I. Dynasty 303

Chapter 303: The Turning Drilling Machine

It was another sunny day, with the warmth of spring spreading across Qingzhou. As the grass and trees along the Xiaoqing River began to turn green, more and more people headed outside for the spring outing.

The night after Wang Xuan left, four foreign merchants and six foreign refugees were arrested in Qingzhou.

In an effort to increase the labor force in his domain, Xiao Ming's refugee policy seemed to have become a target for various factions to place spies among the incoming refugees.

According to Qingzhou law, those who were causing trouble among the refugees were to be executed immediately. The Qingzhou newspaper reported this, serving as a warning to the constantly arriving refugees from other places.

Though Xiao Ming understood that absorbing refugees would inevitably attract some with ill intentions, he couldn't afford to ignore the issue entirely. After all, the refugee policy overall brought Qingzhou a population dividend.

Many of the workers involved in Qingzhou's road construction were inexpensive refugees with no stable livelihood.

At the Machinery Department

Today was the day when the machinery department delivered tools to the water-powered lathe workshop. The craftsmen in the lathe workshop were going to use these tools for the first time to produce hollow gun barrels, the final piece needed for the flintlock musket.

Zhao Long held the reins of his horse, and Xiao Ming jumped off his horse. Zhang Liu was already in the workshop, instructing the craftsmen to install the drill bit onto the water-powered lathe.

This water-powered lathe had a waterwheel at one end, positioned in the fast-flowing current of the Xiaoqing River. As the waterwheel rotated quickly, it powered a circular stone disk fixed to the wheel. This disk acted as a flywheel, and in the center of the disk was the drill bit. The rotating stone disk caused the drill bit to spin, and this was the water-powered lathe Xiao Ming had had the craftsmen create.

During the Ming Dynasty, a similar water-powered lathe had been used in civilian sectors, and Xiao Ming had simply borrowed the concept.

“Your Highness, we’ve started experimenting with drilling gun barrels,” Zhang Liu said, wiping sweat from his forehead as he spoke to Xiao Ming.

At the other end of the drill, a wooden support held the steel rods sent from the steel workshop. Producing these steel rods was simple for the current steel workshop, and they could produce them anytime.

Zhang Liu had also gone to collect some steel rods and brought them to the lathe workshop.

“It looks pretty good,” Xiao Ming remarked. The water-powered lathe was spinning quickly under the influence of the strong river current. The natural power of the waterwheel was far stronger than human effort, and the drill bit easily pierced the steel rods, moving relentlessly as if unstoppable.

At the point of contact, the drill bit had already made some progress, though only slightly.

According to records from the Ming Dynasty, it would normally take about six days to drill one gun barrel using a water-powered lathe. However, Xiao Ming's superior tools could significantly shorten this time.

Ming Dynasty lathes had quickly worn out their tools, a problem that didn't affect Xiao Ming's superior craftsmanship.

"With my calculations, this can be done in three or four days. After all, the workshop is located in one of the most rapid sections of the Xiaoqing River, and our tools give us an advantage," Xiao Ming said confidently.

Following his orders, Zhang Liu brought the two drill bits produced by the machinery department the previous day, along with the two new ones made that night.

With four water-powered lathes working simultaneously, they would have four gun barrels ready in three to four days. If they used rolled steel to make the barrels, it would take about a month.

This meant that, thanks to the superior tools and water-powered lathes, the time needed to produce the barrels had been reduced to one-tenth of what it would have been otherwise.

“Your Highness, you’re truly far-sighted. The lathe was ready, and now we have the drill bits. This makes the production of gun barrels not only simple but also labor-efficient. The lathe’s fixed position ensures the drilling stays accurate, and one craftsman can operate four or five lathes at the same time, saving manpower. It’s truly a three-in-one solution,” Zhang Liu said, feeling a sense of achievement as he looked at the lathes.

Xiao Ming smiled at Zhang Liu’s praise. It was clear the craftsmen were satisfied with the lathe, which meant that his hard work had paid off.

He smiled and said, “Although this is very convenient, the quantity still needs to catch up. Right now, there are only two hundred lathes in the workshop, and we only have four drill bits. You need to work harder.”

“Your Highness, Chen Bingcao has already sent over five hundred workers from the steel workshop. They’ll soon complete the rest of the drill bits,” Zhang Liu said.

Xiao Ming nodded. Looking at the water-powered lathes that were tirelessly drilling the steel rods, his mind felt at ease.

Two hundred lathes were enough for him at this point. With one gun barrel produced every three days, that meant he could have two thousand gun barrels in a month and twenty thousand in ten months.

If he wished, he could have the Qingzhou Army switched from cold weapons to firearms by the end of the year.

This was part of his plan, but the investment required was enormous, likely wiping out all his meager savings.

But given the current state of affairs, he had no choice but to invest heavily in the army, though he remained cautious.

After all, he was facing a barbarian nation with two million people, while Qingzhou only had a population of six hundred thousand.

This nomadic cavalry had been raised in the saddle and was exceptionally skilled. Moreover, their cavalry was disciplined and fearless, a terrifying force. Even in the 17th to 19th centuries, such well-disciplined veteran cavalry would have been a formidable threat, especially given that every member of this barbarian tribe was a soldier.

Thinking about this always made Xiao Ming feel uneasy.

With the drilling machine now officially in production, Xiao Ming, feeling content, headed to the armaments workshop. The last hurdle for the flintlock musket had been cleared.

However, there were still a few issues to address, such as the issue of the bayonet for the musket and the musket's cleaning rod.

Having the experience from his previous life, he knew not to repeat the mistakes that had occurred during the early development of the flintlock musket.

At the start, bayonets had been designed to fit into the barrel, which caused the problem of being unable to fire the musket when the bayonet was attached, and vice versa. This made infantry vulnerable to cavalry charges.

It wasn't until the socket bayonet came into use that this problem was solved. The socket bayonet could be attached to the musket without affecting firing, a significant improvement.

So, having this experience, Xiao Ming naturally wanted to avoid making the same mistakes.

For the second issue—the cleaning rod—he decided to use a steel rod instead of the original wooden one.

Steel rods were less likely to break, which would help increase the firing speed. The Prussian army had achieved five shots per minute by using steel rods and training their soldiers.

The last issue was ammunition, but that would require cooperation between the armaments workshop and gunpowder workshop.

Xiao Ming planned to use oil-paper-wrapped bullets, where each oil-paper wrap would contain enough bullets and gunpowder for one shot. During battle, the soldiers would simply bite open the wrap and pour the contents into the barrel.