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## 1 Research News

### 1.1 Energy

#### **China forms a rational structure of nuke industry**

**(MOST, 2005-01-16)**

China has shaped a rational structure of nuclear industry by streamlining operation in the sector and balancing use of the technology in military and civilian fields.

Kang Rixin, director with China National Nuclear Corporation (CNNC), said this here Saturday while addressing a meeting commemorating the 50th anniversary of the establishment of China's nuclear industry.

China has adjusted its nuclear industry to the economic development of the country and shifted the emphasis to the civilian use of nuclear technology, Kang said.

Statistics from CNNC show that in 2004 combined profits of the corporation reached 800 million yuan (96.7 million US dollars), up 226 percent over that in 2003.

Kang said in the past decade the development of three aspects such as nuclear power, nuclear fuel and applied nuclear technology, contributed greatly to China's nuclear industry.

The construction of China's nuclear power has made remarkable achievements in the past years, he said, citing that till the end of 2004 a total of 11 nuclear generators including those under construction have a generating capacity of 8700,000 kilowatts, 1.6 percent of the country's whole generating capacity.

According to the plan of China's energy structure adjustment, the generating capacity of China's nuclear generators will reach 40 million kilowatts in 2020, four percent of the whole in the country.

#### **China to accelerate nuclear industry**

**(MOST, 2005-01-18)**

The year 2005 marks the 50th anniversary of the founding of China's nuclear industry.

Now the country is taking steps to increase the amount of nuclear power in its overall energy supply and make it an important element of future energy development.

Vice Premier Huang Ju says concentrating on nuclear industry is an important shift in the country's energy development strategy.

"Currently, China's nuclear power has great market potential and the industry looks promising. Promoting the civilian use of nuclear technology will be an effective choice to meet economic and social demands and to improve energy structure."

China's National Nuclear Corporation says last year 11 nuclear generators including those under construction generated 8.7 million kilowatts. That is only 1.6 per cent of the country's total power generating capacity.

Under new plans to change China's energy structure, nuclear generators will be generating 40 million kilowatts by 2020, which is four percent of the national total.

The general manager of the National Nuclear Corporation, Kang Rixin says the Corporation will build 30 nuclear generators in the next 10 years. Most of them will be located in China's coastal

areas.

"We have initial plans for the location of new nuclear power plants. Most will be set up in east China's Zhejiang, Jiangsu Provinces and south China's Guangdong Province.

He says based on a self-reliant development model, China will also introduce advanced technology from overseas to improve its own nuclear energy research and management capabilities.

Currently China boasts three major nuclear power plants including Zhejiang's Qinshan plant, Guangdong's Dayawan plant and Tianwan plant in Jiangsu province.

### **China to build PFR nuclear power stations by 2020**

(Xinhua Net, 2005-01-19)



China will complete the construction of prototype fast reactor (PFR) nuclear stations by about 2020, the director with China National Nuclear Corporation (CNNC) announced here Sunday.

The reactor can lift the utility rate of natural uranium from one percent to 60 to 70 percent with a pressurized water reactor (PWR), said Kang Rixin.

Currently, most of China's nuclear stations, both in operation or under construction, use a PWR and heavy water reactor (HWR), sources with CNNC said.

The development of the new kind of reactor is expected to be finished and put into operation at the beginning of the next "five-year plan" period (2006-2010), CNNC sources said.

China is now speeding up the PFR experiment, which is supported by the 863 Plan, the nation's hi-tech research and development program, sources said. The development research, with a total investment of 1.38 billion yuan (167 million US dollar), is the largest project in the 863 Plan.

Nuclear power should make up four percent of the nation's total generating capacity by 2020, according to plans made by National Development and Reform Commission (NDRC).

"This requires CNNC, in collaboration with other corporations, to make pragmatic plans and schedules to address bottle-neck problems the nuclear industry facing, such as self-researching capability and resources provision," CNNC sources said.

The CNNC sources said working on and implementing these reactors will still be, for a long time, the major product for China's nuclear industry.

## China to build world's first wave power station

(Xinhua Net, 2005-01-26)



### (Exterior of the Station)

Chinese scientists are working on the world's first wave power station, which can supply a small coastal village with electricity.

During an interview Monday, You Yage, chief scientist for the Ocean Energy Division at the Chinese Academy of Sciences Guangzhou Institute of Energy Conversion, said his research team recently completed a test for the most advanced wave power system.

With a patented technology on energy-storage manostat, the Chinese researchers are leading the world in developing a stable electricity flow generated by waves, You said.

You said the test met technical expectations and is shock resistant and stable. The generator produced about six kilowatts, better than diesel generators with similar capacity.

This equipment could be used for electricity for light, computers, air conditioners and sea water desalination, the scientist said.

He said the wave power is one of the most unstable powers in the world. British and Portuguese scientists are now researching on building effective wave power stations. But they have failed to reach technical expectations.

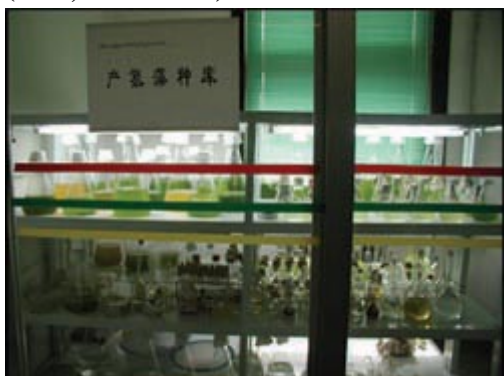
You estimated that by 2005, his team could build a complete wave power station with advanced technologies. But he was not upbeat on the large-scale commercialization of this equipment in near future.

The research done by the CAS Guangzhou institute is financially supported by the Ministry of Science and Technology under its state high technology research and development project as well as the CAS funds for strategic research.

Scientists worldwide have been considering using waves to generate power. They thought that the unending waves could provide humans with an endless power supply. However, the current technology for such wave power stations is expensive and hard to maintenance.

According to You's estimation, a small station with a total generation capacity of 50 kilowatts could produce 26,300 kwh in a year, which could sufficiently supply electricity for a seaside town with fewer than 240 families in residence.

**Photo-producing hydrogen with marine green algae**  
(CAS, 2005-01-31)



Hydrogen is often hailed as a potential source of unlimited clean power. It can be produced with green algae from water and solar energy through a process called "photobiological hydrogen production." Although its efficiency is rather low at present, scientists believe, an increase to 10% would make this process economically feasible.

Significant progress has been achieved by Prof Zhang Wei and his group at the CAS Dalian Institute of Chemical Physics (DICP) since they took the lead to challenge the problem in China in 2000 with initial support from CAS. Their work has been further funded by the National Basic Science Program (or 973 Program) in 2004.

With sea water as the substrate and solar light the energy source, the goal of the project is to develop a marine green algae-based, cost-effective system for sustained hydrogen photoproduction system.

"Our emphasis is placed on the metabolic regulation of hydrogen metabolism and engineering analysis of the hydrogen production system," said Prof. Zhang, who rejoined DICP through the prestigious CAS *Bairen* Program in 2000 after spending nearly five years abroad.

We focus on marine green algae rather than freshwater ones exclusively used internationally in USA, Europe and Japan, Zhang added. "We believe that the utilization of seawater is more meaningful for a sustainable production of hydrogen."

So far, important results have been achieved by the DICP group. They initiated China's first National Collection of Hydrogen-Producing Microalgae, which now has over 20 strains. In addition, they set up two screening system for hydrogen-producing green algae. The first one is a system under the sulfur deprivation condition, which has been proven in US as the controlling factor of triggering hydrogen metabolism. The second was to screen the hydrogen-producing algae with the addition of a proton uncoupler carbonyl cyanide *m*-chlorophenylhydrazone (CCCP), which can accelerate hydrogen production significantly.

By far, the scientists have obtained six hydrogen-producing strains, including a marine green alga, *Platymonas subcordiformis*, which could produce 0.2% hydrogen within five hours in a 250 ml culture system in natural seawater.

The photo-biological hydrogen production is a two-stage process. The first stage is algae cell culture in the light and the second is hydrogen production after a period of dark anaerobic incubation. To improve the light conversion efficiency, the group, designed and constructed, for the first stage, a 5-L airlift photobioreactor and 50-L Biocoil Photobioreactor system for high-density culture of hydrogen-producing microalgae. In manipulating hydrogen metabolism in

the second stage, they have found that a proton uncoupler, CCCP significantly stimulates hydrogen production in *Platymonas subcordiformis*, however sulfur deprivation shows small increase in hydrogen production.

Based on this finding, the researchers have invented a method to metabolically regulate hydrogen metabolism in a marine green alga *Platymonas subcordiformis*, resulting in an increases of more than 300 fold yield of hydrogen. Although the hydrogen productivity at 1.9 ml/h.l is slightly higher when compared with the best system invented by UC-Berkeley and the US Department of Energy, hydrogen production time in Dalian system is about 12 hours, much less than the 100 hours of UC-Berkeley Process.

## 1.2 Earth and Environment

### **Comprehensive benefits of Three Gorges Project apparent**

**(MOST, 2005-01-02)**

The Chinese government says the Three Gorges Project has partially achieved goals set for water storage, shipping and electricity generation, making the comprehensive benefits of the project apparent.

So far, the giant Three Gorges hydroelectric power plant has generated nearly 36 billion kilowatt-hours, greatly easing the chronic power shortages in the eastern and southern regions of the country.

The dam's reservoir held back nearly 500 million cubic meters of flood-water last year, playing a leading role in fighting floods in the middle and lower reaches of the Yangtze River.

During the past decade, over 100 billion yuan, or 12 billion US dollars, were invested in the maintenance and protection of the environment along China's longest river.

The Three Gorges Project, which began in 1994, is China's largest water control project.

### **China urged to step up ocean research**

**(MOST, 2005-01-02)**

Last Sunday's tsunamis in the Indian Ocean sent off a warning that China should accelerate its ocean research, said Chinese experts.

Wang Pinxian, director of the lab with the Department for Education in Maritime Geology of Shanghai-based Tongji University, said that the country's research of oceans is weaker than its research of the land or the atmosphere.

Many an earthquakes on land were actually caused by seabed quakes, causing heavy damages. Some earthquakes taking place in the deep oceans might be felt only through their tsunami aftermath, said Wang, who is a member of the Chinese Academy of Sciences (CAS).

China, with a coastline of 9,000 km, has suffered heavy losses in its coastal cities caused by maritime quakes and tidal waves. Taiwan Straits and offshore of Taiwan are often labeled natural disaster prone. An earthquake in the Yellow Sea in November 1996 was felt in Shanghai on east China coast.

The economic development along China's coast, which has gained steam in recent years, has made it necessary to pay greater attention to the study of oceans. A better understanding of the oceans

should help reduce losses from marine quakes and the tidal waves they produce, said Luo Zude, professor of disaster research at East China Normal University.

Luo warned that coastal areas including Shanghai should keep improving their capabilities of combating maritime disasters and prepare for all kinds of marine disasters.

Academician Wang admitted that in terms of basic ocean research, China only leads the world in the ancient environment, but many aspects of the ocean research had remained a blank in the country owing to limited funding.

According to Wang, China has allocated 5 billion yuan (about US\$602 million) for ocean research during the tenth five- year-plan period (2001-2005).

### **A center for experimental primates to be set up in Guangdong (CAS, 2005-01-04)**

The CAS Guangzhou Institute of Biomedicine and Health will team up with the Guangzhou Entomological Institute in establishing a research center for experimental primates. According to an agreement signed by the directors of the two institutes on Dec. 30 in Guangzhou, a 500 m<sup>2</sup> lab in line with the international standards will be set up during the first phase of the project.

### **State-level wetland preserve set up in East China (Xinhua Net, 2005-01-06)**

East China's Shandong Province has established a state-level wetland preserve in province capital Jinan Wednesday, a local source said.

The Shell Dike Wetland Preserve in the county of Wudi has been upgraded to a state-level preserve from a provincial one, making it the second one in the Yellow River Delta.

Regarded as a natural biological museum, the 2000-year-old dike has 459 wildlife species including some rare clams, conches and seals. In addition to these, the saline meadows and some swamp and wetland vegetation are also seen in the preserve.

It is one of world's three biggest ancient shell dikes. The other two are located in North America and South America's Surinam.

The Yellow River Delta Preserve, the first natural preserve of wetlands and endangered birds in the area, was founded in 1987. It was upgraded to the state level in 1992.

### **'Soil Dams' to be built in the Loess Plateau (China Net, 2005-01-07)**



**(The Loess Plateau)**

China plans to invest US\$9.7 billion in building tens of thousands of "soil dams" for the Loess Plateau, world's worst areas for soil erosion, to protect fragile ecology.

"Soil dams" are put in ditches along the plateau so when it rains, the soil can be kept in place.

Also the acres of farmland which were created in the 1970s will be replanted with trees, to replenish the soil.

The huge project will better protect fragile ecology of this Northern region and improve the living standards of nearly 70 million farming population who live there.

China's Loess Plateau is one of the world's worst areas for soil erosion.

### **Pollution worsens in China's sea waters**

**(China Daily, 2005-01-10)**

Marine pollution has posed a grave challenge to China over the past year, a spokesman for the State Oceanic Administration said yesterday in Beijing.

"The coastal marine ecosystem is worsening, the quality of ocean water is deteriorating and large amounts of pollutants are infiltrating from land to the sea," said Li Chunxian.

It spells a severe challenge to the country's ocean environment control. Li's remarks came after his administration released a report on the condition of China's seas and marine accidents in 2004.

A total of 169,000 square kilometres failed to reach the standard of clean water, 27,000 square kilometres up on the previous year.

The most heavily polluted areas are concentrated along the coastline, and include Bohai Bay and the mouth of the Yangtze, he said.

Lying off the coast of North China, one of the country's most populous and developed areas, the Bohai Sea has witnessed the highest increase of pollution levels.

