The **Honeycomb**

HONEYBEES (*Apis mellifera*) construct their honeycombs with wax secreted from glands found on the underside of their abdomen. The honeycomb is regarded as an engineering marvel. Why?

Consider: For centuries, mathematicians suspected that partitions in the shape of hexagons were better than equilateral triangles or squares —or any other shape—for maximizing space with the least amount of building material. But they could not fully explain why. In 1999, Professor Thomas C. Hales provided mathematical proof for the advantage of what he termed “honeycomb conjecture.” He demonstrated that regular hexagons are the best way to divide a space into equal parts with minimal structural support.

By using hexagonal cells, bees can make the best use of all the space available to them, produce a light but sturdy honeycomb with a minimum amount of wax, and store the maximum amount of honey in a given space. Not surprisingly, the honeycomb has been described as “an architectural masterpiece.”

Today, scientists mimic the bees’ honeycomb to create structures that are both resilient and space efficient. Aircraft engineers, for example, use panels patterned after the honeycomb to build planes that are stronger and lighter and thus use less fuel.

What do you think? Did the superior structure of the honeycomb come about by evolution? Or was it designed? ■