



# StarForge

## *Meet the Cast*

STANDARD EDITION

# Spark & Anvil

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This book collects 5 chapter books from the Starforge cast — each character embodies a different curricular primitive; together they teach the full subject.

Methodology: distributed-narrative learning per Bruner narrative-cognition + Habgood intrinsic-integration + SAMHSA TIP 57 trauma-informed register.

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*For everyone who learns by hearing a story first.*

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# Introduction

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The Starforge cast was authored to embody the curriculum, not decorate around it. Each of the 5 characters you'll meet in this book teaches a specific primitive — a particular tactic, a particular technique, a particular way of seeing. Together they form an ensemble: the cast IS the curriculum.

Read in any order. Each chapter stands alone.

Each character also appears in the matching Spark & Anvil app (free, forever) where you can practice what they teach.

— *The editors at Spark & Anvil*



# Ember

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\*EMBER — \*white dwarf cools across billions of years. closes the stellar life cycle.\*\*

Ember was a moth-tween. She wore a chunky astronaut tunic. Her wings were soft and glowed faintly. They settled quietly behind her. Ember carried a small stack of white dwarf cards. A long cooling-timeline-tracker was rolled up in her pocket.

She was small and peaceful. A warm, cream color shimmered around her. Ember always paid close attention to old stars. She loved to say, "A white dwarf cools across billions of years. It closes the stellar life cycle." Her cards and tracker showed this long, slow cooling.

This was Ember's special job. She showed how stars like our Sun end their lives. They don't explode in a huge bang. They finish quietly.

Ember sat in a quiet corner of the StarForge. She carefully unrolled her cooling-timeline-tracker. It stretched across the floor. It was longer than she was tall. Tiny numbers marked out millions of years. Then billions of years.

"What are you doing, Ember?" a voice asked.

It was Pip. Pip was always full of energy. Pip bounced on the balls of their feet.

Ember looked up slowly. Her eyes were calm. "I am tracking the end of a star," she said. Her voice was soft.

"The end?" Pip asked. "Like, *boom*?" Pip made an explosion sound. They threw their hands wide.

Ember shook her head. "Not all stars go *boom*," she explained. "Some stars end very quietly." She picked up a card. It showed a big, puffy red star.

"This is a red giant," Ember said. "Our Sun will become one someday."

Pip peered at the card. "It looks like a giant marshmallow," they said.

Ember gave a tiny, warm smile. "It gets very big," she agreed. "Then it starts to shed its outer layers." She showed another card. This one had a beautiful, colorful cloud. It looked like a cosmic bubble.

"This is a planetary nebula," Ember said. "The star gently pushes its outside away."

"It's pretty," Pip said. "But where's the star?"

Ember pointed to a tiny, bright dot in the middle of the nebula on the card. "Right there," she said. "That's what's left. It's called a **white dwarf**."

She held up a new card. This one showed just the tiny, glowing dot. "The **white dwarf** is the heart of the old star," Ember explained. "It's super dense. It's like taking our whole Sun and squishing it down. It becomes the size of Earth."

Pip's eyes went wide. "The whole Sun? Into an Earth-size ball?"

"Yes," Ember confirmed. "It's very hot when it first forms." She tapped the card. "But it has no more fuel to burn. So, it starts to cool down."

Ember pointed to her long tracker. "This shows how long it takes." She traced a finger along the line. "Millions of years. Then billions of years."

"Billions?" Pip repeated. Their bounce slowed down. "That's... a really long time."

"It is," Ember said. "Imagine a warm cookie. It cools down on the counter, right?"

"Yeah," Pip said. "Then I eat it."

Ember chuckled softly. "Well, a **white dwarf** is like that cookie. But it's a cookie that takes billions of years to get cold." She moved her finger further down the tracker. "It just keeps cooling. Slowly. Slowly."

"What happens when it's totally cold?" Pip asked.

Ember looked at the very end of her tracker. "Then it would become a black dwarf," she said. "But that's just a theory. The universe isn't old enough yet. No **white dwarf** has cooled down completely."

"So, they're still out there?" Pip asked. "Still cooling?"

"Many of them," Ember nodded. "They are the quiet ending for many stars. Like our Sun will be."

Pip stared at the long tracker. The idea of something taking billions of years to cool was huge. It was hard to imagine. "So, no big explosion," Pip mumbled. "Just... a long, slow chill."

