

The TOM SWIFT Invention Series

# TOM SWIFT

And The  
Atlantean HydroWay



By VICTOR APPLETON II

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And The  
Atlantean HydroWay

BY  
Victor Appleton II

Made in The United States of America

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THE NEW TOM SWIFT INVENTION SERIES

# Tom Swift And The Atlantean HydroWay

By Victor Appleton II

Tom Swift has been involved in numerous undersea adventures, even attempting to create an undersea tunnel in the North Atlantic—it was sabotaged, destroyed and abandoned before it might be completed. His transcontinental bullet train for hauling freight across the nation in less than a day has been operating for nearly five years now with not a single interruption.

However, when a request from a European Trade Commission comes in requesting something that would basically combine the two, he has to believe it is hardly possible to run a train underwater.

The more he examines the possibilities, the more convinced he becomes that it is not just feasible, it is absolutely possible.

When a tandem rail project for Canada appears to fall through at the last moment, and the Europeans appear unwilling to stop asking for changes, an enemy seems to be engaged in some sort of attempt to harm Swift Enterprises' reputation and even Tom himself. In spite of this, Tom is all the more determined to make it work.

The two things in his way are the sheer magnitude of the challenge and the fact that trying to drive a train underwater is about as easy as flying a jet through mud!

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This book is dedicated to the people who have braved the deepest parts of our world's oceans and come back to tell us about it. From William Beeble and Otis Barton who made it down to the unimaginable depth of 3,028 feet in a hollow steel ball in 1934 to James Cameron who got to the deepest point of the world's oceans in 2012, and all the men and women of the various Navy and research submersibles who've managed to travel in between those depths with incredible willingness to go into harm's way on a daily basis.



“Bud, I’ll bet that wreck is one of the missing military planes that supposedly disappeared down here in the Bermuda Triangle!” **CHAPTER 8**

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## AUTHOR'S NOTE

Tom Swift has conquered land, ocean, sky and space in his first twenty-five years of life and work. He's engineered such things as a floating-on-air highway over a swamp that could swallow a skyscraper, a bullet train to haul heavy freight across the country in a matter of hours—not days or weeks—set up a colony on Mars, and many other amazing things.

Now, one of his successes appears ready to spawn a new version, and yet another new one only this third one may try to crack the “impossible” barrier.

That is what your author is up against, once again. A barrier. This is the nineteenth adventure in this series and the hope has always been to explore new and interesting things, not rehash a lot of old stuff.

But, how many new things are there? No, really. How many? Tell me!

I am not completely out of ideas, but my store of ready-to-go future titles is dwindling. Of course, my original intent was to create a solid dozen adventures. I've done eighteen. I say I've got a couple left but probably have at least another six in me making this series come in at twenty-four novels.

Here's my promise to you: keep buying and reading and I'll keep writing! At least for the next few years.

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Copies of all of this author's works may be found at:

<http://www.lulu.com/spotlight/tedwardfoxatyahoodotcom>



My Tom Swift novels and collections are also available on Amazon.com in paperback and Kindle editions. Barnes and Noble sells Nook ebook editions of these same works.

**Handcrafted hardbound versions of the Tom Swift books are available by private order: [tedwardfox@yahoo.com](mailto:tedwardfox@yahoo.com)**

# Tom Swift and the Atlantean HydroWay

## FOREWORD

How many great feats of engineering have there been? Hundreds? Millions? Billions? Whatever the number, it is a certain bet that not nearly enough of them have been in the depths of our oceans.

Tom's own deep sea hydrodome system making reclaiming the golden undersea city possible along with the helium wells is one of the greats for sure. His Jetmarine and seacoasters? Positively. His electronic hydrolung has opened great levels of the oceans for personal exploration. But these have all been small things.

What might have been his greatest underwater feat fell to the hands of sabotage.

He has not been alone. Great feats of deep diving have been accomplished. Travel under the very polar ice cap of the world happened 60+ years ago. The British ring of underwater nuclear reactors that finally made them power self-sufficient and not reliant on France. But everything has been compact. Self-contained.

Nailed down in one relatively small spot!

Tom and Bud's newest adventure is about to take them into a new realm where everything is easy and has been done thousands of times before, except those were all on dry land and not thousands of feet under the oceans where pressures are so great that attempting to move through the eternally-black realm is akin to swimming through molasses.

My only comment was, is and will always be, "Wow!"

But first he takes a little side trip north of the border.

*Victor Appleton II*



## CHAPTER 1 /

### A NEW TRANS-CANADIAN RAILROAD

“HEY, TOM,” called out Hank Sterling, the tall, muscular engineer and chief pattern maker for Swift Enterprises. “Hang on a sec. I need to run something past you.” He came jogging over to the young man who had been heading the opposite direction.

Tom was hiking from the ground-level entrance of his underground lab and office—also the parking place of his first major invention, the *Sky Queen*, his triple decker Flying Lab—over to the Administration building where he and his famous father, Damon Swift, shared a large office. The walk was about fifteen hundred feet in the middle of the four-mile-square research, industrial and aerospace company’s walled property.

“What’s up, Hank?” the young inventor asked running a hand up and through his somewhat shaggy, blond hair. As of late he had been allowing it to grow out a bit. Gone was the short-cropped crewcut of his youth and teens to be replaced with something that needed a comb every now and again.

Coming along side his young boss, Hank grinned. “Well, for starters good morning, skipper. Then, I have just received the latest test information on that new alloy we came up with last month.” He shook his head. “I don’t know how you do these things, Tom, but that combination of metals has some incredible properties. First, it is incredibly strong, but we did some extra testing over the weekend and guess what we discovered.”

Tom stopped walking and turned to face his engineer and friend. “Anything to do with its resistance to heat once forged and cooled?”

Hank shook his head. “Naw. We already knew that one. Take another guess.”

Tom grinned. He began walking again. “You do realize that after all these years we’ve known each other that I don’t like riddles, right? That I have to either get the answers from people like you or go on a search for them myself.”

“Well, you and Bud, usually,” Hank returned referring to Tom’s best friend of a decade who was also his brother-in-law, Bud Barclay.

“Yes, and often you and Arv Hanson and Red Jones and, Chow Winkler and... well a host of others. So, please do not keep me in suspense. What is this amazing thing you have discovered about

the GalioCupreTanium mixture?” This latest experimental metal alloy consisted of nearly equal parts of Gallium, Copper and Titanium with about five percent Gold and a smidgen of Molybdenum. Tom wanted an alloy that could be used for the skin of a new hypersonic probe the U.S. Air Force was having Enterprises build for them. It not only had to be strong and very light, it also needed to have almost zero drag and be capable of shedding the enormous heat built up at hypersonic speeds as quickly as it built up. Even his father’s famous tomasite would not do as it could not be made smooth enough, even when applied as a spray.

Hank said in a low, flat tone, “It gets stronger.”

Tom stopped a second time. “Say that again, please?”

“It actually gets stronger. The more pressure you place on it, like the dynamic pressure of forcing itself through the air at Mach 8, the stronger and more resilient the metal becomes. Pressure off and it goes back to normal.”

They stood there for a minute while the inventor mulled over this information. Turning and making a “follow me” motion with his right arm, Tom started walking faster than before toward their destination.

“I want dad to hear this, Are you ready to give a three-minute description?”

“I am always ready, skipper.”

They entered the building by the side doors and headed up to the second floor using the stairs. The nine-hundred-foot-long building housed all the administrative, legal, and data processing groups for the company. Down the middle of each corridor—because of this length—ran a ride/walk belt system. You could walk along the sides closer to the walls of the twelve-foot hall or you could step onto the belt and move along at about triple normal walking speed.

The two men only had to go about a third of the way so they chose to stay to the sides. As they got even with the office they turned right and into the fairly large outer office manned by Damon’s super-efficient secretary, Munford Trent.

“Hey, Trent. I’m assuming dad is in. He called me over fifteen minutes ago.”

“Absolutely, Tom, and hello, Hank. Can I get either of you something to drink or a warm pastry?”

“I could probably murder a big mug of coffee, Trent,” the

engineer admitted, “but I’ll pass on anything sweet. Thanks!”

“Coffee for me as well,” Tom said.

The two men entered the large office.

To their left were the eight overstuffed leather chairs and low table that made up the conference area. Hanging above it was one of Tom’s 3-D Telejectors, an amazing device that could send out three-dimensional images of anything being fed it—from videos to charts and photographs. Tom’s desk and file storage area was nearby and his father’s desk area took up much of the back, left corner. Five large windows looked out over the western portion of Enterprises and the right side of the office was a combination of many storage cabinets and shelves that held scale miniatures of nearly all Damon and Tom’s inventions.

“Well, to what do I owe the pleasure, Hank? I called for my son and I get a two-for-one.”

“Hi, Damon. I stopped Tom on his way here to give him some news on the new alloy we’ve been tinkering with, and he thinks you need to hear one of the findings.”

“Fine.” The older inventor stood up and came out from behind his desk. “Let’s all take a seat. Is Trent getting you two anything?”

They nodded.

As they sat a soft knock came on the door and it opened. Trent stepped in with a tray holding a carafe and three mugs. He set it down next to Mr. Swift and left the office.

“So,” Damon requested as he poured and handed out mugs, “tell me what this is about.”

Tom reminded him of the Air Force contract and the need for a super slick and strong material for the outer skin.

“Don’t think that detail hasn’t been high on my list of things to worry about,” Mr. Swift told them. “I sense an end, or at least a partial one, to that.”

“We tried to ultra-polish tomasite, but you know how difficult that is once the stuff is hard. We tried special coatings and even molding things in zero-G up at the new Space Station Beta. By the way, kudos to you guys,” Hank said with a smile, “that new station is an absolute marvel. I spent a week up there recently and had to be dragged back down here. It has just about everything a person could ever need. Heck, I can see you attaching some engines to it and taking it for a spin out to Alpha Centauri!”

“Careful what you wish for, Hank,” Tom said with a grin.

“Well, anyway, Damon, Tom decided to try for an all new metal alloy since going the plastic and polymer route was not going to do it. We tried, what, skipper? Nineteen combinations before even getting close? Now with the five basic metals identified we tinkered with proportions. I won’t bore you with them right now, but suffice it to say that some extra testing my team did with the folks in Metallurgy gave us something we weren’t even trying for.”

He told of the incredible property for the metal to actually become stronger the more pressure placed on it.

“And, once that pressure is off it goes back to what it was before.”

Damon rubbed his jaw, a gesture he and Tom shared when thinking about something.

“What about fatigue? As in, does this temporary strength and back to normal weaken the metal after a certain number of cycles?”

Hank shook his head. “Not so far with the fifty cycles we put it through, but I’ve got the metals people continuing with the tests. I’ve asked for one-thousand cycles as a start. But, even if it fails at, oh, let’s say nine hundred, what a boon for some other uses like the Air Force one, and I know you hate this, Damon, but let’s be real. If they start building missiles with their new hypersonic rocket engine then they hardly need the skin to last very long at all.”

Damon shook his head a bit sadly. It was well known, both at Enterprises and within the United States Government that he refused to build weapons, and really preferred to not build the platforms from which they might dispense death and destruction.

But, he was a realist and knew he could not turn the ways of mankind, and so he built anything up to, but not including, things with which to wage war.

“I am incredibly impressed with what you’ve just told me, Hank. You, too, Tom. I’ve been a little worried about our being able to complete this contract. Not that it is an incredibly rich one for Enterprises, but in the back of my mind I’ve wanted to come up with a viable replacement for the old supersonic transport jets of the late twentieth century. So far, and with three attempts, no company has been able to reopen that market. Too expensive to develop.”

Tom nodded. “Right. And the closest one never cracked the whole aircraft skin problem. Far too much heat and far too little Titanium to go around. Plus we can’t make enough tomasite to outfit very many vehicles outside of our own needs.”

The three men talked about a few other things going on in the

company while they finished their coffee, then Hank excused himself.

“What did you want to see me about, Dad?” Tom asked as the door closed behind the engineer.

“Ah, yes. Almost forgot. Let me grab something from my desk,” he said standing up. He was back a moment later holding a small black cube which he fit into the control panel for the Telejector. Seconds later the area over the table darkened as the automatic light controls dimmed the office, and a picture popped up.

“Recognize that?”

“I sure do,” Tom replied. It was the newest of his bullet train locomotives that plied a transcontinental system of tracks and allowed one-hundred-car trains to race from the West coast to the East coast in well under twenty-four hours. To the original tracks and tunnels constructed nearly seven years earlier had come a north/south track from Chicago down to Houston, Texas, and another pair—one from Boston to Miami and the other, newest one from San Diego to Vancouver, British Columbia.

That new route was enjoying Tom’s new, slightly smaller yet more powerful locomotives.

“No problems, I hope,” he said looking over to his father.

With a small chuckle, Damon replied, “Not a problem in sight, but an opportunity. Canada wants their very own line from the Vancouver terminal running close to the Trans-Canadian Railroad.”

Tom scowled. “Do you have a map of that route?”

“I do. Here,” Damon told him bringing up a colorful map of all Canada.

“That is what I thought,” Tom said pointing at the early portion of the west-to-east run. “It jumps all the way up into the central part of Alberta and then winds its way all around, up and down out to the eastern end. Do they really want us to follow that?”

Damon shrugged. I’m not certain they are of the mindset that it could be anywhere else, to tell you the truth. Personally,” he said picking up a stylus and a small electronic pad, “I’d rather see it go like this.”

He drew a straight line east from Vancouver to Winnipeg, took about a twenty degree left turn north to a point over the Great Lakes and then another straight line to Montreal.

“That is their planned end point.” He tapped the right side of the map.

“Do we have any idea of the mileage difference? And, what about servicing Toronto?”

“We have an approximate distance that I did. They list their line as covering about thirty-four-hundred miles. If we took a straight shot it would cut off slightly more than one-thousand miles of track and travel.”

“Plenty compelling a reason to go straight, I’d say,” Tom stated.

“I agree, unless they have a reason for the round-about path. Or, that they like frequent stops.”

“Right...” Tom said cautiously, “but that sort of means the whole bullet train speed gets reduced about to the point where you don’t gain all that much over traditional ones.”

“I agree, but if it is their money it is their show. As to the Toronto issue, I have the feeling this is one of those French Canadian things that we need to tread lightly around.”

Tom nodded. “Okay. But I do want to ask about it at some point. Who can we speak with about this?”

Damon shut off the Telejector and looked at his watch as the lights came back up.

“His name is Damien Cremmiens, and he is the Consul General’s Technology Aide in the Canadian Embassy in Washington. He’s going to arrive at our private aircraft terminal in two hours. If you are free I would like to have you come along. The meeting will take place out there with a catered lunch and then he will go away after no more than two hours. At least, that’s what we’ve been told to stick to.”

Tom smiled. “Is Chow doing the catering?”

Charles “Chow” Winkler was the chief chef for Enterprises and the personal chef for important meetings, for the executive dining room and for the Swifts.

“Of course he is! We even had a little birdie let us know the Aide loves southwestern-style chili, so Chow has been working on a batch of his winning no-meat chili from that contest he won.”

“Great! Count me in. Uhh, is it okay if I come back in an hour or so? I promised I’d meet Bash at the Doctor’s office in about twenty minutes. It’s little Bart’s first set of inoculations, and my darling wife has been reading some very disturbing and totally unsubstantiated muck about how vaccinations harm kids.”

Damon nodded. For several decades a few determined and uninformed people had pontificated that it was vaccinations that were responsible for a rash of childhood problems. Everything

from learning disabilities—most of which had been around in similar or lessening numbers for decades—all the way to deaths.

And, even when it was finally proved that a specific growth hormone being given to cattle in their feed, when mixed with the scorching heat of fast-food grills and a few other additives, to be the root cause of many, the other rumors persisted.

“Remind your wonderful but overly cautious wife that both you and Sandy had the full range of inoculations as both babies and infants, and that we kept giving you all the booster shots as you grew up. I may not be a medical professional, but I’d say you turned out to be just fine.”

“Thanks, Dad, I’ll do that.”

With Tom holding her trembling hand, Bashalli put on a brave face for little Bart. For his part he looked into the nurse’s eyes, laughed and said, “Stick Bart,” and sat still while the tiny needle went into his upper arm. His little face scrunched up as it was removed, but he looked at Tom and the smile came back.

“Dadda getta stick?”

“I hate to ask this, but is it possible for you to give me a non-injection? Just a needle stick so my son knows this is normal and not to be feared?”

She said she would need to get a doctor’s permission and left, but returned a minute later and made a big show of giving Tom his “shot.”

Bart thought it was about the funniest thing in his entire day and practically shrieked with laughter.

When he returned to Enterprises it was just in time to drive out to the civilian terminal near the southwest corner of the property. Designed to host up to one hundred people at a time, it was mostly a large waiting room with two special meeting rooms on one end.

Cremmiens’ jet, a small Canadian manufactured one with government markings, pulled up to the terminal right on schedule. The man—too tall to have been comfortable inside the small airframe—came out, straightened up and came down the short set of steps to shake hands with Damon and Tom.

Introductions were made during which he insisted they call him “Dami,” and they moved into the terminal. The Canadian had three other members of his team with him and each one came outfitted with a large briefcase.

“So, Damon and Tom, I will get to the point. Your transcontinental freight system is a model we watched being built

with suspicion. To tell you the truth, it was being bet on you would fail. Not me, mind you, but others. Anyway, when you finished the West coast run up to our Vancouver it opened up a new era in shipping that had previously either been accomplished via far too many trucks or by slow shipping at sea. In any case we have been of the opinion that our trade imbalance has been in part due to the ponderous nature of our old available shipping methods.”

Damon said, “We have been watching the amount of goods coming down from Canada and even the numbers of shipments heading south of the U.S. and Mexico border. It is quite remarkable.”

Dami smiled. “It is more than remarkable, Damon. It has meant continued life for at least a dozen companies in British Columbia. What I am here to ask about is extending that so the rest of Canada can take advantage.”

“May I inquire if your request is only for an east to west route, sir, or do you envision tying into our eastern seaboard line?” Tom asked.

“That is an astute question, Tom. Unfortunately there are certain elements in our government that think only of Canada as a self-contained nation. They see interaction and cooperation with the United States as a sign of weakness and something that might bring the possibility of a loss of our national identity.”

“How?” Tom wanted to slap a hand over his mouth; that had just popped out.

Cremmiens saw his discomfort and laughed. “Don’t worry, Tom. I assure you I am not part of that faction. No. In fact I want the eastern two-thirds of Canada to see a similar increase in exports as BC has. And, before the question comes up, I know how ridiculous it would be to ship things from Montreal or Toronto or even Halifax out to Vancouver, then train it south to the terminal near San Francisco, transfer it to another train heading east and then ship it on a third train to some place like Florida.”

Ton nodded. “That would add far too much handling time and costs. Can’t your nay sayers see that?”

Dami looked sad when he responded, “Unfortunately, these are the same sort of people who believe that if we give away millions of taxpayer’s dollars for such things as tax breaks for television programs that will only ever be seen once and by fewer than a few thousand people, those dollars will show our determination to have Canada supporting Canadians. In point of fact, all it does is make those production companies lazy and uncompetitive. It is the same with dozens of other industries.”



They spent the next half hour discussing the possible routes before Chow wheeled in the lunch.

Around mouthfuls of the chili, Dami told them there would be a need to stop the train at least three or four places on its trip, being at Calgary, Edmonton, Winnipeg and Ottawa. He also mentioned that an extension might be considered to take the line end down to Toronto.

“Again, there is some push from the Quebecois to halt the line at their front door and not provide ready access to the city they consider to be their rival.”

Tom had been running computations on his tablet computer. He now raised a hand.

“I’ve run the numbers and it isn’t looking all that great given all those stops. If you figure an hour at each one to transfer off some cars and add on others, plus the deceleration and acceleration times, I come up with a cross-country time of two days, eighteen hours.”

“But, *your* trains make a longer journey in one day!” This came from one of Cremmiens’ associates who spoke with a distinct French Canadian accent.

“This is true, but that is for the non-stop cross country trains running fairly straight routes. The ones stopping at the north to south terminal in the middle of the country require three additional hours. Multiply that by four stops plus the evident requirement to follow the current Trans-Canadian Railway line of ownership, and you would be traveling slower on each leg. You would never see top speed.”

“This is intolerable!” the other man declared, shooting to his feet and shaking a fist at Tom. “It is people like you damnable Americans who keep Canada from being the world power she rightfully is!” He stalked from the room.

Cremmiens looked at Tom and Damon. “See what I have to work with? It will be incredible if this project ever gets off the ground.”



## CHAPTER 2 /

### THE NOT-SO-EASY SURVEY TRIP

TOM HAD no time to react other than to sit, open-mouthed, as the angry young man slammed the door behind him. But, a thought hit him and he hoped he wasn't going to be out of line.

“Is that real anger on his part or does he believe it is a good negotiating tactic to shout at the people who might help you?”

Cremmiens shrugged. “Truthfully, I do not know. He was added to my retinue only this very morning and at the request of a different Minister than my own. I shall have to report this outrage on his part as soon as possible. May I have a moment to make that call?”

Damon ushered him into a soundproof side room designed for such private conversations.

When Dami came back out his face was red with the anger he obviously was feeling.

“Please alert your Security people to come here, board the aircraft and take that man into custody.”

His words sent a shock through the two Swifts. While Tom used his TeleVoc pin to call for Harlan Ames, Security Chief for Enterprises, Damon explained the technology his son was using.

The young inventor silently intoned, “Harlan. We appear to have a situation here that may have international implications, but the head of the delegation from Canada has asked we take one member of his group into custody.”

