M Factory 371

Chapter 371: Teacher, are you looking for me?

In the afternoon, the drizzle rained up unconsciously. Compared with the summer rainstorm, the amount of rain is not much. It's just that the cold weather brought by the heavy rain in the late autumn season makes people shudder. Fortunately, Ye Qing prepared a lot of long coats for himself.

In the civil air defense project, Ye Qing and Master Qiao went through a long and wide passage into a large-scale equipment room that was clearly modernized.

The old steel cast explosion-proof doors here were transformed into automatic explosion-proof doors that need to be swiped into. Now the gate is open, and a sci-fi wind corridor leading to the red rear computer room appears in front of the two in a biohazard.

Master Qiao swiped the card into the glass door again, and blow the same air vortex of the blower on both sides and a synthetic electronic sound echoed in the corridor made of glass and metal. Of course, it was not a warning, nor is there a high-energy laser.

"Verified, please store the electronic products you carry with you in the electromagnetic shielding storage box and replace the dust-free clothing."

Two metal boxes popped up on both sides of the corridor to open a glass door of a dressing room with anti-static dust-free clothes of different sizes.

After putting the mobile phone and keys, Ye Qing went to the dressing room to change his clothes to a clean dust-free suit and stepped into this class 10,000 dust-free workroom that was even cleaner than the baby's skin.

This was the newly planned R & D department. This morning, the instruments ordered to the R & D department have just arrived and Ye Qing came here to visit. Any company that wants to maintain long-term product competitiveness must continuously invest massive amounts of money to develop new technologies and products.

There were products from Monster Heavy Factory in the new technology, and Ye Qing had an advantage that no company can match. But for new products and convenient functions, he had to do it himself.

To this end, Ye Qing ordered a batch of cutting-edge industrial experimental instruments that few people were willing to use. After not a long wait, this batch of cutting-edge industrial experimental instruments was officially settled in the new dust-free operations room of the Monster Heavy Industry.

A 10,000-class dust-free workroom referred to no more than 10,000 dust particles of 0.5 microns or more per cubic meter in the air. This sounded like a lot of numbers, but in the outdoor natural environment, even the beautiful grassland with clean air, the amount of particles per cubic meter was too much to be calculated by weight, and the quantity was not responsible for statistics.

In entering here, it is like walking into a pure white world. The equipment was pure white, and the ceiling was also pure white, the walls are also pure white, only the floor, and the color of the dustproof clothes on the employees are different.

Transmission electron scanning microscope, thermomechanical analyzer, material stress detector, isotope mass spectrometer...

The employees of the product R & D department, the technicians who are accompanying the instrument manufacturers, carefully studied the instruments debugging and daily maintenance steps.

The last recruitment, with the product development department, had the highest requirements for diplomas. Among the forty new employees currently joining this department, there are more than 20 with a master's degree and seven with a doctorate. One-quarter of them came from Ye Qing's alma mater, and the rest were also top students from major universities. These employees have been following the instructor to start the lab all year round. They have the strong hands-on ability and were very familiar with the various instruments in the laboratory.

The transmission electron scanning microscope has just been debugged. A master student who graduated from Shanghai University volunteered to drill into the enclosed ventilation operation room next door to observe the sample.

Observation samples of different microscopes have different observation methods. The sample of the projection electron scanning microscope, the ordinary optical microscope that is not in contact with the students, needed to be coated on the transparent glass sheet. It needed to be in the form of metal flakes. The master student followed the tutor before to study the technology of bainite steel.

Bainite steel is widely used in aviation, vehicles, ships, and materials for pressure vessels and high-pressure pipelines. To study bainite steel, the first step is to observe the characteristics of bainite steel.

Characterization is commonly known as the magnification structure, from its appearance to the magnification of the crystal structure, so that the naked eye can observe the crystal lines of bainite.

When Ye Qing entered, the employee was in the ventilated operating room, dipped in the abrasive liquid with an eraser and wiped back and forth mechanically on a stamped metal sheet that was barely visible to the naked eye.

"Boss..." The employee stopped wiping and stood up to say hello to Ye Qing somewhat restrained.

Because no suitable person was found, for the time being, Ye Qing was temporarily the manager of the product development department. Ye Qing gave them a meeting before, so the new employees here can recognize him.

"Tang Bo, do you... plan to use an eraser to wipe the sample to a thickness of 500 nanometers?" Ye Qing also had a picture of the senior from his alma mater. Seeing this, his eyes widened.

That's right! The sample thickness of the electron scanning microscope is only a few hundred nanometers. This thickness is roughly equivalent to one-thousandth of a hair strand, and only those special and often only responsible machine tools for one process can cut it.

"Grind out an approximate thickness, and then use a laser thickness gauge to detect it at any time." Tang Bo scratched his head: "This method is taught by my brother. He said that the sample slices are processed with high-precision machine tools, and the metals wear each other, so it is easy to participate. Other metals go in and affect the observation effect."

"With manual polishing, as long as you master the correct method, the time will not be slower than that of the machine tool. And the sample produced has only a single and very conducive bainite structure to observation."

Ye Qing gave him a thumbs-up, gesturing him to continue his efforts.

By hand grinding, it is indeed possible to slowly grind the metal sheet to that thickness. The eraser only grinds on a large piece of metal foil. Finally, cut out the appropriate sample shape under an optical microscope.

There are extremely advanced laser thickness gauges to check the thickness continuously. As long as you have patience, in theory, ordinary people can also grind out a thickness of 500 nanometers. It doesn't matter if it's worn out, the sample only needs a small 3 mm long disc, and you can cut a piece from there.

Of course, this is just a theory, not to mention 500 nanometers for ordinary people 50,000 nanometers will have to develop mania.

Looking at Tang Bo, Ye Qing was very happy. He realized he had recruited talents, a talent with extraordinary patience.

"Boss, the instruments here are so advanced that you even have atomic probes. It's like the Eden of the industrial god. Only the chemical laboratory at Shanghai University can handle it. If our industrial god wants to do an electrical scanning, it depends on the face of the chemical laboratory. As for the obsolete products that were ten years ago, compare it to yours, the gap between the pheasant and the phoenix. As for the atomic probe, I guess only those professors have seen it."

"Then work hard. As long as you can purchase any equipment, the price is never a problem."

Ye Qing encouraged him by a few words and turned to visit other places.

Ye Qing just walked in front of the isotope mass spectrometer, over the dust channel and came in a man wearing a dust-free suit and shouting: "Boss... Boss.".

The visitor was Kong Tao, the sales manager. After seeing Ye Qing, he trotted over and said: "Boss, I just couldn't make a call to you. Cai Chenning of Shanghai University called and said he would like to ask you for a favor. He introduced himself as your university teacher, and I rushed to find you here."

"Well, he is really my teacher." Ye Qing nodded, went to the dust removal channel, took out the phone and dialed Professor Cai Chenning number.

"Teacher, are you looking for me?"

Chapter 372: Send 1 nut, please match 1 screw

"Eh... Mr. Ye, I'm the cause of our school losing face."

Professor Cai Chenning who was in charge of professional courses at Ye Qing University, sighed on the phone, his voice full of annoyance and frustration.

Standing outside the passage, Ye Qing asked with a smile: "Teacher Cai... Professor Cai, what makes you so frustrated?"

While Ye Qing was still in school, Cai Chenning was only an associate professor. Not long after Ye Qing graduated, his associate professor became a full professor. After fifty years old of hard work, it is reasonable to say it should be a period of career advancement when the fighting spirit and ambition are at their best.

How could he lose his school's face by giving lectures and researching topics at the university?

Ye Qing was confused and also reacted to complain to himself...

"What's the matter? School communication?"

Cai Chenning sighed for five seconds before beginning to talk about the cause of hazy haze to Ye Qing.

"Where there are people, there is a circle and if there is a circle, there is communication. Ordinary people communicate in online forums and companies communicate with each other. The exchanges between universities are broader, from culture to learning, to academics, with schools in different regions and with schools in different countries."

"Through exchanges, students and mentors cannot only broaden their horizons but also increase their knowledge. You can also learn about the academic gap between different countries before."

"Every year, Shanghai University initiates numerous exchange activities to major universities, and other universities are the same. Then the school chooses a relatively suitable university according to its own level so that the students and tutors of both sides can interact and learn about it."

"Shanghai University ranks among the top 30 universities in the country and is considered a top-ranking university. Even with the well-known top universities in China, occasionally there would be exchange activities."

"For example, communicates with some foreign universities, once every semester."

