because it can collect more photons in a shorter exposure time from weak sources, says Jeffrey McClintock of the Harvard-Smithsonian Center for Astrophysics in Cambridge, Massachusetts. With the XMM, one can see "very special things a black hole can do and that nothing else can do," he says.

According to John Heise of SRON, the Dutch Foundation for Space Research in Utrecht, the Netherlands, this new generation of observatories that together cover the entire range of x-ray wavelengths will cause a revolution in x-ray spectroscopy comparable to the revolution caused by optical spectroscopy in astronomy in the 1930s. For example, because of the huge gravitational pull of a supermassive black hole, the gases rotating around it travel at speeds close to that of light. X-ray spectrometers will allow astronomers to directly measure the velocity of the gases in these accretion disks by looking at Doppler shifts. "This would, in my view, be the first real indication of the existence of a supermassive black hole," says Heise. He also hopes that by turning its scopes on the faint x-ray afterglow of gamma ray bursts and tracking how the afterglow decays, XMM will help astrophysicists figure out what fuels these fantastically powerful explosions.

—ALEXANDER HELLEMANS

Alexander Hellemans writes from Naples, Italy.

NIMH

Mental Health Agency Shrugs Off Critics

An advocacy group last week slammed the National Institute of Mental Health (NIMH) for spending money on topics the group says have little relevance to severe mental illness—everything from AIDS and Alzheimer's disease to research on vole mating behavior. But the criticisms, reported by major press, are misplaced, according to NIMH officials and many observers.

The attack came from the National Alliance for the Mentally Ill (NAMI), a Washington, D.C.–based lobbying group for families of the mentally ill, and its research arm, the Stanley Foundation. For years NAMI has urged NIMH to spend a larger share of its resources on studying the most crippling and costly mental illnesses: schizophrenia, bipolar disorder, depression, and obsessive-compulsive disorder. Convinced that NIMH was paying only lip service to its concerns, NAMI appointed a committee led by Stanley Foundation director Fuller Torrey, a schizophrenia researcher formerly at NIMH, to review about $420 million worth of NIMH-funded projects in 1997. It concluded that only a little over one-third of this spending was for research on major mental illnesses, and of that only a small fraction went to clinical and treatment-related research. The panel also noted that NIMH was putting more money into AIDS ($60.2 million) than into schizophrenia ($57.1 million).

Armed with the analysis, Torrey's group last week fired a public broadside at NIMH, accusing the institute of straying into research on diseases—particularly AIDS and Alzheimer's—and on basic neuroscience already being pursued by better endowed divisions of the National Institutes of Health. The panel also asserts that NIMH is supporting "almost no behavioral research that is relevant to severe mental illnesses," instead probing matters such as infant sleep disorders and "how married couples [with new babies] make judgments about fairness in the division of housework." Contends Torrey, "Many people at NIMH are very comfortable with a research portfolio which covers every form of human behavior ever described." Taking a cue from former Senator William Proxmire and his Golden Fleece Awards in the 1970s, NAMI issued a list of projects it flogged as unworthy of funding.

NIMH defends its research strategy. In a statement, the institute explained that the AIDS dollars were congressional earmarks, but insists the money has been well spent, as mentally ill people are at high risk for the disease. As for the non-AIDS research in its budget, which in fiscal year 2000 amounts to roughly $970 million, 80% goes to research directly related to mental illnesses. And NIMH points out that since 1997, it has launched four big clinical trials on major illnesses.

Unimpressed. Criticisms of research spending are shortsighted, says director Hyman.

Without singling out projects, NIMH director Steven Hyman told *Science* that there are a few studies on NAMI's hit list, taken on before his arrival at NIMH in 1996, that he's "not pleased to be funding." Hyman promises to continue phasing out questionable or irrelevant research, which he says amounts to a trivial portion of his budget. Overall, however, Hyman says the NAMI report misses the mark, arguing that it presents "a very shortsighted and to me shocking eschewal of neuroscience." Other advocacy groups have sprung to NIMH's defense. The American Psychological Society, for one, urged the agency to "stand firm in the face of these unwarranted and divisive attacks." Indeed, says Elliot Gershon of the University of Chicago, a schizophrenia researcher formerly at NIMH, NAMI's complaints are outdated: The institute began shifting its focus away from behavioral studies and into the biology of mental illnesses years ago.

