CORNERSTONES OF THE NATION

Stories of Chinese Scientists for Children
Planting the Seeds of Science in Young Hearts

This beautifully crafted series brings to life the stories of Chinese scientists, blending science, scholarship, and art in a child-friendly way. With vivid illustrations and heartfelt storytelling, the books encourage children to dream big, nurture curiosity, and carry forward the spirit of scientific dedication—shaping the foundation of what is to come.

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CORNERSTONES OF THE NATION

Cornerstones of the Nation – Amazing Chinese Scientists

Star Picker of the Rare Earths

The Story of Xu Guangxian

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Star Picker of the Rare Earths: The Story of Xu Guangxian
(Cornerstones of the Nation - Amazing Chinese Scientists)

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Rm 611-612, 6th Floor, Citimark, 28 Yuen Shun Circuit, Shatin,
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Preface

Looking Back at China's Journey

In the past, China faced poverty, wars, and hardship. Today, the nation is strong, peaceful, and full of life. This change was possible because many scientists dedicated their whole lives to helping the nation. They worked with courage, honesty, and determination, even when facing failure. These scientists are called the 'Backbone of the Republic', and we should always remember them.

Why Tell Scientists' Stories to Kids

Children are the future. To inspire them, we need role models. Chinese scientists are perfect examples because they show bravery, creativity, and love for their country. This picture book series was created to share their stories in a way that children can enjoy and understand.

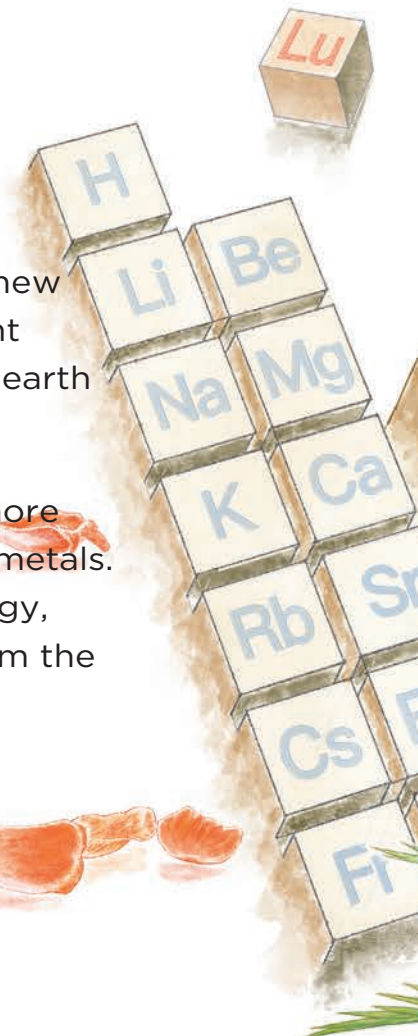
Message to Readers

This series of picture books was created to share those stories with children. Each book tells the life of a great scientist—how they grew up, what challenges they faced, and how their discoveries changed China and the world. The words are simple, the pictures are bright, and the lessons are powerful.

In the series, you will meet six amazing scientists:

- Gu Fangzhou（顧方舟）, the 'Father of China's polio vaccine'
- Liang Sili（梁思禮）, a pioneering space scientist
- Qian Xuesen（錢學森）, the 'Father of China's Space Programme'
- Tu Youyou（屠呦呦）, the first Chinese Nobel Prize winner who discovered a new treatment for malaria
- Xu Guangxian（徐光憲）, the 'Father of Chinese Rare Earth Chemistry'
- Yuan Longping（袁隆平）, the 'Father of Hybrid Rice'

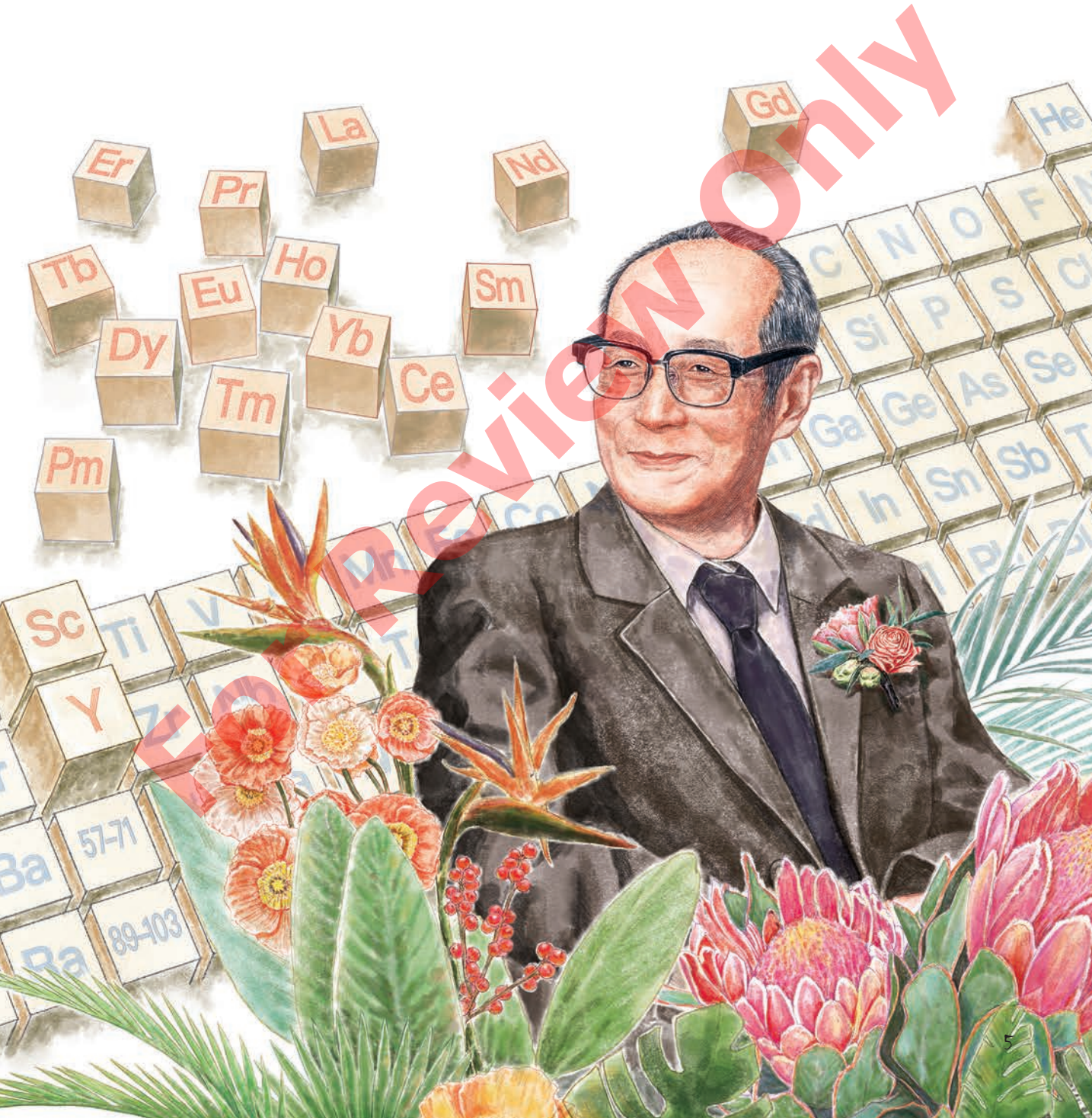
Each of them shows us that science is not just about experiments—it is about courage, imagination, and caring for people.



