

I Can Meet with Dead Scientists #Chapter 21 - 20 A Terrible Lunch and Night (End) (6,000-Word Chapter—Please Continue Reading!!!)_2 - Read I Can Meet with Dead Scientists Chapter 21 - 20 A Terrible Lunch and Night (End) (6,000-Word Chapter—Please Continue Reading!!!)_2

Chapter 21: Chapter 20 A Terrible Lunch and Night (End) (6,000-Word Chapter—Please Continue Reading!!!)_2

With this question in mind, Xu Yun followed Little Niu out of William's cottage.

After lunch, Woolsop was a bit livelier than during the day, and since Little Niu took Xu Yun along the main road of the town, they inevitably encountered a few passersby.

Among them was an old man pushing a cart, in his forties or fifties, short and thin, with a face full of wrinkles.

When the old man saw another passerby not far away, he smiled amicably, but the moment he saw Little Niu, his face turned sour.

There was also a raggedly dressed shepherd boy, his exposed ankles red with cold, yet he still waved a dogtail grass nonchalantly.

When he glanced at Little Niu, he pursed his lips and gave a babyish humph.

And as the number of passersby increased, this wasn't just an isolated incident.

It was obvious.

Over time, Little Niu had demonstrated his talent for cursing.

With words that could cover the heavens, his toxic tongue unparalleled, spraying insults across the town without rival.

Indeed, besides being a school bully, Little Niu was also a blusterer—the kind who gets nastier with age.

If it weren't for William's backing, Little Niu would likely have ended up as a country loafer this time.

And this wasn't all, at Trinity College, because a couple often chirped outside his dorm window (though they were actually forty to fifty meters away according to the college's

layout map), he even took a pot of water and sprayed for hours outside the boys' dormitory.

When thirsty, he drank a glass of water and continued spraying, forcing the couple to break up in tears...

As for his later verbal battle with Hook, it was so notable that it left a mark in history.

In 1715, Old Niu once wrote a sentence himself, saying 'The only one who can point at my nose and scold me as guilty is the priest,' which could also be considered a summary of his character.

Many locals use 'half angel, half demon' to describe Theshy, but this phrase is equally apt for describing Old Niu's scholarship and conduct.

However, Old Niu, who spent his life unmatched in taunts, also attracted a lot of the internet's backlash in the digital age, which in a way is rather karmic.

Of course.

While the passersby sneered at Little Niu, their glances at Xu Yun were varied:

Some hated him due to their animosity toward Little Niu, some were surprised, some were fearful, and others were curious.

After all, in a small place like Woolsop, not everyone understood the concept of Eastern People.

There was awareness of black hair, but it actually referred to Italians and Iberians, Portuguese, and the like, who are Latino.

Although Latinos have nearly black hair, if you look closely, it's actually a deep brown under strong light and is also curly, which is quite different from Xu Yun's situation—if you truly talk about black straight hair, the only person in Europe who fits is a Hungarian.

What, you ask why Monica Bellucci has black straight hair?

Have you heard of dyeing and straightening?

Couple that with Xu Yun's distinctly yellow skin, black eyes, and attire, it indeed sparked quite a few discussions along the way.

No surprise there.

It's estimated that by early tomorrow morning, the entrance to Wolseop village will become lively—fortunately, this isn't 13th century Europe, or else you might have some middle-aged Hero showing up to defeat him thinking he's the boss.

Xu Yun followed Little Niu for a while, then suddenly felt something seemed off:

"Mr. Newton, isn't this the road home?"

Little Niu lifted his eyelids to glance at him and said:

"Of course not, we're going to cut grass first."

"Cut grass?"

"That's right, cut grass."

Whether it was because he thought of the living expenses Xu Yun promised or those words about 'this boy,' Little Niu rarely explained further:

"I can lend you the bedding for sleeping, but you don't plan on lying directly on the ground, right? If you freeze to death, no one will pay me."

Xu Yun scratched his head, only then realizing he still needed to make a bed on the floor for the night.

Little Niu's garden room was completely wooden, certainly less insulated than William's red brick house, and it's not surprising for drafts to come in at night.

Added to that, the floor of Little Niu's bedroom was covered with dust from comings and goings, so having something to pad it would better not be skipped.

Sheepskin or something is out of the question, Little Niu himself only has hose pants, so they could only find some warmer materials to make a pad.

Afterward, under Little Niu's lead, the two arrived at a pond with plenty of reeds.

Seeing this patch of reeds, Xu Yun's eyes lit up:

It seems Little Niu's experience is quite sufficient, they could finally have a good 'mattress' tonight.

People who've stayed in rural areas or often camp should know that reeds are a very high-quality material for grass pads.

Reed grass pads are insulating in summer and cold-proof in winter, while also moisture-absorbing, offering great comfort when lying on them.

Besides artificial mattresses or animal fur, reeds should be one of the most suitable natural materials for making a mattress.

Obviously.

A long-term experience of living alone has honed many of Little Niu's life skills.

Upon arriving at the reed pond, Little Niu handed the Axe used for chopping trees earlier to Xu Yun:

"Fat Fish, you chop that side, I'll chop this side, once one batch is done, we'll set them aside to dry.

The sun sets early in winter, so we need to dry the reeds within four and a half hours."

Xu Yun took the Axe, nodded gently, without feeling surprised or out of place that the word 'Hour' slipped from Little Niu's mouth.

In ancient local civilizations, a day was divided into twelve Hours, while Europe had mechanical water clocks based on a 24-hour day as early as 100 BC in Athens, and by 1510, clockwork pocket watches appeared in Nuremberg, Germany.

Chapter 22: Chapter 20 A Terrible Lunch and Night (Complete) (6,000-word long Chapter, please read!!!)_3

Therefore, for a university student like Little Niu, mentioning hours and minutes casually isn't surprising.

Then Xu Yun took over Little Niu's axe, and they began to chop the reeds energetically.

Over five hours later, the sky was already dark.

The reeds were cut down and dried.

Xu Yun and Little Niu each carried a large bundle of reeds back, and when they returned to the garden house, it was estimated to be close to seven.

Little Niu swiftly opened the door, lit an oil lamp first upon entering, and then, with Xu Yun, laid out the reeds properly.

Next, he took a cattail-filled quilt from a storage cabinet and placed it on the reed mat, completing Xu Yun's little nest.

"Phew..."

Xu Yun wiped the sweat off his forehead and asked,

"Mr. Newton, it's so late, should we still go to Mr. William's house for dinner?"

Little Niu shook his head at him, left the living room, and returned shortly with a basket containing bread:

"We're having this tonight."

Xu Yun examined the pieces of bread, recognizing the familiar marks and asked thoughtfully,

"These breads are...?"

"Took them from my uncle's place. We take them from them once a week. Have a hot stew for lunch at their house, and some water with the bread for dinner."

With that, Little Niu casually handed a piece of bread to Xu Yun:

"This one is for dinner, no more than this,"

After Xu Yun took the piece, Little Niu took out two slightly larger pieces for his own plate.

Xu Yun: "..."

At this moment, he understood what those silly readers from his past life thought when they saw him throw out a paper—truly, it was you.

Looking at the bread in his hand, Xu Yun suddenly thought of something else:

"Mr. Newton, since the bread is from Mr. William's place, then what about the windmill grinding you mentioned before...?"

Little Niu swallowed a small piece of bread with some difficulty and glanced at him:

"Of course, it's to help my uncle's family grind flour. We eat their bread and drink their soup every day, so we have to do something, right?"

Besides, this estate too, in just over a week it will be apple harvest time, and you'll need to help then.

If we can sell some apples, life might get a bit better afterward.

If we can't sell them...

At this, a rare hint of worry appeared in Little Niu's eyes:

"I can manage, but my uncle's family might have trouble; there are six of them."

Hearing this, Xu Yun looked at Little Niu with a bit of surprise.

Although he knew the relationship between Little Niu and William was good, he didn't expect it to be this close?

To have Little Niu take the initiative to do things is quite an achievement—even in a game.

No wonder when William passed away, Little Niu rushed back from Switzerland at four in the morning to mourn...

The two of them continued eating the bread quietly.

After a while, Little Niu suddenly said,

"Fat Fish, time to sleep."

By this time, it was dark outside, and Xu Yun couldn't judge the exact time, estimating it might be around seven-thirty.

Sleeping at this time would be quite early for modern people, but in the productivity-limited 17th century, a considerable number were already asleep at this hour.