"This is a grand event at Shanghai University. If there are still a few exotic beauties in the university team who come to exchange, the males in the whole university will boil."

Ye Qing remembered that in his senior year, the Belarusian National University was invited to Shanghai University for a week-long friendly exchange meeting. In the entire team, two-thirds of them were blonde and pretty, and even the mentors who led the team were beautiful. In the words of some people, what kind of exchange meeting was the scene of Victoria's Secret Supermodel? At that time, the price of the Russian dictionary near the school nearly doubled, and even Ye Qing bought a copy.

The country of Belarus had no sense of existence other than beautiful women in the world, and naturally, there was no place for academic exchanges with them.

But...

This year's situation is a little different because the foreign university that exchanged with China Cloud this year is Japan University of Science and Technology.

The full name of the Japan Institute of Technology is Japan's Kyushu University of Technology. In the field of industrial and technological universities, it can rank among the top ten universities in their country. Its predecessor can be traced back to the Kyushu Industrial Workshop in 1881. After 68 years, it was reorganized into Kyushu Gonggong University and is still in use today.

This school may not be as well-known as Waseda University, University of Tokyo, Kyoto University, which are ranked high in the world. But this university, in the history of industrial development in their country, has made a lot of contributions and many famous engineers there are from this school.

Regardless of ranking, or technical strength, Japan Institute of Technology must far surpass Shanghai University.

It's funny to say that this year, Shanghai University did not take the initiative to invite MIT, but MIT actively sent a letter to invite Shanghai University.

Being able to engage in exchanges with established foreign universities like Nikkei University, although Shanghai University has some stage fright, it must be gritted and agreed anyway.

Three days ago, a Japanese University of technology delegation arrived in Shanghai by plane.

As soon as the Japanese University delegation was picked up at the airport, the students and teachers felt differently. This could be seen from their entourage.

In total, a group of 17 people came to the university visit. None of them were women...

These 17 people were tall, short, fat, and thin, and the aesthetics of the two countries were highly consistent. Therefore, from the perspective of Shanghai University, there is no one who looks above the pass line.

When the Belarussian State University came the students of the two countries have an exchange culture based on exotic culture. That's because the Belarusian National University really had little academic skills to exchange. It was not the same as the Japan Institute of Technology, where academic exchanges are held between the two schools. And it was an academic exchange in mechanical engineering...

The other party sent such a team lineup, obviously moved.

Because this is a face-seeking society, handsome guys and beauties are very easy to eat, and few people can work hard to learn technology seriously. And those who do not have a heterosexual relationship tend to devote their energy to learning, hoping to get ahead in the future and use the other side to win the opposite sex.

"Mr. Ye, you didn't see the student delegation of Japan Institute of Technology at the airport that day, looking at our eyes."

Professor Cai Chenning poured out bitter waters on the phone and said: "in those eyes, each of them was arrogant and murderous, so they had to change the brand to" the Japanese technology and Shanghai University, industrial technology duel meeting..."

"It's been only three days, only three days, and we have lost everything."

"Mr. Ye, anyway this time, you have to find a way to help us and help our alma mater."

Ye Qing received laughter. As a former member of Shanghai University, Ye Qing certainly had a certain sense of honor for Shanghai University. Although Shanghai University can barely be regarded as a first-class university, it is also Ye Qing's alma mater.

Looking at Professor Cai Chenning's appearance, the two of them suffered a lot from the visiting group of Japan Institute of technology and if Ye Qing could help, he will help.

"Yes!" Professor Cai Chenning heard Ye Qing willing to help, and quickly excitedly invited Ye Qing to dinner: "You don't know, Mr. Ye when the Japanese Institute of Technology met, they gave us a gift with a smile.

It was not just a gift. It's just inferior. We're really scared..."

"What gift?" Ye Qing also showed interest.

"A nut."

Cai Chenning said with some fear: "They gave us a nut and said they hoped we could screw this nut with a suitable screw.

Nuts and screws are like representing the relationship between our two schools. Although it is only the first contact, the two sides will be intimately connected without any gap. We...

After working hard for three days, I couldn't produce this screw...

Nuts with screws represent the relationship between the two parties. Good numbness and good reasons are simply impossible to refuse."

"But teacher, you don't have to be so scared, okay." Ye Qing felt Cai Chenning was telling a horror story. Nuts and screws are the most common parts of the industry.

Log in to Taobao to search for screws. What kind of screws can't be matched?

For structural reasons, the nut must be vertical to be screwed into it.

Japan University of technology can't make an S-shaped inner diameter nut, can it?

This kind of thing is against the common sense of physics, so don't want to make it.

But what is the difficulty of equipping a vertical nut with a screw?

Could it be said the Japan University of Technology presented a nut that needs to be observed under an optical microscope?

"No, I will send you a picture of this nut first." Cai Chenning asked Ye Qing what the WeChat signal was.

A minute later, Ye Qing received the picture sent by Professor Cai Chenning.

It is not the nut that Ye Qing imagined, you need a microscope to observe. In the picture, it is an ordinary hexagonal nut. The triangular ruler beside it clearly shows the diameter and height of this screw.

"Isn’t this the nut used for the No. 5 screw?" Ye Qing wondered because there are several tons of such nuts and screws in his factory.

Chapter 373: Dare not to fight.

Three days ago, Professor Cai Chenning, who was in charge of this academic exchange meeting, had just recived the delegation of the Japan University of Technology at the airport, and had not eaten the food. Cai Chenning, who led the team, was quite solemn and was in charge of the teachers and the Japan University of Technology students had presented a nut in a beautiful wooden box which was not an ordinary nut.

"Please provide a screw with your school, tightly connected with the nut, representing the friendship between the two schools?"

The nut was ordinary at first glance, but in Professor Cai Chenning’s words, anyone could smell a strong taste of competition.

Originally, academic exchange is to compare the techniques you master with each other. Whoever has the highest skills will naturally be able to overwhelm them.

There is also the custom of giving gifts to each other in exchanges between colleges and universities around the world.

The gifts from each other will be placed in their respective school pavilions to allow freshmen to understand the history of the university and broaden their international horizons.

But usually gifts are only given to each other when the exchange is about to end. The Japan Institute of Technology delegation just entered the campus, and when the whole school teachers and students came to welcome them, they gave a such gift.

The intention should be too obvious.

On this occasion, under the attention of teachers and students of the whole school, Professor Cai Chenning could not take it. Cai Chenning had the opportunity to secretly take out this nut when he went lunch at noon.

It was impossible for the Japan University of Technology to give away an ordinary nut. Since they dared to face the teachers and students of the whole school, they solemnly send this nut out. So this nut should be the most proud part of Japan University of technology.

As soon as he picked up the nut and watched it, Professor Cai Chenning was completely dumbfounded and fell into a shock that was difficult to extricate himself.

When the lunch was over, the school took the delegation from the Japan University of Technology and began to visit the school. When the top students in the mechanical engineering department came to equip the nut with a screw, they also were falling dumbfounded ...

Cai Chenning planned to invite Mr. Ye to dinner in the evening, and he took the nut by the way. The dinner was set near the school. So, Ye Qing looked at the time and found that there was more than an hour before the appointment.

It is now 4:30 in the afternoon, and Ye Qing is also full of curiosity about the nut that has stung the Changhai University for three days.

Going to eat near her alma mater, Ye Qing felt that he should not turn off the ostentation and he should take bodyguards with him.

Twenty minutes later, a convoy pulling the wind made it to the entrance to Changhai University, consisting of a Lagonda and a Mercedes G65. The security guards who had been notified for a long time kept busy opening the electric sliding door to the maximum and invited Ye Qing to enter. So, he stopped at the security guards and asked if there were any students who asked for leave, then he smiled and nodded gently.

There were just a few celebrities tall, wearing basketball shoes and a jacket on the upper body, and the students with the basketball shoes went out.

Seeing the car window falling, sitting in the car with Erlang's legs and Ye Qing's arm resting on the side of the window, the eyes of the security guards were straight.

"Which one, who is in the Mercedes G65 in front or in the Lagonda at the back?"

This is the difference in treatment!

I think when Ye Qing was also in school, the security guards were a nemesis for him. Not long after graduating now, his alma mater was already proud of him, and whenever there was a big scene, he wanted to invite him.

It was still a while before the dinner. Ye Qing wanted to take a look at the visiting group of the Japan University of Technology.

