to continue, may not survive in Russia's harsh fiscal environment. Russia is propping up "a Potemkin space program," asserts Houston-based space consultant James Oberg. "It's a hollow shell."

In an effort to keep some life in that shell, the Russian Space Agency (RKA) last week backed off plans to bring the 12-year-old Mir space station down to Earth next summer. Russian government officials and legislators are now hammering out a proposal for the 1999 budget, due out next month, that would seek to fund both Mir and international space station operations. "What if there is a problem with the international space station?" asks Bogomolov. "We're very interested in keeping [Mir] as an option for research." Adds Sergei Shaevich, space station manager at the Khrunichev Research Center in Moscow, "There's $100 million worth of new equipment on Mir now."

Western experts see some merit in that argument, pointing to solid NASA-funded Russian research aboard Mir. The 3-year, $20 million program, which wrapped up last year, served as a test-bed for research on the international station, funding peer-reviewed work involving 60 institutes (see pie chart). The program also "sustained scientists through a difficult period," says Dick Kline, director of the ANSER Center for International Aerospace Cooperation, a nonprofit think tank in Arlington, Virginia.

But Kline and others don't see how Russia can afford the estimated $100 million to $200 million needed next year to operate and supply Mir along with the roughly $130 million that Russia is supposed to contribute to the international space station. "It's a good idea, if not for the fiscal realities," says Kline. NASA officials are hoping to persuade the cash-strapped RKA not to divert funds to Mir. "We want them to devote their resources only to the international space station," says NASA spokesperson Dwayne Brown.

Some of the projects begun aboard Mir, including monitoring the physiological stresses on cosmonauts performing heavy labor in space, were slated to continue aboard the service module, a Russian-built station component to be launched next summer. But now that Russia has given up its research time, "we won't be able to perform these experiments," says IBMP chief scientist Lyudmila Buravkova. In the meantime, she says, IBMP staff members are designing ground-based surrogates. But even these may have trouble finding funds in next year's budget.

A financial miracle also may be needed to save Spectrum-X-Gamma. Slow delivery of key components has delayed the astrophysics observatory, originally planned for launch in 1992. Now the question is whether Russia can afford the Proton rocket needed to put it into space. If Spectrum-X's debut were to slip much beyond 2001, asserts Roald Sagdeev, a Russian space expert at the University of Maryland, College Park, it would be so eclipsed by three other observatories scheduled to be launched over the next 3 years—the United States' AXAF, Europe's XMM, and Japan's Astro-E—that "it would make no sense at all" to put it up.

Project officials disagree. "We believe Spectrum-X still has a role to play," says Alan Wells, director of the Space Research Center at the University of Leicester in England, pointing to its unique polarimeter for studying binary x-ray pulsars and supernovas and EUVITA, two telescopes that will explore the largely uncharted far-ultraviolet region. "Our concern is just to get it up there."

There's a glimmer of hope for space biologists, says Sagdeev: NASA could invite Russians to collaborate on U.S.–funded station projects. But one agency official complains that RKA's refusal to join a multilateral space life sciences working group has impeded joint studies. RKA officials declined to comment.

NASA, meanwhile, hasn't yet divvied up the spoils from its deal, which doubles the 5000 hours available for research during the 5 years of station construction. "It's awful to take advantage of someone else's disadvantage, but this is a unique opportunity for us to improve our science," says NASA's Neal Pellis, a station biology manager keen to study how microgravity influences gene expression.

The careers of many Russian scientists will hang in the balance as Russia decides the fate of Mir and RKA and NASA debate the terms of joint research. A lengthy delay will also threaten the Russian program's decades of expertise. As Kline puts it, "You can't suddenly say, 'Let's have world-class research again.'" –RICHARD STONE

CREDIT: NASA

JAPAN BUDGET

Science Gets Share Of Stimulus Package

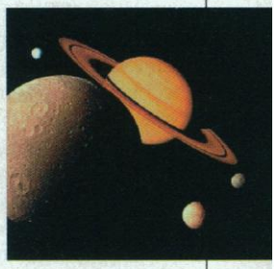
TOKYO—A new housing complex for exchange students, renovated research labs and equipment, and a faster track for some big new science projects are expected to be elements in Japan's latest, and largest, attempt to spend itself out of a prolonged recession.

The $195 billion package, the outlines of which were approved by the cabinet on 16 November, includes $145 billion in stimulus spending and another $50 billion in tax breaks. It eclipses the $138 billion stimulus package enacted just last April (*Science*, 1 May, p. 669). In reality, however, both packages are likely to fall short of those totals because they depend in part on loans to consumers and small businesses and contributions from financially strapped local govern-

ScienceScope

NASA TAPS SPACE COMMANDER

NASA has a new chief space scientist. On Monday, agency Administrator Dan Goldin named Edward Weiler as associate administrator for the Office of Space Science. Weiler had served as acting head since late September, when his popular predecessor Wes Huntress stepped down. Weiler takes control of a $2.1 billion R&D program that includes high-profile research on extraterrestrial life and the origins of the solar system.



NASA scientists are giving Weiler a warm welcome. "Ed Weiler will be a very effective champion for space science," says Scott Hubbard, deputy director of space at the Ames Research Center in Mountain View, California. Researchers credit Weiler with injecting new energy into NASA's astrobiology program and spearheading efforts to recover and repair the Hubble Space Telescope.

ETHICS PANEL URGES SCRUTINY OF MENTAL HEALTH RESEARCH

Brushing aside research agencies' worries about increasing regulation, a presidential panel this week called for tighter control of the way mental patients and other people with impaired judgment are enrolled in drug tests and other experiments that don't directly benefit them.

In a final report approved on 17 November, as this issue of *Science* went to press, the National Bioethics Advisory Commission (NBAC) urged the federal government to create a new standing committee to act as a kind of permanent rulemaker and appeals board in this field. NBAC also proposed that the Institute of Medicine conduct a thorough study of the ethics and science of controversial types of mental health research—including trials in which patients are exposed to "challenges" that exaggerate their symptoms or in which medication is abruptly withdrawn.

The National Institutes of Health objected last month that some of these recommendations would impede research (*Science*, 30 October, p. 857). But NBAC's chair, Princeton University President Harold Shapiro, disagrees. He says he's heard "many assertions" but seen "no convincing evidence" that research would be hurt by such changes.

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