

# **I Can Meet with Dead Scientists #Chapter 31 - 29 I Need Your Help - Read I Can Meet with Dead Scientists**

## **Chapter 31 - 29 I Need Your Help**

### **Chapter 31: Chapter 29 I Need Your Help**

"Mr. Hook, there's no need to refer your question to the teacher. Just give me five days, and I can solve it!"

Little Niu's words were clearly heard by Hook, causing him to stop in his tracks.

He saw the slightly hunched middle-aged man straighten up slightly, turn around, and look at Little Niu with a 'Are you kidding me?' expression:

"Newton, do you understand what this question represents? It involves a set of equations near the equilibrium position of an unknown magnitude. Forget you—it's a field that even your teacher hasn't touched!"

He glanced at the Holy Book in Little Niu's hand with a smirk and said:

"For a small student like you to say such things, if I were you, I'd be ashamed to hold that Holy Book anymore."

As he spoke, a sense of impending triumph over a long-standing rival unexpectedly arose in Hook's heart.

That year's math finals were Cambridge against Oxford, with a final score of 4-3. Barrow came on at a desperate 1-3 and completed a stunning comeback.

Back then, Hook watched his beloved Ilo Bliss sitting in a chair sobbing uncontrollably. It was then he thought, if I could challenge Barrow, I must win it all.

Now the opportunity was right before him, and Hook had to consider if this would be his only chance in life.

He believed Oxford's past dominance was largely thanks to Ilo Bliss.

Recasting Oxford's glory is our duty!

The problem Hook came up with this time covered both mathematics and physics, the product of three years' deduction, and he was confident Barrow would be completely stumped by it!

Unfortunately, however, due to the Black Plague, he had temporarily lost contact with Barrow and could only wait for London to restore order to go back to Cambridge to have his reckoning.

Unexpectedly, on the way to the printing shop, he ran into Little Niu, a student at Trinity College, which both pleased and annoyed him.

He was pleased because as a student at the Divinity School, Little Niu must have Barrow's contact information, and he wouldn't need to wait until the plague was over to find Barrow.

Annoyed because.....

This young man seemed to have become a bit too ambitious, daring to involve himself in such a high-level academic debate?

Has he always been this bold?

On the other hand, Little Niu's brows furrowed even more, his heart evidently extremely displeased.

But since the opponent's ire was directed at Barrow, his remaining reason kept his hands in check. At this point, this notorious critic, rarely, showed a side of emotional intelligence:

"Mr. Hook, since you are paying attention to Trinity College, you must know about the reduced-fee student they admitted four years ago, right?"

Hook glanced at him curiously and nodded:

"Correct, I've heard about it. That was the first reduced-fee student admitted by the four divinity schools at the University of Cambridge in fifteen years. I heard he even received First-class honours in mathematics..."

As he spoke, Hook suddenly realized:

"Wait, are you saying that reduced-fee student is you?"

Little Niu pointed to William's family next to him and said calmly:

"You can ask my uncle and aunt. By the way, just up ahead is Grantham, and the headmaster of the King's School in town knows me, too."

Hearing these words, a slight look of astonishment finally appeared on Hook's face.

As the top college on the British Peninsula, in addition to regular admitted students, the University of Cambridge annually admits some reduced-fee students.

But aside from having high required examinations, most reduced-fee students belong to ordinary colleges. In this era, most universities comprise ordinary colleges plus a few divinity schools.

For instance, the University of Cambridge has 31 ordinary colleges and four church-managed divinity schools that are administratively independent of the University of Cambridge.

Don't be misled by the 'Divinity School' label into thinking they engage in daily prayer and mass; in reality, divinity schools at this time equate to the local Yao Class or Young Talents Class!

Trinity College is an example, producing graduates like Wittgenstein, Bertrand Russell, and even Nehru.

However, the essence of divinity schools is total devotion to service—studying knowledge is service, sleeping and praying are service, but working to earn tuition is considered self-serving.

Therefore, work-study students like reduced-fee students are extremely unwelcome in divinity schools, and the examination requirements are simply inhumane.

Before Little Niu became a reduced-fee student at Trinity College, Cambridge hadn't admitted a reduced-fee student for fifteen years—incidentally, due to the Protestant-Catholic strife in 1680, Trinity College abolished reduced-fee students for over a century.

Thus, Little Niu was the last reduced-fee student of the seventeenth century at Trinity, and the reduced-fee student following Little Niu was named—

James Clerk Maxwell.

Indeed, the man who proposed the greatest formula in human history.

So sometimes you can't help but marvel at how remarkable some things truly are....

In summary.

Reduced-fee students from Trinity College, in terms of web novels, are akin to the Supreme temple accepting an apprentice, promising at least Supreme status, and maybe one day producing an Emperor Huang, dazzlingly exceptional.

As a Royal Society member and an 'enemy' tracking Barrow's movements, Hook naturally wouldn't overlook such news.

Upon learning that Little Niu was the rumored Emperor Huang...cough cough, reduced-fee student, Hook's expression immediately became more solemn—four years ago's reduced-fee student should be graduating this year; clearly, his capabilities far surpass those of ordinary students.

And it is precisely due to this assured mindset that a quirky sense of taking down the master and apprentice seized Hook's heart. With a change of thought, he said:

"Newton, as you can see, this is an academic discussion between your teacher and me, but as a university professor, I'd be happy to see a junior having the resolve to challenge predecessors.

Five days, right? No problem, I'll be in Lincolnshire for a week. Solve it, and you can come find me anytime. The address is Yage Hotel, southwest of Lincoln, about forty kilometers from Grantham."

Patting Little Niu's shoulder with a subtle significance, Hook said:

"I hope to see you again before I leave Lincolnshire. Good luck, Isaac Newton."

With that, he tidied his collar and left without looking back.

Clop clop clop—

Soon, two horses began to move forward in a fragmented trot, slowly pulling the carriage away.

When the carriage gradually disappeared from view, William, who hadn't spoken a word throughout, stepped forward, frowned, and said:

"Little Isaac, how did you get involved in all this?"

As a graduate of the University of Cambridge, William naturally understood what Professor Lucas represented—obviously, it was a sharp academic confrontation.

Academic confrontations may not involve blades clashing, but sometimes the outcome can be nearly as dire, perhaps even worse.

An ordinary scholar like Little Niu getting involved is evidently unwise.

But Little Niu merely shook his head at William, offering little explanation, then turned to Xu Yun:

"Fat Fish, I need your help."

Xu Yun, taken aback, blinked in confusion:

"Huh?"

Originally, hearing Little Niu's resolute tone, Xu Yun thought he could enjoy the excitement as a spectator—how did it suddenly involve him?

Then, Little Niu handed Hook's piece of paper to him, saying:

"Take a look at this."

After taking the paper, Xu Yun glanced at it, and his pupils slightly contracted.

$F=k \cdot x$ .

This is a formula any high school student knows, known as the famous Hooke's law.

This law was proposed by Hook as a mechanical elasticity theory in 1678, and the current year is 1665. Though Hook hasn't fully derived this formula, he has evidently begun part of the research.

The paper recorded problems concerning the computation of the space occupied by undeformed continuous media.

Explaining this problem is complicated, but in layman's terms...cough cough, put simply, it involves....

The second-order Taylor expansion.

But for Little Niu, it's the second-order Han Li expansion.

That is...

Calculus.

Yet Little Niu hasn't completely derived the entire framework of calculus, and rigorously speaking, the definition of the strain tensor would have to wait until William Rowan Hamilton introduced it in 1846—yes, the very Hamilton who invented quaternions.

So to solve Hook's problem, Little Niu could only seek assistance from outside at this time.

Upon reviewing the problem description on the paper, Xu Yun quickly came up with seventeen or eighteen solutions, but considering the current situation, his face still showed a hint of difficulty:

"This problem seems solvable, but it would take some time to calculate. But Mr. Newton, since we're still on the road, why don't we discuss it after we return?"

Hearing this, Little Niu glanced at William's family, then looked up at the sky, and nodded:

"Okay."

.....

### **Chapter 32: Chapter 30 Grantham**

As a devout believer, Little Niu never changed his faith until his death. If loyalty could be quantified, he would surely be at 100%.

Therefore, even though he had concerns weighing on his mind, Little Niu did not choose to leave midway to go home and solve the problems left by Hook, but instead planned to continue to Grantham for the gathering.

And so it was.

After Hook's carriage gradually moved away, the group packed their bags and set off again.

Three hours later.

After two more rests along the way, the group of eight finally arrived at the entrance of a town, covered in dust.

This is a small town surrounded by walls, about four meters high, with a stone monument at the entrance.

The monument is inscribed in English, which translates to Grantham.

Xu Yun, during his two years as an exchange student in the United Kingdom, had been to this small town once and stayed for three and a half days.

After all, this is Little Niu's hometown and, in a sense, can be considered a 'holy place' in the physical world. Most people in the physics profession who visit London would come to check in.

Back then, Xu Yun, who was short on money, stayed at a hotel named Hammer, which was conveniently located near the entrance of Grantham's town wall. Upon entering the town, you could see the door on your right.

The hotel was rated four stars, but the room rate, including tax, was only over 290 Huaxia Coins, which was considered extremely cheap.

However, the hotel's soundproofing was poor, and you could hear some clapping sounds in the middle of the night.

At that time, the hotel owner patted his chest and told Xu Yun that their hotel had a history of over 400 years, but it had been renovated several times in between, so it didn't look very aged.

