

I. Dynasty 66

Chapter 66: The Age of Water Power

“Hydraulic Forging Press (water powered forging hammer)?” Chen Qi exclaimed in delight. These were terms he had never heard before.

But he was already accustomed to Xiao Ming continuously creating these miraculous machines in the Mechanical Department. For him, it was a source of satisfaction.

Xiao Ming nodded, found a chair to sit on, and offered Chen Qi a seat as well. He then began to explain the knowledge of plate armor and water-powered forging hammers to Chen Qi.

Plate armor, which was phased out by firearms in the 16th century, has always been a subject of controversy in history. The debate over the strongest armor has never ceased.

However, Xiao Ming believed that war only eliminates outdated armor.

During the long medieval period in the West, after countless wars, Western knights ultimately chose plate armor. This could only mean that the cost-effectiveness of plate armor far surpassed that of other types of armor.

Moreover, after the medieval period, the advent of Hydraulic Forging Press made the mass production of plate armor possible.

The concept of forging has existed since the emergence of steel. The saying “a hundred temperings make fine steel” refers to the process of forging. The more times steel is forged, the better its quality becomes.

Hence, terms like “hundred-tempered steel” emerged, all of which require forging. Simply put, it involves repeatedly hammering iron to improve its quality.

However, this manual hammering method made the production of armor and weapons very slow. Thus, the West first introduced hydraulic forging press, which some scholars believe marked the beginning of Western military technology surpassing that of the East.

Now, Xiao Ming was preparing to replicate the hydraulic forging press.

Before the advent of steam engines, he had to utilize water power to lay the foundation for industrial development. He needed hydraulic forging press to produce metal materials of sufficient strength and to increase the production of machinery like lathes. Currently, Xiao Ming only possessed a limited variety of lathes, which was far from his expectations.

In summary, he needed water power to stockpile the materials and high-strength tools required for manufacturing steam engines.

As Xiao Ming explained, Chen Qi grew increasingly excited. The slow forging work of craftsmen had long been unable to cope with the growing orders for steel. Now, the machinery designed by Xiao Ming completely solved his problem.

“Your Highness, if the hydraulic forging press is successfully produced, it could increase forging efficiency by at least thirty times,” Chen Qi said excitedly.

“No, forty times,” Xiao Ming corrected. He had consulted data and found that hydraulic forging press directly increased blacksmiths’ efficiency by forty times. Such a hammer could complete hundreds of strikes per minute.

However, the only drawback of hydraulic forging press was the instability of the power source, as water flow is not constant. Nevertheless, it was sufficient for his current needs.

After a detailed explanation, Chen Qi had mostly memorized the manufacturing method of the hydraulic forging press. In fact, the power mechanisms of water-powered machinery were generally similar, much like the ox-powered waterwheel. As long as there was rotation, power could be generated. Gears, bearings, and other components were largely the same, differing only in the working parts.

Thus, for Chen Qi, who had successfully manufactured the ox-powered waterwheel, this was not a difficult task.

Moreover, after observing for some time, Xiao Ming concluded that ancient people were not stupid; their intelligence was on par with modern humans. The only shortcoming was their lack of education and knowledge.

In areas they were familiar with, such as poetry, calligraphy, painting, and even strategy, they were no less capable than modern people.

As the saying goes, “a little hint is all it takes.” The ancient people just needed someone to give them that hint, and Xiao Ming was playing that role.

Recognizing the importance of the hydraulic forging press, Chen Qi focused on its production. Thanks to the convenience of lathe processing, the manufacturing of hydraulic forging press proceeded smoothly. However, even so, the first hydraulic forging press would take a month to assemble due to its complex structure.

Xiao Ming had great confidence in Chen Qi's abilities and entrusted the task entirely to him. Whenever Chen Qi encountered difficulties, he would come to the academy to ask Xiao Ming, and they would discuss the issues together.

During this period, Xiao Ming continued to teach at the academy as usual. However, he had Lu Tong and others begin their first chemical production task: extracting alkali from plant ash.

This task was originally handled by the royal residence servants and the machinery department, but Xiao Ming had now completely separated it to refine the industrial system.

Moreover, during this time, soap production workshops had sprung up like mushrooms in Qingzhou, leading to a sharp increase in the demand for alkali. This was why Xiao Ming decided to produce alkali separately. Otherwise, he would be constantly bothered by merchants coming to buy alkali.

"Thank you, Your Highness."

Another batch of alkali was transported out of the palace, and the merchants purchasing it were all smiles, though they also felt a pang of pain.

The reason was that alkali was simply too expensive. In the cost of producing soap, alkali accounted for more than half. After selling the soap, they could only earn about one or two taels of silver.

“Sigh, if only we could learn how to produce alkali, wouldn’t we make a fortune?”

As they walked away, one merchant said to another.

“Learn? How? I heard that alkali is no longer produced in the workshop area. It’s only produced in the courtyard next to the palace, and that place is not accessible to just anyone.”

“That’s true. But I heard that there are two hundred students living there, and they go out once a week. If we could bribe one of them, maybe...”

“Don’t even think about it. Every time they go out, they are accompanied by guards. It’s impossible for outsiders to get close.”

“Sigh...” The merchant sighed deeply.

At this moment, Pang Yukun passed by the two merchants. Hearing their conversation, he couldn’t help but sneer, thinking to himself: These merchants are indeed driven by profit and will stop at nothing.

Upon entering the palace, he met with Xiao Ming and first repeated the merchants’ conversation to him.

“I am well aware of these merchants’ tricks. Besides this method, they also deliberately sell slaves to Liang Dahai, hoping to infiltrate the workshop district with these slaves. Hmph, they underestimate me. I’ll let them in but never let them out.”

Pang Yukun said, “I brought this up not to discuss the craftsmanship, but because Qingzhou is becoming increasingly chaotic. Your Highness should establish your own secret guards.”

Xiao Ming’s expression turned serious. He said, “It’s not that I don’t want to, but I lack suitable candidates.”

The secret guards Pang Yukun referred to were similar to the Ming Dynasty’s Imperial Guards, essentially a modern intelligence system. Without such a system, Xiao Ming would be blind to the happenings in the Great Yu Kingdom, knowing nothing.

For instance, in the recent case of horse smuggling revealed by the Wang family, Xiao Ming had been completely unaware beforehand.

Pang Yukun brought this up precisely because he was stimulated by this incident.

“Your Highness, I came here today because I think there’s someone who might interest you,” Pang Yukun said with a smile.

Xiao Ming recalled that Pang Yukun had been tasked with finding talents for him. He asked, “Does Pang (Chief Secretary) have a suitable candidate in mind? Who is it?”