**Chapter 41: Gears Grinding**

The trip down to Harry wasn’t without its problems. He made a slow journey, spending extra time listening for ambushes and looking for alternate ways down. After a lot of exploring, he found three separate routes to take in different parts of the cavern network. He’d vary his route up and down in the future and not be so predictable.

Of course, exploring had certain downsides. He also ran into a number of spiders, two mantises, and an immature stone lurker that he had to fight. He was careful, checked to make sure he wasn’t going to be attacked by more than he could handle, and cleared out the creatures in his path. After the lurker went down, he got a message he had been waiting for:

***Welcome to Level Three!*** *You have accumulated enough experience to gain Level 3. You gain +100 Health, +100 Stamina, and +200 Mana.
Your experience total is 6020/10,000. You need 3980 more experience points to gain Level 4
-We notice you have been consuming quite a bit of cheese lately. We approve! Your love of cheese has moved you to stage 3. Trust in The Power of Cheese!
Current well-fed bonus: +150 health, +3 STR, +2 AGI
Current deprived penalty: -5 DEX, -5 AGI, manic tendencies, itching, insomnia. (But why worry about such things.)*

More reasons to stock up on cheese! He had plenty for now, having bought enough cheese in Shadowport to fill his huge *Smuggler’s Stash*, but he should really buy a bunch more next trip to make sure he never ran out. Hopefully, mining would go well. The miner’s guild seemed anxious for more deep copper. He could also work on some of the old machinery he'd found and take that apart.

The experience needed for each level was going up by a thousand each time, so while it took six thousand for his first three levels, it would take fifteen thousand for the next two. Monsters got tougher and gave more experience, which compensated somewhat. The problem would be fighting monsters he could handle, and only one or two at a time.

Harry was happy to see him when he arrived. The old troll had plans to expand his farms and build a bigger lab. “I’ve been sitting down here like a mushroom for too long. I need to do something different.”

Milo spent a couple of days with Harry working the mushroom farms and studying mycology. The new glassware got unpacked, shrooms were harvested, and more stories were told. With a good number of potions that would help him resist poison and disease, Milo headed back to his mining area.

As he left Harry's farm and headed off to his camp, he went slow, trying to get a feel for how to use his *Stone Sense*. It was difficult at the start. He could tell where the rock was with his eyes closed, but that didn't tell him about inconvenient roots or mushrooms he could trip over. Seeing into the rock walls was much tougher. He had to concentrate and sort of push into them to get a feel for what was there and what wasn't. It would be useful for checking an area for ore, but he couldn’t find things just by walking by.

He worked his way through the partially collapsed tunnel on his way to where he'd first met Cronk and found the body of the unfortunate spelunker. He could feel the instability in some areas and see how the cave-in had happened. The stone here was cracked, probably from Cronk throwing fits. He'd have to be careful of such things when he mined. He knew the dwarves didn’t like this area with its constant cave-ins.

The familiar mushroom field was still there, despite the loss of its large guardian. He took some time to harvest the rarer shrooms that Harry said had some medicinal value. He saw a few of the myconid guardians and spent some time baiting them and chopping them up with his machete*.* One at a time, they were easy, and he needed the practice with small blades. *Shadowblight* just obliterated them too quickly for him to get in any practice. The weapon’s damage had gone up with his *Bonecaster* rank increasing.

Looking into the huge cavern with the giant myconid infested with horrible yellow blossoms sent shivers up his spine. Just looking at the waving flowers made him nervous. The flowers had spread even further across the top of the mushroom man's cap, and it leaned slightly to one side. He and Harry had talked about how to get rid of it but had decided it might just be best to try to seal up the large cavern rather than risk exposure to the mind-enslaving pollen.

Now that he knew what to look for, he could see the long vines that ran from the trunk to mounds in the mushroom field. Each one had a decayed zombie attached to it. He didn't want to be the next victim who got an invitation to stay for eternity. It was a dangerous place if a person wasn’t careful. Even walking around the wall and carefully staying away from the yellow flowers and hidden zombies gave him 25 experience points in Sense Danger. It was an interesting yet poor way to level a skill. There was no reason to ever get close to things that want to enslave you and turn you into a zombie. He turned and headed to the mines as soon as he could.

He had to wonder about that. Was that a death that he could respawn from? Would he have to come back and fight his own dead body? Or did it mean losing his character? He’d rather not find out.

He didn't get right to work in the mines. Instead, he went to the tunnel that led to the big drop where he had killed Cronk. He climbed up the wall of the shaft but not all the way to the top. Halfway up the vertical shaft, he crawled into the small side passage that led to his camp. Nothing had been touched. He doubted that anyone else was anywhere near here, but he was always careful. After hiding in the tunnels of the habitat for two decades, he saw no reason to change his cautious habits.

After he got his small fire started and his fondue pot warming up, he summoned Georgie. He and the lizard enjoyed a meal of stale bread, roasted mushrooms, and gooey melted cheese. It had been hours since he had rested in the game or checked in on Section E, so he combined both with a nap. George gave him a nod as if to say, "*Get some shut-eye, boss. I've got this*."

Section E was the same as usual. That is to say, just barely functioning. Milo's repairs kept a couple of steps ahead of things, but he really hoped to change that soon. He wanted to put the money he'd gained to good use, but he had to be careful. Checking on his orders and deliveries, he saw that he had six brand new clog eaters waiting for him down in the new warehouse he had set up. Along with them had been delivered a large assortment of belts, circuit boards, power adaptors, and all the other parts that kept his machines running. It was going to be so much nicer to just install new parts and not have to scavenge half-broken machinery from abandoned areas.

Along with the machine parts were a few treats for himself. The medical analysis that the pod had done on him showed a lot of gaps in his diet. He had ordered better food and vitamin supplements to start correcting his shortcomings. And, of course, a nice selection of real cheese. He was excited to see how it compared to cheese in the game.

After spending a few hours getting the clog eaters into the pipes and upgrading a huge water pump with a new control board, he hid the rest of the parts in one of his storage areas. More orders were placed, and then he moved his money around to different accounts. Leaving money in one place too long was how it got stolen. He should know, having stolen quite a bit of it.

There were no emergencies waiting for him, just slowly clogging pipes to send his new machinery to clean out, some electrical circuit boxes that needed replacing before they exploded, and a potentially deadly leak of poisonous gas that he needed to fix. His system had seen the pressure drop slightly and shut down the flow of gas while turning on exhaust fans to draw off and dilute the gas from the leak. Wearing a hazmat suit modified to his size, he patched the gas line and started the flow back up. All in a day’s work. He ate and decided to visit Cichol in the Arcane Library before going to the game. The old mage had interesting stories about the world he was exploring.

**Chapter 42: Volat-Repax**

The stone platform leading to his Arcane Library would never fail to cause Milo a large amount of anxiety. The small 10'x10' area of flagstones was suspended in space with nothing around it except the arched doorway. Where ever the rest of the building was, it wasn't here. Milo liked having a roof above his head. The expanse of stars in the black sky bothered him. Trying not to look to either side to avoid an attack of vertigo, he moved to the door. Movement in the distance made him pause when he saw a flicker out of the corner of his eye.

Something huge was flying past very fast, gliding on immense wings. If he had to categorize it, it resembled a gigantic white bat with a long thick tail trailing behind it. He felt mesmerized as it turned in a wide circle around his doorstep, several hundred yards away. Then it turned and dived down out of sight. Fear of open spaces momentarily forgotten, he started to crawl toward the edge of the platform to look down. The part of his brain that always double-checked his mechanical creations flared to life and cast *Spectral Spine*. The long bony tail grasped the handle of the door and anchored him to the platform.

Peering over the edge told Milo that the stone was only six inches thick and supported by nothing. Nothing was also what he saw below him. Only a blackness that stretched forever. He wondered about that. If he used a parachute and took along a backpack full of cheese, how long would he fall? Was there something down there eventually? Or would he have to just log out when he ran out of food or got bored? Maybe it would be best to take along poison to kill himself? Would he respawn normally? He'd ask Cichol. Maybe the old man knew something.

He crawled back from the ledge and turned around to go into his library. And froze. Time seemed to stop, but he could feel his heart beating like a trip hammer. It was here!

The immense creature was perched on top of the archway leading to his library. One gigantic, six-toed foot was grasping the top of the arch; the other had no room and instead gripped its own ankle. He had been wrong about it being a bat, very wrong.

What had looked like a set of wings were, in fact, three sets. The second and third sets of wings emerged down the torso from the first. The head resembled the skull of a sabretooth tiger, with massive canines set in its upper jaw. Two sets of eyes stared at Milo, and he couldn't move. The creature was almost entirely covered by thin bony plates that moved as it breathed, sliding over each other as its chest expanded and contracted like a set of alabaster lamellar armor. Where there was no bone, he saw light grey skin that looked like tough leather. The wings were made of the same. The long tail waved from side to side, resembling an extension of the thing’s spine, made of vertebrae uncovered by skin. From clawed foot to the top of its head was at least fifty feet. Its wingspan was four times that.

The thing cocked its head and looked at him. A long tongue flipped out of its mouth and licked his body, leaving him wet with saliva and his nostrils filled with a musky scent. That broke his paralysis, and he panicked and crawled backward away from it, forgetting where he was in his terror. His grip on his door knob had been lost when he first looked up at the creature. There was no lifeline to hold him as his legs slipped off the platform. His hands slipped on the saliva, claws leaving scratches but not stopping his slide. With no way to grip the edge, he tried to regain his tail-hold on the door, but he missed.