Moreover, the nearly whole day of chopping wood, walking, and cutting reeds left Xu Yun's body exhausted.

So he quickly agreed,

"No problem, Mr. Newton, I think I'll just..."

Before Xu Yun could finish his sentence, Little Niu blew out the oil lamp with a whoosh.

Xu Yun: "..."

No brushing teeth, no washing face, no washing feet, not even changing clothes.

What a miserable night.

Yet with Little Niu's character, there obviously wasn't going to be another chance to clean up.

Therefore, Xu Yun sighed and crawled into his simple bed.

....

That night, Xu Yun did not sleep well, a question lingering in his mind:

Why did no one ever tell me...

Newton snores!!!!

.....

Chapter 23: Chapter 21 The Difficult First Step

Although Little Niu's sleeping habits are really not great, his snoring is as loud as a buzzing in your ear.

But perhaps due to the exhaustion from a day of hard work, Xu Yun eventually fell into a drowsy sleep.

The night passed without incident.

.....

Not sure how much time had passed, a sudden burst of birdsong came from outside the window.

Xu Yun lazily opened his eyes, scratched his messy hair, stretched, yawned, and thus woke up.

Currently, as the British Peninsula had reached winter, the morning air was extremely damp and cold. Xu Yun breathed out, and a mist soon appeared in front of him.

Then he suddenly thought of something, turned his head to look to his right.

Only to see that Little Niu's bed was empty; clearly, the master had been awake for quite some time.

At this time, the sky was slightly bright, roughly estimating it was around six thirty to seven in the morning at most.

At home, some late-night writers might just be getting to bed to rest at this time.

Then Xu Yun clasped his hands, breathed on them, rubbed his face vigorously, and quickly slipped out of the covers— All workers know that in winter, to escape the confinement of a warm blanket, you must do so swiftly and decisively before it notices.

After tidying up his clothes a bit, Xu Yun gently opened the bedroom door, peeking his head out to look.

Sure enough.

At this moment, Little Niu was sitting at the desk outside with his head down, writing furiously as if calculating something.

Upon hearing the sound of the bedroom door, Little Niu lifted his head and gestured with his chin towards the teatable at the entrance:

"There's bread on the table, just one piece. Have breakfast, rest a bit, and then go inspect the orchard."

After speaking, Little Niu hesitated for a moment, then changed his mind before Xu Yun could reply:

"Never mind, today is your first day at this job, I'll guide you through the process first, and you can do it alone starting tomorrow."

Xu Yun nodded:

"Understood, Mr. Newton."

Then he glanced at Little Niu, still writing, and continued:

"Mr. Newton, I'd like to go out to fetch some water to moisten my throat; it feels dry after sleeping all night."

This time Little Niu didn't speak, but softly hummed in response.

Given the permission, a mysterious spark passed in Xu Yun's eyes; he took a wooden cup he had carved the day before and stepped outside.

By the side of the garden house, there was a slightly old water jar, seemingly Uncle William's handiwork from years past, positioned outside the line of sight of the window behind Little Niu.

Leisurely, Xu Yun approached the water jar, scooped water with the wooden cup without minding the cold, and poured it directly into his mouth.

He gargled with a glug, glug sound.

One has to say, in the context before the 19th century, Huaxia's mainstream cultural habits were much better than Europe's.

For instance, in ancient Huaxia, even without toothbrushes, there were many ways to cleanse oneself.

As recorded in the "Book of Rites", it mentions the practice of "rinsing after the first crowing of the rooster", with common cleanliness supplies including alcohol, vinegar, salt water, and tea.

Alcohol, vinegar, and salt water have sterilizing effects, while tea is rich in fluoride.

Fluoride not only helps prevent cavities but also cleanses the mouth, providing tooth protection.

Later, well-known items like willow twigs and pig bristles emerged, considered the early prototypes of the toothbrush.

In contrast, ancient Europe was different; they mostly did not brush their teeth or bathe— especially the British.

Even nowadays, many British people still do not have the habit of brushing their teeth, resulting in ongoing oral health issues in the UK.

Of course.

This mainly relates to their political and cultural background, which we won't delve into here.

From a modern perspective, Xu Yun respects some customs if they don't have adverse effects, but he couldn't abide by not brushing his teeth or washing his face.

Therefore, he seized every opportunity to keep himself as clean as possible.

If possible, correcting Little Niu's and William's habits was also necessary.

Even though there's no direct evidence in later generations linking their longevity with not bathing or brushing their teeth, adjusting these habits can't hurt — who wouldn't want to live a few months longer?

After a simple mouth rinse, Xu Yun wet his hands a bit with cold water.

With a few pats on his face, the cool sensation permeated his skin, refreshing him instantly.

Finished with his washing, Xu Yun didn't hurry back but instead looked up at the sky.

"Tsk tsk, not a cloud in the sky and the sun shining brightly, a perfect day for fishing."

Xu Yun rubbed his hands together and chose a spot in the corner where sunlight and shadow evenly split.

He took off his 900-degree glasses and then...

Did nothing, just perked his ears to carefully listen for any commotion at the garden house entrance.

...

Meanwhile, inside the house.

At this moment, Little Niu was quickly calculating on paper:

" $(A+B)m/n = (P+PQ)m/n = Pm/n + (m/n) \cdot AQ + [(m-n)/2n] \cdot BQ + [(m-2n)/3n] + [(m-3n)/4n] + \dots$ "

"Hmm... If I write it as $e^{(n \cdot \ln(1+1/n))}$, using L'Hôpital's rule for 0/0 to turn it into 1..... Damn, still not right!"

With the pen tip's pause, Little Niu frustratedly ruffled his hair.

His cheeks puffed as he let out a sigh.

At this time yesterday, he encountered Xu Yun descending from the sky, leading to a series of subsequent events.

This was nothing special, just a coincidence, easy to dismiss once explained.

However, the scene of Xu Yun's fall overlapped faintly with a previous question Little Niu had pondered:

Why do unsupported objects fall down instead of rising?

Of course.

This question's origin predates yesterday; Little Niu wasn't the first to ponder this.

But Xu Yun's arrival deepened the question's imprint on Little Niu's mind.

Unlike others.

Concerning this mysterious 'force,' Little Niu already had an entry point, which was Kepler's Three Laws.

According to Kepler's Laws, all planets in the Solar System orbit the Sun in elliptical paths.

So, many, including Little Niu, speculated that there must be some kind of connection between the Inverse Square Law and Kepler's Laws.

The issue is that linking the two requires a non-existent mathematical tool— which Little Niu termed the Fluxion Technique, a method for deriving the relationship between known flows and computing their fluxions along with their inverse operations.

Currently, Little Niu had completed a small part of his derivation but got stuck simplifying the binomial $(P+PQ)^{m/n}$.

It was his sixth attempt to simplify the binomial, but he still couldn't expand it into a straightforward series.

If he couldn't overcome this hurdle, how could he begin unraveling that mysterious 'force'?

So, for the moment, Little Niu was a bit anxious, and his mind began wandering:

In a few hours, he had to head to Uncle William's house...

How he longed to see Lisa...

He wondered how much grain was left in uncle's house, especially now with Fat Fish needing supplies too...

Wait!

With a realization, Little Niu quickly turned his head:

Where's Fat Fish?

It had been over half an hour since he went out for water, surely he should be back by now — he couldn't have gone all the way to the Thames River, right?

Considering the living expenses the Eastern man negotiated, Little Niu couldn't sit still.

He quickly set down his pen and hurried out.

Creak—

Pushing open the door, Little Niu headed straight for the water jar as usual.

Unexpectedly, as he rounded the corner, he saw Xu Yun squatting in an Asian crouch on the ground, holding his glasses in one hand.

Seeing Xu Yun wasn't in any mishap and even appeared to be idling, Little Niu's fiery temper surged instantly:

"FU....."

But before the word escaped, he swallowed it back forcefully.

Stopping him was not the censorship system of some website, but...

Behind Xu Yun, on the shadowy corner of the wall, there was a small but distinctly visible...

Rainbow light!

Chapter 24: Chapter 22 No wonder he's been a nuisance for ages...

Outside the garden house.

With the appearance of Little Niu, Xu Yun seemed to have 'sensed' something.

A mix of three parts guilt, three parts surprise, and four parts panic showed on his face as he hurriedly put away his glasses:

"I'm sorry, Mr. Newton, I accidentally lost track of time, now I will..."