There was even a John Bull government-certified 400-year history plaque hanging on the wall, so Xu Yun foolishly believed it and even paid three euros to take a picture with the plaque.

But now, seeing Grantham, he really wanted to spit on the hotel owner's bald head, which had almost the same amount of hair as a programmer:

That hotel had no damn 400-year history! In this era, the location of the hotel is clearly a fruit stand now!

Indeed, when traveling these days, nothing should be trusted. Some even doubt local history, while they've fabricated so much themselves. (Note 1)

Apart from the hotel being replaced by a fruit stand, the overall building condition of Grantham Town is also drastically different from the future:

In the future, Grantham still retains classical decorations, but both the buildings and streets are very clean, somewhat similar to local celebrity residences, focusing on the sense of the era.

But at this moment...

Almost all the visible buildings in the town are two or three-story brick houses, with no discernible architectural style, exteriors battered and blackened, shady areas covered with moss.

Xu Yun, with a casual glance, could see several heaps of filth that could be censored at corners and by the roadside.

Although the main road of the town is relatively cleaner, paved with stones into a seven or eight-meter-wide street, constantly bustling with pedestrians and vehicles.

But if you observe closely, you'll notice some of the stone's crevices or edges stained with some inexplicable, faintly yellowish slime.

From the flies occasionally hovering over, it seems likely that the slime is not something good.

But what slightly surprised Xu Yun at first sight was that many ragged, smallish poor folks in the town seemed oblivious, sitting or even lying directly in the filth.

Their eyes were numb, allowing flies, rats, and cockroaches to scurry nearby or even over their bodies.

Xu Yun sighed slightly at the sight.

Whether it was the early colonial period or the future industrial revolution, the lower classes on the British Peninsula did not have it easy.

Some might have been lucky to rise, but many became the denominators of certain statistics, turning into a black cloud over London, unable to rest in peace to this day.

Then, guided by the William couple, the group headed straight southwest.

Grantham is not large; it took just over ten minutes to reach the tallest building apart from the clock tower, the Saint Titus Church.

Saint Titus Church is about twelve or thirteen meters high, overall square-shaped, with three columns in a group, variable spans, a highly contoured facade, and a red cross atop.

Noble and solemn, majestic and oppressive.

Clearly, it is a standard Baroque-style building—Europe's earlier churches were Romanesque, later developed into Gothic, and by this time, Baroque stylings became popular.

However, by the 18th century, architectural styles will cycle once more:

Then, Gothic style will revive comically, lingering spiritedly for centuries, even influencing local architecture design much.

At the church entrance, stood a kind-eyed Priest, about sixty years old, dressed plainly but of fine quality, with slickly combed hair shining in the light.

As each person arrived, the Priest greeted them warmly, unconcerned about their odors or dirt.

Perhaps due to it being the sole gathering point in the town, a long line had already formed at the church door, with people continuously arriving from all directions, filling the queue's rear gaps.

Xu Yun and his group queued for roughly ten minutes before finally reaching the Priest.

The William family evidently are old congregants here; upon seeing them, the Priest unhesitatingly called William by name:

"Hallelujah! Mr. Asku! Seeing you is a joy, may you be anointed by God, may your family find favor!"

"Hallelujah! Pastor Yarlin! Thank God for His guidance!"

William warmly embraced him, followed by Mrs. Williams, Lisa, Lilani, and others...

When it was Little Niu's turn, Pastor Yarlin appeared even more enthusiastic. After all, he was the only fee-reduced student Trinity Theological College had admitted in over a decade:

"Little Isaac! Praise God, your arrival will surely please the Lord! May God guard your heart above all else, for everything you do flows from it."

Faced with Pastor Yarlin's praise, Little Niu displayed a rare humility and respect; such an expression is scarcely seen in daily life:

"Hallelujah, Mr. Yarlin."

Pastor Yarlin gave him a firm pat on the shoulder, then turned his gaze to Xu Yun:

"Oh my Lord... and who is this?"

Little Niu gave Xu Yun a gesture to step forward and introduced him:

"Mr. Yarlin, this is my friend from the East, his name is Donkey Fat Fish, and he is here to worship with us today."

Xu Yun stepped forward and nodded at Yarlin:

"Hello, Mr. Yarlin."

Yarlin seriously examined him and said:

"Welcome, my child, may God bless you."

.....

Note:

Chatting in the group about revising the work and suddenly remembering, the original title of this book was supposed to be "The Technology Empire Begins with Eradicating

Cockroaches," which many people rejected. Just asking here, does everyone really think it sounds bad?

If so, leave 1 here.

If it's okay, leave 2 here.

Let me see if my naming skills are really that poor....

### **Chapter 33: Chapter 31 Budding of Infinite Magnitude (Part 1)**

Due to the religious reformation in Europe, Protestantism and Catholicism became opposed long ago.

Unlike Catholicism, Protestantism is the core denomination in the United Kingdom today, highly inclusive of all social classes—this could be understood as a grand opening sale, where benefits are quite favorable.

However, from a historical perspective, Protestantism abolished the Catholic indulgences, which is commendable.

Therefore, guided by relatively enlightened thought, Pastor Yarlin did not delve too deeply into whether Xu Yun was a believer or baptized, thus quickly allowing William's group in.

The space inside Saint Titus Church is large, with two levels that can accommodate approximately eight hundred to a thousand people sitting and standing, with a high platform for preaching and a place for the choir at the front.

After entering the church, William's family found a spot relatively in the middle on the left side for this service's seating.

After some adjustments, the seating was finally arranged with seven people sitting, with Lilani on Mrs. Williams's lap.

About half an hour later, a choir walked up to the front platform, and everyone in the church stood up simultaneously and began singing hymns.

Since Xu Yun's knowledge of hymns was limited to the one with a rhythm very similar to "Hallelujah," during this process, he could only hum like a wooden figure, somewhat pretending to be a part of the chorus.

After the hymn was sung, Pastor Yarlin, who had been seen earlier, stepped onto the main platform.

After a brief prayer, he began the formal sermon.

Yarlin's sermon today was on the Book of Matthew, and there was a passage Xu Yun was quite familiar with:

"What good will it be for someone to gain the whole world, yet forfeit their soul? Or what can anyone give in exchange for their soul?"

Xu Yun was not a believer, but this sentence inexplicably touched him for a long time, unknowingly memorizing it.

It was somewhat like the sayings such as 'There is no Bodhi tree nor stand of the bright mirror,' even those outside the faith had heard of it a few times.

The entire sermon lasted for an hour and a half, with Xu Yun listening half attentively and half distractedly, spending the latter part mostly observing others in the church.

After the sermon ended, Yarlin wiped sweat from his forehead with some effort and said:

"Hallelujah!

Dear children of God, may our Lord bless your families; may your footsteps become beautiful, and one day may we all share in the glory!

Now, please stand to receive Communion!"

Upon hearing this, everyone present immediately stood up.

A moment later.

Solemn and heavy piano sounds echoed, and the choir continued singing hymns.

Pastor Yarlin personally held a small tray, followed by three or four people, starting from the front row and gradually moving to the back.

The position of Xu Yun's group was right in the middle of numerous seats, so it wasn't long before Yarlin reached them.

Communion's rule is quite simple:

On the tray Yarlin held, there was a small wooden dish with a fingernail-sized piece of bread, with a wine jug beside it. Each person could use their own cup to hold some wine.

As required, each person just needed to consume the bread and the wine.

This process was described to Xu Yun on his way here by Little Niu, so when it was his turn, he didn't resist much, confidently taking the bread and wine and swallowing them.

After all, this wasn't a formal initiation ceremony but more of a gratitude-based church ritual, something Xu Yun would not actively engage in unless during situations like this, where he wouldn't oppose much.

Typically, the communion wine is often grape wine, symbolizing the blood of the Saint Heir.

However, due to the current disruption in freight shipping, Grantham's stock of grape wine was no longer ample, so Yarin used newly brewed apple wine to substitute.

The color of apple wine actually resembled 'blood' more than grape wine, yet the taste of fresh apple wine was far inferior to grape wine—especially using Bramley apples with plenty of acidity.

So as soon as it entered his mouth, Xu Yun's taste buds were hit with strong sourness.

Yet as the wine went down, Xu Yun's hand holding the wooden cup suddenly froze, a flash of lightning crossing his mind:

He thought of how to make his first sum of money!

Yes, this is it!

After the communion was over, William's group carefully packed their things (mainly the Holy Book and leaf packages) and left the church.

Unlike how they came, Xu Yun and the rest encountered no unexpected events on their way back, only chatting briefly with a few fellow villagers.

And thus, after walking intermittently for over three hours, the eight finally arrived back at Woolsop Village.

Then, Little Niu and Xu Yun, the two young men, bid farewell to William's family at the village entrance and returned home.

Just upon returning to the garden house, Little Niu took out the piece of paper Hook left him and said:

"Fat Fish, don't speak yet, listen to my problem-solving ideas."

Xu Yun agreed willingly, as by Little Niu's mindset, Xu Yun was just an auxiliary 'tool man'; the problem-solving ideas must be addressed personally:

"Go ahead, Mr. Newton."

When Hook left, he had seen Hook's question, described simply in words:

Suppose you have a marble, letting it roll back and forth in an irregular pit, knowing the relationship  $V(r)$  between the pit's depth and horizontal coordinates, then find the nature of this function, that's the problem of calculating the space occupied by an undeformed continuous medium.

"Here's my idea."

