

TOM SWIFT AND THE SUNLESS OCEAN



Fifty minutes later, the Challenger entered orbit around the dark exoplanet. (page 17)

THE NEW TOM SWIFT JR. ADVENTURES

TOM SWIFT
AND THE
SUNLESS OCEAN

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CHAPTER 1: SANDY IS TRAPPED

THE MIGHTY STARSHIP *Challenger* was blazing a trail through deep space, going faster than it had ever gone before. Despite its unprecedented velocity, the ship's inventor, Tom Swift Jr., was not satisfied. The young man impatiently paced back and forth on the bridge, his hands stuffed into his pockets. "Isn't there any way we can get more speed?"

"I'm afraid not, skipper," Bud Barclay replied. The talented pilot glanced at the console in front of him and shook his head. "I hate this as much as you do, but at this speed we're already putting a dangerous amount of stress on the kronolator. If I push it any harder your faster-than-light drive is going to burn out and we're going to be stranded. Then we're going to be in real trouble, because there aren't any ships available right now to rescue us."

Tom sighed. "I know. This is the only functional starship we have right now. I just wish I hadn't picked this week to overhaul the *Cosmotron Express!* That starship can run circles around the *Challenger*. But who could possibly have predicted all this? How was I to know that we'd end up out here? As it was, we barely had time to get together a crew before we left Fearing Island!"

"You call *this* a crew?" Irene Swift asked. Tom's wife looked at him skeptically. "I mean, seriously, Tom. The only people on this starship are you, me, Bud, and Chow. You wouldn't have even brought Chow along if I hadn't made you wait on him. For that matter, you still haven't told me what all of this is about! There I was, in the middle of a very delicate nuclear experiment at the Citadel, when all of the sudden I found myself grabbed by your

matter transporter and beamed to Fearing Island. You could have at least called and warned me, you know!”

Tom nodded. “I’m sorry, honey. I know it put you in a bad spot. But I just didn’t have the time. Something – well, something has gone wrong. Terribly wrong.”

“You can say that again,” Bud added. “Sandy is in a lot of trouble – and she’s a long way from home.”

“I know,” Tom said soberly. “But I really didn’t know this would happen. This isn’t like that time with the claytronic stones. There were absolutely no signs of danger, and my sister had a competent and highly-trained team. Everything should have worked fine. There was just no way to see this coming.”

“Seen what coming?” Irene asked.

“How much longer until we arrive?” Tom asked anxiously.

“It’ll be another hour,” Bud replied. “I’m afraid that Sandy got stranded pretty far from home. The galaxy is a mighty big thing, skipper. Even with your kronolator it’s going to take time to cross it. You’re just going to have to be patient.”

Tom sighed. “Fine. We’ll wait, then.”

The young inventor glanced over at his wife, who was still staring at him. Her arms were crossed and she had a very annoyed look on his face. He winced. He knew that he should have given her more warning, but he just hadn’t had the time. The truth was he was still getting used to being married. For that matter, he was still getting used to having Irene in his life again.

Irene Goddard had been his lifelong childhood sweetheart. The two had worked together on Tom’s first major invention – his nuclear hyperplane. Irene used Tom’s hyperplane to save New York City from nuclear destruction, but in the process the radiation from its poorly-shielded nuclear reactor killed her. Tom grieved over her death for years, and finally went back in time to save her – but at a terrific cost. As glad as he was to have her back again, he still felt guilty about what he had done. There was nothing he could do about it now, though. The deed was done.

On the bright side, he was glad to have Irene back. She had accepted the engagement ring he created for her all those years

ago, and a year later they were married in Shopton, New York. Tom had hoped to have a small, private wedding, but he was simply too famous. Dignitaries from all over the world flew in to attend the ceremony. Even the President was there – which made security a real nightmare. By the time it was all over Tom realized that fighting the Brungarians was nothing compared to planning a wedding. He fervently hoped – for his own sanity – that it would be a while before Bud and his sister Sandy tied the knot. He just wasn't ready to go through that again.

Have we really been married just six months? Tom wondered, as he looked at his wife. *It seems like the ceremony was only yesterday. Where does the time go?*

“Tom?” Irene said. “Talk to me. What's going on? Why are we in such a hurry that we couldn't even take the time to load *food and water* onto the ship before leaving? Do you realize that we have *no* supplies whatsoever? What do you expect Chow to cook – electrons?”

“I know,” Tom sighed. “But there just wasn't time.”

Tom sat down and offered the seat next to him to his wife. After she had sat down he looked at her. “All right. We have some time to kill, so I'll start at the beginning. Do you remember the story I told you about the time I went to that extrasolar planet to retrieve something for our Space Friends?”

“I think so,” Irene replied. “I wasn't around back then, but I remember hearing about it. Wasn't that mission a success?”

“Oh, absolutely! Our Space Friends got what they needed, and they're now quite happy. Things really couldn't be better as far as that goes. But after all that happened I started thinking. What if there are other exoplanets out there – worlds without stars? The astronomers back at Swift Enterprises have spent years looking for planets *around* stars. But what if there are other planets like Thanatos out there, wandering *between* the stars?”

“Wouldn't they be kind of hard to find?” Irene asked. “I mean, there's a whole lot of empty space out there. Where would you even look?”

“That was the problem,” Tom agreed. “You'd need an entirely

new way to find planets. That's why I wrote some new control software for my megascope. I greatly expanded the 'scope's field of view and wired it to one of my Little Idiots, so it could search space automatically. Since the electronic brain works at the speed of light and can evaluate its findings on its own, the system can cover vast areas in a short amount of time. Of course, there's a *lot* of space to cover! So far it's only explored a tiny fraction of the Milky Way Galaxy, but last week it actually found something: a true exoplanet, located light-years away from the nearest star."

"That's pretty neat!" Irene commented. "Why didn't you tell me about it? I don't remember you ever mentioning this over dinner. Finding an exoplanet is a pretty big deal."

"I was going to wait for Sandy's report," Tom explained. "I sent her to scout out the planet because I thought it might be a good candidate for my latest invention. You see, I had an idea."

Tom pressed a button on the console. An image of a planet appeared on the screen. "Despite the planet's ridiculous distance from Earth, the megascope was still able to get a fairly decent picture. As you can see, it's a fairly large world – it has a radius of just under two thousand miles. Not as big as Earth, but still, fairly good-sized."

"Is that an ocean?" Irene asked, as she studied the picture.

"Yes, it is – only it's frozen solid. At some point I think it was a liquid ocean, but then something happened and the planet lost its star. I have no idea how that happened; that's one of the questions we need to answer. But anyway, after the planet lost its star the world got really, really cold. The ocean froze over, and then froze solid. Then the atmosphere froze and fell to the ground. By the time it was all over there was nothing left but ice."

"I guess that makes sense," Irene said thoughtfully. "The planet no longer had a heat source, so its temperature would keep dropping. It would take a lot of time to freeze the entire ocean solid, though."

Tom nodded. "True. But there's more. As you can see, the frozen ocean covers most of the planet. That was when I realized the megascope had discovered something else."

Tom pressed a button on the console, and the picture changed. The screen now showed a high-resolution scan of the planet's surface. Tom zoomed in and pointed.

