

Fossils – shadows of past life

Think for a moment about how our daily lives are affected by organisms that lived millions of years ago. In Alberta, we primarily heat our homes with natural gas which was formed by the decomposition of long-dead micro-organisms.

Similarly, such living things produced oil which we modify to make gasoline, diesel and lubricants to run our vehicles as well as the asphalt that makes our roads. Most of the electricity that we use to light our workplaces and power our machines is generated from coal – some of which is obviously derived from plants.

Cement used for concrete foundations and sidewalks is made from limestone which in turn is made from the skeletal remains of marine micro-organisms and shells of extinct clams. In other words, fossils or their derivatives are very much part of our daily lives.

But now consider the rarer fossils – remains or other evidence of individual organisms that have turned to stone. The accompanying photograph is the fossil shell of an ammonite mollusk that was discovered several years ago right in our “backyard”, near the confluence of the Calling River with the Athabasca River.

Such a fossil is obviously different from other mollusks (snails and clams) found here today. By examining many such fossils, and using various chemical and geological dating techniques, experts can estimate the ages of such organisms, and determine life history information and something about the local habitats. For example, the pictured ammonite fossil helps show that central Alberta was once a shallow tropical sea.

Fossil corals, bones and trees found in Canada’s High Arctic demonstrate that what is now tundra with its permafrost was once a



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warm ocean inhabited by alligators and fringed by forests of large trees. How such an ecosystem survived the winter periods of 24-hour darkness remains a mystery.

Most fossils are not as complete as our ammonite example, nor as obvious. Many fossils appear, upon first examination, simply to be “rocks”.

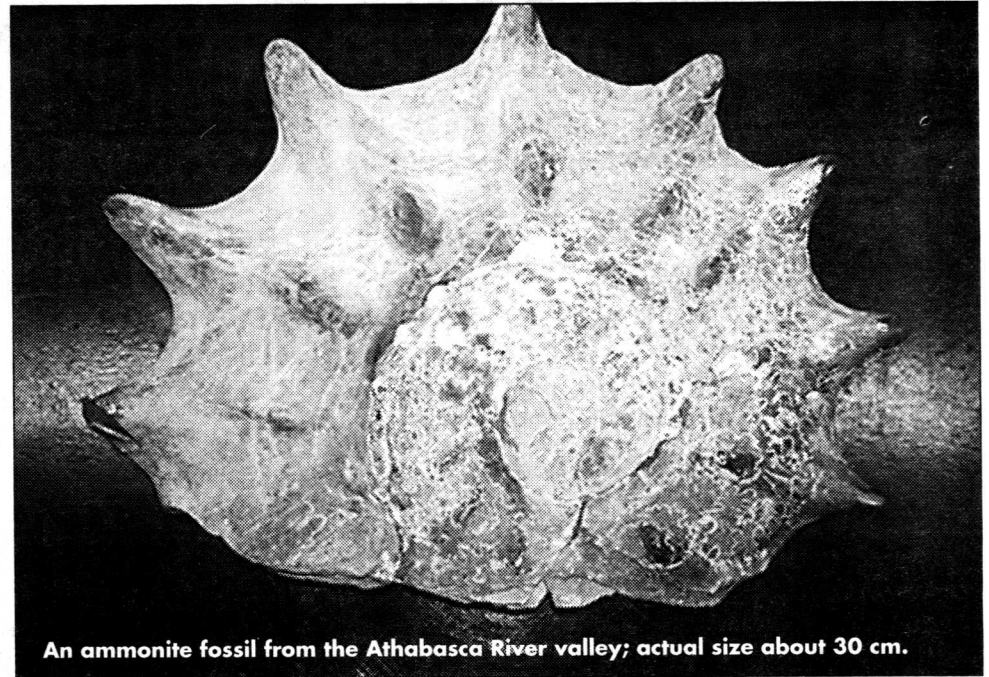
However upon closer inspection, they may turn out to be bits of dinosaur bone, plant tissue, or even microscopic algae. Usually only hard animal parts and wood are preserved as fossils, but occasionally soft or delicate body parts can be seen.

Some fossils, like those of the world famous Burgess Shale formation near Field, British Columbia, are exceptionally well preserved. Many of the organisms from the Burgess Shale do not resemble anything that is alive today. Scientists have difficulty trying to figure out their closest relatives. On the other hand, some fossils, like certain fossil leaves or clams, are impossible to distinguish from present day species.

The next time you use a piece of chalk or swallow a

calcium pill, both usually derived from limestone, you will be touching the shadows of life long past.

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An ammonite fossil from the Athabasca River valley; actual size about 30 cm.