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A New Look at the Pyramids

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Modern science and technology are making an increasing mark on archaeology. While the traditional methods of the archaeologist (grid plans, brush and trowel) are still important, space-age science has given a new edge of precision to archaeology which promises to tell us more about ancient artifacts than ever before seemed possible.

The famous pyramids of Giza in Egypt furnish an illustrative example. These three astounding structures were built between 2600 and 2500 B.C.; the largest is the pyramid of Cheops, the next in size is that of Chephren, and the smallest belongs to Mycerinus. The pyramid of Cheops has been extensively explored, and has been found to contain, in addition to the traditional underground burial chamber, two upper chambers and two lengthy passageways. The pyramid of Chephren, however, poses a problem for the archaeologist: despite numerous attempts no inner chambers have yet been uncovered. Is the pyramid of Chephren simply a solid mass of stone, or does it in fact contain secret chambers similar to those of its fellow-pyramid? Were such chambers skillfully hidden in order to prevent the looting which so frequently befell ancient tombs?

A group of archaeologists are now trying to solve this problem using the tools of modern physics. What they have attempted to do is take a picture of the interior of the pyramid using a combination of computers, spark chambers, and cosmic particles called muons. The process works like an X-ray, and enables physicists to obtain an outline of the pyramid's interior without damaging the structure in any way. This is clearly a vast improvement over the days when explosives were set up near pyramids in order to open them to view!

The principle on which the process is based can be simply stated: cosmic particles continually bombard physical structures, and the speed and density of these radioactive particles depend on the substance through which they are travelling--for example, particles moving through a "soft" structure (such as cotton candy) travel very quickly, while particles moving through a "hard" structure (such as stone) travel more slowly. Similarly, the less resistance the particles encounter, the straighter they travel. And so the physicist records the speed, density, and direction of particles as they pass through the pyramid of Chephren, and the results of this recording will indicate whether the interior is solid or contains empty spaces.

Recordings of this nature were in fact taken for several months. The results, however, were disappointing to the archaeologists: no chambers were indicated by the passage of cosmic particles! And so the pyramid of Chephren looks very solid indeed. But attempts to uncover any secret chambers are still going on, and archaeologists are again turning to modern science: next will come a radar probe of the pyramid. This involves a complete scan of the structure using shortwave radio emissions; any chamber within will reflect a strong radar signal. Perhaps this probe will uncover what the archaeologists so desire to find: a hidden chamber full of the treasure of an Egyptian pharaoh.