Irene gasped. "Are those – buildings?"

Tom nodded. "I think so. It looks like the planet was once home to an advanced civilization – a civilization that lived at the bottom of the ocean. Only now those cities are buried under four miles of solid ice! Once I saw that I knew I had to send in a team to take a closer look. Just think of what secrets that city might contain! There's no telling what we might learn."

"I guess you could always drill a tunnel down through the ice," Irene said thoughtfully. "Your earth blaster could handle that pretty easily. Or maybe you could just use your transmittaton to beam someone through the ice, although that seems kind of risky. If it was me I'd want to know exactly what was down there before sending in a team. But either way, both approaches should work."

Bud shook his head. "You're thinking much too small. Other people might be content with tunnels, but not the famous Tom Swift! What he wants to do is melt the whole ocean and warm up the planet again – make it nice and balmy."

Irene's eyes grew wide. "How on earth could you possibly do that? Do you have any idea how much energy it would take to melt that much ice? It's unthinkable! Even if you could somehow generate that much heat, it would take years – maybe decades – to actually melt the ocean. The cost would be staggering! It's simply not practical."

Bud laughed. "And since when has that ever stopped Tom Swift? You're talking to the man who was once tasked with retrieving a broken Mars probe. How did he do it? Did he go to Mars and retrieve it? Did he remotely fix the probe? Of course not! No, he built a machine that could *reach across space, grab it, and pull it back home* – an inter-planetary tractor beam! That is how Tom Swift solves problems."

Tom grinned. "True. But Irene does have a good point – under normal circumstances it would be a bit challenging to melt the frozen ocean. But there is a much simpler way to do it. The

reason this planet is cold is because it doesn't have a star. All I want to do is provide it with one. The heat of the star will melt the oceans. It may take time, but it ought to work just fine.”

“And how are you going to do that?” Irene asked. “Are you going to install a planet-sized kronolator on that world and then fly it to a new star system?”

Tom laughed. “Oh no! No, that's out of the question. I couldn't possibly move a mass of that size! It did cross my mind, but I ran the numbers and the energy cost is staggering. It was not a good solution. No, I figured it would be easier to simply create a new star – an electronic one. In order to work out the details, though, I needed to know more than my megascope could tell me. So I sent Sandy out to scout the planet.”

“And Phyl,” Bud added. “They both wanted to go.”

“Well, it's about time you let them do something,” Irene remarked. “Sandy is capable of doing a lot more than just selling Pigeon Specials. I'm assuming that you sent a team along with them?”

“Of course,” Tom replied. “They went in the *Osprey*. They were going to be out there a couple weeks, taking readings and so forth. At first everything was going fine. But then Sandy and Phyl beamed down into one of the frozen cities, and they can't get her out.”

“Sandy and Phyl beamed down alone?” Irene asked incredulously. “Whose idea was that?”

“Well, it wasn't going to be just them. They were going to be followed a few minutes later by the rest of the team, but after they beamed down the captain tried to contact them and couldn't get through. That was when he started to worry. He tried to transport her back up, but the transmittaton couldn't get a lock on them. According to the captain they can't transmit things in or out of the city.”

Irene sighed. “Don't you have a remote-control video probe that you can send down in situations like these?”

“Nope,” Bud commented. “That's not how we do things. We like to explore potentially dangerous situations personally. That

way we can be right there where the action is.”

“That is going to change,” Irene said firmly. “When we get back home we’re going to come up with a new way of doing things. People should be sent in *after* you know it’s safe, not before. What you two have been doing is crazy! I don’t know how you guys survived in my absence. It is a miracle.”

“Things haven’t been that bad,” Tom remarked.

“I have seen the reports,” Irene said dryly. “It’s no wonder that nobody will sell life insurance to the Swift family. I’ve never seen such crazy risk-taking in all my life! But to get back to the immediate crisis: is it possible that something’s gone wrong with the transmittaton? Could it have been damaged?”

Tom shook his head. “Not as far as anyone can see. Captain Hewitt can transport things to other locations; he just can’t access the city itself. It doesn’t make any sense.”

Bud spoke up. “That’s when he contacted us. As soon as we heard what was going on Tom promised to be out there as soon as possible. So here we are, blazing across the galaxy as fast as this bird can go.”

“Just how long ago did this happen?” Irene asked.

Tom glanced at his watch. “It’s been about a half-hour now, I guess. We managed to move pretty fast. In my opinion the biggest danger – apart from whatever unknowns the city itself has – is the limited air supply. Their spacesuits were designed for short excursions, not extended trips. By the time we arrive at the exoplanet we’ll only have an hour before they run out of air.”

“And since the transmittaton isn’t working, you can’t beam them more supplies,” Irene remarked. “I can see the problem. So what are you going to do?”

“I don’t know yet. The first order of business is to reach the *Osprey* and see for myself what is going on. Then we’ll have to find a solution – and fast! Every minute is vital.”

* * * * *

Very little was said on the trip there. Bud continued to pilot

the *Challenger*, straining to get every last bit of speed out of the kronolator. He knew the ship's limits and he pushed them as hard as he could. In the back of his mind he knew that he was damaging the engine, but he didn't care. All that mattered was that the ship held together until they got there. They could always replace the engine later – but they couldn't replace Sandy and Phyl.

Irene spent her time studying the map of the exoplanet and learning as much as she could about the frozen city. She was confident that the more they knew about the area, the more options they would have when it came time to formulate a plan.

Tom kept pacing up and down the bridge. He had laid out the blueprints for his transmittaton on one of the desks, but he couldn't focus on them. He kept wondering what could possibly have gone wrong. What could interfere with the transporter's locking signal? Was there some fundamental design problem with his matter transporter? If something *had* gone wrong and he couldn't use it, was there enough time left to use an earth blaster to drill his way down to the city?

The earth blaster he had taken with him was a radical new design that his father had been using to explore Europa. Unlike the original model, it didn't use electrodes to melt rock and then pump out superheated exhaust gases. That had worked fine for extracting iron from the Earth's core, but it was problematic for other applications – such as drilling through an icy ocean. This model incorporated the technology of his transmittaton to transport the material to a predefined remote location, thus leaving behind a clean, usable tunnel – and producing no gasses. It was no longer necessary to wait for days for the tunnel to cool; it could be used immediately.

The problem was that the redesigned earth blaster was far slower than his old one. When he had built it for use on Europa speed was not a concern, and he hadn't given it much thought. According to his calculations it would take over an hour to drill through four miles of ice. He knew that he could optimize the earth blaster's design to drill faster, but it would take days to

overhaul and test it and they didn't have days. He would have to make do with what they had.

As the ship sped through the darkness of space, Tom's thoughts went out to the girls. He prayed that they were all right.

* * * * *

Fifty minutes later, the *Challenger* entered orbit around the dark exoplanet. The pictures on the console had showed a world filled with color, but Irene now realized with a start that the colors were artificial. There was no light in deep space, so the world was utterly black. The only reason it could be seen at all was because it blotted out the stars.

It took Bud only moments to match orbit with the *Osprey*, and the two ships quickly docked. Tom and Irene transferred over to the ship while Bud and Chow volunteered to stay behind on the *Challenger*. Tom didn't want to leave it completely empty for fear that something might go wrong – or that they might need it. As soon as Tom stepped aboard the *Osprey* he made his way to the bridge, with Irene following close behind.

