and light output available are much greater for television and film. Something that is unique to PAR fixtures is their focussing (spot flood) system. Other fixtures employ some means to move the light source toward or away from the lens to accomplish spotting or flooding. The PAR fixture uses a range of lenses which have differing optical properties to accomplish either spotting or flooding. The point source nature of a PAR bulb/fixture makes it very good for long throws where a high level of illumination is required.

The 6-light and 9-light are two fixtures that are basically an array of PAR bulbs arranged so that each can be independently used or adjusted to maximize the output of the fixture. The 6/9 light isn't generally used by itself, but with diffusion between it and the subject to produce a soft, yet directional high intensity light source. I should point out that these sources are incandescent, balanced for 3200 K. There is a line of PAR fixtures that is incandescent that have been coated with a dichroic coating so that the color temperature (when new) closely matches daylight 5600 K. These are FAY lamps. These are used for daylight fill to lessen the shadows caused by sun. This fixture is available as a single lamp or anything up to 12 lamps in an array, each independently focussable. One of the great disadvantages of the FAY lamp is its short life, 30 hours, and the fact that the dichroic coating deteriorates with age and heat.

• *DICHROIC*—a dichroic coating is a thin film, which when applied to glass allows only certain selected colors of the spectrum to pass.

Dichroic lenses are available for a number of light sources but they are difficult to handle (they get very hot because the coating absorbs a great deal of the spectral energy); difficult to use (they fit in the gel frame holder at the front of the fixture); and they are fragile. A few years ago, a company named Coollight incorporated the properties of a dichroic coating into the reflectors of a line of light sources. The reflector in these light sources converted the output of the 3200 K light to daylight balance 5600 K without the need for any color temperature conversion media. These fixtures also incorporated a small, intense point source that delivers a high light output with the added advantage that it was daylight balanced.

Fluorescent Light

Before continuing on, it is important to mention fluorescent light as a soft light source. It is closer to a real discharge source than it is to an incandescent source, so it rightly belongs at this point of the discussion. The fluorescent is a gas discharge source of a sort. It employs an electrical current forming an arc in a medium of selected gases to produce light, but it does this in a manner unique unto itself. The fluorescent process excites electrons, which in turn excite the phosphors which coat the inside of the fluorescent tube. This produces a low intensity light source which does not have a true color temperature but rather a CCT or Correlated Color Temperature. The color rendering of fluorescent tubes thus makes correction through filtration necessary if you are mixing light sources. Despite these shortcomings, fluorescent light is sometimes a suitable softlight as a key or fill light when shooting exclusively under fluorescent light.

• *GAS DISCHARGE SOURCES*—a generic name for any light source that relies on an arc jumping a gap within an atmosphere of rare earth gases. For the purposes of this discussion, the arc is formed by mercury within an atmosphere which is mostly argon gas. There are other elements present such as dysprosium, holmium, thalium, plus a halogen gas bromine. These elements and gases are combined within a sealed glass bulb. When combined during the arc process, they react with one another to produce a complete spectral output which is equivalent to daylight at 5600 K. The bulb and the fixture have been given the acronym **HMI** through common usage.

• The H in HMI represents hydragyrum or, as we more commonly call it, mercury. Why hydragyrum you ask? At one time alchemists (nearly scientists), who fancied themselves part scientist/part magician, believed that mercury possessed special powers—for example that with the correct incantation and scientific process, it could be transmuted (changed) into gold. The alchemists' beliefs were partly based on the fact that mercury is the only metal that appears to be liquid at room temperature—totally out of keeping with the regular state of other metals. The name hydragyrum refers their belief that mercury was liquid like water. Of course we know that not to be the case—mercury is just a metal with a very high specific gravity. It is very dense, which gives it the property of appearing liquid.

• M refers to Medium Length Arc, which is an accurate description of the type of arc produced by the reaction of the aforementioned chemicals and elements within a glass envelope.

• I refers to Iodides in this case, in particular, bromine. Iodides are iodine, chlorine, fluorine, bromine, astatine, a family of gases called halogens that are extremely caustic and toxic to humans when they are free ions uncombined with another element. During the manufacturing process, a quantity of bromine is introduced into the bulb to act as a scrubber for the bulb. During the burning of the