SCIENCE AND DAILY LIFE

Translated from Spanish by Miriam Grenier

96. Why is the sky blue?

The color of the sky is due to *Rayleigh scattering*, a phenomenon explained in Mick O'Hare's *Why Don't Penguins' Feet Freeze?* The sunlight passes through the atmosphere and is dispersed in all directions. Blue light has a shorter wavelength, therefore it scatters more than red and yellow lights, and this is how it seems to fill the sky.

This process also explains why we see a red sky at dawn and dusk. Since the sun is low on the horizon, light has to travel through a longer stretch in the atmosphere to reach us. Consequently, blue light disappears sooner and red light reaches us instead.

97. Why is the sky black at night?

Although it seems like an obvious question, remember Olbers' paradox, formulated by the German physicist Heinrich Wilhelm Olbers in 1823. It explains that in a static and infinite universe, the night sky should be completely bright without dark zones since there would be a star visible in every direction we looked.

Scientific American explains the solution to this paradox. Even if we assume the universe is infinite in size, we know its age is not infinite because light from the most distant galaxies has not reached us yet. "We can never see the light of the stars or galaxies from every distance at the same time: either light from the most distant objects cannot get to us, or if it has, it has taken so much time that objects close up have ceased to exist. "

98. Why do clouds get dark before it starts to rain?

Why Don't Penguins Feet Freeze? explains how clouds turn white. Clouds appear white because white light is dispersed due to the particles of ice and water that make them up. Before a rainfall, these particles are at their largest, therefore absorbing more light and reflecting less, taking on the appearance of a darker color.

99. Why can we sometimes see the moon during the day?

The moon is positioned opposite to the sun during the phase of a full moon; at the height of this phase, it is impossible to see the star and the satellite at the same time in the sky.

In theory during the rest of the lunar cycle, if there is a blue sky, the moon could be seen during the day, considering how bright it is. In fact, according to *Space,* with a telescope pointed in the right direction, Mercury, Venus, and Jupiter in addition to the brightest stars could be seen.

At the last quarter, the moon appears increasingly later on the horizon, and this is why we see it at dawn and in the morning. At the start of the new moon, it aligns with the sun but is not visible from the Earth because the sun shines on the side of the moon we do not see. During a crescent moon, we see the moon at dusk.