Before he finished speaking, Little Niu interrupted him:

"What is that?"

"Ah?"

Xu Yun blinked, waved his glasses, and feigned ignorance:

"As you can see, these are glasses."

Little Niu shook his head at him and said:

"Of course, I know these are glasses, a masterpiece of Sir Bacon from the mid-13th century. My mentor, Mr. Luo Wen, has a pair of custom-made lenses at a high price.

What I'm asking is... what is that seven-colored light on the wall?"

Upon hearing this, Xu Yun displayed a perfectly timed look of relief, his acting skillfully mocking certain young male idols:

"Oh, you mean that seven-colored light, it's a phenomenon of dispersion."

"Dispersion phenomenon?"

Xu Yun nodded and explained:

"In a faraway Eastern country, there was a talented knight named Sir Han Li.

He discovered that when sunlight passes through a triangle prism, it gets refracted and dispersed into seven main colorful lights: red, orange, yellow, green, blue, indigo, and violet, calling this the dispersion phenomenon."

As soon as Xu Yun said this, Little Niu was initially stunned, and then his pupils suddenly contracted!

Friends familiar with optics should all know.

For a long time, people thought white was the purest color, and white light was the purest light.

Until the 17th century, someone used a prism to cause sunlight to disperse, unveiling the secret of colors.

And that person was...

Newton!

And coincidentally enough.

Little Niu did the prism experiment on January 14, 1666, which was only three months ago!

According to Little Niu's description in the book "Optics," his curiosity about light began in mid-June 1665.

During his research with a telescope borrowed from Stock, he suddenly discovered the colors seeping through a distorted image, which sparked his study of light.

In recent days, Little Niu tried all sorts of convex lenses of various sizes, yet still could not uncover the mystery of natural light.

Moreover, due to the problem of binomial simplification, he temporarily shelved this idea, planning to study it seriously when he had the time.

Unexpectedly.....

In Xu Yun, this visitor from the East, he witnessed such a dramatic demonstration of light dispersion, or should I say...

The truth of light?

He then took a deep breath and said to Xu Yun:

"Fat Fish, show it again.... um, I'll waive your meal fee for a day."

Seeing the fish already on the hook, Xu Yun raised a barely noticeable smile at the corner of his mouth, his hands obediently complying.

He placed the thickest edge of his glasses towards the sun, adjusting to a rather subtle angle.

A moment later.

A tiny cluster of colorful spectra once again projected onto the shaded area.

Under normal circumstances, there are two main operational methods for dispersion experiments:

One is mirrors and water, and the other is a triangle prism.

But if your glasses have a high enough prescription, the edges of the glasses can temporarily produce a dispersion effect.

Since nearsighted glasses are concave lenses, the edges are thicker, especially with high-prescription lenses, which display prism-like optical characteristics.

When light hits the lenses, the refraction rates of various color lights differ, dispersing the different colors of light from the source, and then going into your eyes, that's the rainbow.

This is also why some people see color separation when looking at the edges or contours of objects through their lenses—the theoretical basis is light dispersion.

What, you ask what the technical factor is?

Of course, it's the mismatched skills of the optician....

"Red, orange, yellow, green, blue.... this is cyan, right? Cyan, violet, oh God..."

Seeing the sunlight refract into colors through the lenses, Little Niu's lips trembled with excitement:

It was previously mentioned, Little Niu is a firm believer, thus he believes there must be certain codes left by the Creator, revealing the truth of the world within all things.

And the seven-colored light through dispersion... clearly fits this condition.

He then suddenly turned his head, staring fixedly at Xu Yun:

"Fat Fish, did Sir Han Li provide any explanation for this phenomenon?"

Xu Yun opened his mouth, ready to explain the ins and outs of the dispersion phenomenon but found no matter what, he couldn't make a sound.

Meanwhile, a prompt box suddenly appeared again in front of him.

There was no text on the prompt box, only a flashing yellow exclamation mark.

It was clear.

Due to some kind of 'rule', Xu Yun's spoilers for Little Niu were restricted to a certain range, or rather, Xu had to take it step by step.

But thinking about it carefully, this was quite normal.

Otherwise, if Xu Yun directly told Little Niu $F = -(GMm/r^3) \mathbf{r}$ vector form, wouldn't it be over?

So Xu Yun pondered for a moment and said:

"Mr. Newton, Sir Han Li only discovered the dispersion phenomenon of light, but didn't offer much explanation of its principle.

After all, it was just an insignificant discovery in his magnificent life.

Later, Sir Han Li mysteriously disappeared during an adventure, leaving no trace.

However, before he disappeared, the knight had mentioned a sentence related to the dispersion phenomenon."

Little Niu immediately became interested, pressing on:

"What did he say?"

Xu Yun paused for a few seconds, tentatively saying:

"He said... according to his speculation, the main reason why sunlight undergoes dispersion is possibly due to the different characteristics of each color of light itself.

Just like a school of fish made up of countless fish, which appears as a large group to the naked eye, the quantity unknown.

But if different aperture nets are used for filtering, we can separate big fish from small fish.

If more nets are set, we can separate even more different sized fish or fry.

The dispersion of light might be akin to this.

Maybe their 'sizes' differ, so they display colorful rays after passing through some unknown filter."

Little Niu nodding thoughtfully, pondered for more than ten seconds, and said:

"I seem to understand, but Fat Fish, I have a question for you."

"What question?"

Little Niu lifted his eyelids and gave him a look, saying:

"According to you, a school of fish may contain big fish or fry, which belongs to the category issue within the framework of fish.

But for the fish school to survive, there must be a suitable external water source environment, right?

Like in the sea, lakes, rivers, etc., but clearly not on land or sky.

Doesn't that mean...

The propagation of light actually requires a certain environment or condition?"

Xu Yun: "...."

Demon Spirit, I want to report, someone is cheating here!

Chapter 25: Zhang 23: Seven-Colored Light

Friends who have studied physics should all know.

The refractive index of visible light varies in different environments, such as glass, air, water, and so on.

These things have a unified term in concept, which is medium.

Nowadays, with optical theoretical research gradually becoming standardized, many middle school students have also understood a principle:

Light can propagate in a medium, but the propagation of light itself does not require a medium.

But don't forget, Little Niu is in 1665, a period when optical research was still in its infancy.

Therefore, the fact that Little Niu could, just based on a few words from Xu Yun, quickly think of the possibility that seven-colored light might have different effects in different media in less than half a minute, is entirely an outstanding achievement.

Indeed.

Currently, Little Niu does not yet know that light itself is a boson, which does not need any fermions to propagate—at that time, the pinnacle theory of optics regarding refraction was a mathematical equivalence derived by Snell, and it was unknown until after his death.

It wasn't until 1678, when Hewgins and others examined his manuscript, that it was publicly known as the famous Snell's Law.

Prior to that, it was only derived in an equivalent form by Descartes in "Dioptrique."

And this is a fuzzy account with no clear truth, leading to them still sharing the honor of discovering the law of refraction of light.

Therefore, even though Little Niu's expression subconsciously included the speculation that visible light couldn't pass through a certain 'environment,' it's entirely understandable—honestly, to even think of the previous layer is already impressive, right?

Then, looking at the small cluster of colorful light on the ground, Little Niu suddenly thought of something again.

He pondered for a few seconds and then asked Xu Yun:

"Fat Fish, since sunlight can be dispersed into seven beams of colored light, are these seven-colored beams different lights?"

Also, theoretically, these seven beams of light can be recombined into a beam of white light, right?"

Xu Yun twitched the corner of his mouth; well, he just brought up two more critical points.

Nonetheless, by this time, he had gradually adapted to this founding master's abnormal thinking ability, so he quickly adjusted his mindset and said:

"Sorry, Mr. Newton, I only know the answer to the latter question—under the right conditions, the colorful light can be recombined into a beam of white light."

Little Niu was already interested at this point, his eyes glancing around:

"Fat Fish, you mentioned that prisms can also verify the dispersion phenomenon?"

"That's right, and the prism's effect is much better than lenses."

"Then let's do it once more with a prism!"

Little Niu quickly looked around and decisively said:

"I'll go inside to find a prism; I brought back quite a few of these from London before.

You just move the table—the tea table inside will do, just bring it here."

Xu Yun nodded:

"Understood."

Over ten minutes later.

A table about a meter in diameter, several prisms, and a black wooden board were placed next to the water tank.

Then Xu Yun stood up a prism, skillfully adjusted the angle, and gave Little Niu an OK sign.

