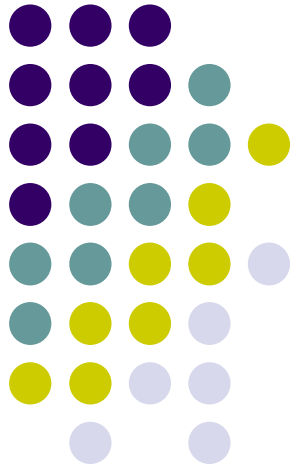
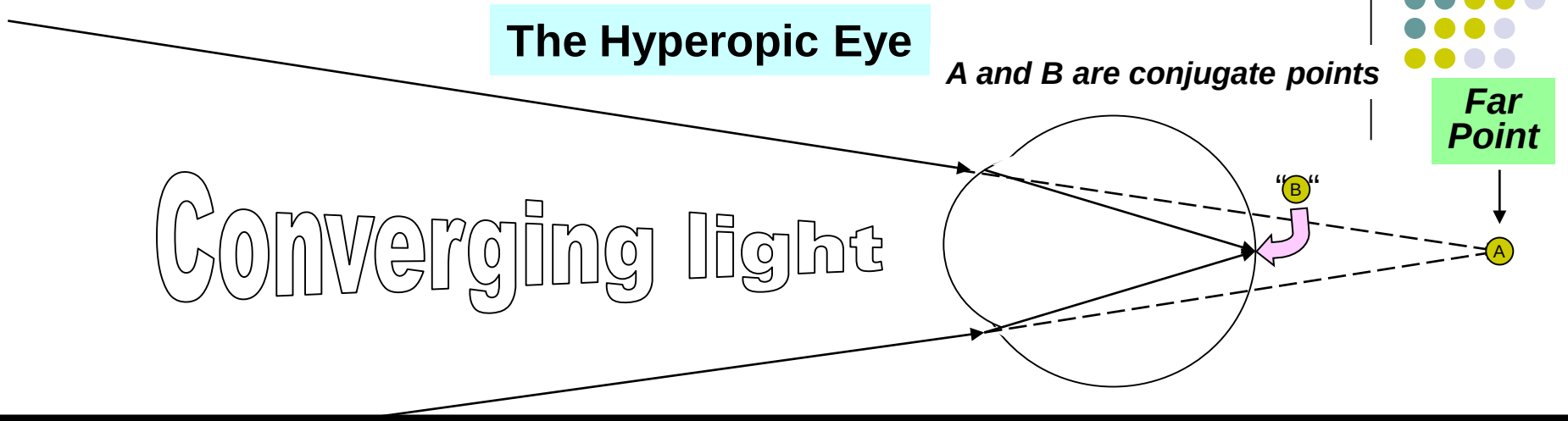
The Essence of Spectacle Correction

Basic Optics, Chapter 6



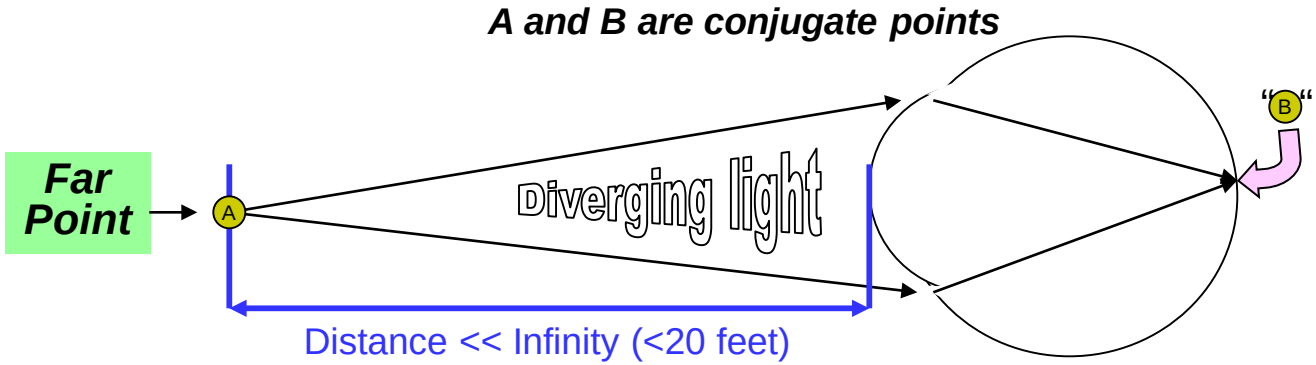
Spectacle/CL Correction

The Hyperopic Eye



Last chapter, we saw that refractive error is in essence a *Far Point* problem. Recall that the far point is the location in optical space that is conjugate with the retina when the eye is not accommodating, and is therefore the optical location that is in sharp focus in the unaccommodated state. The emmetropic eye has its far point at infinity; thus, emmetropes see 20/20 at distance without correction. In contrast, the myopic eye has its far point (and hence clear vision) just anterior to the cornea, whereas the hyperopic eye's far point is behind the globe. How are we going to provide myopes and hyperopes with clear vision at distance? Consider the myopic eye first.