“Not to worry, skipper. I have three men outside the terminal over there and they just reported an angry man came out, flung a rather heavy briefcase at them and tried to escape across the tarmac.”

“Did anyone get hit?” Tom asked, alarmed at the violence.

“Of course not. I actually train my people to duck. It is not a dying skill at Enterprises. Anyway, assure your visitor the man is on his way to one of our not very spacious holding cells in cuffs. I'll have him in cell B when you can get here.”

Tom ended the call and reported what had transpired to Dami.

The tall man took a deep breath in through his nose and let it out through puckered lips. It was a yoga technique Tom recognized as one Bashalli sometimes used to calm down at the end of a stressful day.

“I am of two minds on this. But, you must know that the man who left here—and I apologize for his outburst—apparently managed to fake credentials and also the phone call I received before leaving for the airport. The Minister he says he represents knows nothing of him and did not assign anyone to accompany me today. So, my Minister is contacting our embassy in New York City to see how we should proceed.”

Tom looked at him. “In the mean time, how do we move forward on the train project?” This fast change of subject startled Dami, but he rallied.

“It is the hope of the Canadian government that you can undertake a coast-to-coast survey with the aim of determining feasibility and the most advantageous route. Unfortunately, it is doubtful at this time any of the mid-point stops would be eliminated. So, I beg your patience with us as we undermine the actual ‘bullet’ part of your train system.”

Damon looked at Tom who nodded slightly indicating his understanding this was the way it was going to need to be.

“When might you begin, Tom?” his father inquired.

“I have very little on my calendar for the next week, so if permissions can be obtained to overfly the entire... I suppose it will be the southern four-hundred miles of Canada, I could start the day after tomorrow. Is that possible, Dami?”

“I shall see to it, Tom. And might I add my thanks on this. Personally, I would rather see a single stop at Winnipeg. It is larger than Regina by about a factor of five and too far from Vancouver to be serviced comfortably while Calgary *can* be using the existing rail system.”

The Canadians left twenty minutes later after signing a letter of intent. A formal agreement would be couriered down the following day.

The angry man, who refused to identify himself and also seemed to have forgotten how to speak anything other than Canadian French, was left behind in Harlan’s cell. An official order of incarceration was issued by the RCMP who would have a small detail sent down to retrieve the man the next afternoon.

Tom decided to visit the man on the way back to his underground office. When he arrived, the prisoner was sitting on the small bed, his back to the door.

“May I come in and speak with you? You might wish to hear what I have to say.” Tom asked quietly. The man ignored him. Tom tried his somewhat simplistic knowledge of French to repeat the

last sentence. “*Vous pouvez entendre ce que j'ai à dire.*”

It was bad enough and his accent was terrible, but the man quite plainly understood him as he replied, “No américains sont tous des menteurs. Succès uniquement à l'quebecoise!”

In English Tom translated that. “Not all Americans are liars, whoever you are. Some of us are more patriotic to our nation than you will ever be!”

That, the man understood as he swung around, eyes glaring at the inventor.

“You know nothing of patriotism. How can you? You and your nation of liars and hypocrites.”

Tom shrugged. “Have it your way. Only understand this: the general population of Canada is not behind the Quebecois population over how to interact with the rest of the world, and especially the U.S. Where you see isolationism as the road to travel along, they see cooperation. If this rail project goes through it won't harm your sovereignty efforts. Heck, those have failed time and again all on their own!”

He left the man who was sputtering his denials of the facts.

Two days later the *Sky Queen*, with an atomicar and a Whirling Duck helicopter in the hangar, took off heading for Vancouver, British Columbia, the start of their survey.

Onboard with Tom was Bud, Hank Sterling, Zimby Cox and Red Jones as alternating pilots, two of the original transcontinental bullet train engineer/designers, Jim Adams and Scott Dykstra, and Chow. The latter arrived on the morning of departure complete with no fewer than eleven large boxes of foods.

“We're going to be gone only three or four days, Chow,” Bud reminded the western chef. “Looks like you packed for a month!”

“Complain if ya like, Buddy boy, but know we all gotta eat and there's nothin' written down that says it's gotta be all san-wiches. Heck, I plan on givin' you boys a good feast each and every night we're away!”

“And, you don't see how that shirt of yours might kill our appetites?”

Chow was famous for his gaudy shirts. For the recent couple of years his wardrobe had gone to more plain solid colors, but only because his diet had seen him lose enough weight so all his prized western-themed shirts no longer fit. But, in the past year he had been buying more and more of them, in his new, 95 pounds lighter size.

“Ya like it?” The shirt was a sort of blue never found in nature and was studded all around the collar with rhinestones that made the letters “C” and “W” up near the neckline.

“Well,” Bud cautiously started, “It’s okay, but isn’t having your initials a little bragging?”

Chow looked down. “Them’s fer Chow and Wanda, my wife! Why would ya ever—oh, wait, I see now. Chow and Winkler, right?”

Bud nodded. He picked up one of the last of the boxes from the floor and helped the cook stow it in a refrigerated closet.

The *Queen* landed at the Vancouver airport at noon Pacific time where they had been requested to pick up two passengers. The two women were waiting in an airport minibus next to the parking pad Tom was told to take for their fifteen minutes stopover.

“Welcome,” he greeted then introducing himself and the rest of the crew.

“Hi. I’m Mary Rodway and this is Helena Montgomery. We’re your Ministry of Transportation advisors, at least on paper, but we are both huge fans of what you have done with projects like this one so we are kind of like fan girls. If our whispering and giggling get to be annoying, tell us to grow up and we’ll try to act professional!”

Hand shakes were exchanged all around and the ladies—both about in their mid-twenties like Tom and Bud—were escorted to their quarters near the back of the upper level. They were shown to their rooms by Zimby who also demonstrated how to stow their suitcases, access the oxygen masks in case of an emergency, and took them to the emergency exit hatch.

“The skipper will want to give you the grand tour of the *Queen* once we get airborne, so for now let’s go back forward to the lounge and strap you in for takeoff.

The airport controller had requested Tom not use the vertical lifters in the ship, even though they were repelatron based and would do no damage. So, he taxied the plane to the end of the runway and waited for permission to take off. It came a minute later, and he slid the throttles forward. The *Sky Queen* was not a light aircraft and in horizontal mode required nearly the entire length of the available runway, so Tom cheated a little by adding some vertical thrust to the mix as they approached the midway point down the runway.

The Flying Lab left the ground and soared over the water to the west of the airport. Seconds later came the call to turn to the north and to a new course of zero-five-zero. He banked the ship and got it

lined up quickly allowing them to enjoy the sights of passing over the Burrard Inlet and seeing the city's Stanley Park from the right side and West Vancouver from the left windows.

Once they left the city limits, their permission from the Canadian air authority, the TCCA or the Transport Canada Civil Aviation, gave them complete autonomy to determine their best flight path so long as they remained in a corridor extending from two-thousand feet above sea level up to six-thousand. The exception to this was for climbing over the Rockies.

The decision had been made to fly a direct mapping route between the mandated cities regardless of terrain below on the first pass across the country. This they finished in under five hours before Tom reversed their direction. The two passengers had spent a lot of time sitting up front marveling at both the overall ship and the futuristic control panel that span the width of the front of the cockpit and was built as a single piece of curved high-resolution monitor. They also visited a few feet aft to the side room where Hank had been watching the SuperSight system, Tom's combination high-resolution camera and incredible video enhancement technology.

Shortly after turnaround Tom took the ladies on a tour of the *Queen*.

"She' a beaut," Mary told him. "Looks like she just came from the factory!"

Tom smiled. "Actually, she just went through a major refit. The electronics and flight systems have been updated periodically, but the interior was showing a lot of wear and tear. Like a fifteen year old car with carpet stains, a few rips in the upholstery and something strange that must have died under one of the seats."

Helena took a deep sniff. "Smells factory fresh to me."

On the outbound trip they had been recording everything visible below them and about twenty miles either side. For this second trip Hank was switching the SuperSight to measure and record all topographical changes. But they were doing much more. Tom had outfitted the jet a special version of his Damonscope that could look more than two hundred feet through solid ground to find various isotopes.

He thought to do this for two reasons. If he found anything that might be radioactive enough to cause problems he wanted to plan to avoid it, and he hoped that if there were some mineable ores along the route he preferred to take, it might sweeten the Canadian government's attitude about straying far from where the current rail lines ran.

There was also the ability to check density of the ground as they flew overhead. Although only to a depth of thirty or so feet, it would tell them with some certainty if there were any areas of potential trouble on any given route.

This cross country flight would be much slower than the first one taking nearly ten hours. It was necessary for the instruments to register their findings properly.

Twice the Damonscope sounded and whoever was piloting at that time stopped forward flight and came back over the location.

The first had been north of Michigan and turned out to be, from information the ladies were able to provide, a defunct uranium mine known as Elliot Lake.

“The ore played out back about a dozen years after they opened the first shaft,” Helena told Tom and Red, currently in the hall outside the SuperSight room.

Tom smiled at her as he looked over the readout from the Damonscope.

“Well, don’t look now but our instruments show there are thousands of metric tons of rich ore sitting about ninety feet down. Uh, about twenty-eight to thirty meters.”

The ladies looked at each other. Mary turned to face Tom. “Are you certain? I ask because that mine extends down only twenty meters. They hit too many pockets of water, most likely leakage from the Great Lakes, and called it a day.”

Helena asked, “Just how many metric tons do you believe are there?”

Uranium mining and refining had been a major industry in Canada for several decades and quality refined ore was always in demand.

“Well, let me look.” Tom studied the numbers and asked Zimby to move aside. After five minutes and performing several calculations he looked up. “Roughly sixteen million tons.”

A gasp went up behind him.

“And,” Tom went on, “that is just down to the two-hundred foot mark. There could be much, much more below that!”

Mary excused herself to go file a report with her Minister before the end of the work day.

The second find was an expected one, or nearly so.

In the northern quarter of Saskatchewan, were four operating mines, plus at least three defunct ones and three that were



expected to open within five years.

The *Sky Queen's* route skirted the southernmost mine, McArthur River.

As with their earlier detection, a new "hot" spot was overflowed about fifty miles to the south of that mine. None of the proposed mines were that far south.

Again, they hovered over the area, slowly making a wide circular sweep extending about five miles from the main ore location.

To the East was nothing.

To the South was a light trail running a mile or so, but it was significant in the narrow line it presented, perhaps a hundred feet wide.

To the North where other mines like Key Lake and Rabbit Lake were to be found, there was a nice area of coverage that ran nearly a mile wide and two miles top to bottom.

But, to the West and bordering on the Province of Alberta, was a huge field of radiation signals.

To the ladies' delight and bafflement, it appeared to be about twenty miles wide by five miles. According to Tom, the ore began about seventy-five feet underground and was still giving a very strong signal at the maximum detection depth.

"Remember the first location?"

They nodded.

"Multiply that by a factor of ten or twelve and that will give you an idea of how massive this uranium field actually is."

Another report would go off in the morning. For now it was approaching seven in the evening and Tom declared it time to call it a day.

"We're heading for Calgary, folks," he told everyone over the intercom.

From the back of the jet came a "Yippee!" from Chow. He had taken a great liking to the northern "cowboy" city and their annual Stampede festival making it one of his must-do things at least every other year.

His boots could be heard clomping up the passageway.

"Did I hear right, Tom?"

The inventor nodded. "Sure did, Chow."

"Great, 'cause I know a little cantina there on fourth street that serves the best Mexican grub north o' my kitchen. Let's get a-goin'."

The meal was, as Chow said, wonderful and surprisingly authentic. They slept in the cabins on the *Queen* and got into the air by seven the next morning, completing the leg back to Vancouver before turning around once again.

This route was to take them on a nearly straight line from what would be the West Coast terminal area to Regina.

Bud was at the controls with Tom his copilot as they headed up and over the Rockies. Three minutes later the giant jet took a violent bounce and then dropped nearly two-thousand feet. They bottomed out and Bud's skills got them around the invisible storm, but there was a scream from one of the ladies who had been waking up with their second cups of coffee.

Red rushed to the lounge and sized up the situation. Mary was kneeling over Helena who was laying at a strange angle on the deck. She was trying to comfort the injured woman and when she heard Red enter she didn't turn but said, "She wasn't strapped in and flew out of her seat. She hit her head at a bad angle."

A few years earlier he had taken a course in advanced first aid that included setting broken bones and immobilizing possible neck or back injuries. He called out for assistance.

He had Zimby pull an upper body splint—one of Tom's self-stiffening ones—and had the other pilot hold Helena's head while he slipped the splint under her back and shoulders. A moment later he had it squeezed to be form-fitting and hit the button sending a small electric charge through it, turning it as stiff as steel. It would be impossible for her to move her head or spine until it was turned off.

All her vital signs were stable and she was conscious, embarrassed by all the attention, and red-faced.

"Skipper? It's Red in the lounge." He told Tom about the injury and suggested there be no delay getting the woman to a hospital.

"She's okay, but it's a bad neck strain or sprain that can turn nasty darned fast!"

Tom checked their location and spotted the closest large city that would have the necessary facilities was twenty minutes away. It was Regina in the Province of Saskatchewan. A further check of the map showed the airport, situated to the west of the small city, was about five minutes by ambulance from their General Hospital which he computed to be less than a minute by an atomic jet like the one currently sitting in the hangar at the back of the giant jet.

"Bud. Radio the Regina International Airport and tell them we have a medical emergency. No, wait. Best to tell them we have an

injured Canadian citizen requiring their General Hospital. Add that we will provide transport.”

Bud nodded, but asked, “ETA?”

“Tell them four minutes to touchdown if we can use our vertical lifters. If they have objections then have them clear their long runway but to expect that we are coming in hot!”

The copilot made the call and was given immediate permission for a vertical landing. It was to be on a rectangular pad to the immediate south of the main terminal and would provide rapid access to the street system.

Bud didn’t tell them about the flight capability of the atomicar.

By the time they touched down, Red and Chow had carried Helena down to the hangar and had her strapped into the rear seat of the atomicar. It was just wide enough to accommodate her and the collapsible stretcher she lay on.

Bud told Tom to run while he managed the shutdown procedures.

“If you need me, have Red bring the tommycar back. Otherwise, I’ll wait here for word.”

The atomicar shot out the hangar and curved around heading for the nearby hospital. They crossed over a small lake Mary identified as Wascana Lake.

“Do all Canadians know ‘bout every town and all that?” Chow asked.

She laughed. “No. Far too much Canada and far too little memory. I grew up here.”

The cook smiled at her and patted the hand of their patient he had been holding since getting her into the vehicle.

Tom set down on the helicopter pad atop one of what appeared to be four main buildings. A doctor and several nurses rushed to the car, helped get Helena’s stretcher out and her transferred to a gurney.

As Tom got ready to move the atomicar off the pad, he spotted five men running from the same doors Helena and her medical team had gone in.

“Are you Tom Swift?” the lead man asked.

“I am. And, don’t worry, I’m about to move off here and down to your parking lot.” He reached over the door to shake the man’s outstretched hand only to find his wrist handcuffed. He wanted to ask what was going on but the others reached out, grabbed parts of

his clothing, and hauled him from the car!



## CHAPTER 3 /

### ONE TRAIN, TWO TRAIN, RED TRAIN, NEW TRAIN

THE MEN pulled on him, as if expecting him to struggle, so Tom employed a tactic that had worked with kidnappers in the past. He got his feet under him and stepped forward slightly faster than they were moving. With two of them walking backwards, the result was the entire group stumbled. First the two rear-facing men went down followed by the others.

In a few seconds, only Tom was standing, his one wrist handcuffed with the other end dangling.

“I’m not trying to resist you, you know,” he told the one who’d put the restraining device on him. “So, allow me to help you all up and then please tell me what this is about. And, if you believe as I do the presence of my vehicle might impact any incoming emergency flights, then one or more of you come with me and the gentleman in the back seat—wave hello to Chow—and we can get this moved down to ground level then we can casually walk wherever it is you wanted me to go. Deal?”

By this time two of the men were on their feet and the lead one made a grab for the end of the handcuff. He got hold of it and gave it a yank... and ended up back on his rump. Tom had, while talking to them, pulled a small pick from his front pocket and unlocked the cuff on his wrist.

“You stay right where you are and don’t move!” the man said in a very grumpy voice. “Somebody help me up!”

Tom reached out but the man yanked his hand back. “Not you!”

Once they were all upright, Tom assessed the situation. There were five of them and one of him, plus Chow should it come to that, but he wanted the most peaceful resolution to this possible. He was about to say something when the doors to the elevator opened and Mary rushed out.

“Tom. Stop playing with those men and come downstairs. The doctors need to have you remove that body cast thing!”

“Got to go, gentlemen.”

“Oh, no you don’t,” one of the other stated.

Mary came over taking her wallet and identification from her purse. “If your idiots don’t get away from this man, the other government official he brought in may suffer more harm. He saved her life, for goodness sake.”

“But,” began the lead man, now looking unsure of where he actually stood on things, “we got a report he injured some woman and...”

“Typical!” she practically shouted. “No... he... did... not. He... *saved*... the... woman.” She was pronouncing each word slowly and clearly as if she didn’t believe they could understand her.

Tom could hear Chow trying to be quiet but the westerner was guffawing in the car.

“Show me your IDs,” she insisted. “Show me... NOW!”

As the men took out their own identification wallets she took out a notebook and made a big show of writing their names and badge numbers down.

“Expect repercussions,” she told them before grabbing Tom’s arm and leading him away.

Downstairs he finally let out a laugh.

Mary also tittered a little but they were racing along several corridors. He wondered how she could remember all the turns and stairs they took and asked her as they approached the Emergency Room where Helena was being looked after.

“Remember I said I grew up here in Regina? Well, I had juvenile lymphoma and spent a lot of my time from ages six through nine in this place. I know more about where things are than the custodial service people do. In here.”

Tom introduced himself to the doctor and reached out, tapping a spot on the body cast. It immediately fell away as it returned to its normal, flexible state.

“We’ll get that back to you as soon as we can assure ourselves there is no spinal damage,” a nurse told him as she gently shoved him and Mary back out.

Tom turned to Mary, telling her, “I’d like you to have the medical bills sent to Swift Enterprises. I may not have had very much warning, but I should have called out to tell you both to strap in.”

Mary smiled encouraging at him. “First, it wasn’t your fault and Helena told me she realizes what a bone-head decision it was to not have her seat belt on. We all know that no matter how large or small, aircraft get bumped around all the time. The dumbest thing is, she started out as a flight attendant back at age eighteen to put herself through college. I did that for a year before I got this job. Funny what we are trained to insist from others then forget to do ourselves. Also, here in Canada we have socialized medicine so

there will be no medical bills. So, don't worry."

Tom was about to say something when the curtains slid to the side and the nurse handed him the deflated body splint.

"Doctor Procter—it's not funny!—wants to know where we can get these."

Tom barely registered the name spoken but answered, "They are not on the market, yet. Our arm and leg splints are and these ought to be approved in the States by this time next month. I think the Canadian Medical Association is waiting for U.S. approvals before they will accept some for study."

The nurse came all the way out and closed the curtains, motioning for Tom and Mary to come over to the central station.

"I can't tell you how frustrating it is to have excellent equipment and medications available just a few miles to the south that take our government months or years to approve. However, there is a new program this year allowing certain hospitals to act as the testing grounds for some classes of things. I believe General is one of them for non-invasive equipment. So, that brings up the question of where you got this and who the heck you are."

Tom, who recently had taken to carrying business cards, took out his wallet and handed her one.

The nurse's jaw dropped open when she realized who he was. Mary patted the woman on her shoulder, saying, "He's rather impressive, isn't he?"

The nurse nodded.

"Listen," Tom told her, "if you can get me the name of whomever we need to get into contact on this, I'll arrange things from our side to ship you several of those upper body splints as well as the whole body immobilization one."

The woman pulled a small notepad from her breast pocket, tore off a slip and wrote a name and phone number on it. "Here. I really hope this can come about, and I really am shocked, surprised and tickled to meet you, Mr. Swift. Got to run." She turned around slipping back into the exam room seconds later.

Tom turned to Mary. "What do we do now? I should call the *Queen* and tell them our status."

She pointed to a small alcove with a sign identifying it as FAMILY WAITING AREA.

Tom phoned Bud who agreed to arrange with the airport for an overnight stay. "When you get back there is a message for the ladies about that second uranium find. It also has a little something for



you. Want to hear it or wait?”

“Bud, you know I come from a family of non-waiters. You married the Junior Queen of impatience. So, go ahead and let me know what they say.”

“Okay, so this part is for the ladies... and down to there... and a bit more... ah, here it is. Please tell Mr. Tom Swift that the government of Canada and the Ministry of Development along with the Ministry of Transportation and the Ministry of Mines are in agreement the proposed rail system is to be built and partially funded from the proceeds of the extensive mineral findings provided by his survey. Specific routes to be finalized but his original concept of a near-direct route from Vancouver to Regina, Winnipeg and then to Montreal is tentatively accepted so long as he agrees to assist in construction a spur line to Toronto. The main line will be designated Trans-Canada Red; designation for Toronto spur to come at a later date.

“That’s it for your part, Tom. Pretty neat, huh?”

“You know something, Bud, It is pretty neat at that!”

After hanging up, Tom told Mary about the news adding, “There was a lot of stuff just for you I haven’t heard about, but Bud spotted my name near the bottom and asked if I wanted to have him read it. No intent to spy on your work meant, I hope you understand.”