Milo fell into the void. Part of his mind berated himself for forgetting the parachute. He screamed at first, but after a minute, he regained control. There was nothing he could do. Screaming wouldn't save him.

What did rescue him was the end of a bone tail wrapping several times around his body. He found himself dragged behind the huge creature like a bow tied to the tail of a kite. Six huge, leathery wings moved in unison as the creature swooped and soared. He knew how wings worked, and these weren’t moving the creature; they were guiding it, like the ailerons and elevators on an airplane’s wings. What propelled it through the void at such speeds, he had no clue.

Part of Milo enjoyed the ride, and part was paralyzed with fear. But the main part of his brain was staring at the bony tail that wrapped around him. It was amazing in its construction. What had at first looked like a spine turned out to be several layers of articulated bone parts that worked perfectly together.

He tried to close his eyes and just examine the bones with his magic, as he would a bone he was trying to carve. He was surprised at how easy it was. Each piece of bone was magically infused with inscribed runes. How much of the creature was made of this? It was obviously alive and yet used bone to enhance itself. He struggled to understand the runes. Except for one small one, they were beyond his meager learning. That one rune glowed in his mind, burning itself into his memory. It was similar to a rune he used in his spells but far more complex.

He heard a voice in his head, vast and old, yet amused and friendly. “*Here, little one, let me help you understand what you see. The Rune of Velocity will make your spell better. Use it instead of the silly rune of speed that the system gave you. Travel swiftly. Travel far.*” Knowledge of the ***Rune of Velocity*** burned into his mind and modified his *Bone Spike* spell.

A moment later, Milo felt himself deposited on solid ground and opened his eyes. He saw a familiar door. Volat-Repax flapped his wings three times as he soared straight up and out of Milo's sight, its long tail stretched behind it. Shaking, he entered the Arcane Library and shut the door firmly behind him.

*You have stared into the endless void and not gone insane. You have earned 500 experience points in WIS. You have met Volat-Repax. Volat-Repax knows your scent and taste. (You have, somehow, earned 500 experience points in Rune Lore and 500 experience points in INT. Care to explain? No?* ***That is so annoying!****)*

**Chapter 43: Research**

Cichol sat in a chair, smoking a pipe, watching Milo as he lay quivering on the floor. After a few minutes, the younger Bonecaster staggered up and collapsed into another chair. Digging through his pack, he brought out a two-pound slab of cheddar cheese and began to devour it.

Cichol said nothing. He wasn't all that worried about the affairs of the living. It was one reason his spirit had retired here after his last death. The current visitor to his library would speak if he wanted to after he quit stuffing his mouth with cheese. Currently, his cheeks were extended like a squirrel carrying too many nuts. Eventually, Milo ate enough cheese that a mild euphoria overtook him, calming his frayed nerves.

"What is Volat-Repax?"

This question broke through the old spirit’s disinterest and drew his attention. "Such an interesting question. I've often wondered that myself, and I have some guesses. I used to have a telescope out on the landing and would scan the void looking for Volat-Repax, or one of the other rumored void hunters. But I grew lazy of staring into the blackness. Twice I saw fast-moving objects far in the distance but never close enough to observe. Volat-Repax is, of course, famous for putting an end to the plans of the Golden Sorceress to explore the void using airships. Only seven out of thousands of people who accompanied her on that expedition survived that disaster. Some claim that it is a monster from ancient times. Other scholars, especially the ones who disagreed with the plans of the Golden Sorceress, call him a guardian of the void, left to prey upon intruders."

"Did you find a reference to the creature in some old book, or did you actually catch a glimpse of it just now? I thought I heard a scream from the door. The latter would be much more exciting to my mind."

"I think,” Milo said, looking at the old ghost with narrowed eyes, "That maybe you won't need the telescope so much. It came to visit and perched like a damn bird atop the doorway."

The excited old ghost insisted on the entire story and took copious notes about the size and details of the creature. "Bones with inscribed rune work? You're sure? Oh, of course you are; it did teach you an ancient rune, after all. Simply amazing."

"Amazing and terrifying. I came here for a rest and to study spells. Now I'm exhausted and quivering.”

Cichol laughed at him and rolled his eyes. “So young and jaded! One of the ancient Behemoths introduces itself and teaches you a secret, and you complain about a little stress. Do you even know what you learned?!”

Milo thought about the rune. It was hard to even think of it without pain. “No, it hurts my head to examine it, and I’m already shaking.”

Cichol made shooing motions, laughing, "Then off with you. When you can, examine the rune in your memory, we will talk more. In exchange for this lovely information on one of the void hunters, I’ll dig through my old notes to give you some knowledge on your gift."

Milo decided on mining instead of working in the habitat. He needed to fill his Ore Gathering Bags and gain experience in the skill. Revenge on the snakes was also on his mind. Each Copperhead was a possible source of enhancement points as well as a chunk of pure metal.
*Stonesense* was very useful for his current work. When he found evidence of a small vein of ore, he tried to follow it through the rock, seeing where the vein went and how big. This saved him time since he always mined in the direction of the vein. It also gave him a warning if there was potential for a Copperhead to emerge. The poisonous elementals, like the Vein Lurker, needed a larger vein of ore to absorb and materialize.

The baby snakes were still a pain, darting around and taking a long time to kill as he missed them repeatedly, and they bit at his ankles. But with his growing resistance to their poison, they were a minor annoyance at best, and he had a growing pile of pure copper chips in his bag. The other annoyance was the state of the mines. Too many tunnels were unstable, with broken supports and cave-ins just waiting to happen. He skulked through them as quietly as he could, charting the worst areas and adding support beams where he could. Some promising veins of ore he had to abandon because of the danger of a cave-in, but the maze of mine tunnels was huge, and he didn’t lack places to mine. Sometimes, the ancient disaster opened up new passages. Large cracks in the rock could lead to undiscovered caves. He enjoyed finding those the most and twice found mushroom varieties new to Harry. One of the new mushrooms was edible. The other was in the category of ‘*edible just once*.’ Milo wasn’t eager to try out anything Harry made with it, but the old Troll devoured them with happiness.

After a day of hard work that yielded a full bag of copper ore and seven small chips donated by baby snakes, he was happy to relax with his Watch Lizard. Georgie was keeping the little cave bug free and safe. Milo had put a heavy tarp over the tunnel that led to the drop, blocking even the little light made by his tiny fire and cutting down on drafts that might move the scent of cooking up into the mines. The little smoke that came from his fire collected on the ceiling and then rose up through a small fissure in the rock. He’d spent some time trying to sniff out an opening higher up but found nothing that would lead anyone to his little camp.

He tried to follow Cichol’s suggestion to examine the rune he had been taught. Cichol had taught him the basics of carving runes. He could visualize an *Explosive Rune* and then carve it onto a skull to use with his spells. The rune was like an overlay, showing him how to carve or draw it. The *Rune of Speed* worked the same way. But not the *Rune of Velocity*. The new rune was more complex and felt ‘denser,’ a poor way to describe the feeling, but the best he had. There was more to it than the other runes. Carving it was done in stages, going back over earlier strokes and making them deeper, adding mana to the rune, and concentrating hard on small flourishes.

He practiced carving thigh bones to make the component needed for the new spell. Each one was a struggle, but it was becoming easier. At some point, something clicked in his head, and he started thinking of the new rune as having an extra dimension to it. Not three-dimensional in the sense of a solid object, but it held more information than the other runes he could draw.

He stared at one of his claws, trying to feel the runes that were within it, the runes from the old bone that were now flowing through his bones. It took hours of concentration to finally understand the *Rune of Hard-Bones*. It held even more information than *Velocity* but was very specific. The *Rune of Sharp-Claws* was equally specific and complicated. He tried to isolate the rune in his skin but couldn’t find it. Did it only appear in ‘live-water’? Water that held mana? That would take experimentation at some point. For now, he’d learned something and paid for it with an aching head.

“Let me sleep for two hours, Georgie, and then wake me up.” The lizard nodded and licked his hand and then stared intently toward the tunnel, on guard.

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“So, you return. What have we learned about your new spell and the rune it is based on?”

Milo slumped into a chair. “I learned that trying to understand these weird runes hurts my head in a way that not much else ever has. It feels like I’m trying to understand something I’m not meant to look at.”

Cichol laughed. “Then you are actually learning something. If it didn’t hurt, I’d have my doubts. I don’t have ancient runes in my bones to study, but the time I spent studying the old bone we added to your rib cage stirred my brain in a way I am still recovering from. But on to practical matters. Is the new spell more effective?”

Milo pulled one of the carved bone darts from his pack. “Much more effective. I was able to hit a dodgy baby copperhead with one. Easier to target the spell, and it hits harder. It’s listed as *Harpoon* instead of *Bone Spike*.

“You are skipping steps in the education I was given. We started by carving the bones and learning the runes. Then we spent weeks learning to imbue the bones with our mana and energize the runes. Eventually, we could cast a weak version of the *Bone Spike* spell. And our heads ached from how much we studied. Be thankful that the *Bone Runed Cowl* aids your spell casting, and you have a kindly old mentor to instruct you.”

“Now, I have a treat for you. *Absalom’s Bonepedi*a volumes one to seven are here in my library. These books have diagrams of many creatures and break down the skeletal structures of all of them. Essential reading for someone who wishes to understand the arcane uses of bone. I think you should be able to work your way through the first two volumes today and memorize each. I saw how fast you learned before, so I will accept no slacking from you.”

