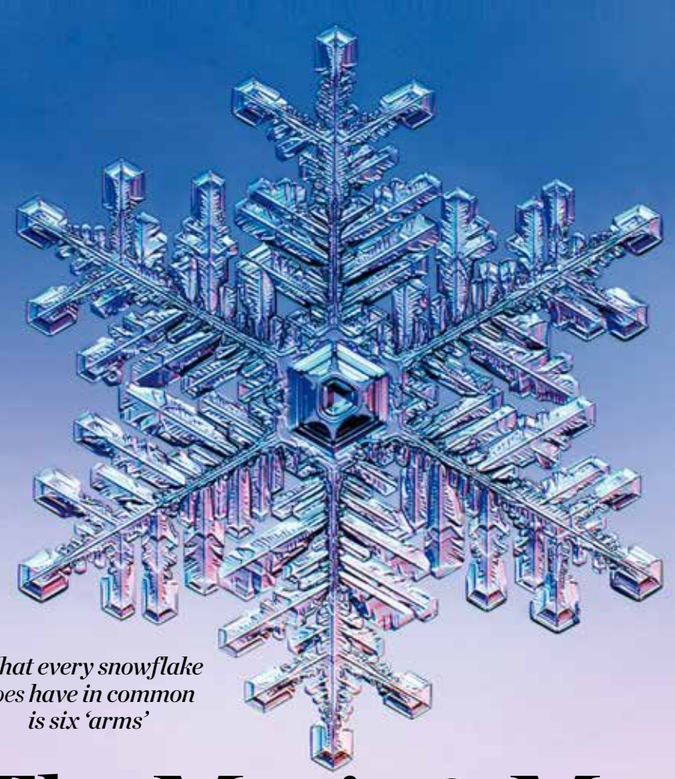
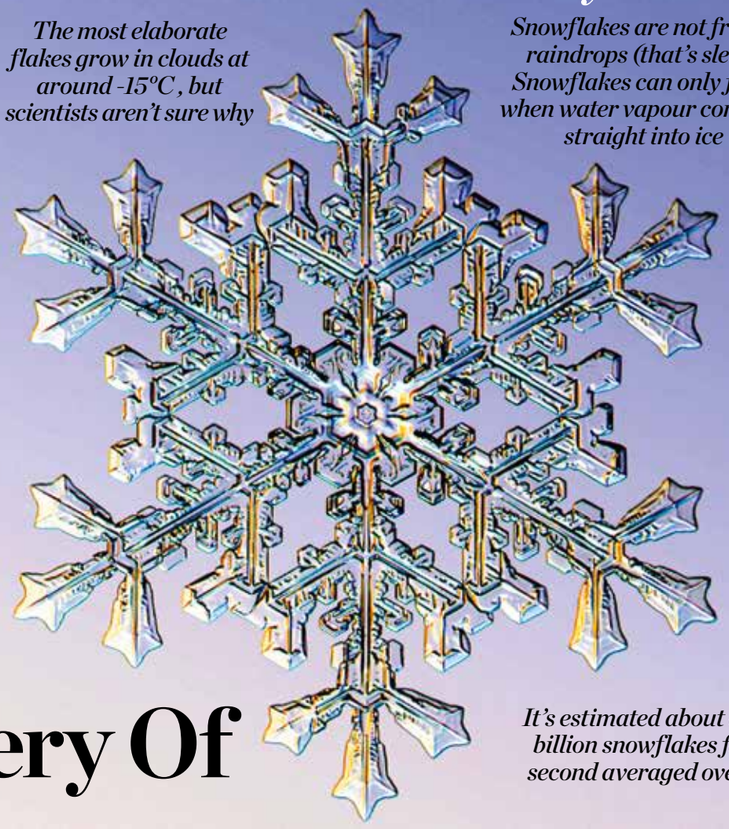
Every snowflake is 'born' from a basic hexagonal snow crystal but ends up unique



What every snowflake does have in common is six 'arms'

The most elaborate flakes grow in clouds at around -15°C , but scientists aren't sure why



Snowflakes are not frozen raindrops (that's sleet). Snowflakes can only form when water vapour converts straight into ice

It's estimated about a million billion snowflakes fall each second averaged over a year

The Magic & Mystery Of Snowflakes

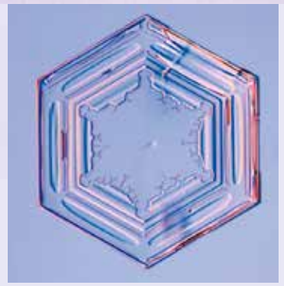
They're lovely to the naked eye but close up snowflakes have an amazingly complex beauty and there's more to them than you might imagine, as Nicola Gill discovers

We all find the delicate artistry of snowflakes appealing but scientist Ken Libbrecht, a professor of physics at the California Institute of Technology, has made studying and photographing snowflakes his life's work. His aim is to unravel the mysterious life cycle of the snowflake and discover what they can teach us about physics. All of these images show natural snowflakes that fell from the sky in various locations, including Alaska, Canada and Sweden. Here, he explains the fascinating differences between types.

✣ ***The best of Ken's stunning photos are included in his book, produced with his wife,*** **The Snowflake: Winter's Frozen Artistry *by Kenneth Libbrecht & Rachel Wing (£15, Voyageur Press)***

Stellar Dendrites

These are the most recognisable snow crystals. Their name comes from their star-shaped appearance, along with their branches and side branches ('stellar' means star and 'dendrite' means tree-like). Stellar dendrites are quite large and common, so they are readily spotted on your sleeve, especially if you are wearing a dark fabric. The best specimens appear when the weather is cold, at about -15°C.

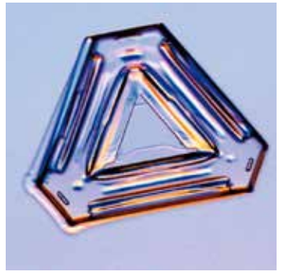


Diamond Dust Crystals

These tiny snow crystals (not flakes, strictly speaking) look like sparking dust in the sunlight, which is how they get their name. They are the smallest snow crystals; many are no larger than the diameter of a human hair. They are quite rare and most often seen in bitterly cold weather.

Triangular Crystals

We know that certain aerodynamical effects help produce these unusual snow crystals. They are typically small, shaped like truncated triangles. Sometimes branches sprout from the six corners, giving an unusual symmetry.



Fernlike Stellar Dendrites

These classic Christmas card snowflakes are like stellar dendrites but larger and leafier, with many side branches that resemble the branches of a fern. If you look very carefully, you will see that the side branches mostly run parallel to their neighbouring branches.

Twelve-branched Snowflakes

If two small six-branched snow crystals collide in mid-air, they might stick together and grow into a 12-branched snowflake. You might think such ideal collisions would be rare, but 12-branchers are actually not too hard to find if you keep an eye out for them.

Rimed Snowflakes

Snow crystals grow inside clouds made of water droplets, so quite often a snow crystal will collide with some of these droplets, which then freeze on to the ice. These droplets are called rime. A snow crystal might have no rime, a few rime droplets, quite a few, or sometimes the crystals are completely covered with rime.

Columns And Needles

Columnar snow crystals appear when the temperature is around -6°C and are quite common. They are small and easy to miss as they look like small bits of white hair on your sleeve. Especially long, slender columnar crystals are often called needle crystals.