The Myopic Eye



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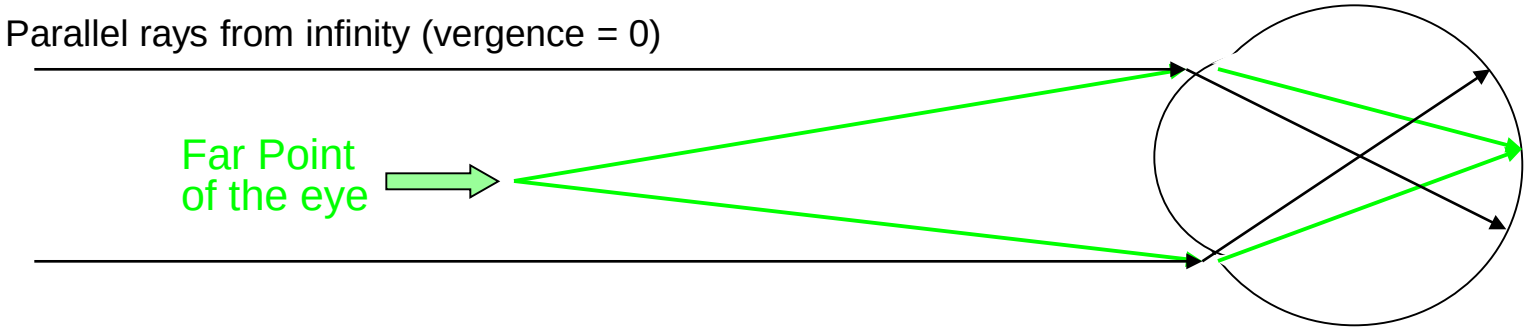
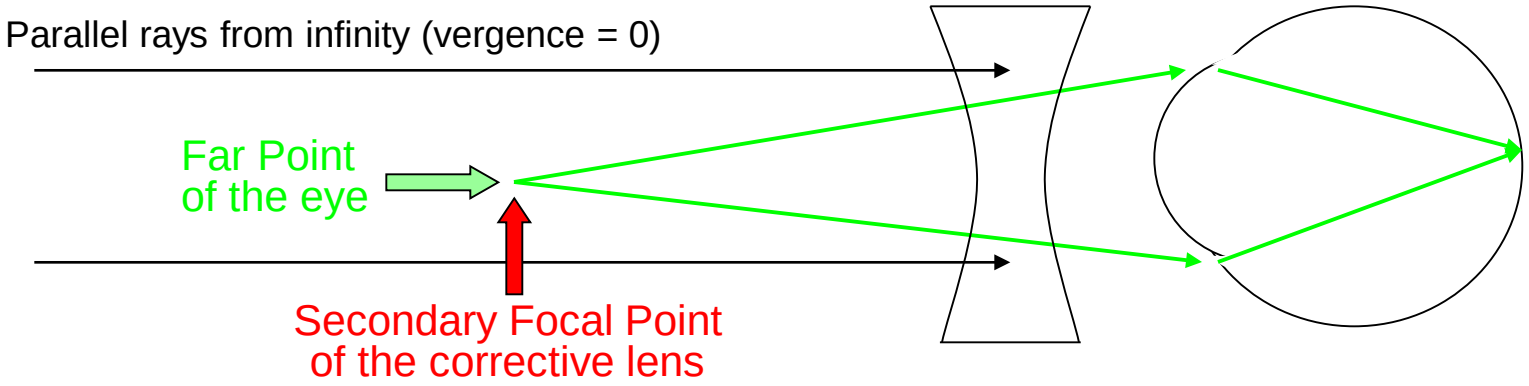


The goal of refractive correction is to provide clear vision at infinity. But a myopic eye is in focus only at its far point, just anterior to the corneal plane. Absent refractive surgery, there's no changing or escaping this fact.

