

# Scientific Spirit Drives Dynamic Innovation

By QI Liming

When we mention science and technology, what is the first thing that comes to mind? Is it the cool humanoid robots, space exploration, or seeking a cure for cancer? The truth is there are so many fascinating facets of science that it's really difficult to single out just one.

Science includes scientific knowledge, scientific achievements, scientific methods and the scientific spirit. Among them, the scientific spirit is at the forefront, because it entails uncovering the thoughts and concepts embodied in scientific knowledge. The scientific spirit can best be described as a general term for common belief, value standards and behavior norms formed by people who have spent their lives immersed in scientific practice.

Promoting the scientific spirit is not only the internal responsibility of the scientific community, but it is also related to all aspects of China's economic, political, social, cultural and ecological civilization construction. It is therefore indispensable. Innovative activities guided by the scientific spirit are full of vitality and hope.

Scientific achievements cannot be

made without spiritual support. The scientific spirit is the precious spiritual wealth accumulated by sci-tech workers in long-term scientific practice. Since the founding of the People's Republic of China (PRC), a large number of sci-tech workers have made breakthroughs in various fields, and fostered a unique spiritual temperament.

### Scientific spirit flourishes

Since the founding of the PRC, China's understanding of scientific spirit is deepening with expanded exploration in this field. In the 1950s, China issued the order of "marching towards science." Then the country issued the 1956-1967 Long-Term National Program for Scientific and Technological Development, and made some major sci-tech achievements represented by "Two Bombs and One Satellite."

Renowned space scientist and developer of China's atomic bomb and missile, Qian Xuesen said, "We can not imitate others, and this is not the scientific spirit. The most important thing in the scientific spirit is innovation."

The spirit of "Two Bombs and One Satellite" is an important symbol of the achievements made since the founding of the PRC, and is the glory and pride of the nation. It has inspired countless sci-tech workers to make innovations and

overcome difficulties.

On March 18, 1978, the National Science Conference was opened in the Great Hall of the People in Beijing, heralding the renaissance of science and technology in China. In 1988, China proposed that science and technology become the primary productive forces, and the country should develop its own high-end science and technology. This was because high-end sci-tech achievements reflect the capability of a country and a nation, and it is also a sign of the prosperity of a country.

### Becoming a sci-tech powerhouse

Since the 18th CPC National Congress, the basic institutional framework of China's sci-tech innovation was established, with reform, innovation and development being a mutually driven cycle. China's sci-tech undertakings have since shown a new outlook.

In 2023, China ranked second in the world in the scale of its research and experimental development expenditure, with a ratio of 2.64 percent to GDP, exceeding the average level of EU countries. According to the Global Innovation Index, China's overall ranking of innovation capacity jumped from 34th in 2012 to 11th in 2024, making it the only middle-income economy in the top 30.

For many years, China's R&D expenditure, R&D personnel, high-level papers, and invention patents have been among the highest in the world. A large number of landmark achievements have been made in manned spaceflight, lunar exploration, developing Beidou Navigation Satellite System, and deep-sea exploration. Emerging industries such as integrated circuits, artificial intelligence, and new-energy vehicles have also developed rapidly.

More than 160 countries and regions have established sci-tech cooperation with China, and 118 inter-governmental agreements on sci-tech cooperation have been signed. At present, China has entered the ranks of innovative countries.

Science and technology are the foundation of national prosperity, and innovation is the soul of national progress. Over the past 75 years, China's sci-tech industry has experienced a grand

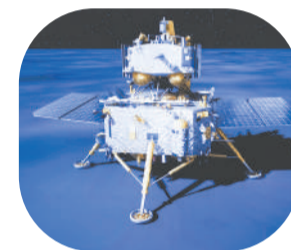
journey from "marching towards science" to proposing "science and technology are the primary productive forces," and from implementing the strategy of rejuvenating the country through science and education to building an innovative country.

China has emerged as a major driver of global innovation, and is making great strides towards the goal of becoming a world sci-tech powerhouse.

## High Technologies

The Chang'e-6 mission **2024**

The Chang'e-6 mission is tasked with collecting and returning samples from the moon's far side.



**2023** The Shidaowan nuclear power plant  
The world's first fourth-generation nuclear power plant begins commercial operation.



The Tianhe core module **2021**

The Tianhe core module is launched. It is the first part of China's three-part permanent space station.

**2020** Fendouzhe (Striver)  
The manned submersible Fendouzhe dives into the Mariana Trench.



Dongfanghong-1 **1970**

China launches its first satellite, Dongfanghong-1 (The East is Red 1), entering the space age.



## Fundamental Research

The Qinling Station **2024**

China's fifth research station in Antarctica became operational on February 7.



**2016** FAST  
The Five-hundred-meter Aperture Spherical Radio Telescope (FAST) is completed.



**1988** HIRFL

The construction of Heavy Ion Research Facility in Lanzhou (HIRFL) is completed.

**1973** High-yield hybrid rice strain

Agronomist Yuan Longping and his team cultivate the world's first high-yield hybrid rice strain.



**1972** Artemisinin

Tu Youyou and her team isolate artemisinin.



**1965** Bovine insulin  
Chinese scientists synthesize bovine insulin.

## High-Quality Development

Driverless taxis **2024**

China offers driverless taxis for hire in 2024 in several cities, including Beijing, Shanghai, and Wuhan.



**2020** The BDS  
China launches the last satellite of the BeiDou Navigation Satellite System (BDS), marking the completion of its global navigation system.



The C919 **2017**

China's first domestically produced large passenger jet, the C919, completes its maiden flight. It enters commercial operation in 2022.