By the way, Ye Qing asked Xu Xiaohu if he wanted to go to dinner with him at night. Ye Qing's relatives of the same age are not many, and Xu Xiaohu's character was very good, so he naturally needed to help him more.

After parking the car in the faculty parking lot, Ye Qing let the three monsters that were accompanying him wait in the car, and first he swayed toward the tree-lined path in front of the library.

After crossing this trail and making another turn there was the mechanical and electrical engineering building, the core headquarters of the Department of Mechanical Engineering.

In the engineering building, there are many laboratories related to mechanical engineering. When Ye Qing went to university, he had many lessons in that building. Before coming here, Ye Qing specially asked Professor Cai Chenning if the team of Japan Institute of Technology was in this building at this time, and had an academic exchange related to powder metallurgy with the top students of the Department of Mechanical Engineering.

Ye Qing walked into this 20-year-old engineering building, not a long-term memory, but also appeared in front of him. There was a familiar faint smell of oil and gasoline, and there were sounds of various machine tools running in the ears.

There seemed to be noisy crowds?

Ye Qing escaped the sound source and walked to the powder metallurgy laboratory at the end of the walkway. As a result, he found that outside the door of the powder metallurgy laboratory, there were no fewer than 30 students standing in the Wuya station. One by one, they were anxious and helpless, and they were discussing something loudly.

"What's the problem with those students of Japan University of Technology?" Ye Qing asked a student with glasses.

"Who are you, which department?" The student hummed and pushed the glasses on the bridge of his nose, then pointed at the front door with his finger: "those arrogant people of Japanese technology are all in the laboratory."

"What are you angry about?" Ye Qing looked at him and felt that he should not look like a student.

"This group of guys in the Department of gas Mechanical Engineering are not up for scramble." The glasses student gritted his teeth: "A nut can't be matched with a screw in three days. It's okay. Those guys are better than us in technology, these... These guys in the Department of mechanical engineering don't dare to fight."

"I'm dizzy ~ It's so exaggerated, I dare not dare to fight?"

"You come in and see for yourself. Our freshmen are almost mad. I knew that I didn't fill my volunteers to Changhai University." The glasses student's expression was disappointed: "It feels unbelievable. Well, in the future, I want to pass my grades. It must be blamed today the group of guys in the mechanical engineering department have given me gas.

Ye Qing appeased the restless student, and then pushed open the metal door of the laboratory.

This was a very large room with very complete powder metallurgy equipment room. As soon as Ye Qing entered the door, he found that in the large laboratory, Cai Chenning stood in a group of two men.

A lonely smile hung on his face, and his eyes dodged.

Ye Qing chose to come to the school early in order to visit the cutting-edge industrial technology at the Japan University of Technology.

In the field of machinery industry, major laboratories and major universities often master many of the temporarily unavailable large-scale commercial applications. However, regardless of concept or technology, they are far from the cutting-edge technology of major factories.

The country where the Japan University of Technology is located is ranked first in the world in terms of high-precision industry. Even many industrial products have been monopolizing the core technology for decades, and the remaining manufacturers have been beaten.

Yamazaki Mazak, Mori Seiki, Jettacote, Anqi Heavy Industries ...

For example, in the global ultra-precision machining field, the highest-precision mother machine is the free-form surface processing machine from Jetta, which makes people feel that this machine tool is still a mass-production machine for the commercial market.

Although Ye Qing has a monster factory in hand, he could not blindly be arrogant. It was still necessary to feel the technology mastered by the Japan University of Technology.

Chapter 374: Comprehensive backward technology

"Professor Cai, please comment. What kind of technical level can my students achieve by using the material of your school's laboratory to sinter this two-color metal ring?"

As soon as Ye Qing entered, he saw a middle-aged man in a blue suit with some acne marks on his face. He was laughing like a slot machine and laughing at the young student beside him.

In the hands of the student, there was a metal ring that attracted Ye Qing's attention.

This is a metal ring with a square cross-section, the size of which is equal to that of an ordinary bracelet.

The metal ring sintered in the powder metallurgy laboratory is naturally processed by powder metallurgy technology. But this metal ring was half golden and half silver.

The most important thing is the intersection of the two colors, without any trace of splicing and polishing, it is completely integrated.

"It's ... powerful." The leader of Zhongyun University is Professor Cai Chenning. It is not known at this moment whether the temperature emitted by the sintering furnace in the room is too high, or other reasons. Anyway, Professor Cai Chenning's forehead was already covered with fine beads of sweat.

However, here at the Japan University of Technology, all looked calm, no sweat on his forehead.

"Can you also invite your school to show us the powder metallurgy technology?" Professor Kobayashi, led by the Japan University of Technology, bent over to make an invitation gesture: "It is not necessary that the two metals are sintered together. Yes, as long as your school thinks it is advanced. "

Another defeat ...

The green bars on Professor Cai Chenning's forehead bounce back and forth.

In terms of rankings, Japan University of Technology is undoubtedly much stronger than Zhongyun University. However, Professor Cai Chenning had previously thought that this academic exchange was not the most advanced national industrial laboratory technology competition between the two countries.

It 's all college students, even if the technology gap does not mean that Zhongyun University, there is nothing that ca n't be used to open the eyes of the students.

However, the fact turned out to make Professor Cai Chenning's heart jump out.

Up to now, there have been seven technical competitions for both size and size. As a result, Zhongyun University only pulled back one round.

Sure enough, they lost a game in the morning, and found it back in the afternoon.

In the afternoon, we visited the powder metallurgy laboratory. Professor Xiao Linjing, who was led by the team, couldn't wait for one of them to look down upon the students and use the materials in the laboratory to give their students in the mechanical engineering department a good lesson.

Sintering of dissimilar metals.

In the field of industrial processing, such a problem is often encountered.

How to weld two metals with different materials together?

As the saying goes, it 's not the same thing to do different things, and the same applies to the metal welding industry. Different metals have to be welded forcibly because of the difference in melting point and characteristics. They will definitely fall to the ground because the strength of the weld is too low.

Welding of dissimilar metals is extremely difficult. Not only do we need to have a deep understanding of metal materials, we can take out various flux solutions according to local conditions, but also master the master-like welding technology to weld industrial parts with qualified strength.

Those who master this technology are not all babies that major factories compete with each other.

In powder metallurgy, sintering of dissimilar metals is also a major challenge.

Because of the different melting points of metals, it is necessary to add a layer of adhesive that can bind the two materials at the junction of the two metals. In this way, if you want to sinter a qualified product, you often have to scrap a dozen products.

The inherent shortcomings are destined to be a very small and very deep processing technology, whether it is dissimilar metal welding or dissimilar metal sintering.

But just this afternoon, a graduate student of Japan University of Technology used two kinds of metal powders, silver and copper, to successfully sinter a perfect dissimilar metal ring without adding a binder.

This product is not a bastard.

In order to prove this, the student had already handed over his work to Zhongyun University and tested it with a tensile tester.

"Professor Xiao Linjing, it's not too early. I think the students in your school must be hungry. Tonight, the cafeteria specially prepared a piece of roast duck for everyone. Why not let the students eat and talk?" Professor Cai Chenning started helpless Sloppy eyes also admitted in disguise that the students of Zhongyun University could not come up with similar powder metallurgy technology.

The Japanese University of Science and Technology sends a graduate student, so according to the established rules, Zhongyun University can only send graduate students or university students.

Professor Cai Chenning cannot always play in person.

"Not hungry or not." Kobayashi raised his head and shot two proud rays of light in his eyes: "Tanaka, you talk to them about the firing skills of different metals."

The student holding the metal ring looked up proudly and looked around the audience: "The physical properties of different metals are very different. The one-time sintering technique I used is the principle

of basic gradient joints. First put the two metal powders one by one The mold is pre-pressurized and formed. UU Reading www.uukanshu.com then uses an electric furnace to sinter, which requires the most stringent temperature control. "

"The melting point of silver is 961 degrees and the melting point of copper is 1083 degrees. How to find the balance point of the melting points of these two metals is that the pressure of the two materials is different. The density of the gap between the materials determines the melting point. speed."

The students on Zhongyun University avoided Tanaka's eyes one by one.

If you lose, then lose. Who makes technology inferior?

Fortunately, the Tanaka student did not take the opportunity to show a wave of superiority, otherwise they would have the heart to find a seam.

Tanaka's people are good, not only telling the technical points, but also not hitting people.

This group of students is too naive. Japan University of Science and Technology came across the ocean and did not hit people. Isn't that in vain?

"just....."

"During operation, I found several problems."

