THE DEBATE OVER THE CRETACEOUS-TERTIARY BOUNDARY;
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Large-body impact on the Earth is a rare but indisputable
gеologic process. The impact rate is approximately known from
objects discovered in Earth-crossing orbits and from the statistics of craters on the Earth's surface. Tektite and microtektite
strewn fields constitute unmistakable ejecta deposits that can be
due only to large-body impacts.

The Cretaceous-Tertiary (K-T) boundary coincides with an
unusually severe biological trauma, and this stratigraphic horizon
is marked on a worldwide basis by (1) anomalous concentrations of
noble metals in chondritic proportions, (2) mineral spherules with
relict quench-crystallization textures, and (3) mineral and rock
grains showing shock deformation. These features are precisely
compatible with an impact origin. Only with difficulty can they
be explained by volcanism, and not at all by sea-level change.

Although only impact explains all the types of K-T boundary
evidence, the story may not be as simple as once thought. Our
original hypothesis envisioned one large impact, triggering one
great extinction. Newer evidence hints at various complications:
(1) Microstratigraphy in western North America suggests two major
impacts within a few years. (2) The Manson crater in Iowa, a good
candidate for the source of the shocked quartz, is evidently not
big enough to produce a mass extinction. (3) Disturbance of the
Oort cloud should produce comet showers with several impacts
clustered in a 2-3 Myr interval. (4) The terrestrial cratering
record hints at a cluster of impacts near the K-T boundary, but
the iridium record does not. (5) The fossil record shows some
hints of a stepwise K-T extinction. (6) The K-T event is one
member of an apparently periodic sequence of biological traumas
and impact crises, suggesting a cyclical astronomical forcing
mechanism, such as disruption of the Oort cloud by the
hypothetical solar-companion star, Nemesis.

Different challenges are faced by the occupants of each apex
of a three-cornered argument over the K-T event. Proponents of a
non-impact explanation must show that the evidence fits their
preferred model better than it fits the impact scenario.
Proponents of the single impact-single extinction view must
explain away the complications listed above. Proponents of a more
complex impact crisis must develop a reasonable scenario which
honors the new evidence.