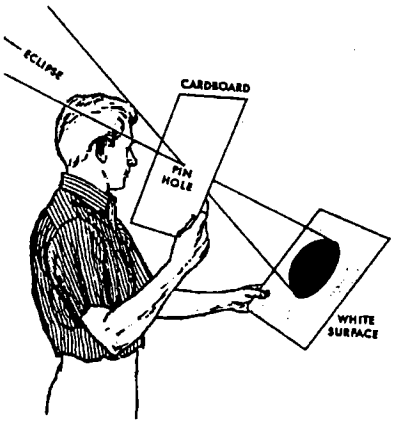
USACHPPM
Readiness thru Health

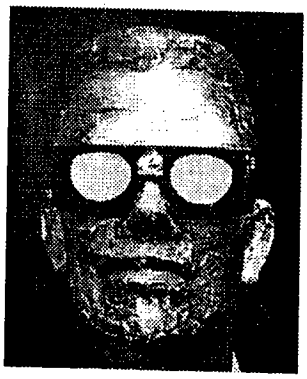
25-002-0699

Just the Facts...

Eclipse of the Sun



- **Military and Civilians**
- **Total Eclipse**
- **11 August 1999**



On 11 August 1999, the late morning skies of Europe will darken! Could this be the final warning of an impending Armageddon? No, it's just a celestial phenomenon known as a total solar eclipse. If skies are clear, this spectacular event can, as they have for centuries, attract many sun-gazers. It may also lead to many cases of retinal injuries and associated vision loss (referred to as "eclipse blindness").

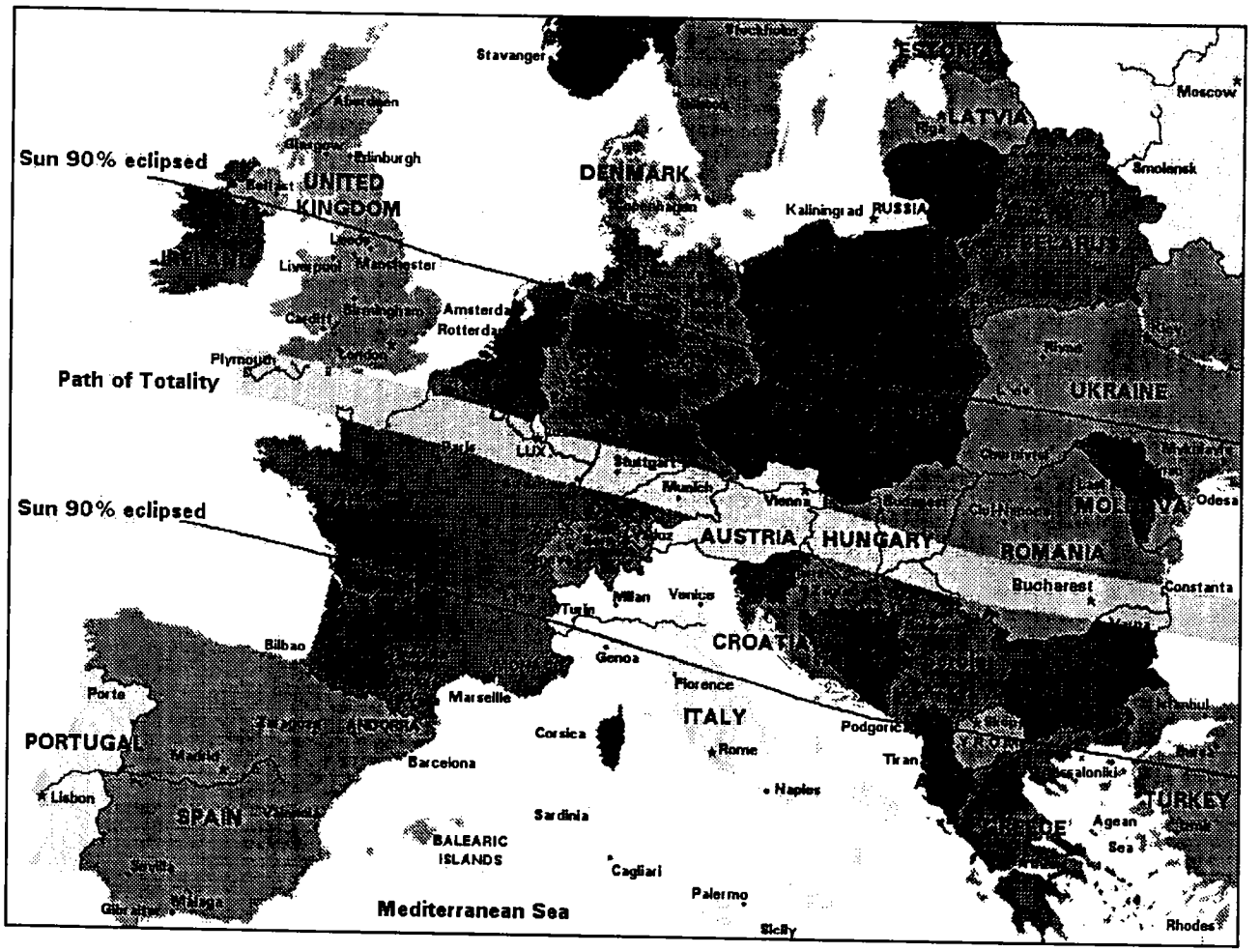
This August's total solar eclipse, the first in nearly forty years visible from Europe will be the last total eclipse of the millennium. Most of the people living in Europe will be able to see at least 80% of the sun being eclipsed by the moon. The Asian countries of Armenia, Azerbaijan, Georgia, Iran, Iraq, Kuwait, Lebanon, Qatar, Syria, Turkey, and United Arab Emirates will also have 80% of the sun eclipsed. The path of totality, a daytime darkness not quite as black as at night, created by the moon's shadow, begins at sunrise on the Atlantic Ocean, about 700 kilometers east of New York City. Its startling onset and eerie appearance combine to create a unique visual impression. This path of totality will reach landfall in southern England (Plymouth area) at about 10:15 Universal Time (UT). It will cut its darkest swath following a path through northern France (30 km north of Paris), southern Belgium, Luxembourg, and Germany (Strasbourg, Stuttgart, and Munich) and move eastward across central Austria and Hungary (about 40 km south of Vienna and Budapest). The path of totality will continue through northern Yugoslavia and into Romania. The instant of greatest eclipse, creating a shadow 112 km wide and lasting for nearly 2.5 minutes will occur at 11:03 UT in central Romania, approximately 160 km west of Bucharest. Upon leaving Romania, the path of totality will pass through northern Bulgaria, cross the Black Sea and move across north central Turkey (11:20-11:45 UT). People living in northern Syria and Iraq, central Iran, southern Pakistan and south central India will witness the darkness created by the totality path. Many will be tempted to look at the event. **Do not look directly at the sun!**

