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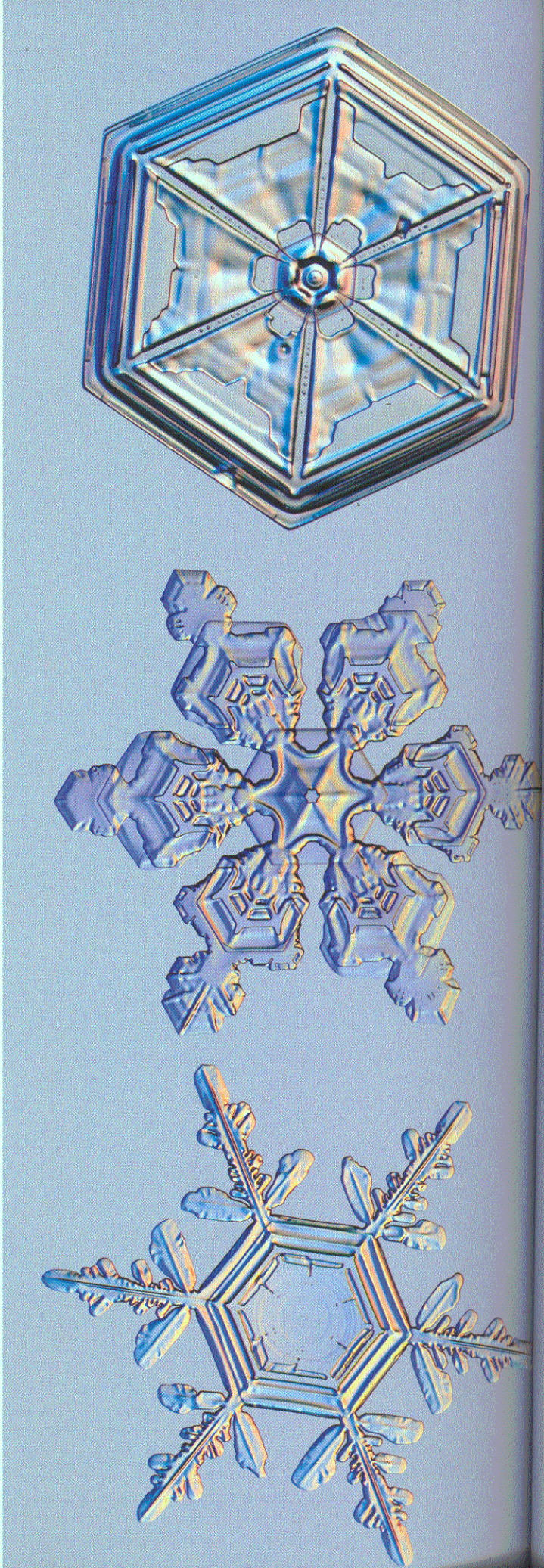
Bio-Snow?

WE'VE ALL HEARD THAT NO TWO SNOWFLAKES are identical. The notion may be more poetic than scientific, but it effectively makes its point: that nature is both staggering in its diversity and remarkable in its precision. Like the geometric basalt columns of Giant's Causeway in Northern Ireland or the regularity of the tides, the geometry of snowflakes reminds us that nature's actions, however unpredictable at times, are governed by basic laws of physics and mathematics. The crystalline symmetry of a snowflake reminds us that the white stuff is composed of ice crystals that combine to form different shapes of snowflakes, as influenced by local weather conditions, especially the temperature.

Snow, much like lightning, is such an everyday wonder that it's easy to forget that we still have much to learn about the mechanics that drive this basic form of precipitation. That was made abundantly clear by the publication in the Feb. 29, 2008, issue of the journal *Science* of new research on the origins of snow and rain. A team of researchers led by Brent Christner, professor of biological sciences at Louisiana State University, reported that bacteria swept off plants into the atmosphere may play a key role in the formation of rain and snowflakes, and thus in the entire cycle of precipitation that irrigates the planet.

Scientists have long known that water vapor in clouds needs something to cling to, a nucleus of sorts, in order to coalesce into raindrops or snowflakes. The new research shows that windborne bacteria may make up the largest percentage of these so-called nucleators. In snow samples taken from Antarctica, France, Montana, the Yukon and other locations, bacteria made up 85% of the nucleators in some cases. The new findings are further proof of the enormously complex mechanisms that keep our world turning. The team's findings supported an assertion first made years ago by a member of the group, David Sands of Montana State University, that the precipitation cycle should be renamed the bioprecipitation cycle. Said lead researcher Christner: "We are just beginning to understand the intricate interplay between the planet's climate and biosphere." ■



TOP LEFT: VISUALS UNLIMITED—CORBIS; OTHER SNOWFLAKES: VISUALS UNLIMITED—GETTY IMAGES (8)