

The Gold Bug

by Orson Scott Card It was all based on trust, wasn't it? You join the Fleet, you train until it's as natural to pilot your ship as to dance, as reflexive to fight with the ship's weapons as to use your fists.

Then you go where they send you, leaving behind your family and friends, knowing that relativistic travel ensures you'll never see them again. To all intents and purposes, you've already given your life for your country — no, your species.

You can only trust that when you commit to battle near some far-off world, the commander they've assigned to you will actually win, will make it worth the sacrifice.

As to you, personally, does it matter whether you live or die? Sel Menach asked himself this question more than once during the two-year voyage to war. Sometimes he thought it really didn't matter at all.

All he cared about was victory.

But when they got to the Formic world, forty lightyears from Earth, and he and his warship hurtled from the transport and faced the enemy formation, he discovered that no matter what his mind decided, his body was determined to live.

It was a child's voice he heard over his headset, giving commands to his squad. And another child giving commands to his commander. They had been warned; it had been explained to them. Mazer Rackham's voice came over the ansible, acquainting them with how these children had been screened, trained, tested, and now the finest military minds among the human race, the most relentlessly competitive, with the fastest reflexes, would give them their orders.

"They don't know the test they're taking is real," said Rackham. "To them, it's all about winning. I can assure you that the supreme commander, Ender Wiggin, does not waste his resources. He will be as careful of your lives as if he knew you were there."

We're trusting our lives to children? But what choice did they have? In some ways, the actual battle was not too different from what the children must be experiencing on their simulators. Inside Sel's fighter, there was no sound except the voices of commanders and fellow pilots, and the Dvoak and Smetana he always played to help keep him calm and focused. When a fellow pilot was killed, all Sel heard was the soft voice of the computer saying "Connection broken with" and the fighter's i.d. If the killed ship had been maneuvering fairly nearby, there would be a blink of light on the simulator.

An hour after they poured out of the transport it was over. Total victory.

Not a Formic ship in the sky. And their losses had been, all else being equal, light.

Mazer's promise about the child commanders turned out to be true.

When the surviving fighters returned to the transport and sat together to watch the replay of the battle on the large simulator, no one could find a single decision to criticize.

Each of the individual children had done well; but on the third viewing Sel began to grasp the genius of Ender Wiggin's overall strategy. He had maneuvered the enemy into an untenable position, forcing the enemy to expose himself, the enemy to be aggressive, the enemy to sustain the losses. Wiggin had been careful of lives that he didn't even know where involved.

But victory in this place was not complete victory. Who knew how many ships were under construction on the planet's surface? How long would it be before a new enemy arose? They watched the succeeding battles, fought near different worlds, on their simulator, and Sel's awe at these children only grew. There were mistakes, but the overall design of the battles was always so deft that they were all in awe of Ender Wiggin.

As the Admiral of their expedition said, "No military force has ever been so well commanded or so wisely used."

Then came the final battle, when they were lost in despair. Vast swarms of enemy ships hopelessly outnumbered the human fleet.

"If he thinks it's a game," said Sel to his friend Ramon, "or even a test, what's to stop him from refusing to go on?"

"Refuse or not, we've lost the war right here."

And this time it seemed that Wiggin had met his match, as he broke with all his previous practice and

simply Artwork by Jin Han, created for the DabelPro comic book version of "Gold Bug,"

Copyright 2007 by Dabel Brothers Productions sent his paltry fleet straight into the swarming enemy.

But there was a method to his madness, it seemed. As they listened to the chatter — the boy called Bean talking to Ender Wiggin — they began to get a glimmer of what Ender might have in mind.

And then the order came, the final mad assault on the planet's surface, the detonation of the M.D. device, the disintegration of the entire world.

Victory.

They celebrated. They drank. They wept for joy. They remembered all the people back on Earth that once upon a time they knew and loved, and wept again in grief. For by now they were all forty years older, and before this fleet could return eighty years would have gone by.

But they weren't going home. They had never planned to. Knowing what relativistic space travel would do to them, that they could never return to the lives they had once had, they set out on this expedition knowing that if they won, it would cease to be a military fleet and become, all at once, a colony.

They had expected to have to fight for control of the planet's surface, and it was to be a mission of extermination, like the one the Formics had launched against Earth.

But after that last battle, it wasn't necessary. The queens of all the conquered worlds had been gathered together on the last planet. All their eggs in one basket, so to speak.

When they died, the workers and larvae on all the worlds died with them. Not immediately, but within hours or days.

Sel Menach set foot on the Formic planet that the enemy had tried to protect from them, not as a soldier, but as a xenobiologist. It was his job to find some way to protect the alien life forms from the terrestrial ones, and vice versa. Could alien parasites pose a danger to them? The answer was yes. Until Sel found a comprehensive drug treatment, more fighter pilots died from nearmicroscopic airborne burrowing worms than had died in their battle in space.

But he found the treatment, which, injected monthly, made human blood fatal to the worms. He found ways to keep maize and amaranth from succumbing to alien molds.

Within a few years, his expertise became less important, on a daily basis, and he was just another worker in the human colony. The Admiral was now the Governor. And Sel Menach was, to all intents and purposes, a peasant.

He, like half the males, lost the lottery to have a fertile mate. The unchosen men had the option of taking drugs to control their libido, so they were not consumed with envy or frustration. Sel did not bother with the drug. Not that he felt no desire; he simply had better things to think about. He worked his turn as a farmer during the days, then returned to his lab at night to work on genetic solutions to the problems of yield and storage and pest resistance.

Others, with different areas of expertise, studied climate patterns and determined that this world was in a cycle of ice ages like those of Earth, though the hot phases would never be as intense or brief as the warm times on Earth. Earth would have another Ice Age long before this planet did; but the cold here would be deeper, and the terrestrial seeds and roots were not adapted. It was Sel's job to help them adapt to the extreme cold so that the plants that humans depended on for survival would outlast the thousands of years of winter, when at last they came.

It would be millennia from now. But that was the way Sel had learned to think. It was the only attitude that could make his losses bearable. I am not living in my own lifetime now, he told himself. I am living on a planetary scale. I am living for the survival of generations of children unrelated to me.

He was nearly fifty years old when the first generation of children reached a marriageable age. He went to the Governor then and told him that the first preference for mating should go to the older men who had not mated in the first generation.

"These would be, in effect, exogamous marriages," Sel explained. "If this new generation marries only each other, then the gene pool will be too small; if they bring in the sperm of the older men who never mated, then the gene pool is vastly increased."