The student named Tanaka suddenly changed his voice, and his tone became proud: "Your equipment is too backward, in our school's laboratory. The stamping machine used for pressing the embryo is the multi-angle CNC of Yamazaki Mazak Company. punch."

"Your equipment, even if the angle is not adjustable, even the impact coefficient is not adjustable."

"In our school, the scrap equipment piled in the warehouse is also more advanced than yours."

"There are also these metal powders. As early as the 1960s, Professor Ueda Ueda invented the preparation technology of ultrafine metal nanoparticles." Tanaka twisted the metal powder left on the twisted fingers: "But you still take this kind of metal powder Use something as coarse as flour. "

"The most critical electrothermal sintering furnace is not even as good as our last century's technical level. The laboratory should look like a laboratory. How can we promote the progress of powder metallurgy technology with this outdated equipment?

Chapter 375: Nuts

If the eyes can kill people, this student named Tanaka should have been filled with hearts at this time.

It's a pity that his eyes could not kill people, so he was okay, for attacking the group of people of Shanghai University in a three-dimensional way.

However, the group of people of Shanghai University could not refute, because this was the privilege of the winner and the punishment of the loser.

After criticizing all the equipment, Tanaka

used in the laboratory and even extended his criticism to the backwardness of the China Industrial Training System, and he never finished his speech.

At this time, Professor Cai Chenning's old face had become like a red liver, and his full of resentment almost squeezed his chest and he was angry but had nothing to do. Because the foreign graduate student who had a few decades old was right. The powder metallurgy equipment of Shanghai University really lagged behind.

But this type of backwardness was really as shameful as Tanaka said and criticized, was it not emphasizing investment in education, was it rising to the backwardness of the entire country?

Professor Cai Chenning wanted to grab this guy and shouted loudly: "Farting, no!"

Professor Cai Chenning was 52 years old this year, and since 1986, he officially entered Shanghai University as a teacher. It can be said that Cai Chenning checked the whole process of Shanghai University, from nothing to achieving the standard of modern education in a comprehensive way.

What was there?

At that time, there was nothing, no money, no technology. This is not only true for Shanghai University, but also for China. But the Chinese people were born with the desire to refuse to accept their present condition and refuse to lose their lives. Since they can do it, they should be able to do it. If they cannot do it now, then they should work hard to learn to catch up and one day, they would be able to catch the delay.

After thirty years of development, China today has become the country with the most comprehensive industrial system in the world and the highest total industrial output value. In the past, in order, to restrict the pace of China's development, Europe and the US issued a famous list of industries banned from exporting to China.

Now what? Most of that embargoed industry list became a joke.

In order to hinder the technological progress of China's heavy industry that year, there were hydraulic presses of more than 30,000 tons on the list of prohibited exports to China. As a result, to date, the old beauty of the leading country in the list, who wanted to purchase a hydraulic press of more than 30,000 tons should buy it from China.

This is simply...

Cai Chenning acknowledged that in the 30 years of industrial technology development, China has made gratifying achievements that others need hundreds of years to achieve. But there is still a long way to go, especially in the rapidly developing electronics and precision industry, which was still behind the board.

However, Cai Chenning believed that as long as the Chinese people's unyielding momentum persists, they will certainly be able to beat the global manufacturing industry in the future. For this future, Cai Chenning believed he would be able to wait.

"Haha... Tanaka, we are here for friendly academic exchanges." Kobayashi smiled as cunningly as the cormorants: "China people are subtle and Shanghai University is backward, but we can't point it out too directly."

"Haha... Everyone is hungry, let's go eat a sliced roast duck."

After finishing the talk, Kobayashi walked out with his head high.

Professor Cai Chenning, immersed in resentment, only then realized that Ye Qing was standing beside him: "Mr. Ye, why are you here?"

Cai Chenning walked up to Ye Qing with a smile and said in a small voice: "Let's see the joke, eh... There are only four days before the whole academic exchange meeting is over, there are more humiliating places in the back what a shameful place. I hope this group of children will not be hit by those from the Japan Institute of Technology but will work hard to surpass them one day."

"Let me see the technical level of the Japan Institute of Technology." Ye Qing gently patted the teacher on the shoulder, with some emotion: "Sintering of dissimilar metals is indeed a very cutting-edge advanced technology, especially without the help of adhesives."

"For me, I can't guarantee a sintered quality product at once." Cai Chenning had a feeling of wanting to shed tears.

Ye Qing shifted his encouragement from the teacher to the group of classmates who were of similar age to him, who were either downcast or had red eyes or gritted their teeth. Because seeing them, Ye Qing vaguely saw his own shadow.

At that time, due to backward technology, the home factory then drove a van to go out and sell the machine tools at home. When they discovered big factories whose managers bought foreign machine tools outside, weren't they like that when they demonstrated superiority?

"Ye... Ye senior student." Hearing Professor Cai Chenning's words, the students who stood there dumbfounded raised their heads and looked at Ye Qing in surprise.

Ye Qing nodded and said to Professor Cai Chenning: "Let's eat now, please call these students, they have worked hard these days."

Cai Chenning nodded again and again. In the past few days, the students' efforts were all in his eyes. After the exchange meeting, Cai Chenning also prepared to pay for the meal by the students.

"By the way, Professor Cai, what about that nut?"

"In the hands of my disciple, he is now responsible for the technical difficulties of that screw in public relations." Cai Chenning took a phone with a sigh while walking outside: "He is a doctor I brought, I'll call him to take the meal together."

"My name is also personal." Ye Qing nodded and sent WeChat to Xu Xiaohu.

Professor Cai Chenning could hear a crazy voice on the phone saying that even a single screw could not be made, and he had no face to eat. So, Professor Cai asked the students to send the nut right away to the speaker.

Xu Xiaohu also returned a message saying he would not go to his cousin because this let the students and the teacher knows their relationship. Then, he would not be able confused, and someone would look for him all day long.

Half an hour later, President Wang Hongnian of Shanghai University and Professor Cai Chenning of the Department of Mechanical Engineering and two former teachers of Ye Qing as well as more than a dozen students in the powder metallurgy laboratory, sat together at the Taogu Restaurant not far from the school inside the largest box.

The nut that worried Shanghai University for three days was also delivered to Ye Qing who was very curious about it, and when Ye Qing took over the beautiful wooden box, everyone on the round table held her breath and watched Ye Qing nervously.

This young man, who was not well-known in the school-age, made an amazing career that attracted the attention of entire China in just half a year after graduation.

Now let's talk about industrial technology in Shanghai City, where there were the strongest laboratory and factories, where all industry insiders would mention the Monster Heavy Industry.

How strong was the Monster heavy Industry, even Professor Cai Chenning could not figure it out, he only knew that the strong is no way...

Monster Heavy Industry was the pride of Shanghai University and the pride of China.

If this screw, even Ye Qing was not sure to get it, then Shanghai University would honestly announce its defeat, so as not to drag it to the end so that the Japan Institute of Technology people were more proud.

"Dah..." Ye Qing opened the beautiful wooden box in his hand.

Chapter 376: Nuts manufactured by the most advanced industrial technology

Appearing in Ye Qing's eyes, it was a silver-white standard hexagon nut. Picking up the nut gently, his first finding was that the nut was heavy. The standard nut with the same size was about seven grams. He often dealt with these things and was very accurate in grasping its weight. But starting with this nut, it weighed about 15 grams. The increase in weight indicated that this nut was made of a higher density high-hard alloy.

When Ye Qing pinched this alloy nut in his hand and aimed at the crystal lamp above his head to observe the inner thread, already hardened by monsters, he could not help but be surprised. There was no thread in this nut. Inside the crystal nut, under the light, there was a faint reflection of metal.

With reflection, it means there was a metal mirror. The inner wall of the nut was as smooth as a mirror, like a seamless precision tube. A nut without thread. Can this be called a nut, perhaps a metal washer is more appropriate?

What is this nut?

Nuts are the most common metal parts in the modern industry and life. Nuts and screws, the two are tightly combined together to fix the principle of objects, even the first-grade children know. The inside of the nut is called an internal test thread, and the top of the screw or bolt is called outside thread. Only

two nuts and screws of the same specification can be connected together. The diameter is the same, and the pitch between the threads is the same. If there is no thread, how to tighten the connection with the screw?

Ye Qing believed that Japan Science and Technology could not make such a mistake that would violate the common sense of physics. Since they proudly gave this nut as a gift, there should be something in this nut.

"Is there a magnifying glass?"