She smiled at him. “Right now, anything that comes from any ministry is open for all to read unless it begins with ‘Eyes Only.’ So, I have no objections. I just wish I could go tell Helena about this.”

“Maybe you can,” he replied pointing to their friendly nurse who was walking their way.

“Miss Montgomery would like to see you both. She is going to be okay, by the way. Gets to wear one of those oh-so-attractive white collar braces for a week, but there is no damage, just a strain. Come with me.”

Helena, outfitted with her collar, was sitting up and smiling.

“I dodged another one,” she declared. “That makes five times I’ve been knocked off my feet by air turbulence and five ‘It’s only a little strain’ outcomes. Maybe I’m invincible.”

Mary glared at her shaking her head. “Right. From now on you listen to me when I tell you to strap in, okay?”

“Yes, mother. Anyway, they say I can get out of here in about an hour. I also heard there was some kerfuffle with some police on the roof?”

Tom told her about the misunderstanding.

“Mary sorted them out. And—” Tom blanched. “Chow! I forgot all about him.”

He tapped his TeleVoc pin and silently intoned the cook’s name.

*Ping.*

“Yeah, Tom? What can I do fer ya. Need me ta bring back the car?”

“Chow, I am so sorry that I forgot all about you. I hope you didn’t just sit out there for all this time.”

“Naw. I skedaddled back to the *Queen* ‘bout ten minutes after ya went inside with that nice Mary lady. I’d a gone sooner but them police men asked me a bunch o’ questions about you. They sort o’ slunk off once they learned who you was. So, do you need me ta come get ya?”

“Come on back in about an hour, Chow. Helena is going to be fine, but a bit stiff necked. We’re going to stay on the ground the rest of today and tonight, so put on a nice dinner for us. In fact, as it’s now about two and we haven’t had lunch, make that an early dinner if you will.”

“Will do, Tom. See ya in a bit.”

Mary had been relating the Tom portion of the message and Helena was thrilled.

“I wonder what else they have to say to us?” she wondered aloud.

When Chow arrived with Bud they parked at the front entrance and Helena was wheeled out, assisted into the middle seat by two overly cautious attendants, strapped in and they all flew off seconds later.

Back at the Flying Lab, Mary and Helena read their message. Once finished, Mary turned to Tom.

“It looks like Helena and I are being recalled. Job done, congratulations, kudos from a grateful nation and all that.” She had a tear in her right eye. “I suppose we would need to have you take us back.”

Tom nodded. “To Vancouver?”

Mary shook her head. “No. If it is possible we actually work out of offices in Montreal. Could you drop us off on your way back to New York?”

Tom explained his intention to remain on the ground until the following morning. “Is that okay with you both?”

They agreed it was more than fine.

Chow announced the early dinner which suited them all as the crew remaining behind had also skipped lunch in their worry over Helena's condition.

After eating, the pain medication she was taking made Helena sleepy so she excused herself heading for her little cabin. Mary went back to help her if she needed it, and returned five minutes later.

"Her head no sooner hit the pillow than she was asleep. Poor dear. Even with that bulky thing around her neck, she just started snoring."

The rest of the afternoon and evening was spent with Mary taking first Tom, Bud and Chow out on a flight around the city she had called home for her childhood, and then she repeated it all for the rest of the small crew.

Chow served a light snack around eight and everyone hit their bunks by nine.

In the morning they took off while Mary and Helena both slept in, heading east. Mary came up to the cockpit thirty minutes into the flight and Helena ten minutes later. As they flew over Lake Superior, Helena pointed out her home town of Sault Ste Marie, the Canadian side of the divided city.

From there they headed almost due east until they reached Montreal. For some reason the controllers at the Pierre Elliott Trudeau International were reluctant to give landing permission. Mary got on the radio, identified herself as a staff member of her ministry, and the controller finally told her the reason.

"We were contacted by the police in Regina who said that flight may be harboring a fugitive from the law. They want time to get some RCMPs here. Can you hold them?"

Now, she was steaming mad. "No! And have the name of the individual who sent in that lie ready for me. Whoever it is will be spending a lot of time in the unemployment benefits line starting tomorrow!" She gave a brief and terse description of the hospital event ending with, "They are really bad sports in Regina. That will change as of this instant. Give us landing permission."

The man on the radio gave the permission and they touched down on a large, rectangular parking pad in the middle of the airport.

During the flight Mary arranged for a ministry car to pick them up, and it drove out to the *Queen* five minutes later.

While getting and giving goodbye hugs, Tom asked her, “Will you really be able to get whoever it was in Regina making trouble for us fired?”

She nodded. “You don’t mess with the daughter of the Commandant of the RCMP and get away with it!”

Tom stepped back looking at her in amazement. She nodded again, smiled and left the ship to join her friend at the limo.

The flight to Shopton was quiet and they touched down about an hour later. Tom headed for the large office to share the news with his father.

But, Damon had already received the news straight from the Ministry of Transportation along with the request for a rough estimate on costs.

“Whether I hear it from you or from them, it is all good news. And, I have a message for you. Do you recall back about a year ago, when I was still, well, under the weather, that you told me about being in contact with the European Commission for Extended Commerce?”

The younger inventor had to think a moment. It finally came to him. “Oh. Right. They were asking about some way to open a new transportation route between North America and the European mainland. They were talking about a tunnel and I had to tell them I wasn’t entirely certain I wanted to try that again.”

Tom had once built a lengthy underwater tunnel in the North Atlantic that had, because of sabotage, collapsed nearly killing him and all the workers inside. The depth and pressures of maintaining such a structure had been fierce making it more challenging from the start. The failure had been personally crushing for the young man.

“What did you tell them back then son?”

“I don’t recall. I was so tunnel-visioned designing and building my nanorobot surgeons I probably said I’d get back to them when I had the opportunity.” He grinned. “Guess I didn’t follow that one through.”

“I believe they are politely reminding you of that promise. Read the message and then you might arrange to go over to speak with their steering committee. If you look at the budgetary figures they provide you will see they have set aside serious money, so I believe they are equally as serious to get started on this.”

He handed his son a fifteen page packet.

The young man sat down in one of the comfortable conference

area chairs and read the entire set of pages before going back to review a few specific areas. Finally, he turned to his father who had just hung up the phone.

“This is nothing like I expected, Dad. In fact, as I read this I did recall more of the original conversation. It was leaning to the tunnel idea or possibly a fleet of ultra-fast hydrofoil-type heavy shipping carriers. I believe they were asking about feasibility of one-hundred knot ships capable of carrying up to one hundred containers.”

“What did you say back then?”

The younger man had to think a moment, “I am pretty certain I said the tunnel was not going to work because of the engineering, and that such ships *were* possible. In my mind I pictured them as not looking so much like ships as sort of triangular platforms on top of a one-level hull that includes living quarters, propulsion and all other ship’s equipment. And, again if memory serves me, the containers would be stacked only two high for stability, but the things would be able to carry as many as they asked for riding twenty feet above the surface and skimming over rough seas.”

“Did you present that to them?”

Tom blushed and shook his head. “No. That was about the point we found Phyllis Newton’s company and their machinery to build the nanobots. It all sort of dropped.”

He agreed to call the Europeans the following morning. It was currently past quitting time in Brussels.

The rest of the day he searched for all his notes and files on the possible project, coming up with everything except for the sketches he thought he must have made for the ships. Failing that but having the concept firmly in mind, he made a fairly detailed sketch and then transferred it into his computer.

Heading home for the night, he rehearsed what he was going to say to the commission. An apology was first in his mind followed by a brief explanation of the reasons. He even toyed with the notion that several months had been spent trying to make the tunnel engineering work, but had to be abandoned.

In the end he decided the complete truth was called for.

His wife, Bashalli, agreed with him.

As they ate their meal with their almost two-year-old son, Bart, watching and munching on some fruity cereal rings he considered his dessert, she told him, “If they have a large budget and believe only you and Enterprises can help, then be up front and tell them

you were so focussed on your father's health and then another project that very little time was left to consider their project. But, now you have ample time and all that!"

"Apple time!" Bart laughed at them.

"No, honey," she explained to the boy. "*Ample* time meaning a lot of time. It will be Bart's apple time tomorrow morning."

He grinned and nodded. Of the many solid foods that now made up his diet, he like crunchy things more than all others and slices of apple were about the best he could think of.

"Apple time tomorrow," he repeated for her as a reminder. "Carts tomorrow," he added mispronouncing the word.

"And, *carrots*," she told him.

"Cartots," he said with a serious look on his little face.

Bashalli knew when to give up. She turned to Tom.

"If you have to go to Europe, where will you leave?"

Tom smiled at her. "Do I also detect a hint of 'And can I go with you?' in there?"

She smiled innocently. "Perhaps. If you want me to be with the man I love and promised to stand with through thick and thin, until something like forever, that is."

He smiled back at her. "Then, perhaps I should take you along to Brussels. Home of the original fried potatoes. Do we take Bart?"

She thought a moment and shook her head. "No. Your mother and my mother would want to come along to 'watch' him for us and I think I want all this time *alone with you!*"

## CHAPTER 4 /

### A DIFFERENT VISION: A WET TRAIN?

WHEN TOM called the European group, a pleasant-sounding woman answered the call. He introduced himself, gave a quick reason for his call, and was put through to the chairman of the commission, Mr. Pierre Artois.

“Yes, Mister Swift. I was the one who contacted you last year. I am pleased to again hear the sound of your voice. May I hope this call is to inform myself and my fellow commissioners that you are ready to assist us?”

“I hope that I am able to do that,” Tom answered. “I feel rather bad for not having returned your inquiry sooner, but...”

“No. Do not put a thought to it. Your own father was ill at the time and family must nearly always come first. Also, at that point we were only asking for input from several firms such as your Swift Enterprises.”

“Thank you for your understanding. So, I would believe based on your correspondence that I am not too late in contacting you. I understand the basics of your request, but what specifically is it I might do for you?”

Mr. Artois went over much of what had been in the notes Tom in front of him. There were a few small new details, mostly regarding potential ports of call for the system.

“As you may recall, we originally proposed to have your and others bid on a continuous tunnel under the Atlantic Ocean beginning at the Port of Saint-Nazaire on the western coast of France connecting to one of your American ports such as Boston in the state of Massachusetts or, Miami in Florida. Both locations offer a great deal of, what you would call, connectivity to road and rail systems to further deliver goods and people. We would still like to look into the tunnel possibilities.”

“Ahh. I do not recall any mention of passengers, only delivery vehicles that would be transported along on electrically-powered carrier robots inside a tunnel. Something like a three or four trailer long haul truck on surface roads.”

“True, that is true, but we have since computed the raw amount of power necessary and the transmission of such power over long distances and came to the conclusion such a system would require five nuclear power plants to be located along the tunnel route. We had, if I may tell you this, a bad publicity event when that idea was

inadvertently released to the public. Outrage and even a few small riots happened along the coastal towns and cities of France.”

Tom knew the man could not see him, but nodded anyway. “Yes, I can see how that might happen. Well, I have an alternate idea I would like to come describe to you. I admit it is not yet a lengthy, professional presentation and three-dimensional display, but only a few simple drawings and some facts and figures. If I might come see you at some time in the near future...?”

Mr. Artois asked for a few minutes to confer with a couple of his colleagues and placed Tom on hold. When he came back there was some level of excitement in his voice.

“Mr. Swift? Might it be possible for you to come here on the forthcoming Monday? That is only four days from today, but it would be most appreciated.

“Now, I shall try to answer your question regarding passengers. A majority of our commission believe that paying customers would underwrite the freight costs significantly and wish to investigate that. The day may come when people outnumber cargo.”

It was agreed that Tom and his crew would fly into the Brussels airport on Sunday evening. When Artois asked how many to provide visas for, Tom listed his crew.

Bud Barclay, Hank Sterling and Zimby Cox would be the other pilots. Also coming would be their cook and Tom and Bud’s wives plus two flight technicians. The visas would be sent electronically the following morning.

He also guaranteed Tom a parking spot large enough for the *Sky Queen* would be available for three days should they wish to sight see after the day of the meeting.

Now, Tom had to get busy. His basic ship sketch needed to be more thoroughly fleshed out. For that he called the two men at Enterprises who could be relied on to provide what he needed whether it be on the computer or as an actual model.

Hank and Arv Hanson arrived in the large office ten minutes after he called them. Both listened intently to the inventor’s description of the basic project as well as looking at what he had put together.

Within minutes Hank took over Tom’s seat at his desk and began working with the basic drawing. As he did his work, Tom and Arv moved away to talk about the possibility of a miniature.

“Well, skipper, I can start with the flat deck and pump that out in Hank’s largest 3D printer today. If I had to make a guess I’d say



it would be about three feet on each side and about two feet wide at the rear. Does that sort of match your concept?”

“Yes, it does. What about everything below that deck?”

“Just as soon as Hank has something in the 3D CAD system for me I can start making other parts. In fact, if you can give me a figure to work on for how much air space above the hydrofoils you think there will be, I can start making those and even motorize them. I’d say by Saturday afternoon you ought to be able to pick up a model that will demonstrate how the foils extend from the hull when in use and fold right up flush when not. Will that work for you?”

Tom laughed. He had called the two men—his patternmaker, Hank, and chief modelmaker, Arv—in hopes of having a one-foot-long static model plus a better drawing of the proposed ships.

“I’m thinking the propulsion will need to be part of the foils so we need to show that even when everything is retracted.”

Arv nodded. “Right, so I’ll make those as impeller-driven pods.”

Hank called them over to show his work.

“It’s a little rough, skipper, but give me the rest of the day and it’ll be smooth and we can put it into the wire design, give it a skin and then Arv and I can build the parts while my big color printer pumps out a nice picture of the thing from the top, side and bottom for you to show them.

“That’s what I love about you guys,” Tom told the other men. “I tell the client I’m only going to be bringing a rough pencil sketch and you just about give me a working model.”

Arv brightened, “I can do that as well, Tom! Put little turbo-props in the six hydrofoil nacelles and pump water through them with enough force to get the thing to rise out of the water. Would that work for you?”

“If you can pull that off then the two of you deserve to come along. I’ll just make a quick call and add your names to the list of who is coming.”

Hank and Arv beamed at the promise of a nice little vacation trip.

Over the remainder of Thursday and all of Friday, as Hank and Arv worked their particular magic, Tom put together a one-hour presentation to go around the physical model. At his father’s suggestion he then paired it down to forty minutes to allow for questions, and even made a list of potential questions he might need to answer. He would be prepared for nearly anything they

might inquire about, even some of the viability and safety questions.

Both Sandy and Bashalli were thrilled to be going along, only Sandy's enthusiasm was reduced a few notches when her boss, George Dilling in Communications, arranged for her to make a presentation on Tuesday to a group of business professionals meeting near the airport on how their companies could benefit from utilizing Swift-branded communications devices and the services for world-wide ultra-high-speed internet connections via the Swift Space Station Beta and Outpost capabilities.

"George is making me earn my time off," she told her mother on Saturday evening when she, Bud, Tom, Bashalli and Bart came to dinner at the senior Swifts' home. "I have to present to a group of about two hundred stinky old men in bad suits who still believe the Internet is just a way to send emails to their employees."

"You may be surprised at who you find in that audience, dear," Anne Swift told her daughter. "I read that recently the majority of business professional in most European nations are under the age of forty these day. Some as young as their late twenties. Not that bunch of old, cigar-chomping relics you seem to think will be there."

"Besides," Bashalli added, "your little talk is only going to be two hours out of three days there. There will still be plenty of shopping for us both to do. If you wish, I can be at the presentation to assist you." She smiled at her sister-in-law and could see the resistance breaking down in Sandy's face.

"Fine. Okay. Whatever! I'll do it, but if there aren't at least a couple of good lookers to take my mind off the absolute tedium, then someone is going to buy me a huge steak dinner!" She looked at Bud who pretended to be extremely interested in one wandering pea on his plate.

Good to their word, Hank and Arv delivered the working model of the super speed carrier hydrofoil to Tom's desk on Saturday afternoon. it was sleek and thin with the foils retracted, but at the press of a hidden button—there hadn't been time to rig the ship with any remote control other than to turn on the impellers and turn them back off—they eased away from the bottom of the hull and extended their full five inches.

"Outstanding," Tom remarked as they showed him the basic functions.

"It isn't much and we certainly could do better with another three or four days, but it ought to show off the concept, skipper," Arv said. Hank nodded his agreement.

“And, if they don’t take it, we can put in some repelatrongs and turn it into a nifty space ship!”

It was a quiet trip across the Atlantic and they landed on schedule at the Brussels Airport. Like a few other facilities, the airport manager had decided to not allow Tom to use the vertical lifters under the mistaken idea that they would crush the concrete under the jet. So, they were directed to land on the airports runway 07-Left, rolling to a stop about fifty feet from the opposite end.

It was late in the day so everyone decided to have a nice dinner, on board courtesy of Chow, go to bed and get up early.

Tom was the first to rise and he went back to the hangar to check on the model. It rested in a special low crate the ground crew had come up with.

When the time came for him to leave, Bud helped get the model out and into the spacious trunk of the limo the commission sent for the inventor.

“Wish I could go with you, skipper,” Bud stated.

Tom looked at his watch. “You have five minutes to get into a suit; then you may come with me. I thought you’d be bored silly or I’d have suggested it last night!”

With a grin, Bud raced into the jet coming back out four minutes later with at least his pants and a clean shirt on. He carried the suit jacket over his shoulder and had a tie and his shoes clenched in his right hand.

“Let’s go!”

The members of the special commission were waiting when they arrived and a hush fell over them as Tom set the model down, now draped with a light nylon cover.

Introductions were made and Tom began his presentation.

“As you know, transportation between Europe and North America really has not changed in more than a century. What came and went by ship then, does today. What needs to be in the other place quickly gets sent by air. There isn’t much else. Certainly, no road exists. Now, when this commission first contacted me it was with the idea of constructing a long and wide tunnel. Here is why that isn’t practical.”

He told them of the engineering difficulties and impossibilities as well as showing them several photographs and a video clip of the building and demise of his own tunnel.

“That was at a depth of about one quarter what would be needed to cross the ocean between us.”

There were several minutes of discussions with Bud watching closely and counting to himself. Of the nineteen people there they seemed nearly evenly divided on the opinion that a tunnel was still their top choice. To some of them it appeared to the flyer they might even have some vested interest in that solution. He made a mental note to ask Tom about it later.

When they settled down, Tom continued.

“Nowhere in your documents did I see anything regarding replacing current shipping methods, mainly being the twenty and forty foot dry cargo boxes placed on the deck of a ship and taken across the ocean in good weather and bad. From my research, on average three ships are lost each year to storms because they just cannot ride out high waves, sometimes floundering when they lose power. Coal fired boilers have been replaced by diesel, but little else has changed.”

“We all know this, Mr. Swift,” the High Commissioner, Mr. Artois, stated, “but, there is little to be done. Larger ships are steadier in such conditions but when you build ships larger you have other issues. Strength, serviceability, and such. Have we neglected to see something?”

Tom shook his head and assured them all he did not believe they had missed something. “Rather, I believe traditional shipping methods, indeed the ships themselves, have not moved with the times. And so, I have come up with one possible solution. I must stress that word, *possible*. Please do not believe I see this as the only solution, but one of several I simply have not had the time to consider and bring to you today.”

He nodded to Bud who pulled the slight blue sheet from the model.

Startled gasps could be heard throughout the room with a few murmurs of, “It is some sort of joke, no?” and “We already have jets.”

“This, to answer the comment from the lady from Italy, and I apologize for pointing you out, ma’am, but you just said the world already has cargo jets. Correct?” She reluctantly nodded. “What you see here in the model is most definitely not a jet aircraft.”

More side discussions followed and Tom got a look from Mr. Artois telling him to let it run its course. He did. When silence came, he told them more.

“As unlikely as it may appear, this is a container ship. The size I am thinking of would hold over two hundred large or three-hundred-sixty small cargo containers, and travel at approximately

one-hundred knots riding twenty feet above the waves. It would skim over waves larger than those up to thirty-foot seas. Because of its tremendous speed it could easily outrace bad weather thus avoiding anything that might cause troubles.”

There were several cries of “Impossible” in a few different languages and the woman from Italy threw her hands in the air and began to make a plea to god to stop the insanity.

Bud and Tom looked at each other and sat down.

Mr. Artois began banging a gavel on his desk shouting for the commissioners to be silent.

Tom stood back up. “I assure you this is no joke, neither is it something foolish or impossible. It is a hydrofoil design meant to carry a maximum load safely and quickly. At up to thirty-five hundred miles of open sea, these ships could make the crossing in a day-and-a-half. Because the cargo would be loaded in a single layer, we believe current ports using two cranes could load or unload each ship in fewer than two hours.”

He took a few questions, all concerning propulsion, before suggesting that they come for a closer look.

Mr. Artois insisted then approach in groups of only three at a time. Tom, with Bud’s help, showed each group how the foils could be raised for navigation inside ports—the power nacelles would be allowed to hang slightly below the hull—and with their steer-ability and numbers, it was likely that tugs would not be required to maneuver them into position.

In fact, when retracted the top deck of the ship would ride only eleven feet above the waterline making it more stable than any other vessel in existence.

“Can that thing float?” the representative of Luxembourg asked, pointing at the miniature.

“Yes it can. Plus, this model can run in a straight line to demonstrate how it comes up out of the water. We didn’t have time to build in steering, so to demonstrate it we would require water at least a foot deep and perhaps thirty meters or more long.”

A recess was called while the chairman make a telephone inquiry. He hung up and motioned for Tom to come over.