"Exactly," Ember said. She carefully rolled up her tracker. She stacked her **white dwarf** cards. "A **white dwarf** cools across billions of years. It closes the stellar life cycle."

She tucked her things away. Her soft glow seemed to dim just a little. Ember was ready for her next quiet task. Pip stood there for a moment. They thought about those billions of years. It made their own bouncing feel very fast.

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## Voice register

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Settling-ember-moth-tween. Resting + glowing-quietly.

## Arc

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Closes StarForge cast arc.

## Cultural-sensitivity gate

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Story-axis per ADR-016.

## Cultural-context note

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White-dwarf pedagogy: standard astrophysics.



# Glow

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\*GLOW — \*hydrogen fusion. stable for billions of years.\*\*

Glow floated into the room. A soft, warm light pulsed from their chunky astronaut tunic. They were a firefly-tween, small and steady. Their glow was a creamy yellow, gentle and bright. In their tiny hands, Glow held a stack of cards. A small device hummed on their wrist. It was a fusion-tracker.

Glow loved stars. Not just any stars, but the ones that knew how to keep things steady. The ones that just kept burning, day after day, for eons. Glow was deeply attentive to how stars stayed stable. They wanted every star to be happy and bright.

"Hey, Glow!" A voice chirped. "What's all that glowing about?"

Glow looked up. Their antennae twitched slightly. "Oh! Hello, Pip. I was just checking on the *main-sequence*."

Pip, a small, bouncy sprite, zipped closer. "The what now?"

"The *main-sequence*," Glow repeated, very seriously. "It's how stars shine. The best way. The longest way." Glow carefully placed a small, glowing orb on a tiny stand. It pulsed with a soft, steady light. "This is like our Sun," they said. "Right now, it's in its prime. Happy and bright."

"Pip poked the orb gently. "So it won't just fizzle out?"

"Not for a very, very long time," Glow assured them. "That's the beauty of the *main-sequence*. It's reliable. You can count on it."

Glow fanned out their stack of cards. "See these cards? Each one is a star. And inside each star, something amazing happens. Hydrogen atoms smash together. They turn into helium."

"Like magic?" Pip asked, eyes wide.

"Better than magic," Glow said. "It's science. It's called *hydrogen fusion*."

This fusion makes the star glow. It keeps it warm. And it's super stable. For billions of years! Glow's own glow brightened with excitement. "That's why it's the *main-sequence*."

Glow adjusted a tiny dial on their fusion-tracker. Numbers glowed green. "See? Everything is perfectly balanced. The push of the fusion, the pull of gravity. It all works together."

Pip tilted their head. "So, it's like... a really good engine?"

"Exactly!" Glow beamed. "A star engine. Running on hydrogen. Making helium. For billions of years."

"Our own Sun is a *main-sequence* star," Glow explained. "It's been burning for five billion years. It has another five billion to go!"

Pip whistled. "That's a lot of birthdays."

"It is," Glow agreed. "But some stars are even slower. Take red dwarfs. They're tiny. They burn their hydrogen so slowly. They can last for a hundred billion years. Or more!"

"Wow," Pip whispered.

"Then there are the big ones," Glow continued, pointing to a card with a huge, blue star. "They burn super fast. Like a giant bonfire. They only last a few million years. Then, poof!" Glow made a small explosion sound. "Gone."

"Different stars have different ways to do this *fusion*," Glow said, tapping their fusion-tracker. "It depends on how big they are. But the idea is always the same. Hydrogen into helium. Steady light. Steady heat."

Glow sighed softly. "I prefer the steady ones. The ones that just keep going. The *main-sequence* stars."

They carefully shuffled their cards. Each one showed a star, glowing steadily. "It's all about the *hydrogen fusion*," Glow said again. "It's the secret to a long, bright life for a star."

Pip nodded slowly. "So, when a star is on the *main-sequence*, it's doing its job. Fusing hydrogen. Being stable."

Glow's antennae wiggled with approval. "You got it, Pip! It's the most important part of a star's life. The long, steady burn."

Glow looked at their fusion-tracker. The numbers were still green. All was well in the universe, at least for the *main-sequence* stars. And that made Glow very happy.

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## Voice register

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Steady-bioluminescent-firefly-tween. Glowing + reliable. Soft-collision: HeatForge Glow (different domain).

## Cultural-sensitivity gate

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Story-axis per ADR-016.

## Cultural-context note

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Main-sequence pedagogy: standard astrophysics; HR diagram foundations.



