



Pine Mt. scientists study the heavens

"The University has recently announced tentative plans for the construction of an observatory to be located on Pine Mountain, east of Bend.

"The observatory would feature the installation of a 24-inch reflector telescope, with a radio-telephone link from the mountain to the computer facilities on the University campus, to provide almost immediate analysis of data.

"The Pine Mountain telescope would be the largest in the Pacific Northwest.

"For the past three years, E.G. Ebbighausen, professor of physics and astronomy at the University, has operated a small observatory near Sisters, using a 15-inch telescope. He has spent the last three summers observing the heavens, and recording and analyzing his observations.

"His work has resulted in the publication of several papers which are significant contributions to research in astronomy. But now, to develop further research in this field, a larger, more modern telescope is needed. Pine Mountain offers an ideal site for the planned facilities."

So read a 1967 news article. Later that year, the Pine Mountain observatory was dedicated. Five years later, the observatory is still operating in many astronomical areas. The observatory has received several federal grants and has added several pieces of new equipment.

Equipment such as a new infrared detector, for example, which allows the observatory to take the temperature of star dust in the sky.

Ira Nolt and James Radostitz, research associates in physics working with Russell Donnelly, professor of physics, designed and built it.

The building of this detector is a breakthrough in the new field of infrared astronomy, according to Nolt. It is the smallest, most self-contained instrument of its kind and attains the lowest temperature of any detector in the world.

Infrared radiation consists of heat waves, he explains. The supersensitive thermometer used to detect and measure this heat is a chip of a metalloid element called germanium.

But before the germanium will work as a thermometer of infrared radiation, it must be cooled to a temperature extremely near absolute zero.

The trick in developing an infrared detector was to make one that housed not only the thermometer, but also all the pumps and fuel needed to cool the germanium all the way down to .3 degrees Kelvin, points out Nolt.

The scientists were able to build a detector that is only 6 inches in diameter and 22 inches high, weighs 22 pounds, and can be attached easily (with milk pipe clamps) to the 24-inch telescope at Pine Mountain.

"Just four years ago, the world's first infrared detector was built, it was big as a table and impractical to use with a telescope," recalls Nolt.

The achievement is the result of several years' work, including some by Nolt before he came to the University in 1971.

When the detector was almost, but not quite finished, the team received an invitation to try it out in an experiment aboard a jet about to take a few other scientists on high altitude flights. Radostitz worked steadily on the detector for 21 days, completing it just in time to do the experiment. "I didn't sleep at all the last four days," confesses Radostitz.

The reason high altitude flights are so desirable for experiments in infrared radiation is that the water vapor in the earth's atmosphere absorbs so much of this type of radiation, according to Nolt.

He notes that Pine Mt., at 6,034 feet, is high enough to be above some of that atmospheric interference.

This summer, Nolt, Radostitz, and a University junior, Dan Lester, are using the infrared detector to look at very early stars in the process of formation.