Milo looked at the large books and turned to the first page. He wasn’t sure when he would encounter Ankylosaurus Rex, but he would know which bones were useful if he did.

**Chapter 44: Grinding**

The dwarven pick bit into the rock wall as Milo worked his way to another chunk of ore. Experimenting with a regular pick had shown him how superior the old dwarven pick was. It cut through the stone easily, especially if he kept it sharp using one of the abilities of his ring. The enchantment was probably intended for weapons, but it worked just fine on his tools as well. Several more chunks of rock were removed, and he could get at the small deposit of Deep Copper. As always, he was ready in case a copperhead appeared. The little snakes could appear and latch onto your hand quite quickly. Their poison could damage him any longer, but their fangs still hurt. They always found a tender spot to latch onto. This was a smaller seam of ore, so he didn't have to worry about a Vein Lurker.

Copper had a different feel than the rock that made up most of the mines. Regular copper ore had a hazy green to its look, and Deep Copper had a darker green. The richer the ore seam, the easier it was to see and know where to mine.

Deep Iron had a much 'heavier' feel to it than copper. At one point, Milo had felt a long, thin piece of 'heavy-not-rock' in the wall and mined several feet to get to it. It turned out to be a four-foot-long drill that had been hammered into the rock from another nearby shaft and left for some reason. He put the sturdy tool into his stash to sell to the guild.

Milo had been mining steadily for five days now, clearing out the area of Deep Copper before he moved on. He was curious about the end of the tunnel with its stairway blocked by rubble but held off exploring that way. He had a good area to work with here, and he needed to increase his mining skills and repay the guild for the cost of the ore bags before he made another trip up top. If he opened up a new area, it might contain monsters he had to fight or interesting areas to explore. He was restraining his curiosity until he paid off his debt. He fell into a regular cycle of mining, sleeping while doing his work in Section E, studying in Arcane Library, and then returning to mining.

Being attacked by a copperhead was always a possibility as he mined areas of Deep Copper. He was getting a feel for the little elementals. A large amount of copper ore faded away as they materialized. This always gave him a warning before they attacked. He had killed 7 of them in five days of mining and earned nine enhancement points. Each one had dropped a chunk of pure Deep Copper, and two had dropped fangs. With how scarce those seemed to be, he expected they would sell well.

He was steadily getting mining experience which was also raising his STR. When he wasn't mining, he was learning more about *Bonecasting* in his library or studying automated repair systems in his home in the pipe works.

His studies were raising his *Rune Lore* and *Bone Carving*. Cichol was helping him understand more about the runes he could carve into bones and create better spells. His work in Section E was a constant quest to find new ways to construct his repair systems and keep things running. There were some synergies between the two that he found ironic. And, of course, while he wasn't quite 'mining' the abandoned sections of the habitat, his salvaging of old machinery was certainly coming close.

His stomach rumbled, and he felt itchy and annoyed. It had been like this all morning. He reached into his pack and pulled out the large chunk of cheese he had selected for today. Jethro had recommended it as one of the best. Coincidentally, it was made by their family. He'd called it a 'fresh and tasty cheese.' But it had turned out to be soft and a bit bland. It melted easily and went well with crackers, but it didn't seem to fill him up as much. Some cheeses were obviously better than others for taste, nourishment, and satisfying his cravings for a tasty snack. He downed the last of the chunk and got back to work. Maybe he'd finish this vein and then head back early. He needed a break and some better food before logging out. And he missed Georgie. His little lizard did a great job of guarding him and keeping his camp bug free. The little guy deserved some playtime.

His annoyance at the mediocre cheese fueled his swings as he drove the pick into the rock wall and dug toward the ore vein. As he got closer, he could see that it was a big one and had some nice chunks of pure ore. After ten minutes of breaking rock and making a large enough hole to reach the vein, a large chunk fell away and rolled onto his tail, causing considerable pain. That woke him up. Massaging his bruised tail, he moved the loose rock aside and looked at the copper ore he had revealed. The greenish ore had long, thin strands of pure copper running through it.

Before his eyes, the ore moved. The strands of copper ore thickened and twisted together. Copper ore turned liquid, and pure copper left the rock behind to join the strands. Then like a river, it flowed away, leaving behind an empty cavity where the ore had been. Milo quickly looked inside and saw a bright green glow coming from a large twisting ball of copper that transformed into a massive coiled snake.

The ball looked to be nearly eight feet across, and the body of the snake was more than a foot thick. Milo did the math and didn't like the answer of a copperhead over 200 feet long. How much ore had been in that deposit? And now it had all turned into something that probably ate ratkin whole. As if hearing his thoughts, a large reptilian head appeared above the coiled body of the snake. Two eyes of solid jade stared into his. He felt rooted to the spot for a moment as the snake quickly started unwinding and heading in his direction.

He stumbled backward as the snake rammed its head into the opening. Stone cracked, and Milo recovered his senses, attacking it with his spells. Two skulls flew through the opening, quickly followed by two more. From inside the small cave where the creature had formed came multiple explosions. Dust and stone flew from the opening.

*You have injured****Hammerhead Constrictor Queen****with several spells.****Hammerhead Constrictor Queen****takes 130 damage -50 damage from armor mitigation = 80 damage.****Hammerhead Constrictor Queen****takes 150 damage -50 damage from armor mitigation = 100 damage.****Hammerhead Constrictor Queen****takes 120 damage -50 damage from armor mitigation = 70 damage.****Hammerhead Constrictor Queen****takes 130 damage -50 damage from armor mitigation = 80 damage.****Hammerhead Constrictor Queen****has been slightly injured 7670/8,000*

Milo had intended to use his spells to weaken and then kill the copperhead while it was trapped in the cave. He abandoned that plan and ran in a panic as true to its name; the snake rammed the opening and made a bigger doorway to come after him.

The last two weeks had been busy ones for Milo. He had expanded the dwarven diggings, adding cross tunnels and connections as he went after small pockets of ore he could see in the rocks. He intended to use that against the snake. He purposely ran away from the drop-down to his camp. The snake followed. For something that had just been created, it was darn quick. After about fifty feet, Milo took a left turn, and the snake rammed into the wall before turning to follow. He had gained a few feet.

With a bit of a lead, Milo thought he'd risk going down the drop. If the snake followed, he'd just keep going. If it didn't, he'd hide out for a bit and see what happened. Did elementals stay around? Or did they turn back into ore? Milo took two more left turns and headed back to the main tunnel. A problem arose. There was a snake already there.

He revised his math. Less volume went into the snake’s back end and its tail, but that meant it was probably over 300 feet in length, and part of it was still exiting its cave. He'd have to leap over it. His first jump took him to the top of the wall, and he rebounded to dive over the snake near the ceiling.

***Hammerhead Constrictor Queen****hits you for 50 points of damage. You are stunned for 2 seconds.*

As Milo had leaped, the head of the snake saw what was happening and used her other end to slam him into the ceiling, stunning him briefly. He came to his senses as a thick copper coil looped around him and began squeezing. He struggled, but he didn't have the strength to get loose before another coil was around him. To his credit, the queen was surprised at how long he lasted without breathing and how difficult it was to crush his bones. The last thing Milo remembered was a huge, unhinged jaw coming closer to him.

***You have died. You will respawn at your base in 12 hours. Have a great day.***

Milo came out of his pod, frustrated and wanting revenge. Also, very intrigued by the sheer size of the elemental. It must contain tons of pure ore and be worth dozens of points! While part of his mind was on his work, the other half was thinking about how to construct a proper snake trap.

He spent the 12 hours working on projects and making plans in his head. The new clog eaters were working out great. They were far superior to the older ones. He ordered another dozen of the machines in different sizes, some as small as 2". With this fleet of clog-hunting mechanical warriors, he could get everything flowing smoothly for the first time in decades.

There were several other machines made by the same corporation. One was just diagnostics. It roamed pipes, taking a continuous stream of X-rays and photos and noting damage to the pipes. The other new machines could scrape away rust and patch bad areas before they leaked. There was even a system that would coat the entire network with a new layer of very hard, frictionless plastic. He was having cost estimates done for his section while disguising it as a request from a chemical factory in Switzerland.

He also spent quite a bit of time looking up details on constrictor snakes and the tensile strength of copper. Then he ran a few simulations. Satisfied with the results, he took time to memorize details and refine the plan. Finally satisfied, he sat back, chewing on a piece of 40-year-old Wisconsin cheddar. The cheese was sharp and crumbly but almost melted in his mouth. The crystals that formed in the aging process gave it a slight crunch.

He took a last look at his diagrams before logging back in. This time he’d be the one doing the hunting.

**Chapter 45: More Grinding**

Georgie was happy to see him when Milo appeared in his camp after dying. He spent some time playing with the little lizard and ate quite a bit of his stored cheese. He knew the depression and exhaustion would go away soon, but it felt intolerable to feel like crap and not be taking advantage of the downtime to snack on his favorite food.

He also caught up on his experience gains for the last week.

*You have gained 500 experience in Mining and 500 experience in STR.
You have gained 100 experience in Identify and 100 experience in PER.
You have gained 100 experience in Poison Resistance and 100 experience in CON.
You have gained 50 experience in Fleet of Foot and 50 experience in AGI.
You have gained 100 experience in Climbing and 100 experience in AGI.
You have gained 200 experience in Bone carving and 200 experience in DEX.
You have gained 200 experience in Rune lore and 200 experience in INT.
You have gained 900 Boss experience.
You will gain an equal amount of experience in the skills you apply this experience to.
You have gained Enhancement Points.*
He made his decisions quickly. If he was going to kill the big snake with traps, he needed the enhancement skill ***Fiendish Traps***. Six points bought the first two levels. The 900 Boss experience went into *Weak Poison Resistance,* maxing out that skill, and the rest went into *Acrobatics.*He was annoyed at the big snake for making him change his plans, but at the same time, excited by the thought of trying to trap or kill it. Milo liked big jobs like fixing habitats and killing bosses. He just had to approach this job like he did others: Create a plan, gather the materials, construct the machinery, and hope things worked and didn’t blow up.