Little Niu quickly drew a diagram on paper and said:

"If confined within Cartesian coordinates, assuming the marble is a point mass, the interaction is solely at close range  $x$ .

Then the force component applied to each small chunk of the medium can be viewed as applied to the surface of this medium, thus the density of force must correspond some quantity to the surface."

Xu Yun continued to nod, the 'certain quantity' Little Niu mentioned was actually integral volume and surface integral.

If he approached from the calculus perspective, it showed Little Niu wasn't far from completing the calculus framework, which was undoubtedly good news.

"Then we assume  $\delta X$  is the displacement of small elements, and according to Cardano's 1545 publication, 'Large Numbers,' we should deduce  $\zeta F$ , then further calculate using symmetry of quantity..."

Saying this, Little Niu suddenly stopped speaking.

Clearly.

His thoughts ended here.

.....

Note:

Okay, I'm bad at naming.....

...

**Chapter 34: Chapter 32: The Bud of Infinite Magnitude (Part 2)**

Inside the room.

Looking at Little Niu's frustrated face, Xu Yun couldn't help but feel a surge of emotion:

Although his character is really lackluster, his mind is truly exceptional!

Just look at what he's mentioned:

Not only calculus, but also concepts of normal vectors, potential energy, net torque, and the hypothesis of small deformations.

Each of these concepts, when made formal, couldn't have been publicly outlined until after 1807 at the earliest.

This kind of 150 to 200-year mental leap... who could achieve it?

Indeed.

The problem Hook proposed is really simple, so simple that the first solution Xu Yun thought of came up with was nearly twenty methods, the quickest method would solve it by setting up a non-Cartesian coordinate system and a covariant derivative.

But don't forget, Xu Yun's knowledge was gained through later learning, when the fundamental theories were already quite well rounded.

Like mastering controlled nuclear fusion, it's like making a 200cc engine with eyes closed.

But as for Little Niu?

He belongs to the era of making fire by friction, yet his vision has already seen the outrageous cetane number calculation of an internal combustion engine!

Thinking of this, Xu Yun felt a strange urge to laugh:

He once wrote a novel, and never mind Newton, even Maxwell was dissed by some comments as 'just a set of equations'.

Then he took a deep breath and refocused on the scene:

"Mr. Newton, I really agree with your thinking, but it requires too many unknown mathematical tools, and with the current progress in mathematical research, it seems a bit lacking..."

Little Niu nodded, readily admitting this point:

"That's right, but besides this, you must have used what Han Li expanded on."

After saying this, Little Niu lowered his head again and quickly wrote another line of formula:

$$V(r)=V(re)+V'(re)(r-e)+[V''(re)/2!](r-re)^2+[V'''(re)/3!](r-re)^3...$$

Next, Little Niu drew a line under this row of formulas and frowned, saying:

"If Han Li's expansion is used, what should be the property of an elastic ball near a stable position? It should be a series, but splitting it into parts is indeed a problem."

Xu Yun looked up at him and said:

"Mr. Newton, what if we calculate the stable position as a local minimum?"

We can assume a mathematical approximation, which means... infinitely approaching zero?"

"Infinitely approaching zero?"

For some reason, a strange emotion suddenly surged in Little Niu's heart, like seeing Lisa come out of the bedroom hand-in-hand with someone else.

However, he quickly cast aside this emotion and pondered for a moment, saying:

"Isn't that the idea of the circle quadrature method?"

The circle quadrature method, that is, an early idea for calculating pi, which anyone who attended elementary school should know this method.

It actually suggests this kind of idea:

Although there's a gap between two quantities, as long as this gap can be infinitely reduced, it can be considered that eventually, the two quantities will be equal.

In this era, the circle quadrature method is already considered an abandoned mathematical tool; with Xu Yun's mathematical expertise of casually mentioning Han Li's expansion, he theoretically shouldn't make such retrogressive errors in thinking.

Facing Little Niu's doubts, Xu Yun gently shook his head and said:

"Mr. Newton, the concept you are mentioning is a non-series variable, but what if we go a step further and understand it as a series variable?"

Even further, regarding it as a constant beyond the real number framework?"

"Approaching zero, series variable? Constant?"

Hearing Xu Yun's words, Little Niu was suddenly stunned.

The concept of infinitesimals is a problem that has hung many university slackers on the tree.

Generally speaking.

A person from being a university student to a Ph.D. has to go through three stages of understanding infinitesimals.

The infinitesimals of the first and second stages are variables, and upon reaching the third stage, all infinitesimals become constants, with each infinitesimal corresponding to a constant.

These constants are not within the real number framework; they are generated by the axioms of the non-standard analysis model.

The first stage is the cognition during college when learning mathematical analysis or advanced mathematics, where infinitesimals can be as small as possible.

That is the absolute value of positive and negative infinitesimals, less than any given positive real number.

The second stage is during learning non-standard analysis when many calculus formulas introduce infinitesimals, and concepts like sequences appear.

The third stage is recognizing mathematical model theory, where infinitesimals can become constants.

Once one realizes infinitesimals are constants, one discovers a broader mathematical world; this mathematical world is broader, deeper, and more complex than the known mathematical world today, with the second type of limit idea and its geometric structure emerging. The second type of limit idea is endowed by the infinite large space, and the standard analysis's limit idea is endowed by the infinitesimally small space.

Next came the phenomenon of compatibility between Euclidean and non-Euclidean geometries, where parallel intersection coordinates can be accurately represented.

The above situation also gave rise to many unconventional geometries, which are neither Euclidean nor non-Euclidean, belonging to a third type of geometry (Chinese geometry), etc.

What practical significance does the third stage of understanding infinitesimals have?

Very directly, you can engage in supercomputers.

Currently, the most in-depth research in this third stage domestically is USTC, with Pan Jianwei academician and Lu Chaoyang professor's quantum computer being an intuitive manifestation of it.

Friends who have participated in the supercomputer algorithm development interview should know that the third-order understanding of infinitesimals is a mandatory exam question in the interview.

Although Little Niu's theoretical knowledge wasn't so well-rounded at this time, as the proposer and foundational figure of calculus—especially infinitesimals, he could vaguely respond to this information.

Then Xu Yun took a pen and continued writing:

Assuming the coefficient of the first-order term is zero at the point of equilibrium, then it can only preserve up to second-order approximation, naturally obtaining the form of potential energy quadratic with the deviation from equilibrium:

$$V(r) \approx [V''(r_e)/2!](r-r_e)^2$$

$$V(r) \approx k/2(r-r_e)^2.$$

After writing here.

Xu Yun put down his pen, glanced at the somewhat dazed Little Niu, and quietly turned to leave.

Before leaving, he picked up a small bag of sugar, a bit of salt, half a spoon of butter, an unused crucible, and two potatoes from the table—earlier ones being commonly used seasonings for breakfast and dinner, the latter being emergency reserve food.

Then he tiptoed and gently closed the door.

Little Niu showed no reaction to this; he just stared dazedly at Xu Yun's equation, especially the approximately equal sign.

A few minutes passed.

His Adam's apple suddenly moved up and down a few times, and a few gurgling noises emitted from his mouth.

Moments later, he dashed back to his seat, quickly picking up a pen.

Three hours later.

With a bang, Little Niu rushed out the door.

Yes, physically rushed out the door—he knocked the door off, holding it in his hands.

There's no helping it, the house was just too old.

It was just over eight in the evening, so Little Niu's first sight was a cluster of firelight not far away, with Xu Yun's face reflected in the light.

Little Niu quickly walked to his side, excitedly saying:

"Fat Fish, I figured it out, it's a linearly changing force with distance, an elastic force!

Its specific form has no particular requirements, in other words, any system near the steady-state, will exhibit elastic behavior!

This is a formula that hasn't been discovered by someone, a theorem under steady-state, I bet, Hook himself didn't derive it because his function actually has a zeroth-order term!"

Little Niu mumbled as he ran to Xu Yun, only to realize when he got to the fire that Xu Yun was actually nodding his head, fiddling with something:

"Fat Fish, what are you...?"

"Mr. Newton, you came just in time."

Gazing at Little Niu in front of him, Xu Yun picked up a plate and smiled brilliantly:

"Freshly baked potatoes, delicious with sauce."

"Sauce? What sauce?"

"Tomato sauce."

...

Note:

Remember the tomato mentioned when introducing the utensils earlier, heh heh...

### **Chapter 35: Modified: Chapter 33 - The Ultimate Money-Making Weapon**

"Tomato ketchup?"

By the campfire, Little Niu hesitantly looked at the potatoes and tomato ketchup in front of him and asked Xu Yun:

"Is it a sauce made from tomatoes?"

"That's right."

"But aren't tomatoes poisonous?"

Hearing Little Niu's question, Xu Yun couldn't help but laugh:

"Mr. Newton, everyone says tomatoes are poisonous, and indeed, in history, some people have died from eating tomatoes.

But think about those who had accidents from eating tomatoes; what kind of people or which class were they?"

"People? Class?"

Upon hearing Xu Yun's words, Little Niu was first taken aback, then suddenly realized something and rushed back into the house, leaving a sentence behind:

"Wait for me, I'm going to get a book."

After a while.

Little Niu returned to the scene holding a book about three centimeters thick, flipping through it as he walked:

".....William Potter, an agricultural magnate from Leeds...Milton Bridges, a royal nobleman from Spain...Hissali Wyatt, a noble lady from Italy...."

What Little Niu held was "Herbals" written by John Gerard, the culprit responsible for tomatoes being banished in modern Europe.