An area of 27,000 square kilometres, accounting for 35 per cent of its waters, failed to reach clean water standards.

Discharge of land waste through ocean dumping is the major cause of ocean pollution, said Li.

The report revealed 80 per cent of sea areas near effluent outlets were heavily polluted.

Resulting pollution has caused the closure of beaches and limited the recreational and aesthetic value of the sea.

What is more, most of the seafood harvested from the ocean comes from inshore waters and the pollution has affected aquatic products.

"Pollution has undermined the multiple functions of the sea," he said.

In 2004, major pollutants carried by rivers such as the Yellow River and the Yangtze into the sea weighed 11.45 million tons.

Li said land waste pollution, together with over-exploitation of resources had worsened the eco-system.

He called for more efforts to repair the damage done and prevention measures.

China is one of the countries vulnerable to marine calamities, but 2004 had not been a significant year in terms of marine disasters.

Economic losses suffered by the coastal areas from storms, typhoons, red tides, tidal waves and oil spills reached 5.4 billion yuan (US\$653 million) and claimed the lives of 140 people.

"Typhoons and storms were the major marine catastrophes for China in the past year. They caused 5.2 billion yuan (US\$628) of direct economic loss and killed 49 people," said Li.

Red tides occurred 96 times last year - 19 per cent less than the previous year - and were more

often found in the East China Sea and Bohai Sea. More than 20 were toxic. Fortunately, the toxic red tides did not affect human beings and the aquatic breeding industry thanks to rapid emergency measures taken by marine authorities, said Li. China has installed a basic marine environment and disaster observation network and an early warning system, covering both offshore areas and distant waters, with the co-operation of several departments.

### **Global warming thawing Qinghai Plateau**

**(Xinhua Net, 2005-01-11)**

Affected by global warming, the frozen earth on the Qinghai Plateau has been thawing, according to scientists with the northwest China's Qinghai Province.

Scientists with the Qinghai Climate Data Center have analyzed the data from the frozen area of the plateau in the past decades by using geological information system technology.

The scientists found that in the frozen region, the earth's temperature has been noticeably rising. Also, the duration of the year during which the ground is frozen is becoming increasingly shorter and the thickness of the frozen layer has decreased.

According to statistics, the layer of frozen earth is now 50 meters more shallow than it was decades ago, said Qin Ningsheng, director of the center.

Qin said that Xining, the capital city of the province, and Gangcha County, are the two places that have witnessed the worst thaw due to the "hot island" effect brought about by urbanization, and the falling water level in the Qinghai Lake.

Because the layer of frozen earth plays a great role in maintaining the ecology of the plateau, Qin called for the government to pay attention to the changes and take measures to protect the current ecological system.

### **Polar explorers climb peak of Antarctica**

**(China Daily, 2005-01-11)**

Chinese polar explorers have completed half of their Kunlun Dome A Inland Icecap programme, the primary mission of China's 21st Antarctic expedition, by climbing to the north peak of Dome A.

Zhang Zhanhai, the leader of the expedition said that he had received a telephone report from Li Yuansheng, the leader of the mission team, that his team successfully mounted the north peak at 11:30 pm Beijing time on Sunday.

Preliminary measurement by global positioning system shows that the north peak of Dome A is 4,091 metres above sea level.

According to telemetering data of the satellite, the South Pole's inland icecap has two peaks, more than 10 kilometres away from each other.

Only by a joint measurement from the satellite and the ground can the explorers decide which one is higher.

After a more exact survey of the north peak, the mission team will set out to look for the south peak.

Gai Junxian, the mission team's technician, left the team on Saturday because of a strong altitude reaction. He is now receiving treatment at a research station of the United States and is in a stable condition.

The remaining 12 team members are all in good condition, said Wei Wenliang, vice-director of the Chinese Arctic and Antarctic Administration.

Besides conducting a variety of scientific experiments and collecting ice samples, Chinese scientists plan to stay in the peak area for about 10 to 15 days and build a temporary weather observatory to prepare for building a permanent research station in inland Antarctica.

Dome A is located about 1,300 metres inland away from the coast. With a brutal climate and a height of more than 4,000 metres above sea level, Dome A is known as one of the world's most inaccessible places.

In another development, China's polar expedition ship Xuelong (Snow Dragon) arrived in Ushuaia, a port of southern Argentina on Friday.

They will stay there for three days for replenishment and then go back to the Zhongshan Station, a permanent research station China built on the continent in 1989.

The Xuelong ship was welcomed by Argentine local government officials and Chinese embassy officials on their arrival in the afternoon.

Zhang said China's 21st Antarctic expedition has finished most of its tasks since it left China on October 25 last year for the 150-day expedition. The Xuelong ship is expected to return to China in March.

Meanwhile, Yuan Shaohong, captain of the Xuelong, said the ship will be completely revamped in May or June this year after the expedition. The revamp will be completed by August 2006.

After the rebuilding, Xuelong will have an increased laboratory area of 300 square metres, and its capacity for scientific research, safety and living conditions will all be greatly improved.

### **China, Singapore jointly bid for the International Congress on Rock Mechanics (CAS, 2005-01-13)**

Teaming up with its Singaporean counterpart, the Chinese rock engineering community offers to host the 12th International Congress on Rock Mechanics in October 2011 in Beijing. The proposal was made to the International Society for Rock Mechanics (ISRM) by Prof. Feng Xiating, director of the CAS Wuhan Institute of Rock and Soil Mechanics, on behalf of ISRM national groups of the two countries at the third Asian Rock Mechanics Symposium, which was held from Nov.29 to Dec. 1, 2004, in Kyoto, Japan.

As more and more rock engineering projects are or will be introduced in the complicated geological conditions in both China and Singapore, rock mechanics is playing an increasingly important role in keeping harmony between rock engineering construction and environment in the two countries, said Prof. Feng.

A series of huge rock engineering projects in complex formation, such as the Three Gorges Project, the Project of transferring water from Yangtze River to Yellow River and the West-to-East Electricity Transfer Project, have been successfully carried out in China. A variety of difficulties have met in the rock mechanics and engineering, and these problems will be food for thought at the Congress, added Prof. Feng.

The International Congress on Rock Mechanics is convened every four years. The 11th Congress will be held in Portugal in 2007.

### **Expedition reaches Antarctic icecap peak (Xinhua Net, 2005-01-19)**

A 12-man Chinese expedition surmounted the highest icecap peak in Antarctica at 3:16 a.m. Tuesday, according to the polar expedition office of the State Oceanic Administration (SOA).

They are the first humans to reach the peak of Dome A Icecap 4,039 meters above sea level, located at 80:22:00 degrees south latitude and 77:21:11 degrees east longitude.

The team planned to establish an interim scientific observation station at the spot to monitor the climatic environment, measure the depth of the icecap and obtain ice sample from a depth 150 meters to 200 meters below the surface, the SOA said.

The team will also look for the right location for the third Chinese scientific research station at Antarctica, which together with the existing Changcheng (Great Wall) and Zhongshan stations will form a regional climatic environment monitoring system, fulfilling China's mission in an international Antarctic research program.

So far, the team has obtained a nearly 100-meter long ice sample from a section some 300 meters below the icecap peak, the first that humans have got at the highest icecap peak in Antarctica and a crucial clue to climatic and environmental changes in this area.

The Chinese scientists have also set up an automatic weather observation system at the peak that may function at minus 90 degree Centigrade. The system, jointly developed by China and Australia, sends out real-time information about local temperature, moisture, solar radiation, wind power and direction, atmospheric pressure and temperature through satellite.

The team is scheduled to withdraw Thursday but leave a commemorative mark formed by 13 empty oil casks and a national flag at the peak.

The Antarctic icecap, the largest continental glacier on the surface of the earth, accounts for 70 percent of the earth's freshwater resources. The icecap has an average thickness of around 2,450 meters and more than 4,000 meters in certain spots.

Climate-induced change in the bulk of the Antarctic glaciers will noticeably affect the sea level. According to scientists worldwide, the Antarctic glaciers can provide high-quality, high fidelity and abundant information for their research into global climatic changes.

### **CAS scientists make suggestions on wetland protection**

**(CAS, 2005-01-20)**



A group of CAS scientists have come up with suggestions about the wetland protection after a two-week investigation in the middle and lower reaches of the Yangtze River from Dec. 2 to 14.

Based on the observation and comprehensive analysis, the scientists suggested that the statutes and regulations in enactment concerning wetland protection be introduced or further perfected while the infrastructure at various natural reserves has to be promoted. Wetland resources have to be undergoing regular appraisals and subject to a permanent system of ceaseless monitoring. The rational plans and schemes must be working out in the context of the development of the water

resources. They call for more efforts to be injected in the exploration of dynamic changes in wetland ecosystems and their bio-diversity while nearby neighborhoods are encouraged to take part in the move of wetland protection.

The survey, which was led by Prof. Deng Wei and Prof. Lu Xianguo from the CAS Institute of Geography and Agricultural Ecology, covered major wetlands of the reaches, including the Honghu Lake in Hubei Province, Poyang Lake in Jiangxi Province, Xixi Creek in suburban Hangzhou City, artificial wetland for wastewater treatment, the coastal wetland in the prefecture of Yancheng of Jiangsu Province and the wetlands surrounding the Taihu Lake. The investigation enables the scientists to get a deeper understanding of the natural conditions of the wetlands.

The wetland resources in the middle and lower reaches of the Yangtze mainstream are lake wetlands, noted for their unique ecotypes and structures, superb climatic settings and geographic locations. Many of them are flourishing habitats of water fowls or stopovers on their migratory routes, playing an irreplaceable role in the protection of the native bio-diversity.

However, the researchers have discovered serious problems affecting the sustainable development of wetlands. One is the mounting threat posed by the economic development in the region. At present, wetlands are shrinking in areas because of the exploitation of land resources by farmland reclamation and expansion of the urban reconstruction. In addition, the over-fishing practice leads to the decrease in bio-diversity and ecological imbalance.

The second is the decline in water resources. The construction spree of water conservancy projects imposes barriers between the different fluvio-lacustrine systems so that the water resources are decreasing in the majority of the wetlands, impeding their effects in ecological purification and environment cleansing functions.

The third is the water quality deterioration. Subject to industrial, agricultural and urban pollution, the water quality of the wetlands sees an ominous tendency from bad to worse.

The fourth is the bio-invasion. The encroachment of alien species such as the water hyacinth (*Eichhornia crassipes*) and cordgrasses (*Spartina spp*) now becomes more and more menacing to the healthy performance of a wetland ecosystem.

### **China's ecological construction enters a new phase**

**(People's Daily, 2005-01-21)**

According to analysis of the latest survey on forest resources & desertification, soil & water losses and wild animal & plant, China's ecological construction has entered a new phase, said Zhou Shengxian, director of the State Forestry Administration (SFA) at a working conference for heads of forestry administrations on Jan 19.

China has made remarkable achievements in desertification control. Both forest area and forest cumulation have kept on increasing. As the 6th survey on forest resources shows, forest area has seen an increase of 240 million mu on the basis of the previous survey. The forest coverage area has risen from 16.55 percent to 18.21 percent. The area of desertified land has outnumbered that of expansion. Desertified land of 19,000 Sq. kms has been brought under control since 2002. The area of desertified land has been declining in 19 provinces and autonomous regions. The number of species of wild plants and animals has been on rise. Of the animals 55.7 percents are of terrestrial. The number of rare and endangered animals like Chinese Alligator and Ibis has multiplied. The number of panda has increased over 40 percent. Of China's 189 species of rare and extremely endangered wild plants, 71 per cent have been stabilized. The area of lands that suffer

from water and soil losses has decreased from 3.67 mln Sq. kms to 3.56 mln Sq. kms.

The ecological situation is still fragile, uncertain in China and the ecological construction work is still arduous. The total amount of forest resources is still insufficient. The forest coverage rate is only 61.25 percent of the world average level. Per capita forest area and cumulation only takes 1/4 and 1/6 of the world average. Loss of land designated for forestry is still serious. Land of 10.1 million hectares designated for forestry has been used for other purposes during the past 5 years. The cutting of forest beyond quota has not stopped. The management of forest needs improvement. Number of wild animals and plants under state's key protection is still small. Area of natural wetlands has reduced greatly. Inning has resulted in disappearance of 900 lakes. China still face arduous task in water and soil conservation. More than 1/3 of the Chinese land is suffering from soil and water losses. 27.9 percent of land is desertified. Therefore China's policies on forestry should remain consistent.

### **Myanmar, Chinese experts to study earthquake belt of extinct volcanoes**

**(People's Daily, 2005-01-24)**

Myanmar and Chinese experts will conduct a joint study in April of the detailed nature of the earthquake belt and igneous rocks lying in Myanmar's extinct volcanoes, local press Flower News reported in its latest issue.

Estimating that Myanmar's volcano belt is linked with that of China's Yunan province, the two sides will study the quake belt of three died-out volcanoes and igneous rocks in Myanmar, near the Wundo area where northernmost Kachin state and northwestern Sagaing division meet, the Meteorology and Hydrology Department (MHD) was quoted as saying.

It will be the second time for the two countries' experts to carry out such activities since last November in collaboration with personnel from the Myanmar Engineers' Association, MHD, Yangon University and Technical College.

During the last study involving geologists from Tengchong Earthquake Administration of Yunnan and covering Popa, Monywa, Sagaing and Shwebo, 30 igneous rocks were taken for laboratory analysis, the report said.

According to Myanmar officials, Myanmar is a country located on the Alphide Himalaya earthquake belt with frequent activities in the past.

In April 2003, China presented two sets of digital seismographsto Myanmar to help promote the country's seismographic activities.

Meanwhile, Myanmar has laid down a project to draw a geological micro-zonation indicator map for Yangon to guide building construction work in the capital as a precaution against quake.

The project will take at least one year and will be extended to other major cities of Mandalay, Bago and Phyu.