The Governor sighed. "This is not going to be a popular decision," he said. "These young people were not pilots or soldiers. They know the Formics only as legends and pictures and vids. They want to marry

for love. They'll assume at once that your advice is that of an old man yearning for young flesh."

"Which is why I remove myself from consideration. I recommend as a scientist, not as a man; ten generations from now, we'll be far stronger for having followed my advice."

In the end, the Governor made it a voluntary and temporary thing.

Young women who agreed would be married to older men, but only until one child was born. That child would be raised by the mother and her new, younger mate, with the biological father as godfather to the child. Some women refused. Most consented — and, as the Governor said to Sel, in private, "It was because of the great respect they have for you. They know they eat so bountifully because of your work with the plants and animals they use for food."

Sel refused to accept the praise. "I only happen to be our chief xenobiologist. If another man of the same training had been in my place, he would have done the same things."

"The problem we have, my friend," said the Governor, "is that many of the women insist that it's your seed they want, and no other."

"But mine is not available," said Sel.

"Forgive my asking, my friend, but don't you like women?"

"Like them, love them — and children, too," said Sel. "But it will never be said that I benefitted personally from this odd little experiment in exogamy."

"You disappoint many women."

"I would also disappoint them if I mated with them. My children would probably be as ugly as me, and as stubborn."

"You have a point," said the Governor, but his jest was a sad one.

"Your sacrifice will make my job easier."

By then the Governor was old, and it was not his job much longer. He died, and the ship carrying the new governor, long ago dispatched from Earth, had not yet come.

So they held an election, and chose, for their acting Governor, Sel Menach, father of none, uncle of all, or so it seemed. He governed for five years, continuing his scientific work, settling disputes, diversifying the colony and setting up smaller villages far enough away, and in different enough environments, that they could learn more about the life of this world.

Then the colony ship came from Earth. It had been sent only a few months after the great victory, but it was forty years in coming — though it seemed only two years to those aboard. It brought ten times as many people as were already in the colony.

It also brought the new governor, appointed by the Ministry of Colonization and backed, should anyone choose to resist his authority, by forty well-armed young Marines among the new colonists.

The original colonists — the old settlers, they already called themselves — learned the new governor's name only a few weeks before the ship came into orbit. It was Ender Wiggin himself, the architect of victory, who would govern them, though he was still only a child of fourteen years.

The old settlers were angry and afraid. The generation that had fought and won the battle, that had first explored this planet's surface and cleared away and burned the bodies of the formics who had died in this area, the ones who had first grown terrestrial crops here and lived in terror of the parasites that attacked the blood and lived for a time in the caves of the formics until they developed the right tools to build with the right kinds of trees to make houses — that generation was old.

The young ones, who were now in the strength of adulthood, in their twenties and thirties, knew nothing of Earth. This was their home, and someone in a far-off place had decided to dump so many new colonists on them that they would become a small minority. And to add insult to injury, a child would rule over them.

"He is not an ordinary child," Sel Menach said. "He's the reason the human race possesses this world, and the enemy does not. He's the reason human beings are spreading out through this corner of the galaxy, instead of struggling to survive in the back hills of our own world, hunted down by Formics."

"So they gave him a reward — our land! Us!"

"Do you think this is a reward?" said Sel. "I think his reward would have been to go home to Earth. To his mother and father. Instead he was sent here. They must have been afraid of him on Earth. In an earlier

age, he would simply have been killed."

It was a sobering thought. But it didn't make the old settlers any more enthusiastic to have him rule over them.

"We who came with the original fleet, we knew that we would lose everything. If we had simply returned to Earth, all our friends would have been dead, our families as well. So before we ever left on this expedition, we were trained in the skills and sciences that would give us the best chance of survival on this planet. We thought we might have to fight for every inch of it; thanks to Ender Wiggin's complete victory, we did not. But we still struggled, and why? We're old now.

We worked so hard in order to give this colony to other people, people we didn't know, people who hadn't even been born when we arrived.

You."

"But that's different. We're your own children."

Sel smiled. "Not mine."

They had no answer for that.

"That's what civilization is," said Sel.

"You labor all your life to create a gift, large or small, which you then hand to strangers to build on and improve for the generation after.

Some of them might be genetically related to us; most of them will not.

We've built something fine here, but with far larger numbers each of our little colonies can now become towns. We can begin to specialize, to trade, to spread farther across this planet's surface. We can make of this a world as diverse and rich and productive as Earth. Maybe even better. And we need their genes, these newcomers. We need a shot of fresh DNA to make our future generations competitive with the humans being born on Earth. We need them every bit as much as they needed us to prepare the ground for their arrival. We are allies in our species' war for survival. We are brothers and sisters on a planet where the indigenous life has no kinship with us at all."

Fine speeches were enough to quell the immediate rebellion. But once the new colonists arrived, there would be conflicts and misunderstandings — it was bound to be so. It would be a constant labor of explanation, of patience, of nudges here and accommodations there to keep the peace. Sel knew just how to do it, but it would be hard, and he was tired, and besides, it was someone else's job. Ender Wiggin's.

Not his.

So Sel began quietly to prepare for an expedition southward. It would be on foot — there had been no beasts of burden in the original expedition, and he was not going to deprive the colony of any of its vehicles. And even though many of the new edible hybrids had spread widely, he meant to pass out of their optimum climate, which meant he would have to carry his food with him. Fortunately, he didn't eat much, and he would bring along six of the new dogs he had genetically altered to be able to metabolize the local proteins. The dogs would hunt, and then he would harvest two of them — and turn the other four loose, two breeding pairs that could live off the land.

New predators turned loose in the wild — Sel knew exactly how dangerous this could be to the local ecology. But they could not eat all the native species and could do nothing with the vegetation, and it would be important during later exploration and colonization to find edible and tamable creatures loose in the wild.

We aren't here to preserve the local ecology like a museum. We're here to colonize, to suit the world for ourselves.

Which is precisely what the Formics were doing to Earth. Only their approach was much more drastic — burn all, and then plant vegetation from the Formics' native planet.

Was that what they had done here? Sel didn't think so. He had found none of the species the Formics had planted on Earth during the Scouring of China nearly a century ago. This was one of the Formics' oldest colonies, and its flora and fauna seemed to be too distant, genetically, to have shared common ancestors with the Formic varieties. It must have been settled before they developed the formification strategy they had begun to use on Earth.

In all the years till now, Sel had had to devote himself entirely to the genetic research required to keep the colony viable, and then to governing the colony. Now that his replacement was here, he could go into hitherto unexplored lands and learn what he could.

He could not go any great distance — he supposed a few hundred kilometers would be his limit, for it would do no good to range so far that he could not return and report his findings.