“We have access to a small pond in a nearby city park. I watched your companion carry that is so it must not be very heavy. Could he perhaps carry it two blocks from here?”

It was agreed that Bud and Tom would carry the model while the others walked with them.

The first run went very well with Tom setting the model on a course to the other side where Bud waited. Things took a different turn, and a literal one as well, on the return voyage. The model was more than halfway back when it dipped to the left and spun around. It kept slipping until Tom got it shut off. He was about to roll up his pants and wade in when one of the delegates stopped him.

Taking a coin from his pocket he whistled and a young boy came over. After a brief explanation, and the handing over of the money, the boy took off his shoes and retrieved the model.

Tom thanked him and took another coin from his pocket thus doubling the youngster's reward.

"Well, I see what happened here," he explained looking at the underside. A piece of sunken paper had been sucked into the forward leftmost nacelle and was blocking that drive unit.

It was decided that they had seen enough of it working properly and did not wish to endanger the model on another run, so everyone went back to the meeting room.

Mr. Artois called them to order and asked Tom, "Have you given the idea of passenger accommodations some thought?"

Tom nodded. "I have. In this configuration I see forty reasonably-sized cabins lining the outer hull." He said this would be about the maximum unless the ship were highly automated for such things as food service. "There won't be enough room for more than another twenty or so service staff."

Once Tom answered a few more questions, one of the members, a woman from Germany, stood up and asked if she might make a suggestion.

"Of course," Tom told her.

"Fine. Then it is this. Some of us who understand the matters with shipping have an alternative we wish you to explore for us. And, while we now know that an air-filled tunnel is not a viable solution, we nonetheless believe that there is yet another way in which to cross the ocean and in hopefully better time."

"I am listening."

"Good. Your own company was involved in a project to cross your wide nation with a rail system capable of delivering goods to the other side in less than a day, Yes?"

Warily, Tom told her, "Yes."

"Then, what is to stop you from creating a train that runs under the water? Submarines do it all the time and they now can travel at

unimagined speeds over even a few decades ago.” She sat down with a look telling the inventor she dared him to say it was impossible.

He wanted to tell her it was impossible.

He opened his mouth to tell her it was impossible.

Then, he shut it. It might not be all that impossible.

“So, are you suggesting a wet version of my transcontinental bullet train?”

“Yes. I would think that the great Tom Swift could make it reality.”

Tom looked at his best friend who shrugged.

He then asked to be excused for about ten minutes. He and Bud went out to the hall.

“Are they insane?” the flyer asked.

“No. Actually there might be something in that concept, but it would be a nightmare to build. I mean, can you imagine trying to lay the railings way at the bottom of the ocean? Wow! Of course, it could be done with serpentine submarine cargo carriers. Hmmm? I’m going to sit down over there and think about this, Bud. You keep people away from me and come rouse me in eight minutes.”

When time was up Bud walked over and stood in front of Tom. He cleared his throat receiving no acknowledgement. Then, he tapped the inventor on the shoulder.

Tom blinked and looked up, grinning.

“Bud, it is a crazy sort of thing to suggest, and it is going to be crazy time coming up with a way to do those tracks, but from a practical position, I think the darned thing is doable. Let’s go in and tell them!”





## CHAPTER 5 /

### DEEPER THAN DOLPHINS

ON HEARING from Tom he believed the suggestion might not be as impossible as it sounded to the rest of them, the delegates held another series of side discussions and ended up nearly split... again. This time the opinion that Tom's cargo ship model would be the wave of the future was eked out by the potential for an even faster mode of transport, and one that held potential for including more and more human passengers at some point.

"If I may, I would like to take at least one month to look into this and see if there is a viable way to build such a system. It isn't so much the locomotives and cars being underwater—after all, we build submersibles that safely go down to those depths all the time—it is finding the appropriate route that gives the best results with the least work to flatten a bed and create the actual rails. Then, it becomes a matter of keeping the sub/train on those tracks and hundreds of other details."

Pierre Artois thanked Tom and Bud and suggested he might call Enterprises once or twice in the coming weeks to which Tom agreed.

They packed up the model and headed back to the airport ten minutes later with a promise to be back in touch with a definite possible/not possible decision and plan inside of thirty days.

The rest of the day was spend sightseeing and on Tuesday Sandy and Bashalli wowed a group of *young* European business professionals with their presentation.

On the return flight to the United States, Bud asked what Tom had in mind.

"It hasn't quite jelled in my brain, Bud, but there are similarities in what we did for the transcontinental bullet train, what we might do in Canada, and this project. All need to ride on rails that safely allow the train to travel from point A to point B without deviation."

"So, you're giving up on the snake sub approach?"

"Yeah, I think that might be a back-up but not our main goal. A tracked system is safer and might even be automated. No crews needed!"

"Got that so far, but how in the heck do you tunnel all the way to Europe. I mean, and pardon me for bringin it up, but the previous underwater tunnel didn't go to plan."

He could see he'd hit a sore spot and apologized.

“Forget it, Bud. I may still berate myself over that failure but I’ve come to terms that it was only because of a concerted effort to sabotage it the destruction ever happened. And, just so you know, I do not intend to tunnel all the way across the ocean. I’m envisioning a submersible version of my bullet train running on tracks mounted right to the bottom of the seabed.”

“As in twin sets of tracks running into the far distance in both directions?”

“Or,” Tom said giving him a sideways look, “it could be a monorail approach. The truth is, there is just too much I haven’t had time to consider.”

Bud was thunderstruck. Finally he asked, “Just how deep will this railroad through the deeps run?”

“Right on the ocean floor, flyboy, or a few feet above it. Other than conquering both continental shelves and the Atlantic Ridge, with the tectonic plate rift out there, this may be pretty much running along the sea floor a mile or more down.”

“Jetz! That’s deeper than dolphins swim!”

“In most spots it is deeper than anything can survive except for some species that can never come up because they’d explode once the enormous pressure is off.”

Something came to the flyer’s mind. “But, you and I’ve been down there. Like when we did the hydrolung crossing to England. I remember it was pretty stark and kind of spooky, but we swam over a lot of nearly invisible living things. Weird shrimps and that clear octopus and the fish that was all teeth. Vampire fish?”

“Viper fish,” Tom reminded him.

“Viper, vampire, the thing was nearly nothing *but* teeth!”

“And, don’t forget those giant squid we encountered.”

“Yeah. And, sunken wrecks. Anyway, how are we going to lay down a track? If you were going to tunnel down there I can see the TBMs being repurposed, but can they work with water and mud all around?”

Tom’s Tunnel Boring Machines had not only drilled a double-bore tunnel system through the western U.S. mountain ranges, it had built and sealed the tunnel walls, extruded the tracks, and moved forward at an incredible rate leaving ready-to-use tracks behind them.

“Well, we will use them at both ends. We’ll need to get down faster than the sloping shoreline allows so I think we might dig five or ten miles out. As for working under water? If I had to pick a

method right now I'd say we form a hydrodome in front of the actual drilling head extending back as far as possible. But, that's just off the top of my head."

Bud sighed. "Give me the top of your head any day of the week, skipper! But that leaves a lot of mileage in between. How about that?"

Tom rubbed his jaw as he thought about Bud's question. "There, you might have me stumped. At a guess I'd say if we can form a large enough air bubble around the TBM and move slowly enough to give the extruded materials time to harden so they are not affected by the saltwater, then I can certainly make the darned machine waterproof. It'll need to be anyway to make the down tunnels at both ends as they will quickly be underwater."

"So, problem solved?"

"I'm not sure, Bud. Not sure at all. Somewhere in the back of my mind I believe there is a better, faster and less invasive way to do it. I just have to find it is all."

It was a problem that bothered him almost to the extent he ignored everything else for five days until his mother—over babysitting little Bart while Bashalli had gone grocery shopping—took him aside and told him to "Snap out of it! Even little Bart can see something is taking your attention from him. He'll forget about it, but your wife will not. So, you take a night off, I'll take the baby home, and you two go out and unwind. Then, come back here and just enjoy each other. Okay?"

Tom smiled. "Yes. And, thanks, Momsie."

When Bashalli came back and heard they were going out she squealed with joy and he quickly found his arms full of wife.

Anne Swift left with Bart ten minutes later and Tom asked where she would prefer to have dinner.

"How about right here? I have two very nice chicken breasts plus some cream and a little curry powder. You've always liked my curried chicken over saffron rice. And then you can tell me everything on your mind without any danger of being overheard by spies or our being attacked on the way down some dark country road."

"Bash? It's a deal."

He helped with some of the preparation and they sat down to eat an hour later.

He told her about the troubles with creating an underwater rail system. "And, it isn't just how do you drive a train along tracks at a

depth of a couple miles. It starts with how in the world do you get those rails there to begin with.”

“Isn’t it very much like drilling through the mountains when you did the first rail crossing here?”

He explained about the pressure of the water and the unevenness of the sea floor.

“All right. This might sound like I have no idea what is going on, but if you need to work in a dry condition, can you not simply form one of your hydrodomes all around the digging machine and then move forward slowly enough for the rails and platforms and whatever else to harden?”

He shrugged. “You’d think it ought to be possible, and I told Bud about that approach earlier, but it came to me yesterday there is an inherent problem with that. I can’t form an air bubble ahead of the cutter with solid ground out there. And, I can’t shove the ground to the side and—” He paused, his eyes narrowing. “Or, can’t I?” he asked in a low voice.

He saw her looking at him. “Okay, Bash. You know about how my Geotron works. Repelatrions shove solid matter to the sides and then let it fall back in behind. Maybe there is a way to create a boring machine that acts like a Geotron and also extrudes the tracks and tunnels behind it. I wonder...”

Bashalli knew her husband and she knew he was in a world all his own for now, so she got up and cleared their dinner dishes. When she came back in with dessert he was sitting there shaking his head.

“Won’t work,” he explained to her. “There would be far too many difficulties in constantly adjusting the hydrodome’s repelatrions to continue keeping water out but allowing soaking wet dirt, rocks and other things in.” He looked into her eyes. “Thought I might have something there for a minute or two. Oh, well.” He perked up. “What’s for dessert?”

“Berry cobbler courtesy of my mother. She saw a cooking program a few weeks ago and ran out to buy berries. She forgot to look at the actual recipe and ended up with enough for six pies or cobblers. We get to benefit from three of them.”

They ate in silence for a few minutes before she asked, “These rails of yours. Do they need to be right on the bottom of the sea? Could they float on the surface or even just enough under the waves so they aren’t hit by passing ships?”

“Well, let’s take those individually. The surface is out because the sea gets too stormy. If we only go fifty or sixty feet under the

surface we have a lot of turbulent water to still deal with. It would have to be at least one-hundred feet down. But, with about a hundred submarines running around in the oceans, there could be a collision. Even if that doesn't happen, how do you keep the tracks in one place? Anchor them to the sea floor is the obvious answer."

"And the one your dim wife was about to suggest."

"You are not dim, Bash. You are an artist and a mother and you're great at both. Heavy-duty engineering is a different world and one even I sometimes have to turn to experts to talk me through. So, back to the tracks. If we anchor them to the sea floor, then how do we float them up perhaps a mile or more in some places? Then, you need to keep them from moving back and forth or the trains might fall off. And, on and on. In the end it is just easiest and safest to anchor the tracks to the bottom and keep them there. The *how do we do that* part is what seems to be running away from me at top speed."

She got up and moved behind him taking his shoulders in her hands and massaging his tense muscles. It felt good and soon he realized how stiff his neck had been. Her fingers were kneading the knots out, and he was enjoying it very much.

When he awoke the next morning at seven, he was still feeling the relaxation she had brought to him. He slowly rolled over so he wouldn't disturb her only to find she was laying on her side, wide awake and watching him, grinning.

"Good morning," she said. "Do you know how fascinating it is to watch you sleep?"

He moved over and kissed her. "Good morning to you and if it is half as interesting as watching you sleep at night when I'm reading, I must put on a heck of a show."

Tom arrived at work no closer to a solution than the evening before, but he had a renewed sense of energy.

He called a meeting of several groups within Enterprises that had been instrumental in the creation of the transcontinental bullet train. Everyone expressed eagerness to try to create another nearly impossible project with him, but he was met with small sea of blank looks when he asked if anyone could think of a way to create a flat and stable roadbed, extrude the necessary rails and service ducting, and even cut through hills and small mountains, all under a mile of water.

Employing an old interrogation trick taught to him by Harlan Ames, Tom stared back at them all, saying nothing, waiting to see who broke the silence first. Shortly, a few of his audience felt

uncomfortable enough with the silence they started giving suggestions. Most he had thought about and gave them his reasons for looking for a different answer, but one was intriguing enough he wrote it on the white board and underlined it suggesting there be more thought given to it.

It simply said:

New excavator/extruder that works underwater

By the end of thirty minutes they had a small list of things to investigate including a variety of rails ranging from monorails, twin and triple rails and a V-shaped arrangement of three rails that could be pre-tilted to make corners smoother and easily taken at high speeds.

But the one thing they could not pin down was how to properly tunnel down from the shore to the continental shelf without everything getting very wet.

The three TBMs still around were originally built in modules so they could be transported and set up on site. They currently were in storage in hangar 7 at the west end of Enterprises grounds. That was Tom's next stop.

Designed to create a side-by-side double bore tunnel with an elevated central platform between, He considered whether there was a need for two trains to be on rails at either end at the same time. Controlling the surrounding soil and water for a single tunnel ought to be easier than for two, but he wasn't actually certain about that.

What he was sure of was the array of small atomic earth blasters that did the actual digging—yet not powerful enough to vaporize materials that required transporting back and out—would have issues with working in wet conditions. As he stared at the head of one of the machines a thought came to him.

He reached up and tapped his TeleVoc pin.

“Damon Swift,” he silently intoned. A *ping* told him the connection was being made.

“Yes, son? What can I do for you?”

“I have a physics question that has to do with digging tunnels in super saturated soil. What are your thoughts about using something like a combination of my blasters and repelatrions tuned just for water? Do you believe I can keep enough water from being right in the path of the blasters to dig through and then keep it away until the tunnel can be extruded behind the head?”

“Well, when you did your first Geotron tests didn't you tell me

the soil remained a little wet, and that was enough to make shoving it aside easier than through absolutely dry dirt and rocks?”

Tom thought about it. “You know? You’re right. Okay. Thanks, Dad. I think I’ve decided how to dig my trans-Atlantic tunnels.”

But,” Mr. Swift said sounding curious, “not all the way across. Just down and out a few miles?”

Tom agreed that was the plan.

After disconnecting, Tom continued to walk around the boring head and the extrusion modules. In between normally would be the control cabin and a special ring of sprayers that gave the surrounding dirt a spray of instant-harden polymer to keep stray rocks and dirt from falling onto and into the machinery before the extruders could form the floor, walls, ceiling and the tracks all in one step.

Even then, it required an array of high-intensity ultraviolet lights to set the materials before they could slump or run.

Mentally, he counted the number of repelatrions it was going to take to keep the tunnel dry enough to set everything up.

He came up with a number greater than fifty!

And, though the units he envisioned were among the smaller ones manufactured by Enterprises, that many would require as much power as his giant space ship, *Goliath*, used and that required more than one of the largest nuclear power pods made at the Citadel.

He let out a low and long whistle. Those pods were nearly fifteen feet across and weighed five tons. Each.

He sighed and looked for logical locations for those.

The current TBMs used four smaller power pods spaced just behind the cutting head and around the control cabin. Anything larger would need a new mounting location.

As he left the hangar, he was telling himself, *It looks like I might get some use from the actual blasters and one of the heads, but I’m going to need to redesign everything else.*

As he climbed into the small electric runabout he had checked out for his drive to the remote building inside the company walls he had a thought that made him feel better.

*At least I’m not signing up to provide something that we have to foot the bill for. If the Europeans are serious about this project, they are going to have to pay for the specialty equipment up front. I think I need to make a phone call.*

It would be too late in the day to speak with the commission leader, so he decided to spend some time trying to come up with a detailed list of what he had, what he needed to build, and what he still had to design.

He headed for his underground office and lab where he could be assured of it being mostly quiet. Sitting at his desk he began calling up every file for the first TBMs on the company's servers. File after file, running into more than a thousand pages, were at his fingertips. Working until nearly nine that night, taking time out to call home to explain what was keeping him at work, Tom compiled all the information, sketches, specifications and 3D drawings of the TBMs and other components he knew would be necessary in his revised unit. By the time he left work, he'd organized everything he believed necessary to back up what he would need to say to the Europeans the following day.

He stood up, realizing how weary he was, and left the office. His footsteps barely made a sound on the hard concrete floor of the underground hangar, the only real noise coming from the *ding* of the elevator's bell.

At ground level he stopped and took several deep breaths. Something didn't seem right and he looked quickly around him. There was nobody or anything to be seen other than the elevator and stairs building now behind him.

He took a few steps heading for the car park next to the Administration building but froze and spun around when he heard another pair of feet behind him.

An icy shiver ran up his spine and he could feel his heartbeat in his ears.

A dark form came around the elevator building but stopped when whoever it was saw the inventor standing there.

Tom as tensing for a possible attack when a familiar voice greeted him.

"Hey, skipper. You're late tonight."

Tom's relief nearly had his knees collapsing at the voice of Phil Radnor.

"Oh, Phil, am I happy to see it's you," Tom said, a smile crossing his face.

A second later a *crack* sound came and echoed from the hillside to the north of the front gate.

Phil spun around slapping at his left shoulder and screaming in pain. He'd been shot from some distance and yet he had the



presence of mind to yell at Tom, “Get down!” Five more shots cracked and echoed.

The inventor dropped to the ground but realized he still offered a target laying in the lights, so he crouched and moved over to Phil, grabbing him by the jacket and dragging him around the side of the elevator.

Tapping his TeleVoc Tom called for Security. He needn’t have as the gate guard already had reported the sound of a gun firing, but Tom added that Phil had been hit and ordered an ambulance.

“Soon as it’s safe, Tom,” Gary Bradley told him. Three seconds later the sounds of five of Enterprises’ Security SUVs squealing their tires getting underway was heard.

“How are you doing, Phil?”

“Been better, skipper. Really a lot better to tell you the truth. The only good thing is I’m pretty sure I only took the one shot in the shoulder and not anywhere deadly. You’re not hit, are you?”

Tom felt his upper body and reported nothing.

Then, his hand touched his own upper left thigh and came away soaked in blood!



## CHAPTER 6 /

### BACK TO THE GREAT WHITE NORTH

WHEN THE all clear was sounded, one of the company ambulances raced for the two stricken men. Just before that had come the sounds of several small arms being fired followed by nothing. Tom was afraid he knew what that meant.

Doc Simpson was on his two nights a week shift and arrived with two med techs.

In spite of their conditions, Tom and Phil argued over who should be attended to first.

“Shut up the two of you or you can both walk to the Dispensary. Now, Glen, you take Tom and Janice and I will get Phil.”

A minute later Glen announced that in spite of all the blood, Tom had not been hit.

“Must be more of yours, Phil,” Doc said. “We’ve got that packed good and tight so lets get you on the gurney. And you,” he looked over at Tom who was sitting up looking slightly ashamed, “climb into the ambulance. We’re taking you in for a check-up even if that isn’t your life juice!”

Twenty minutes later Tom was allowed to go home. Phil was receiving his second unit of blood to replace what he had lost on the tarmac and Tom’s pants during the drag over to cover. Before going, Tom took Doc aside.

“He’s going to be okay, if that’s what you are about to ask. Yes, he lost a lot of blood, but he is one of the easy ones with his type A-plus. You aren’t so easy. He’ll be sore for a week but back on desk duty in three days. Now, go home and if you want me to I’ll write Bashalli a note explaining how you cut yourself shaving or something. GO!”

As he was leaving the building, Harlan Ames—who had been called in from home—stopped him.

“First, how are you and second how is Phil?”

“I’m fine, just got some of his blood on me, and Doc says he’ll recover in a few days, but he did lose enough blood to require two pints going back in. What do you know about those shots?”

Harlan looked disgusted. “Lone gunman, grassy hillside and high-powered rifle with a U.S. Army sniper’s scope. No ID on him, yet, but we’ll work on that. Let me check on Phil then I’ll run you home.”

Tom shook his head. “No, I’m fine. But Phil can use your support. And, my thanks. If he hadn’t been out there and stopped me I might have been a sitting duck target.” He paused, looking at the Security chief. “Should I ask about the gunman?”

“No. Other than he will never do that again, and let’s leave it at that.”

The next morning, after looking in on Phil, who seemed more embarrassed than angry or in pain, Tom headed for the shared office. On the way he met Bud and they detoured to the large commissary for a coffee. The flyer had to run for a test flight but promised to catch back up in the late afternoon to talk about taking both of their wives to dinner sometime in the following few days.

“We owe them, big time!” he said with a grin as he spun and jogged away.

The inventor got up and walked out the door taking a meandering path through a few of the buildings along the grassy walkway.

He got to the outer office fifteen minutes later.

“Tom, there is a call for you from the Canadian Ministry of Transportation. I just put him on hold. Line two.”

“Thanks, Trent.” He got to his desk and pressed the button and answered the call. “This is Tom Swift.”

“Tom? This is Minister Arthur Ryan. I hope I haven’t caught you at an inconvenient time.”

“No, sir. I assume this is about the potential for a trans-Canadian project?”

“It is. But, first I need to give you the thanks of the entire nation for your discovery of the two very rich uranium fields. That ore has been a mainstay of our economy for decades, only recently overtaken by petroleum and natural gas. That aside, our own surveying will take years and to be frank, we don’t have that sort of time. We were wondering if your company might be available to perform a detailed survey of both locations.”