In the book, he clearly stated that 'tomatoes are poisonous and cannot be eaten,' so no one in the United Kingdom dared to eat tomatoes throughout the 17th century.

It wasn't until the mid-18th century that the British gradually dared to use tomatoes in everyday dishes, and even then, they had to be cooked for a long time to eliminate the toxins.

The book recorded numerous cases of poisoning from eating tomatoes, which became strong evidence to support John Gerard's point.

'Clap——'

After skimming through more than a dozen examples, Little Niu snapped the book shut, pondering as he said:

"Class..."

After a few seconds, his eyes suddenly lit up:

"That's right, it's rather strange; these people seem to be wealthy merchants or nobility? Why is there not a single commoner?"

Xu Yun's lips curled into a faint smile as he continued to guide him:

"Mr. Newton, think about what kind of utensils they were using?"

"Utensils?"

Little Niu's gaze drifted slightly upward, recalling in the moonlight:

"It was usually pewter, right? I've seen it a few times at school banquets, and Uncle William attended some upper-middle-class gatherings in his earlier, somewhat wealthier years."

"Then think about what in pewter might react with tomatoes?"

Little Niu had already vaguely sensed something, and even without Xu Yun prompting, he began to consider the possibility of dissolution and reaction:

"Pewter is usually a mixture, mainly silver, tin, and lead... Wait, lead?!"

He grasped the book tightly with one hand, suddenly raising his head and staring intently at Xu Yun:

"Are you saying the acid in tomatoes dissolved the lead in the pewter, leading to poisoning and death?!"

Xu Yun shrugged, saying nothing; everything was clear without words.

Tomatoes were one of the specialties brought back from America by the Spanish in the early 16th century.

They flowed into the United Kingdom at the end of the 16th century, but for a long time, people only considered tomatoes as ornamental plants, afraid to eat them.

The primary reason was that tomatoes belonged to the Solanaceae family, and most Solanaceae plants contained toxic alkaloids, such as belladonna and mandrake, which were all poisonous.

So at that time, people believed that tomatoes were also poisonous and should be avoided.

But in reality, the toxins in tomatoes are mainly in the stems and unripe fruit, and the alkaloid content in ripe tomatoes is very low, hardly posing any health risk.

The second reason was the aforementioned quack, John Gerard, who defined tomatoes as toxic in his 1597 work "Herbals" — but in fact, he plagiarized this part from an article by Dodens, and even miscopied the name of the tomato from "lycopersicum" to "lycoperticum."

Unfortunately, at that time, there was no public channel in Europe to dispel rumors, and since the examples John Gerard mentioned had all really happened, tomatoes were banished from recipes for a long time and could be seen growing wild everywhere.

For example, not long ago, Xu Yun casually searched outside and found many wild ripe tomatoes, which no one was willing to eat.

This misunderstanding of tomatoes gave Xu Yun the idea of creating tomato ketchup as a super culinary weapon.

Don't be fooled by the unassuming appearance of tomato ketchup; it might seem far removed from things like soap or antibiotics.

But in modern Europe, the status of tomato ketchup is almost equivalent to that of Laoganma (a popular Chinese chili sauce) in China, if not more.

French fries, hamburgers, afternoon tea, bread, steak... almost everything can be enhanced with tomato ketchup.

Speaking of tomato ketchup, there's also an unknown little story.

Everyone probably knows that the English name for ketchup is ketchup, but this name doesn't originate from English itself; it's a phonetic borrowing from another language.

This language isn't any other but Chinese!

The earliest recorded use of the word ketchup in English in the Oxford English Dictionary is 1690 (Ketchup - Wikipedia), but the original ingredient wasn't tomatoes.

The word's origin is the Chinese ke-tsiap, which originally referred to a fermented fish sauce used for seasoning during cooking.

Professor Ren Shaotang from Stanford University once wrote a blog titled "The Language of Food," where he argued that the root of tomato ketchup can be traced back to a type of fish sauce from eastern Min Province:

In the 18th-century Min dialect, this fish sauce was called 'ketchup,' 'ge-tchup' or 'kue-chiap' in different regions.

Those familiar with the Min or Cantonese dialects can recognize the last syllable's Americanized pronunciation, 'chiap' or 'tchup,' which means 'sauce,' the Mandarin pronunciation being 'zhī.'

He also noted that the 1982 edition of the "Mandarin Minnan Dialect Dictionary" confirms "蕃" is an ancient character, pronounced as "gue" in Minnan colloquial language, meaning preserved fish.

Therefore, "蕃茄酱" in Minnan dialect is the ancient term for "fish sauce." (Two papers, DOI: 10.1515/bz-1969-0202, DOI: 10.2307/2852096, the latter is from Cambridge)

Of course.

With updates and iterations, today's tomato sauce has little resemblance to the 17th-century ketchup.

Just like the ancestor of cats is the *Proailurus*, it's a sort of ancestral link.

Xu Yun glanced around, noting that as time passed, the outdoor temperature was dropping sharply:

"Mr. Newton, why don't you try a couple of bites? It's a very common sauce in our Eastern cuisine. Not only is it non-toxic, but some who eat it become the five whites of the Central Plains... \*cough\*, become very wealthy!"

Hearing this, Little Niu couldn't help but scrutinize the tomato ketchup in front of him again, appearing somewhat hesitant:

Though he didn't want to admit it, this Eastern person named Fat Fish had indeed brought him many good things and helped him quite a bit since his appearance...

Thinking this, Little Niu made up his mind and took a potato voluntarily.

It's not like it will kill me; I might as well try a little.

The skin of the roasted potato was a bit hot, so Little Niu quickly switched the potato between his hands, continuously blowing on it.

With the help of the cold air, the surface temperature of the potato quickly dropped.

Little Niu skillfully pinched a slightly indented part, using a bit of force.

With a puff of white steam, the potato was split into two.

Then he took the smaller half, dipped it into the tomato ketchup mixed by Xu Yun, and popped it into his mouth along with the potato.

After a while, Little Niu exclaimed softly:

"Hmm? The taste isn't bad, it's delicious!"

At that time, seasonings in the United Kingdom were very scarce; bread with butter was the most common setup, beyond that, it was pickled vegetables with salted meat, combined with pomegranate seeds and peeled lime, made into an early form of simple salad.

Therefore, the introduction of tomato ketchup was like filling the gap between 'sour and sweet,' and its popularity has been proven numerous times in later generations; it's no exaggeration to say, this stuff is inherently a perfect match for Europeans.

Watching Little Niu already going for a second dip, Xu Yun smiled slightly and said:

"So, Mr. Newton, if we were to set a low price for tomato ketchup and sell it, do you think people would be willing to pay?"

"Sell? Pay?"

Thud——

Upon hearing those keywords, Little Niu froze like a battery-powered toy suddenly disconnected.

He didn't even notice the potato in his hand had fallen to the ground.

After a few seconds.

A light suddenly ignited in his eyes, like two gold coins embedded in there, glittering brightly.

### **Chapter 36: Chapter 34 William's Choice**

Early the next morning, at the Williams household.

The warm winter sun flickered across the branches, descending from the heavens with lingering warmth, illuminating every particle of dust in the air, gently steaming the cold of the night into a mist.

Today is the first day of a new week, and William Asku did not plan on doing anything too laborious.

Taking advantage of the comfortable morning sun, he moved his somewhat aged recliner outside,

squinted his eyes, wrapped in a somewhat darkened blanket, and enjoyed a rare moment of leisure.

However, he hadn't relaxed for long before his ears caught a huge sound in his foggy state – to be precise, the sound of a fence being broken through.

Everyone knows the nature of fences, whether abroad or locally, they can't withstand much violent force, but generally, people don't do such things under normal circumstances.

It was broad daylight, and even if there were thieves, they wouldn't come knocking at this time, thus, in his daze, William Asku had only one thought running through his mind:

Oh my, could it be the Netherlands coming to attack?

It was 1665, the midpoint of the famous Anglo-Dutch Wars, where John Bull and the Netherlands fought four major battles and countless smaller skirmishes.

Even though Woolsop was inland, you never know if some small squad would sneak in to create havoc behind enemy lines.

Thinking of this, William Asku instinctively let out a low growl.

Just as he was about to get up and head to the barn to wield a stick of cow dung like Lu Bu, an excited, somewhat distorted face appeared before him, yet familiar in the eyebrows and voice:

"Uncle William, Uncle William! Wake up! Wake up!"

Faced with this, William Asku's mind froze for several seconds, and then his voice suddenly rose:

"Little Isaac? Are you, with your thick eyebrows and big eyes, also betraying Great Britain?"

"?"

Little Niu's face showed a visible trace of confusion, but he quickly cast it aside, gently tugged at William's sleeve, and whispered:

"Uncle William, let me tell you, we're going to get rich!"

With Little Niu's pull, William came to his senses, and asked with a furrowed brow:

"Little Isaac, what exactly is happening?"

Little Niu didn't answer directly but cautiously glanced around, then gestured towards the house with his chin:

"Uncle William, let's go inside and talk."

"What are you up to?"

William looked at Little Niu puzzled, then glanced at Xu Yun who was carrying a package behind him, hesitated, and let them into the house:

"...Fine, come with me."

Just as they entered the house, Little Niu darted to the window and with a swish, pulled down a somewhat tattered curtain.

Unusually, he did not chit-chat with Lisa, but led Xu Yun straight to the dining table where they previously ate.