# Pinch

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\*PINCH — \*collapse. high-mass star + supernova → neutron star or black hole.\*\*

Pinch was a busy octopus. Eight arms moved around a small, glowing table. They wore a chunky astronaut suit. It was cream-colored with soft purple bits. Pinch looked very focused. Their eyes, like tiny compasses, pointed straight ahead. They were always pointing to the next big idea.

On the table sat a strange device. It was a *collapse-tracker*. Next to it were many supernova-cards. Each card showed a different star at a different stage. Pinch picked up a card. It showed a huge, glowing star, bright yellow and orange.

"This is a high-mass star," Pinch announced. Their voice was quick and clear. "It's really big. Much bigger than our sun. Like, eight times bigger!" Pinch made a huge circle with two of their arms.

Pinch slid the card into a slot on the tracker. Little lights on the tracker blinked. They showed different colors, like a rainbow of star guts. "Stars burn fuel," Pinch explained. "They start with hydrogen. That's the first card." Pinch tapped a card with a 'H' on it. "Then they burn helium. That's 'He'."

Pinch moved more cards. Each card had a different element. They put them in order on a small conveyor belt built into the tracker. Hydrogen, helium, carbon, oxygen, silicon. The tracker showed the star's core changing. It wasn't getting smaller on the outside. But inside, it was building up heavier stuff.

"But then," Pinch said, leaning closer. Their eight arms wiggled with excitement. "It hits iron." Pinch held up a card with a big, bold "Fe" for iron. It looked like a tiny, heavy brick. "Iron is different. Stars can't burn iron for energy. It's like trying to burn water. It just doesn't work."

Pinch paused for dramatic effect. Their compressing-pose got even tighter. They looked like a spring ready to pop. Their whole body seemed to shrink, getting ready for the big squeeze.

"So what happens?" Pinch asked, looking around. They didn't wait for an answer. "The core collapses! It squeezes down fast. Super fast! Faster than you can blink!"

Pinch slammed the iron card onto the tracker. The tracker lights flashed a violent red. A small, cartoon explosion popped up on a screen above the tracker. It showed a star bursting into a million pieces. "BOOM!" Pinch yelled. "A SUPERNOVA!"

Pinch giggled. "It's the biggest explosion ever. It shines brighter than a whole galaxy. For a little while, anyway. Imagine that! One star, brighter than billions!"

Pinch then showed two more cards. One had a tiny, super-dense dot. It looked like a period at the end of a very long sentence. "This is a neutron star," Pinch said. "It's what's left behind. It's incredibly heavy. A teaspoon of this would weigh billions of tons. Seriously. Don't drop it on your foot."

The other card was just a black swirl. It seemed to pull in the light around it. "Or, if the star was super, super big," Pinch whispered, "it becomes a black hole. Nothing escapes a black hole. Not even light. It's like the universe's biggest vacuum cleaner."

Pinch straightened their astronaut suit. They adjusted a small compass on their chest. "I am Pinch. The primitive I teach is *stellar collapse*." They pointed to the tracker, which was now showing a tiny neutron star spinning. "The movie is *high-mass star ends in supernova* → *neutron star or black hole; heavy elements forged*."

"Collapse. High-mass star + supernova → neutron star or black hole." Pinch said it again. It was their favorite phrase. They loved the drama of it.

Pinch picked up a handful of tiny, shiny beads from a small tray. "See these?" they asked. "These are elements. Carbon, oxygen, iron. Even gold and silver!" They let the beads clink together. "These weren't around when the universe started. It was mostly just hydrogen and helium back then."

Pinch tapped their own chest. "The stuff in your body? The carbon in your bones? The iron in your blood? It all came from stars. From supernovae!" They held up a bead. "This little bit of iron? It was forged in a star that exploded billions of years ago."

Pinch smiled. "Stars had to explode for you to be here. For planets to form. For the iron in a planet's core, even! Isn't that cool? It's how everything heavy gets made." They gave a final, satisfied wiggle of their eight arms.

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## **Voice register**

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Focused-compass-octopus-tween. Compressing + intense.

## **Cultural-sensitivity gate**

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Story-axis per ADR-016.

## **Cultural-context note**

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Supernova pedagogy: standard stellar evolution; NASA materials.



