of the retro-focus type (see 'How to use Lenses and Mirrors'). Just any lens of say 35mm focal length will not necessarily work on your camera as a wide angle lens.

In short, if you wish to obtain a larger image size you do not necessarily need a telephoto lens; any 500mm photographic lens will give an image size ten times larger than a 50mm one, but a telephoto type will be more compact. On the other hand although any 25mm photographic lens will give double the field of view of a 50mm one, it may not be of any practical use due to limitations of covering power and back focus.

These generalizations are only applicable to lenses focussed at or near to infinity; if it is focussed at close distances a lens will cover a much greater film size than that for which it was designed. Thus for macro work on 35mm film we can use lenses designed for 16mm film sizes or less with no ill effect. Lenses used under these conditions are sometimes mounted back to front; the reason for this is obvious if you visualize a lens as it is used normally with the object at a much greater distance than the film. If these conditions are reversed it is natural that the lens also will perform better reversed.

SLIDE PROJECTOR KITS for 35mm film size (2" × 2" slides)



TYPE KP.1. Latest type optics with 85mm or 100mm f2.8 anastigmat projection lens to choice (please state which). £6.60 per kit, supplied with instructions. Lamps and holders are extra.

Recommended lamps, new and boxed:

KL.6. 12 volt 100 watt Tungsten Halogen (Iodine Quartz). £1.65 each. Lampholders 55p each.

KL.7. 12 volt 50 watt ditto £2.01 each, Lampholders 55p each.

KL.8. 24 volt 150 watt ditto £2.67 each. Lampholders 55p each.

KL.9. 24 volt 250 watt ditto £3.43 each. Lampholders 55p each. (This lamp may require blower cooling).

KL.10. 240 volt 150 watt £1.34 each, Lampholders 66p each.

KL.11. 12 volt 100 watt £1.25 each. Lampholders 66p each.

All parts available seperately as follows:

KPS.1. 2½" diameter surface aluminized glass reflector 66p each.

KPS.2. 2" diameter aspheric condenser lens 66p each.

KPS.3. 1½" square heat filter 66p each.

KPS.4. 2½" diameter plano-convex condenser lens 66p each.

KPS.5. 85mm or 100mm focal length f2.8 anastigmat projection lens (please state which focal length required).
Diameter of barrel 42.5mm. £3.30 each.

KPS.5a. 85mm lens as above but fitted with an additional lens so as to give 50mm focal length. Complete lens £5.50 each. If supplied with complete kit £2.20 extra (i.e. complete kit with 50mm lens £8.80). The 50mm lens gives acceptable definition but is not as sharp as the standard lenses.

KPS.5b. Additional lens ONLY for above, for existing 85mm lens. Unmounted. £1.37 each.

KPS.6. Two way spring loaded double slide carrier 66p each.

KPS.7. Lamp housing complete with slip in mounts for optics plus lamp bracket and adjusting lever. 82p per set. Kit plans and instructions are available seperately at 10p each postpaid.



TYPE KW.1. Back projection kit by Wray Optical. Screen size 8" × 6". Designed for a £200 projector the quality of this kit may be taken for granted; it gives a brilliant picture even in daylight with pin sharp definition from edge to edge. £9 each, complete with plans and instructions. Kit includes lamp and holder.

Parts supplied as follows, available separately at the prices stated:

KWS.1. 49mm diameter aspheric condenser lens in mount £1 each.

KWS.2. 55mm diameter plano-convex condenser lens in mount. £1 each.

KWS.3. 48mm square heat filter in mount. £2 each.

KWS.4. 35mm diameter glass reflector in mount £1 each.

KWS.5. Metal housing for the above parts. 50p each.

KWS.6. 85mm f2.8 anastigmat projection lens £3 each.

The above parts are all interchangeable with Wray 'Moth' and 'Firefly' projectors.

KWS.7. 4" × 3" surface aluminized mirror. £2.75 each.

KWS.8. Special screen, size 8¾" × 6". 50p each.

KWS.9. Slide carrier and bracket, not Wray but of comparable quality. £1 per paid.

KWS.10. 12 volt 100 watt Tunsten Halogen (Quartz Iodine) lamp, equivalent to A1/209 and A1/215. £1.65 each.

KWS.11. Lampholder for above, 55p each.

Suitable transformers (NOT included in the kit) to run the above lamp are available price £4.40 each.

Plans and instructions are available separately price 10p each postpaid.

Plans for kits KP.1 and KW.1 are priced 15p per paid post paid if ordered together.

TYPE KW.12. Special Kit for light shows, liquid wheels and spots. Use with tungsten halogen lamps from 50 to 250 watts to give large brilliant evenly illuminated circle of light. Condenser system as for kit KW.1, but supplied with 100mm focal length f2.8 unmounted acromatic lens and without heat filter. £3.85 per set.

BACK PROJECTION 35mm FILM-STRIP VIEWERS WITH SOUND ON TAPE

These are British manufacturers' surplus stock, unused in original cartons. Screen size is 8" × 5½", overall size of the machine 15" × 15" × 10". Weight 34 lbs. Special cassette accepts up to 20 feet of 35mm filmstrip (still NOT cine) plus 3" reels of standard recording tape. Synchronization of sound track with film frame is fully automatic on forward, backspace or rewind. Remote operation of advance by footswitch. 12 volt 100 watt Tungsten Halogen lighting with built-in transformer. Modern high efficiency projection optics with 85mm lens. Lid lifts off to allow normal front projection onto any size screen. Each machine includes footswitch, clip-on earpiece, lamp, one empty cassette and instructions for use. These machines were originally intended for sale as audio-visual teaching aids at well over £200 each. We are able to offer them at only £27.50 each checked O.K. Carriage is by B.R.S. at purchasers risk only, £2 each extra. Callers may see the machine they purchase demonstrated on sound and vision, but we cannot allow any extra discount on this line. We can also offer the machines complete but UNTESTED at £16.50 each. Carriage extra as above. Spare cassettes are £1.10 each.

