

moderate the US Army. The MRO offers a good look at target missiles fired from Fort Wingate in western New Mexico, says Tomas C. Chavez, chief of test technology at White Sands. "We could collect phenomenology data during the target's boost and coast phases to help home in on the target with an interceptor." Adds Romero, "This is a match made in heaven. The army wants to use [the telescope] during the day and early morning, we want to use it at night." The 2.4-meter mirror was donated by the air force. Originally intended for classified space-based research, it has hardware added to keep it from sagging in Earth's gravitational field.

Astronomers will take advantage of the fast slewing, too. "One big use of the telescope will be 'alert response to transient astrophysical phenomena,'" says project scientist Eileen Ryan. "An example would be to find the optical counterpart of gamma-ray bursts." For that, the telescope would automatically interrupt other observations when it receives signals from Swift, a satellite NASA is supposed to launch in December. The MRO telescope, Ryan adds, will be bigger and will slew

faster than other ground-based telescopes currently hunting for GRBs (see PHYSICS TODAY, July 2002, pages 24 and 25).

Mostly, though, the 2.4-meter telescope will be devoted to studying "small Solar System bodies—asteroids, comets, and Kuiper Belt objects," says Ryan. "We want to use the telescope to ask how fast asteroids are spinning. How big are they? What are their shapes?"

Possible with pork

What with the MRO being funded directly by Congress, the project often gets labeled as pork. Says Romero, "Without this type of funding, we would not be able to build it. But we think this is a facility that funding agencies like NASA and NSF will take the opportunity to fund research at." And, unusual for a federally funded project, New Mexico Tech and its partners will foot the running costs, estimated at \$2 million a year.

If all goes as planned, the single telescope would see first light in 2005, and the interferometer could be up and running a couple years later.

Toni Feder

tions accidentally captured on the plates.

Under ideal conditions, plates can survive for 350 years, according to the Eastman Kodak Co, which manufactured most of the plates. In practice, however, many plates have been lost or damaged. For example, plates from a deserted 1920s observatory on Mt. Brukkaros, in what is now Namibia, are being used by local villagers as windows. Last year, a frantic group of volunteers rescued 50 years' worth of photographic plates thrown out by the University of Michigan to make room for a new laboratory. And photographic plates narrowly survived the 1997 earthquake that rocked the Cerro Tololo Inter-American Observatory near La Serena, Chile, and the wildfire that earlier this year ravaged Mt. Stromlo Observatory near Canberra, Australia (see PHYSICS TODAY, March 2003, page 29). Collections also dwindle when borrowed plates are not returned. "These incidents highlight the risk to historic scientific information if there are no digital backups," says Griffin.

At the same time that collections are degrading, the demand for them is falling. The main users of plates are retiring and the equipment for scanning them is becoming obsolete. Young astronomers, says Mike Bessell of Mt. Stromlo Observatory, tend to be more interested in new instruments and "not that particularly interested in time-sensitive phenomena." It doesn't help that researchers typically have to physically look through the plate collections to determine what observations they contain. "If the information is online, then research could happen much more quickly," says Griffin.

Fewer companies are now making the specialized scanners required for digitizing plates. Petr Skoda, an astronomer in the Czech Republic, got a grant to digitize the Ondrejov Observatory's collection but his scanner was broken. "Because of the collapse of the Soviet Union," he says, "the Hungarian company that made [the scanner] has vanished." Funds to replace the machine do not exist, he adds.

The SVO project will officially start when \$100 000 is raised for equipment costs. The money will go toward upgrading four scanners donated to the project. Even then, Griffin estimates it will take five years to digitize 50 000 plates. The results will help rescue a small part of astronomical history. Says Skoda, "We should try to save the heritage of the epoch of photographic astronomy as well as the data from the current electronic era."

Paul Guinnessy

Astronomers Save Historic Plates

When astronomer Elizabeth Griffin attended the annual International Astronomical Union meeting three years ago in Manchester, England, she issued a challenge to the assembly: Rescue photographic observations. For nearly a century, until digital detectors became common in the late 1980s, star spectra were routinely recorded on photographic plates. But the three million or so plates across the globe are at risk of disappearing owing to neglect and natural disasters. Griffin's challenge is now

under the auspices of an IAU working group and the World Spectra Heritage, a nonprofit organization that is attempting to raise \$1.5 million to digitize spectrographic plates.

Because of the "astronomical" number of plates involved, says Griffin, who chairs the new working group and is a visiting scientist at the Herzberg Institute of Astrophysics near Victoria, British Columbia, Canada, "we select plates that can be scientifically useful." Some 35 observatories are known to have plate collections and many have agreed to ship the plates to the institute's Dominion Astrophysical Observatory for scanning. The processed observations will form the basis for a new Spectroscopic Virtual Observatory (SVO).

The photographic observations are invaluable for understanding stellar phenomena that change slowly over time, such as stars undergoing minor explosions, eclipsing binary stars, pulsating stars, and even stellar evolution. For her part, Griffin is using 100-year-old plates to study details of Earth's atmospheric ozone concentra-

Spectroscopic plates (inset) from the 2-meter telescope at Ondrejov Observatory in the Czech Republic will be digitized by the World Spectra Heritage.