When he got there he saw that most of the crew had already gathered there. Norris Craft, the ship's communication officer, was sitting at his post trying to raise the girls. Tom could tell by the look on his face that he had not been able to reach them.

“No luck?” Tom asked.

Norris shook his head. “Sorry, sir. We've tried everything – even tight-beam transmissions. There's just no response on any channel. I don't know if they're just not picking us up or if it's some kind of interference. The sensors haven't detected any kind of jamming signal, but that's not to say there isn't one.”

Captain Hewitt spoke up. “We've tried everything, Tom. What do you think we should do?”

“I'd like to take a look at your transmittaton,” Tom replied. “I know you've run your own tests on it but it's possible that you may have missed something. In the meantime, keep trying to contact them.”

The captain nodded and turned to talk with Norris. Tom and Irene quickly headed down to the lower deck, where the transmittaton was stored.

When they got to the room they were surprised to find it empty. "I guess everyone really is on the bridge," Tom commented. "Irene, can you take a look at the transporter logs? I'd like to run some diagnostics on the machine itself."

Irene nodded and sat down in front of the console. While she accessed the machine's transporter data, Tom ran diagnostics on it. After a few minutes he stood up, frowning. "The machine looks ok to me. What did you find?"

"A problem," Irene replied. "Come over here and take a look at this."

Tom quickly walked over to his wife and looked over her shoulder. She pointed at the screen. "This is a remote scan of the target coordinates down in the frozen city. Notice the timestamp; it was taken right *before* Sandy and Phyl transported down. As you can see, everything was fine." Irene tapped a button on the keyboard. "However, this is what those same coordinates look like right now. Do you see the difference?"

"Why, the second scan is blank," Tom said, confused. "It's like that point in space doesn't even exist!"

"No, it exists all right. I think the problem is something else entirely. I bet that city down there has a defense system of some kind. Since there was a change after Sandy and Phyl beamed down, that can only mean that the city noticed their transport. It's now actively blocking the transmittaton's signal – and our communication attempts. Whoever built that city also invented a defense against your invention. The city is actively blocking your transporter."

Tom was dumbfounded. "So that means—"

"—that beaming down more supplies is out of the question," Irene said. "You can't beam anything up, and you can't beam anything down. Until that city shuts down its defenses the girls are trapped."

"Unless I can find some other way to get them out," Tom said

frantically. “The problem is that there simply isn't time! I could drill a hole through the ice – but that would take too long. If I had a few days I could redesign the transmittaton to use a completely different beam path. I'm sure I could eventually find one that the city wasn't blocking. But Irene, I've got less than an hour! What can I possibly do in so little time?”

CHAPTER 2: CANYON DIVE

“THERE MAY BE an option,” Irene said thoughtfully. “Come back to the *Challenger*. I want to show you something.”

“But what are we going to tell Captain Hewitt?” Tom asked.

“That we're working on it,” Irene replied firmly. “Just stay focused. We'll figure this out.”

Tom nodded. “I'm sure you're right. I'm just used to having more time than this. Even the deadline for my Quakelizer wasn't this pressing.”

The Swifts quickly returned to the bridge of the *Osprey*. Tom told Captain Hewitt that the transmittaton's signal was being blocked by the city below, and before they could rescue the girls they would have to find some way to get through. He told them to keep trying to contact Sandy and Phyl – and to try raising the city itself. If the city really was still alive then perhaps there was some intelligence down there that would listen to them and help them out.

“Unless they're unfriendly,” the captain pointed out. “They may be holding the girls against their will. I don't think I need to remind you that this ship is not armed. We're not prepared for a fight.”

“Hopefully it won't come to that,” Tom replied. “Right now we just need to focus on getting them out. While I work on that, keep trying to contact them.”

The captain promised to alert Tom if the situation changed. Tom and Irene then left the ship and went back to the *Challenger*.

“So what did you find out?” Bud asked, after they had reached the bridge.

“The city is blocking the signal,” Tom explained.

“The city beneath the ice?” But asked, surprised. “Seriously? So it's not a ruin, then. Do you mean that there's actually someone *alive* down there?”

“Probably not,” Irene commented. “The thermal scans indicate that the city is cold – very, very cold. It's not giving off any heat at all. My guess is that we're dealing with an old automated intrusion detection system of some kind. It's unlikely that there could be life in the complete absence of heat.”

“Unlikely, but possible,” Tom pointed out.

“No, I'm going to go with impossible,” Irene replied. “Remember that those cities were built when the oceans were actually liquid. Whoever built those cities was used to far higher temperatures. If the planet had always been 400 degrees below zero then I might agree with you, but that's not the case. And there are no signs that someone else has started living in those cities since the ocean froze over.”

“I guess you're right,” Tom sighed. “All right. We're back on the *Challenger* now. What did you want to show me?”

“This,” Irene said. She sat down at her console and pulled up the map of the exoplanet, then zoomed in to the icy city. “This is where Sandy and Phyl are trapped, right?”

“Right. It's the largest city on the planet, so it seemed like a good place to start. However, it's under four miles of ice. It would take the earth blaster an hour to drill through all that – and we don't have an hour.”

Bud spoke up. “Your new earth blaster goes four miles an hour? Really, skipper? I've seen snails that can go faster than that!”

“I know,” Tom sighed. “It just didn't matter at the time. Dad wanted a way to drill through the ice on Europa, and time was not a factor. The speed problem is tied to the transmittaton design. The only way to fix it would be to vastly increase the quantity of material that the transmittaton's beam can handle. It would take weeks of experimenting – and a much, much bigger earth blaster – to make that happen. I don't have weeks, flyboy. For that matter,

I don't even have the rest of the day.”

“But there is another option,” Irene said. “Look at this. The ocean isn't one giant block of ice; it has cracks in it – really massive cracks, all over the place. Less than a mile away from the city there's a giant gash that extends all the way down to the crust of the planet. We don't have to drill *down* to the city; we can just set up the drill at the bottom of that ice canyon and drill *through* the wall. The earth blaster can get through in fifteen minutes, tops.”

“That just might work!” Tom said excitedly. “I'd have to modify the earth blaster to follow a horizontal vector, but that's not a big deal. I can make that modification while we're hauling the blaster to the bottom of the canyon. Bud, can you take the *Challenger* down?”

“I'm already on it, skipper,” Bud commented, as he tapped a series of commands onto the console in front of him. “But I think we have a problem. I can land on the frozen ocean just fine, but there isn't enough room at the bottom of the canyon to park this giant bird of yours. You're going to have to take one of the repelatron donkeys down.”

Tom winced. “That's going to slow us down, but I guess there's no choice. All right. Irene, can you and Chow get the equipment we need loaded onto our biggest repelatron donkey? Be sure to pack extra air tanks – the girls are going to need them. While you're doing that I'll see if I can override the programming on the donkeys so they'll travel much, much faster than is usually recommended.”

“And you need to modify the earth blaster, too,” Irene pointed out.