A moment later.

A strip of spectrum appeared on the paperboard behind the prism, and it was noticeably clearer than before.

Seeing this, Xu Yun stepped aside, deliberately not making any indication, curious to see what this youthful founding master could achieve without any hints.

Little Niu came to the table, bent down and closely examined the spectrum.

He hesitated for a few seconds, picked up a black paperboard.

Cut a circle on it and placed it on the outside of the prism, where the light source was coming from.

A vast amount of sunlight was blocked by this paperboard, with only a beam of circular light passing through the small hole, then...

It still formed a strip of spectrum.

Seeing this situation, Little Niu uttered a soft "hmm."

Perhaps because he wanted to confide in someone, he suddenly looked at Xu Yun again:

"Fat Fish, have you heard of Mr. Descartes' theory?"

Xu Yun nodded and said:

"Of course I've heard of it; I even visited the University of Poitiers once.

Mr. Descartes believes that the color of light comes from the medium between the luminous body and the human eye, and is unrelated to the light source.

The color of light is not a feature inherent to the light, and he also proposed the theory of transformations of light traces."

"You're right, but see here."

Little Niu held the paperboard in one hand and pointed to the projected strip of spectrum with the other:

"According to Mr. Snell's equivalence and Mr. Descartes' theory, the circular light beam should form a circular or elliptical spot after passing through the prism.

Yet after dispersion, the colorful light forms a strip spectrum...

Could it be...

that Mr. Descartes' theory is flawed?"

After speaking, Little Niu thought for a moment and, before Xu Yun could reply, picked up the paperboard and scissors again, and made an even smaller hole.

He placed this paperboard behind the first prism, using this circular hole to capture any light beam from the colorful light band. (Little Niu once hand-drew this apparatus, (DOI)10.1098/rsta.2014.0213, personally authored by Little Niu, those interested can take a look, truly a soulful artist).

Then Little Niu beckoned Xu Yun, signaling him to come forward:

"Fat Fish, I'll report data, and you record."

Xu Yun's pupils shrank slightly, knowing that Little Niu was gradually advancing toward his ultimate "goal," but his expression remained unchanged:

"Okay, Mr. Newton."

Then the two started calculating angles, one holding paper and pen, the other taking measurements.

"Red light, incidence angle $i60^\circ$, refractive angle $\beta32.2^\circ$"

"Orange light, incidence angle $i60^\circ$, refractive angle $\beta37.4^\circ$"

"Incidence angle $i60^\circ$, refractive angle $\beta38.7^\circ$"

Twenty minutes later, four sets, 28 data points recorded.

The refractive index of different types of light in optical glass is different; the deeper reason involves relative permeability μ_r and relative permittivity ϵ_r , these two constants need Maxwell's Equations in mediums to calculate, thereafter establishing an intuitive matter and light interaction model, inducing motion equations through linear dissipation force, then solving his steady state using complex numbers, etc...

However, considering it's not convenient yet to PUA readers....ahem, the content is too complex, everyone only needs to understand the relevant conclusions just from a macro perspective.

After all, Little Niu's era didn't have Maxwell's Equations, did it?

"Purple Light 1.532.... Blue 1.528.... Green 1.519..... Yellow 1.517..... Orange 1.514.... Red 1.513..."

Looking at the fixed sets of data in front of him, Little Niu couldn't help but take a deep breath.

Clearly.

The refractive indices of different colored lights differ and remain constant, these seven-colored lights have different properties.

Hence, one can derive a conclusion:

White light is indeed not a pure light; it's composed of different lights.

And this implies...

He might be one step closer to understanding the truth of the world.

Meanwhile.

Little Niu was gazing at the light divided into seven, and also seven merged into one, suddenly thinking of something.

He saw his chest rise and fall a few times, swiftly running back into the house.

.....

Chapter 26: Chapter 24: The only name in this spacetime!

Outside the house.

Watching Little Niu hurriedly run back inside, Xu Yun vaguely realized something and quickly followed him.

"Bang—"

As soon as he entered, Xu Yun heard the sound of a heavy object hitting.

He looked over and saw Little Niu standing by the desk with a face full of frustration, his left hand clenched into a fist pressing heavily on the table.

Obviously, Little Niu had just given the desk a deliberate punch.

Seeing this, Xu Yun stepped forward and asked:

"Mr. Newton, what are you....."

"You don't understand."

Little Niu waved his hand irritably, but quickly thought of something:

"Fat Fish, you — or that Sir Han Li, are you familiar with mathematical tools?"

Xu Yun feigned ignorance and looked at him, asking:

"Mathematical tools? Are you talking about rulers? Or compasses?"

Upon hearing this, Little Niu's heart sank halfway, but he couldn't stop halfway and continued:

"Not physical tools, but a theory capable of calculating rates of change.

For example, the dispersion phenomenon just now, which is an instantaneous rate of change, might even involve some particles invisible to the naked eye.

To calculate this rate of change, we need another tool capable of continuous accumulation to calculate the product of the refraction angle.

For example, multiplying n instances of $a+b$ results in a product from selecting either letter a or b from $a+b$, like $(a+b)^2=a^2+2ab+b^2\dots$ Forget it, I doubt you understand."

Xu Yun looked at him with a half-smile and said:

"I understand, it's Yang Hui's Triangle."

"Hmm, so let's prepare to go to William's uncle later... Wait, what did you say?"

Little Niu was initially following his train of thought, but upon hearing Xu Yun's words, he froze and then suddenly looked up, staring at him:

"Yang Fei San Jiao? What's that?"

Xu Yun thought for a moment and reached his hand out to Little Niu:

"Can you pass me the pen, Mr. Newton?"

If this had been a day ago when Little Niu first saw Xu Yun, this request would have been outright rejected by Little Niu.

Might even receive a retort of 'Do you even deserve it?'

But with the recent derivation of the dispersion phenomenon, Little Niu at this point had developed a vague interest and recognition towards Xu Yun—or rather, the Sir Han Li behind him.

Otherwise, he wouldn't have bothered explaining those words to Xu Yun earlier.

Therefore, facing Xu Yun's request, Little Niu rarely did pass the pen over.

Xu Yun took the pen and quickly drew a diagram on paper:

.....1

.... 1...1

...1...2...1

1.....3.....3.....1 (Please ignore ellipses, without them the starting point shifts, dizzying)

....

Xu Yun drew a total of eight rows, with each row's outermost two numbers being 1, forming an equilateral triangle.

Friends familiar with this image should know, it's the famous Yang Hui's Triangle, also called Pascal's Triangle—in international math, the latter is better accepted.

But actually, Yang Hui discovered this triangle over four hundred years prior to Pascal:

Yang Hui was born in the Southern Song period, and in his 1261 "Detailed Explanations of the Nine Chapters on Mathematical Art", preserved a precious image—the "Origin of Square Root Calculation" diagram, the oldest existing traceable triangular image.

However, due to some well-known reasons, the spread of Pascal's Triangle is much broader, and some people don't even recognize the name Yang Hui's Triangle.

Thus, despite Yang Hui's original notes, this mathematical triangle is still called Pascal's Triangle.

But it's worth mentioning...

Pascal researched this triangular diagram in 1654, officially publishing it in late November 1665, from now.....

Exactly one month to go!

This is why Xu Yun started with the dispersion phenomenon:

Dispersion is a very typical differential model, even more classic than universal gravitation, regardless if it's the angle of deflection or the "seven-in-one" representation itself, it directly points to calculus tools.

The $1/7$ concept directly connects to fractional exponent representation.

Seeing dispersion, Little Niu not thinking about his stuck 'Fluxion Technique' would be rather foolish.

Little Niu observes the dispersion—Little Niu becomes curious—Little Niu measures data—Little Niu thinks about the Fluxion Technique—Xu Yun introduces Yang Hui's Triangle.

It's a perfect logical progression trap, a transition from physics to mathematics.

The reason Xu Yun draws this diagram is simple:

Yang Hui's Triangle is a thorn in the heart of every math professional!

Yang Hui's Triangle is originally a tool our ancestors invented with solid evidence, why should it be forced under someone else's name due to modern grievances?

He can't bother with the original timeline nor has the ability to change it, but at this point in time, Xu Yun won't let Yang Hui's Triangle be shared with Pascal!

With Mr. Niu's endorsement, Yang Hui's Triangle is Yang Hui's Triangle.

A term belonging solely to Huaxia!