Spectacle/CL Correction

The Myopic Eye



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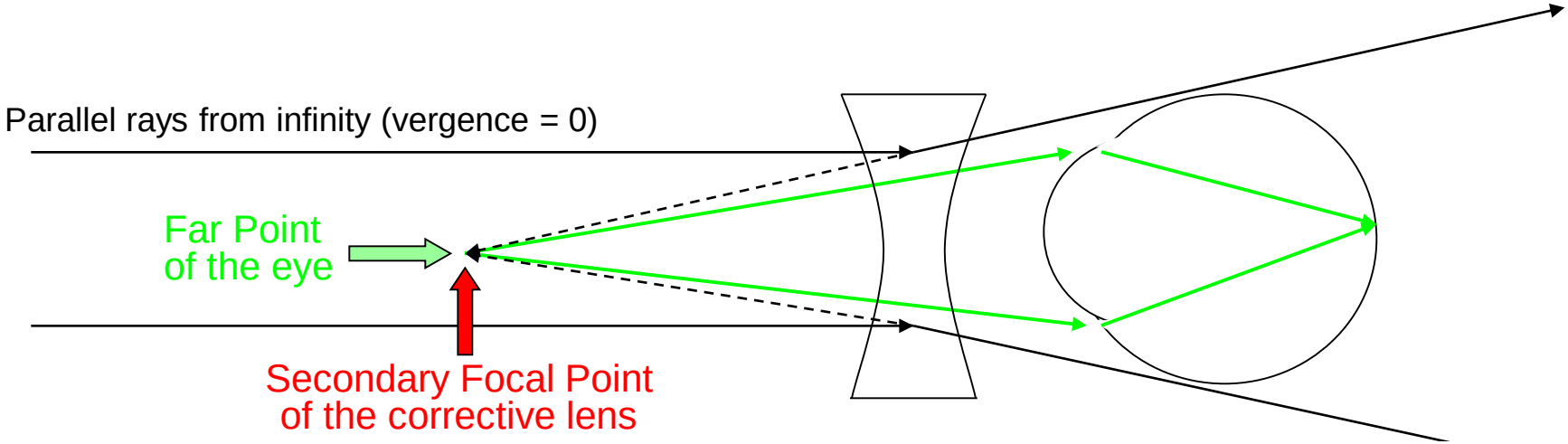

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Spectacle/CL Correction

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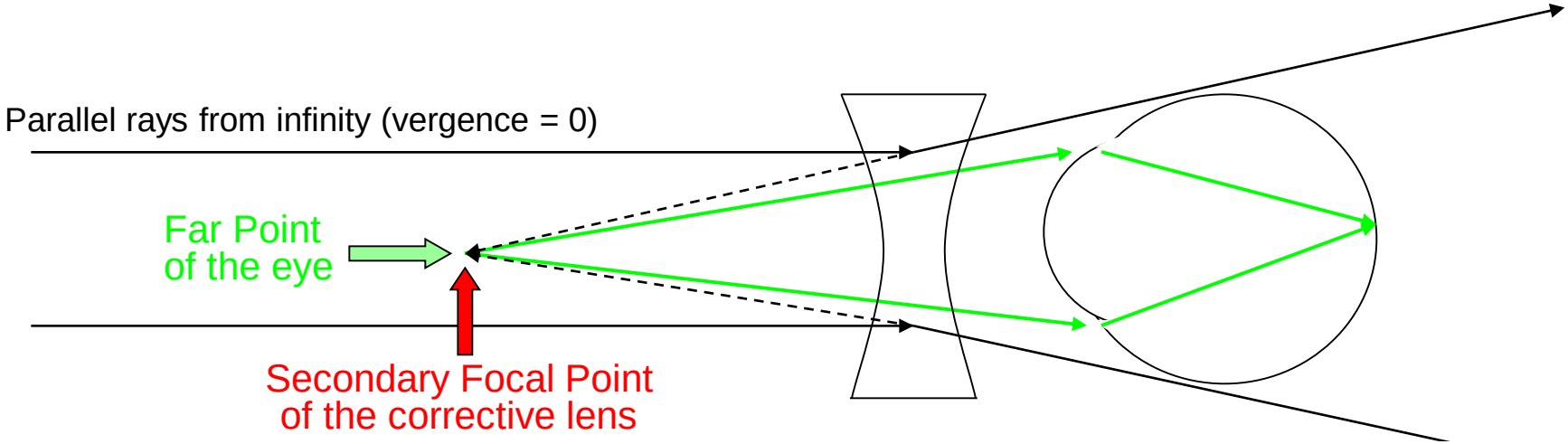