“I'll do that on the trip down,” Tom promised. “Oh – and Bud, let the *Osprey* know what we're doing, all right? And tell Mom and Dad as well. They need to know what's going on.”

“Got it, skipper,” Bud promised.

Tom glanced at his watch as he raced off the bridge. Time was growing short, and every moment counted. Would they be able to reach Sandy and Phyl in time?

* * * * *

Tom reached the *Challenger's* cargo hold before Irene was able to track down Chow. He immediately took the metal housing off of the repelatron donkey's electronics and began tinkering with the wiring. He knew that what he was doing was dangerous, but he didn't care. The main thing was to get down to the canyon floor as quickly as possible. The planet's lighter gravity was in their favor; they could carry more, and they could fall faster with less risk. It didn't really matter if the donkey survived the trip or not. All he needed was for the equipment they were carrying to make it down in one piece. *It might be nice if we survived too, Tom thought wryly. But the donkey is expendable. After all, I can always have Bud take another one to come and get us. We'll have plenty of time to find a way back.*

While Tom rewired the donkey and stripped out all of the safety settings, Irene and Chow loaded the heavy earth blaster onto the metal craft. After it was secure they loaded three crates of air tanks on board as well. It was far more than they needed, but Irene didn't want to take any chances. She would much rather take excess air supplies than risk running out.

By the time they had everything loaded Tom was finished as well. He soldered the last connections with his soldering pencil and then slipped the pencil back into his pocket. At that same moment Bud's voice came on over the intercom. "Ok, skipper, we've landed. We're as close to the edge of the canyon as I dare to get. Is there anything else that I can do for you?"

"Just hold tight," Tom said. "We may need you to come and get us when this is all over."

"Not a problem, skipper," Bud replied. "Just let me know."

Tom then stepped onto the donkey, and Irene followed him. Chow tried to get on as well but Tom stopped him. "I know you want to go, and I would love for you to come, but we need you here. If something goes wrong Bud will need help rescuing us."

"If you say so, boss," Chow replied, disappointed. "But, brand

my toaster, you be careful down there, y'hear? Don't you go and take any risks now."

"We'll try to be careful," Tom promised.

"As careful as he ever is, anyway," Irene said.

"That's what worries me," Chow replied. "You keep an eye on him, girl. I want y'all brought back in one piece."

Irene nodded. After Chow left the hangar, Tom and Irene put on spacesuits. Tom then depressurized the cargo hold and opened the hangar door. With the press of a button the repelatron donkey soared out of the open door and off across the surface of the frozen ocean.

Irene was startled at how dark it was. The only light that she could see came from the *Challenger*. Its floodlights illuminated the immediate area, but beyond that was utter blackness. Even the canyon itself was invisible.

The girl grabbed his arm. Using the suit's built-in radio she said "Tom, we can't see anything!"

"The donkey has radar," Tom replied. "We'll be fine."

"But honey, if you're watching the radar you won't have a chance to modify the earth blaster!"

Tom looked up, startled. "Oh. Right. Well, I guess I'll just have to modify it after we land. It shouldn't take long."

With his attention glued to the screen, the young inventor piloted the donkey away from the *Challenger* and down into the canyon. Irene gasped as she felt them falling, and clutched the donkey's railing with both hands. "Why don't these things have seats?"

"Because they're not really intended for this sort of thing," Tom replied. "They're designed to transport equipment, not people, and they're certainly not designed to go this fast. I would have brought something else but there just wasn't time to load it onto the ship. In fact, I barely had time to load the earth blaster! Bud and I were in a pretty big hurry to get here."

Irene could feel that they were falling rapidly; she felt like she was in some sort of high-speed elevator. But the sensation was strange. There was no rush of air going by, because the exoplanet

was airless. Since everything was dark she could see very little. Their suits gave off some light and the donkey gave off light as well, but it barely reached the canyon walls and offered little illumination. All she really knew was that it was very dark and they were dropping very fast. In fact, it seemed like they were dropping much *too* fast.

“Just how fast are we going?” Irene asked nervously.

Tom glanced at the donkey's speed indicator. “Um, well, pretty fast, actually. We'll be down there in less than a minute.”

“Tom, it's four miles down to the ground! How can we possibly get down there in one minute? That would mean we're traveling 240 miles per hour!”

“You always were good at math,” Tom agreed. “But, yeah, as I said we're going pretty fast. Now, that's our average speed, not our peak speed. We need time to decelerate, you know. In fact, that's going to be the tricky part. Falling is easy; stopping is hard. It's especially hard when you need to stop really, really fast.”

“We *can* stop, though, right?” Irene asked.

“Well, in theory. It's just that the donkey's repelatrions really weren't designed for this much strain. Right now we're essentially freefalling. I used the repelatrions to nudge us up to a good speed, and now I'm exerting a tiny bit of breaking force to keep us from falling any faster. The real test is when I try to abruptly slow us down. The repelatron drive just wasn't rated for this kind of load. I'm hoping that the planet's lower gravity will work in our favor.”

“You're *hoping*?” Irene asked incredulously. “Haven't you worked out the math?”

“In my head, yes,” Tom admitted. “We're kind of exceeding the drive's design tolerances by, um, a bit, but I think we'll survive.”

“You *think* we'll survive?” Irene said, aghast. “Just how high are the G forces going to get?”

“Oh, they're not the problem! Although you might want to get down and brace yourself. I'm more worried about the repelatron drive burning out and the donkey crashing into the ground at 200 mph.”

Irene opened her mouth to say something, but Tom made a quick motion. “No, I mean lie down *now*. *This is it!*”

Tom quickly got to the floor of the donkey, and as the craft began its emergency deceleration Irene did the same. She suddenly felt as if she had a ton of bricks pushing down on her. The air was squeezed out of her lungs. She tried to talk, but she couldn't say anything. She wondered how long it would last, and struggled to stay conscious.

Then, all at once, the donkey smashed into something. There was a terrific *crash*, as the machine slammed into the canyon floor. Irene blacked out.

CHAPTER 3: A PERILOUS EXPERIMENT

IRENE SOLWLY regained consciousness. She had a severe headache, and her back was killing her. She slowly sat up, wincing in pain. As she opened her eyes she saw that she was lying several feet away from the donkey. Tom was standing a bit further away, soldering something onto the earth blaster.

She glanced over at the donkey and saw that it was utterly ruined. The machine was torn in half and looked like it had been hit by a train. Splinters of wood and bits of metal were everywhere. The crates that had been on the donkey were nowhere to be seen.

“What happened?” Irene asked over the suit intercom.

Tom quickly glanced up. “Irene! I was worried about you. Are you all right? The mediscan unit in your suit told me that you didn't have any broken bones, but you took a pretty severe fall. I'm so sorry about that – there was a rocky outcropping that I just didn't see. The air tanks are fine – they're over there – but the blaster was damaged and I'm having to make some repairs. I'm just glad our suits weren't punctured! That's Tomasite for you.”

“I think I'll live,” Irene said wearily. “I just hurt. Everywhere. But how much time do we have?”

“Not a lot,” Tom admitted. “About twenty minutes, at most. Possibly less. The blaster will be ready to go in just a minute.”

“Is there anything I can do?” Irene said, as she struggled to her feet.

“No, I've got it. Just catch your breath. I'm almost done.”