NAMI leaders portray themselves as rendering a public service. "We're helping Dr. Hyman with our report," claims schizophrenia researcher Irving Gottesman of the University of Virginia, Richmond, who helped compile it. "It will give him ammunition to resist encroachments on NIMH's original mission."

—CONSTANCE HOLDEN

MARS EXPLORATION

Changes to Missions Could Delay Science

The silence from Mars is leading to a lot of talk on Earth. With two Mars probes lost in less than 3 months, NASA is hurriedly organizing a blue-ribbon panel to reexamine its ambitious plans for a series of flights that would bring back martian soil and rocks in 2008. Meanwhile, NASA managers are considering whether to send additional navigation and communication systems to Mars to guide future spacecraft, a safety step that could delay some experiments.

NASA Administrator Dan Goldin was expected this week to name the members of a panel that will examine not just the future Mars program but also how the Pasadena, California–based Jet Propulsion Laboratory (JPL) and contractor Lockheed Martin of Bethesda, Maryland, managed the ill-fated Mars Climate Orbiter and Mars Polar Lander missions. "Whatever the panel says we ought to do, we're going to go fix it," NASA Administrator Dan Goldin told CNN on 11 December. The panel's report is due in March. A separate failure review board, to be set up shortly, will examine what went wrong with the $165 million polar lander that failed to phone home after descending into the martian atmosphere on 3 December.

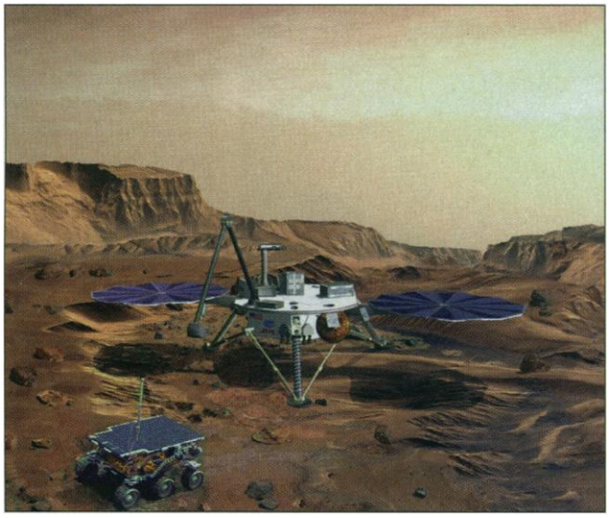
Ed Weiler, NASA's space science chief, says JPL will develop a revised roadmap for Mars exploration, which the panel will then critique. The current plan includes launching an orbiter, lander, and rover in 2001; a 2003 launch of a lander and rover to collect samples; a 2003 mission to place small communications satellites around the planet; and a 2005 lander to gather up the samples and fly them back to Earth.

The panel's most pressing task is to figure out what to do with the 2001 mission. Components that will ease the lander onto the surface, very similar to those on the polar lander, are already arriving at JPL in

CREDIT: NIMH

preparation for the planned April 2001 launch, says project manager George Pace of JPL. "We had confidence that the design was going to work [before the polar lander was lost]," he says. "What does it take to return it to flight status? That is a little hard to say. We don't know what the failure was."

To save weight and money, mission designers did not include a transmitter to send back flight data during the lander's entry into the atmosphere, its descent via parachute, and its rocket-assisted landing. Investigators will study all possible failure points, repeating the steps taken by its designers and by outside experts after the September loss of the Mars Climate Orbiter.



Red alert. NASA's 2001 Mars mission and other flights could be revised in the wake of this month's failure.

Goldin appears reluctant to abandon NASA's plans for 2001, saying, "If there's any possibility that we could go back and land, maybe a little different way, we're going to do it." The existing hardware also could be salvaged for a different mission. One option, says Weiler, is to turn the lander spacecraft into an orbiting telecommunications satellite with high-resolution cameras that could scout out safe landing sites for later missions and provide a stronger link between landers and Earth. Although some science would have to be postponed, he says, such an arrangement would boost the chances of success for later spacecraft.

