Students say they'll stay

Washington

ONE year after the Tiananmen Square massacre, the flood of Chinese students arriving in the United States continues unabated. But the number of exchange students returning to China has slowed to a trickle, a trend that may make it increasingly difficult for other students still in China to follow in their footsteps.

In autumn 1989, after the June demonstration, 33,000 Chinese students were studying in the United States, by far the largest contingent outside China. The total is 4,000 more than the previous year, according to the New-York-based Institute of International Education, which recently released a report on the status of Chinese students abroad. Although new students are arriving at about the same rate as last year, fewer are returning, the institute found. State Department officials say that the number of students who have returned to China since last June is only in the hundreds, most of them officially sponsored by the Chinese government or their home universities. "The historic pattern is that officially sponsored students go back and the privately sponsored ones don't", says one official. Crackdowns at home only amplify the trend, he says.

But the undiminished influx of Chinese students since the June demonstrations has come as a surprise. New Chinese regulations that restrict study abroad and more rigorous US standards for entry have undoubtedly made it more difficult for Chinese students to travel to the United States. But grassroots support for the Chinese democracy movement has spawned new private funding and boosted efforts by US universities to provide room.

Ironically, the difficulties for Chinese students begin with the problem of obtaining a US visa. About half of those applying to the US embassy in Beijing for student visas are rejected. Beyond the standard requirements, students must prove that they will have enough money to support themselves during their studies in the United States. While it was once enough to demonstrate sufficient personal or family funds, US immigration officials are now requiring more rigorous proofs of support. Cases of students who provided bogus letters listing outside sponsors are not uncommon. When such students arrive, they often reveal that the letters were written to satisfy immigration authorities and that in fact there is no independent financial support. The school must then scramble to find some sort of grant or scholarship for the student.

Most of the students who are now allowed in are those who have proven teaching or research assistantships. Such

posts are most common in science and engineering, meaning that most new visas are issued to graduate students in those areas. US academic institutions provide the largest portion of financial support to Chinese students and scholars, amounting to some \$200 million annually for teaching and research scholarships.

Once they are in, Chinese students now find it much easier to stay. Many have already taken advantage of the executive order issued by President George Bush earlier this year that allows Chinese students to remain in the United States for up to four years after their visas expire (see *Nature* 343, 402; 1990). Although the State Department requires that they officially apply for the exemption, "we're not going to deport them if they do nothing", one official says. That seems to suit the Chinese students — applications for visa extension under the executive order have been slow.

Staying in the United States feels right, too. "If you don't go back, that's a demonstration of a political statement, and most of us want to make that statement", says Liu Yuan of the Massachusetts-based China Information Center.

But what is good for Chinese students already in the United States may not be good for those who would like to come. The number of incoming students is expected to drop in 1990, in part because the current crop of students are not leaving and freeing the all-important teaching and research assistantships. Without assurance of funding, prospective exchange students are unlikely to get visas.

Meanwhile, China has instituted new rules requiring university graduates to work for five years before studying abroad, or to pay between \$530 and \$1,275 for each year of their Chinese college education (the money would be returned to them if they return to China within eight years). Another new regulation prohibits academics from travelling abroad more than once a year, a move that could hamper scientific exchanges.

The Chinese student movement outside China appears to be solidifying as its numbers increase. Chinese student groups rallied in dozens of locations around the world last week, commemorating the Tiananmen Square riots and celebrating the Chinese Democracy Movement. In the United States, large demonstrations were held in New York, where a replica of the Goddess of Democracy was set up, and in Washington, where activists and politicians criticized the Bush administration for allowing China to retain its 'most favored nations' status in trade negotiations.

G. Christopher Anderson

Small turnout in Paris

Paris

ALTHOUGH the international headquarters the Federation for Democracy in China (FDC) is in Paris, only a few hundred people braved the bad weather on Sunday evening to commemorate the anniversary of the massacre of students in Tiananmen Square. In the shadow of the Eiffel Tower, on the Esplanade des Droits de l'Homme (human rights esplanade), Chinese and Europeans lit candles in memory of the dead students, read poems and listened to speeches, including a solemn address from FDC's vice-president, Wuer Kaixi, the refugee student leader who now lives in the United States.