He spoke of the need to define borders of each field, whether several large areas were combined with weak veins between them, and their desire to come up with a plan of action for the best places to begin their exploitation of the mineral.

“We can help you with that, or we can lease you the necessary equipment to perform the surveys yourself. Either one is acceptable to us.

“I realize you are probably anxious to get started, but I have a

commitment for the remainder of this week. And, while I could assign a team to get this started, I'd like to be in on the start of the mapping. Then, and I trust my teams to do as great a job with or without me, I'd turn things over to them. I'll need to review the general parameters of those two fields, but my guess is this will require about eight to ten days to give you the most accurate picture possible. Is that acceptable?"

The minister assured Tom it was more than acceptable. His only other questions had to do with obtaining an estimate for the work and then what Enterprises' Accounts Receivable requested for payments.

Tom offered the transfer him to that department. "I honestly can't say what they would want. I believe governmental work is set differently than private projects and our trade partners get discounts. But I can tell you I will have your estimate worked up by end of day tomorrow."

The minister gave him the place to send it and thanked the inventor. "Now, I would love to speak with your costing people."

When Tom got back word on the Transportation Ministry's approval of the bid, he was puzzled to find a personal note attached to the lead page.

Tom Swift - Recipient  
Min. A. Ryan - Sender

Dear Tom Swift,

With grateful appreciation for your time, and as indicated in the main paperwork, we accept your estimate/bid for the survey work, but I want you to know several people believe it to be far below what ought to be charged. Therefore, and against what would normally be procedures, I will tell you (privately, please) that a fund for contingencies is also set aside an amount equal to half your bid.

Do not hesitate to bill for anything that needs be covered by this extra funding. I have a special fund source for contingencies. Your confidentiality is appreciated.

Sincerely,

*Arthur Ryan, M.O.T.*

Tom shrugged and made a note to reply to the Minister's concern. *I thought I'd already put an extra ten percent buffer in there*, he told himself.

After notifying the Scheduling department of the “potential” project needing to be placed in the “probable” column, he walked back out of the office and down the hall.

Chow met him outside the outer office.

“I was just gonna ask ya if’n ya wanted lamb stew, or turkey an’ stuffin’ or possibly a big old salad fer lunch.”

“How’s the stew today?”

“Best I’ve made in a month. Honest!”

Tom’s eyes narrowed. “And, how many times have you made lamb stew in the past month?”

Chow took off his ten-gallon hat and fanned himself a moment while he looked at the ceiling mouthing something Tom couldn’t catch. When he looked back down, he replied, “‘bout a month ago!”

“Lamb stew it is, then. I can’t pass it up with a recommendation like that!”

Two hours later and with his stomach full of the stew, Tom sat in silent contemplation at his drafting table in the large lab he kept down the hall from the shared office. Spread out on it were five different rail configuration drawings, each one liberally notated with ideas and lists of pros and cons.

One of them had less writing on it with only a note asking, “Is this possible?”

It had come about when he thought back to the conversation he and Bud had on the trip back from Europe. He’d casually mentioned one possibility being a monorail system.

What he had pictured then was like those systems in places like the Disney resorts, Seattle, Las Vegasn and even in Montreal. There were, he knew nearly a hundred systems running from a quarter mile or so to one currently under construction in China that would be nearly five hundred miles when complete.

All but one of them were the standard single track running through a channel under the cars using modified automobile tires on the tops—and in some cases the sides as well—to move the cars forward. Only one did not use the under track and it was a system that changed from an overhead track to a cable hanging system running up a mountain. He scooped the drawing up and headed out the door, down the hall to the stairs and eventually outside.

The three minute walk took seven because he stopped three times to say hello to a few employees and answer quick questions.

He finally arrived and stepped into the Fabrication Management

building.

Tom stood inside the double doors of the modeling workshop run by Arv Hanson. He was busy with one of his small production teams trying to fine tune something the inventor did not recognize from fifty feet away. When Arv clapped his two assistants on their shoulders and came over, he had a serious look on his face.

“Hey, skipper. Sorry for the delay but we’ve been working on a proof-of-concept scale model of a change to the *Pigeon Commander*. Purchasing fielded a question from an airline in Southeast Asia to sweep the wings back a lot more, up the horse power and try to eke out an additional sixty or seventy knots air speed for them.”

When Tom asked for a few specifics, Arv rolled his eyes.

“Wings that are eleven degrees they are now asking what might happen if we made them thirty degrees. And, even though they’ve been told that upping the horses will mean both increased cost and a larger engine pod, and all the drag that induces, they are adamant.”

“Just how many airplanes are they hoping to get?”

Arv shook his head. “Just an order of two! All for something that isn’t going to get them what they want, and at a forty percent premium.”

The both shook their heads.

“So, what can I do for you today?”

Tom pulled out a folder with three drawings inside. He walked over to a work table and spread them out.

On the first was a recognizable sketch of the current West Coast bullet train on it’s tracks.

Sketch two was the same things now sitting on a monorail that might be ten or twenty feet above the ground.

But, it was the final drawing that caught Arv’s eyes and made him smile.

Like a number of modern roller coasters, this version of the train ran on a monorail, but hung below it on a series of short armatures.

“Arv likes! So, tell me more and please let it include the sentence, ‘Arvid, make a model of this along with a few hundred feet of tracks.’ Okay?”

“Let me explain the troubles I foresee and then you can have your directive. First, the Canadian line will likely be limited to fifty

cars and not the hundred we run down here. Even so, if you will recall these trains will weigh something like two tons per car and eleven tons per full locomotive plus three for the interim drive cars. So, empty we're looking at about one hundred forty tons. Each car will carry up to thirty tons of goods, so we could be seeing a full train weighing close to seventeen hundred tons."

Arv jotted a couple figures down on a notepad he'd removed from his shirt pocket.

"Got it."

"I have to say you don't seem to be bothered by those numbers. So," he took a breath, "we want to run the trains at about one-hundred-thirty to one-forty miles per hour. I can probably figure out how to solidly anchor the towers to hold the rail, but I need to have you build a model with that many cars—filled to a scale full load—and a run of perhaps three miles of track. We can set things up in the test area at the east side of Enterprises and run things to see what stresses the rail and towers are put under."

"And to test the amount of swing we need to allow for the cars?"

Tom nodded. "Absolutely."

Arv requested a few minutes to do some calculations. When he finished he was looking quite pleased.

"I just figured if we make these cars to 1/80th scale and fill them with heavily salted water we have a scale load to within three percent. By that I mean about five times the amount of salt you find in seawater. Anything more and it would not dissolve."

"So, can you make a locomotive for the front that can pull everything at scale speeds? I recall the computerization that went into the transcontinental train so we could test the interim drive cars without them under or over powering things."

"I'm fairly certain, skipper. The only issue with that is in not testing the dead weight drag of everything back behind the tenth car."

"I don't see that as too much an issue, at least not in this first train. Later, if things pan out, we'll go all out."

"Okay." Arv looked at Tom as if expecting the inventor to say something.

Tom was confused. "Am I missing something?"

"Only the magic words and the request to have this all finished in far too few days," the miniatures man teased.

"Okay. Consider this your 'Go!' request and can I plan to test all



this in three weeks.”

Arv shook his head.

“Four weeks?”

“Nope. Try two. I’ll have Hank program his massive vacuu-form machine to turn out all the left and right halves in one go. After that it will be trimming, baking hard, sealing, filling and adding the... no. Forget that. I was about to say adding the wheels. No wheels on these. So, it is just creating the workings and figuring out the best drive system for the locomotive. Definitely two weeks or less.”

The first hint of trouble came when Arv tried developing a rail that was both strong and supportive, yet allowed for the drive unit—basically the entire piece that attached to the track—to swing the car below left and right and still give the traction needed to speed the trains along, and most important, to slow them down when that was necessary.

Square tracks, the first thought, would not work. I-beam-shaped tracks, providing the best vertical strength, could not be used without a lot of difficulties. That left teardrop-shaped and round.

Arv settled on a modified teardrop and a drive unit featuring a trio of wheels surrounding the bottom ninety degrees. He could not believe the trains would swing farther than half that even on the sharpest curves he might imagine.

He was wrong.

A computer simulation run by Tom showed the train cars, fully loaded, wanted to swing out about fifty degrees in the hardest corners; that was a full five degrees beyond Arv’s prediction. So, the drive unit was redesigned to provide for an additional thirty degrees of total swing.

Driving the wheels looked to be a poser until the inventor suggested a fluid drive. “Just pump high-pressure fluid through tubes, into a gear box and out again to be recirculated. Then you do away with any shafts or belts or chains.”

When a test drive unit was assembled it also proved to be a boon for heat management. The fluid, under pressure, removed nearly all built-up heat allowing the lubricating properties of the fluid to do their job.

While this was going on Tom developed a potential pillar onto which the rails would be attached. If the trains could weigh thirty percent less—unlikely—these support posts could be spaced about one-hundred feet apart for straight runs and at thirty-foot intervals in the corners. However, given the overall weight anticipated, that

spacing had to be cut by half.

Still, for the extended cross-country run the hanging track and support posts would use about the same amount of extruded materials as a double set of tracks with bracing. The cost and time benefit would be in it taking no real time to prepare the ground to be level and compacted. It also might allow the government to declare eminent domain on small, circular patches of privately owned land much more easily than getting a wide right-of-way for a ground level system.

Tunnels became simplified with the arch or the tunnel supporting the track with ease.

He dropped by the workshop again to watch Arv and three techs assembling the individual cars. Because of the relative simplicity of the design over something requiring support for multiple wheels, they were made of just three pieces: a left side; a right side; and the screw-in plug to seal the salt-laden water inside.

Right on schedule the small train, stretching some seventy-eight feet long, and the two miles of track were taken to the testing area inside the grounds of Enterprises and the track erected. Rather than a simple oval, Tom had asked that there be one long straight length, the two sweeping curves at the ends, and on the other side a series of shorter left and right curves.

“The drive unit is a marvel, even if I do say so,” Arv boasted as he was putting the finishing touches on the assembly of the fifty-car train.

“Then, we’ll wait for Bud to bring dad out here and get this test underway.”

The other two men arrived five minutes later and Damon took an end-to-end walk along the train.

“She is definitely a beauty, son,” he complimented Tom.

“I think so, but it will be for nothing if it doesn’t work and the tracks do not remain rock solid.”

“Are you using laser alignment beams to check for that?”

“Yes. That plus I have vibration sensors and a few other sensors in the track and on top of every tenth car.”

“Great. Let’s see how it runs.”

Tom picked up the remote control and flicked the power switch to **ON**. On the top of the locomotive three red lights lit, blinked several times and then one-by-one the turned yellow and finally green. He moved the slider up a little and they watched as the train failed to move. They could hear the rubber tires slipping and soon

small streams of burning rubber were coming out.

Tom stopped the test and shut things down.

“We might need to reschedule this and create some of the mid-train drive cars after all,” he admitted.

Arv smile and walked away from him. In a moment he was back carrying a box which he set down and opened. Inside were five small drive cars with the appropriate units on top.

With Tom and Bud assisting him, they were added to the train model after each tenth freight car.

He also swapped out the now smooth and treadless drive tires on the locomotive.

A half hour late the test began.

The train seemed hesitant to move but within a second it started forward. Slowly at first as Tom checked over the systems, it moved down the straightway. By the time it was half way down he had it running at a scale speed of forty miles per hour.

They watched as it took the sweeping corner with ease, the readout showing the cars were only swinging out eighteen degrees, about two-thirds what was anticipated for this speed.

“If I can create a fast system for digging in and anchoring all the necessary support posts,” Tom said from the side of his mouth as they watched the model negotiate the wiggling curves with ease, “then I do believe we will have a fast and unique solution to offer our Canadian friends!”



## CHAPTER 7 /

### THE REALITY DOSE

TOM HAPPILY called his French customer three days later to tell him progress was being made, and he expected to have a full report on the next steps to be taken for the commission in another five days.

“I am mostly happy to hear that, Tom. No, what I mean is that I am happy to hear your news, but I have been having troubles with this commission of selfish individuals who seem to refuse to work together for the good of this project. One in particular, a former Russian oligarch who defected from that country to Greece nearly a decade ago. He has maintained his personal wealth and business power, which is why the Greeks selected him to represent them.”

“I see. But, what can a single man do in a group of your size?”

“He exerts power in ways unimaginable. At any given time he possibly has loyal employees sitting in three hundred major companies over here. They supply him with information, plant evidence to incriminate those he wishes to depose, and it has been said he controls a personal army of some five thousand former Russian and Eastern European nationals.”

Tom asked if the man’s name could be provided. “I would like to have my Security people check on him and ensure that there is nothing going on over here he might be involved in.”

“I cannot freely speak over the phone, Tom. As it is, there is a possibility these lines are being listened to by some of his people.”

Because he never had been provided a list of the names of the members of the commission he might refer to, the conversation ended unsatisfactorily, at least to Tom’s liking, so he headed out of the office and over to Security.

Phil Radnor, slightly pale and wincing from his wound but back at work, was leaning on the reception desk. “Just filling in while Patty is making some copies. What can I do for you, skipper?”

Tom chuckled. “Phil, it seems you’ve done more than enough for me this past week or so. I won’t ask how you are because I’ll bet all you’ll say is, ‘Top of the world, Tom,’ and let it drop at that. You are looking better than the last time I saw you and Bash managed to wash your blood out of my pants and the little that got on my shirts, but it scared the dickens out of her when I walked through the door that night.”

“If you’ve come over here to make me feel better, Tom, that

might not be the best way to do it.”

“No. I came over to talk to you and Harlan about something that I’ve just learned about one member of this underwater train group over in Europe.”

Phil nodded once. “Do you mean Oleg Belishnikov?”

Tom stared at him. “I... I don’t know his actual name. How—”

“If you are going to ask how we, a group of men and women who are supposedly professionals in the field of security might possibly have heard about someone we need to keep tabs on, then I have to say that we perform this sort of magic daily.”

Patty came back down the hall so Phil invited Tom to come with him. Then knocked on Harlan’s door and entered.

“Tom wants to tell us about Belishnikov, Harlan.”

The inventor took a seat. “I was given a tip off from the head of the commission, only he couldn’t give me the name for fear his phone was tapped. What do I need to know about this guy?”

Harlan reached over to a short pile of papers on his desk and slid a red folder out from about half way down. He opened it, scanned the first page and then turned the folder around, handing it to Tom.

“Oleg Belishnikov is what was known as an oligarch. An exceptionally rich and devious criminal businessman and former Russian citizen who amassed a personal fortune in the billions of Rubles, or about nine-hundred million is U.S. currency. He was and possibly still is involved in arms dealing, drugs, white slavery and was even a legitimate distiller of vodka. Of course, for the two distilleries he ran that paid their taxes, he operated eleven others that did not.

“He managed to leave Russia about nine years ago with all of his money and settled in Greece where he requested and received asylum.” Harlan looked at Tom.

“I heard a little of this from Monsieur Artois, but not much other than an implied ‘watch out for this man,’ unspoken warning.”

“And, a good one to receive. One other thing about him is there is some chatter in the intelligence community of him being the money behind a crackpot group calling themselves the Pangean Society. They not only believe in the theory of a super continent at one point in the planet’s history, they actively believe it had a super intelligent population that were far ahead of where we are today.”

Phil added, “They hold demonstrations any time someone wants to go out into the mid-Atlantic for whatever reason. They were

there when the first trans-Atlantic telegraph cable was about to be laid in the mid-eighteen-hundreds. They tried to sabotage the cable-laying ship by planting explosives on the hull as it sat next to the dock. Only managed to have them fall off and float under the dock so when someone lit the fuze that was supposed to burn underwater a hundred or so feet, it went kaboom and shattered the dock taking about five of the protesters with it.”

Tom nodded. He had heard a small amount about the group years earlier when he and Bud were testing the hydrolung. From what he recalled, they wanted nobody to explore the Atlantic Ocean for fear others would find the fabled lost civilization known as Atlantis before they could mount an expedition to do it themselves. Their belief bordered on religious fanaticism.

Some of them harbored hopes the Pangeans were still alive and their riches and technology might be available for peaceful purposes to those who found and befriended them.

Some, like Belishnikov, wanted whatever they had for their own power and wealth.

“I don’t recall much about this Russian from the demo Bud and I did over there. Just a vague impression of a bored dark-haired man sitting toward the back of the room and hanging at the back of the group when we went outside to run the model in a nearby lake.”

With an unnecessary warning to keep his eyes open the next time he might address the commission, Harlan stated he and the rest of Enterprises’ Security team members were looking as deeply as they could.

Tom left feeling vaguely unsettled. In the back of his mind he could almost, but not quite, see the look in the man’s eyes. Had it been a look of boredom, or one of evil intent?

When he asked Bud about it later in the day, the flyer couldn’t recall the man at all.

“Sorry, Tom. I was watching the three in the front including that Italian woman who kept pleading to the heavens to halt the madness, or something like that. My high school Italian is non-existent, but she was jabbering about something like ‘perchy in nome del chia.’ Well, not that but close.”

“Yeah, it was *Perché in nome del cielo*, or ‘why in heaven’s name?’ And, don’t think I have a great grasp of foreign languages. I had to look that one up.”

With four days to go before he was due to make a report on the route through Canada that would be both the most expeditious to construct and the fastest to run, Tom spent that afternoon and most

of the following day, Friday, deep in the process of putting together detailed descriptions of each segment of the route.

They totaled fifteen separate runs that would allow the train to either bypass—when no goods were to be picked up or delivered—stops at Calgary, Regina and Winnipeg. And, while it would be better to run the line straight from Vancouver to Winnipeg roughly sixty miles north of the Canada/U.S. border he knew there was some pressure to allow for those stops. There would be some intensive changes to be made to the Tunnel Boring Machines for going through the Western mountains if he adopted the overhead monorail approach, but it could offer a better total solution than surface tracks when it came to negotiating the many, many bodies of water in the Provinces of Manitoba and Ontario.

He worked through Saturday but had promised Bashalli he would be home all day Sunday so they could go on a picnic down to the waterfront of the original Swift property near Lake Carlopa.

It worked out as he had the thirty page report and proposal ready before two on Saturday afternoon. He wanted his father's input so he drove over to his old house where the two men sat in Mr. Swift's study off the living room while Damon read it.

"I would only make one very small change, son. On page... ummm, seventeen, right here," he turned the paper around so Tom could see where he was pointing, "you state that the overhead system is the only one that can traverse those two wet Provinces. I'd change that to say it is the *best* and *most efficient* solution to maintain speed of construction and speed of travel over any others besides costly and time-consuming tunneling underneath it all."

"I toyed with that sort of wording but thought I'd see if you picked up on it. You did, so I already have that changed in my computer. I'll go back to work, reprint that page and package it up. I still have time to get it to the overnight shipper for Monday delivery."

He dropped the heavy envelope off fifteen minutes before the 5:00 P.M. deadline and headed home, satisfied he was presenting the best information about the most efficient route possible.

Sunday afternoon by the lake was exciting for little Bart. It was his very first experience swimming in anything larger than the family bath tub. He was initially surprised at the coolness of the water but soon ignored it as he paddled around inside his father's encircling arms.

"Oh dear," his mother said as the two men came out and towed off. "Not only do I have a budding scientist but a swimmer as well. We are going to have to have a sister for me... I mean for Bart to



play with.”

By Thursday of the following week Tom received a three-page response from the Ministry of Transportation. The letter was terse and to the point, and the enclosed map was marked with a bright red line that was, in some places, as much as one-hundred and fifty miles off his suggested route.

In short, it said the Ministry did not like Tom’s proposed route. There were no reasons given other than a statement saying, “This does not meet our specified needs or desires for this system. You must comply with our requests or your participation in this project could be cancelled.”

Tom called up an electronic map and plotted the changes requested. Many were innocuous, only adding time and costs but not greatly impacting the speed at which the trains could travel, but for a great portion of the route beginning at Winnipeg and running through most of Ontario, the route dipped and dove in an erratic pattern around a variety of lakes. In all, it would lengthen the rail system by four hundred miles and would mean the fastest speed through that large section, about one-third the entire length, would be under eighty miles per hour.

Even standard trains of the day could manage a fairly consistent sixty-eight MPH.

He carefully worded a response detailing all the whys and costs of running the rails system along that new path. This time he didn’t wait to ask for his father’s input as he knew exactly what they were asking as well as his reasons why it would make the project difficult and considerably less efficient.

He mailed it off and put much of it from his mind as he returned to the undersea train system and his planning for a trip across the ocean between the suggested terminals to see what he would have to work with and around.

But, Monday morning he came to work only to have Trent stop him.

“You had a rather angry call from the Canadian Transport Ministry, Tom. A Minister Arthur Ryan. Be prepared for some swearing because he used several rather unpleasant words on the phone to me. Or, he may have because he considers a secretary to be an unfeeling underling.”

Tom sadly shook his head. “Then, he is a fool. This place would go to pieces without you, Trent. Assuming I get a word in edgewise with him, I’ll suggest he was being rude when he spoke to you like that.”

“Thanks, Tom, but don’t bother. His sort only get angrier when called out like that. Do you want me to put the call through?”

“Yeah, but give me five minutes. Thanks!”

When the phone buzzed, Tom took a deep breath to calm himself and picked up the receiver.

“Hello, this is Tom Swift. Am I speaking with Minister Ryan?”

“I need to inform you, *young sir*, that when the Canadian government tells for you to take a specific route from one location to the next, it is not up for debate. And, when a minister makes that request it is the same as if our entire nation demands it. Whether you agree with any decisions we might make, it is not up to you to express those. Either accept the route we have provided or remove yourself from consideration for this rail project!”

