

## Saltykov and the decline of Russian science

Boris G. Saltykov, a physicist, was Russia's minister of science and technology, from the formation of the first government of post-Soviet Russia, in 1991, until August 1996, when the Ministry of Science and Technology was temporarily (until its restoration in March 1997) downgraded to a state committee. Saltykov then moved to the Russian House for International Scientific and Technological Cooperation. His political affiliation is with the "Russia's Democratic Choice" (RDC) party of Yegor Gaidar, the Russian premier in 1991-93, whose imposition of "shock" price deregulation and other radical free-trade policies sent Russian industry, consumption, and science into a tailspin. A fellow member of the RDC is current First Deputy Premier Anatoli Chubais, designer of the privatization program under which Russian industry has been asset-stripped.

In his commentary, "The Reform of Russian Science," in the July 3, 1997 issue of *Nature*, and in a speech to last February's annual meeting of the American Association for the Advancement of Science (AAAS), in Seattle, Saltykov has outlined the drastic shrinkage of R&D spending, state subsidization of science, and scientific employment in Russia. He did not mention some of the more stunning events, such as the Oct. 30, 1996 suicide of Academician Vladimir Nechay, director of the elite Chelyabinsk-70 nuclear research lab, who shot himself after having had no

funds with which to pay his staff for five months.

From a peak level of 3.2 million scientists and science-related service workers, employed in the Russian part of the Soviet Union in the late 1980s, such employment has fallen to 1.3 million persons, Saltykov told the AAAS. This is a decline of science employment by nearly 60%. Almost 25,000 Russian scientists have emigrated or are otherwise working abroad. Inside the country, Saltykov wrote in *Nature*, the remainder of the drop took the form of an "internal brain drain," the "exodus of scientists and engineers towards new or modernized parts of the domestic economy such as commercial banks, financial and legal companies, and the telecommunications industry."

From 1991 to 1996, R&D spending fell by 70%. Last year, Saltykov wrote in *Nature*, state-funded science and technology programs received only 25-30% of the allocated funds.

In his February speech and July article, Saltykov expressed the hope that "funding from abroad" would help Russian science to survive. He himself is involved with foreign finance, as a board member of the Open Society Institute-Russia, one of international speculator George Soros's many projects in the former Soviet Union. When Soros is not fending off charges of bashing the currencies of nations, from Italy to Thailand and back, he flaunts his largesse as a Maecenas for ex-Soviet science, but the most visible part of Soros's activities in Russia is merely the promotion of Internet access. Since October 1996, Boris Saltykov has attended, in person or by video-conference, the launches of University Internet Centers in Vladivostok and in Rostov-on-Don, the third and fourth of 32 UICs planned by the Soros network.—Rachel Douglas

important selection of U.S.A. partner in joint efforts, together with other nations, in fostering the natural role of Eurasia as the center of initiatives which are essential to the recovery of the planet's economy. I mean durable recovery from those tornadoes of financial, monetary, and economic crises, the which are presently hitting financial centers around the world with a rising frequency and general intensity. For this work, the most prominent partners of the U.S.A. and Russia include the two giants of Asia, China and India.

Since 1993, my contacts, and those of my immediate collaborators, with Russia's scientific institutions, have been fruitful in respect to defining needed alternatives, even though needed support for these proposals, from relevant sections of the international community, unfortunately, has yet to materialize.

From this vantage-point, the prospect which Saltykov outlines for Russia's science, must be seen as unacceptable. His perspective for Russia's science, is directly contrary to any

policy which might allow a reversal of the present, horror-stricken process of economic collapse gripping that nation. The included object of any sane U.S. policy toward Russia, and also Eurasia as a whole, is to provide, largely from within Russia itself, the reassembly of the scientific support essential for Russia's urgent economic-recovery requirements. I summarize the most crucial issues, first, in a broad-brush, practical overview, and, thereafter from the stickier, but not the less indispensable epistemological vantage-point.

### Measuring economic performance

If we measure input and output of national economies in terms of *physical-economic* market-baskets of infrastructure, and of producer and consumption goods, no leading industrialized economy of the world has sustained net economic growth during any part of this century, except under three conditions: technological mobilization in preparation for anticipated major warfare, conduct of such warfare, or rebuild-