"This time last year", said Kaixi, "the statue of the Goddess of Democracy was smashed to the ground in Beijing. In Berlin, a few months ago, it was the wall against democracy which was smashed. Now I am standing under the Eiffel Tower, under black clouds. I am sure that the Goddess of Democracy will disperse the black clouds hanging over Beijing. As a Chinese, as a student, as a human being, I pray that the Chinese will not be forgotten. We will continue to fight."

There are about 3,000 Chinese students in France, over half of them in Paris, and an estimated 40 political refugees. Last year, an organization called the Maison Chinoise pour la Démocratie (MCD), was set up with donations from couturier Yves Saint-Laurent and others to help stranded and refugee students to obtain visas, accommodation and work (see *Nature* 340, 251; 1989).

According to Ma Tao, a young student of French literature, it is easy for students with bursaries from the Chinese government to return to China, so long as they have not been politically active. "The government encourages them", he says. But for students who have been involved with MCD or otherwise have been active, it would be dangerous to return, says Ma Tao.

The Chinese government is thought to have infiltrated student networks in France, including MCD, and to have put pressure on students. A number have been sufficiently worried to take out membership of the Chinese Communist party. According to articles in a new French language magazine, *Sinopsis*, dealing with current Chinese problems, widely read Chinese language newspapers published in Paris continue to denounce dissidents as "criminal dogs".

The small turnout for Sunday's demonstration is, says Ma Tao, a symptom of a general waning of interest in the plight of Chinese students' efforts to create political reforms. Over the past few months, the

French government, like other Western governments, has been less willing to upset Beijing. This was seen when the government refused to intervene when the radio-ship *Déesse de la Démocratie*, which set sail from La Rochelle to broadcast to mainland China, was threatened with attack by Chinese troops. The venture, organized through FDC, was finally abandoned and the ship is seeking a buyer.

"We've lost some of our enthusiasm", admits Ma Tao. "It's a difficult period for us. Now we are trying to find long-term objectives which will be useful to China." Among these is a project to establish a Chinese library in Paris to gather together documents concerning all aspects of

democracy. "Even Chinese students here have little idea how a democracy works", he says. A summer school on democracy to be held in the French Pyrenees is also scheduled, with support from the French ministry for culture and "friends in the United States". There is even a project to collaborate in the establishment of a University of Democracy in Bucharest, to be sited in the former presidential palace.

As *Nature* goes to press, there is another demonstration in Paris. "Flowers against tanks" are being laid on the steps of the Chinese Embassy. "We hope the whole world will not forget what happened in China", says Ma Tao.

Peter Coles

BIODIVERSITY

Preserving the present

Sydney

THE Centre for Genetic Resources and Heritage (CGRH), a library that will be filled with genetic material from rare or endangered Australian plants and animals, has been set up at the University of Queensland, but lack of federal government support is forcing the library to seek support from commercial interests in Australia and overseas.

CGRH, part of the University's Centre for Molecular Biology and Biotechnology, will be a "genetic Louvre", in the words of director John Mattick. Collected material will be stored as cryogenically or desiccated cells and tissue, isolated DNA and cloned gene libraries. Other gene resource libraries have traditionally restricted themselves to collections of microbiological cultures and seed material. According to Daryl Edmondson, coordinator of the gene library, the CGRH is unique in that it will "actively collect data. Most other libraries simply collate their own collections." CGRH will collect cells or DNA from Australia's most threatened species, such as the false water rat, one of the country's rarest mammals, and the short-necked swamp tortoise. The university's large collection of bacteria, fungi, yeast, algae and viruses, accumulated over 25 years, will also be represented at the centre.

