



Big Glass: Testing a New 6-inch Refractor

Not so long ago, a 6-inch achromatic refractor was regarded as the ultimate visual telescope. Can a short-tube version of an old favourite revive the magic?

IT HAS BEEN A DECADE since we have reviewed an achromatic refractor on these pages, but when the opportunity came along for a test drive of the new Canadian Telescopes 6-inch f/5.9 tube assembly, how could I refuse? My affection for refractors goes back more than 50 years, when I used earnings from a summer job in 1960 to purchase a 3-inch Unitron equatorial refractor. Converting what I paid for it then into today's dol-

lars, it cost me \$2,800! I'll get to the price of the telescope under review in a moment. First, some refractor talk.

My old Unitron, and all other refractors at that time, were *achromatic* refractors, having objective lenses made of crown and flint glass in a two-element sandwich design that dates back two centuries. The design still survives—thrives, in fact—in the form of beginners' telescopes, guidescopes and larger sizes for backyard

astronomers who desire the legendary clean, steady refractor images and understand the limitations of achromatic refractors versus apochromatic refractors.

The standard achromatic refractor brings to a sharp focus most of the visible spectrum, leaving some blue and a bit of red slightly unfocused as a bluish violet fringe around bright objects—most notably the Moon, Venus, Jupiter, Mars and bright stars. The Moon is especially subject to this fringing, known as chromatic aberration. The effect is even more pronounced with photography, as the blue spill is fairly obvious with both digital and film. To avoid this problem, *apochromatic* refractors use so-called exotic glass for one or more of the lens elements, which greatly reduces the fringing and allows unhindered astrophotography.

So why would anyone want an achromatic refractor when the apochromatic design is available? Answer: price.

Exhibit number one is the telescope under review here, the Canadian Telescopes 152mm f/5.9 achromatic refractor tube assembly, which sells with tube rings, handle, Vixen-style mounting bar and diagonal for \$859 in Canada. An apo refractor of this size will set you back \$5,000 to \$10,000 for the tube assembly—that is, if you can find one without being put on a waiting list for months (or years).

Now, some would ask, why a big refractor at all? Why not an 8-inch Newtonian Dobsonian? Or an 8-inch Schmidt-Cassegrain? Given the limited space I have here, I will outline what I regard as the most important points.

Achromatic refractors produce the steadiest visual images of any type of telescope. This is not because of the "closed tube," as is often maintained by amateur astronomers. Rather, it is because once light passes through the objective lens, it is bent (refracted) into a cone down toward the focus, crucially avoiding the tube walls where tube currents are greatest. Tube currents are created as the telescope cools after it is set up and the air cools as night progresses.

Point two is that achromatic refractors almost always have less optical glass than



DARK GLASS A 6-inch objective lens (left) is an impressive optic by any standard. Three baffles within the tube suppress stray light. A welcome feature with this telescope is the heavy-duty 3-inch-diameter focuser assembly with 10-to-1 fine-focus reduction—a very solid and smoothly functioning unit for an instrument at this price point.