With the help of the lead xenogeneticist, Ix Tolo, Sel prepared a kit of the sampling and testing equipment he'd need — well, not all that he'd need, but all that he could carry along with his supplies. It was a meager kit, but Ix didn't even argue with him about it, which was unusual. "Why aren't you telling me that there's no point in making this journey if I don't have the equipment I need?"

"Because," said Ix, "I know you're not really traveling as a scientist."

"I'm not?"

"Look at you — an old man, planning a hundred-click journey."

"Farther than that."

"Like an old elephant, searching for a place to die."

"I don't plan on dying."

"Governor Menach," said Ix, "you're an old man who doesn't want to face his fourteen-year-old successor."

"I don't want to get in his way," said Sel.

"You know everybody and everything, and he knows very little."

"He saved the human race."

"He knows very little about governing this colony. He has authority without relationships or influence. You're making it far harder for him by going."

"I don't think so," said Sel. "It's going to be hard enough for him without everybody turning to me for answers all the time. And they will."

You will. The new colonists have been in stasis throughout the voyage.

They don't know him — so they'll tend to follow whomever the old settlers follow. And if I'm here, that'll be me. No matter what we do or say, Ender Wiggin will be treated like my grandson, not like the governor."

"Maybe Ender Wiggin needs a grandfather more than he needs a position as governor."

"Make no mistake," said Sel.

"Wiggin will be governor. He'll be better than the Admiral and I ever were. But let's make it happen as quickly and smoothly as possible."

You set the example — treat him as governor and help him as much as you can."

"I will."

"So you can unpack that other bag, because you're not going with me."

"Other bag?"

"I'm not an idiot. Half the equipment I decided not to take, you've put into another pack, along with more food and an extra bedroll."

"I never thought you were an idiot."

But I'm not so stupid I'd endanger the colony by sending both our lead xenobiologists on the same journey."

"So who's the pack for?"

"My son Po."

"I've always been bothered that you named him for an insanely romantic Chinese poet. Why nobody from Mayan history?"

"All the characters in the Popol Vuh have numbers instead of names. He's a sensible kid. Strong. If he had to, he could carry you back home."

"I'm not that old and wizened."

"He could do it," said Ix. "But only if you're alive. Otherwise, he'll watch and record the process of decomposition, and then sample the microbes and worms that manage to feed on your old Earthborn corpse."

"Glad to see you still think like a scientist and not a sentimental fool."

"Po is good company."

"And he'll allow me to carry enough equipment for the trip to be useful.

While you stay here and play with the new stuff from the colony ship."

"And train the xenobiologists they've sent along. I'll have plenty of work to do without babysitting the new governor."

"And Po's mother is happy about his going with me?"

"No," said Ix. "But she knows he'd never speak to her again if she barred him from it. So we have her blessing.

More or less."

"Then first thing in the morning, we're off."

"Unless the new governor forbids you."

"His authority doesn't begin until he sets foot on this planet. He isn't even in orbit yet."

"Haven't you looked at their manifest? They have four skimmers."

"If we need one, we'll radio back for it. Otherwise, don't tell them where we went."

"Good thing the Formics got rid of all the major predators on this planet."

"There's no self-respecting predator would eat an old wad of gristle like this."

"I was thinking of my son."

"I'll watch out for him."

That night, Sel went to bed early and then, as usual, got up to pee after only a few hours of sleep. He noticed that the ansible was blinking.

Message.

Not my problem.

Well, that wasn't true, was it? If Wiggin's authority didn't begin until he set foot on the planet, then Sel was still acting governor. So any messages from Earth, he had to receive.

He sat down and signaled that he was ready to receive.

There were two messages recorded.

He played the first one. It consisted of the face of the Minister of Colonization, Graff, and his message was brief.

"I know you're planning to skip town before Wiggin gets there. Talk to Wiggin before you go. He won't try to stop you, so relax."

That was it.

The other message was from Wiggin.

He really was fourteen, but his adult height was coming on him. He didn't look like an actual child now. In the colony, teenagers his size were expected to do a man's work. So maybe his work wouldn't be as hard as Sel expected.

"Please contact me by ansible as soon as you get this. We're in radio distance, but I don't want anyone else to be able to intercept the signal."

Sel toyed with the idea of turning the message over to Ix to answer, but decided against it. The point wasn't to hide from Wiggin, was it? Only to leave the field clear for him.

So he signaled his intention to make a connection. It took only a few minutes for Wiggin to appear. Now that the colony ship wasn't traveling at a relativistic speed, there was no time differential, and therefore the ansible transmitted instantly. Not even the time lag of radio.

"Governor Menach," said Ender Wiggin.

"Sir," Sel replied.

"When we got word that you were leaving, my first thought was to beg you to stay."

"I wonder who reported my plans?"

"Everyone with access to the ansible," said Wiggin. "They don't want you to go. And I thought at first that they were right. But the more I thought about it, the more I knew that if I've got any brains, I'll rely on the decision of the man who actually understands the situation on the ground."

"Good," said Sel.

"Your genetic work has been brilliant. The xenobiologists have been reviewing it ever since I woke them up. They were unanimous in praising the restrained way you adapted terrestrial plants and animals to the new environment. They are already working on following your example and using your techniques on the animals and plants we brought with us."

"On the manifest I saw a full range of beasts of burden as well as milk, wool, egg, and meat beasts."

"The Formics cleared out most of the larger indigenous animals. Within a few years we should be able to start filling those ecological niches."

"Ix Tolo has ongoing projects."

"Ix Tolo will remain the head xenobiologist, in your absence," said Wiggin. "You have trained him to an exacting standard, and the xenos on this ship intend to learn from him."

Though they're hoping you'll return soon. They want to meet you. You're something of a hero to them. This is the only world that has nonFormiform flora and fauna. The other colonies have been working with the same genetic groups — this is the only world that posed unique challenges, so you had to do, alone, what all the other colonies were able to do cooperatively."

"Me and Darwin."

"Darwin had more help than you," said Wiggin. "I hope you'll keep your radio dormant instead of off. Because I want to be able to ask for your counsel, if I need it."

"You won't."

"I'm fourteen, Governor Menach."

"You're Ender Wiggin, sir."

Wiggin said nothing.

"We soldiers who fought under you may be getting old, but we haven't forgotten what you did."

"I gave orders in a nice, safe room far from any danger, and without a clue what I was actually doing. You were the ones who fought the war."

"Who builds the house, the architect or the bricklayer? It's not an interesting question. You led us, sir. We destroyed the enemy. We lived to found this colony."

"And the human race will never again be tied to one world," said Wiggin. "We all did our part. The two of us will continue to do whatever we can."