Then Xu Yun let out a deep breath and continued drawing lines on top:

"Mr. Newton, see here, both slanted edges of this triangle are composed of the number 1, and all other numbers equal the sum of the two numbers on its shoulders.

Any number $C(n, r)$ illustrated in this graph equals the sum of the two numbers $C(n-1, r-1)$ and $C(n-1, r)$ on its shoulders."

Speaking, Xu Yun wrote an equation on paper:

$$C(n, r) = C(n-1, r-1) + C(n-1, r) \quad (n=1, 2, 3, \dots, n)$$

And...

$$(a + b)^2 = a^2 + 2ab + b^2$$

$$(a + b)^3 = a^3 + 3a^2b + 3ab^2 + b^3$$

$$(a + b)^4 = a^4 + 4a^3b + 6a^2b^2 + 6ab^3 + b^4$$

$$(a + b)^5 = a^5 + 5a^4b + 10a^3b^2 + 10a^2b^3 + 5ab^4 + b^5$$

When Xu Yun wrote the cubic section, Little Niu's expression gradually became serious.

By the time Xu Yun reached the sixth power, Little Niu couldn't sit still anymore.

Directly stood up, snatched Xu Yun's pen, and wrote for himself:

$$(a + b)^6 = a^6 + 6a^5b + 15a^4b^2 + 20a^3b^3 + 15a^2b^4 + 6ab^5 + a^6!$$

Clearly.

Yang Hui's Triangle has n numbers in the n th row, the sum of the numbers is 2 raised to the power of $n-1$, and the coefficients in the expansion of $(a+b)$ raised to the n th power correspond sequentially to each term in the $(n+1)$ row of Yang Hui's Triangle!

Although for Little Niu this expansion was trivial, almost basic binomial expansion operation.

Yet it's the first time someone has visually expressed square roots with a diagram!

Moreover, the m numbers in the n th row of Yang Hui's Triangle can be expressed as $C(n-1, m-1)$, representing the combination number of selecting $m-1$ elements from $n-1$ different elements.

This is a tremendous support for Little Niu's ongoing binomial subsequent derivation!

However...

Little Niu's brows gradually furrowed:

The emergence of Yang Hui's Triangle opened up a new line of thinking for him, but didn't help much with his current stuck issue, which is the expansion of $(P+PQ)^{m/n}$.

Because Yang Hui's Triangle deals with coefficients, Little Niu's headache is about exponents.

Little Niu at present feels like an experienced cyclist.

Who, upon turning a mountain road, suddenly sees a wide open plateau ahead, the scenery magnificent, yet sees a huge rock pile blocking ten meters ahead.

While Little Niu was struggling, Xu Yun slowly spoke another sentence:

"By the way, Mr. Newton, Sir Han Li also researched Yang Hui's Triangle.

Later he discovered that the exponent of a binomial doesn't necessarily need to be an integer, fractions even negative numbers seem feasible."

"He didn't detail the method for negatives, but did leave the method for fractions."

"He called it....."

"Han Li Expansion!"

.....

Chapter 27: Chapter 25 Han-Mathematics Genius-Li (Please keep reading ahhhhhhh!!!!!!)

In the room, Xu Yun was speaking eloquently:

"Mr. Newton, Sir Han Li calculated and discovered that when the exponent in the binomial theorem is a fraction, it can be calculated using $e^x = 1+x+\frac{x^2}{2!}+\frac{x^3}{3!}+\dots+\frac{x^n}{n!}+\dots$ "

As he spoke, Xu Yun picked up a pen and wrote a line on the paper:

When $n=0$, $e^x > 1$.

"Mr. Newton, it starts from x^0 here, using 0 as the starting point is more convenient for discussion, you understand this, right?"

Little Niu nodded, indicating his understanding.

Then Xu Yun continued writing:

Assume that when $n=k$, the conclusion holds, i.e., $e^x > 1+x+\frac{x^2}{2!}+\frac{x^3}{3!}+\dots+\frac{x^k}{k!}$ ($x > 0$)

Then $e^x - [1+x+\frac{x^2}{2!}+\frac{x^3}{3!}+\dots+\frac{x^k}{k!}] > 0$

So, when $n=k+1$, let the function $f(k+1) = e^x - [1+x+\frac{x^2}{2!}+\frac{x^3}{3!}+\dots+\frac{x^{k+1}}{(k+1)!}]$ ($x > 0$)

Then Xu Yun circled $f(k+1)$ and asked:

"Mr. Newton, are you familiar with derivatives?"

Little Niu kept nodding, succinctly uttering two words:

"Familiar."

Friends who have studied mathematics should all know.

Derivatives and integrals are the most important components of calculus, and derivatives are the foundation of differential and integral calculus.

It was already late 1665, and Little Niu's understanding of derivatives was actually quite profound by this point.

In the field of deriving, Little Niu's entry point was instantaneous velocity.

Speed = distance/time, this is a formula even elementary school students know, but what about instantaneous velocity?

For example, if the distance $s=t^2$ is known, what is the instantaneous velocity v when $t=2$?

Mathematical thinking is about transforming problems not yet learned into ones that have been learned.

So Newton came up with a very clever way:

Take a "very short" time period Δt , first calculate the average speed within the period from $t=2$ to $t=2+\Delta t$.

$$v = s/t = (4\Delta t + \Delta t^2) / \Delta t = 4 + \Delta t.$$

As Δt becomes smaller, $2+\Delta t$ gets closer to 2, and the time period becomes narrower.

When Δt approaches 0, the average speed gets closer to the instantaneous speed.

If Δt reduces to 0, the average speed of $4+\Delta t$ becomes the instantaneous speed of 4.

Of course.

Later, Berkeley discovered some logical problems with this method, namely, whether Δt is really 0.

If it is 0, then how can Δt be used as a denominator when calculating speed? A rare.... ahem, even elementary school students know 0 cannot be a divisor.

If it's not 0, $4+\Delta t$ will never really become 4, and the average speed will never become the instantaneous speed.

According to modern calculus concepts, Berkeley was questioning whether $\lim_{\Delta t \rightarrow 0}$ is equivalent to $\Delta t=0$.

The essence of this question was actually a challenge to early calculus, questioning if using terms like "infinitely small" to define precise mathematics is truly appropriate.

The series of discussions triggered by Berkeley led to the famously known second mathematical crisis.

Some pessimists even announced that the edifice of mathematical physics was about to collapse, and our world was illusionary—then these people really did jump off buildings, leaving their pictures in Austria, as if they were set up for public admiration or posthumous contempt, resembling seven dwarves, as some unfortunate angler once had the opportunity to witness.

This issue was not fully resolved until the emergence of Cauchy and Weierstrass, who provided thorough explanations and conclusions, and truly defined the tree that many students failed afterward.

But that was a later matter. In Little Niu's era, the practicality of new mathematics was placed in the forefront, thus strictness was relatively ignored.

Many people in this era were using mathematical tools to conduct research while simultaneously refining and optimizing the tools with the results obtained.

Occasionally, some unlucky individuals would suddenly realize that their life's research was wrong while calculating.

All in all.

At this point in time, Little Niu was still relatively familiar with derivation, but had not yet summarized a systematic theory.

Seeing this, Xu Yun wrote again:

Derivating $f(k+1)$ gives $f(k+1)' = e^x - 1 + x/1! + x^2/2! + x^3/3! + \dots + x^k/k!$

According to the assumption, $f(k+1)' > 0$

So, when $x=0$.

$f(k+1) = e^0 - 1 - 0/1! - 0/2! - \dots - 0/k+1! = 1 - 1 = 0$

Therefore, when $x > 0$.

Since the derivative is greater than 0, $f(x) > f(0) = 0$

Thus, when $n=k+1$, $f(k+1) = e^x - [1 + x/1! + x^2/2! + x^3/3! + \dots + x^{(k+1)}/(k+1)!]$ ($x > 0$) holds true!

Finally, Xu Yun wrote:

To sum up, for any given n :

$e^x > 1 + x/1! + x^2/2! + x^3/3! + \dots + x^n/n!$ ($x > 0$)

Having finished the discussion, Xu Yun put down his pen and looked at Little Niu.

At this very moment.

The patriarch of future physics was staring intently at the draft paper before him, his eyes wide open, as if scorched into his memory.

Indeed.

At Little Niu's current stage of research, it's still not easy to fully understand the true inner meaning of tangents and areas.

But anyone who understands mathematics knows that the generalized binomial theorem is actually a special case of the Taylor series of complex functions.