Professor Cai Chenning nodded a little seriously and handed a Carland 300x portable microscope.

A portable microscope with a light source is usually used to observe the surface of jewelry and the roughness of metal materials. It is only the size of a mobile phone and is very suitable for carrying.

After adjusting the resolution and the light source, Ye Qing aligned the lens of the portable microscope with the inner hole of the nut, and his face also became serious. At 300 times magnification, the inner hole of the nut, which was originally as smooth as a mirror. There was even a thread of internal tests, these threads are surrounded by a circle, the spacing between the pattern teeth is too small to be incredible.

Under the observation of the portable microscope of three hundred, it was possible to barely see a trace of depression between the lines and teeth. How fine were these striated teeth?

The thickness of a hair strand is 0.06 mm on average, but a hair strand can be easily seen with the naked eye. If the hairs are lined up neatly and there are gaps of the same thickness in the middle, can it be seen by the human eye?

A closer look can found clues. Ye Qing tore off one of his hair, placed it under the portable microscope, observed the focal length and approximate width in his heart, and then aligned it to the inner wall of the alloy nut to compare the hair silk with the thread, the pitch of the thread was too small to judge. This shows that the gap between the striated teeth was much smaller than one-tenth of the hair silk. As for how small it was, it has exceeded the human eye’s visual analysis ability.

"We have measured with a laser interferometer, and the thread pitch is 0.2 wires, and the thread depth is 3 wires." Professor Cai Chenning gave the answer.

"No wonder."

Ye Qing understood the human eye could distinguish much thinner things than the silk of hair. Under sufficient light source and contrast of different colors, even silk could be seen. But such a small thing has reached the limit of visual recognition.

For one single silk, it is okay. If two silks are close together with a gap of the same thickness between them, the human eye will default to one. The same principle applies to these threads in front of him. It is too thin, only one-thirtieth of the hair silk.

A circle of ultra-fine threads surrounded, as a matter of course, the visual recognition limit of the human eye has been exceeded resulting in the illusion that the surface of this nut did not have any thread.

1 millimeter, in industrial processing, is often referred to as 1 wire which is equal to 0.01 mm.

The accuracy of the current international five-axis machining center is usually 0.2 wires. The domestic accuracy is 0.8 silk.

This is only theoretical data. In actual operation, if you want to reach the accuracy of 0.2 wires you must adjust the machine tool to the best level, use the laser to adjust the tool and the tool wear is automatically compensated.

The nut in Ye Qing's hands already represents the processing limit of an ordinary five-axis machining center.

"Open your eyes, who can imagine that Japan University of Science and Technology can make a nut like this?" Professor Cai Chenning said with some sadness, "when we got this nut, we still had students who didn't know how to do it. We laughed at the fact that Japan University of technology couldn't even distinguish the nut from the washer. They sent a washer without thread saying it was just a nut."

"Someone asked me that the commercial five-axis center can control the precision to 0.2 wires. In theory, the precision can be controlled higher in the laboratory. Why can't a screw be made?"

Ye Qing responded: "Because this screw must be made in one go, hundreds of threads that are invisible to the naked eye are machined out. The point was I still needed a tool that can be tapped, not to mention the market is not available for purchase, I will make my own stupid words. Making a tool that can tap a screw is far more difficult than making a screw like this. Also, the thread of this screw or nut is too thin. If the factory machine tool cuts lightly from the alloy steel, it will cut the thickness of a wire. The cut thread will never be a vertical metal piece, but a roll like a lollipop. This is due to the stress of the metal, thermal deformation, cutting angle of the tool, metal toughness, etc."

Professor Cai Chenning thought to himself: "how does Japan University of Science and Technology do this? In a nut with a height of five millimeters, hundreds of ultra-precision threads with only 0.2 wire pitch are processed?"

The threads processed by the most critical people are not deformed.

"The answer is on the metal material used for this nut." Ye Qing gazed at this nut, which represents the most cutting-edge processing technology, and said softly: "Japan has made a lot of achievements in the special alloy, and ordinary metals are not resistant to high temperatures. Alloy materials should avoid metal stress and thermal deformation."

"I also guess this is the case." Professor Cai Chenning asked cautiously: "But no matter what kind of alloy is as thin as 0.2 wire, it will deform with a light touch."

"The disciple I brought with me ground a very thin probe by hand to test the hardness of the thread. I thought it would deform with a light touch, but the thread of this nut did not."

"It may be that the nano-level coating has increased hardness. Using plasma vapor deposition, it can be coated with a diamond grinding layer with a thickness of only a few nanometers." Ye Qing brought out by a group of top monsters, said with some uncertainty.

Professor Cai Chenning who also knew a little about this process fell into a long bitter smile. He could not do any of the craftsmanship mentioned by Ye Qing. Not only could he not do it at Shanghai

University, but none of the Seiko companies that Professor Cai Chenning knew could do this. Therefore, he went to see Ye Qing brazenly and wanted to invite him to dinner.

Even the headmaster, who was always on his sleeve and never participated in the dinner, came to see Ye Qing.

"Ye Ye... Master, then... Can you make this kind of screw?" Confucian principal Wang Hongnian, blushing at this moment. He was a typical old-school educator. When he saw students, he always kept his stereotyped image in a stretched face.

Ye Qing was also his student. At this time, President Wang Hongnian asked Ye Qing for help with an old face, and he felt his image was completely destroyed. Especially in the case of more than a dozen students sitting on the table. But at this time, no one had to worry about the image of the principal.

The face of Shanghai University would disappear. In the campus forum, the mechanical engineering department has become a national sinner. This screw could not be done. They could not even find the target. Are they free to care about the principal? Everyone was staring at Ye Qing which holding his chin: "It's easy to make the screw, and the key is that I am now graduated. This academic exchange meeting is between students at school."

Making the screw is easy! Making the screw is simple...

President Wang Hongnian, who had summoned the wolf from the Japan University of Technology, didn't hear the next sentence at all. His head was hot, and he slammed up from his chair. His expression was even more exciting than when he became the director of the Education Bureau: "Quickly take the screw out and teach the arrogant guy hard."

"Mr. Ye... Didn't the school send out the graduate application form when you graduated?" Professor Cai Chenning's eyebrows were almost flying, and he rubbed his hands excitedly.

"It seems there is..." Ye Qing, of course, remembered this form. He knew Professor Cai Chenning had not received this piece of material he didn't fill it up and it was rubbed when it changed hands.

Professor Cai Chenning snapped a blank form on the rotary table.

"Welcome Mr. Ye to our school to study for graduate students. You are not used to taking courses. As for this damn program, it's not a problem to take a doctorate directly with your professional knowledge."

Chapter 377: Alma Mater is proud of me

The more successful the entrepreneur, the more titles he holds on his head.

Ye Qing only had the title of President of the: Monster Heavy Industry and the diploma was only undergraduate. Ye Qing would not take the initiative to confuse the titles like the deputy chairman of the Machinery Association and the vice-chairman of the young entrepreneurs. But if he could get a master's degree in graduate school, then he gets a doctorate qualification.

Ye Qing was naturally happy, anyway, he did not have to come to class by himself. After filling out the application form, Ye Qing was very happy. Furthermore, Professor Cai Chenning and President Wang

Hongnian were happy. Even saying that Ye Qing could come to graduate school is a great honor for Sun Yat-sen University.

This is the truth, just like some college mottos: Today you are proud of your alma mater, tomorrow your alma mater is proud of you.

Monster Heavy Industry had gained a great reputation and had extremely bright prospects. Not to mention Shanghai University, those top-ranking palaces and universities were also very happy to invite Ye Qing to go to their school for further study and issue degree certificates.

In the future, they will be able to raise Ye Qing's name in the school profile and say we are the alma mater of the president of the Monster Heavy Industry. You see how powerful our school can train talents like Ye Qing.

When the application form is properly collected, Professor Cai Chenning's face was full of emotion and he couldn't hide his excitement: "Mr. Ye, take this nut and let the people of Japan University of technology have a good look. Our Shanghai University is not a soft persimmon they knead."

For a layman, Ye Qing just took a photo with a 3D camera.

However, Professor Cai Chenning is a layman on the understanding of industrial knowledge, and he was afraid that only masters can defeat him.

In front of him, Ye Qing took a picture with the camera and said that the three-dimensional picture of the nut can be mapped out only by the photo, but he did not stare his eyes.

After solving the mountain that pressed on his heart, President Wang Hongnian invited Ye Qing and graduate school. He could not help to stand up and asked the waiter to open two bottles of good wine and asked the ten students who were somewhat constrained to drink.