Irene walked over and sat down on the ground. She looked up, but could see nothing overhead. There was no visible sky. She

couldn't even see the stars, which bothered her. The local area was lit by a floodlight that Tom had brought, but beyond this local area she could see nothing but utter blackness. She sensed that they were in a bottom of a canyon, but that was about all. Darkness did not usually bother here, but there was something about the utter absence of light that she found unsettling. *A sunless ocean on a sunless world*, she thought. *I so would not want to live here.*

A thought suddenly occurred to her. "Wait a minute! How are those floodlights working?"

"Solar batteries," Tom explained. "It's a good thing, too! That donkey is absolutely shot. We actually *are* going to need Bud to come and rescue us."

"Should I try to contact him?" Irene asked.

Tom shook his head. "No, he'll just worry about us. Let's wait until we reach the city. We can figure out a way to escape after we've rescued Sandy and Phyl."

Irene nodded. Tom made a final adjustment to the battered earth blaster and then closed the access panel. He pressed a few buttons on the blaster's electronic keypad, entered some data, and pressed Activate. He then stepped back. Irene got up and walked a few steps away, just to be safe.

In complete silence, the earth blaster lifted itself off the ground. The drill changed its orientation, then slowly moved toward the towering wall of ice. A faint glow issued from it, offering a gentle light that illuminated only the blaster itself. Irene watched, fascinated, as a hole appeared in front of the blaster. The drill then began slowly moving into the ever-expanding hole.

"That is really, really strange," Irene commented. "You can't even see the beam! It looks like the ice in front of it is just disappearing."

Tom nodded. "That's the whole idea. It's not, of course. I configured the blaster to transport the ice up to the surface of the ocean. This new design is really just a compact transmittaton, with a small repelatron drive to keep it moving forward."

"I can see that we're not going to have any trouble keeping up

with it,” Irene remarked. “We could easily match its speed with a brisk walk, at best.”

“Which we may not want to do,” Tom cautioned. “I'd like to give the unit a bit of a head start, just in case something goes wrong. It's still pretty experimental.”

Tom and Irene each grabbed two air tanks, and they began walking behind the earth blaster. By now it had established a good lead; they could just barely see it glowing in the darkness.

Irene was surprised to see that the air tanks were actually fairly light. They were bulky, but it was not difficult to carry two of them. After making sure that she had a good grip on them the Swifts stepped into the icy tunnel.

The tunnel was perfectly round, and was ten feet in diameter. As soon as Irene stepped inside it she slipped and fell. The air tanks she was carrying clattered to the ground.

“Irene!” Tom called out. “Are you all right?”

“This isn't going to work,” Irene said, as she struggled to her feet. She picked up the two tanks and then struggled to maintain her balance. “This is a perfectly round hole, Tom – and on top of that, it's made of ice! It has a *curved floor*. How are we supposed to walk down this thing?”

“We don't have to,” Tom said. He reached down and pressed a button on his suit. The suit lifted him off of the ground and began gently carrying him down the tunnel.

Irene glanced down at her suit in confusion. She studied its controls for a moment, and then her eyes lit up. “I can't believe it! Why didn't you tell me that these spacesuits could fly?”

“Sorry,” Tom said, as his wife caught up with him. “I keep forgetting that you weren't here for all these inventions. There's just so much to tell! It's hard for me to remember what I've told you and what I haven't.”

His wife shook her head. “That's not what I mean. If these suits have built-in repeltrons and guidance systems then why didn't we take *them* down instead of the donkey?”

“Because the earth blaster was way too heavy for us to carry. Even in the lower gravity it still weighs more than a thousand

pounds. It could carry itself, but there's no way it can go 240 mph. The donkey was much, much faster.”

“But couldn't we have at least used the suits to cushion our fall? I mean, if the suits can fly then we didn't need to ride the donkey *all* the way down. We could have let it crash and then descended at a slower speed.”

“I guess you're right,” Tom remarked. “I just didn't think of it. I was trying to figure out what we were going to do once we reached the city.”

“What do you mean, once we reached the city? How is that the hard part?”

“Well, this is all kind of dangerous,” Tom explained. “We're drilling a giant, ten-foot hole through the ice. We don't know if the ice is stable or not. The tunnel may not survive; it may collapse behind us – or on top of us, for that matter.”

“But didn't your Dad use this on Europa? That was, what, two months ago?”

“Sure he did. But he performed lots of studies before he ever used it, and he knew what he was getting into. He picked a stable site and took things very slowly. Here we're just winging it and hoping for the best. I've never done anything like this before. Things usually fail the first time.”

“That's why we need to talk about all of these details *before* we try it,” Irene said exasperatedly. “I'm a scientist too, you know. If you let me know about these things, maybe together we can spot the flaws before they kill us. You don't need to figure it all out yourself, you know. You don't have to save the world single-handedly. You have a large support staff.”

“You're right,” Tom admitted. “I'm just used to doing everything myself. Bud would always ask me what to do and I would come up with a plan. Then we'd execute the plan. I was the leader, and Bud was my sidekick. All this invention stuff was way over his head. He always depended on me to work everything out, and he never really questioned any of my ideas.”

“But that's dangerous,” Irene said. “You are a brilliant person, Tom, but you need peer review. Sometimes the things you do

work out great, and sometimes they cause epic disasters. I am here for you – and your father is here for you too, and so is the entire staff of Swift Enterprises. You need to let us help you. We want to help, but we can only do that if you let us.”

“You're right,” Tom agreed. “I'm sorry. It's just hard to change.”

“So are there any *other* dangers that I need to worry about?”

“Well, there's always the problem of what to do when we get to the city. I don't know what's going to happen when the earth blaster tries to drill through the city's protective barrier. I don't know what kind of material it's made of or how the city will respond. This is a really gutsy experiment.”

“But won't we know the result long before we get there?” Irene asked. “I mean, right now the earth blaster is pretty much out of sight. At the very least it's got a good three-minute lead. Surely that will give us some time to react.”

“It would, if the blaster was feeding telemetry data back to our suits. But none of my blaster designs have a feature like that. I could add it, but it was never necessary. I certainly didn't have time to add it in the past ten minutes.”

“In that case, here's an idea. These suits can go faster than four miles per hour, right?”

“Of course! I just wanted to stay a few minutes behind it in case something went wrong.”

“Well, here's an idea. Suppose I run up ahead and follow the blaster a bit more closely. I can position myself to see exactly what happens when it reaches the city. I can then relay that information to you, and if something goes wrong we can know about it and come up with a plan.”

“So you would be a sort of advance scout,” Tom said thoughtfully. “That might work – but it would put you in danger. Suppose that I went first instead?”

“Absolutely not,” Irene said firmly. “If something does go wrong you will need time to think of a solution. That is only possible if you *aren't* right next to the problem. There needs to be a time delay, and the only way we can get that delay is if I go first

and you lag behind.”

“But—” Tom hesitated. “Irene, look, this is dangerous. I don't want to lose you again. The last time Bud let you go first things did not go well at all. You actually *died!* I was at your funeral, and it was not fun. I do not want to relive that.”