This series is compatible with the binomial theorem, and the coefficients are also compatible with combinatorial symbols.

Therefore, the binomial theorem can be extended from natural number powers to complex number powers, and the combination definition can also be extended from natural numbers to complex numbers.

However, Xu Yun kept a card up his sleeve by not telling Little Niu that n being a negative number actually refers to an infinite series.

Because, according to normal historical trajectory, infinitesimals are supposed to come from Little Niu's hand, so it's better to leave the derivation process to him.

And so, after a few minutes, Little Niu came back to his senses.

Ignoring Xu Yun beside him, he quickly darted back to his seat and began calculating with great speed.

Watching Little Niu engrossed in his calculations, Xu Yun didn't get upset. After all, this patriarch has a temperament like this, perhaps only in front of William Asku would he be relatively milder.

Scratch, scratch, scratch—

Soon enough.

The sound of pen on paper started, one equation after another was quickly written out.

Xu Yun pondered for a moment upon seeing this, then turned and left the room.

Finding a spot in the corner at random, he looked up at the drifting clouds.

And just like that, two hours passed by.

As Xu Yun was contemplating his next move, the wooden house door suddenly swung open from the inside, and Little Niu came rushing out, full of excitement.

His eyes were bloodshot as he vigorously waved the draft paper at Xu Yun:

"Fat Fish, negative numbers, I figured out negative numbers! Everything is clear now!"

For the binomial exponent, it doesn't matter if it's positive or negative, integer or fraction, the combination number holds true for all conditions!

Yang Hui's Triangle, yes, the next step is to study Yang Hui's Triangle!"

Perhaps due to being overly excited, Little Niu didn't even realize his wig had fallen to the ground.

Looking at the flushed Little Niu, Xu Yun couldn't help but feel a sense of triumph at the historical change.

Following the normal trajectory.

Little Niu was supposed to receive a letter from John Tisliboti next January, only then would he suddenly overcome a series of riddles and difficulties.

And in John Siriboti's letter, it mentioned Pascal's publicly known triangular figure.

Which means...

The node in this timeline's mathematical history has been changed for the first time!

With the initial results of the binomial expansion, it won't be long before Little Niu, with the help of Yang Hui's Triangle, constructs the preliminary model of the Fluxion Technique.

As a result.

The name Yang Hui's Triangle will also be engraved on the mathematical throne's foundation, in a place it rightfully belongs!

Regardless of the world's changes, regardless of the seas rising and falling over centuries, none can shake it!

The light of Huaxia's ancient wisdom will never dim in this timeline!

Thinking of this, Xu Yun couldn't help but take a deep breath and walked forward quickly:

"Congratulations, Mr. Newton."

Faced with Xu Yun's oriental features, Little Niu also felt a strong wave of emotion.

That Sir Han Li, whom he never met, could part the clouds with just a few jotted notes, opening a door for him through the hand of this Fat Fish, a disciple separated by untold generations.

Then to what heights could Sir Han Li's own knowledge reach?

It wouldn't be too much to call a genius who conceived such an expansion a mathematical prodigy?

Originally, I thought Mr. Descartes was already invincible in the world, but I didn't expect there to be someone even braver!

It seems the road of my mathematical and physical journey remains long and arduous...

...

Note:

Why are the binomial exponents negative.....

Chapter 28: Chapter 26 Predestined Encounter (Part 1)

The appearance of what Han (tai) Li (le) unfolded was no less than a timely rain for Little Niu, solving his simplification of m/n in non-integer situations, while also opening a brand new door for him.

In the following two days, Little Niu hardly left the house, continuously optimizing the relevant formulas.

Indeed.

For Little Niu, this short amount of time wasn't sufficient to systematically define infinitesimals—after all, according to history, this concept wouldn't be formally proposed in writing until 1704; speeding up wouldn't break through in a single night.

However, besides that, Little Niu still optimized some other notational forms:

For example, using $a^{1/2}$ instead of \sqrt{a} , a^{-1} instead of $1/a$, and so on.

Such changes in notation are common for people in later generations, but in this era when exponents were still very unfamiliar, these changes in notational forms were an extremely bold move.

Once Little Niu extends the general analysis of finite term equations to infinite expressions, he won't be far from formally deriving the universal gravitation formula.

Meanwhile, in these few days, Xu Yun took on the role of a meal deliverer—once Little Niu entered his zone, he was practically eating and sleeping in his work, once even nearly drinking ink as hot water if not for Xu Yun watching over him.

On the other hand, however, Xu Yun's efforts didn't go unrewarded:

Although there was no task completion prompt, Little Niu gradually started acknowledging Xu Yun's abilities:

He occasionally would chat with Xu Yun and even discuss some mathematical and physical problems.

Keep in mind, Little Niu's full name is Isaac Small-minded Bitter Woman Newton.

In his view, humanity basically divides into the idiotic and slightly idiotic...

Besides delivering meals, Xu Yun would mostly wander outside in his spare time, pondering his next steps.

Even without a phone, which was a bit inconvenient, Xu Yun was no stranger to such times—earning his biology Ph.D. in this life purely through hard work, spending ages in the library was something he was long accustomed to.

Moreover, Xu Yun found a nice fishing spot by a small river not far from Little Niu's house and crafted a lure rod with his good hands-on skills.

Bored, he would throw a few casts, and time passed just like that.

In these two days, Xu Yun caught a worn-out boot, a decomposed squirrel carcass, knocked down a sparrow, caught a snake, and stumbled upon a pair of cheating lovers, but didn't catch any fish.

Fishermen, you know the deal.

And so, two days swiftly passed.

On the third day, early in the morning, Xu Yun woke up on schedule and walked out of the bedroom as usual.

As soon as he opened the door, he saw Little Niu sitting at the round table, flamboyantly grooming his hair in the mirror, wearing formal Cambridge College attire.

Xu Yun blinked at the scene:

"Mr. Newton, what are you...?" (After reader correction, Little Niu should indeed be called Mr. Newton, as Newton is his surname, and he shares the same name as his father. English terms are indeed my weak point, William stays unchanged, or2....)

Little Niu first picked up a hairpin from the table, fixed his wig with the mirror, and then raised his eyelids to glance at him:

"Today is Sunday, did you forget Uncle William's invitation?"

Xu Yun was momentarily dazed, then suddenly slapped his forehead:

"Oh, I remember now, going to the church, right?"

Little Niu nodded, putting on a serious expression:

"You should tidy up too; worship should be clean, the fear of God is the beginning of wisdom, and to know the Holy One is understanding."

Xu Yun muttered under his breath that he should have taken a bath first, but on the surface, he still obediently complied.

After all, faith is Little Niu's fatal weakness and his core spiritual support; there's no need to argue about things in the realm of belief.

Modern mirrors wouldn't be invented by Liebig until 1835; at this time, mirrors were mainly made by applying tin foil and mercury to the back of the glass, and they reflected just as clearly.

Three days had passed (including the day Xu Yun first crossed over), and Xu Yun's complexion had visibly turned quite sallow, unsure if it was the body or the soul that crossed over —if it's the former, Xu Yun might need to consider gaining weight when he returns to reality.

Then, after tidying his hair a bit with a comb, he took the Holy Bible and left the house following Little Niu.

Woolsop was just a very ordinary small village, so to attend service, they had to walk seven miles to Grantham.

Grantham in the 21st century has long been a city, but at this time, Grantham was just a small town with a population of over 3000, but this little town would become a feng shui treasure land in a certain sense:

Besides Little Niu, the Iron Lady Lady Thatcher also came from here.

In 1665, Grantham had only one church, located in the southwest of the town, named Saint Titus Diya.

In 1866, it would be replaced by another church, Saint Ulfric Church, which remains a very famous attraction to this day.

Seven miles is approximately over 11 kilometers. In later generations, most people might choose the metro or bus, and those with better conditions would drive or take a taxi.

However, at this time, William's family and Little Niu were really too poor to afford a carriage, so once the group met at the village entrance, they had no choice but to take the 11-route bus on their way.

"Mr. Feiyu, catch."

After meeting up and setting off, William Asku threw something wrapped in broad leaves at Xu Yun while walking, explaining:

"This is your lunch and dinner—the gathering starts at one in the afternoon and ends at three thirty, so going there and back will take about seven hours, leaving dinner to be eaten on the road.

There's bread and water inside the leaves; you can discard the leaves after eating, but the water sack must be brought back."