They asked for a beer, and when the dishes were served up, everyone raised their glasses and drank together, and then President Wang Hongnian gave Ye Qing two glasses separately.

"Mr. Ye, not only we would like to thank you for your help with the screw in public relations." Putting down the glass, President Wang Hongnian was full of emotion: "Starting in 2008, after college students graduated, the job became more and more difficult to find. Last year we surveyed specifically, more than 11,000 graduates, only 4,000 students found jobs in one month, and the other 7,000 found jobs within three months. "

"According to our half-year statistics, our student employment rate is only 90%, which also includes the number of independent workers. So, I want to thank you, Mr. Ye, again. Every time you recruit in the Monster Heavy Industry, and you will give priority to our school."

Ye Qing quickly waved his hand and said: "This should be done. The alma mater nurtured me, and I have to return to the alma mater the same."

Of course, this is just Ye Qing's kind words. After all, graduates from Shanghai University have to pass the interview assessment without discrimination. Most office workers in any company are locals. Sun Yat-sen University is the best university nearby, so of course, he will recruit more. Of course. He has mixed well. When he came back to interact with his alma mater, he also seemed to have a lot of faces.

After three rounds of wine, the atmosphere in the box became warmer. In particular, Ye Qing proudly told the principal and several teachers that the number of five-axis machining centers in Monster Heavy Industry will soon reach the number of 600 units. In the product R & D department, he had the most advanced batch of top-level industrial laboratory instruments in today's commercial market.

The principal and several teachers, even forgetting to put on the cup in their hands, kept it in their hands and looked surprised.

"Professor Cai, you need to use the experimental equipment in the future, and you need to make an appointment with the company in advance." Ye Qing was not a stingy person. The main purpose of the university's experiment of those types of equipment was to improve the convenience of the product. Among them, the robot needed the most improvement, and allowing Shanghai University to use those devices will naturally not be useless.Ye Qing encountered some unsolvable product problems, and those professors at Shanghai University would naturally take the initiative to help public relations.

Ye Qing encountered some unsolvable product problems, and those professors at Shanghai University would naturally take the initiative to help public relations. After all, the Monster Heavy Industry was only in the mechanical industry, and it was far weaker than other companies in chemistry, chemical industry, and semiconductor.

Shanghai University was not well-known in the field of mechanical automation, but it was very famous in chemistry and chemical engineering. Among them, the state-level key laboratory [Materials Chemical Engineering Laboratory] is not only the pride of Sun Yat-sen University but also the cash cow in the eyes of countless chemical companies.

This kind of cooperation is very common in other enterprises. Now that Ye Qing puts forward this point, it just to comply with the market trend. However, this sentence, listening with Professor Cai Chenning's ears, had another impression. He froze for a long time without talking, because lacking international advanced industrial laboratory equipment, had always been the pain point of Shanghai University.

In the afternoon, they were severely beaten by those from the Japan Institute of Technology, and Professor Cai Chenning almost shed tears. Now Ye Qing has offered to use the top-level industrial laboratory equipment in the Monster Heavy Industry. So, how could he not be excited or moved?

Professor Cai Chenning took a deep breath and filled his glass to let Ye Qing do whatever he wanted.

Professor Cai Chenning took a deep breath and filled the glass to thank Ye Qing to let him do whatever he wanted. Suddenly the phone in his pocket rang abruptly.

"Sorry," he whispered to answer the phone: "What?... Say it again." Professor Cai Chenning shouted anxiously without controlling his voice: "Have you done it? Didn't your teacher fall asleep? This kind of thing has already happened. You only know one thing, do you want our school to be popular all over the country? "

"What happened?" The color of the principal Wang Hongnian's face changed.

"There should be a major event, and there should be a major event." Hanging up the phone, Professor Cai Chenning walked out while wearing a coat: "Mr. Zhang called and said that in the cafeteria, students

from the Japanese University of Technology had somehow quarreled with the 16th-year mechanical engineering students."

"It seems that someone from Japan University has said something unpleasant. As a result, two students in the freshman got grumpy and took up their chairs and said they didn't apologize, so they smashed them to apologize."

As soon as the voice fell, President Wang Hongnian's phone rang.

"I'm so sorry Mr. Ye." Professor Cai Chenning smiled bitterly.

Ye Qing said: "it was all right." Anyway, everyone was already full chatting. "You are all drunk. Let's go in my car."

After losing two hundred dollars for the students to take a taxi, President Wang Hongnian and Professor Cai Chenning trotted into Ye Qing's car. Sitting in the car, the two kept calling. Fifteen minutes later, Ye Qing's car stopped in front of the canteen at Shanghai University. Just in the car, the whole thing had been basically high-definition. Of course, Ye Qing still hoped that this group of people should be understanding.

President Wang Hongnian and Professor Cai Chenning went in the canteen, Ye Qing also followed in. If the group of Japanese University of Science and Technology was really broken by the chairs, it would be strange if the news and netizens on both sides did not blow up the nest.

The mechanical engineering department was may be affected after the fall of flowers on the side of students of the Japanese University of Technology. Because a student was arrogant and said something very offensive.

"The loser is not qualified to eat with us."

Chapter 378: Will Rich man know powder metallurgy?

The incident happened on the second floor. Fortunately, at this point, the students ran out of dinner long ago and only the students from the Japan University of Technology and the students from the mechanical engineering department chatting while eating.

Ye Qing and his party rubbed upstairs and found that two groups of students were still sitting together, and several teachers were constantly persuading them like they were facing an enemy.

"Sorry, no apologies. It's not over today."

Ye Qing saw the freshman who was standing outside the door with glasses in the afternoon, and now he was stretching the table with his hands and holding back his anger:

"What's wrong with our fine industry? In this way, if we have the ability, we will work harder than before. We have never spoken to you of your own faults, but you speak of others' faults."

The culture and language of the two countries are similar. There were two people on the Japanese side who spoke Chinese. This new student's words made them quite funny.

"Only the loser will rely on language to find a sense of existence." Tanaka, who showed skill in the afternoon, disapproved.

"Is it possible to produce parts with a chair?" Tanaka saw that President Wang Hongnian stepped forward and stood up with a smile: "Instead of wasting time here, it is better to study how to make the screw of the nut. I can read Chinese Now, on your campus forum, and it seems that because of this nut, there is no reason to quarrel. "

"You... You..." The freshman on the side of Shanghai University was trembling with anger and spent a lot of energy before stopping the urge to lift the chair again.

"Principal Wang, I hope you can give us a satisfactory treatment." Tanaka waited for the arrival of the Lord and planned to get up and leave.

"Do you want to go? If you don't apologize, I'm going to have to kick you out of the fight and can't let you go either. Yeah, it's just a university. Where is the money to go to? If you do not apologize today, you cannot leave." The rest of the freshmen were also suffocating. The principal is coming.

The temper of the young man came up. Let alone the headmaster, the director of the Education Bureau. Who loves to be dismissed?

President Wang Hongnian stamped his feet in a hurry. Although the students didn't make a big event, in the end, the fighting among the students could also be related to the normal academic debate. But how can he calm down these freshmen agitated emotions?

Principal Wang Hongnian was about to say a few words, but some sloppy and provocative words from the classmate Tanaka are said first: "If you want me to apologize, please fight. Otherwise, I will not apologize to the weak."

The faces of several students at Shanghai University were blue and red. They were just freshmen. They didn't take long for them to study in the Department of Mechanical Engineering, and powder metallurgy had not even touched. How can they beat him?

"Since this student is determined to see the powder metallurgy technology of Shanghai University." Ye Qing stepped forward with a dumb smile and patted the proud Japanese graduate student: "So, on behalf of the Department of mechanical engineering, I'll show you."

The air seemed to freeze all of a sudden, and everyone became speechless. The angry expressions of several freshmen turned into consternation, and they reflected Ye Qing. In the afternoon, they also complained about a lot of complaints in front of Ye Qing. After a brief silence the students of the Japan University of Technology, burst out laughing.

"You?" The student Tanaka used his spare time to look at this guy of his age.

This is an unfamiliar student. In the first three days of academic exchanges, Shanghai University has sent out all the technical bulls. In the end, these bulls were defeated by them.

Age determines knowledge and experience. Tanaka feels that Ye Qing is one or two years younger than him.

"Do you know what is powder metallurgy?" Tanaka squinted his eyes: "Do you know what is dissimilar metal sintering?"