Myanmar is also undertaking a coastal storm and tidal surge forecast project for improving weather forecast services. The project, being implemented with the assistance of the Honolulu-based PACON International (the Pacific Congress on Marine Science Technology), involves the utilization of numerical prediction method to provide advance warning of storm and tidal surge.

It is officially reported that the country was registered with 64 people killed, 56 injured in coastal areas in the tsunami on Dec. 26. The tidal wave destroyed over 600 houses in 29 villages, leaving 3,460 people homeless in some of the regions in six divisions and states -- Tanintharyi, Yangon,

Bago, Ayeyawaddy, Rakhine and Shan (South).

**China to investigate Qomolangma area**

**(CCTV, 2005-01-24)**

Chinese scientists are planning to begin an investigation of the Mount Qomolangma area in March. The Chinese Academy of Sciences and the State Survey Bureau have announced they will send a team to the Roof of the World for a three-month mission.

The investigation will be China's fourth in fifty years in the area. The aim of the mission is to assess the impact of global climatic changes on the environment around Qomolangma, known in the West as Mount Everest. To accomplish this, scientists plan to collect samples and set up a database showing atmospheric changes, glacier evolution, as well as local bio-diversity. In addition, Chinese women mountaineers will make their way to the summit of the Qomolangma to determine the exact height of the mountain through radar and GPS tests.

**Largest field observation ground for sandstorms in operation**

**(CAS, 2005-01-24)**

A new ground for field observation and around-the-clock monitoring of sandstorms was recently put in operation in northwestern China. This is the largest of similar facilities in the world today according to well-informed sources.

Revealed by Prof. Dong Zhibao, vice director of the Key Laboratory for Deserts & Desertification Engineering affiliated to the CAS Cold and Arid Region Environmental and Engineering Research Institute, the two-square-km ground is situated in the county of Zhongwei under the jurisdiction of Ningxia Hui Autonomous Region. Its location is 15 km away to the Shapotou experimental & research station, another CAS-run supervisory entity against the scourge. The ground is a leveled stretch of flatland in the open country. It is divided into three zones designated to the exploration of wind & sand movements, sandstorms and their dynamic effects on landforms in addition to two testing districts devoted to sand-fixation engineering and calamities caused by wind and sandstorms.

According to Dong, the operation of the new ground will play a constructive role in facilitating the daily routine performance of the monitoring systems set in Urdos Desert and Ejin Horo Banner in Inner Mongolia and Minqin County in Gansu Province and strengthening the overall capacity against sand invasion at the Shapotou station.

**China to remeasure world's tallest mountain**  
(Xinhua Net, 2005-01-25)



**(The Qomolangma Peak)**

China plans a scientific investigation on the Qinghai-Tibet Plateau from March 20 to June 20 this year to remeasure the height of Qomolangma Peak (also called Mountain Everest), the world's highest peak, Chinese Central Television (CCTV) has reported.

The investigation, jointly launched by the Chinese Academy of Sciences (CAS) and State Bureau of Surveying and Mapping (SBSM), will focus on the damage caused to the area by global warming over the past 30 years. It will be China's fourth in the region and the others were conducted in 1959, 1966 and 1975.

The SBSM, together with Chinese national women's mountaineering expedition, will adopt radar and GPS (Global Position System) to remeasure the height of the mountain, CCTV said.

Qomolangma Peak is believed to have shrunk as a result of global warming and shrinking of glaciers. A recent survey said that the mountaintop had declined by 1.3 meters.

**An international team completes bio-diversity survey to northwestern Yunnan**  
(CAS, 2005-01-27)



A 25-strong expedition team recently concluded an autumn fieldtrip to the Dulong River Valley in the northwestern corner of southwest China's Yunnan Province.

The 32-day-long survey is part of a much larger five-year biotic survey of the Gaoligong Mountain range supported by the US National Science Foundation and the CAS Kunming Institute of Botany (KIB). Led by Prof. Li Heng of KIB, the international consortium included entomologists and botanists from the CAS Institute of Zoology in Beijing, Hunan Normal University, the US Californian Academy of Sciences, the UK Royal Botanic Garden Edinburgh and University of Marburg in Germany.

The team, which is divided into two detachments of botany and entomology, is focused on the bio-diversity along the Dulong River valley located at the western slope of the northern part of the Gaoligong Mountains. Unlike much of the surrounding areas, the forests of the Gaoligong Mountains have remained largely intact because of their remote location and are known to be one of the hottest biodiversity spots on earth.

A bumper harvest features the field expedition. A total of 14,812 specimens in 2,119 entries of vascular plants were collected by botanical group from the trekking survey, the highest record ever scored in any similar surveying activities in the Gaoligong Mountains.

According to the agreement reached by the participants of the expedition, the specimens are to be mainly stored in KIB and part of them will be exchanged with the foreign participants and the herbarium under the Gongshan County's administration of natural reserves. Another complete set of collected specimens will be sent to peer taxonomists for identification.

The sampled plant seeds contain a lot of new recordings in the Dulong River valley and Gaoligong Mountains such as *Sparganium sp.*, *Aralia armata*, *Aralia stipulate*, *Schefflera clarkeana*, including some endemic species in Dulong River. In the middle and upper reaches of the river valley, a large stretch of forests *Pinus wallichii* was discovered.

In addition, the expedition collected some 2,000 entries of mosses, including some new taxonomic recordings like a primitive moss *Takakia certophylla* (Mitt.) Grolle and many species in Hookeriaceae. In the collection of lichen specimens, almost all samples are new recordings in the Mountains, such as *Horikawaella subacuta*, *Lobatiriccardia sp.*, *Scapania contorta* Mitt. and *Lophocolea sikkimensis*.

In entomology, the teammates succeeded in collecting more than 6,000 insects including 2,000 spiders and 3253 beetles and 1,500 individuals in other kinds of arthropods. Among the beetle specimens, at least more than 40 are new species as the River was the first time to receive entomologist visits. To their surprise, the insect experts discover that some endemic beetles in Hainan Island may be found in the northern slope of the Mountains. They believe this anomaly is only to be explained by the displacement of the tectonic plates.

### **China succeeded in sub-seawater desalination for first time (People's Daily, 2005-01-27)**

China has achieved success in sub-seawater desalination for the first time, noted Tan Yongwen, deputy director with Hangzhou Development Center of Water Treatment Technology under State Oceanic Administration (SOA).

Various indexes of the desalinated sub-seawater are in conformity with or even better than the quality as required for running water and drinking water, which means it can be used for drinking water.

Tan also said that Zhejiang province has the richest sub-seawater resources in China. There are 16 beach reservoirs with a storage volume of over 1 million cubic meters and the total storage capacity reaches 200 million cubic meters.

The desalination cost for per ton of seawater is around 5 yuan, but that of sub-seawater is only around 2 yuan. If the project supplies the society with desalinated water, the water price will be about the same with that of the current running water even with the pipeline leakage and management expense taken into consideration.

## 1.3 Health

### **New director for the CAS Shanghai Institute of Materia Medica (CAS, 2005-01-04)**



Prof. Ding Jian, a medical scientist, has been appointed director of the Shanghai Institute of Materia Medica (SIMM), an affiliation of the CAS Shanghai Institutes for Biological Sciences (SIBS). He will succeed Prof. Chen Kaixian, who has left SIMM to serve as a SIBS top leader. Ding received his doctoral degree in medicine from Kyushu University in Japan in 1991. He has worked as professor, division chief and deputy director of the Institute since he joined SIMM in 1992.

### **New human gene discovered (China Net, 2005-01-07)**

Recently, the research group led by Xi Yongzhi, director of the immunology laboratory of the PLA's 307 Hospital, discovered a new allele of human leucocyte antigen (HLA), which was formally named as A: 110104 by the Committee of HLA of the World Health Organization.

HLA allele discovery and identification are currently hot topics in international HLA research. Because this new gene appeared in two different ancestries in two provinces, it has more application value.

The more frequently the HLA gene appears in the public, the more value it has. The value of this newly discovered allele is exactly its significant frequency and universality among Chinese people and its consequent applicability. The discovery will help improve the matching accuracy of transplant organs and hematopoietic stem cells and help prevent transplant rejection and prolong the patient's life.

For China in particular, as the country enters a single child era and non-kinship transplant cases increase rapidly, the discovery is very helpful in matching organ donors and recipients. Meanwhile, the new allele can be widely used in forensic and anthropological researches.

### **Chinese scientists find new HLA allele (Xinhua Net, 2005-01-08)**

The World Health Organization has named a new allele identified by Chinese scientists that will hopefully enhance the success rates of bone marrow transplants for leukemia patients.

The allele, HLA-A\*110104, was identified recently by immunologists with the Beijing-based No. 307 Hospital of the Chinese People's Liberation Army, while matching hematogenic stem cells for

a leukemia patient from the northern Shanxi Province.

The team of experts, headed by Xi Yongzhi, found an unknown gene in the patient's younger brother who was the potential bone marrow donor. Seeing that the gene did not exist in the international gene bank, Xi and his colleagues paid a visit to the patient's hometown to take blood samples from his father, and detected the same gene.

Shortly after their Shanxi tour, the immunologists found the newly discovered gene again in a patient from the eastern Anhui Province. Laboratory work later found the same gene in blood samples from the patient's parents and grandparents, too, said Xi.

WHO's HLA naming committee has named the allele and published the discovery in several academic journals, according to Xi.

The new allele will match more adequate types of bone marrow for leukemia and other fatal blood disease sufferers, for whom the best therapy available so far is bone marrow transplant, said Xi.

HLA, or human leucocyte antigen, is a kind of antigen of the white blood cells. There are three types of HLA -- A, B and C.

Doctors rely on HLA antigen system that gauges how well donated tissue matches the patient's immune system. A perfect match, usually from a relative, is best. The more HLA mismatches there are, the greater the risk of rejection.

This has made matching more difficult in China, the land of only child where leukemia patients are increasing by 40,000 a year and more than 4 million patients are waiting for bone marrow transplants.

The results of the Chinese scientists' research may also help organ transplant patients find ideal donors and help anthropologists find out more about the migration of different ethnic groups in history, according to Xi.

A\*110104 is not the only HLA allele identified by Chinese scientists. A group of researchers in southern boom city of Shenzhen discovered one new allele in 2001 and another two in 2002. In 2003, scientists identified a new allele named HLA-B\*5516 in a girl in southwest China's Sichuan Province. In October 2004, transfusion experts in east China's Zhejiang Province identified two new alleles: HLA-B\*5614 and HLA-B\*5136.

About 80 percent of the 1,013 known alleles of HLA-A, B, DRB1 were discovered by American scientists. Identification of unknown alleles is a hotspot for worldwide scientists and the competition is extremely high.

### **Cloned cows with human genes born in Shandong**

**(China Radio International, 2004-01-09)**

Two cloned cows containing a human gene, which is an important component in breast milk, were born in east China's Shandong Province.

The cows, which have the lactoferrin gene, were born in an animal research base for gene transfer. Experts say the cloned cows will be able to yield nourishing milk because of the gene transfer of human milk.

They say cloned cattle with the human gene is valuable for scientific purposes and business. Only a few countries can do this cloning, including Britain and Argentina.

**Chinese, British scientists to start DNA analysis of 2,500-year-old horses  
(People's Daily, 2005-01-11)**

Chinese and British scientists are planning for the DNA analysis of 12 horse skeletons unearthed from the burial ground of a prominent duke who lived more than 2,500 years ago in northwestern Shannxi Province.

Archeologists with Beijing University and Cambridge University have used a professional database to process data collected from the skeletons, including the size and weight of the skulls, spinal columns and limbs.

A Cambridge laboratory will be entrusted to carry out the DNA analysis, after the State Administration of Cultural Heritage of China gives the green-light, said a source with the Shaanxi Provincial Institute of Archeology who declined to be named.

The DNA test will hopefully find out more facts about ancient horses, including their skeletal bone mineral density and other trace elements, which may shed light on how horses were fed and tamed in history, he said.

Experts say this will be the first comprehensive study on ancient Chinese horses, though sacrificial horses and carts are often found in north China.

The 12 horse skeletons were unearthed from two sacrificial tombs close to the No. 1 Tomb of Duke Jinggong (577 BC - 537 BC) of the Qin Kingdom in Fengxiang County, 170 km west of the provincial capital Xi'an.

The Kingdom of Qin was one of the major kingdoms during the Spring and Autumn Period (770 BC - 475 BC).

The duke's tomb was excavated between 1976 and 1986, during which time archaeologists found 3,500 valuable cultural relics even though it has been broken into by thieves and robbers more than 200 times.

Its funeral chamber, 24 meters from the surface, 16 meters long, 5.7 meters wide and 4.2 meters high, was separated by a wooden partition into two parts. The chamber to the east was designed in imitation of the duke's office and rear chamber to the west as his dining room.

Fengxiang County is home to a graveyard where 17 other Qin dukes are at rest.

**China to control spread of schistosomiasis in next decade  
(MOST, 2005-01-11)**

The Chinese government plans to control the spread of schistosomiasis in four years and eliminate the disease in the next decade.

Xinhua news agency reported that the latest plan by the Ministry of Health requires the provincial governments to cover the medical fees of patients with the disease who are in the late stages.

The Ministry's statistics show that the country had 843,000 registered schistosomiasis patients at the end of 2003, and 24,000 of them were at the late stage of the disease. This is 22 percent more than that in 2002.

Carried by freshwater snails, schistosomiasis, or acute snail fever, is a fatal parasitic disease that attacks humans' blood and liver.

### **China sets up lab for polar surveys**

**(MOST, 2005-01-12)**

China has set up a laboratory for polar surveying and mapping in Heilongjiang Province, in northeastern China, to enhance its polar research capacity.

The lab will provide precision surveys and mapping services to help upgrade the remote sensing information technology.