Irene shook her head. “Oh, Tom, be reasonable. I knew exactly what I was doing when I took that jet. In fact, the whole reason I persuaded Bud to delay you was so that I *could* go first. If I hadn't taken that hyperplane, New York City would have been nuked and millions of people would have died, including your father. It was absolutely necessary. There was no other solution.”

“Sure there was! For instance, Bud could have flown it. After all, we had both just met him the previous day, and his entire job was to fly airplanes. Why not let him do it? If you had explained the situation to him he would have jumped at the chance.”

“It would never have gone down that way,” Irene replied quietly. “If I had reminded you about the radiation leak you would have insisted on flying the jet yourself. You would never have sacrificed Bud's life, ever. It didn't matter how long you had known him – you don't kill other people. The only way to save your life was to fly it myself, so that's what I did.”

“But you don't have to do it this time,” Tom insisted.

“Yes I do,” Irene said firmly. “I am *not* going to die, Tom. It will be fine. Remember, we've got lives depending on us – Sandy and Phyl need us, and we're their only shot at survival. It's got to be done.”

“All right,” Tom said reluctantly. “But be careful, ok?”

“I will,” Irene promised. “Don't worry. It will be fine.” She then adjusted the controls on her repelasuit and zoomed off.

Tom watched her fly off into the distance. A sense of foreboding came over him. He knew that she was right, but it bothered him tremendously to see her go. He remembered all-too-well what had happened the last time he had let her out of his sight. He desperately hoped that this time would be different.

* * * * *

Irene glanced down at the tiny electronic screen that was embedded into the arm of her suit. She was a bit unnerved at the way the suit automatically navigated her through the tunnel. She knew that it was computer-guided and there was no actual danger of running into anything, but it still bothered her. She didn't like being pushed along by some invisible outside force, but there was nothing she could do about it. She just clutched the air tanks she was carrying and waited. *The world has changed so much since I died*, she thought to herself. *I feel like I've stepped into some weird alternate reality. I can't believe how much Tom has accomplished! Every day I bump into some mind-blowing invention that he's already forgotten about. How much longer will it take before I'm finally caught up again?*

She didn't know how much further ahead the earth blaster was, but it didn't take long for her to spot its gentle glow in the distance. Irene touched the controls on her arm and slowed her suit down in order to keep from overtaking it. She wanted to be close, but not too close.

"I can see the earth blaster now," she told Tom over her suit intercom. "It looks like it's making pretty good time."

"I hope so," Tom replied. "We don't have that much time left. If we don't find them in the next fifteen minutes..." His voice trailed off.

"We'll find them," Irene said firmly. "They beamed down to a part of the city not far from where the blaster is going to break through. I'm sure that they were smart enough to stay in the drop zone. They wouldn't have wandered off – especially if they were running low on air. We will make it."

Tom said nothing. Ahead, there was a sudden flash of light. Irene's eyes widened in surprise. "Something just happened! The earth blaster – I don't know what's going on, but boy is it putting out a lot of light. It's—"

Just as suddenly, the light went out. The entire tunnel was plunged into darkness. The only available light came from her repelasuit, which continued pushing her through the tunnel.

“What is it?” Tom asked.

“I don't know. It just got really dark all the sudden. I think something happened to the earth blaster. I'm going to go take a closer look.”

Irene touched the controls again and raced through the pitch-black tunnel. As she hurried along, she suddenly saw that something was racing *toward* her. It was ghostly and vaporous, and so indistinct that she couldn't really focus on it. She reached for her suit controls to slow down, but it was too late. She collided with something – something she couldn't quite see.

“Tom!” she shouted.

“Irene!” the young inventor called out. But there was no response.

CHAPTER 4: ICY BUBBLES

TOM RACED TOWARD Irene as fast as his repelasuit could carry him. He was positive that something terrible had happened. Fear clutched at his heart as he thought over the possibilities. The earth blaster could have exploded. The tunnel could have collapsed. Her suit could have ruptured. The city's automated defenses could have attacked her. A thousand things could have gone wrong.

The young inventor pushed all of his worries aside and raced ahead. In seconds he had reached his wife. He was shocked by what he saw.

Irene was lying on the floor of the icy tunnel, still clutching the two air tanks. She was encased in a translucent white shell. Tom put down the air tanks he was carrying and knelt beside her. "Irene, are you there? Can you hear me?"

There was no response. However, when Tom looked more closely he realized that he could see through the translucent shell and into Irene's helmet. Her mouth was moving, but he couldn't hear anything over his suit radio. He was immensely relieved to see that she was still alive. But what was going on?

Tom rapped his gloved hand on the shell that had imprisoned his wife. It was hard and smooth. He reached up and touched one of the controls on the side of his helmet, activating his suit's infrared vision. He was shocked to see that, while he could read his own thermal signature and the heat left behind by the earth blaster, Irene did not register at all. From an infrared point of view she might as well have been invisible.

The coating is somehow trapping heat, Tom realized with a

start. That had far-ranging implications, but Tom pushed those thoughts aside. He had to find a way to rescue Irene. For all he knew the coating could have terrible side-effects – radiation poisoning, nerve damage, toxins, or countless other dangers. He had to act fast. *You're encased in an unknown substance and you can't move. So how do I get you out of there?*

He knew there were a thousand ways to do it, but he had no time. He didn't have the time to bring Irene back to the *Challenger* and perform experiments. He didn't have the time to perform a chemical analysis on the material or invent something new. He had to find some way to free her, using whatever he had with him right then. And he had to do it fast – he still needed time to rescue Sandy and Phyl.

Tom then stopped for a moment. Should he rescue Sandy and Phyl first, and then come back for Irene? He glanced down at his wife, and then at his watch. The girls had twelve minutes left. Irene, however, had an unknown amount of time left. She might be fine for an hour, or she might be dead in another thirty seconds. *There are too many unknowns! How can I make the right decision when I don't know what's going on?*

He could not bear the thought of losing Irene again, but he also had to save the girls. After a brief moment he made his decision. He would spend a few precious minutes trying to free his wife. If he failed, he would be forced to leave her behind and come back for her after the girls were safe. A part of him wondered if he would be able to simply walk away from Irene, but he pushed that thought aside. He fervently hoped it would not come to that.

Tom thought desperately for a moment. What did he have with him? He had an air tank, but he didn't dare use it as a hammer to bash the casing open. It was too dangerous – he risked rupturing the suit, which would kill Irene. But how could he crack the casing open without harming what it contained?

Tom felt his suit pockets to see what he had with him. He pulled out his pencil radio – and an idea occurred to him. Harmonics! The planet had no atmosphere in which sound could

be propagated, but perhaps he could use radio waves. If he could find the right frequency he might be able to set up a resonant vibration in the rigid casing that would crack it open. It was a slim hope, but it was all that he had.

Using his pencil radio, he adjusted its output to transmit a high-frequency tight beam, which he aimed directly at Irene's repelasuit. He was hoping that the material in the shell would react to it, but there was no visible effect. He then increased the output of the transmitter until he had maxed it out. He knew that Bud was probably detecting the transmissions and would wonder what Tom was up to, but he could explain it later.

