York. The search for a science chief is still on, he says, adding that his goal is to build a team with complementary skills.

Marburger adamantly rejects speculation by some analysts that the White House dictated the changes at OSTP. "I was under no pressure to do this," he says. "It was not suggested by anyone in the Administration."

–ANDREW LAWLER

FORMER SOVIET UNION

Cautious Optimism, But Progress Is Slow

LONDON—When he learned a few years ago that a molecular biology lab run by GlaxoSmithKline was due to close, Ivan Gout of the Ludwig Institute for Cancer Research in London made sure none of its equipment ended up on the scrap heap. Instead, with crucial support from Peter Campbell of the Federation of European Biomedical Societies, he shipped the surplus equiptment—along with DNA and protein sequencers donated by the Ludwig—to the Institute of Molecular Biology and Genetics in Kyiv, Ukraine. This high-tech bonanza helped persuade a colleague in the United States, Valery Filonenko, to return to run the newly outfitted lab as a joint project with the Ludwig. "There are so many people who would go back to Ukraine if they could have even 10% of the capability of U.S. labs," says Gout. "We have to build on the idea that scientists need to repatriate."

A short time ago, that idea would have been unthinkable. The dissolution of the Soviet Union in 1991 spurred a mass exodus of scientists, some fleeing persecution, others fleeing subsistence salaries, aging equipment, and poorly stocked libraries. Russian science "suffered the most precipitous decline in financial support known in modern history," according to Loren Graham, a historian of Russian science at the Massachusetts Institute of Technology. That prompted some observers to augur the death of Russian science, but "we now know that these predictions were false," says Graham.

Indeed, at a meeting here last week on international support for Russian and Ukrainian science, there was cautious optimism about the future. Graham and Irina Dezhina of the Institute for the Economy in Transition in Moscow pointed out that after years of short-changing researchers, the Russian government fully paid institute budgets and salaries in 2000 and 2001, while graduate student enrollment in the natural sciences rose during the turbulent '90s. And the ranks of scientific staff in Russia have stabilized at roughly 500,000, about a third of the total 20 years ago.

Some of the credit for saving science in Russia and other former Soviet states must go to "perhaps the largest program of scientific assistance the world has ever seen," says Gloria Duffy, board chair for the U.S. Civilian Research and Development Foundation (CRDF). In the past decade, the International Science Foundation launched by financier George Soros, the CRDF, the European Union's International Association for Cooperation with Scientists from the former Soviet Union program, and scores of other players ploughed more than $3 billion into research in the region.

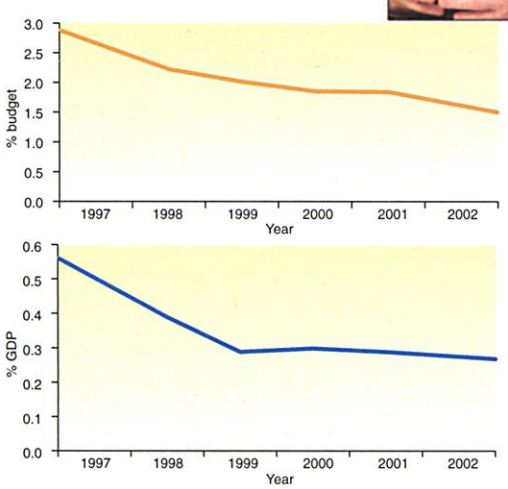
But recent developments could still undermine the optimism voiced in London. For example, at its annual meeting next month, the Russian Academy of Sciences (RAS) is expected to reelect Yuri Osipov to a third 5-year term as president, suggesting that there will be no change in its policy of keeping all its 325-odd institutes running, whatever the cost. "The hopes of the more radical reformers have turned out to be unrealistic," says Graham. Putting the RAS's glacial pace of change in vivid relief are the rapid strides by the Chinese Academy of Sciences to cull deadwood and embrace peer review. "China is going ahead from a very low level at great speed," says Sir Brian Heap, Foreign Secretary of the Royal Society, which hosted the London meeting with the Virginia-based CRDF. "Looking at Russia, there's just no comparison at the moment."

And the attitude of the Russian government toward science continues to be capricious. Earlier this month, the government abruptly dissolved the post of science minister, leaving vice premier Ilya Klebanov in complete control of federal science policy. He's expected to continue a year-long tilt toward applied research. "The government wants science to provide not only new knowledge, but knowledge useful to industry," explains Mikhail Alfimov, director of the Russian Foundation for Basic Research. The challenge is to build up high-tech industry on anemic government support for R&D (see chart). "The most important enemy of science in our country is the Ministry of Finance," says physics Nobel Prize–winner Zhores Alferov, director of the Ioffe Physico-Technical Institute in St. Petersburg.

Lack of funding to replace and upgrade aging equipment continues to be a serious problem. "Everything we have—telescopes and other large equipment—was constructed during the Soviet period," says Yaroslav Yatskiv, director of Ukraine's Main Astronomical Observatory. And the Western system of competitive grants and peer review has been slow to take root. Peer review "has been adopted to a very limited degree," says Heap. There is, however, at least a glimmer of hope that the RAS may be warming to peer review: A new academy program allots a sliver of its budget to competitive projects in 11 priority areas.

All that suggests that reversing the brain drain of the past decade is still an unlikely prospect. Western agencies say they would rather build infrastructure than fund repatriation grants, banking on the hope that well-equipped labs will lure homesick talent. Sharing that sentiment is the Ukrainian government, which is considering setting up a fund for supporting top-gun expats. That's one indication, at least, that the worst is over. "The time for bailing out science in Russia and Ukraine has ended," says CRDF president Gerson Sher. But the long rebuilding process has only just begun.

–RICHARD STONE



Ever more anemic. Ilya Klebanov now has sole control over science, but R&D funds are dwindling.

ASTROPHYSICS

Pulsar Pulls Mass From Distorted Companion

The astrophysical zoo contains a dizzying variety of pulsars, spinning neutron stars that flash radio beams across the galaxy. Among the rarest of these dense stellar corpses are the "millisecond pulsars," which can whirl hundreds of times per second. Now, astronomers may have spied one of these exotic beasts at a critical point in its development: It's locked in a dance with a bloated star that may have just finished revving up the pulsar to a breakneck pace.

Data from an Australian radio telescope

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