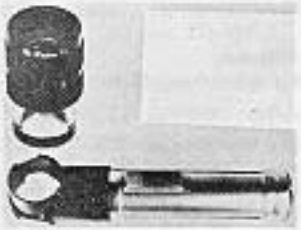


MITUTOYO MEASURING INSTRUMENTS

Extra fine quality instruments by the world's largest manufacturers of precision tools. All net prices, no extra discount allowable.

Pocket Comparator

Of especial interest to the printer and photo-engraver, this instrument is an indispensible aid for the inspection and measurement of many types of small components. Magnification is 7X and an illuminator is available. There is a range of thirteen different reticles to suit practically any purpose, and these are to a very high standard of accuracy.



183–101. Comparator. £5.50.

950–757. Illumination attachment (without battery), £2.15. Reticles, £2.97 each.

Vernier Caliper Guages

Tools of very high grade, fully equivalent to any internationally accepted standard. Made of fully hardened stainless steel throughout. These vernier calipers incorporate the 'Quadri' feature, permitting use in layout work and eliminating many tools normally considered necessary for this purpose. May be used for outside, inside, depth and step measurements.



531–128. Vernier caliper guage, 0–6" (1/1000 inch divisions) and 0–150mm (150mm divisions), with thumb lock adjustment. Supplied in good quality case. £6.44.

532–119. Vernier caliper guage, 0–5" (1/1000 inch divisions) and 0–130mm (1/50mm divisions), with adjustable slide for fine adjustment. Supplied in good quality case. £6.82.

505–626. 6" dial caliper guage, with adjustable dial reading to 0.001 inch. Patented covered rack prevents ingress of dirt or grit. Supplied in velvet lined metal case. £14.41.

Micrometers



These are instruments of unrivalled quality; stainless steel spindles have hardened ground and lapped threads plus carbide tipped measuring faces. Graduations are clear and easily read. Positive locking clamp ensures spindle lock at any desired setting. Enamelled frame. All types are supplied in de luxe case.

103–127. Micrometer 0–1 inch, 0.001 graduations, friction ratchet. £5.94.

103–131. Micrometer 0–1 inch, 0.0001 graduations, friction ratchet. £6.77.

103–132. Micrometer 1–2 inch, 0.0001 graduations, standard ratchet. £8.36.

103–135. Micrometer 0–1 inch, 0.0001 graduations, friction ratchet. £6.77.

103–177. Micrometer 0–1 inch, 0.001 graduations, standard ratchet. £5.94.

103–178. Micrometer 1–2 inch, 0.001 graduations, standard ratchet. £7.15.

103–125. Micrometer 0–25mm, 0.01mm graduations, friction ratchet. £5.94.

103–129. Micrometer 0–25mm, 0.001 graduations, standard ratchet. £6.77.

103–137. Micrometer 0–25mm, 0.01 graduations, standard ratchet. £5.94.

103–138. Micrometer 25–50mm, 0.01 graduations, standard ratchet. £7.15.

103–500. Heavy duty micrometer 0–25mm with heat plates. 0.01mm graduations, standard ratchet. £5.12.



Super quality instruments conforming to international standards

2046. Dial diameter 55.6mm, reading 0–100 with revolution counter. 0.01mm graduations. Spindle travel 10mm. £5.72.

2047. Dial diameter 55.6mm, reading 0–50–0. 0.01mm graduations. Spindle travel 10mm. £5.72.

2412. Dial diameter 2.2 inches, reading 0–100 with revolution counter. 0.001 inch graduations. Spindle travel 0.4 inches £5.72.

2413. Dial diameter 2.2 inches, reading 0–50–0 with revolution counter. 0.001 inch graduations. Spindle travel 0.4 inches £5.72.

PUBLICATIONS

"HOW TO USE LENSES AND MIRRORS"

Our book 'How to Use Lenses and Mirrors' is the result of many years of experience in solving the optical problems of others. We guarantee that given the will to learn anyone can master the basic principles of optics with the help of this book. No specialised knowledge is required beyond primary school arithmetic. 'How to Use Lenses and Mirrors' is a completely new concept; it does not contain sections which have been taken in whole or in part from any other book ever published. Not just a different perspective, this book looks at optics in a completely new light. In addition it gives for the first time information on concepts such as effective focus and principal planes which is concise, easily assimilated, utterly simple yet totally correct. 'How to Use Lenses and Mirrors' is not limited to any one field of optics; whether your interest is in telescopy, microscopy, photography, any branch of commerce or industry, or even discotheque light shows, this book will prove of inestimable value to you. In our opinion no student of optics can afford to be without it. Here is a synopsis of the contents.