At this time, besides Xu Yun, Little Niu, William, Lisa, and Mrs. Williams, only Lilani was present among the three sisters.

It's worth mentioning that compared to last time, this little rascal seemed a bit more well-behaved, at least there wasn't much dirt on her face.

Then Little Niu placed Xu Yun's package on the table and quickly took out a few baked potatoes, dipped them in sauce, and handed them to William and the others:

"Uncle William, try this first. Auntie, Lisa, Lilani, please have a taste too."

William took the potato, held it close to his nose, and slight flares in his nostrils occurred:

"What is this, strawberry sauce?"

Little Niu shook his head and teased him:

"You'll know once you try it."

Seeing this, William hesitated for a moment but, trusting Little Niu, eventually ate the half potato.

The potato, freshly taken from the oven by Little Niu not long ago, although slightly cooled during the walk, remained warm thanks to Xu Yun's careful protection, perfect for eating.

As soon as the sticky potato entered his mouth, a marvelous blend of sweet and sour flavors danced on William's taste buds.

This flavor wasn't as refreshing as mint but unexpectedly lifted his spirits, opening his appetite instantly.

William's left hand holding the potato and his lips seemed uncontrollable, as they shoved and bit, swallowing the whole potato before his brain could send the next feedback.

He then mechanically chewed the potato, somewhat dazedly looking at his fingers, still coated with a hint of bright red sauce.

After a while, he looked at Little Niu and asked:

"Little Isaac, what is this stuff?"

This time Little Niu didn't tease, he gently touched Lilani who was licking her fingers, and said:

"Tomato sauce."

When Little Niu said tomato sauce, it wasn't ketchup but the phonetic translation of tomato sauce, thus William understood the ingredients immediately and whispered in surprise:

"Tomatoes? Oh God, isn't that stuff poisonous?"

Upon saying this, he stepped forward to stop Lilani's further actions.

Seeing this, Xu Yun, well-prepared, smiled softly and stepped forward to repeat the words previously said to Little Niu.

As previously mentioned, William is also a graduate of the University of Cambridge, and he obtained a degree in natural science.

Given the educational levels of 1665, this is almost equivalent to a doctoral degree from a top university in later generations.

Coupled with some insights from the early years of his rise, William was quickly guided by Xu Yun to follow the same thought process as Little Niu and was successfully persuaded.

"Tomato sauce?"

William glanced at Lilani, who was happily munching on potatoes dipped in tomato sauce, and asked Xu Yun:

"Mr. Feiyu, are you saying this is a specialty sauce from the East, and are you willing to share its recipe with us?"

Xu Yun nodded, looking at him calmly:

"That's right. This sauce was developed by a chef named Yuan Prefecture from the East. It's very simple to mix. If Mr. William is willing, we can partner up for this business."

William looked deeply at this young man from the East, his face still filled with doubt:

"Mr. Feiyu, since you possess such a technology, why not choose to go solo?"

"Of course, because of my friendship with Mr. Newton."

Xu Yun patted his chest, putting on a look of loyalty and camaraderie with Little Niu, then sighed and said:

"Given the current situation of the Black Death in London, I'm afraid I need to stay in Woolsop for a while. I can't even contact my parents temporarily. I can't just freeload here, right?"

Besides, the market for tomato sauce is absolutely huge, possibly even at a European level, but the replication cost is really low. It can't be monopolized.

If I choose to go solo, I fear I might not even sell to Grantham before the market is flooded with imitations.

Rather than making less money myself, it's better for all of us to come together and think of ways to earn more guineas before the technology is uncovered."

After saying all this, Xu Yun looked at William frankly, no longer speaking.

His explanation had both truths and lies, not entirely deception nor were they complete truths.

The false part was naturally the reason for sharing the technology, while the true part was his judgment on the replication market.

Currently, in the United Kingdom—or rather in all European countries except Italy and Spain—the biggest production barrier for tomato sauce is not the recipe but the ingrained notion that tomatoes are poisonous.

The method for making tomato sauce is pretty simple: first cook the tomatoes and mash them, then add sugar, salt, and blending oil (Xu Yun initially used butter), and slowly stir in a certain proportion.

This technique won't be deciphered in just a day or two, but probably within a couple of weeks at most.

If it were truly some complex craft, Xu Yun wouldn't have been able to handle it so easily, right?

Once people's perception of tomatoes being poisonous begins to shift, tomato sauce will be everywhere in no time.

Just like local cold noodles, while the national market for cold noodles is undeniably vast, have you seen any person or company monopolize it?

In some small counties, you can even encounter "Shan Province cold noodles" spoken in the local dialect.

This is the inevitable result of technology with no barriers, and it is one of the reasons Xu Yun chose tomato sauce:

The taste of tomato sauce inherently fits with Europeans, but due to the short replication window, the time to make money is relatively limited.

This way, it can improve the living conditions of Little Niu and William's family, without skewing Little Niu's future life trajectory.

If it were something with technological barriers—like soap or something like a pocket toy—Little Niu might spend his whole life chasing money.

The view returns to the room.

Looking at the tomato sauce before him, William pondered for a moment and said:

"Mr. Feiyu, I have no objection to going into business together, but the specific profit-sharing ratio..."

"Mr. William."

Just as William intended to discuss profit distribution, Xu Yun suddenly interrupted him:

"Mr. William, we can talk about the distribution ratio later because we are still missing one person, an essential partner."

Upon hearing this, William and Little Niu exchanged a glance and simultaneously asked:

"Who?"

"Think about it."

Xu Yun pointed to the tomato sauce on the table and explained:

"For educated individuals like you two, understanding why tomatoes are 'deadly' requires guidance. Now, what about ordinary people?"

With the knowledge base of commoners, they probably couldn't even grasp the concept of acid dissolving lead. How would you persuade them to buy tomato sauce?

Simply because it tastes good? That's clearly impossible. No one is willing to risk their life for a delicious treat."

Seeing the two in front of him pondering, Xu Yun smiled and shrugged:

"So we must find a highly respected person who can win others' trust with the simplest words, for example..."

"Pastor Yarlin of Saint Titus Church."

.....

Note:

Heard that a bunch of place names yesterday were suddenly reduced to pinyin abbreviations. Some protagonists in books are named Li (Luo) (Yang), but readers see it as Li LY, which is really tragic.....

### **Chapter 37: Chapter 35 Endorsers of Authority (Please follow and read!!!)**

"Pastor Yarlin?"

When Xu Yun mentioned this name, William was momentarily stunned.

Then he flattened his left hand and knocked his right fist upwards:

"Right, we can reach out to Pastor Yarlin!"

During the 16th-century European Reformation, Protestantism broke away from the Roman Universal Catholic Church, emerging as one of the three major JDJ sects in later generations.

From an objective standpoint, in the 16th-18th centuries, Protestantism, both in reputation and actions, truly deserved the word "new."

For instance, they famously abolished the practice of indulgences, believing that people could contact God directly without the need for a priest, effectively eliminating the 'intermediary' from the faith hierarchy.

However, the Protestantism in the United Kingdom was a bit more complex. Although the UK also adopted Protestantism after the Reformation, the reasons were hardly related to doctrine:

The UK's Protestantism was purely because the king wanted a divorce, but the Catholic Church disagreed, saying no way.

So the king simply abandoned Catholicism and declared himself the supreme leader of the UK's Protestantism, and this continues to this day.

This means if the marathon runner in line were to fall behind, their successor would also become the supreme leader of Protestantism.

Therefore, many of today's Protestant priests in the UK are actually somewhat connected to the royal palace, not purely puritans, and they are allowed to openly own businesses.

Whether this is good or bad is subjective, but at least from a rule standpoint, at this time, Protestant priests can engage in business partnerships with others.

As for the credibility of priests at this time...

How should I put it, although not as outrageous as manipulating the public at will in the Middle Ages, hosting a live show to promote products was still a breeze.

Especially in the Lincolnshire area, Yarlin's reputation in both official and civilian circles had reached an extreme.

It's like the local Pu Cunxin recommending cheap cookware to the grandmas, the conversion rate was simply incredible.

Therefore, when Xu Yun proposed this name, William and Little Niu agreed without any hesitation to Xu Yun's idea of bringing Yarlin into the venture.

.....

Early the next morning.

Grantham.

Saint Titus Church.

The elderly Yarlin, wearing coarse linen, was laboriously wiping down a chair after worship. Not far behind him in the choir room, a choir was practicing a hymn.

Yarlin's full name was Yarlin Dilat, fifty-nine years old, a graduate of Cambridge St. John's College, having held a priest qualification for over thirty years.

Besides his priest duties, he also held corresponding political positions in Grantham Town, with his family owning a sizeable estate in North Lincoln.

But Yarlin's private life wasn't lavish, even somewhat monotonous.

On normal days, apart from reading scriptures and praying, he went to Sunday school to teach children, living and eating at the church, his conduct as consistent with his outward appearance.

After all, Protestantism itself was a derivative of Catholicism, and despite the various scandals over the following one or two hundred years, it was relatively clean in its early stages.

For instance, when Little Niu was able to enter Trinity College to study, Yarlin had contributed a lot, using his name for the introduction letter.

Of course.

Even during this period, people like Yarlin were still a minority; others had more or less some worldly desires.

"Knock, knock, knock—"

Just as Yarlin was about to return to his prayer room to read the Holy Book, a knocking sound abruptly came from the church's main door.

Yarlin quickly put down the rag, cleared his throat, and responded:

"May God have mercy, I'm coming!"