It's jointly established by Wuhan University in central China's Hubei Province and the Heilongjiang Provincial Bureau of Surveying and Mapping.

The bureau is a leading survey and mapping base for China. Four of its researchers have been involved in China's scientific expeditions to the South Pole since 2002.

### **DNA to help solve ancient equine mysteries**

**(MOST, 2005-01-12)**

An archaeological project will be carried out to conduct a DNA analysis on a dozen horse skeletons unearthed from ancient burial tombs in Shanxi, an inland province in Northwest China.

Just approved by the State Administration of Cultural Heritage, the effort is set to begin next month.

A joint Chinese and British team of scientists from the Shanxi Provincial Institute of Archaeology, Peking University and Cambridge University will undertake the project, said Li Gang, a Shanxi Provincial Administration of Cultural Heritage official.

Archaeologists have used a professional database to process and date material collected from the skeletons, including the size and weight of the skulls, spinal columns and limbs.

A Cambridge laboratory will be entrusted to carry out the DNA analyses, and the samples from the unearthed horses will be sent to Britain next month, said Sun Anna, a researcher with Shanxi Provincial Institute of Archaeology.

"These unearthed skeletons were chosen as samples especially because they are more fresh and without any pollution," Li said.

These horses were unearthed last June from the burial site of a prominent duke who lived more than 2,500 years ago. They are well protected, Li said.

The tests should provide information such as the horses' bone mineral density and other trace elements, which may shed light on how the animals were fed and tamed, archaeologists say.

Experts say this will be the first comprehensive study on ancient Chinese horses, though sacrificial horses and carts are often found in northern China.

The find was made in Fengxiang County, 170 kilometres west of the provincial capital Xi'an, in the No 1 tomb of Duke Jinggong (577 BC-537 BC).

The Kingdom of Qin was one of the major power during the Spring and Autumn Period (770 BC-475 BC).

The duke's tomb was excavated between 1976 and 1986, during which time archaeologist found 3,500 valuable cultural relics even though it has been broken into by thieves and robbers more than 200 times.

Its funeral chamber, 24 metres from the surface, 16 metres long, 5.7 metres wide and 4.2 metres high, was separated by a wooden partition into two parts.

The chamber to the east was designed in imitation of the duke's office and rear chamber to the

west as his dining room.

Fengxiang County is home to the graveyard where 17 other Qin dukes are at rest.

### **China develops single vaccine for hepatitis A and B**

**(MOST, 2005-01-13)**

China has developed its first single vaccine that prevents both hepatitis A and B. The vaccine to be released into the market costs less than current vaccines for the infectious diseases.

The vaccine to be released into the market costs less than current vaccines for hepatitis A and B.

Research into the vaccine started at the end of 1999. It's hoped the vaccine will narrow China's gap with international hepatitis control and treatment research.

Hepatitis A and B are the major infectious diseases in China and have a negative effect on people's health and social development.

### **CAS scientists make progress in natural drug development**

**(CAS, 2005-01-13)**



A recently concluded CAS project on natural drug development has passed the appraisal and checkup by a panel of experts in Beijing.

A major CAS project for the development of China's West, the research is hosted by Prof. Hao Xiaojiang of the CAS Kunming Institute of Botany with participation of researchers from such CAS affiliations as the Shanghai Institute of Materia Medica, Kunming Institute of Zoology, Chengdu Institute of Biology, Northwest Plateau Institute of Biology, South China Botanic Garden, Institute of Botany in Beijing, Wuhan Botanic Garden and South China Sea Institute of Oceanography.

With an investment of 10 million yuan from CAS, the project aims at promoting the related studies on natural medicines, making contributions to the rational exploitation and sustainable development of the natural resources in China's West as well as the regional economies. The project stresses the construction of China's own pharmaceutical industries and farming bases of medicinal plants in a bid to bolster the modernization of traditional Chinese medicine.

To achieve the objective, the research group has conducted studies into the pre-clinical research of the new drugs, their pharmaceutical and toxicological studies, and research and evaluation of their bio-active components. After five years of work, the researchers have made progress in 18 issues, including the development of an anti-cancer drug GC-51, the pre-clinical research of carcinoma inhibitor *Anouning*, an anti-drug *SH Compound*, a herba erigerontis injection, an intelligence-enhancing drug *KMBZ-009*, a cobra venom factor CVF, a new hypoglycemic drug

*FP-215*, the bone of a mole rat (*Myospalax baileyi*) synthesis, a new drug from a marine organism (*Placuna placenta*) in treatment of osteoporosis, and a nerve growth factor from snake venom.

### **Checking mother-to-child HIV transmission (MOST, 2005-01-15)**

Shen Junhong, a 35-year-old rural woman, cannot forget how she suffered in the 30 minutes she waited for an HIV test in the People's Hospital of Shangcai, Central China's Henan Province.

"I leaned against the wall outside the testing room. My legs were trembling so severely that I could hardly stand," she said.

She was awaiting the test result for her 18-month-old son. When she was informed that her son was not infected, her tears streamed down.

Shangcai hit the headlines in the late 1990s as AIDS spread in the county through contaminated blood donations.

No official statistics are available to reveal how many HIV positive villagers live in the county with a population of 110,000, but local doctors estimate the number could be over 5,000.

A villager of Kanhualou in Shangcai, Shen was diagnosed as HIV positive in a prenatal examination before giving birth to her twin daughters in 2000. One of the girls was also infected in delivery.

Since then, Shen and her husband, 34-year-old Zhai Guochun, stopped having sex and began to live separately. But occasionally when Zhai got drunk, he slept with his wife, and Shen became pregnant again in 2001.

She refused to give up the baby. "I want a son," she said.

Thankfully, local doctors came to her aid and conducted an intervention of mother-to-child AIDS transmission.

Before delivery in January 2002, Shen was asked to take medication called Viramune. Her baby also received a dose of the same medication upon birth.

She had a Caesarean section to deliver her baby son and was given milk powder to feed him for six months. The medicine, operation and powdered milk are all free of charge.

As one of the three transmission channels of AIDS, along with blood and sex, the mother-to-child transmission rate has increased rapidly in China in past years, from 0.001 per cent of all the HIV/AIDS infections in 1997 to 0.6 per cent in 2003, says Dr Wang Linhong, deputy director of the National Centre for Women and Children's Health of China's Centre of Disease Control and Prevention.

In regions such as Shangcai, where the situation is more serious, the rate could be even higher.

An infant is likely to get the deadly virus from its mother at three stages: pregnancy, delivery and breastfeeding, with the second stage most risky.

Without intervention, the chance of transmission averages 15 to 35 per cent. But, according to Dr Wang, one third to half of the infections happen during the delivery period. Therefore, great efforts have been made to check delivery transmission.

Since October 2001, experimental intervention sponsored by the United Nations Children's Fund has been carried out in the seven most seriously plagued villages of Shangcai, said Han Boyong, head of the Women and Children's Healthcare Centre of Shangcai.

By June 2003, intervention had extended to all the 25 villages in the county, and a supervisory group for the intervention work had been formed.

Pregnant women diagnosed as HIV positive in the prenatal examination could make a choice whether they wanted to keep the baby or not. For those who wanted to, the prevention method as it was done to Shen is carried out.

They are asked to take 200 mg of Viramune two hours before delivery, and the baby is fed with 2mg to 6mg of the drug in accordance to its weight within the first 72 hours of birth.

Three hospitals in Shangcai County, including the People's Hospital, provide the intervention service, with special operating tables and wards for HIV positive mothers.

"In examinations or Caesarean operations," said Han, "certain steps, like fetoscope detection and amniocentesis, which are likely to expose the baby to his mother's body fluid, should be handled cautiously."

After the mothers return home with their newborns, doctors like Chen Jinrong with the People's Hospital of Shangcai, go and visit them, often on their bikes, bringing them formula milk and checking the physical condition of both the mother and the baby.

"When they are reluctant to reveal their illness, we have to pretend to be their relatives or fix another place for the appointment," says Chen.

Working in the hospital since 1989, she remembers that when she first came into contact with HIV carriers in 2001, she felt afraid despite using barrier nursing methods.

"You can't anticipate whether the contagious amniotic fluid or blood of the patients would spout out," she says.

But when later the grateful mothers clutched her hands or even knelt before her in tears, she was overwhelmed by a sense of mission.

The doctor has until now helped deliver 10 babies of HIV positive mothers.

To date, more than 60 HIV positive women have received medical intervention in Shangcai.

Because of technical limitations, local hospitals could only detect if a child was HIV positive via an antibody test after he is 18 months old.

Fortunately, the 18 babies older than 18 months born after intervention are all HIV negative.

Yet the method cannot check transmission in all cases.

"As this project was carried out in 2001 and the period is not long enough, we couldn't calculate the probability of success with current data," says Dr Wang, adding that in theory, the success rate is 50 per cent.

Besides, Wang is worried about the side effects of Viramune, which is reported to cause hepatitis, skin diseases and medical resistance in patients.

That's why Wu Zhongren, a medic with the clinic of Guotun, a village where 10 per cent of the 1,476 residents are infected, often discourages pregnant women with HIV from keeping their babies.

"As a medical worker with nearly 40 years of professional experience, I feel rather sorrowful to see my neighbours struggle in pain, their families break up, and their children become orphans," he says.

"Their living standard is not very high, so if their children become infected, they have to spend more money because of the disease; even if they are healthy, rearing a child aggravates the already heavy burden of the parents."

Wang Lin, 33, had heeded Wu's advice.

Already having a son, Wang and her husband, both HIV positive, longed for a daughter, and she got pregnant in the spring of 2004.

"As a mother, I should be responsible for my child," she says.

"Now that we are unable to work because of the illness, how could we support her if she is HIV positive too?"

Wang has joined the village's waist drum team, which was formed in September 2004 by HIV positive villagers.

"By keeping ourselves fit and doing more exercise, I will fight the disease as long as I can," she smiles. Her son is now a third-grader in the local primary school. "I see him entering university and marrying a beautiful girl."

And Shen Junhong, the HIV positive mother, named her son Taiping, meaning "peaceful and safe."

"I just want him to be safe and healthy," she says.

### **Oral vaccine for cholera prevention**

**(China Radio International, 2005-01-18)**

Chinese scientists have successfully developed a new kind of oral vaccine for preventing cholera, which has been proved to be more effective than other vaccines.

The researchers say the vaccine has been proved to be immuneogenic in 85 percent of those inoculated, while traditional intravenous vaccines work in less than 50 percent of cases.

The World Health Organization has praised the vaccine and says that it might be using to prevent the spread of cholera among humans after serious natural disasters.

Cholera is an acute bacterial infection of the intestinal tract and patients often die if they don't receive medical treatment immediately.

### **Experts call for limit on DNA testing**

**(China Daily, 2005-01-18)**



Legal experts are calling for restrictions on DNA tests on parents, bucking a recent social trend that has sprouted due to suspicions of infidelity of spouses.

They argue the tests sometimes cause more harm than good, and can tear at the social fabric of families.

DNA blood tests have been a help to law enforcement, said Li Xuejun, an associate law professor with the prestigious Renmin University of China in Beijing.

On the one hand, such tests allow solving criminal cases easier for judicial and public security departments.

On the other, however, "paternity tests should be treated with prudence, because they may lead to family conflicts," Li said. "And children can become the victims of waning loyalty in marriages."

China's Marriage Law stipulates that children, no matter legitimate or illegitimate, enjoy the same

legal rights.

Li points out that many potential problems and risks also exist with the mushrooming numbers of paternity testing companies in recent two years.

"Paternity testing should not only be regarded as a kind of commercial activity," Li said. "Certain restrictions and standards of paternity testing should be set for these companies, as well."

The number of applications of paternity testing is several times higher than in the past, China Central Television quoted Hu Lan, a doctor with the material evidence and appraisal centre at the Ministry of Public Security, as saying recently.

Hu said that most DNA tests done by her centre are entrusted by the judicial departments.

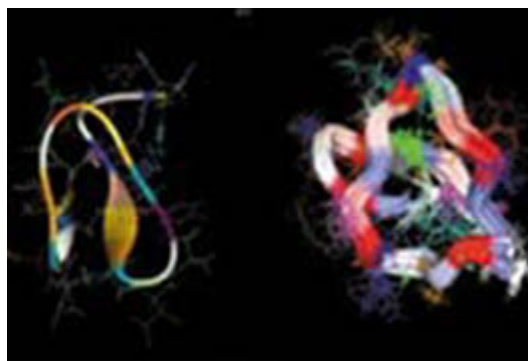
As for civil paternity tests, parents want to prove fidelity within families, Hu said.

More than 90 per cent of suspected philandering parents tested at Hu's centre prove to be legitimate parents of their children.

That means more than 90 per cent are wrongly accused. Such a result could severely hurt the accused parent and child and could shake the foundation of a family, Hu said.

### **Scientists call for strengthening efforts for marine drug development**

**(CAS, 2005-01-19)**



Marine medicine is an emerging high-tech industry. China should grasp the opportune chance to catch up with the world advanced levels so that the country can have new and competitive marine drugs with its own intellectual properties in the global market, urge experts at recent seminar on the R&D strategies for China's development of marine drugs in Shanghai.

Entitled China's R&D Strategies for Marine Medicines, the seminar is the 50th session of the Eastern Forum for Science and Technology. It was hosted by the Second University of Military Medicine under the auspices of CAS, the Chinese Academy of Engineering (CAE) and Shanghai Municipal Government. The meeting attracted more than 40 marine biologists and pharmacologists from CAS, institutions of higher learning and pharmaceutical enterprises.

