

If you've ever dreamed about observing in conditions usually reserved for professional astronomers, look no further than Kitt Peak in Arizona. The drive from downtown Tucson to Kitt Peak takes about 1.5 hours on very well maintained interstate (I 10) and state roads (Rt 86). Scenery ranges from that expected with urban sprawl (malls, new housing developments, etc) in a very rapidly growing city to total isolation in the Sonoran desert. The National Optical Astronomy Observatory on Kitt Peak (elevation ~6800 ft), where 19 optical and 2 radio-telescopes are in operation, is located within a 2.8 million acre reservation set aside for the Tohono O'odham Nation. My wife and I had previously enrolled online in the Advanced Observers Program which ensured



**McMath-Pierce Solar Telescope**



**Mayall 4-meter Telescope**

exclusive access to an optical instrument. We arrived around 2 PM on March 4<sup>th</sup> whereupon we were assigned a personal guide (Roy Lorenz) and telescope system for use after the public nighttime observing program finished (~10:30 PM). Following a fairly decent dinner in their cafeteria we watched a magnificent sunset and then retired to our room until 10 PM. Our telescope system for the evening was housed in a roll-off roof observatory and consisted of a first-rate collection of optics. Both instruments, a TEK 140 mm f/7 apochromatic refractor and a 16" carbon truss Ritchey-Chrétien from



**Roll-off Observatory at Kitt Peak Housing RC 16R & TEK 140**

RC Optical Systems, were mounted on a Paramount ME. Imaging was performed with either a Canon XTi or Orion single-shot color videocam.

Even though there was a slight haze that imparted some nebulosity to stars in the northeastern skies when we started serious viewing at 11 PM, it was readily apparent that these conditions (substandard in AZ) were far superior to anything I had ever witnessed at home. My eye-brain circuits went into data overload trying to assimilate the total number of stellar objects that were visible. Constellations whose brightest stars provide a textbook outline in NJ were filled in to the point that they were difficult to identify. In particular, the naked eye view of Coma Berenices was a staggering explosion of stars which reminded me of a dense open cluster through an eyepiece. The Winter Milky Way as viewed from Earth's home position within the Orion arm of the galaxy produced a delicate band of light which spread out diagonally across the sky from southeast (Puppis) to northwest (Perseus).

You could drive a Mack truck through Castor A and B in Gemini using a 17 mm Nagler on the Ritchey-Chrétien. Similarly, the six brightest stars (A-F) associated with the Trapezium in Orion were child's play. Unfortunately as the skies became even clearer after midnight, the wind picked up with gusts over 20 mph thereby significantly challenging our ability to photograph the heavens. Nonetheless, I was able to salvage

some avi images taken of Mars and Jupiter through a color videocam by another AOP couple in a nearby domed system. Surface details and the polar cap on Mars were clearly evident even though the apparent diameter of this planet is presently less than 9 arc-sec.



**Mars from Kitt Peak, AZ (04March08)**



**Saturn from Kitt Peak, AZ (04March08)**

Saturn alone was worth the price of admission into the AOP program; this glorious ringed planet was visually stunning. Three of its moons (Dione, Tethys and Rhea) stood out

with remarkable clarity while dark banding in the southern hemisphere was very prominent. The near perfect coincidental alignment of the ring and darkest atmospheric banding imparted the illusion of 3-dimensional space.

Globular clusters as seen through the 16" RC optics and a 17mm Nagler more than filled the entire field of view and appeared much more granular to the core compared to my only experience with 8" of aperture. Although the great Omega Centauri would never rise above the observatory shed walls for telescopic inspection, binocular views (7x50) of this largest globular cluster associated with the Milky Way were no less than spectacular. Its apparent brightness (mag 3.7) and size (36'), which is larger than the moon, made this DSO easy pickings on top of Kitt Peak. Open clusters like the Beehive in Cnc and M35 in Gemini exploded into view, each sparkling like hundreds of gemstones.

M97, the Owl Nebula in the Big Dipper, has always managed to elude visual detection from my vantage point in north-central NJ. Even without averted vision, this well known planetary nebula exhibited a ghostly greenish countenance with two darkened eyes through the RC optical train. NGC 4361, a similarly challenging PN located in Corvus, required a little more effort and averted vision to see. Galaxies such as the Whirlpool (M51) in CVn, M64 ("Black Eye") in Com, and the Leo Trio (M65, M66 and NGC 3628) were all clearly defined and showing, as appropriate, dust lanes and/or spiral structure.



**Leo Trio (M65, M66 and NGC 3628 - 5 min exposure with Canon XTi)**

By 3:30 AM, the cold and very windy conditions began to take their toll and dampened our enthusiasm for further viewing. Although somewhat disappointed by this weather-related turn of events, many of the objectives that I had established for the evening were achieved. These included many "firsts" such as viewing from a dark

(mag. 22 per square arcsec ) world-class location with transparent skies, a spectacular naked-eye/binocular view of Scorpius in its entirety, and pristine vistas of other astronomical eye-candy like Omega Centuri and M97 which for various reasons had not ever registered on my retinae.

On a final note, I should mention that the staff at Kitt Peak were friendly and very knowledgeable about the stellar denizens of the sky which motivate us to buy bigger rigs and blow our children's inheritance. The accommodations were clean and well maintained. I look forward to a return visit in the not too distant future...perhaps a late October excursion with a chance to see the great Sagittarius Arm of the Milky Way from high on a peak in the middle of the Tohono O'odham Nation.