After finishing the talk, the middle school student took out his proud work from the pocket. The two-color metal ring showed Ye Qing: "Two colors of metal, the joint has 70% strength of the material itself."

"Yes or not, see you in our powder metallurgy laboratory."

Ye Qing didn’t look at the nut and walked toward the canteen stairs. On the spot, all the freshmen from the Department of Mechanical Engineering ran along.

"Let’s also take a look at the advanced technology of Shanghai University." Xiao Linjing took the lead to follow up:" I am looking forward to this classmate, what powder metallurgy technology can make us shine."

"Academic exchanges need to be displayed to each other. Otherwise, it’s only our Japanese University of Science and Technology. We’re not here for nothing."

"You will see that." Professor Cai Chenning gave him a blank look.

A contradiction that should not have been solved was successfully resolved by Ye Qing in one sentence. Five minutes later, two groups of people came to the powder metallurgy laboratory.

On the side of the Japan University of Science and Technology, they simply found stools to sit down and look at the play.

"You’ll have to apologize if you lose." The freshman here at Shanghai University rattled with teeth.

"Then if we win?" Tanaka is sitting in crossed legs shrugged sullenly.

"Classmate, I don’t know which aspect of metallurgical technology you intend to show?" Professor Kobayashi concealed a trace of contempt in his eyes: "Say there is a preparation for learning."

"I’m afraid you won’t learn." Ye Qing, who was debugging the equipment, did not even raise his head.

The students of the Japanese University of Science and Technology had a stronger smile here and seemed to have heard a joke that could be recorded in Guinness.

If he was from Shanghai University, and he was an old professor who had more than fifty years old, Kobayashi in person could still take it seriously. But he was not. He was just a stunned young man who looks younger than Tanaka. But for looking at the clothes, he is wearing. Kobayashi does not have to look too carefully to know it was valuable. Would this rich man be proficient in powder metallurgy?

Professor Kobayashi almost burst out laughing in his heart. How can the rich learn the metallurgy of dirty and tiring powders?

Oh... I almost forgot something. When he first entered the door, Kobayashi smelt some obvious wine from the young man. After drinking and drinking too much, the naive rich man thought he could save the world!

"Who’s going to get me 500ml, four points of chemical alcohol? And turn on a laboratory vacuum sintering furnace the size of a refrigerator and preheat it." Ye Qing told the students at Shanghai University.

4 points refer to 99% high-purity alcohol. There are many such things in the chemical laboratory, and a student immediately volunteered to find a chemical teacher to apply for materials.

"Aluminum hydroxide powder, chlorite powder, quartz powder, zinc powder, potassium ketone peroxide..." Later, Ye Qing counted 11 kinds of common metal and non-metal powders in a row: "Go and help me find these materials, each one hundred grams."

"You don’t even know where the laboratory materials are placed... what do you want to do?"

The student Tanaka was the first one who could not bear the doubts in his heart, stood up, and asked: "How come there are so many non-metallic materials?"

"Because I want to show you that the combination of two metals with different properties in the sintering of dissimilar metals is only the most basic technology, not even the introduction."

After talking, Ye Qing ignored Tanaka’s student and his companions, with a horrified expression of "you drank 100% fake wine." On the high-mirror workbench, Ye qing quickly used an electronic balance to weigh the measuring cup, and then accurately weigh out various powders from the colorful powders given by the students according to the different ratios. High-purity alcohol was also quickly given. Ye Qing turned out to be like noodles, injecting a certain proportion of alcohol into a beaker of powder of different materials, and then mixing well.

On the side of the Japan University of Science and Technology, this young man, who was coming to the battle angrily, is funny. For a long time, they thought there was any technology, and the result was to be blind. Of course, they could not understand it, because the technology that Ye Qing was about to show was powder metallurgy learned from the metal master experts.

At first, the metal master experts used various materials to sinter and synthesize exquisite jadeite.

Now Ye Qing needs another way to let these people know what powder metallurgy is.

Chapter 379: Now that“s a real sintering

The more you think you have an understanding of something in technology, the easier it is to think you are seeing the wrong thing after seeing something that you cannot understand.

Kobayashi and his colleagues thought that the Japanese University of Science and Technology far surpassed Shanghai University in the research of powder metallurgy technology. Then, after seeing Ye Qing’s blending technique as if adjusting pigments, he felt very funny.

High-purity alcohol has volatile properties and can theoretically act as a humidifying agent. However, when it is used in various metal and non-metal powders, chemical reactions may occur and the density of the powder will increase because the embryo is compressed by the hydraulic machine and the phenomenon that the internal alcohol cannot be completely volatilized. So, in order to solve this problem, it is necessary to put the embryos on the shelf for a long time to let the alcohol completely evaporate.

This is a waste of time and a natural placement. After the embryo is dried, it may appear slightly deformed, increasing the rate of product failure. For that, this technique has long been eliminated on their side and changed to a special humidification fluid. There are also mixtures in this laboratory, there are only backward ball mills, but now the three-dimensional motion mixer is the standard equipment in the first-class laboratory.

There are too many bad points, insist on not make complaints about it!

Kobayashi had a feeling of backward feeling when he came to the university laboratory thirty years ago.

Ye Qing sneered at the Japan University of Technology team and ignored the mocking eyes, mixed five main powders by himself, and then put them into ring molds with different specifications using a hydraulic press to die-cast into five circles with different sizes. The smallest round accessory was only the size of a wine bottle cap, and the largest was similar to a bracelet. If you measure their diameters, you will find that these rings are from small to large, and the outside of each ring is slightly larger than the one above.

"Are you doing the Olympic rings?" Tanaka smiled indifferently: "The 2020 Olympics will be held in our country. Speaking of the location of the opening ceremony [New National Arena], the mechanical automation system in it is still made by our responsible school for the design."

An industrial microscope used to observe the micropore structure on the surface of the material was adjusted by Ye Qing. The microscope was then used to observe. Ye Qing used a micrometer to carefully measure the size of each round embryo while using a knife on the edge of each blank, a semi-arc concave and convex surface like a gear was carved.

After the engraving was completed, Ye Qing assembled the five-ring sleeves accurately and then recast them with a hydraulic press. Those half arcs concave and convex surfaces are magically fused together after being cast and pressed by the hydraulic press with a pressure of 500 tons.

Without giving them time to appreciate, the embryos were assembled, and they were directly sent by Ye Qing to the pre-heated vacuum sintering furnace and everyone watched nervously as the temperature of the sintering oven increased. Ye Qing looked at the watch on his left hand and calmly said: "Wait another twelve minutes."

"Do you want me to count the time for you?" Kobayashi flaunted and raised his left hand, showing a silver-white dial, a matt black metal strap watch, shaking: Seiko Minute Repeater mechanical watch with chronograph Stopwatch function, daily travel time error is controlled within 0.5 seconds. "

"Uh..."

Ye Qing dragged his sleeves to unveil this piece in his hand. There is only a piece of Patek Philippe 2499 red gold series handed down in the world. Some difficult words said: "No...use it."

Some opposing atmosphere which lasted until the vacuum arc furnace was re-injected with protective nitrogen to balance the internal and external atmospheric pressure before they were broken by great tension.

"It will definitely break into glass." Kobayashi whispered in the ears of Tanaka’s ears, not worrying they would be turned over.

Ye Qing smiled, wearing insulating gloves and using special pliers, from which a fiery red disk with a shape similar to jade Bi was pinched out. The fiery red disk is like a magnet, instantly attracting everyone’s attention, and there was a sound of inhalation in the powder metallurgy laboratory.

"It’s not broken?"

Professor Kobayashi rubbed his eyes. What a surprise.

When an object is heated, due to the heat transfer of the material, if there is a crack in the object it will appear a very obvious black gap. But the fiery red disc in front of him was completely a whole.

The flaming red disc faded away the residual heat bit by bit. A touch of emerald green appeared first on the outermost periphery of the disc. Under the hot halo around, the verdant green on the outermost periphery became exceptionally transparent, glittering like the crystal luster of jade. Then the second fiery red faded away, and the silver-white metal outline made Kobayashi’s eyeballs more and more inflated during the gaze. Then the third purple, then the fourth white and the fifth transparent...

Green, silver, purple, white, transparent. Five different colors were combined together, they were intertwined with each other, and they were natural. Silver and white were metallic materials and the remaining three were non-metallic materials.

The sintering between different metals is already a big piece of high-end technology. But Ye Qing was now holding five different colors and different kinds of sintering.

