

# Scholar Explains "Mission of Science"

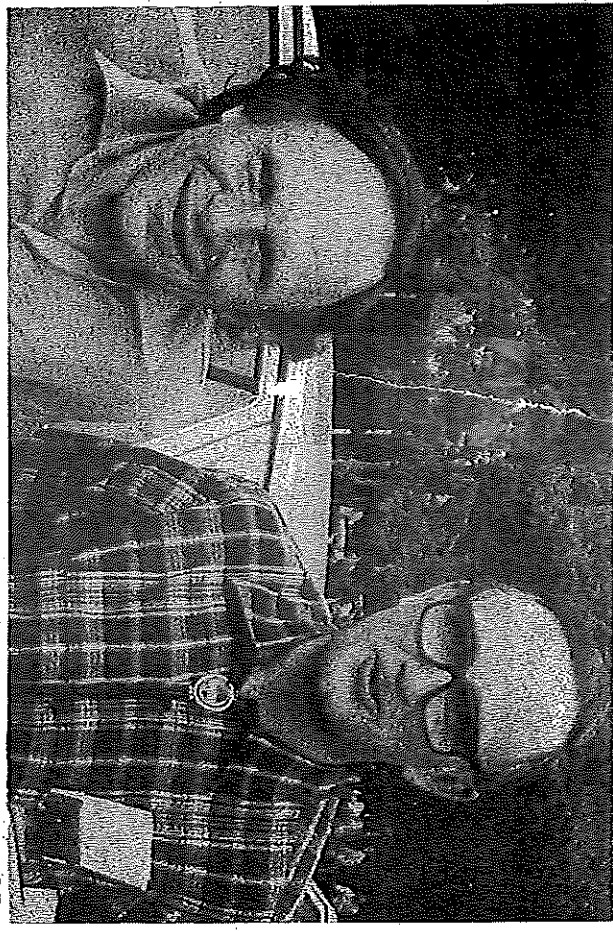
The mission of science, says a distinguished scholar who has devoted much of his life to making it relevant to the average person, is to "place individuals in their universe."

But, maintains Phillip Morrison of the Massachusetts Institute of Technology, humankind still must rely on skepticism and logical arguments to augment technology in its quest for knowledge.

Morrison, professor of physics at MIT and holder there of the coveted title of Institute Professor, spoke here recently in connection with an international astronomers conference in Albuquerque and an accompanying tour of the Very Large Array.

Calling the huge radio telescope west of Magdalena "one of the world's great instruments," Morrison who is also book review editor for Scientific American, declared that large equipment, such as the VLA with its 27 210-ton antennas, is required to explore both the very large and the very small.

To illustrate, he showed a film underscoring the scale of the universe from the largest galaxies down to the structure of the atom. At either end of the scale, he observed, large, expensive machines are needed for scientific investigation such as very high-energy accelerators to study the smallest particles and those like the VLA to investigate the giant radio galaxies, the largest objects now known.



**DISTINGUISHED SPEAKER** — Dr. Phillip Morrison (left), Institute Professor and Professor of Physics at the Massachusetts Institute of Technology, spoke at the New Mexico Institute of Mining and Technology recently in connection with an international astronomers conference visit to the Very Large Array site and to Socorro. Shown with Dr. Morrison is Richard Thompson of the VLA, who served as local arrangements chairman for the conference. (New Mexico Tech Photo)

However, Morrison told an audience of more than 500 attending the inaugural event in the New Mexico Institute of Mining and Technology's new Conference Center, that of all the instruments needed, "the most essential for the astronomer is the eye" because it is that organ which amplifies what is observed by the machine.

Speaking on "Cosmic Waterfalls, Whirlpools and Fountains," Morrison reviewed characteristics of the giant radio galaxies and quasars in the light of findings discussed at the weeklong International Astronomers Union Symposium.

Reflecting on the composition of galaxies, he

pointed out that the substance is difficult to grasp because "we stand as tiny observers looking far into the distance."

However, many of the characteristics of galaxies, he continued, can be explained in terms of physics with which astronomers have become familiar over many years of study. These are the constituents which are largely in the form of stars.

Radio observations also reveal matter in another form, which involves particles at extremely high energy traveling close to the speed of light.

One question now occupying astronomers is the nature of these very high

energy particles and the means by which they become accelerated to their extremely high velocities, commented Morrison.

One possible explanation, he said, was that there is some kind of "central engine" in the middle of a radio galaxy which emits the particles and transmits to them energy obtained by some mechanism such as the inflow of gases into a rotating black hole.

The structure of the galaxies, as revealed by instruments like the VLA, shows giant radiating clouds which are linked to the central galaxies of jets and streams of high energy particles.

NMIMT news release