Capitalism, Military Style

BEIJING—China's military researchers have joined their civilian counterparts in a campaign to spin profits out of scientific know-how. The government-controlled China Association for Peaceful Use of Military Industrial Technology (CAPUMIT) says that the shift is part of China's "wish to contribute to the welfare of the human race," but a defense attaché at a Western embassy says some of the profits are going to buy new weapons, especially from the Russians.

In addition to meeting their primary mission, China's military factories each year churn out thousands of automobiles, refrigerators, and washing machines—not because of superior technology, but because of the army's unrivalled access to supplies. That dual use is not new, but a new category of products incorporating advanced technology is now making its way to civilian customers. These include satellites, nuclear reactors, and computer-controlled telecommunications networks.

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Dual use. Military factories make goods ranging from high-technology fighters to refrigerators.

Although the government declines to reveal the size of China's military establishment, officials do say that the percentage of its output deemed to be "civilian" has soared from less than 10% in 1979 to nearly 70% last year. Western intelligence sources say that arbitrary decisions on classification and sloppy accounting make all numbers questionable, but that the trend toward greater civilian production is clear. Estimates of the number of military enterprises now engaged in civilian production are equally unreliable, ranging from a few hundred to several thousand.

Although it is too soon to tell whether military marketers will reach the government's goal of making their facilities self-sufficient, if not profitable, the effort is expected to produce an unprecedented flow of once-classified military research into China's civilian research community. "They have not yet worked out a mechanism for declassifying military technology," notes one Western military analyst. "The only apparent rule is that they will open up classified information if they see a way to make a buck from it."

Wang Luye, a senior CAPUMIT official, says that many enterprises still show "poor market consciousness" and that many managers have failed to recognize the importance of efficiency and quality control. They must also learn to handle less docile employees. "In the past, workers in the defense industry had a spirit of selfless contribution," says Wang. "But now, with so many people in the big cities getting rich, our workers are not always content."

Not everyone is happy with the rampant commercialization of China's military. Generals have begun to warn publicly that "money fever" threatens the army's ideological purity and undermines its ability to defend China.

But such criticism is unlikely to slow the process. The hunt for profits has become so important, says one Chinese military official, that defense researchers of every stripe have learned to keep one eye on the civilian market as they go about their work.

–T.P.

awards. Grants from NSFC will reach $50 million this year, double the 1991 figure, and they are scheduled to climb to $75 million by 1995. Created 8 years ago, the NSFC's original mission was "to have wide coverage and small money," explains its director, Zhang Cunhao, a well-known chemist. Today, it funds roughly one-third of the 14,000 proposals it gets each year. "We give 60,000 yuan ($10,000) per grant over 3 years," says Zhang. "By 1995, we'd like to give 90,000." Larger 5-year grants of $100,000 are awarded for "key projects," and "major projects" get $400,000. There are also 3-year grants of $17,500 for scientists under the age of 35.

In addition to the NSFC, scientists can apply for "climbing-up grants" offered by the powerful State Science and Technology Commission (SSTC). There are 30 of these, at $160,000 apiece, aimed at helping China scale figurative peaks in the world of science. "We want to get to the top," explains Zhou Yuan, a policy analyst for the SSTC. "Priority is given to basic research with close ties to technology development," such as biotechnology, information technology, new materials, and new energy sources.

In keeping with this focused approach, the government has created about 130 national labs, usually within institutes and universities that already excel in a particular field, and 80 State Key Labs run by several ministries. These labs receive funds to buy up-to-date equipment and to pay visiting scientists from other institutes—a major departure from the previous policy of restricting facilities to institute employees. The national labs get reviewed every other year, and at least one in the northeast of China has been stripped of its status because of poor reviews, according to one insider. Officials, however, won't confirm that. "These laboratories represent China's highest standard of science," says one government spokesman, "so there is no question of closing them down."

Centers of excellence. Given adequate support, Chinese scientists can be very productive. The Beijing Electron Positron Collider (BEPC), a 5.8-GeV ring that is China's first high-energy particle accelerator, was built in just 4 years for $350 million. Not a cent was wasted on appearances. Parched weeds squeeze through cracks in the pavement on the site, and visitors enter through a peeling, fly-specked foyer guarded by an ancient woman in a Mao jacket. Despite its somewhat shabby look, the lab has produced the world's best measurement of the tau lepton mass, and physicists are now looking for glueballs, four-quark states, and other exotic events.

BEPC has enabled China to get a jump start in a slew of advanced technologies—superconducting magnets, klystrons, electronics. A $200 million upgrade will boost the rate of collisions by an order of magnitude, creating the world's first "factory" for tau leptons and charmed particles. Achieving this goal will require speedier electronics, materials that can withstand the intense radiation, and a faster detector. "That's very advanced technology," notes BEPC director Zheng Zhipeng. "But we have good engineers." Meanwhile, BEPC has spun off commercial products, such as superconducting magnets for medical magnetic-resonance imaging machines and high-vacuum technology for integrated circuit manufacturing.

It's not surprising that high-prestige, high-tech projects like BEPC have adequate support. But how are less practical fields faring? A visit to the Institute of Vertebrate Paleontology and Paleoanthropology suggests that, in keeping with the popularity of *Jurassic Park*, the only lucrative area of paleontology these days is digging for dinosaur bones.

The discovery of Peking Man in 1929