Tom then carefully went up and down the frequency range, looking for one that would have some effect on the crystal coating. He knew that time was passing, and he knew he had to act fast. If this didn't work—

Then Tom saw faint cracks starting to form on the shell. He couldn't turn up the power any more, so he tried fine-tuning the band, looking for just the right frequency. His heart leaped as he saw the cracks begin to spread, and then connect with each other. He waited, and waited—

—and then, all at once, the shell shattered. Tom immediately heard Irene's voice come over his suit intercom. “Tom! Tom, can you hear me? What are you doing?”

“Irene!” Tom exclaimed. He helped her to her feet, and dusted the crystal shards off her suit. “Are you ok?”

“I think so. I just couldn't move. After the blaster exploded — or whatever happened to it — this gas rushed down the tunnel and hit me. The next thing I knew I was lying at the bottom of the tunnel. I tried contacting you but I never got a response. It was like you had just disappeared.”

“It's the material,” Tom explained. “Apparently it blocks electromagnetic radiation. It completely masked your infrared signature.”

“And you somehow used your pencil radio to shatter it?” Irene asked.

“I was using harmonics,” Tom explained. “I was looking for a

resonant frequency.”

“But that doesn't make sense! Harmonics is a function of sound, and you need an atmosphere for that. This planet doesn't have an atmosphere. Were you trying to set up a resonance cascade using electromagnetic waves?”

“Well, the material's crystal lattice seemed to absorb electromagnetic energy,” Tom explained. “I was hoping it had a weakness – some portion of the signal along the band that it couldn't absorb. By overloading it, I was hoping to cause the material to start vibrating and ultimately fail.”

“That's not harmonics,” Irene replied. “That's totally different.”

“I guess you're right. Bud doesn't usually ask a lot of questions, and being specific just confuses him. I'm not used to going into that much detail.”

“Look, we can argue about this later. Don't we need to be going? How much time do we have left?”

Tom glanced down at his watch and paled. “Not enough. Come on!”

Tom grabbed the air tanks he had put down and Irene did the same. They then pushed a button on their suits, and the repelasuits sprang to life and raced down the tunnel.

“So you didn't see what happened to the earth blaster?” Tom asked.

“Not really,” Irene replied. “I just saw a big flash of light, and then it all went dark.”

“That might have been the blaster shutting down,” Tom remarked thoughtfully. “If it had exploded we would have felt the tremor in the ice. In fact, an explosion might have brought the entire tunnel down on us! I bet the blaster just turned itself off after—”

Tom's suit suddenly came to an abrupt halt. Ahead of them, encased in the ice, was a giant city. The lights on their repelasuits did not penetrate very far, but they did give an impression of the city's monstrous size.

Directly ahead of them was a hole that had been punched

cleanly through a gray metal wall. Covering the hole was a white translucent substance. Beyond the hole they could see the earth blaster, which appeared to be resting in a large room.

“So it did work,” Tom said. “It made it through the wall just fine. Then something sealed the rupture.”

“And sealed me as well,” Irene added. “The city must have somehow detected me.”

Tom stared at the hole, lost in thought. “This is going to be a bit tricky. I can use my pencil radio to create another rupture, but I bet it will just seal itself again. Only this time we might *both* be trapped, with no way to get out or call for help.”

“But there was a delay,” Irene pointed out. “There was a gap of several seconds between the flash of light and the time the gas hit me. If we're fast, we might be able to crack it open and slip inside. I doubt the city will touch anything that is *inside* its walls.”

Tom glanced down at his watch. Irene looked at him, concerned. “We're almost out of time, aren't we?”

“It's now or never,” Tom replied tersely. “We don't have the time to find a different solution.”

“Then do it,” Irene said.

Tom took the pencil radio out of his pocket, but Irene stopped him. “Can we set up our suits to force us inside as soon as the wall shatters?”

Tom stopped. “Why yes, we certainly can! That's a great idea. The computer can react instantly and move at superhuman speeds. We can be inside less than a second after the rupture.” Tom looked down at the controls on his arm and tapped a series of commands. He then did the same to Irene's suit. “There. As soon as the rupture appears we'll be launched. At least, in theory. I haven't actually tried doing this before.”

“We'll just hope it works right the first time,” Irene said.

“Usually things fail catastrophically the first time,” Tom remarked, as he began tuning the pencil. “It generally takes a couple iterations before I work out the bugs.”

“We don't have a couple iterations. We have about sixty

seconds before Sandy and Phyl run out of air. It has *got* to work right the first time.”

“It will,” Toms said nervously.

After making sure that the frequency was set to the same setting that he had used to free Irene, Tom closed his eyes, said a silent prayer, and then turned the power on the pencil up to its maximum setting. When he opened his eyes he saw that cracks were beginning to form in the translucent barrier.

“Tom!” Irene shouted. “You did tell the suits to stop after we got inside, didn't you?”

Tom thought for a moment. “Um—”

“Thomas Alvin Swift! Do you know what will happen if we don't stop? We'll slam into the far wall at 90 mph!”

Irene quickly punched a button on her suit arm. She then reached over and grabbed Tom's arm – but it was too late. The shell shattered into a thousand pieces, creating a giant hole. That same instant the two repelasuits roared to life and threw them into the room. Irene felt as if a mule had kicked her. As she screamed her suit slammed her to a halt, ten feet inside the room. She winced in pain.

Tom, however, did not stop. His suit blazed off across the room and slammed into the far wall. The air tanks he was carrying bounced off the wall and went flying across the room.

“Tom!” Irene screamed.

CHAPTER 5: A SHOCKING VICTORY

AFTER TOM SLAMMED into the far wall, he instantly lost consciousness. The repelasuit crumpled to the floor, where it lay still. Irene ran over to him. She gasped when she saw that his faceplate had been completely shattered. His helmet was cracked, and large pieces of it were missing.

Panic gripped Irene. She didn't know what to do. The gashes were too large; she couldn't just cover them with her hands. She had air tanks with her, but without a seal they wouldn't do any good. Besides, Tom's suit was now depressurizing. Any minute now—

That was when she realized that Tom's suit wasn't depressurizing. But how was that possible? She glanced down at the screen on her suit arm and saw that the room's atmospheric pressure was normal. They were not in a vacuum. Moreover, the environment in the city was breathable. There was plenty of oxygen.

The reading was so bizarre that Irene actually checked it three times. She couldn't believe that here, in an abandoned city at the bottom of a frozen ocean, there was an Earth-type environment. It just didn't make any sense.

Irene then heard muffled voices. She turned around and saw Sandy and Phyl rush toward them. To her surprise, neither of them were wearing helmets.

As Sandy rushed over to her brother, Irene took her helmet off. “Sandy? Phyl? What is going on here?”

Sandy grabbed Tom's arm and checked his suit readout. She then winced. “Ouch. Poor Tom! He'll live, but he's going to spend

some time in the hospital. He's got a broken arm, a fractured wrist, and three broken ribs. What happened to him?"

"He forgot to tell his suit to slow down," Irene replied. "I tried to fix it but didn't have the time. We were kind of in a hurry to get you two some more oxygen."

"Oh, right," Sandy said. "Goodness! We would have been running low by now, wouldn't we? I forgot all about that. You must have been so worried about us. In fact – wait a minute – what are you two even doing here? Weren't you two on Earth?"