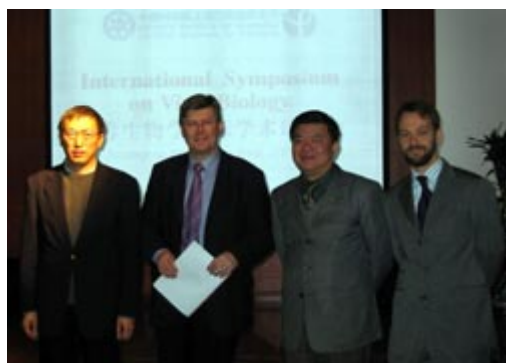
The forum participants hold that with the dawning of the 21st century, the human society has to face three grave challenges: population explosion, natural resource shortage and environment deterioration. Plagued by the increasing shrinkage of land-based resources, it becomes a more and more pressing necessity to seek resources from seas and oceans.

Classics in traditional Chinese medicine boast valuable recordings on marine drugs. For instance, the 1977 edition of Chinese Pharmacopeia contains 144 marine drugs. At present, related research bodies have been established in China's coastal provinces and municipalities with several thousands of professionals. In 1996, research into marine pharmacology and maritime drug development received support from the National Hi-tech Development Program.

As a result of arduous work lasting for five decades, Chinese scientists have achieved encouraging accomplishments in the field, including the successful development of new marine drugs against the AIDS, tumor and arteriosclerosis. For instance, CAS researchers have purified and characterized a novel conotoxin from a worm-hunting cone snail, *Conus betulinus*. The toxin, with three disulfide bonds and 25 amino acids, is noted for its strong efficacy of pain suppression and safety. Another success comes from scientists of the Second University of Military Medicine, who took the lead in isolating an angiogenesis inhibitor from shark cartilage. By the construction of the cartilage's cDNA library, its products with high gene-expression may be obtained.

However, according to experts, there is much room for improvement in field. For instance, the development of bio-medical products from our marine resources is very limited in number. The new bio-pharmaceuticals of the top grade are so rare and this is roughly in conformity with the overall stance of the whole industry. In addition, a full play is unavailable in tapping the enormous potential housed in the marine medicines when they are introduced to the treatment of some key and murderous diseases now menacing the people's life quality and their health. Also, cooperation is lacking between pharmaceutical firms, universities and research institutes.

### **Institut Pasteur of Shanghai hosts its first international seminar (CAS, 2005-01-21)**



On Dec. 21, an International Symposium on Viral Biology was held in Shanghai. This is the first scientific conference held by the CAS Pasteur Institut of Shanghai since its official inauguration. The meeting was under the joint sponsorship of the French Consulate General in Shanghai, CAS and Science & Technology Commission of Shanghai Municipality.

High-ranking officials, including CAS vice president Prof. Chen Zhu, the Consul General of France in Shanghai Mr. Jean-Marin Schuh and director of the Shanghai Institutes for Biological Sciences Prof. Pei Gang, were among its participants.

In his opening remarks, Prof. Chen Zhu says lessons from the 2003 outbreak of the SARS epidemic must be learned. As the viral research is beyond the national boundaries, he predicts, the newly established Institut Pasteur of Shanghai is to grow into a unique platform under the joint auspices of the Shanghai Municipality, French Institut Pasteur and CAS. Its operation will promote the international cooperation, and training of young scholars by summoning more top-ranking virologists from every corner of the world today and make its own distinct contributions to the virology research, Prof. Chen concludes.

On behalf of Shanghai Institutes for Biological Sciences (SIBS), Prof. Pei Gang extends his congratulations to the seminar's convention. He wishes that the two new member of SIBS, Institut Pasteur of Shanghai and the Shanghai Institute for Computational Biology would further

enhance the interdisciplinary research in the related field. Talent training is the crucial factor in the move, he stresses.

SARS crisis in 2003 may serve as a warning to the public, Mr. Jean-Marin Schuh says in his speech. After the event, governments of various countries started strengthening their cooperation with one another in the field of public sanitation. He praises the newly inaugurated Institut Pasteur of Shanghai to be an exemplary case in the rewarding Sino-French S&T partnership. He personally hopes the two countries would make more substantial contributions to the realm of public hygiene.

Focusing the exploration of the complexity and diversity of contagious diseases, and viral contagion in particular, the symposium consists of three sessions: emerging viruses, immune responses to virus infections, and genomics and proteomics.

A group of celebrated scholars of international renown gave lectures or monographic addresses at the meeting, which was attended by more than 100 experts and students. They included: Prof. Albert Osterhaus from Erasmus Medical University, The Netherlands; Prof. Bing SUN from the Institute of Biochemistry & Cell Biology, SIBS, CAS; Prof Hans D. Klenk from Medical Center, Philipps University Marburg, Germany; Prof Zhao GuoPing from the Chinese National Human Genome Center at Shanghai; Dr Cao WangSen from the Johns Hopkins University School of Medicine, Baltimore, USA; Dr Zheng YongHui from the Department of Rheumatology, University of California, San Francisco, USA; Dr Paul Zhou from the Department of Virology and Immunology, Southwest Foundation for Biomedical Research, USA; Prof. Olivier Schwarts from the Department of Virology, Institut Pasteur, Paris, France; Dr. Ge BaoXue from the Department of Molecular and Cellular Biology, Harvard University, Massachusetts, USA; Dr Bo DING from Dept of Medical Epidemiology and Biostatistics, Karolinska Institutet, Sweden; Pr Ian LIPKIN from the Center for Immunopathogenesis and Infectious Diseases, Columbia University, USA.

One day prior to the seminar, the first academic conference of the Institut Pasteur in Shanghai was convened. The nine-member academic committee consists of scientists from China, France, Germany, the Netherlands and the US, covering such fields as micro-biology, virology, immunology and vaccine virology. At the meeting, Prof. Hans Klenk from Marburg University and Prof. Zhao Guoping were elected the president and vice president of the academic committee respectively. At the one-day meeting, the participants held deliberate discussions on the invitation of six directors for its monographic subdivisions. Also, they confirmed the correctness and competitiveness of the research plans to be adopted by the Institute and pinpointed its research orientations for coming years.

### **CAS geneticists granted by US fund in fight against mental retardation (CAS, 2005-01-31)**

A research team headed by Dr. Zhang Yongqing (Yong Q. Zhang) at the CAS Institute of Genetics & Developmental Biology recently received a financial grant from FRAXA, a US foundation supporting top-notch research of Fragile X Syndrome, a special hereditary disease of mental retardation.

Fragile X Syndrome is one of the most common inheritable form of mental retardation in the world. Among all populations of different human races including Chinese nationals, there is one Fragile X sufferer in every 4,000 males or 8,000 females and one in every 600 females carries a defective gene which will cause the mental anomaly in the next generation. A conservative

estimate shows that there are at least 200,000 patients suffering from the disorder in China nowadays. The hallmark symptom of Fragile X is retarded development of intelligence, as the average IQ of normal people is about 100 while that of Fragile X patients is 40. The patients can have a normal life-span but is unable to live a normal and independent life. Therefore, the disease causes enormous stress and heavy burden both psychologically and economically to affected families as well as the whole society.

Fragile X Syndrome is caused by a mutation in the gene Fragile X Mental Retardation 1 (FMR1), which shuts down the production of a specific gene product FMRP, an intelligence-related protein. The lack of the latter in a patient's body leads to thinking hindrance. Prof. Zhang's research team plans to go on with an all-round and systematic exploration of the structure and function of FMRP by taking the fruit-fly (*Drosophila melanogaster*) as a model system.

The success in cloning and identification of the causative gene in 1991 brought about high hopes to prevention and treatment of this common brain disease. By mustering multi-channel social resources, a philanthropic fund under the title of FRAXA Research Foundation came into being in the US to promote the disease's research. The fund's main task is to support domestic studies in the US with about 15 research projects financed each year. The financial support to Prof. Zhang's laboratory means his work has been recognized by international peers and it will greatly facilitate his research project to participate in the international effort and make our Academy's own contributions to the defeat of the debilitating disease.

## 1.4 Key Technologies

### **High-performance router successfully developed in China (People's Daily, 2005-01-01)**

The core router, new generation pivot equipment for Internet based on the "Sixth Generation Internet Protocol", was developed by the Information Engineering Institute under the PLA Information Engineering University recently and passed technical appraisal. A panel of many Chinese scientists headed by Jin Yilian, member of the prestigious Chinese Academy of Engineering unanimously believed the system has reached the advanced levels of the world. The high performance IPV6, first of its kind in the world, is the first core technique with the autonomous intellectual property rights of China, which produced far-reaching impact on the country's national Internet information security.

The router is known as pivot and controlling center for the Internet. The router was developed with an investment of more than 35 million yuan or 4.23 million US dollars and a staff of more than 200 scientists and technicians spending more than two years. It has a message switching capacity of 320 billion bits per second with a smooth transition to 128-bit Internet address space and the equivalent information transmission capacity of 4 billion Chinese characters. The router is in stable operation in a military and civilian demonstration network.

According to Professor Guo Yunfei chief of Experts' Team of Information and Communications the core chip used by the new-generation router is completely designed and produced by China. The successful development of the chip marks that China has entered into the ranks of a handful advanced countries with the capacity for producing such a kind of chips.

### **Successful installation of a 75 m 3-phase HTS cable on power grid**

**(CAS, 2005-01-06)**

Experiments show that a 75 m, 10.5 kV /1.5 kA, 3-phase, AC high temperature superconducting (HTS) cable system installed on a power grid is reliable in operation and reached the expected energy-saving objectives.

Under the support of the National High-tech Development Program (dubbed the 863 Program), the research project is carried out by the CAS Institute of Electrical Engineering in cooperation with the CAS Technical Institute of Physics and Chemistry and several business enterprises. The researchers have made progress in the commercialization of HTS technology for power grid applications. The R&D cost for the cable system per unit length is much lower than those on the existing ones. The feat also demonstrates that Chinese scientists are leading the world on HTS cable welding, low-temperature linking and the winding of multi-section cables.

Upgrading power utility industry is one of the fields to which the HTS technology can contribute. Among all possible power utility applications of HTS, power transmission cable is of great importance. The main advantages of superconductor cables over conventional cables are high capacity, superior efficiency, and compactness. Use of superconductor for transmitting electricity can reduce the energy loss due to extremely small Joule losses. Superconductor cables will also allow low voltage and large current transmission systems to be constructed. This will reduce the cost of high voltage auxiliary equipment and the impact on environment.

### **More funds injected into development of technical standards**

**(CAS, 2005-01-19)**

The Ministry of Science and Technology will inject more funds into research and development of technical standards, an official with the ministry said here Tuesday.

Xu Jianguo, vice director of the ministry's development and planning department, said that enterprises are encouraged to get involved in making national and international technical standards.

The ministry launched the research and development program in 2002 with a total fund of nearly 200 million yuan (24 million US dollars) and more than 2,100 scientists and experts involved.

The scientists and experts have already completed national standards for environmental protection signs, trace element examination, textile safety and key technologies on broadband local area network and urban public graphics.

Meanwhile, Xu said, they are working on the establishment of 29 international standards.

The research and development program focuses on strategic studies on technical standards, introduction of new national technical standards concerning high technologies, public safety, social benefits and other needed areas, as well as examination methods for those standards.

In 2002, 71 percent of Chinese exporters and 39 percent of their exported goods were faced with technical barriers to trade from foreign countries, causing them to lose 17 billion US dollars in goods value.

### Watching pandas live on the Internet

(CAS, 2005-01-26)



A new channel Watching Giant Pandas on Line has been launched recently at the Science Museum of China, a popular science website run by the CAS Computer Network Information Center (CNIC). It is expected to open to the public in February.

With net cameras set up at a panda kindergarten thousands of miles away in southwest China's Sichuan Province, the channel offers an opportunity to remotely watch baby pandas live from a standard web browser on computers.

The activity is part of the international cooperation project between CNIC, and Texas A&M University in US and has been supported by China Panda Protection Research Center.

## 1.5 Structure of Matter

### Shanghai Light Source project kicks off

(CAS, 2005-01-06)

The launching ceremony for the building of the Shanghai Synchrotron Radiation Facility (SSRF), a third-generation synchrotron radiation light source, was held on Dec. 25 in the Shanghai Zhangjiang Hi-Tech Park. Secretary of Shanghai CPC committee Chen Liangyu and CAS President Lu Yongxiang witnessed the event, and the ceremony was chaired by CAS Vice President Bai Chunli.

Vice-Premier Zeng Peiyan sent his congratulatory letter to the project, saying that the facility is an important part of China's strategy to rejuvenate the country by developing science and education.

"It will be very significant for China to develop life, materials and environmental sciences and will have a position in the world's science and technology sphere," Zeng stressed.

"The 1.2 billion yuan (about US\$145 million) project will be the largest funding package for a single science facility in new China's history," noted President Lu. "It will have wide and deep impact on future science and technology development in this country."

A third of the funds come from the central government, while the rest are share evenly by the Shanghai municipal government and CAS.

The facility will consist of a 3.5 GeV electron storage ring, a full energy injector including a 3.5 GeV booster and a 100 MeV linac, and a dozen of beamlines and experiment stations. When

completed in 2009, it will be one of the advanced intermediate energy light sources in the world, according to Prof Xu Hongjie, director of the CAS Shanghai Institute of Applied Physics. The institute is in charge of the project.

### **CAS institute to train plasma researchers for developing countries**

**(CAS, 2005-01-10)**

The Plasma Center of the Hefei Matter Institute under the Chinese Academy of Sciences (CAS) announced on Thursday that it had been chosen to train plasma specialists for third world countries.

A spokeswoman with the center said it was informed of the decision by the Third World Academy of Sciences (TWAS), a non-governmental organization, and that the fellowship training program, established in accordance with an agreement signed between CAS and TWAS in 2004, would be valid for five years.

CAS, with headquarters in Beijing, will provide fellowships to 50 medical professionals from third world countries chosen for the training program each year. The amount of the fellowship is not disclosed.

TWAS, initiated by Nobel physics laureate, Abdus Salam, of Pakistan, was founded in November 1983. It has 626 academicians from 77 countries and regions. A total of 89 Chinese scientists have been elected academicians of TWAS.

