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