It was Tuesday, not a regular worship day, but Yarlin wasn't surprised by the visit.

Even in later generations, European churches frequently had visitors during the week, usually involving confession, inquiry, or matters of mourning and joy.

Yarlin quickly walked to the door, took out a key, and unlocked it.

As a beam of light shone in, a hint of light also fell on Yarin's linen clothing, somewhat resembling the grey-robed Gandalf from The Lord of the Rings.

He first shielded his eyes with a hand, adjusted to the light slightly, and raised his eyebrows in slight surprise upon seeing the visitors:

"Oh, my God, Mr. William, Little Isaac, and this... Mr. Feiyu, right? What brings you all here?"

Opposite him, Xu Yun's mouth twitched slightly:

Darn, is the name "Fat Fish" really so catchy?

Looking at the astonished expression of Yarin, William and Little Niu both stepped up to embrace him before speaking:

"Pastor Yarin, there's something we'd like to discuss with you, may we come inside?"

Yarin's gaze swiftly swept over the three of them, nodding:

"Certainly, please follow me."

After saying that, he led them into the church, arriving at a reception room.

The reception room was very simply furnished, just a few benches, a table, and an oil lamp, with some books and letters on the table.

"Hallelujah!"

After taking a seat, Yarin curiously glanced at William and asked:

"Mr. William, you don't often visit at this time, is there something on your mind?"

Then, seeing the unconcealable joy on William's face, he suddenly had an epiphany, looking towards Little Niu:

"Let me guess, is it because Little Isaac and Lisa are planning to get engaged, so you're here to arrange the wedding venue..."

"Not at all!"

Upon hearing Yarin's words, Little Niu couldn't sit still, waving his hands frantically:

"I didn't... I'm not... don't say that, Pastor Yarin!"

Seeing the reaction, Yarlin was momentarily stunned, lightly glancing at Xu Yun, and suddenly thought of something else:

"Then, could it be Lisa and Mr. Feiyu?"

"Also no..."

Yarlin paused for a few seconds, and his gaze became peculiar looking at Xu Yun:

"Then, could it be you and Mr. Feiyu..."

"Hold on, hold on!"

Seeing this esteemed elder about to imagine all three of them coming out, Xu Yun quickly interrupted his wild imagination:

"It's not a relationship issue, Mr. William, please explain!"

William gently nodded, his expression subtly complex at the moment:

If he didn't misinterpret, Little Niu seemed a bit agitated when mentioning his eldest daughter?

Could there be something hidden from him?

But this thought only flashed through his mind, as there was something more important:

"Pastor Yarlin, here's the matter..."

Then, William took out a small jar of tomato sauce and explained everything about the matter to Yarlin in detail, basically revealing everything except for the formula:

"If you're interested, you can invest either personally or in the name of the church.

Rest assured, tomatoes have absolutely no toxicity, this is definitely a business that pleases God....."

William deliberately avoided discussing the formula, which was their backup plan:

If Yarlin wanted to go solo without them, without the formula, it would take at least two weeks to decipher the tomato sauce—despite the fact that homemade tomato sauce requires only four ingredients, they have been refined through numerous trials.

At this time, Mrs. Williams was at home making tomato sauce with a few daughters, in case the worst happened, William could immediately head to larger cities like Lincoln.

Even without someone with high credibility backing him, he could still earn some profit from this emerging opportunity.

"Tomato, huh..."

Yarlin extended his withered fingers, dipped a little of the red sauce, and observed it closely:

"Actually, more than twenty years ago, there were scholars in England who questioned the toxicity claims of tomatoes.

They were very popular among the lower class in Spain, but the mortality rate wasn't as high as rumored, even varying by several magnitudes.

I saw tomatoes served at a banquet during my visit to the Spanish Deji Lane College, and I even tried one, showing no sign of poisoning.

But seeing it made into a thick sauce with other recipes... this is my first time. Judging by its flavor, it seems to include some other ingredients, right?"

Watching Yarlin talk eloquently, William was a bit puzzled:

"Pastor Yarlin, so you mean..."

Yarlin thought for a moment and said:

"I agree to invest, but not personally, rather as the Grantham District.

The district can provide sales channels and manpower, but you need to assure me of two things."

....

Note:

I'm really begging everyone to follow the series during this period, the life-and-death push is next week, don't just stack up Chapters.....

The release might be much later than I anticipated, doubling the food-shortage time... begging for follow-up support!!!

### **Chapter 38: Chapter 36 Agreement Reached**

Inside the church.

Hearing Yarlin's response, William was slightly taken aback:

"Which two points?"

Pastor Yarlin pondered for a few seconds, then raised one finger:

"The first point is that the ketchup must first be arranged by the church for a two-week consumption observation to ensure it's non-toxic before it can be sold.

If you're worried about the formula being leaked, I can make a prepayment of five guineas on behalf of the district."

Upon hearing this, William exchanged a hidden glance with Little Niu and Xu Yun.

It was mentioned before.

The current average household income is about 0.65 guineas, and five guineas is nearly 8 years of income.

Translating to the future, this would roughly be equivalent to around 500,000 if a family's annual income is 60,000.

This price is negligible for the potential market of ketchup. After all, bread and potatoes are staples in this era, and the market for ketchup across all of Europe must be measured in "ten thousand guineas".

But, the same thing applies.

When a product's technical barriers can be easily overcome, no matter how large its potential market is, it's hard to monopolize.

Especially in this tumultuous era—unless you nationalize it through policy, banning private production.

According to Xu Yun and the others' previous estimates, without an authoritative guarantor, they could at most make 5-8 guineas.

Not to mention that Xu Yun is very clear about Yarlin's track record, this priest truly is a person of upright character.

According to historical trajectory.

Six years later, Yarlin would receive a 150 guinea inheritance, but he left himself only 10 guineas for retirement, donating a part to the church per Protestant "tithes" and using the rest to help the poor.

Today, Grantham Town has a restored Charity Shop to commemorate this priest.

After Yarlin's passing, Protestantism also established a Yarlin Fund in his honor. On the day the fund was established, Little Niu donated 40 pounds (by then, pounds had already begun circulating).

And that 40 pounds was the only time in Little Niu's life where he received a physical receipt for a donation.

Facing the large sum of 150 guineas, Yarlin chose to casually donate it completely, let alone the unpredictable future of ketchup.

Thus, Xu Yun invisibly gave William a look, suggesting he could agree.

William apparently shared the same sentiment, quickly nodding:

"No problem, Pastor Yarlin."

Yarlin nodded slightly, picked up the cup on the table for a small sip, and continued:

"As for the second matter... the church wants a seventy percent stake."

"Seventy percent stake?"

William's voice suddenly heightened a few notches, although he quickly regained his composure, the rise and fall of his chest still revealed his internal unrest:

"Pastor Yarlin, isn't this ratio a bit too high?"

The ketchup formula came from Xu Yun, Little Niu acted as an intermediary, and William provided a relatively stable backing.

Therefore, disregarding the church, the internal profit distribution among the three parties should at least be 4:3:3, and if Xu Yun was persistent, taking half would be reasonable.

If the church holds a seventy percent stake, wouldn't the actual share for one's family be less than ten percent?

Seeing the somewhat agitated William, Yarlin waved his hand, signaling him not to rush:

"Mr. William, will you listen to me before deciding?"

He then paused and continued:

"The first issue is the material cost of the ketchup. Although I haven't seen the specific formula, I'm sure it must include sugar, right, Mr. William?"

Upon hearing the word sugar, William immediately stopped speaking.

17th century Europe isn't like the future, where you can buy a pack of sugar for two and a half.

During this period, sugar in Europe couldn't even be considered a food; it was mostly used as medicine or to flaunt wealth and power by the rich and powerful.

The reason sugar was used as medicine primarily was because many people suffered from chronic malnutrition, and sugar had a high calorie content, making it an instantly effective 'magic potion' in any circumstance.

At that time, 100 grams of sugar cost about 8-9 pence, equivalent to 1/20 of a family's annual income.

The little sugar in Little Niu's family was supplied by William and his wife as a reserve. Had Little Niu not been contemplating the problem of infinite sequences at the time, Xu Yun almost wouldn't have been able to take it away smoothly.

If the church chooses to collaborate with William's family, at least the market of a town like Grantham is in sight, and the initial production cost clearly isn't a small figure—plus, it must be borne by the church.

Watching William's gradually weakening posture, Yarin once again smiled:

"Besides the cost, the Grantham District can offer superior channels—in the least, covering one-fifth of the East Midlands isn't difficult.

Mr. William, you're also a businessman; you should understand the difference between selling to a hundred and selling to ten thousand, right?"

Hundred sales earn a hundred percent, ten thousand sales earn ten percent, yet the latter's profit is ten times that of the former, a calculation even Lilani would understand.

Thinking of this, William glanced at Xu Yun.

Xu Yun shrugged lightly, indicating he had no objections.

The two reasons Yarin offered were quite sufficient, plus there's no necessity for Xu Yun, whose earnings of any amount in this era couldn't be taken back, to haggle excessively.

With this consideration, William had no choice but to give up fighting over the big picture and instead turned his attention to the minutiae:

"Mr. Yarlin, what you said is very reasonable, but I still think seventy percent is a bit high, how about a sixty-forty split?... And about the prepayment, I hope to receive at least eight guineas..."

In such a nickel-and-dime bargaining phase, William naturally changed the title from 'Pastor' to 'Mr.'; after all, the term pastor might be a bit awkward in such a transactional setting.