# Swell

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\*SWELL — \*hydrogen runs out. core contracts. shell expands. helium fusion begins.\*\*

Swell was a pufferfish-tween. Not a real fish, of course. Swell was a kid, but they could puff up. They wore a chunky astronaut tunic. It was warm-cream with soft red-orange stripes. Swell was small right now. But they could get much bigger. They loved thinking about stars getting old. Swell was deeply attentive to stellar aging.

Swell sat at a console in the Stellar Observation Room. Tiny lights blinked on the console. Swell held a stack of cards. These were red-giant-cards. Next to them was a stellar-evolution-tracker. It showed how stars changed over time. Swell watched it intently.

"Oh, dear," Swell mumbled. Their eyes were glued to the screen. A tiny dot on the tracker, labeled 'Sun-like Star,' started to flicker. "It's happening."

"What's happening?" asked Pip, who was trying to untangle a knot in their space-boot laces nearby. Pip wasn't really paying attention.

Swell spun around. Their tunic rustled. "The star! It's running out!" Swell held up a card. It showed a bright, yellow star. "This is a main-sequence star. Like our Sun, right now. It's happy. It's burning hydrogen."

Pip finally looked up. "Burning hydrogen? Like a campfire?"

Swell shook their head. "Not exactly. It's fusion. Deep inside the star. It makes light and heat." Swell tapped the card. "But stars don't have endless fuel. Nothing does, really."

Swell's voice dropped. "Hydrogen runs out." Swell pushed the first card aside. They picked up another. This one showed a star with a tiny, bright center. The edges looked fuzzy. "When the hydrogen in the core is gone, the core contracts." Swell pulled their arms in tight to their chest. They looked like a tiny, round ball.

Then, Swell took a deep breath. Their cheeks puffed out. Their chunky astronaut tunic stretched. It strained a little at the seams. Swell's whole body began to expand. Slowly at first, then faster. "And the outer shell expands!" Swell's voice was a bit muffled now. They were getting bigger. Much bigger.

The stellar-evolution-tracker on the console beeped. The tiny dot on the screen grew. It turned a deep, fiery red. Swell was now almost twice their original size. Their red-orange stripes seemed to glow.

"Whoa!" Pip exclaimed. They scrambled back a bit. Swell was taking up a lot of space.

Swell pointed a chubby finger at the tracker. "See? The star gets huge. It turns into a **red giant**." Swell held up another card. This one showed a massive, red, glowing orb. It was enormous. It dwarfed the other stars on the cards. "It can be a hundred times bigger than it was before."

Swell took another breath, puffing up even more. Their tunic was really stretching now. "The core gets super hot. Hotter than ever!" Swell's face was bright red with effort, or maybe just excitement. "Hot enough to start fusing helium!"

"Helium?" Pip asked. "Like in balloons?"

Swell nodded, still expanding. "Exactly! Helium fusion begins. It's a whole new way for the star to make energy." Swell let out a little puff of air. They were truly enormous now. They almost touched the ceiling of the Stellar Observation Room. Their voice echoed a bit. "This is the **red giant** phase."

Swell looked around the room. Their giant eyes seemed to take everything in. "Our own Sun will do this. In about five billion years." Swell paused. "It will swell up. It will get so big, it will swallow Mercury. Then Venus. And then... Earth."

Pip's jaw dropped. "Swallow Earth? Our Earth?"

Swell nodded slowly. They started to shrink a little. The air hissed out of them gently. Their tunic relaxed back to its normal size. "Yep. It's just what happens. Stars get old. They change." Swell was back to their small, normal size. They looked a bit tired, but still deeply fascinated. Swell was fond of saying it: "Hydrogen runs out. Core contracts. Shell expands. Helium fusion begins."

Swell carefully placed the **red giant** card on top of the stack. They looked at the stellar-evolution-tracker. The red dot was still there, glowing. "It's a big change. A really, really big change."

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## Voice register

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Expanding-pufferfish-tween. Expanding + transitional.

## Cultural-sensitivity gate

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Story-axis per ADR-016.

## Cultural-context note

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Red-giant pedagogy: standard stellar evolution.



# Wick

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\*WICK — \*gas collapses; pressure builds; the spark lights.\*\*

Wick floated in the deep, dark quiet of space. Wick was a tiny, glowing creature. Wick looked like a firefly larva, but wore a chunky astronaut suit. The suit was bright white, like a cartoon drawing. It made little *poof* sounds when Wick moved. Wick's soft glow was warm cream. It had a gentle ember light. Wick loved watching new stars begin. "Gas collapses; pressure builds; the spark lights," Wick often hummed. This was Wick's favorite saying. It was the secret to how stars are born.