CGRH, at present supported by the university, is seeking help from private sources and has been in touch with corporations in Australia and Japan and scientific foundations in the United States. Mattick complains that the Australian government "can't see the benefit of collecting genetic resources and eventually sequencing key genomes". The project will not yield any visible benefit for ten years, according to Mattick, but, if it is not done, "subsequent generations will see we had the technology to keep (DNA) software and will ask why we didn't do it".

Tania Ewing

INDIAN SCIENCE

Talent down the drain

New Delhi

SOME 324,000 engineers, doctors and scientists from India have so far migrated and the figure may exceed half a million by the year 2000 according to a study carried out by the New-Delhi-based Centre for Planning, Research and Action at the request of the Department of Science and Technology.

There has been tremendous increase in the magnitude of the brain drain since 1961. Only 8,900 skilled professionals moved abroad in the period 1962–65. By 1982–85 the number had reached 84,200.

One-third of engineers and technologists emigrate, as do 28 per cent of doctors and 22 per cent of scientists. Highly qualified scientists and technicians make up 20 per cent of the Indian work force abroad. The report calculates that as a result India lost benefits by 1985 equivalent to \$8,000 million to the United States, \$2,600 million to Canada and \$2,200 million to the United Kingdom.

The study has attempted to project the size of the brain drain in the future after taking into account recent restrictions on emigration. The number of Indians living in countries outside the subcontinent is estimated at 475,000 people in 1995 and 539,000 in 2000.

According to the projections some 61,400 skilled workers will emigrate in the period 1988–2001. Of these, 1.5 per cent will go to the United Kingdom, 12 per cent to Canada, 26 per cent to the United States and the largest number, 28 per cent, to West Asia.

Economic factors, inadequate attention by Indian industry to research and development, political and historical factors, prestige attached to living abroad and immigration policies that give preference to skilled manpower are some of the causes of the brain drain, according to the study.

K. S. Jayaraman

X-RAY ASTRONOMY

New telescope hits orbit

Munich & Washington

ROSAT, the multi-nation Roentgen satellite, was launched successfully last week, ready for a six-month survey of cosmic X-ray sources and a year or more of detailed study of black holes, very hot stars and supernova gas clouds that emit X-ray radiation.

Although the ground controller at Cape Canaveral briefly lost radio contact with the satellite after its launch on a Delta II rocket, full communications have resumed. The satellite extended its solar panels and other appendages without trouble, and is transmitting a "strong signal", according to Goddard Space Flight Center, the US laboratory that oversaw the launch. First scientific data should arrive today when Rosat open its camera door, followed by two months of calibration.

Rosat has two telescopes on board that will scan the sky in the ultraviolet and X-ray frequency ranges. In the 18 months it is expected to function, Rosat should transmit enough data to create a sky atlas of X-ray sources with over 100,000 entries. At the same time, researchers will use Rosat to study the X-ray background radiation from the sky.

Boasting the smoothest mirror in the world, Rosat is one hundred times as sensitive as any other X-ray telescope yet launched. Coated with a fine film of gold, the mirror (made by Carl Zeiss) varies from perfect smoothness by only 10^{-8} cm, close to the dimensions of an atom.

Rosat is an international project with three partners, West Germany, Britain and the United States. The main body of Rosat and its mirror was built in West Germany beginning in 1982 by three companies — Messerschmitt-Bölkow-Blohm, Carl Zeiss and Telefunken Systemtechnik — as well as the Max Planck Institute for Extraterrestrial Physics and the West German Aerospace Research Establishment (DLR).

West Germany contributed the larger X-ray telescope, with an aperture of 84 cm, and two of its three photodetectors. The third was provided by the United States. Britain contributed a lower-resolution wide-angle telescope of 57 cm aperture to study ultraviolet radiation. The satellite cost DM560 million (\$333 million).

Rosat was originally scheduled for launch on the US space shuttle in 1987. But after the Challenger explosion, the launch date was pushed back so far — to 1994 or possibly even later — that project leader Joachim Trümper, backed by the West German government, sought another way to get Rosat into orbit. The United States finally agreed in early 1987 to provide a Delta II rocket (see *Nature* 326, 820; 1987).

Steven Dickman
& G. Christopher Anderson