

## CHAPTER 3

# SCIENCE: A PROCESS FOR STUDYING GOD'S WORLD

## K-T BOUNDARY INVESTIGATION

The K-T boundary investigation is a good example of how scientists can learn about past events through the methods of historical science. The K-T boundary is a particular layer of rock that is famous because it indicates when the dinosaurs became extinct. Older rocks below this boundary contain many dinosaur fossils. In younger rocks slightly above this boundary, no dinosaur fossils are found. Radioactive dating of lava flows and other rocks formed around this layer indicate an age of 65 million years.

Around 1980, two scientists named Luis and Walter Alvarez studied the composition of some sedimentary rock at the K-T boundary, and they measured unusually high amounts of the element iridium. This element is rarely found in rocks on Earth but is commonly found in meteorites. (Meteorites are small asteroids from the solar system that have fallen to Earth.) To explain the iridium-rich layer, these scientists hypothesized that a large asteroid hit Earth 65 million years ago. In their model, the impact was powerful enough to destroy the asteroid and send its dust up into the Earth's atmosphere; the dust would have settled all over the planet. This model offers an explanation for dinosaur extinction. If the asteroid was very large and enough dust was thrown into the Earth's atmosphere, it could change the Earth's climate enough to cause the extinction. (Some scientists believe that this asteroid was the primary cause of the dinosaur extinction; other scientists believe that other causes were also at work.)

As is often the case in historical science, this new model of asteroid impact not only explained previously known data (iridium levels and dinosaur extinction) but also made predictions for what would be seen in new observations. The asteroid model predicted

- ▶ that sedimentary rocks at other locations on Earth would also show excess levels of iridium in the same layer.
- ▶ that the layer would also include bits of shocked quartz (quartz that was shocked by the asteroid impact and blasted far away from the impact site).
- ▶ that somewhere on Earth there would be a large crater from the impact.

The first two predictions have been confirmed. So far, 100 sites around the world have shown a layer with excess iridium, and 30 of these also have shocked quartz. The last prediction may be confirmed with the discovery of a 180-kilometer-wide crater in the Yucatan Peninsula in Central America; geologists are still investigating this crater as well as other crater candidates.

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