Laser/Optical Radiation Program
U.S. Army Center for Health Promotion and Preventive Medicine
ATTN: MCHB-TS-OLO, 5158 Blackhawk Road
Aberdeen Proving Ground, MD 21010-5403
DSN 584-3932 or Commercial (410) 436-3932
http://chppm-www.apgea.army.mil/

The hazard to vision is due to the most energetic wavelengths of the visible spectrum, namely blue-violet light. This hazard is always present, but the brightness of the sun, when it is overhead, normally prevents us from staring at it. With the lower light levels that occur with an eclipse, there is a high risk for retinal overexposure. The hazard does not exist at sunset because the blue-violet light has been filtered out by the atmosphere, causing the sun to appear as an orange-yellow disk.

If you want to see the eclipse, use the pinhole-indirect method as the moon begins to obscure the sun. You will see the crescent of the sun on the white surface. Never try to view the sun through smoked glass, sunglasses, or gas welding goggles. Only an arc-welding helmet filter with a shade of 11 to 13 will permit safe viewing. Above all, do not try to view the eclipse with a telescope or a pair of binoculars, as serious injury will result. **Do not view the sun directly through the pinhole.**

The map shows the path of the eclipse through Europe. Since many U.S. Army personnel are stationed in this part of the world, Preventive Medicine personnel should be sure that warnings get out against direct viewing of this phenomenon. Many government and educational agencies in Europe are distributing disposable eye safe solar eclipse spectacles so members of the general public can look at the eclipse without danger of eye injury. Most of these cardboard framed spectacles use aluminized mylar plastic film "lenses" which reduce the sun's brightness by at least 20,000 times.



Path of Solar Eclipse. At locations within the black lines shown above, one can view the solar eclipse with 90% of the solar disc covered. The path of totality is designated by the gray stripe through central Europe.