In 1794, a chemist named Gadolin discovered a new element inside a strange black rock. This element was called yttrium, and it was the very first rare earth element ever found.

Over the next 170 years, scientists discovered more rare earths, until they had identified 17 different metals. These elements are super important in technology, defence, and the economy. People even call them the 'magic earth'.

Many scientists have worked in the world of rare earths, shining like stars. One of them was Xu Guangxian, a brilliant Chinese chemist.



Xu Guangxian was born in 1920 in Shaoxing, Zhejiang Province. He was the youngest of seven brothers and sisters.

His father loved mathematics and often gave him puzzles like 'chickens and rabbits in the same cage' or magic squares. Xu enjoyed solving them and also learned to play Go, which sharpened his logical thinking.

As a child, Xu was curious about science. He loved asking 'why' and 'how', and he often turned everyday objects into little science puzzles. He loved looking at the stars and even built a simple telescope using two lenses and paper tubes.

XU GUANGXIAN (1920-2015)

The Father of Rare Earths

Childhood and Early Studies

Xu Guangxian was born in 1920 in Shaoxing, Zhejiang Province, into a family that valued books and learning. He was the youngest of seven children and much loved by his parents. His father, a lawyer who enjoyed mathematics and chess, helped Xu develop strong logical thinking. His mother often reminded him, 'A thousand acres of farmland are not as valuable as possessing a skill.'

When Xu was thirteen, his father passed away, and the family became poor. Xu studied at different schools, sometimes even in abandoned temples during wartime. Despite the hardships, he worked hard and dreamed of helping his family by finding a stable job.

University and Love of Chemistry

In 1940, Xu entered the chemistry department at Jiaotong University (today's Shanghai Jiao Tong University). Classes were taught in English, which gave him a strong foundation in the language. He impressed his professors with his independent thinking and excellent experiments. His graduation thesis earned the highest grade in the university.

At Jiaotong, Xu also met Gao Xiaoxia, who became his lifelong partner. They shared a love of science and supported each other through their studies.

Studying Abroad

In 1948, Xu went to Columbia University in New York to study quantum chemistry. He worked as a teaching assistant and earned scholarships. His wife studied chemistry at New York University while working part-time to support them. Xu's research was so outstanding that he received honours from American scientific societies.

He completed his PhD with a thesis on optical rotation theory, solving problems that foreign scientists had failed to answer. His professors wanted him to stay in the United States with a comfortable career, but Xu and his wife had other plans.

Returning to China

In 1951, Xu and Gao Xiaoxia decided to return to China, believing that science should serve their homeland. They joined Peking University and began teaching and researching. Xu often changed his research direction to meet China's needs, working in quantum chemistry, nuclear fuel extraction, and eventually rare earth separation. He believed that research which did not serve the country was like 'a tree without roots or water without a source'.

Rare Earth Breakthrough

At the age of fifty-two, Xu was asked to solve a difficult problem: separating rare earth elements like praseodymium (Pr) and neodymium (Nd). He worked tirelessly, writing notebooks full of formulas and experiments. Finally, he developed the cascade extraction theory, which became the foundation of China's rare earth industry.

Thanks to his work, China rose to become the world's largest producer of rare earths by 1986, changing the global industry.

Teaching and Mentoring

Xu was one of China's first approved PhD supervisors. He trained many outstanding scientists, including Yan Chunhua, Li Lemin, and Huang Chunhui, who made important contributions in chemistry and rare earth research. Xu proudly said, 'Each generation is stronger than the last; that is the hope of China's revival.'

Honours and Legacy

Xu Guangxian received China's Highest Science and Technology Award in 2008 and was celebrated as the 'Father of Rare Earth Chemistry'. He passed away in 2015 at the age of ninety-five, leaving behind a legacy of dedication, innovation, and love for his country. His life shows how determination, knowledge, and patriotism can change the world.