	Page
Lenses as Building Bricks	6
The Computer and How to use it	11
Lenses. How they work. Positive and Negative	15
Negative Lenses	18
Combinations of Lenses. In contact	21
Effective Focus	24
Spaced Combinations of Plus Lenses	27
Negative Combinations of Positive Lenses	30
Plus and Minus Combinations in Contact	33
Spaced Combinations. Plus and Minus	35
Reversed Telephoto Combinations	38
Retro Focus Lenses	40
Spaced Combinations of Two Negative Lenses	41
General Summary	42
Telescopes. Refracting and Reflecting	46
Increasing the Power	55
Terrestial Telescopes. Increasing the Power	60
Magnification and Vision	65
Photographic Section	68
Supplementary Lenses. Positive	68
Afocal Adaptors	72
Wide Angle Lenses for Detachable Lens Reflex Camaer	76

	Page
Telephoto Lenses	78
Variable Focus Telephoto System	81
Anormorphic System	82
Projection Systems	84
Film Projectors	86
Lamps	89
Reflectors	90
Heat Filters	91
Condenser Systems	91
Spotlight	93
Nodal Points and Principal Planes	96
Eyepieces	99
Erector Lenses	103
Periscopic Systems	104
Effective Aperture	105
Laser Light	107
Virtual Images	107
The Power of Lenses	108
Data Section	109

'How to Use Lenses and Mirrors' has 112 pages and 100 illustrations. Hard covers. It is available on 14 days approval for £1.65 per copy post paid.

HOW TO USE EX-GOVERNMENT LENSES AND PRISMS. No. 1 (illustrated. 25p. Contains valuable information concerning the optical layout and general construction of TELESCOPES, BINOCULARS, ENLARGERS, PROJECTORS, EPISCOPES, MICROSCOPES, RIFLE SIGHTS, CONDENSING SYSTEMS, EYEPIECES AND MAGNIFIERS and general information on lenses and prisms with particular reference to EX-GOVERNMENT TYPES offered in our lists and elsewhere.

HOW TO USE EX-GOVERNMENT LENSES AND PRISMS. No. 2 (Illustrated). 25p. Published as a supplementary to No. 1, with more optical gen. Details for making 8mm., 9mm., 16mm. projectors and enlargers. Projectors for 2 × 2 slides. Stereo Viewers. 40× Terrestial Telescopes and a 35× prismatic scope. Using Ex-Government lenses, etc.

LARGE SCREEN STEREO WITHOUT VIEWERS. In fact any type of stereo without viewers. Our booklet "STEREOSCOPIC REPRESENTATIONS OF THREE DIMENSIONAL SCENES", price 50p. With sample pictures describes a unique system which offers a simple and complete solution to the problem of viewer-less stereo. Sample 16mm. Kodachrome Cine Loops for demonstrating the above system 50p each. Stills on 16mm. Kodachrome, 60 stereo pairs. 120 frames. 50p.



EM1



EM2



EM3



EM8



EM12



EM16



EM17



EM19



EM21



MB3



MB8



V.17

MOTORS

EM1 Small geared motor suitable for driving large telescopes. 24v. D.C. Electro-magnetic clutch. Will run full power from 6v. Clutch requires 24v. Speed approx. 1 r.p.m. Worm gears throughout, running in 7 ball races. Size only 1¼" × 1½" × 3". Price £2.75 each. Supplied brand new and boxed in die-cast case, with various relays etc.

EM2 Small motor. 24v. D.C. Fitted pulley and wire belt, size approx. 2" cube. Speed approx. 5,000 rpm. Fitted speed governor. Ex-equipment. 75p.

EM3 Small motor approx. 2" × 2" × 2½". 3,000 rpm. Brand new. Ex-Government. £1.05.

EM6 Rated 19v. D.C. Runs from 12v. Size approx. 3" × 3" × 9". Ex-Government. Shunt wound. Powerful and quiet. Suit small grinders etc. £1.75.

EM8 John Oster Motor. 24v. A.C. or D.C. Size 7½" × 3" × 3". 2 geared take offs 3½ and 12 rpm. Plus cam operated push rod system. A very versatile motor for the inventor. Precision built. Brand new. £3.10.

EM11 Syncronous. 230v. 50c. A.C. 20 revs. per hour. Fitted switch contacts and adjustable arm. £1.50.

EM12 6 to 24v. D.C. reversing. Ali. case. ⅜th spindle. Very powerful and quiet. Suit large fans. Size 6" × 5". Brand new £3.00.

EM13 115v. A.C./D.C. with V pulley on ¼" spindle. Suit sewing machines etc. £2.48.

EM14 24v. D.C. Heavy duty. Bags of power on 6 or 12v. D.C. Runs Kiddy cars, small lathes and saws etc. Size 7" × 4". Soiled but unused. £3.10.

EM15 Parvalux geared, 120v.D.C. 70rpm at 7lbs./ins. Single ⅜th spindle. £3.85. New.

EM16 Ditto. With double spindle. £4.40. New.
Spare gears to suit above available at £1.10 each. Complete with ball races.

EM17 Crouzet. 240v. A.C. 60cs. 4rpm. With 2" gear attached to final drive. Complete with quick release mounting plate and screws. New £2.48.

EM18 Crouzet. 110v. 60cs. 1rpm with mounting plate £1.93. New.

We have a variety of other small motors and servo mechanisms, multi-speed gear boxes etc. available to callers. Also new spares for Pye Unicam spectro-photometer equipment.

EM19 Servo motors. 24v. D.C. Size approx. 3" × 3" × 3". £1.95.

EM20 Geared Motor, 100–125 volts AC 60 cycles. 60rpm approx. Run from 230 volts with 8000 ohm 2 watt resistance in series. Spindle ⅛" × ¼" long. 66p each. These are LOW POWER, 2 watts, where considerable power is needed use EM.18.

