Astro-Madness
Problem Situations

Help these astronomers select the telescope and instrument at McDonald Observatory that best suits their research project.

Star City
1. Starr Brite, a graduate student in astronomy at the University of Luminosity, is doing her dissertation on a large globular star cluster called M13. She is most interested in infrared light (near a wavelength of 0.9 micrometers) emitted by theses stars. Spectra are what Ms. Brite needs to complete her research.

Flickering Stars
2. Dr. Hugo Tomars of the Olympus Mons Consortium is researching rapid brightness changes of nearby stars, like Sirius and Procyon. He will need to take several images for later comparison. He also needs to take many images very rapidly to search for small changes in light intensity over short periods of time.

King of Clean
3. Dr. Ima Stronomer from Antarctica State University is looking for ammonia on the planet Jupiter. Ammonia emits and absorbs infrared light at wavelengths between 1 and 1.5 micrometers. She hopes to find out more about chemical elements in Jupiter's atmosphere with an assortment of spectrographs.

New Planets in our Solar System
4. Amateur astronomer Mr. Cal Q. Laater's quest in life is to find a tenth planet in our solar system. His strategy is to take several pictures of large areas of the sky where he expects to find the planet. He then compares the pictures to each other to see what things in the pictures change. Mr. Laater needs instruments with a wide field of view, about the width of the moon in the sky, to survey the sky for planets.

New Planets Beyond our Solar System
5. Dr. Usee Themun from the Lunar Research Institute is interested in discovering planets around other stars. Since the planet and the star orbit a common center of mass, he will look for regular motion of the star toward and away from Earth. To do this, he needs to see fine detail (high resolution) in the spectra of candidate stars in order to detect the orbital motion of the star (the planet is too faint to see).

Turn, Turn, Turn
6. For her master's thesis, Ms. Sol Faraway is monitoring how fast some galaxies are rotating. Some of her galaxies are very faint, with magnitudes near 20. She would like spectra of several of these galaxies during a single observation, so a spectrograph that can look at multiple objects would be helpful.