Figure 4.24 Illustrating astigmatism. Meridional rays $PA$ and $PA'$ are imaged at $P'_1$, sagittal rays $PB$ and $PB'$ are imaged at $P'_2$. (After A.C. Hardy and F.H. Ferrin, *Principles of Optics*, McGraw-Hill, New York, 1932; by permission of McGraw-Hill Book Company, Inc.)

$PA$, $PA'$ - Meridional rays
$PB$, $PB'$ - Sagittal rays
Fig. 6.7. The astronomical refracting telescope.
Fig. 6.11. The terrestrial telescope.
(a) The Huygenian eyepiece.

(b) The Kellner eyepiece.

Fig. 6.14.
$AF_1 = f_1$, $AF_1' = f_1'$, $BF_2 = f_2$, $BF_2' = f_2'$

Fig. 6.8. The Galilean telescope.
Figure 4.31  
(a) Right-angle prism used for 90° beam deflection; (b) right-angle prism used for retroreflection. Incident and reflected ray are parallel only if the incident beam is in the plane of prism cross section; however, in this orientation, retroreflection is independent of orientation about the axis $A$ within a large angular range.

![Diagram of antireflection-coated faces](a)

![Diagram of orientation A](b)

Figure 4.32  
(a) Two Porro prisms used as an image-erecting element; (b) Amici prism.  
(Courtesy of Melles Griot, Inc.)

![Diagram of Porro prisms](a)

![Diagram of Amici prism](b)
Figure 4.33 (a) Dove prism; (b) penta prism; (c) octagonal prism; (d) rhomboid prism; (e) wedge prism. [(a), (b), and (e) courtesy of Melles Griot, Inc.]
Figure 4.34  Corner-cube prism. (Courtesy of Melles Griot, Inc.)
Fig. 11. Prism binocular, former type.

Fig. 12. Prism binocular, newer type.
Fig. 13. Tripod-mounted binocular, former type.
Fig. 6.27. Illustrating the principle of the microscope.
Fig. 6.29. Microscope objectives.

(a) Low power.
(b) Medium power.
(c) High power.
Fig. 6.18. The Newtonian telescope.
Fig. 6.19. The Cassegrain telescope.
Fig. 6.20. The Schmidt camera.
(The figuring of the corrector plate is greatly exaggerated.)
Fig. 6.16. Periscope mirrors.
SCANNING PRISM

OBJECTIVE LENS

RETICLE LENS

ERECTING LENS

FIELD LENS

COLLECTIVE LENS

PRISM, 90°

REVERSED GAUCHEAN SYSTEM

Fig. 20. Submarine periscope (shown on its side).
Fig. 18. Tank-Gunner's periscope:

- Eye Lens
- Center Lens
- Field Lens
- Reticle
- Prism
- Penta Roof
- Window
- Mirror
- Lens
- Objective
- Wedge
- Mirror
- Window
Dove Prism

FIG. 6.16. Periscope with
Fig. 6.4.

(a) The Protar lens.
(b) The Dagor lens.
(c) The Celor lens.
(d) The Tessar lens.
(a) Cemented achromat.

(b) Aplanatic achromat.

(c) Photo-visual objective.

Fig. 6.12.
Fig. 6.3.

(a) The Chevalier lens.
(b) The Petzval lens.
(c) The Rapid-Rectilinear lens.
(d) The Topogon lens.
(a) The Planar lens.
(b) The Zeiss Biotar lens
(c) The Cooke Triplet.
(d) The Sonnar lens.