EM21 24 volt DC motor, 6000 r.p.m., 0.96 amps. Weight 2 lb. £1.80 each.

MOTOR BLOWERS

MB1 24v. D.C. small lightweight. Size approx. 3" × 2". £1.43.

MB3 24v. D.C. or A.C. Outlet 1" × ¼". Size approx. 5" × 3". New. £2.48. Unused £1.65.

MB8 80v. A.C./D.C. 1¼" Outlet. Powerful blast. New £2.48.

V.17 Spirit levels. Precision type as used on Surveying instruments. 5" long in brass twist action weatherproof case. For adjustable mounting. Brand new. 44p.

BW1 Box wood Scale rules. 6 and 12". First grade by Hall Harding, Armstrong etc. 12 all different £1.32. 36 all different £3.30.



ACM.1



EM.22



RV.1



CP.2

TRANSFORMERS

TR1 12v. 1½ amp centre tapped. New 99p. 230v. input.

TR2 Auto-transformer. 1,000 watt or 10 amp max. 0-115-205, 225, 245. £6.60 New.

AMMETERS. AC – DC

ACM1 6" dial Flush mounting. Switchboard meters 15 amps, 30 amps or 50 amps. State which. Brand new and boxed. Our price £2.75 each.

FL1 FLEXIBLE DRIVES, 23 feet long. Similar to heavy duty speedometer drives; used for remote control in aircraft. Ref. No. 9/2668. New and boxed. £2.75 each.

LAMPS

L1 24v. 80w. Ex-Government. SBC. DC. Special offer to clear. £1.10 for 10. £8.25 per 100.

HAND GENERATORS

EM22 Ex-survival equipment. Rated 28v. 0.175 amp and 300v. at 40 m.a. As L.T. generator with H.T. brushes removed will charge up to 1½ amps at 6v–24v. Or will run from 24v. as geared motor at approx. 30 rpm. Complete with handle. Aluminium gear case and gears. Bargain at only £1.65 each.

RV1 Ex-RAF rotary vane fuel pump, with integral 24 volt electric motor. Brand new and boxed. £5.50 each.

CONTACT MICROPHONES

CM1 Low impedence. Size approx 1½" × ½" × ¾". Electro magnetic. Can be used singly to pick up from any vibrating surface, or alternating magnetic field. Boxed in pairs at 33p per pair.

CM2 American carbon type throat microphones. With neck band lead and plug. 33p pair.

PRESSURE GAUGES

CP2 0–150. 1½" dia. New 55p each.

CP3 Ditto 0–160 calibrated lbs. and Kgs. 66p

EXTRA ITEMS

X.1. PARALLAX BARS, TYPE PB.2, with micrometer adjustment. Complete in case with spare flats and graticule. £7.50 each.

X.2. PERSPEX CIRCLES, 9" diameter, divided 0-360 degrees in 5 degree intervals. Domed approx. ½" with pointer attached to centre. Marked N, E, S and W. £1 each.

X.3. ROSS BINOCULAR EYECUPS, plastic, 25p each.

X.4. ROSS BINOCULAR BODIES, 7 × 50 and 10 × 50, all metal. Authentic bodies less optics for display or theatrical use. Unpainted. £3.00 each.

X.5. X-RAY EQUIPMENT. Stainless Steel plate holders for exposure and development. Assortment available to callers.

X.6. 25 × 105 German Binoculars.
The object lens for this famous binocular is a triplet of approx. 15" focus, consisting of a bi-convex lens of 6½" focus spaced ½" from a plus and minus combination in contact, focal lengths 33" and 10" respectively, diameter 4". Regret we have no front elements but we can offer the two rear elements at £6 per pair.
The correct front elements were sold some years ago by Charles Franks of Glasgow, as condenser lenses 105mm dia. × 6½" focus. We would like to hear from you if you purchased anything from them answering this description and which you no longer require.

X.7. SURGEONS' SKIN GRAFTING KNIVES. With roller guide. Brand new ex-govt. £3 each. 7¼" blade.

X.8. SURVEYORS' 2 METRE FOLDING RULES. 10 section. Brass hinges. One side for measuring, the other for sighting. German manufacture, ex-govt. £1.50 each.

X.9. SPECTACLE FRAMES. Good quality modern plastic frames with steel reinforced sides. Colour almost clear with faint pinkish tinge, various sizes including children's. Would make top quality sterovisors if fitted with polarizing material. 75p each, £5 for 10. State size, large, medium or small.

X.10. SUNGLASSES. Various types, all up to date styles, recent bankrupt stock. Three different qualities, four for 50p, £1.00 or £1.50. Assorted. All worth double.

X.11. DIVIDED CIRCLES. Brass. Engraved figures white against black. 6½" diameter. Centre clear plastic 5" diameter. Engraved centre line with 4 × 10 degree angles converging to centre. Paint will clean off leaving engraving on brass. Ex-government. £2.50 each.

X.12. GEAR TRAINS. Ex survival equipment auxiliary to hand generator list no. EM.20. Comprise 5 reduction gears with speed control driving cam operated double-pole change over switch and stepped wheel operating three switches to give automatic S.O.S. signal in morse code. 50p each.

X.13. 28V 1000 ohm single pole change-over RELAY, cut out for above unit. 30p each. Three items together. EM.20, X.12 and X.13 sent for £2.00 postpaid. No extra details or circuits available.

X.14. X-RAY CARD. Kodak. One side white, one side cream darkening on exposure to light. White side ideal for artwork etc. Unmarked. 72 sheets 24" × 11". £1. Six packs for £4. Postage 50p.

