

the Earth contains a delicately balanced heat engine that runs on radioactive fuel. Like the engine in a car, it has to run at just the "right" speed to accomplish some amazing feats. One of the remarkable accomplishments of this finely tuned heat engine is the production of the Earth's magnetic core. Another is the production of the Earth's special atmosphere. The Earth's atmosphere and its magnetic field act as a shield -- a kind of protective blanket. They act as a barrier against most of the damaging radiation from space that would otherwise strike the Earth and threaten life.

The Earth's special atmosphere also helps protect the Earth from meteors. The gases in our atmosphere act as a cushion to brake and soften the blows from these celestial projectiles that hurtle at us from space. The pockmarked surface of the Moon indicates what the Earth would look like without its protective blanket. The Earth is a very special and pampered planet.

But it was not always this way. When the Earth originally condensed from its nebular cloud of gas and dust particles into a solid planetary body, it looked very different from its appearance today. It

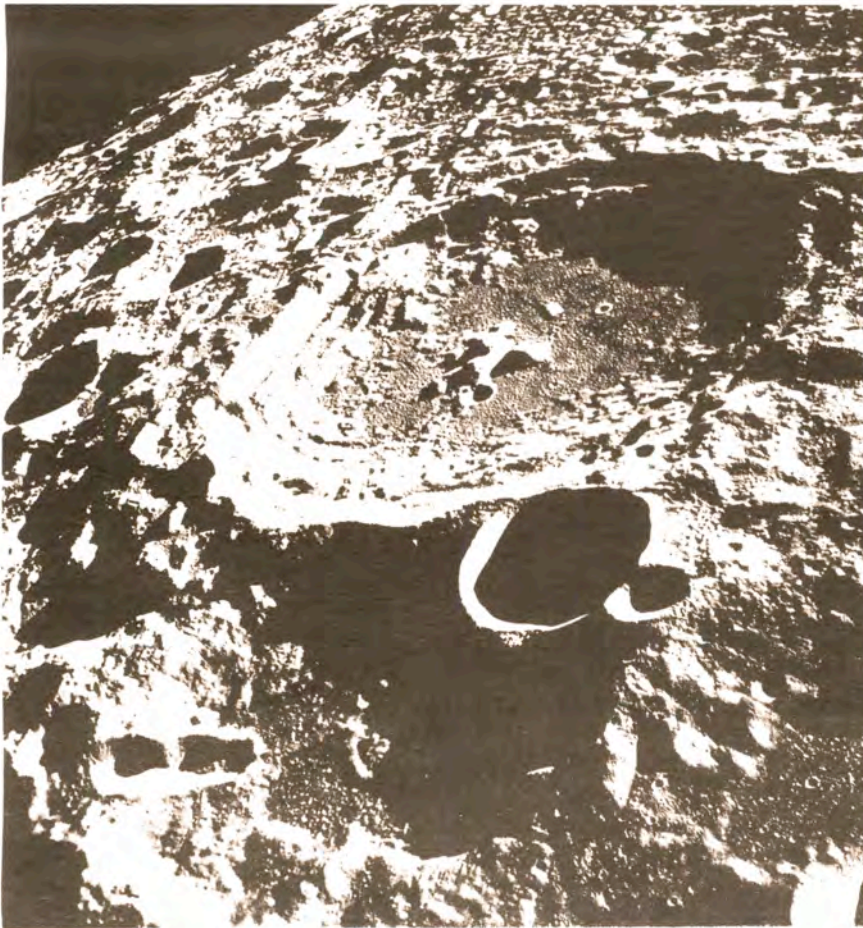


FIGURE 4.2

An oblique view of the lunar far-side shows a crater of approximately 50 miles, surrounded by numerous smaller craters in the basaltic lava surface which makes up most of the Moon's basic landscape. (Courtesy NASA.)