"Yes, sir."

"Please. Call me Andrew. When you return, I want us to be friends. If I have any skill, it's knowing how to learn from the best teachers."

"If you call me Sel."

"I will."

"I'm going back to bed now. I have a lot of walking to do tomorrow."

"I can send a skimmer after you. So you don't have to carry your supplies. It would increase your range."

"But then the old settlers will expect me to come back soon. They'll be waiting for me instead of relying on you."

"I can't pretend that we're not able to track you and find you."

"But you can tell them that you're showing me the respect of not trying."

At my request."

"Yes," said Ender. "I'll do that."

There was little more to say. They signed off and Sel went back to bed.

He slept easily. And, as usual, woke just when he wanted to — an hour before dawn.

Po was waiting for him.

"I already said good-bye to Mom and Dad," he said.

"Good," said Sel.

"Thanks for letting me come."

"Could I have stopped you?"

"Yes," said Po. "I won't disobey you,

Uncle Sel."

Sel nodded. "Good. Have you eaten?"

"Yes."

"Then let's go. I won't need to eat till noon."

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You take a step, then another. That's the journey. But to take a step with your eyes open is not a journey at all, it's a remaking of your own mind.

You see things that you never saw before. Things never seen by the eyes of human beings. And you see with your particular eyes, which were trained to see not just a plant, but this plant, filling this ecological niche, but with this and that difference.

And when your eyes have been trained for forty years to be familiar with the patterns of a new world, then you are Antony van Leeuwenhoek, who first saw the world of animalcules through a microscope; you are Carl Linnaeus, first sorting creatures into families, genera, species; you are Darwin, sorting lines of evolutionary passage from one species to another.

So it was not a rapid journey. Sel had to force himself to move with any kind of haste.

"Don't let me linger so long over every new thing I see," he told Po.

"It would be too humiliating for my great expedition to take me only ten kilometers south of the colony. I must cross the first range of mountains, at least."

"And how will I keep you from lingering, when you have me photographing and sampling and storing and recording notes?"

"Refuse to do it. Tell me to get my bony knees up off the ground and start walking."

"All my life I'm taught to obey my elders and watch and learn. I'm your assistant. Your apprentice."

"You're just hoping we don't travel very far so when I die you don't have so long to carry the corpse."

"I thought my father told you — if you actually die, I'm supposed to call for help and observe your decomposition process."

"That's right. You only carry me if I'm breathing."

"Or do you want me to start now? Hoist you onto my shoulders so you can't discover another whole family of plants every fifty meters?"

"For a respectful, obedient young man, you can be very sarcastic."

"I was only slightly sarcastic. I can do better if you want."

"This is good. I've been so busy arguing with you, we've gone this far without my noticing anything."

"Except the dogs have found something."

It turned out to be a small family of the horned reptile that seemed to fill the bunny rabbit niche — a bigtoothed leaf-eater that hopped, and would only fight if cornered. The horns did not seem to Sel to be weapons — too blunt — and when he imagined a mating ritual in which these creatures leapt into the air to butt their heads together, he could not see how it could help but scramble their brains, since their skulls were so light.

"Probably for a display of health," said Sel.

"The antlers?"

"Horns," said Sel.

"I think they're shed and then regrown. Don't these animals look like skin-shedders?"

"No."

"I'll look for a shed skin somewhere."

"You'll have a long look."

"Why, because they eat the skins?"

"Because they don't shed."

"How can you be sure?"

"I'm not sure," said Sel. "But this is not a Formic import, it's a native species, and we haven't seen any skin shedding from natives."

So the conversation went as they traveled — but they did cover the ground. They took pictures, yes. And now and then, when it was something really new, they stopped and took samples. But always they walked. Sel might be old and need to lean on his walking stick now and then, but he could still keep up a

steady pace. Po was likely to move ahead of him more often than not, but it was Po who groaned when Sel said it was time to move on after a brief rest.

"I don't know why you have that stick," said Po.

"To lean on when I rest."

"But you have to carry it the whole time you're walking."

"It's not that heavy."

"It looks heavy."

"It's from the balsa tree — well, the one I call 'balsa,' since the wood is so light."

Po tried it. Only about a pound, though it was thick and gnarled and widened out at the top like a pitcher.

"I'd still get tired of carrying it."

"Only because you put more weight in your backpack than I did."

Po didn't bother arguing the point.

"The first human voyagers to the moon and the planets had an easy time of it," said Po, as they crested a high ridge. "Nothing but empty space between them and their destination.

No temptation to stop and explore."

"Like the first sea voyagers. Going from land to land, ignoring the sea because they had no tools that would let them explore to any depth."

"We're the conquistadores," said Po.

"Only we killed them all before we ever set foot on land."

"Is that a difference or a similarity? Smallpox and other diseases raced ahead of the conquistadores."

"If only we could have talked to them," said Po. "I read about the conquistadores — we Mayans have good reason to try to understand them. Columbus wrote that the natives he found 'had no language,' merely because they didn't understand any of the languages his interpreters knew."

"But the Formics had no language at all."

"Or so we think."

"No communication devices in their ships. Nothing to transmit voice or images. Because there was no need of them. Exchange of memory.

Direct transfer of the senses.

Whatever their mechanism was, it was better than language, but worse, because they had no way to talk to us."

"So who were the mutes?" asked Po.

"Us, or them?"

"Both of us mutes," said Sel, "and all of us deaf."

"What I wouldn't give to have just one of them alive."

"But there couldn't be just one," said Sel. "They hived. They needed a hundreds, perhaps thousands to reach the critical mass to achieve intelligence."

"Or not," said Po. "It could also be that only the queen was sentient.

Why else would they all have died when the queens died?"

"Unless the queen was the nexus, the center of a neural network."

"As I said, I wish we had one alive, so we could know something instead of guessing from a few desiccated corpses."

"We have more of them preserved than any of the other worlds. Here, there are so few scavengers that can eat them, the corpses lasted long enough for us to get to the planet's surface and freeze some of them. We actually got to study structure."

"But no queens."

"The sorrow of my life," said Sel.

"Really? That's your greatest regret?"

Sel fell silent.

"Sorry," said Po.

"It's all right. I was just considering your question. My greatest regret.

What a question. How can I regret leaving everything behind on Earth, when I left it in order to help save it? And coming here allowed me to do things that other scientists could only dream of. I have been able to name more than five thousand species already and come up with a rudimentary classification system for an entire native biota. More than on any of the other Formic worlds."

"Why?"