How the different crafting skills, regular skills, and lore skills worked could be confusing at times, but with the help of the old Bonecaster, he was figuring it all out. *Rune lore* was Lore Skill. It was all book learning and memorization. You could become a scholar in Runes without ever having crafted one yourself.

*Bone Carving* would let him carve bone into tools, weapons, and parts for an automaton (if he ever figured those out. He lacked the Necromancy skill that would have made that easy) and give him the skill to carve a rune onto a bone. Without *Rune Lore, Bone Carving* was a practical crafting skill. Together, and backed up by *Bonecasting*, they would let him produce the magical runes that enhanced materials, held spells, and many other things Cichol hinted at.

The *Rune Crafting* skill expanded his options to more than just bone. It tied together all the practical and theoretical knowledge. Of course, he still had to go acquire all that knowledge. Milo was excited by it all.

Getting back his pack and gear proved to be a bit difficult. He carefully climbed the cables up to the mining area and started working his way through the corridors. His hopes that the huge copperhead had gone back to its lair were dashed as he saw it moving down a corridor far ahead. The problem was that while he knew where part of its body was and the direction it was headed, he didn't know where its head was.

He quietly moved around for a couple of hours, avoiding the snake as it moved through the corridors. It was looking for ore deposits, battering at the stone until it could absorb them. At one point, he saw it turn a corner far down the hall and move away from him. It looked different. Sharp growths on its head formed a natural crown. He was able to identify it and cursed. Was the snake leveling up? He was going to have to revise his plans.

**Queen Salasha the Rat-Slayer**
*Level 9 Epic Boss, Health: 9000/9000*
*(Huge size, elemental, constriction, tremor sense, keen sense of smell, hammerhead.)*

At least she was heading away from his pack. Her majesty was headed down the corridor towards the blocked stairs. Soon after, Milo heard the sounds of the giant snake smashing through the rubble. The noise and dust she was kicking up meant it was much easier for Milo to get to his grave, recover his stuff, and get back down to his camp. He had plans for how to take care of the Queen, but it was going to take a lot of work and a trip up to the guildhall. He told Georgie to take a break. The little guard lizard nodded his head and disappeared back to where ever he came from. Milo headed back to Harry and spent a day with the troll and then made his way up through the caverns to Shadowport. He had plans to visit first the Miner's Guild and then go visit the Engineers Guild.

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"Can someone explain to me why we have a human taking the test for Journeyman in the Dwarven Guild of Engineers?" Guild master Rolf Morgenthern was making a rare visit down to the basement of the Mechanics Guildhall. If there was one complaint anyone had about him, it was that he used a pencil too much and a wrench not enough. His hands were suspiciously free of grease most of the time. Still, no one else wanted to handle the contracts and politics, so he was sure to be reelected.

Several of the Guild Elders chuckled or shook their heads. The Mechanics Guild had opened up to non-dwarves over 500 years ago, and the Engineer’s Guild was known to rarely take a gifted mechanic, even if they weren’t a dwarf. Rolf's grandfather had opposed it. His father had opposed it. And Rolf was adamant that the glory days would only return with the 'softies' being purged from the rolls.

Elder Bancroft refilled his tankard and turned to the irate guild master. "All by the books Rolf. He came into the guild, paid for a year’s membership up front, and asked to take the apprentice test. He passed it easily. His schematics on how to solve a few of the problems were interesting and a bit unorthodox, but they worked."

"So, a couple of the brothers ran him through tool knowledge and basic hydraulics. He had some odd gaps in his knowledge of tools. Somehow didn't know what a #9 gangly wrench was. But someone schooled that boy on hydraulics and pressure systems. He's way the hell ahead of the other journeyman. We put him to work for a solid week of double shifts, and he didn't complain at all. Only left the job to grab some cheese from a vendor outside. He slept curled up in the corner for a couple of hours and then got right back to work."

"By the time the week was up, he had helped us take apart the old ore crusher and completely reconditioned and repaired the old machine. Even suggested some improvements to the gear linkage. It's up and running now and is 2% more efficient than the newer machine. As far as I'm concerned, he earned a chance at the journeyman's test."

Rolf scratched at his beard. "Something's fishy, though. Where did he learn all of that?"

"Somethings always fishy with you." Bancroft rolled his eyes. "But I already checked. He's in good standing with the Miner's Guild. Hell, better than good. He's solo prospecting down in the deeps. Brings up ore bags full of Deep Copper and pieces of ancient machinery. Which explains where the Miner's Guild was getting all the high-grade ore they’ve been sending to us for processing."

Rolf's dislike of non-dwarves was easily swayed by innovative design work and increased cash flow. He was starting to warm up to the new engineer. "Has he said where he's getting it? I might be willing to send a crew down that way to explore"

"Heh, not exactly. But it might be tough to send a crew out. He's been down in copperhead territory. Killed several of them and brought back some fangs for the Miner's Guild. That's a spooky area of old mines and death by poison. Maybe after he's done hunting the big one, we can convince him to show us the area, and we can convince a crew to go with him."

"What big one? Hunting?"

Bancroft pulled out some plans that apprentice Milo had asked him to look over. "Look at those numbers for the tension on the cables. If that's a snake that he's after, it's a damn big one. There’s never been even a rumor of a copperhead that big. Think of the amount of pure metal in its corpse!"

Rolf whistled. "Ok. I’m thinking of how hard it would be to stay alive while you lure it into a trap. Damn, that’s insane. But, he's fine in my book, then. Anyone who's crazy enough to try to trap a monster like that is crazy enough to be an engineer. But see if he'll pay his journeyman fees for a year ahead of time. We might not ever see him again."

Later that day, Milo found himself sitting at a table with Elder Bancroft, Guild Master Rolf, and several of his fellow journeymen engineers who had been on the project to refurbish the ore crusher. It started out as a celebratory luncheon and turned into a long skull session where everyone went over Milo's plans, and many revisions were made. Milo was happy with the changes. His knowledge was lacking about the strengths of materials in the game.

Everyone thought he was crazy. But many journeyman engineers worked on odd projects from mana-powered whisky distilleries to steam-powered mining drills. A giant snake trap was a novel idea, but the level of crazy matched the expected parameters.

Milo continued to work at the Engineers guild for another three weeks. He needed the experience of working in-game with pulley systems and especially smithing. When Milo needed to work with metal in Section E, he used an auto-welder or part fabricator. In the game, he had to use blacksmithing for the things he needed. He programmed one of his search engines to go sift through the old internet for articles and videos on traditional blacksmithing and compared those techniques to what was used in the game. It helped somewhat, although a full 80% of the material his search program found was corrupted with viruses and worms like most of the internet.

The game forums that were on the data network were easier to work with but lacked data. Links and material copied from the internet couldn’t be brought into the data network as a security caution. Any crafting guides on the forums, either real-world or in-game, would have to be created by players.

Some of what he needed to learn was how to work with Deep Iron cables, pulleys, and machinery to run the trap he was devising. Deep Iron was much stronger than normal iron and much more difficult to cut and splice back together. The engineer’s guild had very little Deep Iron machinery, but they did have books with all the information Milo needed. He’d found many of the old machines that had been used in the mines and was sure he could get some of them running with a little work. Maybe a lot of work? Milo didn’t mind work, and he had a snake to kill.

While his body in the game rested, he was at work in Section E, making sure nothing was too badly broken. The new machines helped immensely, as did the replacement parts he’d bought. The habitats built all over the world had been created to use similar parts and systems. This made sourcing parts easier. On the downside, it meant that if something was a problem in one habitat, it was probably a problem in others. The pneumatic delivery system and food processors were notorious for breaking down, and parts were difficult to get.

A month after he had come upstairs to Shadowport, he left again for the depths. In his stash were tools he had purchased from the guild. The money he had earned from the bags of ore, pure copper, and copperhead fangs had been enough to cover his journeyman fees for a year, the tools, and other supplies. He was out of money but ready to fight another round with Salasha.

Guild Master Rolf had complimented his work. Milo and the other journeymen had completely cleaned and refurbished several of the ore crushers, smelters, and alloy furnaces. Milo would have thought working with people would be annoying, but dwarves were different from humans. They talked less, worked longer, and didn’t mind if he stayed focused on the job. They seemed to value hard work and ‘less chatter.’

He'd even been able to gain some knowledge of runes. Dwarves had a system of Engineering Runes that were carved onto their machines. Milo realized they were control systems used for regulating the flow of fluids, the tension on components, or the speed of rotating gears. He carefully memorized each one and practiced carving it onto metal parts until he could do things correctly and within specs. Which, according to all the Engineers, was the only way to do things. Milo liked their attitude. His job keeping the habitat running would be easier if only all the human technicians did things his way. Unfortunately, they didn’t know he existed, so it was hard to teach them.

The time spent had been worth it in other ways. Being able to concentrate entirely on learning skills had raised his stats as well. He earned 500 experience points in Mechanics, Rune Lore, Rune Carving, Tool Making, and Smithing. That also gave him 500 points in STR, 1000 in INT, and 1000 in DEX. As soon as he earned enhancement points from killing the Snake, he needed to raise the cap on more stats. He was rapidly earning enough to push above rank 5 in several things.