More than slightly shocked at the tone coming from the politician, Tom ventured, “May I ask what is so vitally important in the route you prefer that you would accept it will be nearly fifty percent more expensive to go that way, and the result will not allow the train to function much above ground train speeds for about eighty percent of the distance?”

“No, you may not question my decision. Either accept, and do it right now, or this ends our conversation.”

Tom felt he had nothing to lose, so he asked, “Does that end the project?”

There was silence on the line for a moment. Then, “We have a signed letter of intent from your company we intend to hold you to. It’s your choice if this is a friendly relationship or one that is, shall we say, less than cordial.”

“I see, except that I do not see. So, I will contact my Legal people to determine where we actually stand. In the meantime, sir, I will work up the route and construction plan for your route and have the cost figures to you in three days. Good-bye.”

He sat back finding that his face had begun perspiring. His handkerchief wiped it away and he stood to leave the office.

He sat back down and dialed Jackson Rimmer’s number. When the company lawyer answered he explained in a few sentences what had transpired.

To his surprise, Jackson laughed. “That letter was only an intent letter to perform the original survey of their possible routes. There is nothing we have seen or signed that obligates us to do anything more for them. If you are going to ask me if we can just step back, I’d say there is nothing to step back from. They have the next move

to make before we step up and sign on for the actual project.”

Tom puffed his cheeks out and thought about the situation.

“What is your suggestion on how I handle this? I don’t want to get dad derailed on his low Earth orbit research station for the folks from India so I either have to kill this or try to get that minister back on our side.”

“Personally, I’d suggest waiting a day or even two. Take the week and weekend and don’t worry about it at all. Let him sweat it out a little. The original request came from a trio of their ministries along with a rubber-stamped signature from their Prime Minister. I think if he feels they won’t support him, this one minister might just come back to you.”

The young inventor knew it was going to be hard. He had never enjoyed negotiations, especially when they were filled with tension.

“In fact,” the lawyer offered, “I believe you and I *never spoke about this* and I have become interested, purely from a legal standpoint, what the status is and may just check with their version of the General Accounting Office. Let you know what hornet’s nest I stir up.”

Tom found it hard to concentrate after that so he called Bud.

“Let’s get one of the mothers to watch Bart tonight and we four will hit the dance floor up in Oswego. You game?”

“Of course I am. And, as I mentioned just a very few short days ago we need to do something so our ladies don’t get too angry at us. I’ll call Sandy right now if you’ll also call Bash. That way whichever one calls the other won’t be springing any news on them we haven’t already passed along.”

Both wives were enthusiastic but Bashalli asked what time Tom was absolutely going to leave work.

“I thought we’d all meet here and take a Whirling Duck over. Now that you have your multi-engine and jet endorsements, I think it is time to give you a practical lesson in vertical rotor aircraft. How about it?”

For nearly three years she had been slowly learning how to fly and excelled at each phase of her training. With Tom, Bud, Damon and Sandy all seasoned pilots, and Red Jones who was an FAA qualified flight instructor, she and Anne Swift had been the only ones not qualified, and Anne was still a holdout.

“If you think I’m ready, I’ll try it, but please do not leave me alone with the stick or knob or whatever the controls are. Okay?”

“Deal!”

She turned out to be nervous but concentrated well on the handling of the dual controls. The Duck made it easy with its abundance of ready power and computer assist. When they were coming in for a landing she turned the controls over to Tom and he set them down as gentle as a feather.

A young woman Sandy had once helped get a job at the airport came over on a golf cart.

“Hey, Mrs. Barclay. Hi, everybody else!”

She promised to get the helicopter tied down and offered to clean the windscreen. Sandy gave her a ten dollar tip and the girl gave her a big hug.

They dined at a favorite restaurant and club in the Tishamingo Towers on the lake in Oswego. Most nights a house combo played but on special evenings they featured other bands or even entertainment acts. Tonight a seven-piece band played nonstop uptempo blues, a recent arrival from Chicago.

After their main meal and before they wanted to order dessert, the band leader announced they were going to do a five number set of blues/jazz he told the audience, “It’s so danceable you’ll hate yourselves if you don’t let your feet take you to the floor!”

As it turned out, the shortest of the five tunes ran well over five minutes, so when the band took a break nearly forty minutes later, the foursome, and everyone else who had gone out to dance, nearly collapsed in their seats.

Dessert was forgotten as weariness took hold. Tom ordered a large bottle of sparkling water and four glasses filled with ice. After refreshing their thirsts, they paid the bill and headed back for the airport.

There, Tom was the first to notice the Whirling Duck was not where they had set it down. It wasn’t that far away, perhaps one hundred feet, but he became concerned.

Taped to the pilot’s side window was a note from the grounds girl:

Tom and all of you,

Some man was snooping around a little after you left. He flew in ten minutes behind you in a small Cessna 150-H. A 1968 model, white with red trim and NO ID numbers! Made lots of smoke so he needs a ring job. Light red hair, about five foot ten and maybe 200 lbs. I asked him what he wanted and he told me to mind my own @\$!\* business. So, I hooked up to your landing gear and pulled the copter off the field and to the maintenance hangar. He

flew back out right after that, but I moved it to this other spot because you can't see it from the runway. Had to go home to dad at 9:50.

Mollie VanCamp

“Great little detective is our Mollie,” Sandy told them after she read the note. “Someone remind me to send her a second tip!”

Tom and Bud carefully checked the helo. From the time she had evidently left the note until now, nearly an hour had passed.

Neither of them located anything that appeared to have been tampered with so Tom got in and fired up the engines giving them a three-minute run-up. They purred like contented lions.

The trip back to Enterprises was uneventful and when they parted ways at the parking lot, both ladies practically had to be carried to their cars they were so sleepy.



## CHAPTER 8 /

### AN UNCOMFORTABLE DISCOVERY

TOM SENT Mollie a personal letter the next morning and included a one-hundred dollar bill asking that she keep an eye out for that same man. If possible, would she be able to point him out to anyone else there who might either identify him as harmless or verify he was an unknown snoop?

That taken care of he called Sandy in her office to tell her he'd taken care of the "extra tip" thing.

"Oh, good. I was so beat last night I couldn't remember if I'd only thought that or said it out loud. Thanks big brother. I'll slip you a twenty next time I see you"

Tom didn't bother telling her how much he had sent the girl.

Since he didn't expect to hear anything from Jackson Rimmer or the Canadians for several days he put the above ground project from his mind and concentrated on the underwater train.

He was still bothered by several aspect of it including how to keep wheels in contact with tracks, how to power the wheels, and what to do with freight cars not completely full or filled with lightweight contents.

The last thing he wanted happening was to have one or more cars want to float up from the tracks. He knew he would need to model things in the computer so he began looking for code to repurpose for simulations. He eventually located about seventy percent of what he could use and spent the remainder of the day listing everything he would need to program from scratch.

By day's end he realized it was going to require more than two-hundred-thousand lines of new code to complete his simulator.

That level of work would take far too much of his time, so he sent notices to Programming to have a five-person team meet in the lab next to the shared office the following morning at eleven.

He walked out of the shared office at ten minutes before the hour to find seven people waiting for him to unlock the lab door. He knew all of them save one young woman who had the most mysterious almond-shaped eyes he had ever seen on a non-Asian.

"Oh, Tom, this is our latest acquisition in the programming group. Samantha Formova, meet Tom Swift."

They shook hands and he notice hers was slightly cold and she was shaking. "A pleasure, mister Swift," she told him with a slight

accent.

“Pardon my nosiness, but your family background... is it Kranjovian?”

Her eyes went to the floor and she nodded, sadly. He saw a couple tears drop away from her face and hit the floor.

“I’m sorry if my question was out of line,” he told her, touching her forearm gently. “As you have no doubt heard we have had several encounters with people from that nation. I’ve noticed there are certain ways some vowel sounds are pronounced there. Anyway, I hope you find us to be good people with which to work.” She looked at him and managed to smile.

When they had settled he outlined the task ahead. It was, he described, going to need seven modules of code created. He told them what he already had and how the new routines would interact. He said he wanted one of them to take on the task of integration of new into old and to report to him any places where things might not be handled in the most efficient manner.

“I know you all love to code or you would not be here, but do I have any volunteers?”

Samantha hesitantly raised her hand. “If you will trust a young girl who pronounces vowels in a *Kranjov* way,” she said now raising her eyes and looking at Tom. He detected a twinkle in there and nodded. “Good, then I would be most glad to be that person.”

“Fine. I believe that divided up we can get this finished in about a month. If any of you run into difficulties or delays, let me know. This is a team effort and we all have to succeed for the simulator to be viable. Thanks you for coming. Oh, and Samantha, I don’t mean to single you out, but can you stay for a moment?”

She nodded and stood to the side as the rest filed out and down the hall. Once they were gone he closed the door and took a seat, offering her another stool, the one Bud generally perched on.

Not quite certain why he’d asked her to remain behind, she sat. He looked at her and smiled.

“You wish to know how a Kranjovian got here and how I managed to get hired?”

Tom shook his head. “No, because we do a very good screening job these days and it takes a lot to get past that and be offered a job. Also, I’m betting that you were perhaps born over there but your family came here when you were young. You had already started speaking, but your parent had or have very heavy accents.”

She smiled at him, and it seemed to be an honest one. “You are



correct except I was actually born here in the United States shortly after my mother and father arrived. They knew no English so I learned Kranjov first and English second.”

Tom took a chance and asked, “Have you ever heard of Oleg Belishnikov?”

She looked as if she was pondering the name but soon answered, “Not that I ever recall hearing. Is he another employee here who came from Kranjovia?”

Tom shook his head. “No, just someone who has taken an interest in me. So, do you have any questions about the project?”

They talked for fifteen minutes and she had only suggestions and no questions.

Tom wanted to believe her circumstances were what she had told him, but decided to make a detour back to Security to ask.

When he brought up the subject of Miss Formova’s background, Harlan made a tutting sound. “Tom. Don’t you think we do a good job of screening people. Wait, don’t answer that because we all know a few bad eggs have slipped through in the past. But, these days I feel we do the best job possible. Anyway, Miss Samantha Formova is the granddaughter of Sergei Sokolov the dissident General in the Kranjovian Army who attempted to overthrow the dictatorship there—the evil one we’ve run afoul of—over thirty years ago. He was executed for his attempted coup but his family managed to escape to Poland where they lived until the year before Samantha was born. That was about the time the Polish authorities were rounding up former Kranjovian and Czechs and Ukrainians and forcing them to return to their native countries. Her folks would have met the same fate as her grandfather.”

“Now I feel embarrassed,” Tom admitted. “It’s this Belishnikov business and the shooting that hit Phil. It has me looking into shadows or spinning around at noises.”

“That reminds me, you ought to hear what we ended up with over that shooting. The man has been identified by the FBI as Stanley Cody. He has made various threats against different industries in the past but this was his first, and last, foray into violence. And,” he looked at Tom a second, “he was a member of that Pangean Society.”

Tom left the office a few minutes later thanking Harlan for clearing up his misapprehension about the young programmer.

With the aide of an oceanographer who taught at Grandyke University Tom plotted a likely path across the Atlantic starting near Miami, or at least at the terminus of the East Coast bullet train

run, all the way to the central coast of France. The actual U.S. terminal was outside of the small suburb of Sunrise, north of the city, where its goods could easily be transferred to regular freight trains and a fleet of trucks.

From that point it was going to be necessary to tunnel under several other suburbs to get to the ocean, but they would be able to exit into water just one mile from the shore so those tunnels would be about six miles long.

Professor Stephens had an extensive knowledge of those waters having been raised in the town of Fort Lauderdale.

"I believe you will want to head on a northeasterly course once you get to the sea. There is a double valley out there dipping down some two hundred extra feet. Now, if you angle toward Boca Raton right out of the station and keep on, oh, a heading of about fifty degrees then you will want to switch to a new heading of about ten degrees off of North to get around the shallow waters and the northern islands of the Bahamas."

"Is it smooth sailing, pardon the incorrect comparison, from there?"

The professor shook his head. "No. See right here?" He tapped a point on the chart, "It is indistinct on this map but there is another valley there to have to skirt. It runs from about zero-two-zero down to about two-hundred degrees. Once you pass that you will want to turn back to a more easterly course as a couple hundred miles further along there are a couple inverted cones some people, such as myself, believe were once volcanoes poking above the waters that collapsed. One is nearly two thousand feet deep!"

Tom groaned. "And it looks to be right in the way of getting to that more gentle slope down from the shelf to the deeper waters. Great!"

Professor Stephens shrugged. "I am not certain why you would choose this route to get to France, but it does have one advantage. Out here at the Atlantic Ridge there are at least three pathways that remain at the normal ocean floor depth even as the mountain chain rises on either side. They are not smooth and even by any means, but would likely not require you to create an actual tunnel through that extremely wide range."

Tom looked closely at the map of the ocean floor. "Correct me if I am mistaken, but those would require changing course to about one-two-zero on the outbound route. Right?"

"Yes. And, here is a very big reason I believe you will want to promote a different route. If you take this one, the actual travel

distance may be as much as four-thousand three-hundred miles. You see, as you get closer to Morocco there are many island groups to maneuver around and between if your desire is to rise to the continental shelf on that side as soon as possible.”

Tom thanked the educator and offered to fly him back to Albany. “That is not necessary. I might have been flown up here by a colleague, but I have family in Thessaly who will collect me, feed me very well tonight and take me back south in the morning.” He shook Tom’s hand. “I hope you can see this route starting in Florida is, in my opinion, folly and you can take a more direct path from a northern location.”

“That is what I’d like but I’m receiving some pressure from my customer on this southern route. We’ll see. Thank you for your expertise.”

That Sunday evening, Tom and Bud flew down to Florida in the Toad, landing at the Pompano Beach airport. Bud questioned why they didn’t go to the Boca Raton field.

“Seems to me if the tunnel will head that direction why not begin there?”

Tom smiled. “Because, flyboy, I want to check the coast for about fifteen to twenty miles either side of that to find the best spot for the tunnel to come out.”

“Ahhh. A method to your not really madness I see.”

After parking and paying for a week’s fees, they pulled their hydrolung gear from the back of the jet and hailed a taxi.

“Doing some sort of underwater fishing?” the cabbie asked them in a thick Cuban accent.

“Yes. Something like that,” Tom replied.

They entered the water to the amusement and surprise of about two hundred beach-goers at the end of the 14th Street Causeway, one of the few bridges spanning the inland canal. They could only submerge starting about ninety feet out as the water was quite shallow. Passing under several small boats tied to buoys a few hundred feet father out, they began the first leg of their investigative swim.

Turning to the north they let their drive units carry them along at about ten knots as they swept their surroundings looking for anything that would need be avoided.

As they passed Boca Raton Tom noticed that everything was looking very uniform. He made a mental note that just about anywhere along this stretch would be adequate for a tunnel exit as

long as it was farther out to sea. Many spots had water only deep enough to cover about fifteen feet of the train, barely to the top, and that would cause no end of troubles.

“Let’s go ahead and head out to sea Bud,” he suggested.

“I’m all for that. This part is downright beautiful, but in a boring way.”

About a quarter mile out the bottom took a steep dip down several hundred feet to the actual continental shelf.

Tom had outfitted both of their helmets with a special underwater camera that not only took a stream of photos at a rate of about one per second, it also time stamped each one and added an accurate GPS marker. After the swim Tom would put them together into a 3D video that should cover the entire swim in about a single ninety-minute movie showing everything they had seen.

The reached and were over the continental shelf by late in the day. Tom decided they should go ahead and anchor themselves to the drop off for a rest. It wasn’t that they were exerting themselves, but the length of time spent in mostly one position caused body fatigue.

They ate from their liquid nourishment tubes taking in a mixture of proteins, carbohydrates and liquid to sustain them for about twelve hours.

“Are we seeing anything other than what you anticipated?” Bud asked as they floated a few feet from the wall in water that was now so dark they could only see when their lights were turned on.

“Nothing so far, but we’re just starting this thing. In the morning, as soon as we both wake up and eat, we’ll head down and out at a higher speed. I’d like to stay a couple hundred feet above the floor unless we find something that looks interesting.

They both fell asleep quickly, and woke up before six the next morning. After eating Tom set their course and they went shooting off remaining about ten feet apart.

Nothing of note was to be seen the first nine hours. At one point Tom announced they were at the same latitude as Fearing Island and were going to head a little more to the east.

“There are all sorts of small mounds along here I’d like to take a better look at.”

“Lead on,” Bud told him and they dropped to within twenty feet of the ocean floor.

As they scooted along close to the ocean floor, Bud let out a cry of alarm.

“Tom! Look at that!” He was pointing ahead of them at something several hundred feet away.

Immediately slowing to a crawl they approached their find. From the murk projected what was a propeller, and it was soon evident it was still attached to its engine.

“Bud, I’ll bet that wreck is one of the missing military planes that supposedly disappeared down here in the Bermuda Triangle!”

Bud found that he was gulping. As a flyer who had ditched a plane in the ocean once, he was well aware how violent the contact must have been. He only hoped it had been a swift end for the pilot.

They slowly swam over the out-sticking blades and could now see what they believed to be fuselage was actually part of a wing. Tom used his gloved hand to wipe away some of the algae and other sea life that was using the wreck as their home.

“From the numbers here, Bud, it might have been an old B-17 and this would be the inboard engine on the plane’s right side. Let’s see if the rest of the plane is nearby.” Before moving Tom noted their GPS location and registered an electronic marker for the relic.

No more than fifty feet away Tom found the front half of the main body.

“Got something, skipper?” bud called over.

Tom felt sick at what he had just discovered. “Stay over there, Bud. I found the cockpit and it... well., it isn’t empty. I think I need to move on. Come on, let’s go!”

He rejoined Bud a few hundred feet on along their original track. His friend waited until Tom wanted to talk about it.

“That was a bad surprise, Bud. I’ve registered the location so if we get to building this line we’ll skirt around this gravesite. Another dive team may come out to retrieve remains. I don’t know.”

“Are you okay, Tom,” the flyer asked very concerned at Tom’s emotional distress.

“Yeah. Just rocked a bit back there. I’ll be good in a few. Just have to come to terms with what I saw. Thanks.”

He reached over and squeezed the forearm of his friend as they began picking up speed again.

After passing Bermuda it became obvious the sea floor was getting quite rugged. An underwater mountain range reared up several thousand feet in front of them

Tom decided early on the best thing to do was to remain together but he was tempted to split up with Bud heading to the

North and he would go south. By dividing they might stumble on a good route between the peaks or come to the end of the chain which the charts showed was about equal distance either way.

“So, if we knew about this range, why did we head straight for it, Tom?”

“We have nothing concrete about how complete the coverage is. The Navy’s deep sea charts are darned accurate but not even Admiral Hopkins could get us clearance. My guess is these mountains are used for a version of hide-and-seek submarines play.”

“Some game!”

“Right. Want to play another underwater game?”

“Well, as long as the rules aren’t very long and we can do it without going back to get a game board. Sure.”

Tom held out one hand clenched in a fist. “Rock, paper, scissors. If you win we go north, and if I do we head south. Deal?”

Bud nodded and Tom provided the counter. “One, two, three!”

Tom kept his fist—the rock—and Bud stuck out two fingers as his scissors.

“Rats! You win, skipper, so south we go.”

They started to skirt to the southeast staying about five hundred feet from the base of the mountains. Surprisingly or not, once the mountains reached the flat sea bed there was nearly no transition. The 45-degree slope flattened out within a few dozen yards.

An hour passed and they came to a nearly ninety-degree turn that proved to be a passage between the current mountains and more farther south. They picked up speed for three hours until Tom’s SONAR detected more tall features. This time, there were dozens of them, but all were spaced by anything from a quarter mile up to more than one hundred miles.

For the next two days the young men sped across the ocean bottom taking note of all the places where some engineering of the sea floor would be mandatory. One of the more notable ones was the tectonic rift running north and south in the middle of the Atlantic. It had been the source of the rift that caused Tom to build his Tectonic Interrupter in order to halt the progression of a massive crack coming off it and heading right through the state of Rhode Island.

In this area it looked like a fifty-mile bridge of some sort would be necessary to cross the rift. That was something Tom really had no desire to tackle.

Even more disappointing was the incredible roughness of the sea bed starting about a thousand miles from the coast of Portugal. There was only some relief once they reached the northwest tip of Spain and the continental shelf. From that point it was remarkably smooth all the way around upper Spain and along the coast of France.

Emerging from the water in the small coastal town of Pornichet they walked up the boat ramp in the city's marina and waved at Zimby Cox who was sitting on the hood of one of the original atomicars.

"Got a reservation at a small hotel plus clean and dry clothes for you both. I'll get you there so you can shower and take a nap. Hank and Red will be meeting us at the airport in Bordeaux in ten hours. So," he asked as they climbed into the atomicar, "how was the trip?"

Bud groaned.

"That bad?"

Now, Tom told him, "Let's just say that our possible route number one is not practical. I'm going to have to find a better route that doesn't take us over around and between about a thousand different hills and mountains and rifts and valleys down there." He hooked a thumb over his shoulder at the sea.





## CHAPTER 9 /

### ROUTE TWO

BACK IN Shopton, Tom made a series of plots on an ocean map showing both where he and Bud had traveled as well as a second, more northern route he wanted to investigate. He'd been working in the peace and quiet of the underground hangar but felt he needed his father's input.