"Because they stripped those and then established only a limited subset of their own flora and fauna. This is the only world where most of the species evolved here. The only place that's messy. The Formics brought fewer than a thousand species to their colonies. And their home world, which might have had vastly more diversity, is gone."

"So you don't regret coming here?"

"Of course I do," said Sel. "And I also am glad to be here. I regret being an old wreck of a man. I'm glad I'm not dead. It seems to me that all my regrets are balanced by something I'm glad of. On average, then, I have no regrets at all. But I'm also not a bit happy. Perfect balance.

On average, I don't actually exist."

"Father says that if you get absurd results, you're not a scientist, you're a philosopher."

"But my results are not absurd."

"You do exist. I can see you and hear you."

"Genetically speaking, Po, I do not exist. I am off the web of life."

"So you choose to measure by the only standard that allows your life to be meaningless?"

Sel laughed. "You are your mother's son."

"Not father's?"

"Both, of course. But it's your mother who won't put up with any bullshit."

"Speaking of which, I can hardly wait to see a bull."

By the time they had been a fortnight gone, with almost two hundred kilometers behind them, they had talked about every conceivable subject at least twice, and finally walked along in companionable silence most of the time, except when the exigencies of their journey forced them to speak.

"Don't grab that vine, it's not secure."

"I wonder if that bright-colored froglike thing is venomous?"

"I doubt it, considering that it's a rock."

"Oh. It was so vivid I thought —"

"A good guess. And you're not a geologist, so how could you be expected to recognize a rock?"

At two hundred clicks, though, it was time to stop. They had rationed carefully, but their food was half gone. They pitched a more permanent camp by a clear water source, chose a safe spot and dug a latrine, and pitched the tent with the stakes deeper and the ground more padded under the floor of it. They would be here for a week.

A week, because that's about how long they expected to be able to live on the meat of the two dogs they slaughtered that afternoon.

Sel was sorry that only two of the dogs were smart enough to extrapolate that their human masters were no longer reliable companions.

Those two left — they had to drive the other pair away with stones.

By now, like everyone else in the colony, both Sel and Po knew how to preserve meat by smoking it; they cooked only a little of the meat fresh, but kept the fire going to smoke the rest as it hung from the bending limbs of a fernlike tree... or treelike fern.

They marked out a rough circle on the satellite map they carried with them and each morning they set out in a different direction to see what they might find. Now they collected samples in earnest, and took photographs that they bounced to the orbiting transport ship for storage on the big computers there. It was nothing but a big satellite now, its electronics running on a tiny amount of the fuel and its databases constantly being transmitted to Earth automatically by ansible. The pictures, the test results, those were secure — they would not be lost, no matter what happened to Sel and Po.

The samples, though, were by far the most valuable items. Once they brought them back, they could be studied at great length using far more sophisticated equipment. The new equipment from the colony

ship.

At night, Sel lay awake for long hours, thinking of what they had seen, classifying it in his mind, trying to make sense of the biology of this world.

But when he woke up, he could not remember having had any great insights the night before, and certainly had none by morning light.

No great breakthroughs; just a continuation of the work he had already done.

I should have gone north, into the jungles.

But jungles are far more dangerous to explore. I'm an old man. Jungles could kill me. This temperate zone, colder than the colony because it's a little closer to the poles and higher in elevation, is also safer for an old man who needs open country to hike through and nothing unusually dangerous to snag or snap at him.

On the fifth day, they crossed a path.

There was no mistaking it. It was not a road, certainly not, but that was no surprise, the Formics had built few roads. What they made were paths, and those inadvertent, the natural result of thousands of feet treading the same route.

Those feet had trodden here, though it was forty years before. Trodden so long and often that after all these years, and overgrown as it was, the naked eye could trace the path of it through the pebbly soil of a narrow alluvial valley.

There was no question now of pursuing any more flora and fauna.

The Formics had found something of value here, and archaeology took precedence, at least for a few hours, over xenobiology.

The path wound upward into the hills, but not terribly far before it led to a number of cave entrances.

"These aren't caves," said Po.

"Oh?"

"They're tunnels. These are too new, and the land hasn't shaped itself around them the way that it does with real caves. These were dug as doorways. All the same height, do you see?"

"That damnably inconvenient height that makes it such a pain for humans to go inside."

"It's not our purpose here, sir," said Po. "We've found the spot. Let's call for others to explore the tunnels.

We're here for the living, not the dead."

"I have to know what they were doing here. Certainly not farming — there's no trace of their crops gone wild here. No orchards. No middens, either — this wasn't a great settlement. And yet there was so much traffic, along that single path."

"Mining?" asked Po.

"Can you think of any other purpose? There's something in those tunnels that the Formics thought was worth the trouble of digging out. In large quantities. For a long time."

"Not such large quantities," said Po.

"No?" said Sel.

"It's like steel-making back on Earth.

Even though the purpose was smelting iron to make steel, and they mined coal only to fire their smelters and foundries, they didn't carry the coal to the iron, they carried the iron to the coal — because it took far more coal than iron to make steel."

"You must have gotten very good marks in geography."

"I never saw Earth," said Po.

"Neither did my parents — all born here. But Earth is still my home."

"So you're saying that whatever they took out of these tunnels, it wasn't in such large quantities that it was worth building a city here."

"They put their cities where the food was, or the fuel. Whatever they got here, they took little enough of it that it was more economical to carry it to their cities, instead of building a city here to process it."

"You may grow up to amount to something, Po."

"I'm already grown up, sir," said Po.

"And I already amount to something.

Just not enough to get any girl to marry me."

"And knowing the principles of Earth's economic history will attract a mate?"

"As surely as that bunny-toad's antlers, sir."

"Horns," said Sel.

"So we're going in?"

Sel mounted one of the little oil lamps into the flared top of his walking stick.

"And here I thought that opening at the top of your stick was decoration," said Po.

"It was decorative," said Sel. "It was also the way the tree grew out of the ground."

Sel rolled up his blankets and put half the remaining food into his pack, along with their testing equipment.

"Are you planning to spend the night down there?"

"What if we find something wonderful, and then have to climb back out of the tunnels before we get a chance to explore?"

Dutifully, Po packed up. "I don't think we'll need the tent in there."

"I doubt there'll be much rain."

"Caves can be drippy."

"We'll pick a dry spot."

"What can live in there? It's not a natural cave, I don't think we'll find fish."

"There are birds and other creatures that like the dark. Or that find it safer and warmer indoors."

At the entrance, Po sighed. "If only the tunnels were higher."

"It's not my fault you grew so tall."

