

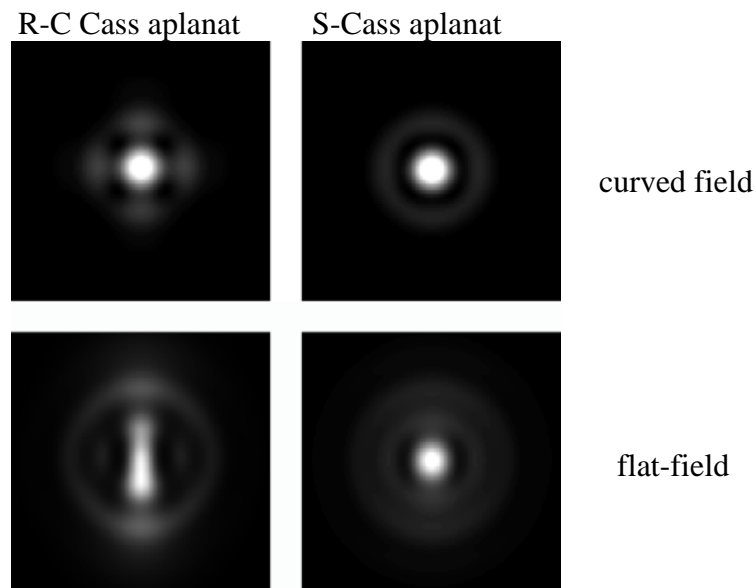
The R-C Controversy

by Dick Suiter

In a recent *Sky & Telescope* editorial [Jan 2007] concerning the lawsuit generated when Meade named its new catadioptric an "Advanced Ritchey-Chrétien," editor-in-chief Rick Fienberg points out that the telescope industry has recently been "in the doldrums." Far from being a side issue, I believe he has pinpointed the reason for the lawsuit. In any legal dispute, it is important to follow the money when looking for causes, and RCOS, Star Instruments, *et al.* are no doubt feeling the pinch of competition from the Meade juggernaut.

Now, I am no friend of Meade. I think that Meade invents little, but rather finds successful telescope designs already proven by bolder but less well-capitalized entrepreneurs and feeds them into its well-oiled marketing engine. In short, it behaves like the Wal-Mart of amateur optics. The "Advanced Ritchey-Chrétien" is itself not original but is a slight modification of older designs.

That being said, the lawsuit has no technical basis whatsoever. The design is *closely* modeled on the Ritchey-Chrétien, much as the Schmidt-Newtonian is based on the Newtonian and, as Mr. Feinberg mentions, the R-C is based on the Cassegrain. The common commercial Schmidt-Cassegrain is not called a Schmidt-Dall-Kirkham-Cassegrain only because such a name is cumbersome. The R-C is the only aplanatic (i.e., coma-free) form of the Cassegrain reflector and it is obvious to one skilled in the art of optical design to extend it to a Schmidt catadioptric form. This situation would be clearer if it were inverted: Does anyone seriously believe that if RCOS or Star Instruments had exclusive rights to the aplanatic Cassegrain reflector that they would not now be furiously attacking Meade for patent infringement?



The precise Meade optical design itself is no doubt a trade secret, but with modern optical design software it doesn't take a genius to design another. In the accompanying picture, I have generated the star test image for 15 colors weighted photopically in the ZEMAX program. It is rendered in a grayscale image, with a 10-inch f/8 Ritchey-Chrétien reflector in the left column and the Schmidt form in the right column. At the top are images found at the corner of a 12x12mm curved focal plane and at the bottom are images found at the same corner of a flat focal plane. Obviously, Meade's design has brought improvement to the pure-mirror R-C design, so their claim of "advanced" is valid. Also, because the field curvature shows astigmatism on flat focal planes, few R-Cs are used without a field-flattener, which further blurs the distinction. Aren't all R-Cs thus catadioptric?