Subsequently, the two engaged in a discussion and ultimately reached an agreement:

Yarlin, on behalf of the Grantham District, signed a ketchup profit-sharing agreement with William, with a share proportion of 6.5:3.5.

The parties will conduct a one-week consumption observation period, and if all goes well, will formally enter the mass production stage.

Meanwhile, Yarlin will pay William 7 guineas as a guaranteed prepayment, which is a prepayment aspect of the profit-sharing agreement but also carries a guarantee nature—meaning during the ketchup profit distribution, the church will first deduct 7 as a baseline before sharing, but if the total profit doesn't exceed 7 guineas, William doesn't need to return the amount.

Subsequently, the parties pressed their handprints on the agreement successively; in this era where civil law was gradually budding, such an agreement carried a very high legal effect:

A year ago, in March 1664, a commoner had just won a lawsuit against a nobleman in Wimbledon using a similar contract.

More than ten minutes later.

The three walked out of the church gate, Little Niu touched the three guineas in his pocket (two were his and one was Xu Yun's meal provision), and couldn't help but smile.

### **Chapter 39: Chapter 37: Goodbye Hook**

Three days later.

At noon.

Da da da—

On a road about four or five meters wide, which was of significantly better quality than ordinary rammed stone roads, a hay cart was swaying along in the southeast direction.

The creaking joint sounds resembled an old, worn-out harmonica, singing the hardships of life.

Besides potatoes and vegetables loaded on the back of the hay cart, there were also three men sitting there at this moment.

Leading them was a middle-aged man, and the other two were young, one with black hair and black eyes, namely Little Niu, Xu Yun, and William.

After receiving seven guineas from Pastor Yarin three days ago, William's family, now relatively well-off, first spent ten shillings on some daily necessities and food, enjoying a hearty meal for the first time in a year.

They then rested for a day before finding a made-to-order hay cart this morning to head towards the county city of Lincolnshire, Lincoln City.

"County" is the UK's second-tier division, classified into ceremonial counties and metropolitan counties by nature.

In 1665, there were 27 of the former and only 4 of the latter—by the 21st century, this number would change to 34 and 6.

Lincolnshire is a standard ceremonial county, with a county chief representing the British Royal Family but with no real power, serving only for geographical designation, coordinating civil affairs, and a few other limited functions.

The county chief of Lincolnshire is in Lincoln City, a city considered very small by the locals, so small that you might not find it without searching with the 'UK' prefix.

The hay cart continued under the sun for a while, and after about half an hour, the driver pulled the horse to a stop:

"Gentlemen, we've arrived in Lincoln City."

Upon hearing this, Xu Yun and the other two exchanged glances and gradually got up.

Brushing off some potato dust from their bodies, they grabbed their belongings and deftly dismounted from the cart.

William then deliberately walked to the front of the cart and took out a small piece of jerky:

"Mr. Wenger, this piece of venison is the agreed fare, thank you for the journey."

The carter, referred to as Mr. Wenger, was a small, skinny old man with somewhat dark skin. He accepted the jerky from William and opened his mouth, revealing a mouthful of yellow teeth:

"Mr. William, you're too kind. Shall we meet here again tonight?"

William nodded:

"See you tonight."

After settling with the carter, William turned around and waved to Xu Yun and Little Niu:

"Alright, Isaac, Mr. Feiyu, let's enter the city."

Fat Fish and Little Niu both responded in agreement and followed William to the entrance.

In 1665, England did not require people entering the city on foot to pay an entry tax, but if you owned a house in the city, you had to pay a 'hearth tax.'

Apart from that, long-distance freighters like Wenger didn't have to pay if they were empty vehicles, but if they carried goods, they'd be stopped.

With a statement like "resources not allowed," you'd obediently pay up.

Xu Yun and the other two didn't face any entry tax issues so they easily walked into Lincoln City.

The current population of Lincoln City's main district was about forty to fifty thousand, which wasn't large for Europe in this era, yet not too small either—back home, in the Qing Dynasty's fourth year of Kangxi, the population of the Two Lakes area barely exceeded half a million.

Compared to Grantham Town, Lincoln City's architecture was much more upscale, with landmarks like opera houses and taverns being quite prominent.

If you looked closely, you could occasionally see some well-dressed wealthy individuals passing by in carriages.

In short, in the county city, one could somewhat feel the noble atmosphere of the seventeenth century.

Of course.

The tallest structures were still the clock tower and the church.

After entering the city, William looked around and brought Little Niu and Xu Yun to a luxurious attic, saying:

"Little Isaac, Mr. Feiyu, this place is quite recognizable, let's use it as our meeting point and meet back here in three hours, okay?"

Xu Yun and Little Niu nodded together:

"No problem, Uncle (Mr. William)."

After that, the three of them parted ways.

William's purpose in coming to Lincoln City this time was to buy sugar—although they had granted the rights to make ketchup to Yarlin, William and his team couldn't completely leave themselves without a backup plan. Making some ketchup just in case was the best option.

To make ketchup, one naturally couldn't do without sugar as an ingredient.

Due to different sources of goods and transportation costs, at this time, sugar prices varied among towns, counties, and even the capital within England, with the lowest prices in the county chief's location, fluctuating considerably by the time they reached towns.

Since William was buying sugar worth no less than three guineas, it was far too insecure to do so in a small town like Little Grantham with only a thousand people.

Even the British knew the wisdom of not flaunting wealth.

As for Xu Yun and Little Niu's purpose in coming to Lincoln City, there was only one:

Finding Hook!

"Yage Hotel in the southwest of the city....."

After parting with William, Xu Yun and Little Niu followed the address Hook had previously left and finally stopped at another three-story building.

The building was located in a wealthy area in the southwestern part of the city, where the streets were relatively cleaner, at least you wouldn't suddenly have someone dump a bucket of waste next to you while walking.

A cross on the façade indicated that it was church property, belonging to an official source.

A plaque with Hebrew lettering hung below the cross, with the words "Yage" inscribed on it.

"Yage Hotel, this should be the place."

In this era, hotel entrances didn't have attendants, and the so-called "lobby" was only about twenty or thirty square meters, so Little Niu and his companion easily reached the front desk:

"Hello, is Mr. Robert Hooke staying here?"

The front desk owner was a short, chubby middle-aged man with a goatee. He raised his eyes to glance at the two before speaking:

"Mr. Hooke? He lives here. Do you have any matters with him?"

Once they confirmed Hooke's presence, Little Niu clenched his hand, hidden in his sleeve, a bit tighter and said:

"We have an appointment with him. Can we contact him?"

Just say that Isaac Newton, a student of Barrow, is looking for him."

The chubby man put down his pen and once again scrutinized Xu Yun and Little Niu, a trace of hesitation appearing on his face.

Since it was noon, and uncertain if the guest was napping, he had to weigh the risk of potential complaints—this was church property; he was merely a higher-ranking employee, like a lobby manager.

As Lincoln City's top hotel, he had encountered his share of people who, through various channels, had learned guests' names, hoping to either extort money or forge connections.

After more than ten seconds, the chubby man finally made a decision in his heart.

He picked up a pen from the table, scribbled a message on a piece of paper, and handed it to Little Niu:

"Barrow and Isaac Newton, are these names written correctly?"

Little Niu took the paper, glanced at it, and nodded:

"Correct."

The chubby man retrieved the paper, placed it in a small basket nearby, and shook another string.

Soon, a response came from the second floor:

Someone above tugged the rope, slowly pulling up the basket.

Moments later, footsteps could be heard from the top floor.

Ring ring—

After another two or three minutes, a bell on the left side of the front desk suddenly rang crisply.

The chubby man saw this and let out a slight sigh of relief:

There were two response bells at the front desk; the left one signified guest consent or permission, while the right one indicated denial.

Then he glanced at the ledger again and reported a room number to Little Niu and Xu Yun:

"Second floor, room 233, someone will escort you there after you go upstairs."

Xu Yun thanked the proprietor on behalf of Little Niu, and the two headed upstairs.

The stairs to the old attic were a bit shaky, giving off a sense of dilapidation.

If the Yuewen Gold Writer Salon were held in this hotel, it would likely collapse after just a couple of attendees walked over it.

However, the combined size of Xu Yun and Little Niu was smaller than Ear Root's, so they easily reached the second floor.

As soon as they got upstairs, a small-statured attendant came to greet them.

Following his lead, Xu Yun and Little Niu proceeded down a somewhat narrow hallway straight to a door.

The room's lock had already been opened internally, left ajar, with a faint scent of tobacco wafting out.

The attendant gestured to Xu Yun and Little Niu to knock on the door themselves, bowed slightly, and left.

After the attendant's departure, Little Niu stepped forward and knocked on the door:

"Mr. Hooke, I'm Isaac Newton."

#### **Chapter 40: Zhang 38 Killing and destroying hearts... (Please follow up!!!)**

Just a few seconds after Little Niu knocked on the door, a male voice came from inside the room, and the owner of the voice was none other than Hook:

"Come in."

Little Niu took a deep breath, then pushed the door open with Xu Yun.

The guestroom Hook was residing in was a one-bedroom suite. This kind of arrangement, which in later years would be classified as a suite in most hotels and quite expensive, was a standard configuration in the seventeenth century.

At this moment, the bedroom door was already closed. Hook was sitting at the desk directly facing the living room, smoking a pipe with one hand and seeming to be leafing through a book with the other.

Upon seeing Little Niu's arrival, he did not rise to greet them but instead leaned comfortably against the back of his chair:

"Newton, it's been... oh, four days, right? What brings you here so soon?"