Sel lit the lamp, fueled by the oils of fruit Sel had found in the wild. They grew it in orchards now, and pressed and filtered it in three harvests a year, though except for the oil the fruit was good for nothing except fertilizer. It was good to have cleanburning fuel for light, instead of wiring every building with electricity, especially in the outlying colonies. It was one of Sel's favorite discoveries — particularly since there was no sign the Formics had ever discovered its usefulness. Of course, the Formics were at home in the dark. Sel could imagine them scuttling along in these tunnels, content with smell and hearing to guide them.

Humans had evolved from creatures that took refuge in trees, not caves, thought Sel, and though humans had used caves many times in the past, they were always suspicious of them.

Deep dark places were at once attractive and terrifying. There was no chance the Formics would have allowed any large predators to remain at large on this planet, particularly in caves, since the Formics themselves were tunnel makers and cave dwellers.

If only the Formic home world had not been obliterated in the war. What we could have learned, tracing an alien evolution that led to intelligence!

Then again, if Ender Wiggin had not blown the whole thing up, we would have lost the war. Then we wouldn't have even this world to study.

Evolution here did not lead to intelligence — or if it did, the Formics already wiped it out, along with any traces the original sentient natives might have left behind.

Sel bent over and squat-walked into the tunnel. But it was hard to keep going that way — his back was too old. He couldn't even lean on his stick, because it was too tall for the space, and he had to drag it along, keeping it as close to vertical as possible so the oil didn't spill out of the canister that was holding it.

After a while he simply could not continue in that position. Sel sat down and so did Po.

"This is not working," said Sel.

"My back hurts," said Po.

"A little dynamite would be useful."

"As if you'd ever use it," said Po.

"I didn't say it would be morally defensible," said Sel. "Just convenient." Sel handed his stick, with the lamp atop it, to Po. "You're young. You'll recover from this. I've got to try a new position."

Sel tried to crawl but instantly gave up on that — it hurt his knees too much to rest them directly on the rocky floor. He finally settled for sitting, leaning his arms forward, putting weight on them, and then scrabbling his legs and hips after him. It was slow going.

Po also tried crawling and soon gave up on it. But because he was holding the stick with the light, he was forced to return to walking bent over, knees in a squat. The boy would end up crippled, probably, but Sel would never have to hear his father and mother complain about it, because Sel himself would never get out of this tunnel alive.

And then, suddenly, the light went dim. For a moment Sel thought it had gone out, but no — Po had stood up and lifted the stick to a vertical position, so that the tunnel where Sel was creeping along was now in shadow.

It didn't matter. Sel could see the chamber ahead. It was a natural cavern, with stalactites and stalagmites forming columns that supported the ceiling.

But they weren't the normal straightup-and-down columns that normally formed, when lime-laden water dripped straight down, leaving sediment behind. These columns twisted crazily. Writhed, really.

"Not natural deposits," said Po.

"No. These were made. But the twisting doesn't seem designed, either."

"Fractal randomness?" asked Po.

"I don't think so," said Sel. "Random, yes, but genuinely so, not fractal. Not mathematical."

"Like dog turds," said Po.

Sel stood looking at the columns.

They did indeed have the kind of curling pattern that a long dog turd got as it was laid down from above.

Solid yet flexible. Extrusions from above, only still connected to the ceiling.

Sel looked up, then took the stick from Po and raised it.

The chamber seemed to go on forever, supported by the writhing stone pillars. Arches like an ancient temple, but half melted.

"It's composite rock," said Po.

Sel looked down at the boy and saw him with a self-lighting microscope, examining the rock of a column.

"Seems like the same mineral composition as the floor," said Po.

"But grainy. As if it had been ground up and then glued back together."

"But not glued," said Sel. "Bonded? Cement?"

"I think it's been glued," said Po. "I think it's organic."

Po took the stick back and held the flame of the lamp under an elbow of one of the twistiest columns. The substance did not catch fire, but it did begin to sweat and drip.

"Stop," said Sel. "Let's not bring the thing down on us!"

Now that they could walk upright, they moved forward into the cavern.

It was Po who thought of marking their path by cutting off bits of his blanket and dropping them. He looked back from time to time to make sure they were following a straight line. Sel looked back, too, and saw how impossible it would be ever to find the entrance they had come through, if the path were not marked.

"So tell me how this was made," said Sel. "No toolmarks on the ceiling or floor. These columns, made from ground-up stone with added glue. A kind of paste that can hold up a chamber this size. But no grinding equipment left behind, no buckets to carry the glue."

"Giant rock-eating worms," said Po.

"That's what I was thinking, too," said Sel.

Po laughed. "I was joking."

"I wasn't," said Sel.

"How could worms eat rock?"

"Very sharp teeth that regrow quickly. Grinding their way through.

The fine gravel bonds with some kind of gluey mucus and they extrude these columns, then bind them

to the ceiling."

"But how could such a creature evolve?" said Po. "There's no nutrition in the rock. And it would take enormous energy to do all this.

Not to mention whatever their teeth were made of."

"I don't think they evolved," said Sel.

"Look — what's that?"

There was something shiny ahead.

Reflecting the lamplight.

As they got closer, they saw spotty reflections from various spots on the columns, too. Even the ceiling.

But nothing else was as bright as the thing lying on the floor.

"A glue bucket?" asked Po.

Artwork by Jin Han, created for the DabelPro comic book version of "Gold Bug," Copyright 2007 by Dabel Brothers Productions "No," said Sel. "It's a giant bug.

Beetle. Ant. Something like — look at this, Po."

They were close enough now to see that it was six-legged, though the middle pair of limbs seemed more designed for clinging than walking or grasping. The front ones were for grasping and tearing. The hind ones, for digging and running.

"What do you think? Bipedal?" asked Sel.

"Both. Bipedal at need." Po nudged it with his foot. No response. The thing was definitely dead. He bent over and flexed and rotated the hind limbs. Then the front ones. "It could do both equally well, I think."

"Not a likely evolutionary path," said Sel. "Anatomy tends to commit one way or the other."

"Like you said. Not evolved, bred."

"For what?"

"For mining," said Po. He rolled the thing over onto its belly. It was very heavy; it took several tries. But now they could see much better what it was that caught the light. The thing's back was a solid sheet of gold. As smooth as a beetle's carapace, but so thick with gold that the thing must weigh ten kilos at least.

Twenty-five, maybe thirty centimeters long, thick and stubby.

And its entire exoskeleton thinly gilt, with the back heavily armored in gold.

"Do you think these things were mining for gold?" asked Po.

"Not with that mouth," said Sel. "Not with those hands."

"But the gold got inside it somehow.

To be deposited in the shell."

