of flight. It’s said to be the first-ever combustion at hypersonic speeds within an air-breathing engine. Similar experiments could eventually help the Pentagon reach its goals of a Mach-7 piloted craft by 2008 and one that travels at Mach 12 by 2012. The craft would probably use a combination of rocket and scramjet engines and more problematic fuels, such as liquid hydrogen. Toward that end, this summer NASA will resume testing of the X-43, a 4-meter-long unpowered craft grounded in 2001 after a disastrous inaugural flight in which a booster rocket zoomed out of control. Some analysts believe that testers dropped the craft from its mother ship at such a low altitude that the unexpectedly thick atmosphere ripped control fins off the rocket.

Still, researchers say that such real-world mistakes are essential. “There isn’t a hypersonic wind tunnel that allows you to simulate all the important parameters—you might get high pressure but not high temperature,” says Robert Korkegi, a retired military hypersonics researcher who now teaches at the University of Maryland.

Progress this time.”

says Maryland’s Lewis. The DOD initiative, officials say the bulk of the new funds will go to building and testing prototypes. Still, “the [funding] climate has never been better” for academic scientists interested in hypersonics, says Maryland’s Lewis. The DOD initiative, he adds, “has created a sense of optimism that we are actually going to make some progress this time.”

—DAVID MALAKOFF

**Iraqi Archaeology**

**Antiquity Experts Endorse Plans To Restore Shattered Collection**

The rubble in Baghdad’s National Museum and unsecured Iraqi borders pose long-term challenges to any recovery effort.

**LONDON**—His office desk is broken in three pieces and his files sit in a heap. But Donny George considers himself lucky because he found his chair intact outside the National Museum of Iraq; most of the 120 other offices in the museum were stripped bare. Last week the research director for the Iraqi State Board of Antiquities left the rubble in Baghdad for a meeting at the British Museum here. In addition to giving Western archaeologists a detailed account of the April looting, George helped hammer out an international blueprint to repair broken artifacts, recover lost items, and provide desperately needed equipment, salaries, and technical expertise to the museum staff.

Three weeks after Baghdad fell and the National Museum was pillaged, the international antiquities community is scrambling to gain its footing in the new landscape. The 40 researchers, conservation experts, and museum officials from around the world who gathered here were relieved to hear that key portions of the collection—including a large library of cuneiform tablets, the Nimrud gold grave goods, and hundreds of Islamic manuscripts—are likely safe in their respective storage facilities in the museum attic, a Central Bank vault, and a vast underground bunker. But they cautioned that a detailed inventory will take time. “A survey will take 6 months once it is started,” says John Curtis, a British Museum archaeologist who visited Baghdad for 2 days last week. “So we’re probably looking at well into next year.”

That timeframe is at odds with what Curtis called “significant pressure” from U.S. officials for a fast audit. A memo last week from John Limbert, a senior U.S. Department of State official in charge of cultural affairs in Iraq, says “museum director Nawala al-Mutawalli and her staff have begun an inventory of lost, damaged, and saved items.” Limbert also characterized the museum as “a haven of relative safety and sanity,” a prerequisite for efforts to assess the losses—and protect what is left from further damage. The rescue work is complicated by the chaotic state of the museum, a combination of crime scene and archaeological site. “I’ve never seen such a mess as in these rooms,” says Curtis.

The list of missing and damaged items presented last week includes a half-dozen Sumerian, Assyrian, and Roman-style statues, a host of statue heads, two famous and intricately carved Assyrian ivories, and Islamic wooden columns. All office and lab equipment was taken or destroyed, showcases were smashed, and a fleet of vehicles stolen. And there currently is no funding for the 400 archaeologists, 600 technicians, and 1600 guards who make up the State Board. “We cannot even function,” says George, adding that “a team of conservators could come maybe in 2 or 3 months, when everything is safe.”

Safety is a precious commodity; George and Curtis are thankful they are alive after being robbed at gunpoint on their way out of Iraq last week. And the condition of archaeological sites and museums in cities north and south of the capital is largely unknown.

George says that all was intact when he and Jaber Khalil—State Board chair—toured Mosul and key sites in the north during the bombing before the ground war. Small objects had been removed from Mosul and the new Tikrit Museum had not yet been stocked when it was bombed. There are unconfirmed rumors that Kurdish soldiers stole many large statues and sarcophagi that were in the Mosul Museum. Limbert adds that the important site of Hatra is being protected by a local tribe, while two Assyrian slabs may have been stolen from the ancient capital of Nimrud.

In Baghdad, daily radio broadcasts and pleas from two local mosques have generated a stream of returned objects. An Iraqi Na...
Looted. His museum was robbed, and then so was Iraqi State Board of Antiquities research director Donny George, shown with an Assyrian stone panel housed in the British Museum.

