zational scheme, but in the real world it ain't gonna fly," a congressional staff member said.

The paper concludes by raising two alternatives the scientists consider "highly undesirable"—moving DOE science into NSF, or putting all federal science programs under a massive Department of Science.

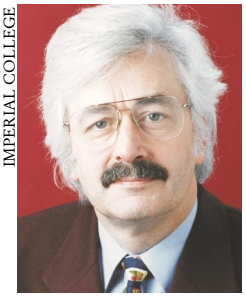
The DOE/NSF merger is objectionable because it would reduce the diversity of funding sources for research. In addition, the paper says, "there would be a serious mismatch between the science and management activities [of the two agencies], and it might be difficult to establish a culture that would maintain the strength of the national laboratories. . . ." Such a merger could also create tension between NSF's "small science" approach and DOE's "big science" programs.

An all-encompassing Department of Science is an idea that occasionally surfaces on the hill because it seems less messy than having science programs spread through several agencies, but the discussion paper says such a consolidation would completely eliminate the diversity of funding sources and destroy the unique nature of NSF.

How seriously politicians will take the discussion paper is unclear, but at least when policy-makers in the White House and the new Congress look at how the physical sciences are funded, they will already have the concerns and recommendations of a group of top scientists in hand. **JIM DAWSON**

ESA Taps Southwood as Science Chief, Sets Missions

The European Space Agency has named planetary scientist David Southwood to be its next director of science. He will begin a four-year term on 1 May, succeeding Roger Bonnet, who held the post for 18 years. Southwood's main role will be to oversee the implementation of ESA's long-term science strategy, Horizons 2000, for which the agency recently ranked missions for 2008–13.



IMPERIAL COLLEGE

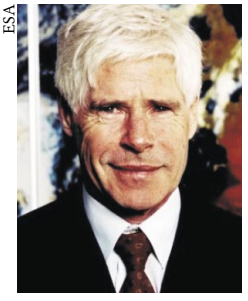
SOUTHWOOD

Topping the list of ESA's new commitments is BepiColombo, a cornerstone mission to Mercury to be launched in 2009 jointly with Japan. Two additional cornerstones—ESA's most expensive and ambitious missions at 550 million euros each (about $500 million)—are GAIA, which will measure the positions and compositions of some billion stars, and LISA, a gravitational wave observatory that ESA plans to do in partnership with NASA. Another proposed cornerstone, Darwin, a mission to hunt for Earthlike planets, didn't make this cut. "It's far beyond the current budget," says Bonnet. "It's much too early, but technical work to prepare for it will continue." (See PHYSICS TODAY, September 1999, page 53.)

ESA also selected two "flexible" missions, which have price caps of 175 million euros: Solar Orbiter will probe the Sun up close and at high latitudes, and ESA will go in with NASA on the Next Generation Space Telescope (NGST), the planned successor to the Hubble Space Telescope.

And, if any of those missions is postponed or cancelled, or if the agency's pockets deepen, ESA will fly Eddington, which would study star interiors and hunt for habitable planets. The schedules for the joint NASA–ESA missions are not fixed, says Bonnet. "We had to find a solution in case NGST or LISA sleeps, so we selected a reserve mission."

Creating a long-term strategy at ESA was originally "a little revolution. Very few people believed in it, but everyone followed," Bonnet recalls. He is proud, he adds, never to have abandoned a mission. "We have always rescued them—like Cluster," he says, referring to the spacecraft that was destroyed in 1996 when its launch rocket, the Ariane 5, exploded. This past summer, ESA sent up the rebuilt Cluster II to probe Earth's magnetosphere.



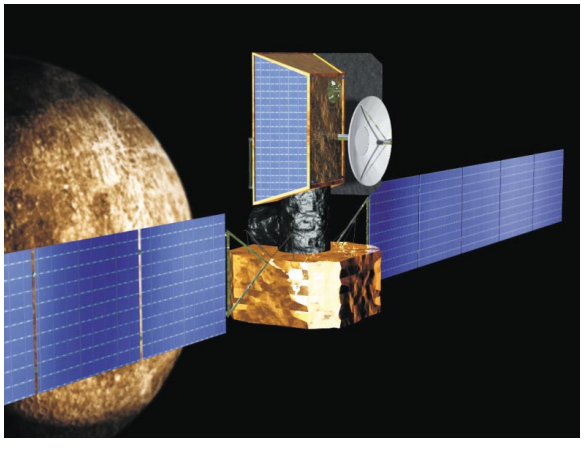
ESA

BONNET

The biggest challenge facing Southwood, says Bonnet, "will be to keep ESA Number 2, and keep it competitive. When I started, Europe was Number 4, behind NASA, Russia, and Japan. We will never be Number 1, because of money"—ESA's annual space exploration budget of about 365 million euros is less than a quarter of NASA's. What's more, Bonnet says, "space station activities and potential applications could swallow up resources—science could run the risk of being marginalized."

Southwood says he's "over the moon" to have landed the science directorship. He has spent most of his career at Imperial College in London, earning his PhD in physics there and in 1971 joining the physics faculty. Southwood recently led the team that built the magnetometer for Cassini, a joint NASA–ESA mission now en route to Saturn. From 1997 to 2000, he oversaw strategy development for ESA's Earth observations programs. In addition to overseeing the Horizons 2000 missions, Southwood plans to increase cooperation between ESA and Europe's national space agencies, and to work with politicians and the public to ensure continued funding for ESA's science programs.

For his part, Bonnet will return to science because "it would be hard to find a management position as exciting as the one I had for 18 years." He plans to focus on astrobiology and teaching students the importance of communicating science to the public, splitting his time between the Institut d'Astrophysique de Paris and the Institut d'Astrophysique Spatiale at the University of Paris–South in Orsay. "Things are stable in the science program," Bonnet says. "And I trust David Southwood will do an excellent job." **TONI FEDER**



BEPICOLOMBO is scheduled to set off for Mercury in 2009. (Artist's rendition courtesy of ESA.)