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Walter*

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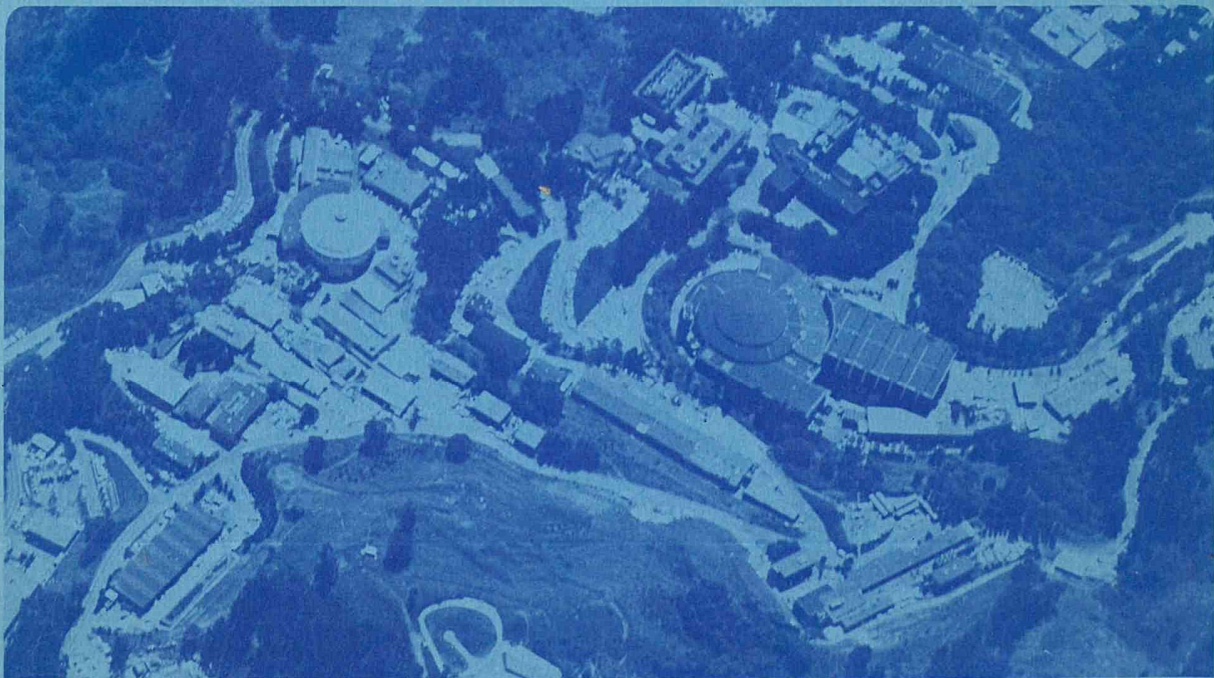
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EXTRATERRESTRIAL CAUSE FOR THE CRETACEOUS-TERTIARY
EXTINCTION: EXPERIMENT AND THEORY

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EXTRATERRESTRIAL CAUSE FOR THE CRETACEOUS-TERTIARY
EXTINCTION: EXPERIMENT AND THEORY

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ABSTRACT

Platinum metals are depleted in the earth's crust relative to their cosmic abundance; concentrations of these elements in deep-sea sediments may thus indicate influxes of extraterrestrial material. Deep-sea limestones exposed in Italy and Denmark show iridium increases of about 30 and 160 times, respectively, above the background level at precisely the time of the Cretaceous Tertiary extinctions, 65 m.y. ago. Reasons are given to indicate that this iridium is of extraterrestrial origin, but did not come from a nearby supernova. We suggest a new hypothesis to account for the extinctions and the iridium observations. Impact of a large Apollo object would inject about 100 times the object's mass into the atmosphere as

pulverized rock; about 20 percent of this dust would stay in the stratosphere for 3-5 years and be distributed world-wide. The resulting darkness would suppress photosynthesis and the expected biological consequences match quite closely the extinctions observed in the paleontological record. One prediction of this hypothesis has been verified: the chemical composition of the boundary clay is markedly different from that of clay mixed with the Cretaceous and Tertiary limestones, which are chemically similar to each other. Four different and quite independent estimates of the diameter of the asteroid give values that lie in the range 10 ± 3 km. This hypothesis has not been proven, but deserves further testing.