The additional navigational tools reflect NASA's view that martian geography may have contributed to the lander's failure. The craft was headed toward a poorly understood terrain in the south polar region. Although images returned from orbit by the Mars Global Surveyor showed the targeted landing site to be relatively smooth, "we don't have a lot of experience yet in interpreting [those] images," says 2001 project scientist Stephen Saunders of JPL. "Mars looks like a completely different planet at a resolution of a few meters versus the tens of meters" available before Mars Global Surveyor, he says, and it could still harbor lethal hazards too small for Surveyor to see.

Project scientists are currently eyeing two large zones as potential landing sites for the 2001 mission. "It could be we should put more emphasis now on the smoother area" just north of the equator near Sinus Meridiani, says Saunders. The region may be a dried, mineral-laden lake bed.

So far, criticism of NASA and the Mars effort in Washington has been muted. Recent media polls show that a majority of the American public supports continued planetary research, and President Bill Clinton assured reporters on 8 December that he firmly backs Goldin's approach of "faster, cheaper, better" missions. For the moment, members of Congress seem willing to withhold judgment until the panel has had its say.

–ANDREW LAWLER AND RICHARD KERR

SCIENTIFIC MISCONDUCT

Researcher Rebuked for 20-Year-Old Misdeed

The Max Planck Society, Germany's premier research organization, announced on Monday that its president will issue a formal censure to neuroscientist Peter Seeburg, director of the Max Planck Institute for Medical Research in Heidelberg, for publishing data in a 1979 paper that Seeburg has said were false.

Seeburg's censure is the latest chapter in a drawn-out scientific melodrama involving a court battle between the University of California (UC) and biotech pioneer Genentech of South San Francisco over patent rights to engineered human growth hormone (*Science*, 11 June, p. 1752). Seeburg, a co-inventor on a UC patent at the center of the dispute, testified last April that shortly after he moved to Genentech in 1978, he took DNA samples that he had helped prepare while working at UC San Francisco. He also said he and Genentech colleagues falsified technical data in a *Nature* paper to cover up the origin of the samples. Prompted by this testimony, Max Planck president Hubert Markl earlier this year ordered a scientific misconduct investigation.

Only after Genentech agreed to pay UC

ScienceScope

Data Grab Hoping to pry open the Clinton Administration's narrow interpretation of a new law that gives the public access to raw research data, the U.S. Chamber of Commerce last week set the stage for a legal challenge by requesting data used to support several Environmental Protection Agency (EPA) regulations and policies.

Universities breathed a sigh of relief earlier this fall when the White House Office of Management and Budget limited the public's reach to published results used in crafting a rule or unpublished data cited in a regulation, and said only data collected under grants made after 6 November were open to scrutiny (*Science*, 8 October, p. 209). But such restrictions are "improper," according to chamber vice president William Kovacs. His group has asked for raw data from several older studies used by EPA, including a 1993 Harvard University air pollution analysis that prompted the campaign to force researchers to share their data. Kovacs expects EPA to deny the requests within a couple of months. If so, the chamber will sue the government.

Try, Try Again French research minister Claude Allègre (below) hasn't given up his idea to reform the CNRS, France's mammoth basic science agency. Allègre laid low much of this year after his first reform plan raised a ruckus (*Science*, 18 December 1998, p. 2162). But Allègre rebounded earlier this month, asking CNRS officials to come up with a more palatable scheme for overhauling the 12,000-researcher agency.

The new plan—dubbed "reform light" by the French daily *Le Monde*—will "blend" previously suggested reforms, such as forging closer ties between the CNRS and universities, with recommendations from the Cohen–Le Déaut report, prepared by two parliamentary deputies for Prime Minister Lionel Jospin (*Science*, 30 July, p. 647), says Vincent Courtillot, the science ministry's research director. But the retooled proposals—which should be ready by February—are already drawing preemptory fire from researchers' unions. Unhappy about a stagnant research budget for 2000, they are planning demonstrations for January.

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