### **CAS builds largest experimental facilities for acetylene production**

**(CAS, 2005-01-19)**



Scientists from the CAS Institute of Plasma Physics (IPP) completed in early November, 2004, a 2-megawatt experimental facility for acetylene production by coal plasma pyrolysis. The successful operation of the largest installation of the kind in the world confirms a new method for the large-scale industrialization of acetylene production.

Known as the "mother" of the organic chemistry, acetylene is one of the most basic raw materials among all organic chemical products. The conventional way to produce acetylene in China is the calcium carbide method, which has been abandoned by the industrialized countries due to its high energy consumption, heavy pollution and massive resource consuming.

As a country that is deficient in hydrocarbon deposits and rich in coal resources, China gives high priorities to the studies of the large-scale clean coal usage. Under the support from the national key research projects in energy resources, the acetylene production method is obtaining improvements.

The experimental installation of plasma coal pyrolysis built up by IPP researchers can produce

effectively and directly acetylene with less pollution. Its mechanism involves a chemical reaction of powdered coal and hydrogen by using hydrogen plasma generated in plasma torch with an average temperature of 5,000 degree centigrade.

The first debugging and normal operation of this experimental installation has been successfully performed on November 3, 2004. Because it directly involves basic research for each process of industrial technologies, the achievements can directly be applied to the installations for its industrialization. This set of equipment can yearly produce 1,600 tons of acetylene when the carbon conversion rate is only at 20%. In addition, it can be used in the large-scale and comprehensive applied research on natural gas (e.g. hydrogen production, acetylene etc.) and special waste.

### **Synchrotron radiation biological platform in progress**

**(CAS, 2005-01-26)**



After nearly three-year development, the CAS efforts in setting up a synchrotron radiation (SR) biological platform has paid off, concluded experts at a mid-term review panel on Nov. 23, 2004 at the CAS Institute of High Energy Physics (IHP).

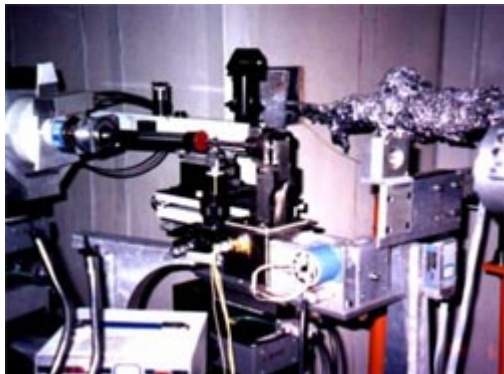
With the support from CAS, a project to establish a SR biological platform and to study the method applied in analyzing biological macro-molecular crystal structure was launched in 2002. Now the project has reached the expected targets in instrumentation, methods and application, according to the jury.

The scientists have succeeded in making clear the structure of more than 20 proteins, including some world-renown ones such as the identification of the photo-captivating protein complex extracted from spinach and the main proteinase in the corona-virus which has been found to be the pathogen of the SARS epidemic. They also invented a set of methods to treat the single-wavelength anomalous diffraction of proteins.

Experts say that the experience and research results attained from the platform's construction may be used in the development of the second facility to detect bio-macromolecular structures at the IHP and the bio-platform attached to the forthcoming Shanghai Light Source Program.

**Studies on synchrotron radiation high pressure and temperature experiment techniques well under way**

(CAS, 2005-01-28)



A mid-term appraisal on a research project Synchrotron Radiation High Pressure and High Temperature Experimental Techniques and Physical Study of Important Minerals in the Earth's Mantle and Core was recently held in Beijing.

Jointly supported by the CAS Bureau of Basic Sciences and the CAS Bureau of Resources and Environment, the project was started in 2002 by researchers from the CAS Institute of High Energy with an objective to provide high temperature and high pressure research means in studying the material structure of the earth's inner part and material science. technical platform under extreme conditions for geologists and high-pressure researchers.

As a result of nearly three years of hard work, a laser-heating experimental system for in-situ X-ray diffraction was established, becoming one of the three open DAS (diamond-anvil cell) systems in the world. In addition, it inaugurated the internationally second testing system capable of carrying out supersonic measurement at a micro-anvil and conducted a series of high-level tests such as the graphite melt under the pressure of 2.7Gpa and the structure and phase change of minerals in the earth's mantle.

## 1.6 Transport and Space

**Fengyun-2 goes into trial operation**

(China Radio International, 2005-01-01)



(Launch of Fengyun-2)

China's self-developed weather satellite Fengyun-2 has started its trial operation. It will provide weather forecast information and television images of the nephogram captured by Fengyun-2.

The trial operation will end around January 15 and the satellite is expected to start all-around operations before the flood season of 2005.

China launched Fengyun-2 in October 2004, which is capable of collecting data on weather, ocean as well as solar radiation and typhoon.

### **Int'l space cooperation makes headway**

**(MOST, 2005-01-03)**

China has launched a variety of cooperative projects in space technology with other countries and international organizations.

The National Space Administration says China worked together with Russia, the European Union and Brazil to further develop technology related to the exploration of space.

Meanwhile, China initiated a cooperative space technology project with France and also maintained strong ties with the United States.

Last year, China also joined the United Nations Committee on the Peaceful Uses of Outer Space and promoted multilateral cooperation in space technology in the Asia-pacific region.

### **Weather satellite's first picture received**

**(China Radio International, 2005-01-04)**

China's first independently developed weather satellite has formally sent its first visible cloud picture.

China's Central Meteorological Station received the first picture of the Fengyun-2 C, on Saturday.

The Fengyun-2 C was launched into space in October last year. It monitors the temperature and the clouds above China and neighbouring areas and is able to provide meteorological information for the Asia-Pacific region.

**Space mission set: two to orbit in Shenzhou-VI**  
(China Daily, 2005-01-21)



Two Chinese astronauts may be orbiting Earth as early as September, this time spending five days aloft in the nation's second manned venture into outer space, China's space agency chief confirmed yesterday.

Sun Laiyan, who heads the China National Space Administration, also said the country expects to expand exchanges with the United States in space science and applications to further tap co-operative potential.

"Compared with (China's first astronaut) Yang Liwei's solo mission, Shenzhou-VI will carry two men to circle the globe for five to six days sometime in September or October," Sun told China Daily.

"If the flight is successful, China's space programme will proceed to space walks and spaceship docking, with the earliest space walks scheduled for 2007," the senior space official added.

Amid widespread media speculation about the nation's space programme, the official confirmed the country has been actively preparing for the take-off of another spaceship following its maiden manned mission in October 2003.

"There are more demanding requirements to ensure the reliability of the capsule and safety of two astronauts compared with Yang's flight -- for example in life-support systems," said Sun.

Yang's mission lasted 21 1/2 hours.

Chinese scientists have already worked out problems regarding spacecraft environmental controls and life support, according to a statement issued by China Aerospace Science and Technology, the major manufacturer of the manned spacecraft and its launch vehicle.

Sun said there is an arrangement for astronauts to move from the spaceship's re-entry module to live and do scientific tests in the craft's orbital module.

Due to optimization of its configuration, the spacecraft will hardly hold more weight on the

second launch, though it will carry the second astronaut and fly the extra days.

It will again be launched atop a China-manufactured Long March 2F rocket, he said.

Asked if Yang Liwei will be part of the second mission, Sun said no decision has yet been made about the crew's makeup.

But he said the duo will be chosen from the same 14 fighter-jet pilots who were part of the first selection process in which Yang was chosen.

Finalists will not be announced until one or two days before the designated launch, based on astronauts training performance, psychology and mood, he said.

Manned space activity aside, China also plans to send about five satellites into orbit this year, including foreign-made communications satellites and several others for scientific experiment, he said, declining to specify further details.

## 2 News on Universities

### **Chinese, US universities to hold environmental seminar**

(Xinhua Net, 2005-01-27)

Qinghua University of China and Yale University of the United States will hold the first seminar on environment and sustained development for Chinese mayors in July this year.

Sources from the China Association of Mayors (CAM), the partner of the China-US seminar program, said here Friday that the seminar program is regarded as an effective way to train more governors to care about China's environment.

On Thursday, the Department of Environmental Science and Engineering of Qinghua University, the School of Forestry & Environmental Studies of Yale University, and the CAM signed a cooperation memorandum.

According to the agreement, the seminar will be held once a year, with each seminar lasting three weeks, attended by 30 Chinese mayors. The mayors will be trained both at the Qinghua University and the Yale University.

A number of world-renowned domestic and overseas scholars and experts specialized on environment and urban development will be invited to give lectures at the seminar. This will help improve Chinese mayors' governing level and their understanding of the sustained development, said the CAM.

The CAM said each mayor will get a certificate jointly awarded by the two universities at the end of the seminar. The relevant teaching materials and studies cases about the seminar will also be published each year as reference to other Chinese mayors and officials.

### 3 Innovation Management

#### **China's State Key Lab Plan brings benefits**

**(MOST, 2005-01-03)**

China's 161 state key laboratories have become groundbreaking innovators in several fields.

The Vice Minister of Science and Technology, Chen Jinpei, says China launched the State Key Lab Plan in 1998 to boost research capacity.

So far 3 billion Yuan, or 362 million US dollars, has been invested in equipment, while 2 billion Yuan, or over 240 million US dollars, is raised annually for research projects. The labs house 5,000 permanent researchers.

He says the State's key labs meet national interests, and have made a tremendous contribution to social development and national defense.

#### **Bilateral meeting sign of progress on IPR protection**

**(MOST, 2005-01-14)**

A China-US intellectual property rights (IPR) roundtable yesterday acknowledged Beijing was making progress in IPR protection, but it will still take time before fundamental changes reach all corners of the country.

At the conference, Vice-Premier Wu Yi introduced the areas where China has made headway in IPR protection over the past year.

"The whole country has been mobilized in the campaign against IPR infringement," she said.

US Secretary of Commerce Donald Evans said China had taken some steps to address IPR violations but they were still short of US expectations.

"Process is not progress. Results are progress," said the outgoing secretary.

James Zimmerman from the American Chamber of Commerce in China said they believed China has taken progressive steps to improve both its civil and criminal enforcement system.

He especially welcomed the move by the country in issuing a new judicial interpretation to improve the protection of IPR in China, which has substantially lowered the bar for imposing criminal penalties on IPR violators.

But he urged the government to consider new measures aimed at strengthening administrative enforcement.

Wu admitted, however, that China's governments, businesses and consumers have to make long-term concerted effort before IPR protection in the country can be changed thoroughly.

"I hope the US Government and enterprises can understand this, and see what China has achieved so far in IPR protection, and have faith in the future," said Wu.

She also spoke highly of the judicial interpretation announced last month. It made clear that offenders pirating more than 250,000 yuan (US\$30,000) worth of copyrighted products can be jailed for up to seven years.

In drafting the interpretation, the Chinese side solicited opinions from many foreign sources, such as the European Commission and the US Information Technology Office, Wu said, adding the approach was "unprecedented."

Another big move last year was the formation by the State Council of a group to oversee IPR protection across the country, according to Wu, who is also head of the group.

Some 12 departments are involved in the group, including the Ministry of Commerce, the

publication administration, the police and customs.

The group launched a year-long campaign in September to crackdown on IPR infringements nationwide.

Authorities prosecuted over 1,000 cases involving 550 million yuan (US\$66.5 million) within two months of its launch. And local business administrations have dealt with more than 9,800 trademark infringement cases, and confiscated or destroyed over 10 million pirated products.

She said China moved forward in 2004 in communicating with other countries in the fight against IPR infringement.

The Ministry of Commerce and the IPR Protection Working Group have also established a regular communication mechanism with foreign IPR holders, according to Wu.

Li Shunde, professor of the IPR Centre of the Chinese Academy of Social Sciences, said IPR protection will be a long-term process in China where private income is low and the public's IPR awareness is lacking.

"But obviously law enforcement is getting tougher, which will be a deterrent to piracy, meaning the situation will change gradually," said Li.

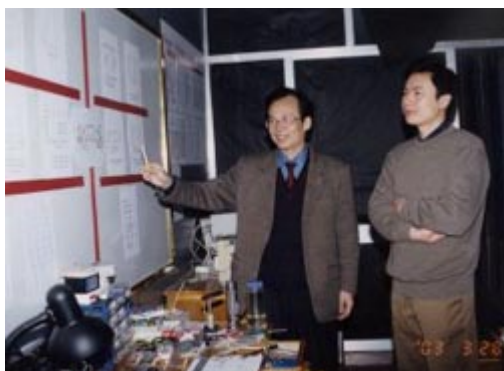
There is one big advantage in China's system, that is government departments can strike at IPR violators on their own initiative, according to Li.

"The fight against piracy could not have achieved what it has, had the government not been so aggressive," he said.

On Tuesday alone, local authorities in China destroyed 63.35 million pirated audio-visual discs seized last year in a campaign organized by the Ministry of Culture.

Premier Wen Jiabao, met with Evans yesterday, and thanked him for his efforts in promoting Sino-US trade over the past four years.

### **International partner group on quantum information passes review (CAS, 2005-01-21)**



A proposal to set up an International Partner Group on Quantum Information at the University of Science and Technology of China (USTC) passed the scrutiny of a panel of experts. The meeting was organized by the CAS Bureau of High-Technology Research and Development in 24th, December and chaired by Gui Wenzhuang, director of the Bureau. USTC Vice President Hou Jianguo was present.

International partner groups are a new vehicle of CAS to attract the outstanding overseas scholars. The overseas cooperators are required to be established young faculty members who at least hold associate professorship. The proposed group at USTC has already had seven such cooperators, including Professor Shao Zhong from Yale University. Four of them are USTC alumni of

prestigious Special Class for Gifted Youngsters.