Is it because you couldn't reach Barrow, or is it that... you've solved the problem?"

The last sentence from Hook carried an obvious tone of mockery, looking down with deep intent.

In his opinion, Little Niu's purpose for the visit was inevitably to inform him that he couldn't get in touch with Barrow:

Clearly, four days were not enough for correspondence to go back and forth, and if Barrow was in the Lincolnshire area, he would certainly have come along with Little Niu to find him today.

He had a fair understanding of Barrow, who had a bit of a sense of responsibility and, even if he couldn't solve the problem, wouldn't send his student to call upon him instead.

So it was quite apparent there was only one possibility at the moment:

Little Niu, after searching at home, either lost contact information for his teacher, or was informed that due to the pandemic, mail was temporarily halted, leaving him no choice but to inform Hook in person.

This action also implied another point:

He attempted to solve the problem but failed.

As to the possibility of Little Niu solving this problem...

Hook would rather believe someone would derive the specific formula for gravity during his lifetime than believe this young fellow could solve his problem.

No matter if he was the first scholar in fifteen years at Trinity College to have a scholarship reduction — it was simply impossible!

And just as Hook was contemplating how to mock Little Niu, he heard Little Niu's voice, carrying a somewhat inexplicable tone:

"That's right, Mr. Hook, I've solved this question."

"I know, for someone with your capability, it's indeed quite challenging... Wait?!"

Hook had prepared to continue the sarcasm but suddenly realized something was amiss while speaking, and his smile froze, leaving him standing there, dumbfounded.

He stared blankly for over ten seconds before abruptly sitting up straight, fixing an intense gaze on Little Niu:

"What did you just say?"

Little Niu shrugged and pulled out a prepared manuscript, presenting it to Hook:

"The solution is here, provided you can understand it, Mr. Hook."

"Nonsense, this is impossible!"

Hook uttered a foul word, then unceremoniously snatched the manuscript from Little Niu, spread it out on the desk, and started reading:

"Specific vibration frequencies correspond to specific curves... differential calculus for the coordinate..."

"The linear strain formula within an element  $\Sigma a = (\Sigma x + \Sigma y) + (\Sigma x - \Sigma y)\cos 2\alpha + yx\cos 2\alpha$ ... remarkable, remarkable..."

" $d(\Delta l) = \epsilon_x dx \cos \alpha + \epsilon_y dy \sin \alpha - \gamma xy dx \sin \alpha$ ..."

$\epsilon \alpha = d(\Delta l)/ds$

$= (\epsilon_x + \epsilon_y)/2 + \{(\epsilon_x - \epsilon_y)/2\}\cos 2\alpha - \{(\gamma_{xy})/2\}\sin 2\alpha \dots$ " (Someone asked me what the equation content was, so I've written it here this time)

"Horizontal displacement  $S = \epsilon_1$ , then... hmm?"

Caught up in his calculations, Hook's pen suddenly stopped at a certain point.

He drew a line under " $\rightarrow 0$ ," then asked Little Niu:

"What does this mean?"

Given that it involved the core issue of Hook's current research, Little Niu naturally wouldn't disclose it easily—despite appearances of being small-minded and easily angered, Hook was actually very sly, as seen when deriving the law of gravitation where he got tricked.

So Little Niu casually hummed:

"It's just an abbreviation for approaching, can be seen as a decreasing trend of -1st-order factorial.

Mr. Hook, you can draw a stress distribution curve on the center height line, with the displacement approaching the side of load action, and you'll find the position where the three stress fields tend to coincide is twice the distance to the load boundary."

Little Niu's tone seemed relaxed, carrying an air of "those who understand, know."

Yet, in reality, this statement contained a lot of crucial information—especially the latter half.

This sentence actually touched upon Saint Venant's principle, a foundational theorem proposed by Gaul scientist Saint Venant in 1855, nearly 200 years away from now.

However, after a bit of homing and processing by Xu Yun, it became the handiwork of all-around genius Han Li.

Saint Venant, in deriving the problem of zero-force systems and strain energy density, employed a plethora of infinitesimal concepts, thus there exists a very subtle equivalent recursive relation between them, which can be measured to explain infinitesimal concepts.

Anyway, before the generalized Hooke's law was proposed in this era, no one knew what the equivalent force system actually was.

At worst, it could be concluded as a positional phenomenon describing stress fields tending toward—as Little Niu said, claiming to have created a new mathematical tool

might attract some resentment, but saying he observed a phenomenon consistent with certain rules in an experiment, even Hook wouldn't say much.

Of course.

This also related to the fact that Hook's problem only involved the Taylor second order expansion.

Throughout the process, aside from some calculations, most situations didn't require the use of the calculus tool; simply using interpretative concepts sufficed.

So after Little Niu pre-opened a bug by 200 years, covering the real significance of infinitesimals, Hook quickly calculated a brand-new result:

"Under the situation of constant  $p_x$ ,  $p_y$ , is this an elastic force within a logical framework? Wait, no!"

While calculating, Hook suddenly looked up:

"What about the stress-strain relationship? How do we derive the linear strain of a medium occupying space?"

Looking at Hook, who appeared frantically as if witnessing the author breaking the Chapter, Little Niu spread his hands and said innocently:

"Sorry, Mr. Hook, Professor Barrow has only taught me this.

If you're interested in learning more, you can come to Trinity College for some guidance once the pandemic is over.

With my teacher's temperament, I'm sure he will patiently answer your questions."

"You are dreaming in broad daylight!"

Just as Little Niu's words fell, Hook suddenly stood up, and his look in the shaded environment appeared extremely intimidating:

"To expect me to consult him with questions—wait till the world ends!

Little thief, let me tell you, don't think that just because you've solved this tiny problem you're impressive; one day you will regret it!

Regret being Barrow's student! Regret saying this today!"

Watching the furious yet powerless Hook, Xu Yun shook his head slightly:

Thankfully this is reality; if this were a game where you could ask a question at this moment, Hook would likely smash his computer in agitation...

Meanwhile, besides Xu Yun, Little Niu uncharacteristically didn't get angry, instead smirking annoyingly:

"Mr. Hook, whatever you think is fine, I won't disturb you any longer. Please, suit yourself."

Having said this, he pulled Xu Yun along, leaving the room.

Just as they reached the door, little Niu, as if suddenly remembering something, exaggeratedly exclaimed, "Oh," and said to Xu Yun:

"Fat Fish, do you know where Teacher Barrow is now?"

After several days of interaction, Xu Yun had somewhat gotten to know this grandmaster, so even though puzzled by why Little Niu brought up the topic, Xu Yun cooperated and said:

"I have no idea."

"Ah, that's just like him, always running around, but with Mistress by his side, he should be living quite happily... "

"Mistress?"

"Yeah, don't you know? Mistress is named Ilo Bliss, a great beauty. She was actually a renowned top student at the University of Oxford, but one year got up against the teacher during a Cambridge-Oxford exchange competition. After being reverse-swept in three sets by the teacher, she began pursuing him..."

Before Little Niu could finish his words, sounds of something heavy hitting the floor came from inside, along with an anguished scream mixed with a sobbing tone:

"Nonsense, this can't be possible!"

Hook blurted out a curse, snatching Little Niu's manuscript uncouthly and spread it on the table, starting to read it intently.

"Elastic force within a logical framework when  $p_x$ ,  $p_y$  remain constant? Wait, no!"

As Hook calculated, he suddenly looked up:

"What about the stress-strain relationship? How do we derive the linear strain as the medium occupies space?"

Seeing the frantic Hook, as if staring at a cliffhanger, Little Niu spread his hands in innocence and said:

"Sorry, Mr. Hook, Professor Barrow only taught me these things.

If you want further details, you could wait until the pandemic ends, and then come over to Trinity College to ask."

"You've got to be dreaming!"

No sooner had Little Niu finished speaking than Hook leapt up, his face looking exceptionally dark in the dim light:

"You little brat, don't think you're so amazing just because you solved this little problem. One day you'll regret it!

Regret it for becoming a student of Barrow! Regret for saying these things today!"

Beside him, Xu Yun watched the crazed and helpless Hook and shook his head slightly:

Luckily, this is reality; otherwise, in a game environment, someone would have already launched an attack...

In contrast, Little Niu was uncharacteristically not angry, instead, he cheekily smirked and said:

"Mr. Hook, you can think whatever you like, I'll leave you be."

With that, he dragged Xu Yun out of the room.

When they reached the door, it "suddenly" occurred to Little Niu, and he exclaimed, "Oh!" and said to Xu Yun:

"Fat Fish, do you know where Teacher Barrow is now?"

Having spent some time together over the past few days, Xu Yun had gotten to know this ancestor a little, so although he was puzzled as to why Little Niu was bringing this up, he played along and said:

"I don't know."

"Ah, that's just like him, always running around. But he has his wife with him, so he should be quite happy..."

Just as Little Niu had yet to finish, a heavy object could be heard falling inside the room, followed by a sound that seemed to carry just a hint of tears.

Note:

What's actually being derived here is the Generalized Hooke's Law. The three-dimensional Generalized Hooke's Law comprises three equations, and  $f=k \cdot x$  cannot be directly derived from it at all.

Historically, Barrow didn't solve this problem and was quite forced into a corner by it...

From today till Tuesday are the critical three days of life and death, so I beg for continuous reading!!!

The previous book lasted 35 hours, still seeking continuation readership!!!