"We were, but when Tom heard you were trapped we raced here at top speed. We got here as fast as we could."

Phyl spoke up. "We've been trying to get in touch with the *Osprey* but our suit radios don't seem to work down here. We haven't been able to get the weird robot guys to help us. They somehow knew what kind of environment we needed, and they provided that for us here, but other than that they've kind of left us alone. They're not really very communicative."

"We think they read our suits," Sandy added. "I'm not really sure though. They seem helpful, but I don't know how to use them."

Irene looked around. "I don't see any robots around here."

Sandy pointed to a glowing sphere on the far wall. "That's one right there."

"Oh," Irene said, taken aback. "I thought that was a light fixture."

Phyl nodded. "Yeah, we did too, until they started moving around and stuff. We're pretty sure they're robots. We haven't seen any actual people around here."

"Or aliens," Sandy added.

"So what do we do now?" Phyl asked.

"Well, we need to get Tom medical help," Irene said. "He'll be unconscious for a while, but he's going to be in a lot of pain when he wakes up. Are you two wearing repelasuits?"

"Of course," Sandy said.

"All right. Then we can get out the same way we got in. The *Challenger* is at the top of the ice canyon, just a few miles away.

Our suits should be able to get us up there without any trouble.”

“But what about Tom?” Sandy asked. “He can't possibly leave with that broken helmet!”

“You're right,” Irene said thoughtfully. “Besides, it would probably be best to get Tom medical attention before trying to move him. Is there a medic on the *Osprey*?”

“Yes, there's Doc Simmons,” Phyl said.

“All right. In that case, you two stay here. I'll go out and tell Bud to send the doctor down, and to be sure to send an extra space helmet along with him. I'll meet Simmons outside and bring him here. After he has tended to Tom and stabilized him, we can all head back to the *Challenger* and get off this awful planet.”

“I think that works,” Phyl replied.

“It's really not an awful planet,” Sandy added. “I admit it's kind of dark outside, but the city is fascinating. I really feel bad about all the trouble you went to get here! We were fine. I would have told Captain Hewitt, but there was just no way to communicate.”

“Well, we weren't fine, exactly,” Phyl said. “We were trapped here without food and water. That would have gotten old eventually.”

“True,” Sandy admitted. “But they didn't have to be in such a big hurry to get here. I wish we could have told them. I hope you and Tom didn't take any risks, or anything.”

Irene smiled. “Well, you know Tom. He wouldn't be a Swift if he didn't take insane risks. But I really need to be going. Is there anything else you need?”

“No, we're good for now,” Phyl replied.

“All right, then. I'll be back shortly. Take care of Tom, will you?”

“I will,” Sandy promised.

* * * * *

It took more than an hour for the entire party to return to the *Challenger*. Irene came to hate the process of passing through the

city's protective barrier. It worked every time, but the sudden push of the repelasuit was jarring. She knew that she would be sore for days – and she was already in pain from the time the repelatron donkey crashed.

After the doctor took care of Tom and fitted the replacement helmet on his repelasuit, the five of them prepared to leave the city. To their amazement, when they went to exit through the barrier one of the robots came over and actually opened it for them. It had somehow sensed what they were doing and tried to help. Irene was very curious about the little machines, but they had to hurry on to get Tom to the *Osprey's* medical bay. There would be time enough to explore that later.

As soon as the group had boarded the *Challenger* Bud launched the ship off the planet. It only took him a few minutes to enter orbit and dock with the *Osprey*. While Phyl and Sandy contacted Earth to let their parents know that they were fine, Irene and Doc Simmons transported Tom to the *Osprey*.

Tom did not regain consciousness until he was in that ship's medical bay. His injuries were extensive, but not life-threatening. The doctor strictly commanded Tom to stay in bed for at least six weeks. Irene promised the doctor that his orders would be carried out.

After Doc Simmons left the room Irene spoke up. “This is like old times, isn't it?”

“Old times?” Bud asked.

“I got hurt when working on the hyperplane project,” Tom explained. “Irene had to take care of me for a while.”

“That's right,” Bud replied. “I remember hearing about that! It was the first in a long line of project-related injuries. Boy, I would hate to be the guy who had to pay all your medical bills. You have really racked up the injuries! I was there for all the others, but I missed that one. It was before my time.”

It was the only one I was there for, Irene thought to herself. When I died Tom was a disgraced inventor, infamous for causing the world's first nuclear accident. Now he's a world-famous superstar – the first man in space, the first man on the moon, the

first man to travel to another star system, and the inventor of the future. And I missed all of it.

Oh, Tom, why didn't you just let me go? In my final message I told you to leave me in peace. I wanted you to move on, not spend your life trying to get me back. You and Bud changed the world together. I feel like a third wheel – or an outsider, looking in. You and Bud have a lifetime of memories that I will never share.

Tom noticed that his wife and grown quiet, and he looked at her with concern. “Is something wrong?”

“You don't call me 'Ace' anymore,” Irene replied. “And I never got those pencils I asked for.”

“The pencils?” Tom asked, confused. “Oh, right. I made you a set – honest I did! I even made a special trip and put them on your grave. They're probably still there, unless someone stole them.”

“Well, I would like a new set,” Irene replied. “I'll add that to your list of things to do once you get out of those casts.”

“There's no need for that. I'll just call up Arv and have him make you some. It's not a big deal.”

Irene shook her head firmly. “Nope. I could do that myself – I have his number, you know! For that matter, *I* could build them myself from your blueprints. I want *you* to make them. Add some pizzaz. Show me what you've learned. I bet you haven't upgraded them in years.”

“I actually haven't,” Tom said thoughtfully. “And I did use to call you Ace, didn't I? I'd forgotten about that. I don't usually call people by their nicknames anymore. I guess I've changed.”

“You call me flyboy all the time,” Bud pointed out.

“I suppose I do,” Tom said thoughtfully. “I never really thought about it.”

Bud spoke up. “So what now, skipper?”

“Well, I still need to build my electronic star,” Tom replied. “Once we melt the oceans, perhaps we can establish contact with the robots that still live in the cities. There's a lot that we can learn from them! I'm amazed at how they've been able to survive all this time in such an inhospitable environment. I'd also like to find a better way to get through that protective barrier. All in all, I'd

say that we have enough on our plate to keep us busy for months to come.”

“And you don't have to do it alone,” Irene added. “You are going to stay right there in bed until those bones heal. Bud and I can do the heavy lifting until you're well enough to get up and about.”

Tom nodded. “You're exactly right – and I'm very lucky to have both of you! I don't know what I'd do without you.”

“You'd probably starve to death,” Irene said, grinning. “I don't know how you managed to survive all these years without me.”

“You can thank Chow for that,” Bud replied.

The quip was lost on Tom, who was already deep in thought. He grabbed a pencil and a notebook, and began drawing. “Now, here is how I think this planet's new star should be designed. If we begin by assuming that it should orbit the planet, and not the other way around, then we can use that to determine its optimum orbit and radial heat level. According to my calculations...”

The three of them spent the rest of the day in that room, listening to Tom describe his plans for the dark exoplanet. They did not know it, but their work on that sunless world was only beginning. Their adventures would be continued in *Tom Swift and His Electronic Star...*