X.15. GRINDING WHEELS. Carborundum aloxite. 12" dia. × 2" wide. 1" bore. New and boxed. £1 each. 12 for £6. Postage 50p.

X.16. INSPECTION LAMPS. Ideal for cars. Eight foot cable with lampholder pulls out and returns to spring loaded drum. 75p each.

X.17. AIRCRAFT COCKPIT LAMPS. Red glass. Adjustable angle and light control. 75p each.

X.18. LUCAS 12V IGNITION COILS. Standard type. Unused. Useful spark generators. £1 each. Six for £4.50.

X.19. DRUM CAMERA BY NASH AND THOMSON. Medium speed (up to 1200" per sec.) on 37" long by 70mm wide film or paper. Shuttered drum type with variable format (1mm × 25 to 20mm × 70). Cassette load. 24V d.c. electrically driven with with provision for TR and phasing marks on film and slave camera. Each camera is complete with 2 drum cassettes, 2 control boxes and through the lens focussing device with four Dallmeyer lenses focussing from six inches to infinity. Lenses 3", 3", 6" and 12" focus, with iris to f.32. Lenses as new and bloomed. Cameras may require attention but in generally good condition. Complete in 3 transit cases. 5 available. £120 each.

X.20. CARL ZEISS PHOTO THEODOLITE, complete with 38cm f5 Tessar, 12 plate holders 7½" × 5½", screen and micro focussing. Auxillary stroboscopic equipment, etc., in five large transit cases. General condition good but may require some attention. £140.

X.21. HONEYWELL BROWN ELECTRONIK CHART RECORDERS. 230V a.c. 50cps. Condition as new but untested. £35 each. Several other types available.

X.22. LARGE MOTOR DRIVEN VARIABLE TRANSFORMER. 230V in, 0-260 out. 20 amp or over. U.S.A. powerstat auto. £35.

X.23. LARGE DOUBLE WOUND TRANSFORMER. 150 to 250V input in 25V steps. 50 or 55V 20 amp output. Steel cased. £10 each.

X.24. ENGLISH ELECTRIC 1.25 h.p. 230V a.c. MOTOR coupled to 115V 517 watt d.c. generator. On base with easy glide casters and cover. Brand new. £30.

X.25. LARGE 18" DIA. ROTATING HEAD. Cross slotted and divided 0-36 in 5 min. intervals. Driven by four speed gearbox. Provision for 25 electric leads to head through silver slip ring system. Size overall approx. 3 feet × 2 feet. Weight about 2 cwt. Mainly aluminium. In good order except that internal motor of approx. ¼ h.p. is missing. £50.

X.26. PRESSURE GUAGES. 4" dia. 0-50 lbs. Chrome rim. New. £2.25 each.

X.27. SWITCH. Push on-off. 230V 2A. One hole fixing for thin sheet metal or approx. 8" panel. State which preferred. 8p each or 10 for 50p.

X.28. ORION MICRO SWITCH, 250V 10A complete with roller type lever. 15p each, 10 for £1.

X.29. BOMB DELAY SWITCHES, incorporating 8 day jewelled watch movement. Two contacts adjustable 1 hour to 38 hours or 15 min. to 8 hours. Adaptable for slow drives, 1 rev. in 40 hours approx. Supplied ready wound and movement checked O.K., remove saftey pin to start movement. No winding keys, no instructions available. May be some rust or corrosion on non-moving parts. 75p each.

X.30. TELEPHONE MAGNETOS. Various types with handle £1.25 each. Less handles 75p each.

X.31. WAFER SWITCH. 6 bank 12 position. 75p each.

X.32. LEDEX SWITCH for remote control, 24V d.c. 5 bank carrying about 10 × single pole, three position units plus on-offs. Impulse motor adaptable for many uses, turning liquid wheels for light shows, etc. Brand new £1.50 each.

X.33. CRATER SWITCH. 260V 16A 6 bank, type LRC/4/Z36a. New. £1 each.

X.34. LARGE ROTARY SWITCH, two bank 20 way, carry 20 or possibly 40 amps. Size about 5" dia. brass copper and stainless steel, laboratory equipment. Brand new. £2.50 each.

X.35 REVOLUTION COUNTERS. Mechanical. Three figure 20p each.
Four figure by Veeder 30p each.

X.36. ACCUMULATOR CUT-OUTS. Aircraft type. 24V 60A. New £1.50 each. Similar types, used or slight damage to case, but serviceable. 75p each.

X.37. STANDARD AMPMETERS, 0-250 amps in wood case. Ex-govt. £5 each.

X.38. MAZAK PLUGS AND SOCKETS. Offered to model makers etc. for casting metal. Melts easily, strong and tough, moulds well in plaster, turns easily and cleanly. Complete with brass ferrules and insulating cores in most cases but offered only as scrap. 14lb. for £1.25. Postage 75p.

X.39. H.F. CHOKES, UHF to all wave. New. 12 assorted 60p.

X.40. 5 COIL ALL WAVE CHOKE on panel with .01 mica condenser. 10p each.

X.41. UHF COILS, set of 7, all different with dust cores or rotary air spaced trimmers, unused. No data. 40p per set. Additional coils to match any supplied 15p each.

X.42. TRENCH LOUDSPEAKERS, Tannoy re-entrant type. In case with transformer and switch. £3 each or £5 per pair. Postage 75p each.