"I think you're right," said Sel. "But this is the adult. The harvest. I think the Formics carried these things out of the mine and took them off to be purified. Burn off the organics and leave the pure metal behind."

"So they ingested the gold as larvae ..."

"Went into a cocoon..."

"And when they emerged, their bodies were encased in gold."

"And there they are," said Sel, holding up the light again. Only now he went closer to the columns, where they could now see that the glints of reflection were from the bodies of half-formed creatures, their backs embedded in the pillars, their foreheads and bellies shiny with a layer of thin gold.

"The columns are the cocoons," said Po.

"Organic mining," said Sel. "The Formics bred these things specifically to extract gold."

"But what for? It's not like the Formics used money. Gold is just a soft metal to them."

"A useful one. What's to say they didn't have bugs just like these, only bred to extract iron, platinum, aluminum, copper, whatever they wanted?"

"So they didn't need tools to mine."

"No, Po — these are the tools. The factories." Sel knelt down. "Let's see if we can get any kind of

DNA sample from these.

"Dead all this time?"

"There's no way these are native to this planet. The Formics brought them here. So they're native to the Formic home world. Or bred from something native there."

"Not necessarily," said Po, "or other colonies would have found them long before now."

"It took us forty years, didn't it?"

"What if this is a hybrid?" asked Po.

"So it exists only on this world?"

By now, Sel was sampling DNA and finding it far easier than he thought.

"Po, there's no way this has been dead for forty years."

Then it twitched reflexively under his hand.

"Or twenty minutes," said Sel. "It still has reflexes. It isn't dead."

"Then it's dying," said Po. "It has no strength."

"Starving to death, I bet," said Sel.

"Maybe it just finished its metamorphosis and was trying to get to the tunnel entrance and died here. Or stopped here to die."

Po took the samples from him and stowed them in Sel's pack.

"So these gold bugs are still alive, forty years after the Formics stopped bringing them food? How long is the metamorphosis?"

"Not forty years," said Sel. He stood up, then bent over again to look at the gold bug. "I think these cocooned-up bugs embedded in the columns are young. Fresh." He stood up and started striding deeper into the cavern.

There were more gold bugs now, many of them lying on the ground — but unlike the first one they found, these were often destroyed, hollowed out. Nothing but the thick golden shells of their backs, with legs discarded as if they had been...

"Spat out," said Sel. "These were eaten."

"By what?"

"Larvae," said Sel. "Cannibalizing the adults because otherwise there's nothing to eat here. Each generation getting smaller — look how large this one is? Each one smaller because they only eat the bodies of the adults."

"And they're working their way back toward the door," said Po. "To get outside where the nutrients are."

"When the Formics stopped coming ..."

"Their shells are too heavy to make much progress," said Po. "So they get as far as they can, then the larvae feed on the corpse of the adult, then they crawl toward the light of the entrance as far as they can, cocoon up, and the next generation emerges, smaller than the last one."

Now they were among much larger shells. "These things are supposed to be more than a meter in length," said Sel. "The closer to the entrance, the smaller."

Po stopped, pointed at the lamp.

"They're heading toward the light?"

"Maybe we'll be able to see one."

"Rock-devouring larvae that grind up solid rock and poop out bonded stone columns."

"I didn't say I wanted to see it up close."

"But you do."

"Well. Yes."

Now they were both looking around them, squinting to try to see movement somewhere in the cavern.

"What if there's something it likes much better than light?" asked Po.

"Soft-bodied food?" asked Sel.

"Don't think I haven't thought of it."

The Formics brought them food.

Now maybe we have, too."

At that moment, Po suddenly rose straight up into the air.

Sel held up the stick. Directly above him, a huge sluglike larva clung to the ceiling. Its mouth end was tightly fastened on Po's back.

"Unstrap and drop down here!" called Sel.

"All our samples!"

"We can always get more samples! I don't want to have to extract bits of you from one of these pillars!"

Po got the straps open and dropped to the floor.

The pack disappeared into the larva's maw. They could hear hard metal squeaking and scraping as the larva's teeth tried to grind up the metal instruments. They didn't wait to watch. They started toward the entrance. Once they passed the first gold bug's body, they looked for the bits of blanket to mark the path.

"Take my pack," said Sel, shrugging it off as he walked. "It's got the radio and the DNA samples in it — get out the entrance and radio for help."

"I'm not leaving you," said Po. But he was obeying.

"You're the only one who can get out the entrance faster than that thing can crawl."

"We haven't seen how fast it can go."

"Yes we have," said Sel. He walked backward for a moment, holding up the lamp.

The larva was about thirty meters behind them and coming on faster than they had been walking.

"Is it following the light or our body heat?" asked Po as they turned again and began to jog.

"Or the carbon dioxide of our breath? Or the vibrations of our footfalls? Or our heartbeats?" Sel held out the stick toward him. "Take it and run."

"What are you going to do?" said Po, not taking the stick.

"If it's following the light, you can stay ahead of it by running."

"And if it's not?"

"Then you can get out and call for help."

"While it has you for lunch."

"I'm tough and gristly."

"The thing eats stone."

"Take the light," said Sel, "and get out of here."

Po hesitated a moment longer, then took it. Sel was relieved that the boy would keep his promise of obedience.

Either that, or Po was convinced the larva would follow the light.

It was the right guess — as Sel slowed down and watched the larva approach, he could see that it was not heading directly toward him, but rather listed off to the side, heading for Po. And as Po ran, the larva began speeding up.

It went right past Sel. It was more than a half-meter thick. It moved like a snake, with a back-and-forth movement, writhing along the floor, shaping itself exactly like the columns, only horizontally and, of course, moving.

It was going to reach Po before he could get out of the tunnel.

"Leave the light!" shouted Sel.

"Leave it!"

In a few moments, Sel could see the light leaning against the wall of the cavern, beside where the low tunnel began, leading toward the outside world. Po must already be through the tunnel.

But the larva was ignoring the light and heading into the tunnel behind him. With Po struggling to move through the low tunnel, the larva would catch him easily.

"No. No, stop!" But then he thought:

What if Po hears me? "Keep going,

Po! Run!"

And then, wordlessly, Sel shouted inside his mind: Stop and come back here! Come back to the cavern!

Come back to your children!

Sel knew it was insane, but it was all he could think of to do. The Formics communicated mind to mind. This was also a large insectoid life form from the Formics' home world.

Maybe he could speak to it the way the hive queens spoke to the individual worker and soldier Formics.

Speak? That was asinine. They had no language. They wouldn't speak.

Sel stopped and formed in his mind a clear picture of the gold bug lying on the cavern floor. Only the legs were writhing. And as he pictured it, Sel tried to feel hungry, or at least remember how it felt to be hungry.