Xu Yun nodded and felt the shape of the leaf package with his hands.

Hmm, four pieces of bread and a hard water sack, William surely is a hearty person.

Then, the group of eight officially started off like this:

William carried Lilani, Mrs. Williams held hands with Elura and Andrea, while Little Niu continued chatting along with Lisa.

Xu Yun glanced around somewhat bewilderedly, feeling like something was off:

Why, even after switching worlds, am I still single...

.....

Winter in England wasn't particularly hot, but due to inadequate nutrition intake, the members of the William Clan didn't have very strong constitutions, so after walking for more than an hour, a noticeable amount of sweat appeared on William and the others' foreheads.

When they reached a large tree, Mrs. Williams let out a weary breath, pointing to the shade and saying:

"Darling, shall we rest there for a bit?"

William glanced at the sky and roughly estimated the time:

"There are still a few hours before worship starts, alright, let's rest for a bit then."

So the group stopped there.

"Gurgle gurgle—"

William leaned against the tree and took a big gulp of water, just as he was about to speak, a carriage suddenly appeared on the forked road not too far away.

It was a four-wheeled carriage pulled by two glossy chestnut horses, covered on all sides with luxurious high-quality fabric, the windows overshadowed by a light blue silk curtain, with many intricate patterns engraved at the corners.

Clearly, the person inside the carriage was either rich or noble.

Elura, the one with the smallest courage, couldn't help but shrink her neck and timidly leaned behind William.

The two chestnut horses slowly walked by on the road, snorting as they passed the group.

However, after only a few steps, with a whistle, the carriage suddenly stopped.

.....

Note:

Let's play two games.

1. Easy question, guess who's in the carriage, guess correctly and there's an extra Chapter on the launch day.

2. You can guess what the protagonist will think of to make money, guess correctly and there are five extra Chapters; actually, there are already hints in the front...

Chapter 29: Chapter 27: A Fateful Encounter (Part 2)

Creak—

The sound of the carriage stopping quickly drew the attention of everyone beneath the shade of the trees, and even William's expression began to turn serious.

A moment later.

Whoosh—

With the sound of a curtain being lifted, a figure slowly stepped down from the carriage.

The newcomer was a man in his thirties, somewhat short and hunchbacked, wearing a powdered wig made of horsehair and a long gray robe.

Notably, the robe was made of exceptionally rare silk—although 17th-century Gaul had a complete silk production system, with Lyon even becoming the center for European silk production and design, silk was still considered a top-tier luxury commodity before the Jenny Spinning Machine emerged.

If tea during this period was equivalent to a Rolls-Royce Phantom, then silk was roughly the Bentley Continental of that class.

Judging by the current map of England, the newcomer was likely at least a second-generation magnate from a self-governing borough or a capable wealthy merchant.

Watching the man approaching, William frowned slightly and cautiously shielded Elura and Lilani behind him, while Mrs. Williams instinctively stepped in front of Andrea.

As for Lisa, she was left aside—in this era, assuming similar circumstances, the safety of adult women was actually higher than that of children.

Due to the sensitivity of this topic, no further elaboration will be made.

However, beside Lisa, Little Niu had quietly picked up his Holy Book, ready to reason with anyone who seemed suspicious.

Gulp——

William watched the approaching man, his Adam's apple moved a few times, maintaining a certain level of deference before the man's intentions were clear:

"Sir, may I ask what business you have here?"

The man lifted his gaze and glanced at him, a slight smile appeared on his lips, and he gestured with his hand to indicate relaxation:

"Please rest assured, sir, I am probably not the kind of person you have in mind."

Then he walked over to Little Niu and stared at the University of Cambridge uniform he was wearing, lingering on the Trinity College emblem for a few seconds:

"University of Cambridge, Trinity College?"

Whether due to his high status or not, the man's tone carried a slightly questioning hint, causing Little Niu to feel inexplicably displeased.

However, at this time, Little Niu was still just the youthful version of that irritable future self, lacking the confidence due to his current standing, so he only replied dryly:

"That's right."

"So, you're a student of Isaac Barrow?"

"That's right."

Upon hearing this question, the man suddenly let out a cold snort.

"What's your name?"

Little Niu's eyes flashed with a hint of shadow, and after a few seconds he replied:

"Isaac Newton."

The man's eyes slightly narrowed, seemingly sensing Little Niu's displeasure:

"Isaac Newton? Good name.

Allow me to introduce myself, Robert Hooke, currently a professor of geometry at Gray Sam College."

Upon hearing these words, Little Niu and William's family had not yet reacted when Xu Yun's heart sank heavily, almost crushing the bread in the leaf wrapper!

Could it possibly be him?!

Anyone with a bit of knowledge about Little Niu's experiences would know.

In Little Niu's 85-year life, there was one person who was both mentor and rival, closely bound to him.

Speaking of Newton invariably invokes reference to this person.

He was Robert....

Hooke!

Hooke was born on July 1635, seven and a half years older than Little Niu, his academic performance was excellent from a young age, eventually attending the renowned University of Oxford.

However, due to certain reasons, Hooke ultimately did not graduate with a degree, but was fortunate enough to become Boyle's research assistant.

Due to his outstanding scientific insights, in 1662, this exceptionally talented young scientist was recommended to serve as the laboratory director of the Royal Society of the United Kingdom, quickly becoming an academician of the Royal Society.

And to be able to clash with Little Niu later for decades, Hooke's capabilities were certainly beyond reproach.

In mechanics, Hooke proposed Hooke's Law, which is the fundamental law of elasticity mechanics and materials science, widely applied.

In the American TV series "Prison Break," Marshal Mi used Hooke's Law with a whisk to pierce through the prison's reinforced concrete wall.

In optics, he was the first to advocate the wave theory, gaining fame along with Huygens, the leader of the Gaul Academy of Sciences.

At the same time, Hook was a DIY enthusiast, expanding the human perspective in both the vast and the minute worlds with his magical hands:

He improved the telescope, observed Jupiter's Great Red Spot and the Moon's craters for the first time, improved the microscope, discovered and named the cell (another was Levin Hook who discovered bacteria), and his masterpiece "Microscopy" became a bestseller.

However, quite dramatically, just when Hook was at the peak of his fame, Little Niu arrived.

In 1668, the young Newton placed the first reflecting telescope on the table of the Royal Academy of Sciences, directly offending Hook.

The reflecting telescope was the most advanced telescope design of the time, directly encroaching upon Hook's two areas of expertise in the society:

Optics and instrument design.

When this compact, exquisite model, outperforming all previous refracting telescopes appeared, Hook felt his position was challenged, so he did not join the camp praising the reflecting telescope but loudly claimed that he was the first to make the practical reflecting telescope.

Hook emphasized at the meeting that he had made a reflecting telescope only 3 centimeters long seven years before Little Niu, with performance stronger than others up to 15 meters long.

He even had smaller designs that could fit in a pocket watch, but further research was delayed due to the spread of the Black Death and the reconstruction after the Great Fire of London.

This debate inflicted great damage on Little Niu, as it evoked experiences of being severely bullied in his youth, and he even threatened to quit the Royal Society at one point.

Finally, under the mediation of Henry Oldenburg, the Royal Society's secretary, the two sides reached a "reconciliation."

But from then on, Little Niu began to "retreat" in Cambridge, no longer publishing his academic achievements externally.

But the grievances between Little Niu and Hook did not end there. In 1679, Hook wrote a letter to Newton.

After a series of discussions on mechanics, Hook told Newton that he believed there was gravitational force between any two objects, and this gravity was inversely proportional to the square of the distance between them, known as the square inverse law.

To explain this more plainly, Hook generously pointed out Little Niu's mistake, not hiding it and watching him stumble.

But likewise, he arrogantly claimed that this calculation required a new tool, so Little Niu, even knowing where he was wrong, couldn't figure it out, teasingly mocking him.

This tool was actually calculus, which Little Niu called the Fluxion Technique, and it was already nearing completion at the time.

But Little Niu, being too crafty, didn't tell Hook about it, secretly developing and deriving the law of universal gravitation on his own.

In 1687, with the support of the British astronomer Halley, Little Niu published one of the greatest works in the history of human science, "Mathematical Principles of Natural Philosophy," later simply referred to as "Principia" by posterity.

In this book, Little Niu proposed the famous three Laws of Newtonian Mechanics and the law of universal gravitation, and using the calculus he invented, he proved Kepler's three laws could be derived from the square inverse law of gravitation.