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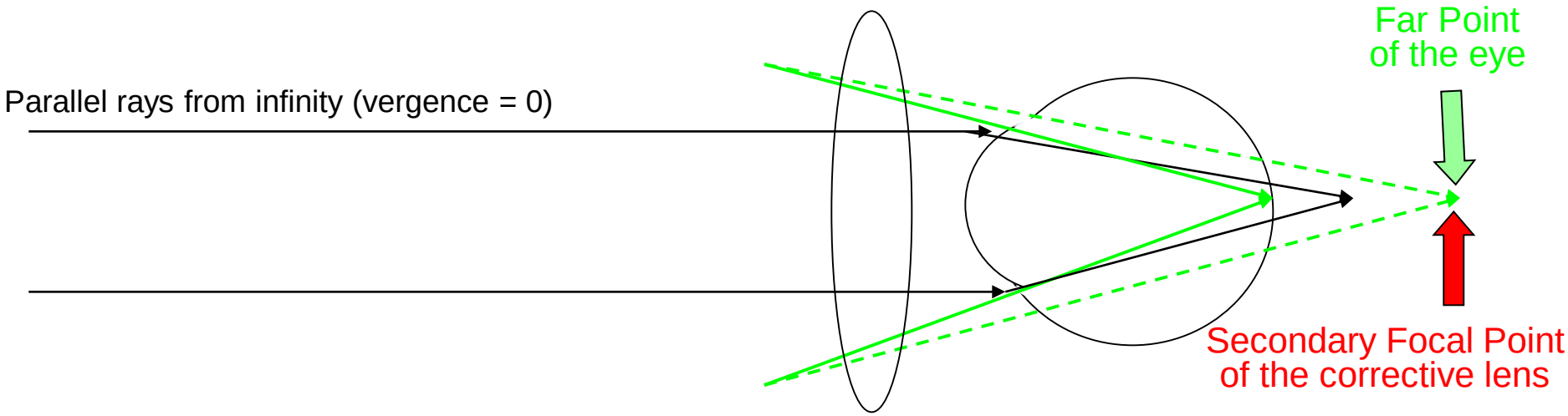
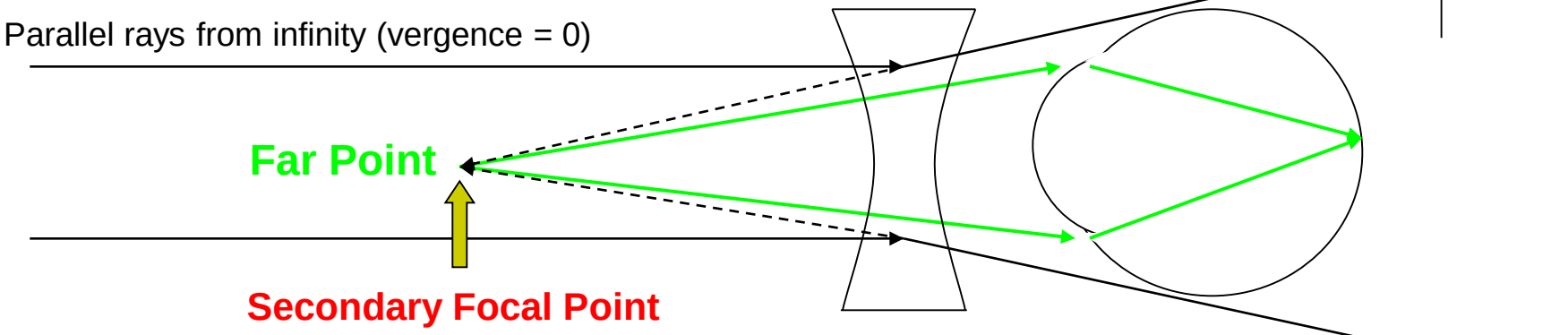
Spectacle/CL Correction

The Hyperopic Eye



Spectacle/CL correction of **hyperopia** works the same way. A lens is selected that has its secondary focal point at the same location as the eye's far point, posterior to the corneal plane. The resulting added convergence places parallel rays sharply on the retina.

Spectacle/CL Correction



So we could summarize refraction thusly: ***Place a lens in front of an eye so that the* secondary focal point *of the lens coincides with the* far point *of the eye***. That's all there is to it!