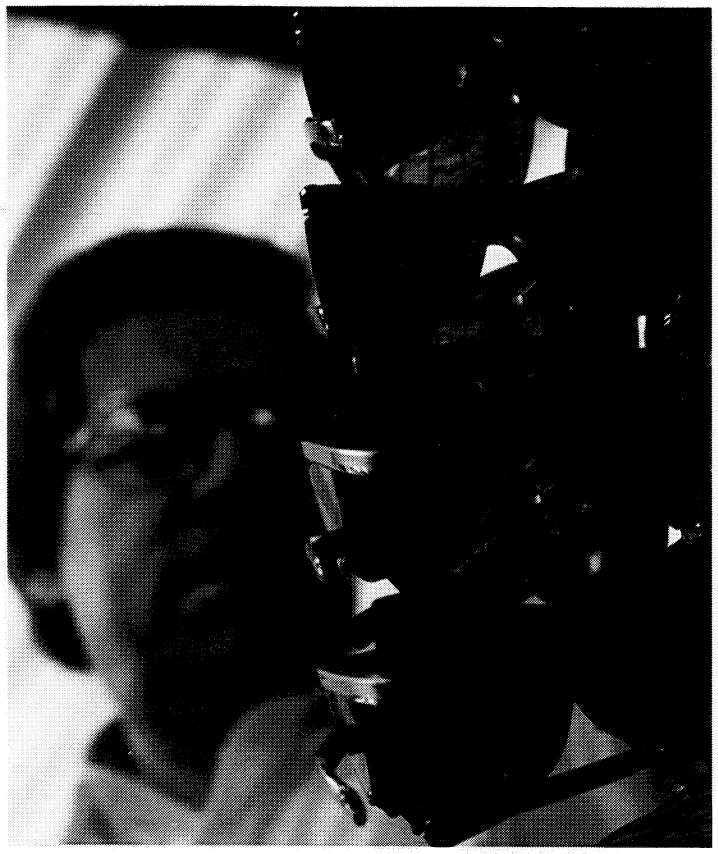
Eyeglass Filters

Eagles, hawks and other day birds of prey have excellent visual acuity. One reason is that they have built-in eye filters that absorb near ultraviolet and blue light. Humans do not have such filters and experiments have shown that exposure to ultraviolet radiation and blue light can cause a variety of eye disorders, in particular cataracts and age-related macular degeneration.

"Cataract and senile macular degeneration are the two principal causes of vision loss in Western nations," says Dr. Richard Young of the Department of Anatomy of the University of California at Los Angeles. "A simple, safe and inexpensive way to delay the onset or progression of these diseases is known: wear protective filters that absorb the blue, violet and ultraviolet when exposure to bright light is necessary." Other vision experts go further and suggest that both the retina and the lens of the eye should be protected throughout life from both blue light and ultraviolet radiation. Those most subject to hazard are those who work or play continuously in bright light environments—sunbathers, skiers, hikers, mountain climbers, welders, surgeons and nurses in operating rooms, seamen, farmers, lifeguards and aircraft pilots.

Spinoff products that provide the requisite protection recently appeared on the commercial market. They are amber/orange/brown lens filters that work in similar fashion to the retinal filters of eagle and hawks, selectively blocking blue and ultraviolet light. Marketed as Avian Orange™ and PST™ (Polarized Selective Transmission) lenses by Suntiger™, La Crescenta, California, they are available as sunglasses, visors, ski goggles and prescription eyeglasses. A display of Suntiger glasses of various tints is shown in the top photo. Above, Suntiger officials Lori Paul, Laurie Johansen and Paul Diffendaffer model their product.

The Suntiger lens is a "spinoff from a spinoff," a secondary product that



emerged from research toward development of welding curtains designed to protect persons exposed to welding arcs from blue and ultraviolet radiation. James B. Stephens, a systems engineer at Jet Propulsion Laboratory (JPL) shown above, and the late Charles G. Miller, a JPL physicist, spent three years on their own time applying JPL problem-solving methodology to development of a dye formula for a curtain capable of filtering out harmful ultraviolet and blue rays produced by welding operations. The curtain is now being marketed commercially.

Upon completion of the welding project those who had worked on it with Stephens—Laurie Johansen, a NASA scientist, Paul Diffendaffer and Charles Youngberg, NASA engineers, and Dr. Michael Hyson, a JPL contractor—turned their attention to the related matter of protective glasses. Using the biomedical knowledge acquired during the curtain project, they used a computer to analyze hazards and aid in design of sunglasses for various light environments—mountain or desert light, for example, or that experienced in offices with fluorescent lighting. They eventually developed Suntiger lenses for every natural environment and activity.

Suntiger lenses eliminate more than 99 percent of the harmful light wavelengths. The lenses make scenes more vivid in color, as illustrated in the top right photo, which shows a morning glory in natural view and as viewed through a Suntiger lens. The lenses also increase the wearer's visual acuity: distant objects, even on hazy days, appear crisp and clear; mountains seem closer; glare is greatly reduced; clouds stand out in bold relief; and daytime use protects the retina from bleaching in bright light, thus improving night vision. ▲