

Lunar Eclipse Ignoramus

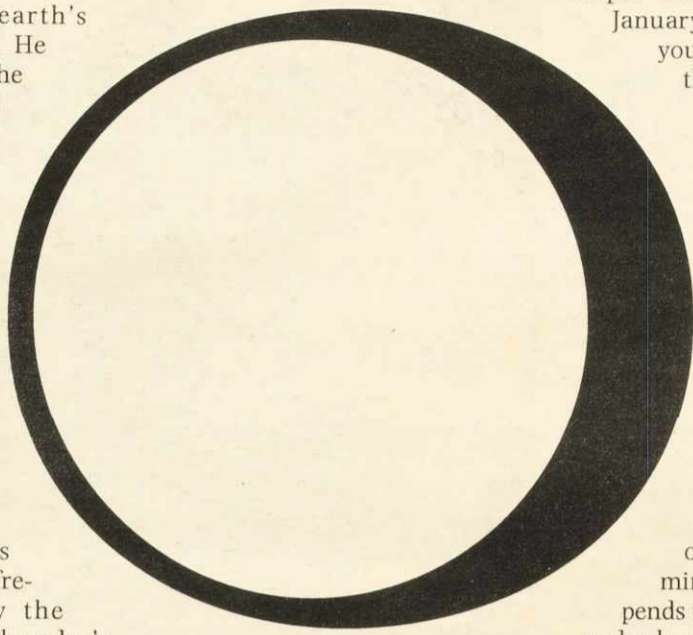
BY KEN SMITH

As a child, someone explained to me why the moon appears in different phases. He said that the moon appears as a crescent because most of it is covered by the earth's shadow, and it appears as a half-moon because half of it is covered by the earth's shadow, and so on. He even told me that the ancients first learned that the earth was round by noting the circular shape of its shadow projected onto the moon.

With this explanation in mind, I was fairly confused by last Thursday's lunar eclipse. According to the wisdom of my previous adviser, the moon is frequently shaded by the earth. So why was Thursday's display such a spectacular event?

I asked many learned friends and called a few institutions, until David Lane at the St. Mary's Observatory set me straight. He explained that the phases of the moon are not caused by the earth's shadow, but by the angle of the moon in relation to the sun. You can recreate the effect with

a ball and a strong light source. For example, the ball resembles a full moon when you look at the side that is facing the light. It resembles a half-moon, when you view it from a 90 degree angle from the lit side, so that one half



facing the light while the other half remains in the dark.

The phases of the moon, therefore, have nothing to do with being shaded by the earth. The moon only passes through the earth's shadow when the sun, the moon, and the earth are all on

the same plane. A lunar eclipse occurs when all three are positioned so that the earth is between the sun and moon, and all three are on the same plane.

Despite my ignorance, I fully enjoyed the show on Thursday, which was the last total lunar eclipse visible in Canada until January 21, 2002. In case you saw it, the reason the moon did not completely disappear is that some of the sunlight curved around the earth's atmosphere and illuminated it. The moon appeared red because the earth absorbs the blue colours but allows the red colours to refract around. Apparently, the colour of the light that illuminates the moon depends upon how much dust and volcanic ash is currently in the atmosphere.

For those of you who enjoyed the eclipse, there will be more stargazing opportunities in 1997. In particular, next year will bring us a comet called Hale-Bopp, which should be the brightest comet seen on earth in the past twenty years.

Dal joins fight to save Phytoplankton

BY RYAN JOHNSON

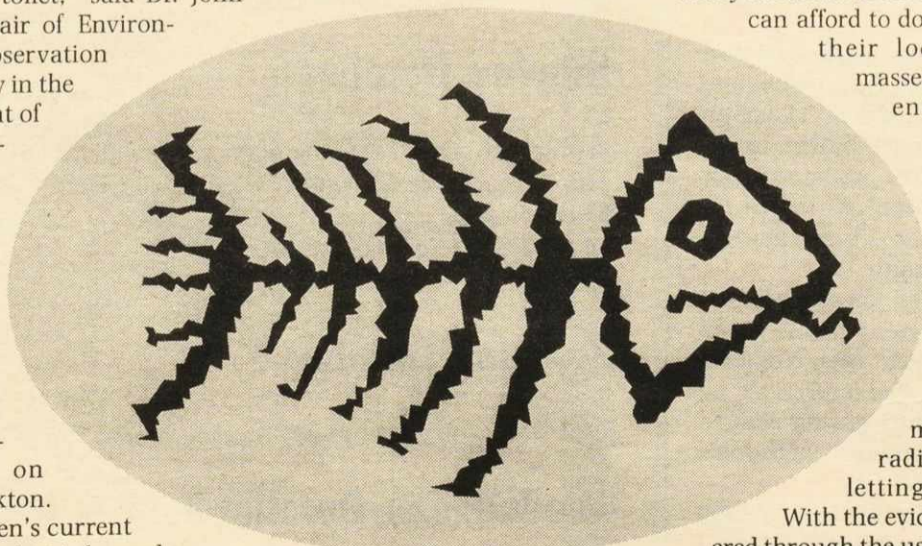
Research in the Department of Oceanography has potential to bring marine scientists the world over closer to mitigating the effects of ultra-violet radiation on phytoplankton.

"[People might as well] just stick their heads in the sand, be ignorant, and watch the world go down the toilet," said Dr. John Cullen, chair of Environmental Observation Technology in the Department of Oceanography, on those who ignore the ongoing negative effects of ultra-violet radiation on phytoplankton.

Dr. Cullen's current research project is focused on the negative effects of ultra violet radiation on Phytoplankton. He is attempting to develop a scaled-down version of an ultra-violet radiation measuring instrument, which is one-tenth the size of its original prototype, and far less expensive than its American equal.

The problem with increased

ultraviolet radiation in freshwater is that it destroys the phytoplankton. These microorganisms dwell in water where they carry out some of the world's photosynthesis. If phytoplankton are lost, there will be less oxygen produced on earth, which is potentially disastrous.



Dr. Cullen's research on the instruments has been ongoing for years. There are several different instruments currently being worked on. One instrument measures the UV radiation wavelengths from the sun and their degree of natural water surface penetration.

Another instrument measures the colour of water to give information concerning pollution as well as the depth that light penetrates the water. Results from this experimentation are put together in models with reference to atmospheric conditions.

If the project is a success, then many scientists around the world can afford to do studies on their local water masses. This will enable them to determine the state of the ozone layer in their particular areas, and how much UV radiation it is letting through.

With the evidence gathered through the use of this instrument scientists can provide arguments in favour of banning certain ozone-depleting substances.

Dr. Cullen plans to meet and discuss with other marine scientists on the current state of the ozone layer in Canada.

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