X.43. TANNOY LOW PRESSURE SPEAKERS, less horn, 15 ohm. Checked O.K. Complete with protective screw cap. WARNING; do not stick your finger in as the diaphragm is extremely delicate and will be damaged on contact. We will not exchange such damaged units. £2.50 each. Postage 75p.

X.44. DITTO, faulty, offered for the very large ring magnets, weight about 10 lbs. £1.50 each. Postage 75p.

X.45. TOGGLE SWITCH, 4 pole change over, centre off. Long toggle with luminous tip. American war surplus. Ideal for motor control, 10 amp contacts. Voltage unmarked but in constant use in our workshops for reversing 230V single phase and 440V 3 phase motors. 20p each. 10 for £1.50.

X.46. POWER UNIT TYPE 392. 230V 50cps. 700V d.c. smoother output at 70ma rating but will stand 100 or more. Unused with two valve rectifiers, in steel case with large block condensers. Slydlock fuses in front of panel may be damaged or missing. £5 each, post £1 extra.

X.47. SANGAMO TIMESWITCH. 240V 50cps. 20 amp. Solar self-compensating dial. New £5.50 each.

X.48. HEATING ELEMENTS, 230V 1000W, Flat type wound on mica, size approx. 9" × 2". 60p each.

X.49. DITTO, coil type mounted in ceramic. 230V 2000W. Suitable for blowers. Terminal connections could be paralleled for 115 or 60V for control gear etc. Size approx. 6" × 2" × 2". 80p each.

X.50. TRANSFORMERS, brand new. 200–250V 50cps input, 12V 10A, 28V 3½A and 28V ¼A outputs. Screen primary with fly leads. Size approx. 3½" × 4" × 4½". £4.40 each. Post 50p.

X.51. TRANSFORMER, 230V AC, 8V 10A output, centre tapped, £1.50 each.

X.52. UNISELECTOR SWITCHES, new. 8 bank 25 way £4 each.
6 bank £3.50 each.
4 bank £3 each.
8 bank 30 way, ex-equipment, as new, £2 each
Banks of six wired in parallel, £12 each.
Various types of secoodhand selectors offered at £1 each for any type, but without guarantee as they may require slight attention or adjustment. A genuine DUD returned as received will be replaced on payment of carriage cost, 25p minimum.

X.53. AERIAL CHANGEOVER RELAYS, old type with input and output sockets, unused. 30p each. Plugs to suit 10p each.

X.54. SMALL RESISTORS, suit transistor equipment. 20, 47, 500, 600, 700, 1K, 1.5K, 3K, 3.3K, 5.5K, 6K, 22K, 77K, 80K ohms. Assorted 60 for 60p (some of each type) or your choice at 2p each. All new wire ends.

X.55. 500 OHM SUB MINIATURE POTS. 5p each, 10 for 25p.

X.56. METAL RECTIFIERS, new ex-govt.
12–24V 5A full wave bridge type, £1 each.
24V 10A f.w.b., £1.50.
12V 1½A f.w.b., 50p.
12V ¼A f.w.b., 20p.
230V 5A half wave, centre tapped, £1 each. Use two for 110V f.w.b. or four for 230V f.w.b.
230V 60MA h.w., 20p'
110V 60MA h.w., 10p.
Type RM.1., centre cell h.w., 20p.

X.57. EX-GOVT. CO-AXIAL SOCKETS, 10H/528. 10p. Plugs to fit 10p.

X.58. VOLUME CONTROLS, 3500 ohms wire wound, 15p each.

X.59. 1000 OHM WIRE WOUND POTS, screw adjustment, 15p each.

X.60. ASSORTED VOLUME CONTROLS AND POTS, mainly morganite. Unused ex-govt. 10 for 50p.

X.61. TOGGLE SWITCH, single pole changeover, Bulgin or similar, 20p each.

X.62. PLUGS AND SOCKETS, 5 pin. Type 10H/13078 and 9. 25p pair, 10 pairs for £2.

X.63. SMALL 2 PIN FLAT TYPE PLUG AND SOCKET, 2 amp. Ref. 10H/4206 and 5C/1951. 10p pair.

X.64. BULGIN BRASS PANEL LAMPS. MES fitting. Green and Red. 20p each, 10 for £1.50.

X.65. EX-GOVT PLASTIC PANEL LAMPS with removeable metal blackout shades which are rusty. MES. 10 for 30p.

X.66. VERNIER DIALS. Type D. Ref. 10A/8510. New £1.50 each. Used, minus front plastic knob, 75p.

X.67. TAG BOARDS, two and earth and three and earth. 10 for 20p.

X.68. LIMIT SWITCH, Skeleton type. 10p each.

X.69. CARBON RESPIRATOR MICROPHONE. 20p each

X.70. MOTOR SWITCH. 24V d.c. motor geared down to 6 to 1 to drive various cam operated switches connected to 6 co-ax. sockets. Suit small light displays. £1.50 each. Plugs to suit 10p each

X.71. BLOWERS, 24V a.c. or d.c. Approx. 1" outlets. Used, serviceable. £1 each. Brand new £2 each.

X.72. SPERRY MATCHED ACCELLEROMETER with encapsulated demodulator unit with lead and 12 pin plug. Part no. 2262–55. New £5 each.

X.73. ACCELLEROMETER GW3 MK4. Plus or minus 15G. £4 each.

