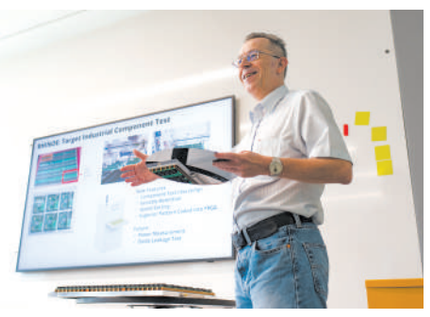
科技日報

Science and Technology Daily

VOL.4-NO.156 AUGUST 31 - SEPTEMBER 1, 2024

FOSTERING SUSTAINABLE FOREST GROWTH

PAGE 3 | INSIGHTS



THRIVING IN INNOVATIVE ENVIRONMENT

PAGE 4 | LIFE IN CHINA

# Undersea Tunneling Machine Sets New Record

By WANG Jing

China just shattered both its domestic and the international record for the deepest underwater excavation, using a locally developed tunnel boring machine (TBM).

Named "Shenjiang No. 1," the TBM has a cutting diameter of 13.42 meters, and completed the excavation of the underwater high-speed rail tunnel at a depth of 106 meters below the seabed in the Pearl River estuary on August 19.

The 3,590 meter tunnel connects Dongguan to Nansha district in Guangzhou city, south China. The tunnel, on a crucial 13.69-kilometer segment of the Shenzhen-Jiangmen Railway in Guangdong province, is one of the most difficult underwater tunnels constructed in China because of its depth and high water pressure.

One of the challenges of the mission was the complex hydrological and geological conditions. The "Shenjiang No. 1" needed to pass through several main channels, traversing 13 different geological strata and five complex geological formations.

The difficulty was reflected in the pressure the intense machine had to bear. The tunnel's lowest point, 106 meters beneath the estuary, subjected the "Shenjiang No. 1" to extreme water and soil pressures. The tunneling machine had to withstand water and soil pressures of up to 1.06 MPa, which is equivalent to a pressure of 10.6 kilograms on an area the size of a fingernail.

However, there was no equivalent engineering experience and design standards in China for reference to guide that project, said Li Bing, the project leader of the China Railway 14th Bureau Group.

The "Shenjiang No. 1" began work in December 2021, completing the excavation in 969 days. The 490-meter fault zone was the most complex and difficult section for construction, among which the widest fault, measuring 32.5 meters across, added to the complexity and risk of the operation.

*See page 2*

## WEEKLY REVIEW

***Water from Lunar Soil Step Toward Moon Stations***

Using the lunar soil samples brought by the Chang'e- 5 lunar landing mission, Chinese researchers have found that one gram of the soil can produce 51-76 milligrams of water, which can meet the needs of 50 people a day. It is expected to provide new ideas for the construction of lunar research stations and space stations in the future.

***Sea Gas Field Produces over 1 Bln Cubic Meters of Gas***

A mega sea gas project in China's Bohai Sea has produced over one billion cubic meters of natural gas, providing strong support for the gas demand in the Beijing-Tianjin-Hebei region and the Bohai Rim region.

***First Blockchain Hardware for Data Interconnection Developed***

The Chinese National Blockchain Technology Innovation Center has announced the launch of the country's first blockchain-specific computing hardware open architecture BUDA (Blockchain Unified Device Architecture) "Bodhi." This architecture offers unified specialized hardware functionality, implementation standards, and interface calls for blockchain and privacy computing, and will promote the interconnection of data across China.

***New Research Offers Hope for Brain Disorder Therapy***

Scientists from Singapore have discovered a novel method to wake up dormant neural stem cells that have the ability to grow into new cells, offering potential new therapies for neuro developmental disorders such as autism, learning disabilities, and cerebral palsy.

***AI Model Provides Early Autism Diagnosis***

Researchers from Sweden have developed an AI model, a screening system named AutMedAI, which can help identify autistic toddlers with approximately 80 percent accuracy among children under the age of two. It utilizes available information to identify individuals with elevated likelihood of autism at an earlier stage, enabling earlier identification and intervention.

Two MA60 firefighting aircraft are officially delivered to the Ministry of Emergency Management in Xi'an, Shaanxi province on August 26. The aircraft, developed by a Chinese company with independent intellectual property rights, is a large and medium-sized fixed-wing plane that is specially tailored to serve aerial firefighting and other rescues. (PHOTO: XINHUA)

## Editor's Pick

# *Black Myth: Wukong*— A Shining Light for China's Games

By YU Haoyuan

"I'm going insane from this Monk Guang Zhi!" This exclamation has gone viral among gamers around the globe. Guang Zhi, an early-game boss at the beginning of the newly released game *Black Myth: Wukong*, has players everywhere voicing their frustration and awe.

The game's boss battles have been described as "insanely difficult," sparking a heated discussion and elevating the game's popularity to unprecedented levels. As China's first true AAA game, a term that refers to games that are produced with high development costs, long production circles, and significant resource investment, *Black Myth: Wukong* stands toe-to-toe with Western games in terms of technical quality and holds the current top spot in global sales rankings, marking a significant breakthrough for China's games in the high-end sector.