The walk to the Administration building gave him time to consider a few things they needed to discuss, and he came to the conclusion he was going to need to put his foot down with the Europeans over their requested route.

Tom walked into the shared office and sat down somewhat heavily behind his desk. He looked at his computer screen as if daring it to do something. When it didn't, he looked over at his father.

"Trouble in paradise?" Damon asked.

"Can you tell? Actually it is nothing I haven't known, but I am facing the prospect to telling our Europeans the route they have wanted is not going to be the one I'm willing to build for them."

Damon nodded but asked, "Even if it is their money? Even if they are willing to foot the bills for everything making their route difficult?"

"I believe, even then," Tom told him. "There is just so much wrong with crossing the Atlantic in about the longest possible route. Continental drop offs that are precipitous and, frankly, dangerous. The highest possible passage across or through the Atlantic Ridge including the need for a bridge of some terrible length over the widest continental plate rift to engineer a safe way over. And, practically no room at the Miami terminus of the East Coast line for additional tracks and facilities."

"Right. That station was only meant to be a receiver of hard goods and shipper of citrus fruits. Why is it they don't want to go for a Boston link? It's close to the end of the current East to West line, close to major distribution arteries, and even would be something to help sell the Canadians on linking down from Quebec and Toronto."

"You'd think. The issue for me is now I need to talk to them and present all the reasons why their route is too difficult and unproductive."

Mr. Swift asked if Tom wanted him to be involved in that

discussion, but the younger Swift shook his head admitting it was his problem to tackle.

His father excused himself leaving Tom alone in the office to make his call.

“Ah, Mr. Swift. I am so very happy to have you call,” Pierre Artois told him once they were connected. “Do we have a plan of action for our undersea transportation system?”

Tom briefly described many of the difficulties that would need to be overcome in what he termed “the lower route,” and Artois listened to them all without commenting.

When everything on his list had been said, Tom asked for the Frenchman’s input or questions.

“Well, let me begin by telling you the route given to you was tentative, and not one agreed to by all members of the commission. For myself, I would prefer a route taking a more direct path between our nations.”

Tom wasn’t certain how he ought to word his next question, but he forged straight ahead.

“What would ever have convinced some of your members that a route from Florida to France is the way to go?”

Artois laughed long and heartily. “I’ll tell you my suspicions but please do not share these back with anyone at my end. I believe a number of our members have promised a more direct route to go to all of the amusement facilities in Florida. The movie studio tours and DisneyWorld and that sort of thing.”

Tom joined him in the laughter. It suddenly struck him as ridiculous that a number of people would be willing to double or triple the cost to build a trans-ocean system all in the name of faster access to amusement parks!

“Well, if the subject comes up, we will back out of this project if pressed for that route. In fact, if shipping goods is paramount for this sub-ocean train then Florida is prohibitive from a cost of goods shipped standpoint. It could double the rates to get anything to an end point on the West Coast.”

“I shall pass that on and use my position as the supposed leader of this band of fools and tell you we wish to have you locate a more advantageous route for this system. Thank you for your ongoing work in keeping this project from imploding!”

Damon had come back in and heard part of the end of the conversation. He inquired where Tom might be wanting to survey now.

Tom called up a map of the northern half of the Atlantic and traced a finger track from the upper East Coast toward Iceland and then over to France. Bud and I already swam over to a place on the French coast very near their terminus and it appears to be much more conducive to our needs.”

“But, you will do a more comprehensive survey before committing to it?”

“Of course!” Tom smiled at his father. “If we take this northern route it is going to be much shorter even though we have a bit more silt to contend with. Of course, there is the Atlantic Ridge right down the middle we can’t avoid, so we will go up and over. But, that way is more than thirteen-hundred miles shorter.” He looked at Damon and smiled. “And, since it isn’t looking likely that I’ll crack the one-hundred mile per hour barrier down there, I can back off on that and still get trains from one end to the other in under twenty-four hours!”

“Supposing your ninety-five MPH speed is going to be the average, then travel time on that route should be under twenty hours with the time necessary to speed up plus any areas where slower speed is called for. This is great, son. Truly great!”

“Bud had a good question about that ridge. He wondered why I don’t just drill a tunnel through the thing.”

“I believe I know the answer, but what did you tell our Mr. Barclay?”

“That there are a number of places where we can cross over it with relative ease, and that the entire area is stable on the sea floor but not necessarily so deep under those mountains.”

“I guess I only now need to ask when you will be heading out.”

Tom looked at his tablet computer consulting his personal calendar. “In five days, and we’ll probably be gone for a week to ten days.”

For this trip Tom decided to take a jetmarine. it wasn’t so much a comfort consideration but more what he expected to find the nearer they got to Ireland and England.

Along with Bud and Zimby, they took Chow and a young oceanaut, Jerome Howard from Fearing Island’s staff.

The jetmarine selected was a new 6-man version capable of forward speeds of nearly forty knots underwater and thirty-five on the surface. Like all jetmarines it featured a clear nose allowing direct view by the crew of the area in front of the sub. What it also

had that no other one did was a pair of articulated arms with multi-purpose “hands” under the nose. Those hands could be used to cut into things, pick things up, and even scoop up samples and place them into one of three external storage pods.

As they slipped out of the dock area, with Bud at the controls and Tom talking to Chow and Jerome, Zimby kept a keen watch on their SONAR equipment.

“Are we bringing back samples, Tom?” the young crewman asked.

“Perhaps, but that isn’t the main reason for bringing this particular submersible. I don’t want to spoil the surprise, but I may need to rethink that in order to minimize what could be a shock. Ask me tomorrow and I may tell all,” he replied.

“No contacts other than our security buoys and your father’s gardens, skipper,” Zimby called out. With the majority of the submarine’s interior space a single open area there was little reason for any sort of announcing system.

“Please give us updates every five minutes or so, Zim.”

“Will do!”

As they headed north skirting along the continental shelf Zimby reported numerous surface contacts, most close to seaports. As they drew abreast of Delaware he called Tom over to his station.

“I’m picking up something to the east, skipper. One of the canyons named Wilmington Canyon. See how there is a very small ping back? Looks to me like something is hiding there and has only a small bit raised above the shelf.” He looked meaningfully at Tom.

“Like a periscope, for instance?” the inventor asked.

“Yeah. Kinda, sorta just like one of those. What do you want to do?”

Tom pondered it a moment. “Let’s keep an eye on it and we’ll keep going. If it looks like someone is following us, I’ll take evasive action, but I have to bet that other than our interior lights being seen, they can’t be that aware of us visually. Our turbines put out some noise but that is disguised pretty well.”

He started to walk away then stopped. “Let’s turn off our lights except for operational minimums.”

Everything went into deep shades of gray, but the crew continued their duties almost as if in normal light. Each one could have operated the sub in total darkness.

Nine minutes later Zimby reported that the contact had

disappeared, so Tom had the lights slowly brought back to normal.

They pulled in close to Boston and anchored for the night. At first light they would be off checking and marking what Tom hoped would be a much more favorable route than the southern one.

With almost no kitchen, Chow was left with heating up prepared meals for them, but true to his nature, he'd brought along fresh herbs and fruits to serve the small crew. Beds were unfolded from the walls toward the aft of the sub and they turned in before ten.

Their trip out had been preplanned to a point at the farthest eastern area of the continental shelf. Along the way they spotted at least fifteen shipwrecks, mostly smaller fishing boats but at least two cargo ships that had broken into pieces in heavy seas. There was also one old diesel electric submarine, the German U-866, that had a special marker designating it a place of memoriam for the men lost in the sinking.

Tom stopped the sub for three minutes and they all looked on in solemn contemplation.

There were several areas Tom wanted to get better looks at, and two he discounted and suggested a wide sweep north and south to find something that would be better. He found what he wanted and the electronic survey chart was marked.

On day three with Jerome manning the controls and Bud at SONAR, Tom and Zimby were chatting while Chow took a nap.

“Coming up on the western slope of the ridge, Tom. How high above the bed do you want me to keep?”

Tom got up and stretched before walking back to take a look at the readouts.

“Okay. We've been keeping at one-hundred feet over the sea floor, so I say we try to keep to that. Do me a big favor and try to locate a canyon in the ridge to go down and a corresponding one heading back up at the France end. I'd love to avoid too much drilling and cutting if it can be managed.”

This part of their survey trip required three additional days. In the end Tom had a chart with seven possible marked paths. All were within the Faraday Fracture Zone with one suffering a land slide as they glided over it. The damage was slow and minimal, but a little worrisome.

As they left the Atlantic Ridge on the east side Tom got them all together around the station where he was manning the controls.

“I wanted to tell you what I am fairly certain is going to be a new feature visible in our undersea world, perhaps in as few as a

hundred miles of so.”

“Pirate booty?” Bud asked with a smile.

“Not exactly. Something a little more serious. We are about to travel through an area where more than twenty-five hundred ships were sunk by German U-boats during the second World War. They actually sank over twenty-seven-hundred but a lot were in the Mediterranean and farther south than we are going to travel.”

The mood became serious in the jetmarine.

Jerome, the youngest of them, and possibly the least worldly, asked in a shaking voice, “Are we going to see the ocean floor covered by them and their crews?”

Tom shook his head. “Statistically those wrecks will cover less than one-fiftieth of one percent of the sea floor, but I want you all to understand that there may be some hulks out there that will be caught in our undersea lights. Also, for whoever is piloting, I can’t discount more than one ship sitting on top of another, so be ready to evade.”

Chow raised a hand. “Are we gonna see any ghost ships? I mean, like whole ships just a-sittin’ there lookin’ like it could rise up and sail off?”

Tom tried to keep his face from showing the humor he was feeling. “Uh, Chow, what in the world would give you that idea?”

“Friend o’ mine back in Texas had his pappy on one o’ them Liberty ships that took a torpedo and sank with all hands, but folks on another ship said it sort of stopped, then turned around and headed back toward America as it was slowly sinkin’. Said the lights was still on long after the ship went under almost like the people was alive and trying ta sail home.”

Tom gave Bud a warning look and the flyer closed the mouth he was about to use to make a wisecrack.

“Chow, I think your friend may have been telling you something he heard from someone who probably wasn’t there but had heard the story and was painting it a lot more heroically than actually happened. The truth is many of those ships had so much fuel oil and ammunition in them they blew apart with the first strike.”

“Yeah. I always figgered it was a bit far-fetched, but thought I’d best ask.”

The following morning the first wreck came into view. It had lost its entire bow area and half of the top had been blown away. It was resting on its keel and was, even to Tom, one of the spookiest things he had ever seen. Several other wrecks were passed over or

near during the final two days of their voyage. Some were mere pieces of former ships and a few were mostly whole vessels.

The one wreck giving everyone the shivers was the *Bismarck*. It was on their course taking them straight into the northern French city of Brest.

After stopping for a half hour Tom decided to head to land and then turn around. As they picked up speed he said to Bud, "That is one of the hardest reminders of what war brings to man. Destruction of something technologically beautiful accompanied by horrific loss of life. Dad is right. I'm glad we aren't involved in developing weapons!"

They approached France and got to within five miles of the suggested terminal city of Saint-Nazaire and passed over another sunken U-boat. Any closer and they would run into water too shallow. As it was Tom knew there would need be a tunnel dug from out at sea covering the final twenty or even thirty miles before popping up out of the ground in the large field that would be the site of the terminal and cargo transfer station.

"I believe we need to take a slightly more northern track so we'll go look up closer to Ireland before heading back toward Nova Scotia. I think we have the route from North America through the Ridge plotted, but I need to see if things are better four hundred miles farther up."

He suggested remaining off shore at anchor like they had done near Boston but everyone was anxious to stretch their legs, so he radioed to the harbor control and received permission to come into port on the surface and to dock in a sheltered marina on the coast to the west of the city of Pornichet. It was the same one where Tom and Bud emerged from the water on their hydrolung trip a couple weeks earlier.

Several hundred boats called the marina home and it seemed that each one had two or more people currently on or near them who all felt the need to rush over to the dock where the jetmarine was being tied up. Tom paid the marina master the equivalent of fifty dollars to provide a security guard to keep children and others off the sub's deck so that the crew could all go into the small town for a meal and a good walk.

The manager suggested several eateries and indicated that at least two of them had English-speaking staff.

"The others will stare at you, nod their head at your order, and then bring whatever they have the most of," he warned them with a smile.

Even Chow, not given to enjoying French-style foods— “Too durn many o’ them sauces an’ parts o’ the animal that only belong on the open range”—had nothing but good things to say about the *Poulet frit aux asperges et sauce hollandaise* he ordered in broken French with a Texas twang.

The next morning, after one final walk around the marina admiring many of the more expensive yachts and one intriguing bright orange catamaran, they cast off, heading back out to open water. Half a mile out Tom was able to dive the boat to a depth of fifty feet before turning to the northwest.

On the trip back they saw many more sunken wrecks, most of which were in two or more pieces and all showing the ravages of time.

“I hear that in another fifty or sixty years the combination of invading sea life and pollution in the water will make a lot of those collapse and disappear,” Jerome commented as he and Tom sat up front watching through the clear nose.

“That may not be a bad thing. They’re a sad reminder. Of course, on the positive side only a few are designated memorials or official graves so moving some things aside for our tracks will not be impossible.”

Bud walked up behind them with a cup of coffee and leaned an elbow on the back of Tom’s seat. “They’ll make some interesting viewing for the folks in the passenger versions of the train.”

Tom groaned. “I’m really hoping the get *that* notion out of their heads. It’s one thing to build freight cars that are sealed and will protect goods at these depths, and another thing entirely to provide living space plus air recirculation and bathrooms and reclining seats and food and drinks and interesting views and all that in an infallible self-contained tube for a bunch of people who probably think the entire ocean bottom is a crystal clear, brightly lit, lush and verdant place filled with small blue and yellow fish!”

His comment made the others smile, but they knew he spoke the truth. The ocean was anything but a beautiful place seen in travel videos taken in twenty-foot-deep tropical waters. Triply so in the North Atlantic where the summertime surface water temperature rarely rose above 55 degrees Fahrenheit and was dismally less than that in the dead of winter or anything lower than about fifty feet below the surface.

They sat silently contemplating their individual thoughts until Bud spoke again. “Well, I didn’t mean to kill all conversation, but unless the skipper here can dissuade the Europeans away from the tourist-carrying aspect the truth is people are going to want to look



outside and not just at the back of the seat in front of them if they are going to be inside a passenger car for a full day.”

“Bud’s right,” Tom admitted. “We are going to need to accommodate sightseers, even if there aren’t very many sights to be seen. I suppose these sunken ships could be thought of as both entertaining as well as a startling reminder of how bad things once were. So,” he stood up and offered Bud his seat, “with that I am going to take a short nap before I go back on piloting duty. Feel free to discuss other ideas for entertaining people in their crossings because I doubt I can talk our customer into a freight-only scenario.”

As he headed back and pulled down his bunk, Bud turned to Jerome. “I know he’ll put in some sort of entertainment system like they have in airliners, but people do like looking out windows even if there is not much to see.”

“Yeah. My mother will spend hours in the air just looking at the tops of clouds,” Jerome told him with a small chuckle. “I guess she’s easily amused.”

“Or,” Bud told him, “your mother can see beauty in the randomness of nature at work.”



## CHAPTER 10 /

### WHAT A CONCEPT

EVEN THOUGH Tom believed he had a good northern route plotted he decided to stay out for one additional over and back crossing. They ranged about a hundred miles to the south on the way east and the same distance to the north on the way back to Boston.

He cut the trip short heading straight for Fearing Island once they reached a point off the outer island coast of Nova Scotia.

“The rest of the way is really not going to change, so let’s get home.”

The crew were all happy to hear that. Even though the little sub wasn’t exactly crowded, it certainly did not allow for much in the way of room to walk or exercise. Everyone worked well together but tension crept in after about five days when a team was kept confined in a small space, and doubly so if there wasn’t a lot to do other than sit and watch.

Just twenty minutes after docking the young men were flying back to Shopton, and Bud asked whether Tom might do something about the lack of exercise space in the subs.

“You know that combination bed and exercise platform dad created for the two-man fish sub we build for the Aussies? I can try having one of those put in to replace the lowest port side bunk. That’s the spot with the most wiggle room.”

That bed could be picked up and turned over making it into a horizontal exercise machine. Stretch bands gave arm and leg tension the same as a set of weights could and a set of pedals with a resistance brake let cramped legs ride their way to relaxation. The added benefit was it kept submariners’ circulation systems in top condition.

“It will go a long way to making long trips more bearable.”

When he got back to his desk in the large office he made a couple calls arranging for an exercise bunk to be installed and a test crew dispatched on a three-day trip to test the viability.

“It might become standard equipment on all our submersibles,” he told Bashalli that evening.

“I believe it would be better to arrange for wives to accompany you when you go away for more than a day. It might be crowded in there but I’d certainly sleep better. I really do not have good nights when you are gone. Without you in bed I feel lonely and cold, even

on warm nights.”

Tom felt bad about that. He knew in their early days together his absences had been rough on her as had his tendency to forget to stop working and take her out on dates. Both he and Bud had been guilty of that with their girlfriends. Now, married and with a son, he tried his best but there were just too many things to turn over to other people on large-scale projects like this undersea transport system.

He took her in his arms and hugged her. It wasn't going to make up for everything, but it made her feel a lot better.

By morning he had made a decision.

“I am going to try to keep my away nights to a minimum for the duration of this project. I can't promise I'll not be gone three or even five days at a time, but it won't be every week. Even once we get building this project, or the one in Canada for that matter, I promise I will try to be home more often than in the past. At least the Canadian tracks would let me take you and even Bart with me.”

She gave him a hug and kiss before saying, “I was feeling sorry for myself last night. You spent more than half a year being home while father Swift was ill. I got used to that, but I am a realist, Tom. I know your work makes it impossible to be home every night. I appreciate what you are trying to promise, but I signed up for *everything* that comes with being the wife of Tom Swift, so do not hate yourself if you need to be gone.”

She stepped back and looked at him, “Of course, if you could take me along once in a while it would help. There are several places in Canada I would love to visit, and that is a hint!” Bashalli giggled and kissed him again.

Tom went to work feeling better. Not only because his wife was feeling better, but the evening before something had come to him and he wanted to get it down on paper.

As happened frequently, as soon as he got fully involved with his task he lost track of time and even ignored the plate of cold chicken sandwiches Chow brought in at noon.

The chef came back at one and tutted, but Tom didn't notice him, so he covered the plate with some plastic wrap and left.

When three o'clock came and passed by he leaned back looking at the drawing on his drafting board. He was sitting in the large lab down the hall from the shared office where he had been sketching, erasing, redrawing and changing things for more than seven hours.

A knock came on the outer door and he called out, “Come in!”

and went back to concentrating on his drawing.

Bud pulled his favorite stool over and sat down. Seeing the untouched sandwiches he uncovered them, picked one up, sniffed it and shrugged, then took a big mouthful and chewed.

He looked over Tom's left shoulder at the interesting drawing showing a collection of what appeared to be hoses running between the bottom of a ship and the floor of the ocean. At the bottom was a sketch of a very large sled, possibly as big as the ship above if things were to any sort of scale.

"I see a ship and something that looks like a sled that has been cross-bred with a small office building. Now, please tell me what I should be seeing on that sheet of drafting paper."

Tom drew one final line on Bud's sled/office building and set his pencil down.

"Whether we get to take the shorter north route or have to adhere to the commission's long and winding southern one, we are going to have to lay down our tracks in one continuous piece. Or, at least in as few sections as possible making seams between each one invisible and as strong as the rails themselves. I did some research last night, to Bash's dismay as she wanted to play Scrabble after dinner, and found lots of information about the way they used to lay down trans-ocean cables for everything from telegraph signals to the emergency data bypass fiber optic ones of today."

"Yeah. I've seen a documentary of two about those. Huge spools of rubber-coated cable—miles long—they had to hand-splice together as one cable reel was getting close to running out. Then, they painted huge glops of hot rubber on the spliced areas to keep water out and managed to get their work finished in time to pull off the empty spool and slide the next one in place."

"Right. And the more lines they needed to fit inside one cable the longer it took to splice things until one day someone got the idea to already have waterproof connectors on both ends. That way all they had to do was click the right color combinations together and then seal a round grease-filled tube around the outside. It made things go faster and faster."

"Okay," Bud said slowly as he gathered his thoughts, "and that relates to our train... how?"

"It goes back to the continuous nature of what we will put down there. We can't take out preformed pieces of track, and we sure can't roll a great length of it up, so we need to have something down at the ocean floor to form it," he tapped the sled, "and something above filled with the mixture that is being extruded

down there.” He placed one finger on the ship and then slid it down the tubes back to the sled.

Bud brightened. “Oh. I see. That’s pretty nifty if you ask me.”

“Well, it’s one concept. I wish we had a big ship of our own, but we don’t. I am going to have to look into leasing a ship capable of carrying what we need and trailing the extruder. That, by the way, isn’t the sled’s only purpose. Like our old TBMs it will have a cutter head to go through many of the short hills and bumps along the way, lay down a flat bed and even up the sides to keep silt from sliding back down onto the tracks. Then, the middle section will extrude the rails and the service conduits.”

“What goes in those?”

“Possibly nothing, Bud. But, I don’t want us to design this thing only to find we forgot to allow for a communications cable. Or, something.”

“What happens at the back?”

“That is likely to be both the curing equipment along with a conveyor system to move anything we dig up off to the side and far enough away so it doesn’t just settle back on top of what we’ve just done.”

Bud watched as Tom made a few changes to the drawing and then they carried it over to a large scanner where it was turned into a computer file that could be used in the CAD system.