Or to find hunger within himself — after all, he hadn't eaten for a few hours.

Then he pictured the larva coming to the gold bug. Circling it.

The larva reemerged from the tunnel.

There had been no screaming from Po — it hadn't caught him. Maybe it got too near the sunlight and it blinded the larva and it couldn't go on. Or maybe it had responded to the images and feelings in Sel's mind.

Either way, Po was safely outside.

Of course, maybe the larva had simply decided not to bother with the prey that was running, and had come back for the prey that was standing very still, pressing himself against a column.

"Nice larva," whispered Sel. "How about some nice dried dog?"

When he reached for his pack, to extract the food, it wasn't there. Po had his pack.

But he had the little bag at his waist where he carried the food for each day's hike. He opened it, took out the dried dog meat and the vegetables that he carried there, and tossed them toward the larva.

It stopped. It nudged the food lying on the ground. Then it rose up and plunged its gaping mouth down on the food like a remora attaching itself to a shark.

Sel could imagine a smaller version of the larva being exactly that — a remora, attaching itself to larger creatures to suck the blood out of them. Or to burrow into them? He remembered the tiny parasites that had killed people when the colony was first formed. The ones Sel had invented blood additives to repel.

This creature is a hybrid. Half native to this world. Half formed from something from the Formic world.

No, not "something." Formics themselves. This thing was a hybrid between Formic and parasite. It would take very expert gene-splicing to construct a viable creature that combined attributes of two species growing out of such disparate genetic heritages. The result would be a species that was half Formic, so that perhaps the Hive Queens could communicate with them mentally, control them like any other Formics.

Only they were still different enough that they didn't completely bond with the Queen — so when this world's Hive Queen died, the gold bugs didn't.

Maybe not. Maybe they already had a species they used for menial tasks, one that had a weak mental bond with the Hive Queens, and that's what they interbred with the parasitic worms. Those incredible teeth that could burrow right through leather, cloth, skin, and bone. But sentient, or nearly so. It could be ruled by the Hive Queens' mind.

And mine? Or did it come back for the easy food? By now the larva had plunged down onto each of the bits of food and devoured them — along with a thin layer of the stone floor at each spot.

The thing was hungry.

Hungry enough to override Sel's commands? He formed a picture in his mind — a complicated one now. A picture of Sel and Po bringing food into the tunnel. Feeding the larva. He pictured himself and Po going in and out of the cave, bringing food. Lots of food. Leaves. Grain. Fruit. Small animals.

The larva came toward him, but then circled around him. Writhed around his legs. Like a constrictor? Did it have that snakelike pattern, too? No. It didn't get tighter. It was more like a cat.

Then it pushed from behind.

Nudging him toward the tunnel.

Sel obeyed. The thing understood.

There was rudimentary communication going on.

Sel hurried to the tunnel, then knelt and sat and started to try to slide along as he had coming in.

The larva slid past him in the tunnel and then stopped.

Sel took hold of the creature's dry, articulated surface, and it began moving forward again. It was carefully not thrashing him against the wall, though he scraped now and then. It hurt and probably drew blood, but it didn't break anything. It wouldn't even have bothered a Formic. Maybe the Formics rode the larvae in and out of the tunnel just like this.

The larva stopped. But now Sel could see the light of day. So could the larva. It didn't go out there; it shied from the light and backed down the tunnel past Sel.

When Sel emerged into the daylight and stood up, Po ran to him and hugged him. "It didn't eat you!"

"No, it gave me a ride," he said.

Po wasn't sure how to make sense of this.

"All our food," said Sel. "I promised we'd feed it."

Po didn't argue. He ran to the pack and started handing food to Sel, who gathered it into a basket made by holding his shirt out in front of him.

"Enough for the moment," said Sel.

In a few moments, he had his shirt off and stuffed with food. Then he started laboriously down the tunnel again. In moments the larva was there again, coiling around him. Sel opened the shirt and dropped the food. The larva began eating ravenously. Sel was still close enough to the entrance that he could squat-walk out again.

"We'll need more food," said Sel.

"What's food to the larva?" asked Po.

"Grass? Bushes?"

"It ate the vegetables from my lunch pack."

"There's not going to be anything edible growing around here."

"Not edible to us," said Sel. "But if I'm right, this thing is half native to this world, and it can probably metabolize the local vegetation."

If there was one thing they knew how to do, it was identify the local flora. Soon they were shuttling shirtfuls of tuberous vegetables down the tunnel. They took turns carrying food to the larva.

It was still eating when two skimmers arrived. It was new technology, obviously developed long after Sel's transport had left Fleet Command on the long voyage to war. The pilots were strong young soldiers, with potent-looking sidearms. One skimmer held supplies in bags and boxes. The other had a passenger. A fourteen-year-old boy in civilian clothes.

"Ender Wiggin," said Sel.

"Sel Menach," said Wiggin. "Po said you had a giant worm situation going on here."

"No weapons needed," Sel said to the soldiers, who already had their weapons at the ready. "We're not exactly talking with the thing, but it understands rudimentary images."

And he explained about his theory of cross-breeding.

"So these aren't actually Formics," said Wiggin. He looked disappointed.

"None of the Formics could have survived," said Sel. "But they're somewhat like Formics. When we get back, we can do the gene comparison and see just how these things were made. And also, we can get all the gold we'll ever want."

There might be iron bugs and silver bugs and copper bugs elsewhere. We need to do a search for the likely sites — forty years of surviving by cannibalizing each other is a long time, and they might all be on their last legs, so to speak."

"Count on it, we'll do it at once," said Wiggin.

They stayed long enough to make sure the soldiers could project images of food to the larva — at least enough not to get eaten when they carried food down the tunnel. Then a training course in which plants had nutrient-rich roots. Then, leaving Po behind to supervise, Sel climbed into one of the skimmers with Wiggin and the DNA samples and headed back to the colony.

*

Over the next few weeks, as Po organized the search for more Formic mines that might contain similar

bugs and Sel learned how to use the new, improved equipment so he and the new xenobiologists could decode what the Formics had done to create these creatures, a few of the old settlers did come to him, just as he had feared, trying to enlist him in some kind of resistance to whatever it was the new colonists were doing.

Sel's answer was always the same.

"I've got real work to do here! Get out of my lab! Go take your complaints to the governor. That's his job now, not mine."

Something of the Formics had survived on this world after all. Only a biological remnant, but it was something. It was so irritating that he was probably going to die before they had learned everything this world could teach them. How have other scientists put up with this death thing? It would be such a tedious interruption to his career, just when it was getting really interesting.

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