X.74. METERS for parts, experiment or repair. Mainly 2" flush type, 50A, 20A, 20V and 40V. Cases or glasses damaged but in most cases movements O.K. but not guaranteed. Contain shunts, wire wound precision resistors, magnets, fine springs. These small and intricate parts and movements are often seen in jewellers' shops and stores encapsulated in clear plastic as novelty ornaments and selling at several pounds each. Chance to make a fortune or lucrative and interesting hobby. 10 for £1.25, 50 for £5.

X.75. MAGNETS only as above, 10 for 75p.

X.76. MINIATURE LEAD-ACID BATTERIES. Rechargeable, by Williard U.S.A. Ready charged, only needing to be filled with acid. Size 85mm × 35mm × 22mm. One 6V and three 36V in hermetically sealed can with instructions. 60p each.

X.77. SMALL A.C. OR D.C. MOTORS, 12V. Beautifully made with ball races and speed governor. Many uses for mechano or models. Used to drive small gyro mirrors in gunsights. Size about 2" × 2" × 2". 75p each.

X.78. DITTO, slightly larger type, 24V. £1 each. Both types fitted with pulley and wire belt.

X.79. BANK OF 9 VITREOUS 5 WATT RESISTORS, 100 to 500 ohms mounted on base and wired to terminal tags via ceramic beads. 75p each.

X.80. ELECTRICIANS' SCREW DRIVERS, ex-govt. Wood handles, 9" overall. Box of 6 for 60p.

X.81. RESISTANCES, CONDENSERS, CHOKES, etc., mainly ½ and 1 watt including wire wound vitreous, all on tag boards or small panels. From older equipment but but unused, £1 per 100. Cardboard tubulars not counted.

X.82. SMALL ROTARY TRANSFORMER, 18V d.c. input, 150V 100Ma output, £1 each.

X.83. FIRE ALARM BELLS, large twin gong, 230 V a.c. Poor condition but serviceable. £1.75 each.

X.84. ASH DENTAL BURRS, nos. 6 and 9. Box of 6, 25p. 2 boxes 40p.

X.85. DRAUGHTSMAN'S CROSS HATCHING DEVICE with lever and ratchet advance. Adjustable spacing. All brass in case. German precision instrument. £4 each.

X.86. TYPE G.45 16mm CAMERAS. New and boxed with cassette. £6 each.

X.87. TELEPHONE HANDSETS, ex-govt., new and boxed, type YA/6451. £1 each, 6 for £4.50.

X.94. PRECISION ALTIMETER, system Paulin, 5" diameter. Mirror scale micro adjust, in leather case, £17 each.

X.95. 2½" DIAMETER PLASTIC GRATICULES as used in the Magniray hand magnifier. Metric scale, 10th, 15ths, inches and inch metres. 5p each. 10 for 25p.

X.96. SHERWOOD PARSONS CELLULOSE LACQUER, brush or spray, in 1 pint tins for cars. All colours. 10 all different £5.

X.97. POLAROID RED FILTER, 20mm dia. in plastic eyecup 32mm dia., threaded 24mm. In canvas bag, by Polaroid U.S.A. Ex-govt., optical glass. 25p each.

X.98. INFRA-RED LENS WITH FILTER in brass mount 5" long × 2" dia approx. Lens 32mm dia × 100mm focus. 50p each.

X.99. MOUNTS TO FIT RIFLE SIGHTS LIST NOS T29a AND T.30 to Ex Army 303 rifle, £2.50 each.

X.100. LAMPS. S.B.C., 24V double filament 6–18 watt frosted internally silvered, 10p each, 12 for 80p.

X.101. LAMPS. S.B.C., double contact, frosted, 24V 80W. 12 for £1.

X.102. LAMPS. S.B.C., double contact, 12V 10W. 10 for £1.

X.103. LAMPS. M.E.S., 6V 1.8W. 10p each. 12 for 80p.

X.104. LAMPS. M.B.C., 12V (marked IIV) 12W. 10p each, 10 for 75p.

X.105. LAMPS. Large Horizon, for aircraft flood lights. 230V 2000W. £1.50 each. £6 for six.

X.106. LAMPS, special fitting for Aldis signalling lamps. 25p each, 6 for £1.

X.107. LAMPS, G.E.S., 240V 1000W tubular, A1/57. £1.50 each.

X.108. LAMP HOLDERS. M.B.C. with bracket. 10p each.

X.109. LAMP HOLDERS. S.B.C., d.c. batten type brass. 15p each.

X.110. LAMP HOLDERS. S.B.C., d.c., brass. Pendant type minus cord grip. 10p each.

X.111. OHMITE VITREOUS RHEOSTATS. 350 ohm 25W. 25p each.

X.112. WIRE AND CABLE. Single PVC covered, per 100 yards.
1/024. 60p.
1/036. 75p.
7/0076. £1.
14/0076. £1.50.
Co-ax. Screened, PVC covered. 14/026, o.d. 3mm, £4.50 or 8p yard.
Twin screened, PVC covered, o.d. 4mm, 7/0076. £4.50.
4 core, PVC covered, o.d. 7mm, 14/0076. £5 or 9p per yard.

X.113. PRECISION SURVEYOR'S COMPASS BY WILD COINCIDENCE PRISM DIAL and magnifier plus small sighting telescope focussing down to a few feet. As new in case, exceptional instrument. £25. each.

X.114. AMERICAN GEARED DYNAMOTOR with three low speed take offs and one high speed (4000 r.p.m.) with 5 cam operated switches. Rated 18V 3.7A d.c., Runs well on 12 volt. Very useful ex-govt. motor. £2.50, carriage £1.