The quantum information is one of the essential research orientations of CAS since it is the new rapid-developing subject with important prospect of development and potential of application. The overseas cooperators of the group have made a series of world-class achievements in theory and experimental research in the fields of quantum information, condensed matter, computer science and atomic physics. They have relative favorable conditions of research and certain reputation. The research group, headed by CAS member Guo Guangcan, is the most important research team focusing on the study of quantum information in China. It has received the support from a program of innovation teams of the National Natural Science Foundation of China, and one of them is the Chief Scientist of a project financed by the National Basic Research Program. All members are complementary and have spirit of teamwork.

The group will mainly focus on the basic and applied studies of the quantum information technology. They are expected to make innovative progresses in the fields of quantum information theory, quantum cryptography, network of quantum communications and quantum computation, so as to work out some key problems concerning the practical application of the technology.

The team has a detailed and operational research plan. It is expected that through several years; substantial cooperation, the group may make substantial contributions to the basic research and the practical application of the secure communications, and play an important role in establishing world-renown research bases in the country. Its innovation ability would also be enhanced accordingly.

The experts listened to the reports from the overseas scientists and Prof. Guo Guangcan. After the serious discussion, the experts all approve of the plan, moreover, they show supporting attitude to the plan and suggest that it be started as soon as possible.

### **China's basic state research projects open to public bidding (MOST, 2005-01-25)**

An official with China's Ministry of Science and Technology said Monday in Beijing that the state's key basic research projects are now open to public bidding, allowing research institutions in European Union member countries to join according to a Sino-EU sci-tech cooperative treaty.

The primary focuses of this batch of projects include: biological research on vital economic crops and animals, agricultural ecological control, research on agricultural product safety, clean use of coal, exploitation and use of oil and natural gas, recycled energy, software and virtual reality research, network safety, climate change, water resources, mineral exploitation, ecology and environment, basic research on infectious diseases, health and life sciences, basic research on traditional Chinese medical theories, improvement of traditional materials, development of new materials, and interdisciplinary scientific frontiers.

According to rules set by the ministry, applicants from the EU must join at least two Chinese research institutions to carry out any Chinese state basic research projects.

Chinese scientists who are now foreign citizens and scientists from the Hong Kong and Macao special administrative regions and Taiwan can play leading roles in such researches, said the official.

The most successful applicants could get funds worth over 30 million yuan (3.63 million US dollars) and the others might get financial support valued at less than 15 million yuan (1.81 million dollars), the official said.

Applicants should log onto <http://www.973.gov.cn> to proceed on online application by March 14, the official said.

The state science and technology working leading group approved state research projects, or the 973 Plan, at its third plenary meeting when it decided to reinforce basic research in the country.

From 1998 to 2003, 3.3 billion yuan (399 million dollars) worth of state budgets were put into 157 projects under the 973 Plan.

## 4 China's International Science Cooperation

### UK, China unite in hi-tech research

(China Daily, 2005-01-18)

Energy, electronics, stem cell studies and space and aviation sciences are major fields for scientific co-operation between China and the United Kingdom.

A series of conferences or workshops will be held soon to deepen co-operation in the four areas, Lord Sainsbury, minister for science and innovation at the Department of Trade and Industry of UK, said Sunday.

Scientists from the two countries will have additional opportunities to conduct extensive exchanges, he told the opening session of the two-day third UK-China High Technology Forum.

He noted China's rapid economic growth and excellent science development are good foundations for the bilateral collaboration.

The UK and China have also started co-operation in space fields, such as air-to-surface observation for environmental-monitoring and other aspects, according to Sainsbury.

He added the UK is actively co-operating with other countries, including China, for studies of technological standards that are important to world trade.

Under the umbrella of China-UK Scientific Park programme which was launched in 2003, some Chinese high-tech firms have entered the UK to develop and commercialize their technologies, according to the Department for International Co-operation of China's Ministry of Science and Technology.

Sources from the department said China and UK have conducted many technological co-operative programmes. For example, the ministry and British Petroleum (BP) have signed a memorandum of co-operation for building hydrogen stations to support the use of fuel cell-powered vehicles -- vehicles powered by hydrogen or other cleaner fuels emitting less pollutants.

Under the memorandum, BP will provide experience for the development of hydrogen energy and fuel cell-powered vehicles to China.

During the plenary session Sunday, Huang Xing, director of the China Science and Technology Exchange Centre and head of China-European Union Science and Technology Co-operation Promotion Centre, said China is willing to further co-operate with the UK in industries of information and communications.

He said enterprise-to-enterprise co-operation should constitute the bulk of bilateral scientific exchange to make high-tech co-operation more substantial.

The policy, adopted by the Chinese Government to encourage independent innovation as well as technology imports from other countries, will remain unchanging.

Besides, the country's positive policies catering to technology globalization will not be ignored in the next few years, according to Liao Xiaohan, an official of the Ministry of Science and Technology.

Tan Tieniu, director of the Institute of Automation of the Chinese Academy of Sciences, said China has made rapid progress in information technology over the past few years, particularly in such fields as high performance computer, advanced servers, desktop operation system and new generation broad-band Internet network.

In view of the large market in China, universities and research institutes from China and the United Kingdom should associate with each other, so as to further tap the market through

technological collaboration.

Barry Furr, chief scientist of the Project Evaluation Group of Astra Zeneca (an international pharmaceutical company), said scientists from the UK and China have great co-operative potential in medicinal development, clinical research, genetic studies and in chemistry, because China has good expertise in these fields.

He said his team will soon visit major universities in China and sort out collaborative partners to propel co-operation in the above fields.

## 5 Miscellaneous

### **CAS institute sets up hydrobiology museum in Wuhan (CAS, 2005-01-05)**



A hydrobiology museum pooling thousands of specimens of fishes, algae, aquatic invertebrates, fish pathogens and whales has been established by the CAS Institute of Hydrobiology in Wuhan, capital of the central China's Hubei Province. Its opening ceremony is to be held on January 8, announces the institute.

The predecessor of the museum is a freshwater fish museum that was set up in 1930. During the past 75 years, generations of its researchers have collected a large amount of hydrobiological specimens. For instance, there are 400,000 freshwater fish specimens in 1,000 species, including type specimens of 260 species native to China and those of 600 foreign species. Its aquatic invertebrate collection of 10,500 specimens mainly contains those of freshwater invertebrates, including protozoan, nematoda mollusca, rotifera, annelida and arthropoda.

The construction of the 5,000 m<sup>2</sup> museum began in April 2002 an investment of 24 million yuan from CAS.

### **World-class Observatory Planned in Tibet (CAS, 2005-01-12)**

A top astronomer said that China may build a world-class observatory on the "roof of the world" -- in the southwestern Tibet Autonomous Region.

A preliminary survey has found the Sengge Zangbo town in Ngari Prefecture, western Tibet, may be the ideal place to launch the world's largest and most advanced telescope with a caliber up to 100 meters, said Ai Guoxiang, who heads the National Astronomical Observatories at CAS.

"The crown of 21st century's ground-based astronomy will be on China if further investigation proves the same," said Ai, also an academican of the Chinese Academy of Sciences.

An alternative location for the new observatory could be Taxkorgan county in the Xinjiang Uygur Autonomous Region, northwest China, he added.

Chinese scientists will carry out astronomical observations from fixed positions in these two places for a year or two before the final decision is made, according to Ai.

"When the location is confirmed, we'd suggest China cooperate with some Southeastern countries in building an optical/infrared telescope with a caliber of 10 meters," he said.

The astronomer said China is also considering building a new generation telescope with a caliber between 30 and 100 meters through international cooperation. "On whose basis we'll build the

world-class observatory," he said.

Such a large telescope will enable human eyes to see the farthest parts of the universe and help unravel some of the mysteries about the origins of celestial bodies and the entire universe, said He Jinxin, a researcher with the Chinese Academy of Sciences.

The researcher said the Tibetan town of Sengge Zangbo is an ideal location because it is located on the roof of the world and surrounded by mountains 4,800 meters above sea level. It is quiet, dry and usually has clear night skies.

**Large Mesozoic mammals found to feed on young dinosaurs**  
(CAS, 2005-01-17)



Mammals in the Mesozoic era (280 million to 65 million years ago) are commonly pictured as tiny shrew-like creatures that were mainly insectivorous, probably nocturnal and lived in the shadow of the dinosaurs.

The myth is challenged by new discoveries of researchers from the CAS Institute of Vertebrate Paleontology and Paleon-anthropology (IVPP) and the American Museum of Natural History in New York. They provide the first direct evidence that some primitive mammals were carnivores and large enough to compete with the dinosaurs for food and even feed on their youngsters.

In the 13 January issue of the journal *Nature*, the researchers reported their studies into the fossilized remains of two mammals roaming the land about 130 million years ago, which were dug up in the Yixian Formation in northeast China's Liaoning Province.

One of them is a new species of mammal *Repenomamus giganticus*, or "giant reptile-mammal," which was more than a meter long and about the size of a large dog. It is the largest Mesozoic mammal ever found, according the researchers.

The other finding is more complete remains of a mammal belonging to a species called *Repenomamus robustus*, or "strong reptile-mammal," which was known previously from skull fragments. Although smaller than *R. giganticus* in size, the primitive creature's stomach contents reveal a startling fact that its last meal was a juvenile *Psittacosaurus*, or the "parrot dinosaur."

It is the first proof that primitive warm-blooded mammals were predatory carnivores feasting on other vertebrates, including small dinosaurs, say the researchers. It gives a drastically new picture of many of the animals that lived in the age of the dinosaurs. Because the enlarged incisors and strong jaw muscles, suggest the palaeontologists, the *Repenomamus* should be a predator rather than a scavenger.

If *R. robustus* could manage to eat a dinosaur, then its big brother *R. giganticus* almost certainly could do the same thing, the researchers suggest. However, that it may well have fed on plants and insects too, they add.

### **Scientists select 2004 top 10 S&T achievements in China**

**(CAS, 2005-01-18)**

China's top 10 events in S&T progress have been chosen by 384 members of the Chinese Academy of Sciences (CAS) and the Chinese Academy of Engineering (CAE). The announcement was made in a news release held on January 13 in Beijing.

**1. China's fastest super computer, Dawning-4000A, was put into commercial operation on Nov. 15, 2004 at the Shanghai Supercomputer Center, acting as the largest main node in the national grid.**



Running at maximum speeds in excess of 10 trillion operations per second, or 10 Tflops, the computer is jointly developed by CAS Institute of Computing Technology, the Dawning Corporation and the Shanghai Supercomputer Center. It was completed in June and ranked 10th on the list of the world's top high-performance computers released that month.

Its official inauguration signifies that China has become the third country, after the US and Japan, that could build high-performance super-computer with such a high speed in the world.

**2. The No.2 reactor of the second phase project at the Qinshan Nuclear Power Plant officially start commercial operation in May 2004, marking the full-load operation of the China's first nuclear power station independently developed by Chinese engineers.**



It means a giant stride forward for China from the manufacture of small-sized prototypes of nuclear generators to the successful construction of large-capacity nuclear power plants for commercial use by relying on its own technological strengths.

With a total investment of about 15 billion yuan (or US\$1.8 billion), the phase-2 project consists

of two units of China-made 600Mw pressurized water reactors. Its service life would be 40 years.

**3. The 4,000-kilometer-long pipeline for the cross-country transmission of natural gas has officially gone into its commercial operation since December 30, 2004.**



The main energy artery links the hydrocarbon-rich hinterland of the country with the currently booming coastal regions centered at Shanghai and other power-thirsty big cities in east China. Its chief supplier is the Tarim gas field in Xinjiang Uygur Autonomous Region, whose exploitable reserve is 229 billion cubic meters, the largest natural gas trove in the country.

By pumping a ceaseless flow of natural gas at the west-to-east direction into the booming regional economies in coastal China, the imbalance in the power layout throughout the country is alleviated. The natural gas transmission project is a landmark pipelining work as well as a mammoth engineering feat rarely seen in the world today. A subsidiary program to the current national campaign for promoting the development of the underdeveloped western China, it has a designed capacity of 12 billion cubic meters per year.

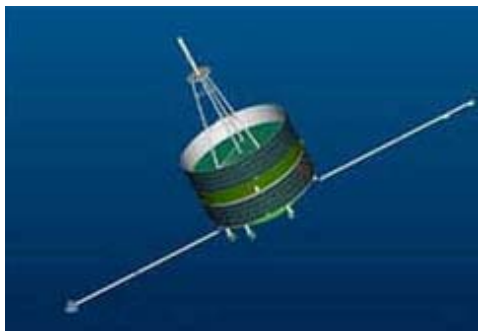
**4. A state-of-the-art Internet backbone, the Cernet-2, was launched in late December 2004.**



The successful inauguration of the first backbone network of the latest-generation Internet is expected to dramatically narrow China's gap with the world's leading countries in this aspect.

Connecting 20 cities throughout the country based on a pure Internet Protocol Version 6 (IPv6) technology, the Cernet-2 is the biggest next-generation Internet network in operation in the world. The speed of the backbone network could reach 2.5-10 gigabits per second and it can connect the campuses at a speed up to 1-10 gigabits per second.

5. The second satellite of the Geospace Double Star Program (DSP), the polar spacecraft TC-2, was launched on July 25, 2004, signaling the successful operation of the program.

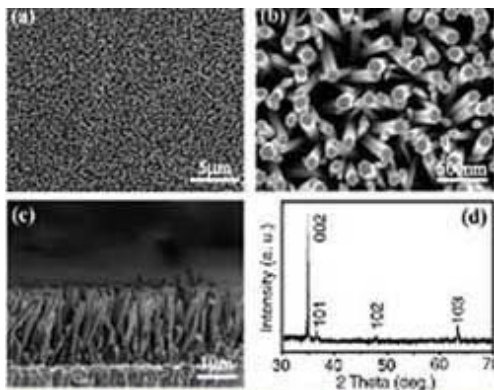


As being suggested by its name, the DSP involves two satellites. The first one, the equatorial spacecraft TC-1, had blasted off on December 30, 2003. Both of them are designed, developed, launched and operated by Chinese scientists, including those from the CAS Center for Space and Applied Research.

