

I. Dynasty 288

Chapter 288: Precision Manufacturing

Rules—in ancient times, the word referred to two different tools: the gui and the ju. The gui was a compass, and the ju was a straightedge used for drawing lines.

These two instruments were the ancestors of ancient measurement tools.

Because of this, Xiao Ming didn't have to rack his brains figuring out how to make compasses and rulers. The Great Yu Empire already had them.

Now, unifying weights and measures was simply an improvement—not a complete overhaul.

So, Xiao Ming asked Chen Wenlong to bring him a compass and a ruler. He then used them to measure out millimeters, referring to the scale in the technology crystal. By walking the compass along the ruler one step at a time, each mark became one millimeter. At each point, he made a dot.

When he had walked one full meter, he stopped. Then, he began drawing vertical lines, clearly marking millimeters and centimeters, and labeling them.

To ensure precision, he worked for a full hour before finally finishing the ruler.

He then compared it against the ruler shown in the technology crystal, and found it almost perfectly matched—there were only microscopic errors, which he couldn't help.

For Qingzhou's current level of industry, this ruler was more than sufficient. At this stage, no machinery could be completely free of error anyway.

Once the ruler was completed, Xiao Ming handed it to Chen Wenlong and instructed him to use it as the standard for all production—and to distribute it across all workshops in Qingzhou.

"Your Highness, is it really okay to change the entire empire's system of measurement like this?" Chen Wenlong asked. He was still more comfortable with the traditional system, and the new ruler made him uneasy.

Xiao Ming explained, "This isn't just about measurement—it's about industry. If Qingzhou's industrial goods are produced using this precision scale, others won't be able to easily copy our products unless they adopt the same standards. And once we start making cutting tools, and the lathes are running, we'll soon be producing even more precise parts. Without fine measurements, how could we ever manufacture them? Even the tools on the lathe will need engraved measurements."

Chen Wenlong nodded slowly. "Ah, I see. Forgive me for being slow-witted."

Then, he asked, "Your Highness, you seem very focused on making cutting tools. Do you have another invention in mind?"

His question stirred a wave in Xiao Ming's mind. It was already the 18th century. In the modern era, the West had long replaced matchlock guns with flintlocks. Yet in the Great Yu Empire, not even crude firearms existed. The gap in development was massive—like the Qing Dynasty still using sail ships while the West had steamships.

The urgency behind making cutting tools was because once the lathe had reliable tools, he could start producing precision seamless steel pipes.

That's right—he possessed the knowledge of how to forge rolled steel into tubes. This technique could also be used to produce firearms.

But producing cannons, steel, glass, and other industries had already stretched their slave labor thin.

So at the time, he had to choose between building cannons or guns. In the end, he chose cannons. Technically, they were easier to manufacture. Using cast-iron molds, cannons could be mass-produced.

At that time, crafting guns required smiths to painstakingly forge each one by hand. Even then, the best they could manage were matchlocks. In the Battle of Cangzhou, they had only a few hundred matchlocks to fend off an army of 100,000 barbarians. On the walls, those matchlocks were hardly better than bows and arrows. Historical records showed a trained matchlock shooter could fire two shots every three minutes.

That dreadful rate of fire was exactly why Xiao Ming had no intention of mass-producing matchlocks. With the West already having discarded them, why invest in backward weaponry?

His goal was to jump straight to flintlock rifles, closing the technological gap and avoiding wasted time on outdated arms.

Still, the matchlocks could serve a purpose. Once flintlocks were developed, other factions in the empire would surely begin scheming. At that time, the matchlocks could be pushed forward as a decoy.

Even though Xiao Ming had this plan in mind, he knew flintlocks were far more complex. The barrel was just one part—they also required springs and firing mechanisms.

And those components were no easier to manufacture than the barrel itself.

Because of this, Xiao Ming didn't answer Chen Wenlong's question directly. Instead, he chuckled and brushed it aside.

After all, Chen Wenlong was a civil official, not a technician like Chen Qi. Explaining further wouldn't help.

After finishing the orders regarding tool molds, Xiao Ming returned to the royal palace. By the time he arrived, it was already midday.

As he passed through the Eastern Market, he suddenly heard a familiar melody. Hearing it made him smile—Ziyuan had done well.

The Great Yu version of The White-Haired Girl was now being performed among the people.

"Zhao Long, Zhao Hu, want to go see it with me?" Xiao Ming asked with a smile.

During the Spring Festival, Zhao Long and Zhao Hu had gone home for the holiday and missed the drama performance. They had heard about how impressive it was and had been eager to see it.

They'd even heard snippets of the play's opening lines. Upon hearing the music now, they instantly realized what it was.

"Your Highness, this must be The White-Haired Girl!" Zhao Long and Zhao Hu said excitedly.

Xiao Ming nodded. "That's right. You missed it during the New Year, but now you have a chance to watch it."

The two of them nodded eagerly.

And so, the three of them made their way toward the theater stage in the Eastern Market.

Xiao Ming wasn't going just for entertainment. He wanted to observe the public's reaction. He was counting on The White-Haired Girl to spread across the vassal states through grassroots channels.

Only then could his goals be achieved.

"Other girls wear flowers in their hair, but my father is too poor to buy one for me..."

By the time they arrived, the character Xier was finishing her solo. A crowd of citizens had already gathered around the stage.

They watched with wide eyes. In this era lacking entertainment, there were few ways to pass the time. So when something this novel appeared, no one could bear to look away.

“What’s this play? I’ve never seen it before.”

“Yeah, the singing is strange... but it sounds good.”

“That’s Honest Chen’s troupe. They used to perform Liuzi opera. Why are they doing this now?”

...

The murmurs from the crowd reached Xiao Ming’s ears.

On stage, Xier finished her opening song, and the play entered its storyline. At this moment, the crowd quieted, fully drawn in by the drama. Its down-to-earth characters and setting quickly captured their empathy.

Xiao Ming never watched the stage. Zhao Long and Zhao Hu, however, were completely entranced.

Seeing their expressions and the audience's response, Xiao Ming nodded with satisfaction. This new form of drama clearly had a strong chance of spreading widely among the people.