SURFACE ALUMINISED MIRRORS. Top grade spherical. Positive focus.

	dia inches	focus inches	
AM.18.	4	13.5	£7.50.
AM.19.	4	3.5	£7.50.
AM.20.	2	4.25	£3.
AM.21.	2	20	£3.
AM.22.	1.25	0.85	£2.50
AM.23.	2	0.9	£3
AM.24.	2.5	1	£4
AM.25.	2	2 NEG.	£3
AM.26.	2.5	0.75 NEG.	£4. Practically Hemispherical.
AM.27.	1.25	2.3 NEG.	£2.50

X.115. PERISCOPE. length 51 inches. Main tube 2½" dia. Fitted adjustable prism system at front end and controlled by knob at eyepiece end which in combination with rotary movement controlled by geared drive (90 to 1) fitted throw out lever and 6" dial cal 0-360 degrees, gives 180 degree cover in all directions. ie cover complete hemishpere. Modified by us from American drift sights. £150 ea.

X.116. Object lens and Prism system from above with control mechanism in mounts. Size 2½" × 15" £30 ea.

X.117. Also from above. GEARED HEADS. Comprising geared head with 6" dial and geared drive in ali mount with 7" dia flange through which the 13" × 2½" driven tube projects. £6 ea. Carr £1.50.

X.118. D.E. box spanners. EX GOV. ¼ and ⅝" Whit with lever. 15p ea £1 for 10.

X.119. Ditto. ½" and 9/16 S.A.E. 20p ea £1 for 7.

X.120. AIR SPEED INDICATORS. 60 to 400 M.P.H. Soiled. £1 ea.

X.121. G60 Wavemeters. 180 to 230 mes. In ali case complete with 10 mc crystal but less valves. £7.50.

X.122. For Callers only. Electrostatic Tubes. VCR 97, 517 and 139A. £2.50 ea.

X.123. Master Contactors. Precision Spring driven Clock giving 2 pulses per sec in sound proof case with heater and thermo control for 24v. £2.50.

X.124. CONDENSERS. Muirhead. High Voltage. .002 mfd. Size 90 × 45 × 15mm Yields hundreds of ruby mica sheets size 56 × 32 mm. 20p ea or 10 for £1.50.

X.125. PO type lamp holders. Ref 10H/9102. 4008 TFG. £1 for 20.

X.126. Kilo watt hour meters. 230 v AC 10a. Guaranteed but externally rusty. £1 ea. Damaged 50p ea. Carr 50p.

X.127. RELAYS. 24v DC 30a. 25p.

X.128. Phone adaptors. High to low impedance. Fitted standard plug and jack. soiled but guaranteed. 40p ea.

X.129. ANASTIGMAT LENS. 20" F5.6. No iris. Bloomed. Brass cased As new £20 ea.

X.130. ELECTROSTATIC VOLTMETERS. by E. Turner. as New. 2½" 0-750 v £3.

X.131. Ditto 3½". Various types from 750 to 6000 v £4 ea. All flush type by E. T.

X.132. Ditto 3½" flush. 0-1 ma, 0-100 micro-amp and 0-250 £4. 50 micro £6.

X.133. 7x50 Compass Bearing Monocular. Hand bearing compass built into 7x50 monocular. £33.00 with pistol grip.

X.134. Bench type stereoscopic binocular microscope. Magnifications 10 and 20x with built in changeover movement and high intensity illumination. Adjustable pillar stand on formica base. £125.00.

X.135. Stereoscopic binocular microscope, with five built in objectives and six paired eyepieces. Objective powers 0.6, 1, 2, 4 and 7, eyepieces 6, 8 and 12.5 plus 8x micrometer eyepiece. Supplied with built in lighting unit and special stage for reflected or transmitted illumination. £195.00.

X.136. As above but with microscope mounted on separate 15½" pillar base with adjustable arm 13½" long with rack and pinion movement. £219.00.

X.137. 50x pocket measuring microscope with swing out graticule. £16.00 with small case.

X.138. PZO spotting telescope in metal case. Very fine portable instrument. £47.75.

X.139. Binocular cases, 8 × 30 size, real black figured hide, with strap. £3.50.

X.140. 30 to 90 × 60 zoom terrestrial telescope, on tubular triped metal. Good quality new line from Japan. £31.35.

X.141. Accurate hair-hygrometer (air humidity guage), hang up type, attractive appearance, brushed aluminium dial. £5.88.

X.142. 15 × clip-on pocket telescope, blue anodised finish, £1.95.

RUSSIAN PORTABLE RADIOS

X.143. Vega Jade. Medium and long wave, with rechargeable battery and mains charging unit. £7.18.

X.144. Vega Ruby. Medium and long wave, with built in 15 jewel clock and autotimer. £7.46.

X.145. Vega Sapphire. Medium and long plus two short wavebands, tone control and fine tuning. £8.15.

X.146. Vega Zircon. Medium, long plus four short wavebands, tone control. £9.49.

X.147. Nickel Supra 15 to 60 × 60 two draw telescope, with fine focus control. Superlative quality instrument. £89.65.

SHARP CAR RADIOS

X.148. All IC, 5 push button. £25.15.

X.149. AM/FM 5 push button, all IC. £31.45.

X.150. FM STEREO 5 push button all IC. £44.95.

JAP CAR RADIOS

X.151. MW/LW manual switchover. £8.65.

X.152. 5 push button. £12.65.

X.153. Car cassette stereo. £23.19.

X.154. Car radio with 8 track stereo cartridge player. £31.95.

X.155. Cassette recorder with automatic level control. £15.95.