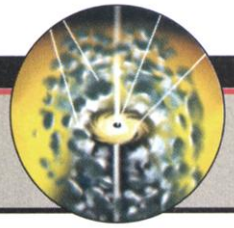

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LEAD STORY 1988
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UNDERGROUND LABORATORY

U.S. Researchers Go for Scientific Gold Mine

U.S. scientists are asking the National Science Foundation (NSF) to pour $281 million into a hole in the ground. A new research coalition last week submitted a proposal to NSF to transform one of the world's deepest gold mines into a world-class underground laboratory for physics, geology, and extreme biology. The plan is enthusiastically backed by many researchers, and a powerful member of Congress—Senate Majority Leader Tom Daschle (D–SD)—hopes to find money to get the ball rolling. But the project faces an uncertain reception at NSF, which already has a long list of expensive projects awaiting funding.

Lab advocates are also battling the clock. The owner of the Homestake Mine in Lead, South Dakota, plans to abandon the 2500-meter-deep shaft at the end of the year, leaving it for nature to flood. "This is an unusual opportunity to create the best underground laboratory ever," says physicist John Bahcall of the Institute for Advanced Study in Princeton, New Jersey, who earlier this year led an ad hoc review that deemed Homestake the best of several potential sites.

U.S. researchers—especially astrophysicists studying the origins and composition of the universe—have long coveted an underground facility deep enough to shelter sensitive instruments from unwanted cosmic radiation. But advocates failed to win funding for such a facility in the 1980s, prompting many scientists to export their studies to better subsurface labs in Japan, Italy, and elsewhere. Hopes rose anew last September, however, when Homestake Mining Co. announced that it would close its 125-year-old namesake, dug deep into the scenic Black Hills near Mount Rushmore.

Energized by the chance to snag for science the Homestake's 1000 kilometers of tunnels, electrical wiring, and extensive ventilation system, a group of researchers asked Bahcall to chair the hastily assembled ad hoc panel. It examined the potential uses of an underground lab and toured several possible sites—including an undeveloped area at California's Mount San Jacinto near Palm Springs and the Waste Isolation Pilot Plant, a nuclear waste dump in New Mexico. In March it gave Homestake the nod, noting that it is nearly twice as deep as the deepest existing underground facility, at Gran Sasso in Italy.

On 8 June, five Homestake advocates, led by physicist Wick Haxton of the University of Washington, Seattle, turned the committee's recommendation into a formal proposal. It seeks $281 million over 5 years, beginning in 2002, to carve detector halls, upgrade cables, build clean rooms, and begin small research projects. Major studies, however, would be funded separately, probably by NSF and the Department of Energy.

Treasure hunting. With support from new Senate Majority Leader Tom Daschle, researchers hope to convert a South Dakota mine into an underground laboratory.

Researchers are already proposing projects that would cost from hundreds of thousands to hundreds of millions of dollars. Biologists, for instance, are interested in relatively inexpensive studies that would examine the bacteria and other "extremophiles" that have adapted to the mine's harsh conditions. Astrophysicists say that they could install a $20 million detector designed to capture the burst of neutrinos created by a supernova. But it could take $500 million and a decade or more to build one of the biggest experiments envisioned for Homestake—the Ultra Underground Nucleon Decay and Neutrino Observatory, a bigger version of Japan's Super-Kamiokande proton-decay detector.

NSF officials say that they will soon identify reviewers to weigh the mine's merits. Even if the idea wins good notices and the approval of NSF's governing board, however, the agency will then have to slot it into a crowded lineup of already approved projects. The Bush Administration threw NSF a curve ball this year by issuing a no-new-starts diktat for the budget year that begins on 1 October. The pending projects within NSF's physics division alone include the United States' $200 million contribution to the $660 million international ALMA millimeter telescope in Chile and the $240 million ICE CUBE polar neutrino detector.

Bahcall believes Homestake "deserves a place right at the top of the list"—even though it might delay other projects he has championed, such as ALMA. "Because of the time pressure, that is the way the game has to be played," he says. But Joe Dehmer, head of physics at NSF, says his "concept is that, if approved, it will not preempt [projects] that are ready to go."

The proposal has powerful friends, including Daschle and South Dakota Governor Bill Janklow, a Republican said to be close to President George W. Bush. They see the lab as an economic and educational engine, envisioning an underground IMAX movie theater and other tourist attractions. Senator Tim Johnson (D–SD), a member of the Senate Appropriations panel that oversees NSF's budget, has already asked for $10 million next year to keep the mine open while the science bureaucracy's wheels turn. Observers say that politicians might move to earmark more funds if the project is approved.

In the meantime, Homestake's advocates are moving forward. They plan to hold a workshop next month near the historic hole to discuss what kinds of precious data the mine might yield in place of the glittering gold it once produced. **–DAVID MALAKOFF**

NAZI RESEARCH

Max Planck Offers Historic Apology

BERLIN—For half a century, survivors of cruel experiments at Nazi death camps have been seeking a formal apology—as well as more details about the research abuses they endured—from Germany's scientific societies. On 7 June, a few of those victims finally got an explicit apology from the head of the country's premier basic research organization, the Max Planck Society, on behalf of its forerunner, the Kaiser Wilhelm Society (KWG), some of whose scientists were implicated in the nefarious research. However, the statement from Max Planck president Hubert Markl won't close the book on

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