***Behind the scenes: A struggle and industry breakthrough***

*Black Myth: Wukong* is not only a shining light for China's games, but represents a milestone in the international reach of Chinese gaming culture. It has showcased the immense potential of Chinese developers in both technology and creativity, fundamentally changing the traditional perceptions of local games.

The success of *Black Myth: Wukong* is backed by an inspiring story of perseverance. The game was developed over six and a half years, while its producer, Feng Ji, founder and CEO of Game Science Studio, drew on nearly two decades of experience. In the early stages, the development team, driven by sheer enthusiasm, suffered staffing shortages and numerous hurdles. Feng has shared that this journey was filled with tears, setbacks, and moments of doubt. Yet, the team's resilience and passion ultimately brought this ambitious project to fruition.

Before the launch of *Black Myth: Wukong*, China's games like *Gu Jian 3* and *Shen Wu Fantasy* were also highly anticipated to make a mark as AAA titles. Despite similar investments in development, these games often struggled to gain tremendous acclaim.

*See page 4*

# Heavy Ion Device Facilitates Cancer Treatment

By QI Liming & LU Chengkuan

China's first hospital- based tumor therapy facility with independent intellectual property rights — a heavy ion medical machine (HIMM) installed at the Wuwei Heavy Ion Therapy Center in Gansu province in northwest China — has significantly contributed to cancer treatment in the country.

Heavy ion beams are regarded as the most optimal radiation for tumor treatment as they can target cancerous cells with a minimal risk of directly harming the surrounding healthy tissues, and China is the fourth country in the world to have self- developed heavy ion therapy systems and clinical application.

"This machine is one of the largest medical devices in China," said Zhang Yanshan, director of the Wuwei Heavy Ion Therapy Center. "Since its completion, more than 1,400 cancer patients have been treated."

The device, put into operation in 2020, comprises an accelerator subsystem and a treatment terminal. The accelerator subsystem consists of an ion source, cyclotron, synchrotron and transmission subsystems.

The principle of the heavy ion radiotherapy is to "bombard" tumor lesions with high speed beams. The crux of the device is to output high speed and stable heavy ion beams.

After the heavy ion beam comes out of the ion source, it enters the cyclotron, the first station of acceleration. Cyclotrons use a combination of magnetic and electric fields to accelerate heavy ion beams repeatedly in rotation.

Compared with linear accelerators, cyclotrons have more obvious advantages. A cyclotron is like a cylindrical granary with a diameter of about three meters and a height of about two meters, and takes less space. Though small, it is able to accelerate a heavy ion beam to 6.8 meV/nucleon, equivalent to 12 percent of the speed of light.

After getting the "initial speed" to leave the cyclotron, the heavy ion beam enters the core component of the device — the synchrotron, the "main force" of acceleration.

The unique combination of a cyclotron and synchrotron can effectively shorten the length of the entire accelerator. Accordingly, the cost of the entire device is also lower, which helps reduce patients' expenses.

Compared to the German accelerator of the same class, the Chinese device is smaller, consumes less power, and occupies less area, which is more conducive to its use in hospitals.

Since the success in Wuwei, more new carbon ion projects have been constructed in other Chinese cities, and the heavy ion therapy technology is expected to benefit more cancer patients.

# China, Brazil Sow Seeds of Success

## International Cooperation

By WANG Jing

This year marks the 50th anniversary of the establishment of diplomatic relations between China and Brazil. Bilateral cooperation in various fields has achieved tangible results, especially in agriculture. In recent years, both sides have expanded the scale of agricultural trade and strengthened cooperation in agricultural development.

China is a major destination for Brazilian exports, and for Brazil, the Chinese market is of strong attraction and strategic importance.

China has been the largest export market for Brazilian beef for many years. In 2023, Brazil's beef exports to China accounted for 54.9 percent of its total beef exports. As a result of market expansion, China authorized 38 Brazilian meat-packing plants to export meat in March 2024, increasing the total number of plants to 144.

More meat plants exporting to China will create more jobs and boost local economic development in Brazil's inland regions, according to Roberto Perosa, secretary of the Ministry of Agriculture's Secretariat of Trade and International Relations.

Brazilian enterprises have participated in the China International Import Expo for six consecutive years. This has helped Brazilian meat, honey, propolis, wine, sparkling wine, coffee and other specialty agricultural products becoming familiar to Chinese consumers.

Shao Yingjun, chief minister of the Economic and Commercial Department of the Chinese Embassy in Brazil visited Mato Grosso in February. During the visit, a Brazilian representative said "The Chinese are our biggest buyers of soybeans and grains. We want to expand this trade, with the sale of more meat and cellulose, among others."

In February, the China-Brazil agricultural mechanization cooperation demonstration project was launched in Apodi, in the Northeast Region of Brazil. It focuses on promoting the application of smart agricultural innovation technologies such as precision sowing and fertilization, drone plant protection, and mechanized harvesting on Brazilian farms.

The first consignment of 31 tractors, planters, harvesters and supporting agricultural machinery from China were officially delivered to Brazil, visiting demonstration operations in nine states in northeastern Brazil.

*See page 3*

## New Graphic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