The diligent work paid off with an increase in Level as well. At Level 4, he had over 800 Health and over 1000 Stamina and Mana.

And being able to easily experiment with different types of cheese in his diet showed him how to maximize his satisfaction and the effect it had on him. He ignored that he needed to eat more cheese each day. It was cheese, and there was nothing wrong with cheese! The system agreed with him.

***Your love of cheese has reached Stage 4!*** *You gain a bigger bonus: +200 health, +3 STR, +3 AGI. Eating less than 2.5 lbs. of cheese a day will decrease your bonus and be unhealthy! Not eating cheese for 24 hours will cause cravings, negate all bonuses, and inflict a penalty of -5 DEX and -5 WIS. Eat Healthy, and don’t let this happen!*

He placed a large order with Jethro for the cheese he would pick up next trip. Jethro seemed anxious to please, and inquired about what day and time that might be, offering to get it all ready for him. Milo just shrugged and guessed. He had a lot of work to do, and it might take a couple of weeks or longer. He passed on Jethro's offer to stay and have dinner with his family and headed back down to see Harry, and a day later, started Operation: Snake Hunt.

**Chapter 46: Scavenging**

The tinkling of small bells alerted Milo that he needed to run.

He had learned the hard way, suffering two more deaths, that escaping the queen of snakes was quite difficult. She knew the tunnels well and didn’t follow directly, looping around through side corridors and filling them with her long body. Milo had counted on his intelligence to help him outwit her, but she was proving to be a cunning adversary.

He had spent time on the various game forums trying to find information. Incredibly to Milo, some players had actually died over a dozen times to the same creature just to test out the creature's abilities. Dying several times in a small period of time made the penalties worse, leading to long respawn times if there wasn’t a handy cleric who could resurrect the fallen. Much worse was dying to the very same creature: Players weren’t the only ones to gain experience points and level up. Milo was finding this out himself.

The severity of those penalties went down over time if you were careful and didn't die. There was one entire thread devoted to stories of what some players did while waiting a week in town. Drinking was popular, along with training a weapon or learning a trade skill.

Milo didn't want to take time off, so he got careful. He started placing small bells in the different corridors to let him know when the snake was moving. The different tones of the bells even told him where she was. It wasn't a great system, but it helped. Piles of old cans and metal scrap also proved useful.

By the end of two weeks, Milo had the snakes’ movements mapped out, and his early warning system let him get to work. He wasn't mining; for the most part, he was scavenging. The old dwarven mines were a maze of cave-ins and treacherous areas, but they had a treasure Milo needed.

Cables and pulleys were at the top of the list. Regular steel cables had long since rusted away or were too prone to break. The Deep Iron cables were still strong. They were also heavy and very hard to work with. Milo spent days filling his magical storage area and bringing the hardware back to the base of the big drop. So far, the copperhead queen hadn't come down the long vertical shaft, even when pursuing Milo. She stopped at the edge and watched as he descended to the bottom.

His little workshop was filled with all the things he needed for his very cunning snake trap. A few more hundred feet of cable, a bit of mining out some passages, and he'd be ready to see if it worked as well in reality as it did on paper. His search had led him further and further into the maze of old tunnels. He'd encountered very few creatures. Two small cave mantises had ambushed him, and he'd had to kill a half dozen piles of sentient slime. Other than that, the tunnels were dark and silent.

Today he was following a tunnel that was better built that the rest of the mines. The area was beyond the blocked stairway he had found. The Snake had battered her way through the cave-in but must have been disappointed with what she found beyond that. There were no outcroppings or veins of deep copper or signs of any mining tunnels in this direction.

The walls were smoother, and the supports were stone, not timber. Arched lintels were supported by thick pillars. The worn stone of the supports was still sound, with very few cracks or chips. The few branches off of this passage hadn't fared as well. They were clogged with rubble and time-rotted timber supports. After nearly a half mile of exploring, the strange tunnel ended in a set of sealed stone doors.

The flat stone surface of the doors was broken only by the vertical seam down the middle. A gear-shaped indentation that spanned the seam was about three feet up the door. Milo carefully examined the area for traps but found nothing. Brushing dirt from the indentation, he could see runes carved into the stone and a symbol he had seen on the spine of one of the engineering books he had studied. On a hunch, he placed his hand on the indentation and tried to activate the rune with mana. Nothing moved, but on the right half of the door, a complex diagram appeared. After staring at it for ten minutes, he realized it was an engineering problem, and he had to select the right tension on two wires from a set of choices. He touched the two that would keep the structure stable. The diagram faded, and the doors opened slowly,

Strange smells came down the short hallway that led to a large room. Oil and ozone. The smell of metal and decay. It reminded him of many parts of the habitat. Pipes ran along the walls and ceiling, heading to different tanks and machines. He recognized an ore crusher but none of the other machines. The floor was swept of dust, and overhead a few lights were slowly increasing in brightness.

The doors shut behind Milo. From his left, he heard the sound of many steps.

Creatures shambled into the room. They were barely recognizable as once having been dwarves. Bits of clothing or armor hung from their bodies. Missing body parts had been replaced with mechanical substitutes wired to their bones. Many had wrenches or drills instead of hands. If any had a beard, it was made of wires riveted to their jawbones. Glowing green eyes flashed in their eye sockets.

The pack paused, and one held out his hand. "...shoooyurbadge.."

From the pack came murmurs. "nobeard....nonono...nobeard", "tooopretty..tasty?...spare parts!", "wharsyorbadge!" Slowly, step by step, they edged forward. Milo was seeing a lot of teeth but no smiles. "Badge? In my pocket. Why don't you fellows just back off, and I'll pull it out."

If anything, his voice made things worse. The once-dwarves ran at him, stumbling forward and raising their weapons. That was enough for Milo; he tossed an explosive skull to the right side of the mob and dodged to the left. A wrench clipped him on his shoulder but did little damage, and then he was past the edge of the mob and running. His first spell had done some damage. One body was down, trying to reattach a leg, and others had taken wounds. He waited until the lead ghoul was almost on him and then turned and swung hard, putting both spikes into the creature. The lights in its eyes went out, and it slumped to the ground, twitching.

Milo kept running, circling around them, and his pursuers kept nicely bunched up. Another explosive skull took out several, and the remaining two stumbled forward to be taken out quickly.

Now that they weren't moving, he could see that they were little more than bones and dried sinew wired to whatever mechanical junk seemed to be at hand. Even now, three of them were pulling parts off of others and trying to fix themselves.

A bad feeling made him stand and turn around. From a side passage came more of the once-dwarves. These were in better shape. Most wore partial suits of plate armor. All had beards of burnished copper wire, and the glow in their eyes spoke of intelligence. Seven of them moved forward, their heavy steps clanging as their metal feet came down upon the stone.

Milo readied a skull and prepared to fight.

The lead creature pointed a gauntleted hand at him, with a very large gun mounted onto it. "You will come with us to see The Chief, or we will be using you as spare parts. Either choice is fine with us."

**Chapter 47: Spare Parts**

Milo was intensely curious about all the strange machines but also aware that his escort seemed on the edge of attacking him, so he decided that he'd save questions until later. Still, his head twisted back and forth, staring at overhead conduits leading to large tanks, cables with buckets carrying unknown materials throughout the complex, and everywhere the scurrying, badly put together creatures who were similar to those that had just attacked him.

Several times as they traveled down ramps and through room after room, one would pause to glare or snarl at him. Some even started towards him, only to be yelled at by his escort. They lowered their heads and got back to work. Each of the large work areas or machine shops was connected by a metal walled tunnel with a heavy iron or stone door on each end. His escort opened them by inserting a tool or solving a puzzle similar to the one on the outer door that he had entered by. Either way, it only took a few seconds to open the doors. They had these problems memorized, obviously.

The last room was gigantic. From the stalactites on the ceiling, Milo assumed it had started as a natural cave, and its rectangular shape was the result of work over the years. Massive buttresses reinforced the ceiling and gave support to the overhead system of cables and pulleys. The room was at least a quarter mile in length and two hundred feet wide. One of the long walls was entirely taken up with silos holding liquids or pulverized materials.

But for all the machinery, not a lot was going on. Large areas of the room were barely lit, and only one area seemed to have workers doing something. Milo saw what looked like a huge drilling apparatus that started at the ceiling and went down into the earth. His escort took him up to the edge of the area and paused, their heads turning in the direction of someone who was obviously in charge.

"Dagnasted mumble-heads, I said, 'Bring him up!' That means today and not next week!"

The person who was controlling a double cable heading into the opening of the borehole didn't bother to turn his head. "The winch works just as fast as always, brother. The distance and speed dictate that it takes a half-hour to bring him back up."

"Don't you lecture me on elementary time-distance equations, brother; I'm referring to the break you took in the middle."

The winch controller again didn't turn around. "Breaks are a rule, brother, for both the operator and the machine. We wouldn't want her to overheat, would we? But here he comes now."

The long cables were attached to a large bucket. As it got to the top, a damaged once-dwarf leaped out and started running around the room, screaming before it collapsed.

The dwarf in charge, whom Milo suspected was The Chief, walked over to the creature and poked it. The Chief resembled a dwarf in full bronze plate armor of some ancient design. Each piece was covered in glowing runes, and he was entirely encased in the metal suit. His gleaming wire beard was made of shining gold beneath a sculped copper mask. Or was it a mask? Milo could see him scowl, and his lips moved as he said, "Damnation, broke another one. Take down to the break room, and hopefully, he wakes up in a month or so. What in the darkest hell is down there?"