This book's publication made Little Niu renowned worldwide, solving the world's difficulties of that time and creating calculus, one of the most powerful tools in the history of mathematics.

As Halley put it, he became "the person closest to God in the world," except for being single, his life was perfect.

And at this time, Hook wrote again to Little Niu, asking him to revise "Principia" and acknowledge that he was the discoverer of the square inverse law.

This demand completely angered Little Niu. He replied to Hook, saying this law was not proposed by Hook at all but was a well-known fact.

At the same time, in a fit of anger, Little Niu directly deleted all references to Hook in "Principia," wanting Hook to vanish from this ancient history.

Furthermore, speaking of Little Niu and Hook, one must mention another little-known fact.

Previously, we mentioned the anecdote of Mr. Tao not bowing for five bushels of rice, and in this letter involved another phrase ruinous of childhood.

Many people know that Little Niu once said:

"If I have seen further, it is by standing on the shoulders of giants."

Many people think this quote from Little Niu was self-deprecating and inspirational, but in reality, it was a jab at Hook.

It must be known that Hook himself was not tall and had a hunched back condition.

Thus, Little Niu's letter was not at all for saying inspirational words; the subtext was, "My achievements have nothing to do with you, Hook, you hunchbacked dwarf!"

Of course.

The context of this quote was in a letter from Little Niu discussing thin film colors, and it was even sparked by Henry Oldenburg—yes, that old man who mediated at their first meeting.

So the details of this quote aren't so dramatic, at least having nothing to do with universal gravitation, but it is indeed a sarcastic remark.

Following Hook's death, Little Niu was elected the new ** of the Royal Society of the United Kingdom, and in his first year, Hook's laboratory and library were dismantled on the spot, and Hook's experimental apparatus was either dispersed or destroyed.

Even during the Royal Society building's relocation in 1710, Hook's only portrait was 'accidentally lost' during the move, and to this day, no one knows Hook's true appearance.

Thus, one could even say in some sense, the argument between Little Niu and Hook was a matter of life and death among academic tyrants from beginning to end.

However, Xu Yun found it strange...

Not to mention how Hook appeared here, just speaking of the argument between Little Niu and Hook, which should have occurred thirteen years later, why was it that when these two met now, there seemed to be a sense of verbal daggers?

.....

Note:

There are several check-in posts in the comments section, everyone can check in if you have time, it can also boost reach index.

Chapter 30: Zhang 28: Grudges

Under the shade of the tree.

Watching the somewhat explosive Little Niu and Hook, Xu Yun quickly recalled the history he knew.

It's unclear whether it's due to Little Niu's interference, but later generations didn't have detailed records on Hook's specific experiences, often glossing over them.

Most of the time when Hook is mentioned, it serves the same purpose as leveraging Tyue Lun just to highlight fakes, merely to either praise or disparage Old Niu.

As such, Xu Yun couldn't immediately recall when Little Niu and Hook might have met; he could only find clues to deduce the timing.

"1665... Hook was a professor at Gray Sam College, and his hometown White Island is also in the southern part of the United Kingdom, completely in the opposite direction of Lincolnshire... Moreover, the publication of 'Microscopic Image' took place in the latter half of the year...."

Xu Yun sifted through Hook's rather public records one by one in his mind, and suddenly, a light bulb went off:

"Wait, publish 'Microscopic Image'?"

In 17th-century United Kingdom, the Royal Society tightly held the power to define science, a typical academic monopoly.

Anyone wanting to publish academic books first needed the society's approval and secondly, had to go through the society's press to print them.

At that time, the press operated under the Royal Society was only one, coincidentally located in Lincolnshire!

Realizing this, Xu Yun's focus began to shift between the two people:

"In other words, the current Hook should be preparing to go to Lincolnshire to discuss publication matters, so it doesn't make sense for him to be at odds with Little Niu at this time....

Uh, could it be due to the Cambridge and Oxford university rivalry?"

Those who studied as exchange students at the University of Cambridge should be aware.

Cambridge and Oxford, as two of the most famous colleges in the United Kingdom, have enmity that even dates back to before their founding.

Oxford is the main city in the Thames Valley, rumored to be a place where ancient herds of cattle forded the river, hence the name Oxford.

As is well known.

Before the 12th century, the United Kingdom actually had no universities, and people went to France and other European countries to study.

In 1167, some scholars returned home from Paris, gathering in Oxford with the support of the king and the church, forming what is now Oxford University.

By 1209, a student from Oxford University accidentally killed a woman while practicing archery, escalating tensions with the Oxford townspeople.

Two scholars and several students who lived with the offender were hanged by the townspeople without church consultation (which would usually pardon scholars first).

This further intensified the conflict, triggering violent clashes between the school and the townspeople.

During the conflict, some teachers and students fled north to Cambridge Town, where they focused on studying culture and academics with local church support.

Thus, the University of Cambridge as it is today was formed.

From the start, the two schools had significant enmity, which was even evident in their oppositional emblems:

Both Cambridge University and Oxford University's emblems have a book, except Cambridge's is closed while Oxford's is open.

During the English Civil War, Oxford was the command center for Charles I and the Royalists, while Cambridge became the base for the Parliament Army, politically opposed to each other.

So if Hook, due to school rivalry, saw Little Niu in university attire along the way....

That would indeed be quite a dramatic situation.

As Xu Yun pondered this, Hook, standing nearby, spoke again:

"Kid, how is Barrow doing lately?"

Upon hearing Hook mention his teacher's name for the second time, Little Niu had a faint understanding:

"The teacher is in good health. Mr. Hook, do you know each other?"

Upon hearing this, Hook's mouth curled into a smirk, and with his hunched body, he resembled something of the Casimove:

"Know each other? It's more than that. I didn't get a bachelor's back then... never mind, it's pointless to talk about this with a current student like you.

How about this, you can help me deliver something."

Hook took out a piece of paper from his body, densely filled with several lines of words:

"I don't have Barrow's address. If you know where he is, send him this problem, and let him take a good look at it.

If he cannot solve it, according to our previous bet, he needs to resign from the position of Professor Lucas.

Of course, if you can't find him or he pretends to be dead, that's fine; after the plague ends, I will visit in person.

In any case, he can't escape from this, grimly leaving is his best end."

Upon hearing Hook's particularly villainous words, Little Niu's face immediately darkened.

Professor Lucas.

This is not a name, but an honorary position at the University of Cambridge.

The title is awarded to researchers in mathematics and related fields, awarded to only one person at the same time, and its holder is referred to as "Professor Lucas."

In a way, it is somewhat like the 'Shadow' from the Legend of the Five Villages' Weapon Fight:

A village might have four or five shadow-level combatants, but the one who can truly be called the Shadow to represent the highest honor is only ever just one.

Little Niu's mentor, Isaac Barrow, was the Professor Lucas of the time, the "Shadow"—indeed, Little Niu's mathematics teacher was also named Isaac.

Western cultures, unlike the local, typically have fewer given names but more surnames, so sharing names is quite normal.

Little Niu had a very close relationship with Barrow. According to posthumous manuscript decryption, Barrow had even reached results on the product, quotient, and differential theorems of two functions at this time.

Yet, he ultimately passed this knowledge on to his beloved pupil, making a monumental contribution to the establishment of calculus.

In accordance with historical trajectory, Barrow would voluntarily resign from the position of Professor Lucas in 1669 and recommend Little Niu as his successor.

If William is without doubt listed as Little Niu's top1, then Barrow, Stock, the current Lisa, and the future Halley can probably all be counted as top2.

After suddenly hearing Hook's disrespectful words, Little Niu's inner anger surged immediately.

He quickly scanned through the letter Hook handed to him, and after glancing over a few lines, a trace of shock and uncertainty flickered through his eyes.

Then he suddenly raised his head and called out to Hook, who had already turned to leave:

"Mr. Hook, please wait a moment!"

Hook stopped upon hearing this, raised his slightly ground-touching robe, and turned to face Little Niu:

"What else is it?"

Little Niu first glanced at Xu Yun beside him, took a deep breath, and said:

"Mr. Hook, your problem doesn't need to be passed to the teacher; if you give me five days, I can solve it myself!"

....

Note:

The incident between Barrow and Hook is indeed strange, not to mention involving Newton, as well as Hook's graduation and Barrow's resignation, but hardly anyone in the country has mentioned it...

It's somewhat puzzling, but the events are certainly true, scratching my head.