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EDITORIAL

Winds of Change

BEIJING, CHINA—A broad path runs straight north from Tiananmen Square through arch after arch, splitting the Forbidden City in two. They call it "The Axis," dividing Beijing into east and west. Once the emperors' exclusive passageway, today it serves the people. Hundreds of thousands of them strolled the path this National Day, 1 October 1995—a sea of heads as far as the eye could see. None wore Mao jackets. What surveillance there was was well disguised. The military appeared only as small knots of young soldiers taking snapshots of one another to show to their families back home. The mood was festive, relaxed.

The scene shifts. We are visiting the main building of Qinghua University, the "MIT of China." A relic of Soviet architecture circa 1950, this building looks grim enough from the outside, but inside paint peels from every wall. Choose a main corridor and you have to get past a pile of sand a meter high. Offices are gloomy; bathrooms better left to the imagination. And yet, through this peeling door is a high-tech oasis: a brightly carpeted room that sports not one but an array of brand new Sun workstations. This is the brain center of CERNET, one of the major Chinese efforts (page 1141) to spin the glass fibers of the World Wide Web across this enormous, complicated, once closed land. In a flash, the *Science* home page appears on a Sun screen. Graphics emerge as quickly as they do at *Science* headquarters nearly 12,000 kilometers away. When can we get full text of your papers? young scientists want to know.

These personal observations illustrate the pace of change in China. So much is happening so fast—and the nation's scientific potential is so great—that *Science's* news staff decided to devote 22 pages this year to mainland Chinese science. Moreover, the renowned physicist and president of the Chinese Academy of Sciences Zhou Guangzhao, as well as Zhu Lilan, executive vice chairman of the State Science and Technology Commission, have contributed policy forums on pages 1153 and 1154.

The journalistic tour begins on page 1134 with Deputy News Editor Jeffrey Mervis's clear-eyed assessment of the staggering potential of Chinese research and the daunting obstacles still faced by Chinese researchers. Take central planning. On the one hand, government decrees have accelerated the process of reform; on the other, political favoritism and the Chinese version of U.S. pork-barrel funding have tossed money at second-rate science. Then there's secrecy and nationalism: These impulses discourage the sharing of knowledge that is so crucial to scientific progress, and they hamper global competitiveness, a necessary component of the great march forward. Indeed, *Science's* staff hopes this special section will encourage wider information exchange, inside as well as outside the Great Wall of China.

There are more positive themes as well. Deng Xiaoping's directive endorsing all-out efforts to reform the economy through market-driven means may have led to some measure of chaos, but it has also produced an extraordinary flowering of entrepreneurial drive in the pursuit of profit. Competition is flourishing even among government ministries, regional and city governments, and professional associations and individual universities. Inefficiencies may sometimes result, but everyone with whom we spoke concedes that the pace of change has been radically increased by this introduction of institutional competition.

China has a minimum of half a million scientists and engineers engaged in research and development (R&D), with thousands of outstanding Western-trained researchers returning every year. More than 6000 libraries and information centers boast scientific databases, and another 25,000 provide "integrated technical services" in specialized areas from the earth sciences to engineering. Several billion dollars in government funding is going to R&D in an economy where the salary of a full-fledged researcher may be as little as \$1400 a year.

And beyond matters of scale, quality is rising. As correspondent June Kinoshita reports (page 1137), one decade into the government's program to create "key labs," 2 dozen facilities nationwide are doing world-class research. Papers by scientists there and elsewhere are now being published in *Physical Review Letters*, *Science*, and *Nature*. Mao's Cultural Revolution badly damaged the scientific infrastructure of China. He once said, "Let a hundred flowers bloom," only to punish scholars who tried to follow that directive. Today the climate has changed and, barring another ice age, this next decade in Chinese science seems likely to see a thousand—perhaps a thousand thousand—flowers bloom.

Ellis Rubinstein