National Congress representative reportedly retrieved and returned nearly 500 objects, including cylinder seals and tablets, from the southern city of Kut. But Curtis says that the 60 objects brought back while he was in Baghdad represent only “the tip of the iceberg of what’s missing.” Thieves gained access to one storeroom by bashing a hole in one wall, but how much was stolen from the dark and still-locked room remains uncertain.

Iraqi and U.S. officials are convinced that some of the looting was done by professionals. George offers as proof four glass cutters—all of which he says the museum would have—that were left behind by looters. Thieves also astutely ignored copies of ancient works.

Questions about who’s in charge hamper the recovery effort. George said that the museum staff was informed that a large number of boxes containing artifacts are stashed in a nearby neighborhood. But U.S. officials declined to intervene, citing a lack of authority to search houses. George says the new chief of police, an acquaintance, has pledged to conduct searches—perhaps with American assistance in blocking off roads—as soon as he has the personnel.

Meeting participants called on the U.S. government to secure Iraq’s borders to stanch the outflow. “American forces are not controlling anything,” George says. “And we’ve asked and asked.” Jordanian customs officials, for example, have intercepted 12 cases of documents and other goods being smuggled into that country, he noted.

Participants also agreed that UNESCO should oversee an international effort by scholars to create a database that combines all archives, lists, and inventories relating to Iraqi artifacts. They also backed a United Nations plan to impose a temporary embargo on the acquisition of antiquities that could have come from Iraq. UNESCO plans a mission to Iraq, FBI agents are already there, and Interpol will hold a strategy meeting this week in Lyon, France. The London meeting closed with participants endorsing a 12-point plan that included paying staff salaries, restoring the State Board to full strength, providing new equipment and facilities, resuming publication of the scholarly journal *Sumer*, and, ultimately, reopening research sites throughout the country.

Meanwhile, the British government last week announced its support for tougher antiquity legislation. “Now, if an item can’t be tracked, no one can be prosecuted, and that’s an important loophole,” says Tessa Jowell, British minister for culture, media, and sports. “We’ll attempt to strangle the market for tainted Iraqi objects—and we’ll do everything we can to hurry this important legislation through.” But Jowell declined to speculate on whether the British government could have curbed the looting.

The question of who will coordinate the ambitious and expensive international rescue effort remains “a slightly contentious issue,” Curtis said. George would like to see the British Museum lead the way, given its longstanding ties to Iraq. But U.S. Department of State’s Maria Kouroupas, the only official U.S. government representative at the meeting, questioned the idea of the British Museum as liaison because the Department of Defense’s Office of Reconstruction and Humanitarian Assistance is technically in charge of Iraq and likely would pay the bulk of the costs.

The cash is already beginning to flow. Limbert last week began handing out $20 to each museum employee, and the Department of State is pledging $2 million for the rescue and restoration efforts. But not everything comes with a price tag. George and other Iraqi antiquity officials remain deeply upset that the U.S. military did not act to prevent the tragedy. One U.S. officer declined to intervene just as an angry crowd was gathering. To stop the looting, George says, “moving a tank 50 or 60 yards would have been enough.”

—ANDREW LAWLER

**Romania**

**Unexpected Riches From a Fabled Gold Mine**

Scientists are hoping that ecological concerns and new archaeological finds might derail a major mining venture in southeastern Europe.

High in the Apuseni Mountains of western Romania lies a treasure coveted since prehistoric times: one of Europe’s largest gold deposits. Untold tonnage has been hauled from the Rosia Montana mine over the past 2000 years, and now a Canadian company is hoping to finish the job. The firm, Gabriel Resources in Toronto, plans to build an open-pit mine covering 2800 hectares—about half the size of Manhattan—where it will extract the remaining gold and other precious metals by treating pulverized rock with cyanide. The project promises to breathe economic life into an impoverished region.

But many Romanian scientists are staunchly opposed to the mine. Some object on ecological grounds: They worry that cyanide-laced wastewater may infiltrate the local water table. But it’s Rosia Montana’s past that is increasingly haunting Gabriel Resources. Archaeologists argue that the ancient mine shafts and the artifacts they may contain offer a unique window on gold mining in ancient times as well as the community it supported. Ironically, much of the information has come from digs the company has funded.

Last month, opponents released a protest letter signed by more than 1000 scholars—mostly archaeologists and historians—and in March the Romanian Academy inveighed against the project and called on the government to stop it. “The mine will destroy some very, very valuable archaeology, and it will destroy the local environment,” asserts academy vice president Ionel Haiduc, a chemist at the University of Babeş-Bolyai in Cluj-Napoca.

Gilded past

In the second century A.D., the Roman emperor Trajan conquered this region, then called Dacia, in part to exploit the rich veins of gold, silver, and iron. Sixteen hundred years later, Austro-Hungarian Empress Maria Theresa claimed the gold mines to enrich her treasury. Small-scale mining continued through World War II; in the early 1900s, the remote valley in Transylvania was prosperous enough to support a cinema and a Parisian tailor, notes Stephanie Roth, a