

PHYSICS

Peaceful U.S. A-Bomb

► **THERE IS A BRIGHT** and good side to the development of nuclear bombs, that is, if you explode them only for peaceful purposes. To demonstrate the benefits of the bomb, the Kennedy Administration announced its approval of a nuclear experiment known as Project Gnome, a part of the Atomic Energy Commission's Plowshare Program to develop productive uses for nuclear explosives.

Within the next 60 days, the AEC will detonate a 5-kiloton nuclear bomb underground near Carlsbad, N.M. The explosion will be conducted about 1,200 feet underground and is designed to be contained so that no radioactivity will escape into the atmosphere.

However, re-entry into the cavity for scientific investigation and for determining the success of the four experiments of Project Gnome may result in release of small amounts of radioactivity, the AEC acknowledged. All possible precautions are being taken to keep the escaped radiation within permissible limits, the AEC said.

One of Project Gnome's experimental objectives is to explore the feasibility of converting the energy from nuclear explosives

into heat for producing electric power. If this should prove feasible, it may be possible to provide power at low cost for underdeveloped areas by exploding bombs in caves. The experiment may very well demonstrate that this cannot be done, John S. Kelly, director of the AEC Division for Peaceful Nuclear Explosives, said.

The other experimental objectives of the project are to investigate the practicability of recovering large quantities of such industrially and medically useful radioisotopes as cobalt, uranium and plutonium; to learn more about nuclear detonations in salt which has marked differences from the volcanic rock in which previous United States underground nuclear tests have been conducted; and to measure neutrons on a vast scale to learn more about the physical properties of matter.

For the last objective, Mr. Kelly said the explosion for Project Gnome will in a fraction of a second yield as many neutrons as would be produced in any known nuclear reactor, accelerating over a period of 3,000 years.

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pounds that provide a way of telling the time elapsed since a meteorite fell, because radioactive compounds disintegrate at a known, steady rate.

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ZOOLOGY

Octopus Bores Through Shells to Reach Food

► **THE OCTOPUS** is a killing bore, especially at dinner time.

He bores his way into the shelled mollusks that provide him with food, injecting a venom that causes his victim to relax the muscles that keep the protective shell closed. In this way the octopus feeds on abalone, chiton and other shelled mollusks, Drs. M. E. Q. Pilson and P. B. Taylor of the Scripps Institution of Oceanography, La Jolla, Calif., report in *Science*, 134:1366, 1961.

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TECHNOLOGY

World's Largest Radome To Be Operated by MIT

See Front Cover

The largest radome in the world will be the U.S. Air Force's Haystack Hill 150-foot-wide dome of white aluminum and glass fiber in Tyngsboro, Mass.

The dome, seen perched as an oversized golf ball on the cover of this week's issue, will hold a sensitive communications and space research antenna scheduled to begin operating by the end of 1962.

The radome was designed by Lincoln Laboratory of Massachusetts Institute of Technology which will also operate the facility.

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ASTRONOMY

Meteorites Very Old

► **BOTH STONY** and iron meteorites last much longer on the earth's surface than was previously thought, two studies showed.

Dr. James R. Arnold of the University of California, San Diego, said that the Williamstown meteorite found in Kentucky had spent 600,000 years on earth after landing from somewhere in space. It was dated by the amount of radioactive chlorine-36 it contained, which was only one-quarter that found in meteorites from other recent falls, Dr. Arnold told the National Academy of Sciences meeting at the University of California, La Jolla, Calif.

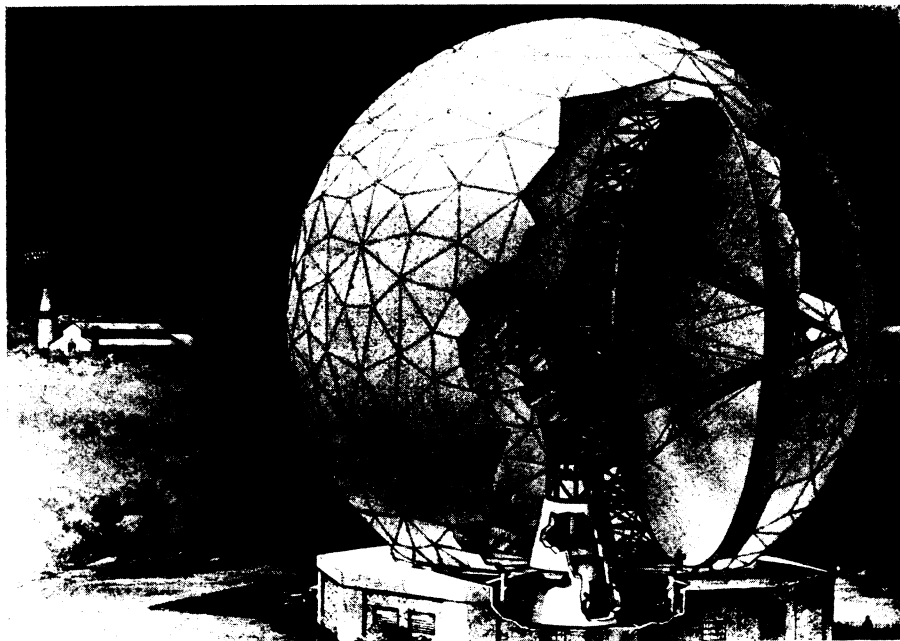
Scientists have previously assumed that iron meteorites disappear by weathering in a relatively short period, at least in most climates. Investigation of other meteorites indicates that the earthly age of 600,000 years is not unusual.

Dr. Arnold's ages were a by-product of his study of possible time variations in the intensity of cosmic rays bombarding the earth during long periods in the past. The great resistance of these meteorites to corrosion is "puzzling," Dr. Arnold said.

Dr. Hans E. Suess of the University of California, San Diego, told the Academy that stony meteorites whose time of fall is unknown have been on earth from a few thousand to 20,000 years. He found this age by measuring the radiocarbon content of five meteorites that have fallen during the past few decades and comparing this amount with the radiocarbon content of stony meteorites of unknown age. The latter amount was much smaller.

Scientists have previously assumed that stony meteorites are also subject to weathering and disintegrate within a relatively short time after falling.

Cosmic rays hitting meteors while they are still in space produce radioactive com-



CUTAWAY RADOME—The 150-foot-wide Air Force radome will protect a communications and space research antenna expected ready in 1962.