One of Milo's escorts stomped his foot. The Chief turned to look at them. The green glow in his eye sockets intensified, and he yelled in a loud voice, "AN INTRUDER?! And you drug him all the way through the complex? What if he’s a spy?! Find out how he got in!"

The same dwarf stomped his foot again. "Begging The Chief’s pardon, but we watched him come in through the old access doors on Level 3. I checked the mechanism, and it shows he solved a static tension problem to gain access. Plus, the decapitation trap recognized him as a journeyman from Uptop and let him live."

"That still doesn't explain why you brought him here. You know those lame brains Uptop don't know a differential from a factorial. We fought hard to have our membership separate. We follow the OLD WAYS!"

All the assembled dwarves stomped their metal feet and more or less shouted back, "THE OLD WAYS!"

"Yeah, I get that, boss, apologies. I'll toss him to the lower brethren for parts. But I seem to remember we have an engineering problem that needs solving, and you keep using faulty components to diagnose it. Maybe we should use a different type of sensor."

Milo had no difficulty figuring that part out. He looked at the borehole and then at the nearest group of lower brethren. Better to go exploring into the unknown that get tossed to the part-hungry lower-brethren.

"I would be glad to help out your brotherhood with finding a solution. But you know I can't. Guild regulations state that you can't just put any idiot child to work. Who knows what could happen if you so much as give me a wrench? Don't THE OLD ways tell that a tool is only as useful as the person holding it?"

Several of the dwarves nodded, stomped, and shouted out, "THE OLD WAYS!"

Milo hurriedly continued talking. "NO! I insist you give me the tests to prove I have the knowledge to work in these hallowed halls! Only after you have tested me on the theory of mathematics, statics, dynamics, fluid flow, pressure systems, pulley systems, and general mechanics can I even be considered an apprentice in this guild." He stomped his foot as loud as he could. “TEST ME!”

A chant started among the lower brethren. "The Tests! THE TESTS!"

The Chief looked at him long and hard and then chuckled. "Oh, aren't you the clever one for sure? Not wanting to be spare parts, are you? Well, that remains to be seen." Turning to two of Milo's escorts, he said, "Sprocket? You and Cogswell take this little gear to my workshop and find a spot for him to work. Peenhammer, go get me a copy of the first ten apprentice tests. We'll see if he's good enough to be tossed down the borehole.

**Chapter 48: Subragators and Throttlecogs**

The Chief scowled as he looked at a sheet of parchment. "I don't like his answer on this one either!" He tossed the sheets filled with diagrams of pipes and turbines over to his main assistant, Throttlecog. Like the Engineer, he was entirely encased in metal. His body looked like polished steel, and his beard was the dark metallic color of Deep Steel.

Throttlecog looked up from the test paper that he was examining. "What now? You didn't like his answer on the tension-support problem either, but he was right."

"He didn't get the answer that he was supposed to get! The problem states, *'The tertiary cable on a tension bridge support has broken; how would you rearrange the cables to keep the bridge from falling down?*' " He said he'd repair the cable and put it back in place. That's cheating. He was supposed to move the other six cables to compensate for the missing tertiary!"

Throttlecog chuckled. The Chief was big on theory but didn't like to get his hands dirty with the more mundane tasks. A shame; only a few centuries ago, he would swing a hammer with the best of them. "Well, I say he was correct. What engineer worth his salt goes out to fix a tension bridge and doesn't have tools on him to splice cables? And who wants to have to move six cables when you can just fix one? Now tell me, what's wrong with the problem you've got in front of you?"

The Chief put the parchment on the table. "Look at this! He managed to get the repair to the pump correct. But see here? He wants the three-inch pipe connecting the water tank to the pump replaced with a three-point-five-inch pipe. And he wants to have three-inch connectors on each end. Why would you do that? Connectors should match the size of the pipe."

Leaning back in his chair a bit, Throttlecog looked at the odd addition to the pump system.

"Oh, see here? He has the math worked out on the bottom. It has to do with friction on the walls of the pipe. That pipe is the point where you most need a continuous flow with no disruption. Friction on the sides decreases the flow rate and can cause swirling in the pipe. Making the pipe a bit bigger reduces that and keeps the flow steady."

"Dammit, hand that here. That would explain why we only get a 97% efficiency out of that system". The Chief was scribbling furiously on a slate. After a few minutes, he looked up. "He's right. HE'S RIGHT!!" The metal-clad dwarf began pacing back and forth. "By the Maker's Holy Hammer! I so don't want to let some no-beard from Uptop into the guild, but I can't fault his theory work. Let's go take a look at his practical problem. What did you assign him?"

Throttlecog got up and followed The Chief out of the room. "I figured you wanted a tough one for that. I told him to fix the old copper ore subragator system. Hasn't worked in years."

"Smart thinking. Let him break his brain on that old thing. Useless without the ore to process anyway. After he fails, we can grudgingly let him in on a trial basis so we can toss him down the borehole."

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The lower brethren in the cavern were confused. A half dozen of them were watching the outsider as he scrambled around the machinery and examined the rusting hulk. They knew this machine was long broken, but he just kept prodding it. His excitement was contagious. The senior brothers didn't let them tinker with things anymore; they broke too much. But three times, the outsider had asked for their help in removing parts, and he had sent them looking for tools or bits of wire or gears. Their need to work on the machines over-rode their dislike for outsiders, humans, and people that weren't in the guild. Despite Milo being all three, they still were excited to be at work.

Milo turned and looked at them. "Too much of this is broken and decayed. How long since it's worked?" Most of the once-dwarves shrugged. D-Wrench was one of the few that could still talk. "Uh...lots of years? At least four-cubed-minus-seven. Never going to work, just like the others. "

Milo looked up at D-Wrench’s statement. "There are other broken machines that are just scrap?"

The lower brothers nodded to each other. Of course, there were. So many broken.

Milo smiled. "Then no one will miss them. Get your tools. We're going scavenging." The lower brothers raced to comply.

The Chief and Throttlecog heard the noise from several rooms away. Yells, screams, and the hammering of metal were echoing down the hallway from the copper works. They increased their pace. It sounded like a battle was going on.

Upon entering the cavern, they were quite surprised to see four large machines that had been relocated to this cavern being rapidly dismantled by the lower brethren. Something had got them riled up. In the center of the room was a growing collection of spare parts. Two of them were sorting out the bits torn from the machines into neat piles of plates, cogs, cables, bolts, and other useful things. More brethren were scrubbing pieces clean with files or hammering plates flat on anvils. It was a madhouse but an industrious one. Several were screaming at each other excitedly as they worked, eyes manic and hands flying as they did their jobs.

At the far end, the copper subragator was belching smoke, its old gears slowly grinding. Milo was racing around from the boilers to the hammer system to the subragator and then to the smelter. Adjustments were made, and repairs seemed to be ongoing by several of the brethren. There must have been three dozen people working on things all told.

"By my hammer. He's really got them moving." The Chief looked at the way the lower brethren were working and wished it could always be this way. They got worse each decade.

"The machines or his workforce?" Throttlecog was also happy to see the activity. It had been too quiet lately.

"I'd say both." The Chief pointed to the end of the machines Milo had up and running. "Look at that! Is he feeding waste fluid into a firebox? Why the hell would he do that."

"Well, maybe you should go ask him."

The Chief just nodded and started walking over to Milo.

Waste fluid was a byproduct of the process used to make Dark Steel. The Dark Iron ore was crushed to remove rock and impurities. Then, instead of smelting, the separated ore was put into a huge vat with hundreds of gallons of concentrated liquid phlogiston and turpentine. After it burbled for a month, the waste fluid was poured off and stored in huge tanks. It was useful at times as a lubricant, but they already had a few hundred thousand gallons too much of the stuff. The cleaned Dark Iron nuggets were then thrown into a modified Franklin Smelter to begin the process of making Dark Steel.

Waste fuel burned hot, but it didn't burn clean, putting out great gouts of black smoke that soon covered everything with fine grit. No one had ever tried to use waste fluid as fuel. Until now.

Throttlecog was watching two of the brethren change out wire mesh filters on the smokestack of the firebox. The new filter went in, pushing the old one out. Two more brethren were brushing the heavy black dust from the filter into a barrel to clean them. The smoke coming off the firebox was a lot cleaner than he'd expected.

One of Milo’s helpers was mumbling over and over: “Mustn’t throw out the filter dust. Mustn’t throw out the filter dust.”

“Why not throw out the filter dust?” Throttlecog was curious. This set off the lower brethren all around the boiler.

“Mustn’t Throw Out The Filter Dust!!! Recycle! Reclaim! 7% ore. Milo says so.” They repeated this several more times. Throttlecog saluted them. “Sounds good, carry-on brothers. I’d like a report on the reclamation project, please.”

The steam boiler was providing power to the hammer system that was busy crushing copper ore. The Chief grabbed a lump from another bag and licked it. "Deep Copper, or I'm a three-toed halfling..."

Turning to Milo, he yelled loudly, "Where in tarnation did you find this much Deep Copper ore? Who was hiding it?"

The copper nuggets, freed from rock and dust, were being dumped into the subragator. There, the metal was subjected to an acid wash to break it down and further remove impurities. The resulting copper dust then got dumped into the smelter, and molten copper was poured into ingots. One of the brethren wearing thick gloves on what passed for arms was picking up and stacking the ingots as they cooled.