The two DSP satellites orbit in some important and active regions of the magnetosphere, which have been never covered by any geospace satellites in the current international exploration programs.

Together with the four ESA orbiters in the Cluster Program, China's duality mission will be thrusting into six uncharted spaces of the magnetosphere. In this way, the data-sampling activity under the Sino-EC partnership will be expanded to a wider and more panoramic coverage than either side could do ever before.

## 6. Reversible transition of nano-materials between Super-hydrophobicity and Super-hydrophilicity.



A group of researchers led by Prof. Jiang Lei from the CAS Institute of Chemistry have been successful in reversible switching between super-hydrophobicity and super-hydrophilicity by changing temperature and light. Their work was published in *Angew. Chem. Int. Ed.* (2004, 43, 357) and *J. Am. Chem. Soc.* (2004, 126, 1, 62). The work has been reported by *Science* and *Nature*.

The CAS chemists show that they can reversibly switch a surface from being superhydrophilic to being superhydrophobic with a very small change in temperature. On its own, poly (N-isopropylacrylamide) will switch from being hydrophilic to being mildly C. At the lower C to 40 hydrophobic when the temperature is raised from 25 temperatures, the C=O and N-H groups are partnered by water molecules, and intermolecular hydrogen bonding dominates; when the

temperature is raised, intramolecular hydrogen bonding takes over, ejecting the water molecules, and the chains adopt a more compact form. The researchers enhanced this transition by depositing the polymer onto patterned silicon substrates. As the pattern size was decreased (finer grooves), they observed an increase in the range of contact angles achieved on switching. Detailed investigation of the substrate showed a large fraction of irregular nanoparticles produced by sputtering from neighboring regions and thus a very large surface area.

The scientists also prove that remarkable surface wettability transition occurs with an inducement of ultraviolet (UV) for aligned ZnO nanorod films. The inorganic oxide films, which show super-hydrophobicity, become super-hydrophilic when exposed to UV illumination. After the films are placed in the dark, the wettability evolves back to super-hydrophobicity. This reversible effect is ascribed to the cooperation of the surface photosensitivity and the aligned nanostructure. Such special property will greatly extend the applications of ZnO films.

**7. Chinese scientists succeed in developing a high-precision underwater global position system (GPS) and its main functions are believed to be up to the advanced level of the world today.**

The underwater GPS equipment, apart from performing the conventional functions for subaquatic detection and submarine search, is capable of piloting or positioning underwater objects in real time.

The success signals China's accession to the top-ranking status in contemporary world's underwater GPS technology, only next to the US, France, Germany and a few countries in the mastery of such an advanced technique. Practical tests conducted at an artificial freshwater lake Qiandaohu in Zhejiang Province indicate that, at a depth less than 45m, the gear's horizontal positioning accuracy is within 5cm and its depth precision is 30cm.

The system is composed of four buoys and a GPS detector for collecting sounds and positioning data from a hidden body beneath the water surface.

**8. A membrane protein exposed by Chinese scientists as the major light-harvesting complex in the photo-system II (LHC-II), which serves as the principal solar energy collector in the photosynthesis of all green plants.**



In collaboration with researchers from the CAS Institute of Botany, a research group at the CAS Institute of Biophysics succeeds in determining the crystalline structure of the complex from spinach by revealing the first X-ray structure of LHC-II in the world in an icosahedral proteoliposome assembly in detail at the atomic level. Their paper was published as a research highlight on the March 18 issue of the journal Nature. The work is a key breakthrough in the six-year-long studies into photosynthesis in the capacity of a major achievement scored by the on-going national Knowledge Innovation Program spearheaded by the CAS.

**9. Prof. Pan Jianwei and his colleagues at the University of Science and Technology of China in Hefei have been succeeded for the first time in the world in entangling five photons and demonstrating a process called "open-destination teleportation".**

As reported in the July 1 issue of Nature, the results are spoken highly in the international community of physics as a major breakthrough in efforts to exploit the laws of quantum mechanics in quantum information processing.

With the support from the national knowledge innovation program piloted by CAS, national basic research priority program and National Natural Science Foundation of China, the researchers began their work by producing a high intensity and ultra-stable source of entangled photons. Next they used two entangled pairs of photons to generate a four-photon entangled state, which they then combined with a single-photon state. After three-year hard work, they are finally able to produce a five-photon entangled state by detecting the coincidence of five photons.

The experimental demonstration has profound implications. First, the experiment has demonstrated the ability to manipulate five-particle entanglement, which is the threshold number of qubits required for universal error correction. Second, the realization of open-destination teleportation opens up new possibilities for distributed quantum information processing. Last, the techniques developed in the present experiment enable experimental investigations of a number of quantum protocols.

**10. The first discovery of more-than-10 km- thick Mesozoic strata in deep waters of the South China Sea marks a major breakthrough in off-shore investigation of the hydrocarbon trove in China's territorial waters.**

In the latest round of the off-shore investigation beneath the marine territories under Chinese jurisdiction, 38 sedimentary basins with estimated 35.1- 40.4 billion tons of oil equivalent have been pinpointed, including 11 seaside oil-bearing structures home to 21.3-24.5 billion tons of oil equivalent in an initial estimate.

In the northern slopes of the continental shelf under the South China Sea, a series of geophysical clues have been detected as evidence to the existence of natural gas hydrate. In the Xisha Sea Trough alone, the prospective reserves are estimated at 4.55 billion tons of oil equivalent. The discovery will play a critical role in China's energy exploitation and sustainable development of its national economy.

**Panda numbers up 40 per cent**

(China Daily, 2005-01-20)



There has been a steady increase in the number of rare and endangered wildlife, including the rare and endangered giant panda because of enlarged habitats and improved ecosystems.

"Shrinkage of habitat caused by worsening local ecosystems has more or less been controlled following China's rehabilitation of forestry resources that kicked off in the 1990s," a leading forestry official said yesterday in Beijing.

Addressing a national conference, Zhou Shengxian, director of the State Forestry Administration (SFA), said "some rare and endangered species of wildlife have multiplied -- including the Chinese alligator and crested ibis."

Quoting the latest survey by SFA on China's wildlife and wetlands resources, he said, of the increased number of wild animals, more than half of them are terrestrial.

He estimated that the number of giant pandas, one of the most popular of all wild animals both at home and abroad, "is up 40 per cent over the number that was recorded before 2000."

"Their number increased from 1,114 before 2000 to the present 1,596" while the number of crested ibis, one of the world's rarest species, known as an "oriental fossil," in Northwest China's Shaanxi Province, jumped from only 7 to 740, said Lei Jiafu, SFA's deputy director.

So far, forestry authorities have brought the distribution areas of China's 130 wild plants and habitats for more than 300 wild animals under effective protection, according to statistics released by SFA yesterday.

Of China's 189 species of rare and extremely endangered species of wild plants, 71 per cent have been stabilized, Zhou said.

Best of all, new distribution areas of arborvitae, an endangered species which has tailed off for more than 100 years according to the International Union for the Conservation of Nature and Natural Resources (IUCN), has been rediscovered in the remote Daba Mountains in Southwest China's Chongqing, as have the white-aril yew and tsoong's tree.

Meanwhile, species of wild animals and birds have been found to have enlarged their living spaces.

Years ago, giant pandas only occupied about 1.4 million hectares, fragmented into isolated patches in southwestern China's 11 counties.

"Now, their habitats cover 2.3 million hectares of areas dotted across in 45 southwestern counties and parts of the Northwest provinces. Living space had been enlarged by 65 per cent, Zhou said.

New distribution and breeding areas or overwintering habitats were also reported for some highly protected rare and endangered species of birds including black-faced spoonbills, relic gulls and

brown-eared pheasants.

Zhou attributed the improvements to China's efforts to preserve its existing forestry resources through unremitting and massive afforestation and intensified protection of wetlands which were initiated in the late 1990s.

"China is one of the world's countries abundant in the varieties of wetlands. So far, we have put 40 per cent of our total wetlands into effective protection and many of their ecological functions have begun rehabilitating," he said.

**China to resume post office in Antarctic station**

**(Xinhua Net, 2005-01-21)**

The State Post Bureau (SPB) confirmed Thursday that China will resume a post office at the Changcheng (Great Wall) Station in Antarctica.

The mail service is only available in Beijing.

From Thursday to February 1, residents are able to send a letter or postcard to the Changcheng Station. The post office on Antarctica will send it back with the rare postmark, the SPB source said.

"We would like to record our history of Antarctic exploration by mail record," said Wang Shuguang, director of the National Bureau of Oceanography, in his congratulation telegraph to the post office Thursday.

The mail will travel 17,051 kilometers from Beijing to the Changcheng Station via Chile. Each mail weighing 20 grams or less will cost 7 yuan (84 US cents) and a postcard will cost 4.5 yuan (54.4 cents). The mail will leave Beijing on February 4.

According to the source at the Beijing international post office, trial service began this month delivering mail once a week, said Chi Tao, an official with the office.

A temporary post office was set up when the Changcheng Station, one of the two Chinese inhabitations in the southernmost continent, was founded on February 20, 1985. It closed eight days later, reopened on Nov. 15 the same year and then had been "suspended" since March 1, 1986.

The Changcheng station is on the King George Island out of the Antarctic Circle.

**First Chinese Turing Award winner joins CUHK as distinguished professor**  
(People's Daily, 2005-01-21)



**(Prof. Dr. Andrew Chi-chih Yao)**

The first Chinese scientist to receive the prestigious Turing Award Andrew Chi-chih Yao has joined the Chinese University of Hong Kong (CUHK) as distinguished professor-at-Large, announced CUHK Thursday.

The Turing Award, the highest honor in computer science, presented annually by the Association for Computing Machinery to a selected individual whose contributions are of lasting and major technical importance to the computer field and have propelled the information technology industry.

As a winner of the Award, Yao's profound contributions to the advancement of computer science and technology is widely recognized worldwide.

He was awarded the Award in 2000, "in recognition of his fundamental contributions to the theory of computation, including the complexity-based theory of pseudorandom number generation, cryptography, and communication complexity".

Currently three world-class masters have joined CUHK as Distinguished Professor-at-Large. They are Professor Yang Chen Ning, the first Chinese Nobel Laureate, Professor Sir James A Mirrlees, Nobel Laureate in Economics 1996, and Professor Yau Shing Tung, Director of the Institute of Mathematical Sciences of CUHK and the only Chinese Fields Medallist.

**Can hi-tech save Peking Opera?**

(China Daily, 2005-01-24)



Chinese cultural researchers will adapt modern computer and video technologies to set up a national audio and video database for Chinese traditional opera.

The practice, launched jointly by the Chinese Academy of Arts and provincial-level art research institutes across the country, hopes to preserve the nation's traditional operas, according to Wang Wenzhang, president of the academy.



The rapid globalization and the influence of foreign cultures in China have caused unprecedented challenges to the survival of Chinese traditional opera, which has been evidenced by more and more traditional operas vanishing, said Wang.

Statistics show there were 367 types of traditional operas in China at the end of 1950s, but the number has dropped dramatically to 267, and some of them are now extinct.



"If we do not take practical measures to preserve the traditional operas still alive, some of them will disappear very soon," said Liu Wenfeng, deputy director of the research institute of traditional Chinese operas at the academy.

Liu, who is in charge of the project, said the academy is planning to spend one and half years to set up the database. It will include outstanding repertoires of traditional opera troupes as well as masterpieces by famous performers.

The academy so far has collected more than 40,000 gramophone records of traditional operas, 15,000 hours of audio recordings and 2,000 hours of video recordings of Chinese traditional opera. Such collection has provided favourable conditions for setting up the database, according to Liu.

"However, what the academy possessed includes only those materials related to major traditional operas, such as Peking Opera and Kunqu," said Liu, adding that those traditional operas popular among small populations of audiences are not included.

"That is why we ask provincial-level art research institutes to take part in the project so that more local operas could be found and included in the database," said Liu.

Thanks to modern computer technology, these materials will be finally turned into digital products and put on the Internet, he said.

Once the database is established, all materials will be available to Internet users from both home and abroad.

"Such practice will be conducive to promoting academic exchanges between Chinese and overseas researchers," Liu added.

#### **4 Chinese students win Asian young inventors awards**

**(Xinhua Net, 2005-01-27)**

Four Chinese mainland students received the gold and bronze awards of the 5th Young Inventors Awards 2004, which is hosted by Asian Wall Street Journal (AWSJ) in association with Hewlett-Packard Asia Pacific, said sources with the China operation of Dow Jones here Wednesday.

All the four award-winning students are currently pursuing postgraduate degrees at Singapore's Nanyang Technological University (NYTU).

Winner Wang Qijie received the gold award for discovering an innovative and simple way to build cheaper optical interleavers and de-interleavers, which make it easier for fiber-optic networks to carry more data and the services cheaper for customers.

The bronze award went to Liang Xiaojun, Sun Yi and Zhang Xuming, who developed a chip-based diagnostic kit that can detect cancer instantly, long before the patients' bodies demonstrate any signs of illness, says a written statement from the China operation of Dow Jones, to which AWSJ belongs.

The silver award was given to Randall Law, from National University of Singapore for the invention of an ultrafast laser nano-patterning device.

A total of 12 scientific and technological inventions from Singapore, Australia, India and Philippines were selected as finalists from 87 nominations from Asia-Pacific higher education institutions.

Yang Huiying, another Chinese student from the same Singaporean University, was also shortlisted.

The Young Inventors Awards began in 2000, aiming to foster the spirit of invention among students in Asia-Pacific region by recognizing and supporting outstanding efforts or projects that enhance quality of life in a significant or meaningful way. The awards were organized by Far East Economic Review (FEER) in association with Hewlett-Packard in the previous four years but changed sponsor this year.