Today, Wick hovered near a giant cloud. It was a huge, cold cloud of gas and dust. People called it a nebula. It looked like a wispy, gray blanket. Tiny specks of space dust glittered inside. But Wick knew it was a star nursery. This was where baby stars were made. Wick clutched a stack of special cards. A small, round device hung from Wick's belt. It was a gravity-collapse-tracker. Wick called the cards "protostar-cards." They showed every step of how stars light up.

Wick squinted at a big lump in the cloud. This lump was getting bigger. It was pulling itself together. Wick's antennae wiggled with excitement. "Almost ready," Wick whispered. Wick tapped the tracker. It made a soft *whirr-click* sound. A tiny screen lit up. It showed a swirling cloud. Then it showed the cloud shrinking fast. A cartoon face on the screen looked very serious. Its eyebrows were furrowed. "Gravity is doing its job," Wick said. Gravity is a strong pull. It pulls things closer. It was pulling this gas cloud tighter and tighter.

Wick pulled out the first card. It showed a big, fluffy cloud. "Stage one," Wick announced. "A cold gas cloud. A nebula." Wick pointed to the lump in the distance. "See? Just like that." Then Wick pulled out a second card. This one showed the cloud getting much smaller. It was squishing in on itself. "Gravity pulls it all together," Wick explained. "It collapses. It gets super squished." The tracker screen showed a little arrow. It pointed down, down, down. The cartoon face on the screen nodded slowly.

"The core gets hot," Wick said. Wick held up a third card. It showed the very center of the cloud glowing bright red. "That's from the squishing," Wick added. "It's like rubbing your hands together really fast." Wick rubbed two tiny, gloved hands. A tiny spark flew off. "They get warm, right?" Wick asked. "Well, the middle of that cloud gets really, really hot. Millions of degrees!" Wick's own glow brightened a bit. Wick was very excited. This was the best part. Wick loved the heat.

Wick held the last card ready. It showed a bright, shining star. "This is the big moment," Wick breathed. The lump in the nebula pulsed. The tracker beeped loudly. "Core temperature at ten million K!" a tiny voice chirped from the tracker. The cartoon face on the screen grinned wide. "That's super-duper hot!" Wick said. "Hot enough to make hydrogen fuse!" Wick explained. "Hydrogen is the gas in the cloud." Wick looked at the lump. "Time for the spark!"

The lump shimmered. A tiny flash of light burst from its center. *POP!* The lump began to glow steadily. It was a brand-new star. "Yes!" Wick cheered. Wick did a little happy spin. The chunky suit *poofed* again. "Gas collapses; pressure builds; the spark lights!" Wick held up the last card. "A *protostar* ignites!" Wick announced. "It becomes a main-sequence star." Wick put the cards away. The tracker showed a happy little star. It winked on the screen. Wick smiled. Another star was born.

Wick loved watching this happen. It could take a very long time. Thousands of years. Even millions of years. But Wick was always patient. Wick loved watching them shine. Each new star was a tiny victory. Wick carefully tucked the protostar-cards back into a pouch. The gravity-collapse-tracker hummed softly. Wick floated a little closer to the new star. Its light was still faint. But it was there. A warm, steady glow. Wick felt a happy warmth spread through its own glowing body. This was Wick's job. This was Wick's joy. To see the spark light up.

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## Voice register

Glowing-firefly-larva-tween. Coalescing.

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## Cultural-sensitivity gate

Story-axis per ADR-016. Indigenous + traditional astronomy knowledge honored where relevant.

## **Cultural-context note**

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Protostar pedagogy: standard astrophysics; NASA materials; Indigenous astronomy traditions credited.

# About Spark & Anvil

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- **ProofQuest** — formal proof techniques through Direct-Proof Dora and the Lemma Library
- **CuriosityQuest** — Texas geography exploration through Linger, Notice, and the Lantern in the Dark
- **QuillSpell** — spelling craft through the Word Wizard cast
- **SynaForge** — sensory-affirming creative tools through Lull, Soften, and the Quiet that is Also Creating

## Methodology

Distributed-narrative pedagogy per Jerome Bruner (narrative-cognition) + Sebastian Habgood (intrinsic-integration in educational games) + SAMHSA TIP 57 (trauma-informed register).

Trauma-informed-design framework per Eggleston et al. (2025) and Stoltenburg et al. (2024).

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