Milo hopped down from the machine. He yelled commands at several of his enthusiastic helpers and received one answer of "You got it, boss" and several thumbs up. "I brought it along with me. I have a small ability that lets me store ore in a sub-spatial storage area. I had 27 cubic feet of ore and wanted to test out the system. Am I out of time? I really need a few more hours to realign the process and improve efficiency. The boiler may need some patching, too; it's going to explode soon."

Throttlecog and Milo watched as the Chief poked around the machines, peering at the inner workings and even talking to the lower brethren who were still verbal. After a few tense minutes, he walked back to Milo. "Take your time. I'm not going to hurry an Engineer when he has a project to get right. Come see me in a few days when it's finished." He patted Milo awkwardly on the shoulder. "Good work, though; keep it up."

Turning to Throttlecog, he said, "Maybe see if we can scare up one of the old hardhats and coveralls for Journeyman Engineer Milo from Uptop. If he's doing the job, he should look the part."

**Chapter 49: Bucket Time**

"A good engineer always tries to improve on previous designs. And broken machinery needs to be fixed. So, it wasn't much of a step to applying the same doctrine to our own bodies. Accidents happen, and a missing hand or leg shouldn't be the end of a promising career. Mechanical replacements for missing limbs have been common among the brotherhood going back a couple of thousand years. A few didn't wait for an accident; they just had an arm replaced by a mechanical one with multiple tools and increased STR. It was a practical thing." The Chief paused.

"Yes, totally practical. Like polishing your gilded body armor every day or competing for the best beard." Throttlecog added with a wink.

The Chief glared at him but acknowledged the comment. "Hush you. But yes, some of us do care a bit about our appearance. That was much more important back when this outpost was crewed by a thousand engineers. Not so much now, I suppose."

"It seemed to be a natural progression at the time to go from replacing limbs to fixing a fried nerve ending with a bit of thin-wire or aural compensators used to replace shattered ears. Dwarves are naturally long-lived, but eventually, we do wear out. We started using some *'preservative potions'* to help keep us going another century or two. I think that is where the engineering started taking a back seat to the necromancy." As he said this, he watched Milo carefully for any bit of censure or disgust. The new member of the guild just sat there unperturbed. "That doesn't seem to bother you, brother Milo?"

Milo considered his words. "Too complicated a subject. Too much overlap with other things. The preservatives your people used might be called medicine by some. And while it came from necromancy, an alchemist might also be able to brew it. From what I've read, necromancy seems to incorporate medicine, alchemy, anatomy, and all kinds of things that don't involve making zombies and other undead."

"Aye. That's a decent way to look at it." The Chief looked thoughtful, then continued. "After the cataclysm that sealed the roads to the surface, we were pretty much on our own. Based on the magnitude of the cataclysm, many of us doubted there was anything left Uptop. We continued our work. But a schism was growing in the brotherhood. Those that had the knowledge and special skills to construct their own preservation suit did so. But a lot of the brotherhood were mechanics, pipefitters, and machinists. An engineer who knew the correct runes and had the right magitech skills could construct a suit that would keep him alive for centuries longer. The rest were just getting old and worn out."

"Engineer Malvos thought he had a way to help the lower ranks. He was always keen on alchemy and applied necromancy. He devised a pressurized tank that saturated a body with his longevity potions and preserved the entire body at once. While the council debated for half a year about his designs and theories, he used the process on most of the lower ranks. They were desperate, and we were blinded to that desperation. And Malvos was correct; it did preserve their bodies and even granted them some regeneration. But there was a cost."

"It was a strain on their minds to constantly be holding themselves together. These weren't mages with the WIS or INT to manage the constant drain of mana that powered the regeneration. Slowly over time, they became how you see. The schism is complete. The lower brethren are a collection of parts held together by Malvos’s process. The senior brothers are tucked away neatly in containment suits. We’ve preserved our minds, but we can't stray from the complex, or we start shutting down. We're like any other machine here, needing power from the broadcasters."

While Milo was happy having things explained, he was still a bit upset about why they told him. "Which is just a very long explanation as to why I'm going down the shaft in a bucket."

The Chief said, "Well..."

Throttlecog just laughed loudly. "Oh hell, Chief, just be straightforward with him. Yes, that's why you get the honor of hopping in a bucket and heading for the nether regions to see what's gumming up the works. You don't need power, and hopefully, you'll be able to talk when you get back."

"What's down there? How deep does it go?" Looking down the borehole, Milo only saw the metal-sided shaft going into darkness.

The Chief pulled out a very old book from a shelf. Opening it, Milo saw it was filled with maps of each level of the tunnels. "Vaguely useless since the cataclysm. So many of the shafts and tunnels collapsed. Based on the exploration done, we surmised there was a cavern about 1000 feet below us. It was partially scouted long centuries ago and noted for a dozen exposed high-grade ore veins, crystal clusters, strange rock structures, and a small colony of acidic white slimes. All of that is valuable, even the slimes. You can distill high-grade acidic residues from them."

"We determined that part of the cavern was under the complex. The plan was to drill down, then extend the broadcast network down far enough to support a crew. Then widen the borehole for machinery and start working the new veins for metal we badly need."

That made sense to Milo. "But?"

"But something down there is gumming up the works. The drill is stuck, and worse, the shaft is filling up. Something plugged the end. The brethren we send down come up nearly catatonic with fear and refuse to go back down."

Milo looked at the Chief, then to Throttlecog. The latter just gave him a thumbs-up of encouragement.

"Well, of course, I'll help with the project, sir. It sounds exciting." That was certainly the answer the Chief was looking for. He quit smiling as Milo continued. “After all, that will gain me your personal thanks and promotion to regular journeyman. I bet you’ll be grateful enough to tell me about this magitech you mentioned. It sounds interesting.”

Throttlecog laughed as The Chief considered his newest applicant. “If you survive and can give an accurate statement of what’s down there, I’ll put your application to a vote. And…well, I’ll think about the other thing. Some secrets need to stay secrets.”

Two hours later, Milo found himself being lowered down into the shaft of the borehole in a steel bucket. A chain was used to lower him down, but there were also two lines that played out and were kept taunt. Tugging on the lines would get him lowered further, stopped, or brought hastily back up.

Milo was equipped in full engineer's gear. Heavy dwarven work boots and gloves, tough coveralls, hard hat, goggles, breathing filters, and three healing potions. He could see roughly 100 feet ahead of him from the mana-fueled lantern that hung above him. Slowly he went down, an endless succession of steel walls, the drill shaft, and a bucket for his companions. At around the 900-foot level, the dwarves slowed his descent. Shortly after that, he signaled a stop.

There was movement below him. He signaled another 20 feet of drop and then a hasty signal for STOP! Below him, the torch illuminated a heaving pool of white liquid. As he watched, pseudopods formed and wrapped around the drill shaft. Slowly, the mass crept up another inch higher. But what was in? A white slime had been mentioned. Had these crept into the borehole and plugged it? He signaled another 20 feet of drop, which put him only 15 feet above the slowly moving mass.

He watched it for half an hour. It was definitely gaining ground. Sometimes the pseudopods slipped or snapped off, but more often, they held tight, and the rest of the mass climbed up and over them. Milo decided to gather some data. He took a large bolt from his pocket and tossed it down. It hit the mass and slightly bounced before coming to rest. Pseudopods wrapped it up and drew it down.

Next, he tossed down an edible mushroom he'd eaten part of for lunch. As soon as it hit, a hole appeared and swallowed the mushroom. Pseudo pods formed, looking for more and waving around. Milo tossed another bolt. It simply sat on the mass, ignored, and slowly sank into it. The thing liked organic and didn't seem to eat metal. Time to try for a sample.

Milo summoned his 'tail' and anchored himself securely to the bucket. He tossed another 'shroom down, and as the pseudopods waved, looking for more, he swung down and, using his weapon, severed one. It reacted by wrapping around his weapon. Retracting his tail, he regained his perch in the bucket.

The slime on his weapon was still moving a little. He carefully poked it with his finger and hastily withdrew his hand as it dissolved the tip of his glove and burned his finger. Definitely a white acidic slime, then. He chugged down a healing potion to empty the glass jar but left a bit inside. The slime eagerly left his weapon when given the chance to drop into the remaining liquid. Milo closed it tightly. He had a sample to take back. Maybe one more experiment.

Milo lowered himself and swung Shadowblight at the mass of white goo. As expected, he didn't seem to do much damage. He saw a flicker of a message.

*“….###.....!??..”*

Interesting. He swung again. And again, the strange flicker. The mass didn't seem to do anything. Hoping that he was actually doing some damage and his weapon was increasing with each swing, he hacked a dozen times at its mass.
Eventually, his experiment paid off. But not in a good way.

The borehole vibrated, and the drill shaft moved back and forth several inches rapidly like it was being shaken. Pseudo pods erupted from the mass, much bigger and longer than before. Milo barely got out of the way. He'd started scrambling up the shaft, pulled by his tail, at the first vibration.

***Ooblipimux the Ever-Pudding Sees You!!!*** *You have dared to hurt Ooblipimux! Current health: 999117/1000000
You have stolen mass from Ooblipimux!
Ooblipimux has decided that you will be its next acquisition of mass. Please jump down into the pleasantly waving pseudopods. Ooblipimux promises it will be fun.*

Milo thought about the request; that really did sound fun! Should he take off his coveralls first, though? He really shouldn't damage guild property just because he wanted to swim in acidic slime.