The laboratory lights just gave it a hazy, five-color luster. As the fiery redness of the last point faded, this exquisite disc seemed to be alive, with life flowing inside.

"Impossible!" Tanaka, who had shown two metals sintered in the afternoon, jumped up, not only breathing, but even thinking. There was no gap, and it is natural.

"The melting point between zinc metal and quartz is sufficiently different by 1150 degrees. I want quartz to be sintered into a transparent color. The zinc metal with a melting point of only 420 degrees has long been melted into a pile of waste. This is not in line with science."

"You said it was pure zinc, but don’t you know that the most common way to use zinc is to mix it with other metals and become an alloy?"

"I don’t believe it, then tell me. Even if it is a zinc alloy, how can it be perfectly combined with quartz?"

There is not so much why, after the five-color disc cools down, Ye Qing directly handed it over to the Japan University of Technology and they put the five-color disc under the industrial microscope without hesitation and looked at it with the thorniest eyes still unable to find any cracks in it.

Now, Shanghai University is caught in the joy of tasting the fairy fruits of Pan Taoyuan.

The HIT of the Japan University of Science and Technology could get into the five-color disk and glance at the expression of the mystery of the atomic structure inside, making them cool from the bottom of the foot to the heavenly cover.

Is it better? How many times is the sintering of five materials compared to the sintering of two materials?

This is not the difficulty between metal and non-metal, and it is not at an altitude, and the Himalaya cannot even close the gap between the sky and the valley.

"Isn't that enough?" Yun Tianjie, a freshman, walked in front of his classmate Tanaka as a winner.

"Hey... Loser, you should fulfill your promise and apologize to us."

Chapter 380: What gift do they give back?

"Hey... loser, you should fulfill your promise and apologize to us."

The Japanese University of Science and Technology was also immersed in the visual and technical impact brought by the five-color disc, which is difficult to extricate itself. It was unheard of for the freshman Yun Tianjie and he repeated it again and the Tanaka student who had spoken at the beginning was only overwhelmed over with sweat. He used to spit out the big words before, but now if he apologized, does it mean he has slapped himself in the face?

When he looked up, he found everyone except the Japanese University of Science and Technology team looked and staring at him with angry eyes. It showed him bad encouragement that he cannot try to not apologize.

If Ye Qing just made similar bimetallic sintering, Tanaka could find an excuse from a technical perspective. However, under the huge technical gap, Tanaka could not find any excuse to refute Ye Qing's work.

"Yes... Yes... No..."

Tanaka's voice was severely jammed at this time, and an apology was the same as the phone repeater. On the Japanese side, the group was utterly embarrassed. But Shanghai University is not in a hurry here. The longer the student Tanaka delays, the more interesting they will be.

At ten o'clock in the evening, after given a good lesson to the group of students, Ye Qing, the master of this multi-material powder metallurgy technology, triumphantly returned.

The nut, considered by the Japanese University of Science and Technology as the most cutting-edge industrial work, was thrown to Ye Qiao by Ye Qing and asked him to make a screw.

Before the break, Ye Qing contacted the managers of several top international machine tool companies at one time and asked the specific arrival date of their last batch of machine tools. The time is set in the afternoon of two days later. After that, Ye Qing looked at the manufacturing ranking of the Monster Factory and found it was only 150,000 points away from the 10th China Pacific steel group.

"In the fifth stage, where will there be an upgrade?" Ye Qing couldn't help looking forward.

The Monster Factory was in the fourth stage and is already alone in the traditional machinery field.

Even in a field of global ultra-precision machining, the highest precision free-form industrial mother machine from Jetta is placed in front of the Monster Factory.

Monsters could also disassemble this mother machine, and then according to the measured data, perfectly reproduce all the components of this industrial mother machine. They could even increase its accuracy by another level. But...

The copied industrial mother machine would be only a semi-finished product. In the modern industry, because mechanical automation is only the most basic link. In addition, there are very important electronic technologies. Because it would be just like an industrial mother machine without supporting programs and automatic processing cannot be achieved.

The most profitable electronic technology products in the 21st century cannot be manufactured without electronic technology.

After thinking about this idea, Ye Qing pressed it back. It seemed that sales of ionization purifiers were better than those of Apple phones. It was a miracle that this pure industrial product could achieve this kind of achievement.

With the launch of five other full-motion assembly platforms, the daily output of ionization purifiers could reach a staggering 400,000 units.

Now the daily sales volume is very stable, about 300,000 units per day. After deducting the cost and the tax payable, Ye Qing can make a profit of 1.5 billion. Furthermore, the number of ionization purifiers produced every day is also 300,000. After all, the two core components inside and the number of magnetic generators and induction originals can only be supplied so much.

If Ye Qing was an ordinary person and did his business like this, even one-tenth of him would probably wake up with a smile in his dream. But with the Monster Factory, Ye Qing felt that these were not enough.

When a certain amount of money is reached, such as 100 million yuan, it is not much different from 10 billion yuan. How to use Monster Factory to turn foreign technology industries one by one into domestic production is better than buying it, and it is undoubtedly more fun than how to make money.

To achieve this, it is naturally not enough to rely on the traditional machinery industry alone.

Ye Qing was impatiently waiting for the Monster Factory to climb to the fifth stage, and it was better to produce dark electronic technology or energy.

A phone call interrupted Ye Qing’s conjecture. Professor Cai Chenning called on the phone. And as soon as the phone was connected, Professor Cai Chenning laughed there.

"Mr. Ye, the students from the Japan University of Technology, and Professor Kobayashi, who led the team, applied for the right to use the powder metallurgy laboratory with us. They shouted they would not sleep tonight before they copy your product."

Listening to the teacher over there in the laboratory: "The students of Japan used a full barrel of high-purity alcohol and they did not sinter a complete five-color disc."

"Without the correct formula, they can’t copy it out for a long time," Ye Qing quietly waited for Professor Cai Chenning’s following.

"That..." Professor Cai Chenning was a little embarrassed and asked: "Mr. Ye, the technical public relations of that nut, you have a few days to..."

"It will be done tomorrow."

After receiving an affirmative answer, Professor Cai Chenning also felt relieved. This exchange meeting with the Japanese University of Science and Technology will take one week. Counting from tomorrow, they will return to their country in three days.

Since the time is up, Professor Cai Chenning had no worries.

As long as the screw could be made, let them carefully prepare the cutting-edge industrial technology, and the processed nut would fall.

It’s not ugly to lose more time at the competition between those students and teachers. Besides, there were now two rounds here. Ye Qing’s round at night directly caused severe psychological shadows on the side of the Japanese University of Science and Technology.

Reciprocity to reciprocity, naturally here at Shanghai University it should also give a gift to the Japanese University of Science and Technology. It was not a gift by making the screw, and this was just a problem in the gift from the Japanese University of Science and Technology, and after the screw was made, the screw and the nut will be placed in the exhibition hall of Shanghai University for students to visit.

They could not let the Japan University of Technology go back empty-handed, they have to give a gift and ask them to bring back a problem originally prepared aside here at Shanghai University, also air test that also tests the precision processing technology as a return. It was just all the plans that were overturned by the nut that couldn’t be screwed.

The air clock was a very mysterious clock that could run smoothly for more than ten years without relying on any energy. It obtained power according to temperature changes. Every time the temperature rises or falls by one degree, the spring of the barrel inside the movement could accumulate a power source sufficient to run for about two days.

The mystery came from the temperature difference expansion chamber in the clock. In theory, the toughness of metal materials and springs is qualified. The air clock could even run for a century. Because of the low price and accuracy of travel time, the air clock had not been popularized, and Shanghai University had elaborately made a high-precision air clock as a gift, which was originally thought to be a good gift.

As a result, a nut made by the Japanese University of Science and Technology turned the original accuracy of Shanghai University into a ridiculous workshop-level product. After all, the air clock appeared several decades ago, and some presidents and chairmen liked to put it as decoration in their office.

Japan University of Science and Technology wanted to make an air clock with several orders of magnitude higher accuracy.

But Shanghai University could not make this screw. The most important thing was that there was no way to rely on the air clock to give the other party a problem.

The return ceremony was overturned and Professor Cai Chenning thought for a long time but thought of nothing that could be easily unachieved. Since he could not solve the nut problem, he could not offer a gift like a screw. Professor Cai Chenning couldn’t think of it, so he had to consult Ye Qing again.

"Then I try to think about what kind of problems..." After hearing Professor Chen Chenning’s request for help, Ye Qing thought it over a bit and promised to try it.