He started to take off his hard hat and fell to his knees in pain. The pain cleared his head.

The thing had almost got him to jump with a powerful suggestion. It was too strong, though. His hard hat offered some protection from the mental intrusion; without it, the suggestion caused pain and confusion and was likely what had driven the lesser brethren mad. Quickly, he jerked on the rope for emergency extraction as the slime creature began its slow, determined ascent up the shaft.

"Don't worry, Ooby, I'll be back. You just tried to eat the wrong engineer!"

**Chapter 50: The reward for a job well done**

"*Ooblipimese demands more mass..."*

One of the lower brethren scampered off and came back with what looked like some dried mushrooms and a desiccated gopher and tossed them into the small opening of the large glass container. They fell down into the white ooze that was filling the bottom third of the jar and slowly started dissolving as the little slime absorbed the mass.

Two other jars had similar oozes in them, all yelling to be fed. The original plan of 'Careful observation and experimentation' had gone out the window when some of the more chaotic of the dwarves had heard the ooze begging for food. Before they knew it, the overfed ooze was near the top of its vat.

Separating it into three vats spawned more personalities. **Ooblipimese**demanded mass and was quite sullen. **Ooblip, the Lesser of Two Puddings,** whined and begged for food and purred as it digested a meal. **Ooblip Face-Eater** growled and thrashed in his containment jar, secreting large amounts of high-potency acid.

The Chief declared Face-Eater to be useful, and plans were made for a much larger and stronger containment jar for it, with special filters to drain the acid without letting out any bits of ooze.

Of the other two, Ooblipimese was the less popular, and it got to test out various substances designed to neutralize acids and oozes. It was found that even a small amount of 'High Potency Cleansing Agent B-37' would create an instant reaction that reduced its mass and left it cowering on one side of the jar. The powder had been used for centuries to clean up spills of acidic nature and was potent when used against the white acidic oozes.

Milo explored a different line of experimentation. Separating out a fourth ooze, the short-lived Ooplipapatamus proved to not like waste fluid sprayed on it, and really, really didn't like being set on fire. Within a minute, the ooze was just an oily stain in the bottom of the jar, along with a small nugget of dark steel.

Plans were quickly made. A dozen large tanks were moved into the area of the borehole, each holding thousands of gallons of waste fluid. These were all connected to a pipe that exited into the borehole 50 feet down the shaft.

A huge chunk of metal-encased stone was suspended just to the side of the borehole and two stories in the air. The Chief explained its use to Milo. "I don't want to lose the drill. That’s a thousand feet of hardened dark steel shaft leading down to a diamond-encrusted bore head. But if we can't stop the damned pudding, we'll have to sever the shaft, move the plug into position, and let it go. It's just a bit wider than the borehole at its top.”

“The force of the drop will put it down 20' into the bore, where it will jam tight. There are explosive bolts inside that will then trigger, driving spikes into the side of the bore in a dozen places. Nothing will move that, and it will buy us weeks of time to come up with another counter for the ooze."

Milo looked over at the borehole. More cables had been strung. A much larger bucket was being loaded with High Potency Cleansing Agent B-37. The powder was bright orange in color, and Milo overheard one senior engineer just refer to it as 'Agent Orange.' The smaller bucket that would hold someone Milo’s size was above it by 50 feet. Milo looked at the setup and spoke to the Chief. "It looks like, that in addition to the mechanisms for distributing Agent Orange, there is an operator’s bucket. As if you need someone to observe the reaction and make sure the experiment is a success."

The Chief patted Milo on the back. "Your powers of observation are strong, young engineer. And because you are the first person to bring this to my attention, I reward you with the position of observer in the coming operation."

Milo sighed. "I'm suspecting that the reward for any job well done is just another job."

The Chief chuckled. "Indeed. Welcome to the ranks of the trusted and competent. While lesser engineers tighten bolts and dream of whiskey, those with skill get to work their ass off."

"But seriously: Be careful down there. These little shits we have in jars aren't the same as the monster down there. It may react differently. Keep your filter mask on. We reinforced the lining of your hard hat with three layers of aluminum foil to give more protection against its mental attacks. Dump some agent orange, back up a bit, and if you're in trouble, jerk the emergency cord, and hold on tight. We'll get you back up here."

The descent down the tunnel went slower this time. Without knowing just how far up the pudding had come, Milo had to be careful in going down. At just past the 600' mark, he started to feel something like an itching in his head. At 700', he could understand distinct words.

"....fear not...no fear...be happy...Ooblipimux comes to hug you...be one with the Ever-Pudding...share masses...happy...oh so happy...no resist the pudding love!..."

Milo had much resistance to pudding love! When he could finally see the undulating white mass, he pulled a cord to one of the barrels attached to the bigger bucket and dumped a large barrel of Agent Orange. The results were all he could have hoped for...and a few things he would have gladly skipped.

Ooblipimux stopped his cheery monologue and screamed. Milo covered his ears, but the scream was in his mind, and he felt just the edge of the pudding’s actual thoughts. It was losing mass, and hated it. Agent Orange turned the whitish ooze into a stinking brown liquid that bubbled and gave off noxious gases. He was glad for the Chief's warning to keep his mask on. It made breathing harder, but other than a bad taste in his mouth, it was filtering out the harmful gases.

Eventually, though, the sheer mass of Ooblipimux defeated the acid-neutralizing powder. The ooze had retreated 50' down the shaft. Or maybe lost that much mass? But it wasn't discouraged. The screaming stopped, and the voice came again.

"You will feed us! We see you! "Milo was worried the thing might build resistance to small doses of agent orange. He tried replying to the voice in his head as he shouted down at it. He thought of the mechanical clog-eaters he used in the pipes in Section E. The grinders eating away at anything in their way, turning the obstructions into mulch that was flushed down the drains.

"Ooblipmux is just a clog! You dare to come into my pipe, and I will flush you away. Your mass is nothing! The Ever-Pudding will die and become just a stain."

He pulled on the other three cables and dumped all three remaining side barrels at once. Grabbing the main cable to dump the bucket, he met resistance. The mechanism was jammed. He jumped down to the bucket, hanging by one hand, his tail wrapped around the cables, and banged on the stuck lever with a wrench. The noxious vapors had actually decayed the metal and caused the jam. On the third hit, it came loose and several tons of Agent Orange dumped onto the ooze below. Milo scampered as fast as he could back up to his bucket and kept going higher.

The shaft vibrated as Ooblipimux the Ever-Pudding thrashed in pain. Milo held the thought in his head of a clog-eater grinding away at a white, oozing clog. With the sound of a toilet flushing, the ooze rapidly fell down the shaft, then silence, followed by a distant sound of thousands of tons of ooze going '*plop*' as it hit the bottom of the cave.

Milo signaled to be lowered down further. Down he went, past the areas where the pudding had been climbing the shaft and finally to where the borehole opened out into a huge cavern. It was lit with the eerie light of glowing lichen on the walls and ceiling. 50' below him, Milo saw the drill head, free and clear of clinging puddings. Directly below the drill head was a huge white lake surrounding a small orange island formed from the debris from the borehole and what was left of the agent orange. Ooblipimux had retreated rather than take more damage. It circled the little island, giving it lots of room.

The cavern was immense. At least a thousand feet to the far side and three hundred feet from ceiling to floor. It stretched into the distance in both directions. Milo signaled to be lowered further. He needed to be lower to see the ceiling; something about it looked odd.

From further down, it was obvious. A massive ridge ran lengthwise, supporting the ceiling. Evenly spaced along it, pairs of gigantic, curved supports ran across the ceiling and then down to the base of the cave. It was like a huge, gothic cathedral carved out of the rock. Or....

Milo looked again, trying to think of the huge supports in a different scale. He knew suddenly that no one had built this place. The hollowed-out area was inside the cavity formed by the spine and ribs of some gigantic, primordial creature. Between the ribs were bare rock and exposed ore. Milo saw several places that gleamed with the familiar sight of deep copper. This area would become one huge mine if the dwarves could get rid of the pudding.

One of the supports/ribs was about 30 feet from the edge of the borehole. Milo wanted to investigate it and see if it really was bone or just stone carved by some mad race of stone workers. He really should wait, give the Chief a full report, and wait to investigate until later. Instead, he dug in his pack for pitons, a hammer, and more rope.

He signaled to be pulled back up until he was about at the end of the borehole and even with the ceiling. He tied a safety rope securely to himself and to the bucket. A large stalactite was about 10 feet away. Milo leaped for it, his 10’ long tail of spectral bone wrapping around it and his clawed hands and feet trying to get ahold of the stone. The plan worked, and he was able to not fall while putting in a piton. If he could avoid it, he wanted to not test his safety rope. Now he just had to repeat the same leap twice more.

The next two were even harder. The last leap left him hanging by his tail below the stalactite. The ‘rib’ was only a few more feet. He swung back and forth like a pendulum until he could grab hold of the rough surface and scramble up to a small ledge between the curve of the bone and what looked like petrified scales above it.

The substance was certainly bone. Very old bone. And either he was shaking, or it was vibrating. The area Milo was laying on suddenly gave way, tumbling him into a hollow area of the structure. At first, it was dark, and then he began to see lights. Small yellow lights ran along the bone and clustered around him on the inside surface.

Not just lights…. runes. Each glowing bit was a rune. A few different ones repeated endlessly. They moved to where he was touching the bone and flowed from the rib and onto his skin, sinking in and burning. Like millions of little biting ants filling him up and eating into him.

Milo fell unconscious and began to dream.