“I know you’ve been trying to promote a couple strange names for this train, but we really need to keep this simple and to the point,” Tom told his friend as the end of the sheet disappeared in the machine. “So, with that in mind, do you have any suggestions for what to call the system?”

“Well, Atlantic Trans-Ocean Railway, or ATOR. You know, sort of a play on your first robot?”

“I got that. It’s not too bad, but do you have anything else?”

“Only the Atlantic Express... and that is dead boring.”

“Okay. How about this one?” Tom said. “The Atlantean HydroWay?”

Bud mouthed the words several times before he looked up, smiled and nodded.

“I like it! Really says what it is and where it is and everything. Think the clients will buy it?”

“It is going to be what we call it in all correspondence and in conversations. We’ll see if they push back on it. Oh, on the good

news front, I received definite buy in from Pierre Artois on the underwater train and to no longer consider the surface ship option.”

The next couple days Tom, with some help from Hank Sterling, worked on the ship and sled concept. By the end of that second day Tom was making dimensional changes and fine tuning what might go where.

One thing to be decided was how to cut through things. It was a poser for the two men until Arv Hanson stopped by and made a suggestion.

“You both know how Tom created that wide, rolling cutter we used for the first land trains? The ones now on the front of our asphalt rejuvenating machines.” He meant the huge powered drum that contained more than a hundred hardened cutting teeth and rotated at high speeds chewing through everything including solid rock.

Tom and Hank shared a look that said, “What idiots we are,” before the inventor congratulated Arv.

“I can’t think of a single reason that didn’t occur to me.”

“You might be too close to the issue, skipper. That’s what you tell us when we get stumped on something.”

That feature was added to the front end of the sled. Tom added hydraulic rams that could lift it out of the way when not needed and then quickly lower it into position.

“Are you still thinking of adding a hydrodome to the front?” Hank inquired.

“I am, but possibly not to the front. I am now seeing that feature as covering the back of the sled so the curing lights can do their trick and the conveyor can drop the excavated materials in a neat row fifteen or even twenty feet out from the tracks. By the time water comes back in it will be settled and ought to just stay close to where it’s been dumped.”

As Arv and Hank worked on some of the mechanical specifics, Tom took a break to do some calculations. When he finished them he announced, “I think we can scoop out the track bed, lay the bottom shell and tracks and even the sides where needed at a rate of about a mile an hour. So, if we are forced to take the southern route it will require about thirty-five weeks. On the other hand if the northern route is our target, that drops down to just around twenty weeks.”

“And uses far less extrusion material and no need to head back

to port to resupply as often,” Arv added.

“Right,” Tom responded, “and that means I need to figure out how many times we *will* need to head back to port.”

“Or,” Hank offered, “couldn’t we just run our three largest seacopters with their supply tanks full out and resupply right at sea?”

Tom rubbed his jaw and thought about it a moment. “Well,” he finally said, “depending on what mixture we eventually use and how much it expands, that could be a possibility for the early part of the project but the farther out the longer the trip and the more we will start to lag behind. Plus, my guess it would only work if we can stage all that material near the start or even on the outer island of Nova Scotia. But, that is something for the future. It would, however, do away with the need to stop, cut, depart, refill, come back, locate and reconnect and then splice the tracks together. My biggest fear is in having to leave things behind and all the troubles that entails.”

They discussed it a little before Hank suggested that if the ship had to depart then one or even two of the large seacopters could remain behind keeping station directly over the current location of the sled.

“They can keep hold of the upper end of the equipment.”

“Brilliant, Hank. If we get to that, it’s the plan!”

Inside Tom’s head came a small ping followed by “*Harlan Ames*.” He excused himself from Hank and tapped his TeleVoc pin subvocalizing, “Answer.”

“Hey, skipper. I wanted to give you an update on our long-distance shooter. The man was also the one who rented the Cessna in Schenectady but not the one who flew it up to Oswego. We managed to get a good face shot of that pilot from the airport’s security cameras. We already knew it couldn’t be the same man, but had no clues until now.”

“And he’s also tied in to the Pangean Society? I don’t like this, Harlan. Not at all.”

“That makes you and thirty-seven of us in this department! Plus your dad and probably everyone else at Enterprises. I’ll keep on this, but I wanted to let you know that one less bad guy does not wrap up the two incidents.”

Tom asked if there was any progress on tying the former Russian from the commission into everything.

“Oleg Belishnikov is a clever and paranoid man. He has to be



with the Russians still after him for all those Rubles he stole from their economy. I have three of my best people tracking through miles of paperwork involving a lot of his business dealings. If he is behind any of these attacks, then we'll get him. That's a promise!"

The call disconnected and Tom went back to helping his associates.

An hour later they stopped when it started to look like all the equipment on the ocean floor was still not going to allow for smooth track laying.

"It's just too darned far to pump everything down there, skipper," Hank admitted. "It would start to harden before it reached half way."

They called it a day.

Even more disappointment and frustration met Tom as he was walking through the outer office. Trent stopped him.

"You've had two messages in the past twenty minutes from the Ministry up in Canada. Evidently when I told his secretary that you were in a meeting until four this afternoon, what she told him, or what he heard, was 'Tom will call you right back.' During the second call I was informed how busy the minister is and what an important man he is and what lucky people we are that he should favor us with a call, and other rot. Sorry. I just get a little impatient with people who believe they are the only ones who are busy or that they are the only important people. Want me to put a call through to them?"

Tom nodded. "You might as well, but let's wait for another fifteen minutes. That would have me getting out of my unimportant meeting ten minutes early and rushing back here to call them."

"Tom," Trent began looking apprehensive.

"Yes?"

"It isn't my place but do you think these Canadians are just being a bit too much? Maybe to the point where it isn't that important to do their project?"

Tom laughed. "You know, Trent? The more I deal with this minister of theirs the more I'm coming to that conclusion. Thanks for the input. So, fifteen minutes."

He disappeared through the door into the empty office.

As the moment of truth approached, Tom became more nervous. Then, when the intercom buzzed announcing the call, he suddenly found himself to be calm.

“This is Tom Swift.”

“This is Minister Arthur Ryan. I have your counter proposal on my desk and have just written ‘Refused’ across the first page. I don’t know what you are playing at—”

“I am playing at nothing, sir,” Tom interrupted him. “I have tried to explain on paper that the route you seem to insist on, or at least favor, runs too close to sources of radiation to be healthy for anyone crewing your trains over an extended period of time. Also, should anything force a train to stop in that area they would be exposed to even more. You, sir, seem to ignore that and want this train to run exactly where you think it ought to go. I honestly cannot think why you hired us to do the survey and give your ministry a report with the best possible route if you evidently knew it would not be acceptable to you. Now, before you either shout at me or hang up I have to tell you that our Legal department has contacted the Prime Minister’s office to inquire about ultimate authority to accept or decline this project. It turns out you are one of five individuals sharing that responsibility, and yet we only have been contacted by you. So, with a certainty in my heart that your way is an incorrect one I hereby take Swift Enterprises out of contention for this rail project. Good day.”

Tom hung up, slumping against the desk and taking a deep breath.

The approach was a daring one but one that both his father and Jackson Rimmer had approved should it come to this point.

He poked his nose out the office door and told Trent what he had just done. “If his office calls back suggest to them you will transfer the call to Legal and that neither myself nor my dad are available. Of course, if a different ministry calls, and especially if their Prime Minister calls, put them through. I’m heading home now. I have had a rotten day.”

Trent smiled at his young boss. “I admire the strength you have been showing, Tom. When the day comes for your father to retire I hope I can stay here to serve you. It will be an honor.”

Tom picked at his dinner that evening. His mind was a couple thousand miles away and his level of frustration at the stupidity of the Canadian Transportation Ministry and its Minister in particular was evident.

Bashalli picked up his plate and took it to the kitchen to wrap up for later.

When she come out she gently climbed into his lap and hugged

him.

“Is there any way you can get your mind off the fools up in Canada and onto something else? Something nicer. Like me? Or, failing that, go back to thinking about the ocean trains?”

“You’re right, Bash. I need to stop sulking. But even the underwater route is having its issues.” He told her about the problem with getting the materials for the extruded tracks down to the sea floor and formed before it hardened.

“It must be mixed with the right amount of air before it goes down and then the work time is in seconds not minutes.”

“Can you pump the air down to the bottom?”

“No. Well, yes but the equipment to do the proper mixing won’t fit down there.”

“Well, it is really too bad you can’t borrow that gigantic submarine from that nice Admiral Hopkins like you did a few years ago. It would seem to have plenty of space down where it used to carry other things, and you could just sink down to the ocean floor and do the work.” She looked at him as if asking if that were a foolish suggestion.

Tom looked at Bashalli, his jaw slack.

She had a moment of panic imagining he was having some sort of attack and let out a little scream. It brought him to his senses.

“I’m okay,” he insisted. “I had a sudden idea and it was so strong I couldn’t help myself. Sorry.”

She was trembling but asked, “What sort of idea?”

He smiled at her and whispered in her right ear. As he did here eyes widened and a smile came to her face.



## CHAPTER 11 /

### THE U.S. NAVY COMES TO TOM'S AID

BUD LOOKED at Tom with his mouth hanging open. "That's the dumbest thing I've heard today!" he declared.

Someone at the Ministry of Transportation had called the next morning to beg Tom to reconsider his decision to drop the project. They still had not backed down on the route stated by the Minister it seemed he might no longer be in a position of influence. They said the route was set in stone. In fact, they insisted the entire project would be now cancelled should the Swifts refuse to follow that route.

His friend gave a tiny shake of his head. "Not so dumb, flyboy. While I still believe it is going to add unnecessary costs and time, they have made the final selection of the route. I'd like to talk them out of running the thing so close to one of their uranium fields, but there is nothing else I can think to do. I'm afraid I may have to let them cancel the project."

Now Bud shook his head but his was a much more noticeable shake. "It's pretty lousy negotiation if that's what it is. Why not split the difference between their route and your safe one?"

"No idea, but I should call them and discuss just that."

When Trent put the call through Tom was glad to hear the voice of the person on the other end.

"Mary Rodway, Ministry of Transportation."

"Hello, Mary. It's Tom Swift. I hope you're having a good day because I need to speak with someone about the route your minister selected. Well, when I say *selected* I mean dictated. So, I do not wish to speak to your specific minister."

"On, nuts. I just knew it wasn't a good one. I tried to tell the minister, but he wouldn't listen to me. And, I'm the one with the advanced degree in Geology. No, he listens to the oil industry people who are only in it for themselves." She paused. "Sorry. Uncontrolled frustration dump. So, tell me what we did wrong and let's try to see if there is a fix."

He detailed the issues with proximity to the newly discovered uranium fields along with the sheer number of lakes to deal with for that route.

"It would add nearly a third more to the construction costs to go that way. I cannot think why anyone would decide on that," he told her. "It's bad enough that there are all the mountains across

western Canada to deal with, but add a million lakes and stray radiation to that and I really do not want to do this train system for you.”

“Hmmm. So, where would you suggest?”

“Haven’t you been given access to our proposal?”

“No. Minister Ryan did not share it with anyone.”

“Ah. I see. The route we suggest runs more than a hundred miles to the north once it leaves Winnipeg and skirts to the north of Lake Nipigon. Then it is pretty much a straight shot to the terminus. His stated reason for *not* selecting that lower route is fear of seismic disturbances while we are constructing our tunnels and rails and the possible affect on the trans-Canada oil delivery pipeline.”

“That’s preposterous. You want to run, what, on the surface or underground and that pipeline sits on earthquake-resistant pilings thirty feet off the ground. Wow. Now, I wonder what is really behind all this? I’ve got to do some digging.”

He told her not to do anything that would put her job in jeopardy, but he thanked her for looking into what she might be able to find.

After hanging up he called his father who was spending the afternoon at home working on a presentation to give a delegation from India the following day.

Damon listened to the recap before saying anything.

“I’m afraid this smacks of someone having a vested interest in that route. I won’t suggest it is the Minster, but it might be someone or some company that has him in their pocket. It might be interesting to find out how much longer his term in office lasts.”

“Why?”

“It isn’t uncommon for outgoing politicians to start searching for a cushy civilian job and what better way to get important doors open than to push business in a *special* direction?”

Tom let the Canada situation drop and to turn his efforts to the underwater high-speed train.

He started looking at the design of both the freight cars as well as the locomotives on his land-based bullet train.

A few computations told him the long nose shape that cut so nicely through the air would build up too much water pressure. A more blunt approach would be needed. More than that, he needed some way to reduce the forward pressure even further than a rounded nose alone might.

It brought him to thinking of his Geotron. That large mechanical

mole used repelatrions to shove dirt and rock and even water away—he grinned as he thought of the effect it had on water—so the machine could move through on its treads, then everything was allowed to fall back into place behind them.

It was the water he came back to.

The repelatrions neatly pushed the water forward and out from the Geotron leaving a negative space. In other words, a vacuum formed in front that helped suck the Geotron forward.

He made a lengthy series of notes about that. It warranted not just research, but a scale model test

A call to Arv had the man in his office ten minutes later.

Tom described what he needed to test and together they made a preliminary sketch of the possible nose shape for the locomotive.

“I’d set the nose low—under the half-way mark, skipper. That way as the thing moves forward and water rolls over it, the pressure will help keep it down on the track.”

He asked to be given at least a full week to come up with something that he could show the inventor. “That will just be the outer body. Then, I’ll fit a small repelatron in the nose and we can test it in the big pool. If it works there, we can try the pressure tank.”

By the next day Tom felt he had a good handle on what the cars would look like and how they would use ballast below the floors and between the tracks to hold them down.

He sat with his father having lunch and explaining his thoughts. Damon liked the idea of forming a vacuum in front of the train.

“I see that as a great way to get some extra speed for less power output. It really looks like you’ve got your teeth into this one, son. I do have a small detail that should be brought up. Care to hear it?”

“Tell me, Dad. I can use all the brains available.”

“If you plan to lay a couple thousand miles of underwater track for this hydroway of your, you are going to need to build something to float on the surface and pump the materials down to the equipment. We really do not have anything that would work, although we may be able to lease one of the trans-ocean cable-laying ships.”

Tom looked at him with a hint of a smile playing around his lips.

“Okay. What?”

“What would you think might be the answer if I call our friend, Admiral Hopkins, and ask to borrow that giant sub carrier again?”

“Well, I would guess it depends on what you intended to do with

it.”

“I think the huge cargo bay on its underside would be the perfect place to put my track laying equipment. Plenty enough room for the tank of material along with the forming equipment. It would even have room to put in a leveling machine to give us a flat, stable and compacted roadbed. What do you think now?”

“I think it is time to call our Navy friend and ask.”

Trent was asked to make the connection with the Admiral’s office. But, when Tom got on the line, it was an unfamiliar voice he heard on the other end.

“I am both sorry to say and happy to tell you that Admiral Hopkins was promoted to three stars and given a prestigious position in Washington a few months ago. I am Admiral Beau Stennis and have taken his place.”

Tom explained about his desire to borrow the giant submarine again and gave him a few details of the purpose and how the United States would benefit from such a trans-ocean connection.

“Well, it sounds like quite a project, But, I’m afraid the Navy will pass on this one. There is no such vessel in our inventory. I’m sorry you’ve wasted your time on this, but what you describe just does not and never has existed.”

“That is very interesting, Admiral Stennis. You see, we used that *non-existent* submarine carrier on a U.S. Government mission to pick up a number of wrecked nuclear submarines a few years ago. In fact, we had it in our possession for over six months during that time. But, I suppose that the crew of half my own employees and half U.S. Navy submariners must have been hallucinating. Admiral Hopkins as well since he came on board several times during that period.”

The man on the other end of the line was silent for half a minute. He then said, “I can only suggest that what you were on has been scrapped because there is no such vessel in the United States Navy!”

Calmly, Tom countered with, “In that case do you mind if we go to the base and find it? Obviously someone locked the door and lost the key and nobody else has tried to look for that submarine. Oh, and it is the one we performed a significant amount of work on at our facility so that means there are another two hundred or so of my people who believe they saw and even touched it.”

“Mr. Swift. It is obvious that I cannot convince you otherwise, so I suggest that you get hold of Admiral Hopkins and request his permission to find this submarine you so firmly believe to exist. Good day!” With that, the line went dead.



Tom buzzed Trent asking the secretary to locate the Admiral's new office and put a call through.

It took nearly half an hour.

After greetings and Tom congratulating the Navy career man on his promotion, he got to the point.

"I need the *Demeter*, again."

There was a slight pause, then, "When can I expect you down here, Tom?"

"I believe my calendar is clear most of tomorrow, sir. I could be there as early as nine?"

"Let's make it for ten. If you can come down in a helicopter I will arrange for you to land on the North helo pad and then send out an escort. Will that work?"

Tom was smiling to himself. "Absolutely, Admiral. See you tomorrow at ten."

He asked his father if the older inventor would like to come along, but Damon begged off saying he had been spending far too much time away from Enterprises and in Washington lately.

"Give my best to the Admiral and see if he can give you any hints about anything that will change for us because of his new position."

Tom called Bud for lunch, and the dark haired pilot said, "I'm already half way out the door!"

Chow brought in a lunch for the three of them about five minutes after Bud arrived. As he set things out on the conference table Damon was talking about how he thought it would be best to ask the Navy man to allow them the use of the giant submarine carrier once again.

"Remind him of how much time and effort we put into that recovery mission, and how it was the first legitimate use of all the money that has gone into that boat."

By the time lunch was over it had been decided to go into the meeting softly but not to take no for an answer.

The next morning the young men met at the side doors of the Administration building at eight. Tom was leaning against a futuristic automobile, one of the newest of the atomic line. Unlike the long and sleek original model, the new ones were more teardrop shaped and about half the size. Gone were the three rows of seats able to handle three grown men each as well as the roll-back roof. As before, the entire roof was see-through but now featured polarized clear tomasite that could be set to darken to varying degrees in eight different sectors. It was now a four-seat

vehicle.

Other than the visible changes, this atomicar was still capable of operation on land, in and under the water, and in the air. It was the latter Tom intended to use today.

The new shape cut through the air with almost zero drag or buffeting from cross winds.

As they raced through the skies, passing over Albany at an altitude of just two-thousand feet, Bud asked, "Should I try to make my own fun in the corner or do you want me to be an active participant?" He was asking in earnest as he knew his lack of diplomacy could get in the way of any delicate negotiations.

"I want you with me and by my side down there, flyboy. We've both known and worked with the Admiral for years, and he knows what you bring to the discussion." The flyer rolled his eyes at that but said nothing.

D.C. Control asked Tom to take a roundabout course to the Pentagon and to keep to a strict flight altitude until nearly over the five-sided building.

"Swift Two. Be advised to not stray directly over the structure. Come in on heading zero-three-two directly over Highway 27 until parallel to pad. Sideslip to pad and touch down in center then taxi to far eastern point."

"Roger and wilco. Swift Two now two minutes from touchdown."

Waiting for them as they climbed from the atomicar was a very large, black SUV with a simple marking of a pentagon on the front doors. Two men dressed in black and whom Tom had been told to expect were waiting.

"Welcome to the Pentagon, Mr. Swift... and guest. Please be sure you have everything you require for the meeting with Admiral Hopkins along with your ID packets. If you would please get into the back...?"

They drove down one of the parallel lanes heading directly to the five story building—Tom knew it also extended below ground but nobody without clearance knew exactly how far down it went—and then around one of the corners to their right. The vehicle stopped at a nondescript roll-up door and the driver leaned out to not only place a card against the face of a reader, but to type in what Tom believed was at least a thirteen-digit code. The door rolled up quickly and they drove into a well-lit area some fifty feet deep by twice as wide. The door shut before the car parked.

They were let out and taken into another code locked door by a Marine Gunnery Sergeant. It took ten minutes to get to the point where a golf cart picked them up to go to the Admiral's office.

"Far cry from the days we could drop into his headquarters and see him within a minute," Bud whispered to Tom.

The inventor nodded.

They headed back around the perimeter of the building toward the side they'd landed, took a right turn down one of the interconnecting hallways, past the second "ring" of buildings and finally a left turn down the inner hallway of the middle building.

Halfway down the long hall the cart stopped and they were taken through a very plain, wood door with only a small plaque identifying it as **USN ATL OPS**

Both men immediately recognized the woman behind the only desk in the small outer room.

"Hello, Tom, Bud," she greeted them.

"Hello, Mrs. Burner," Tom replied. "How many times a day do you get lost trying to walk around here?" He grinned at her.

She held up her left hand showing him her watch. "Built in guidance program and locator. I have the fifteen or so spots I need to get to programmed in it, select one from the list and it tells me to turn left or right or keep going all through a series of taps to my wrist."

She showed them into the Admiral's office a moment later.

"Well, Tom and Bud. Welcome to my little slice of political hell." He came around his desk to shake their hands.

He explained that he would have preferred to be out "with the real Navy," but his advancement to three star admiral meant taking a desk job inside the worlds largest office building.

They all sat down and Tom got to the point.

"Sir, I have been in contact with Admiral Stennis, your replacement, and asked him for permission to use the *Demeter*, or what we renamed as *Swift Recovery One*. He told me with no uncertainty that it does not and never has existed." Tom looked questioningly at the Navy man.

The admiral swore and then smiled at them. "Can't take the sailor out of the boy. Sorry for that lip slip." He took a deep breath as if preparing to recite something long and official. "Admiral Stennis was given my old position over my strenuous objections. He was a fleet Captain with nine commands under his belt, but

none of them with much distinction. In other words, he did his time and didn't make waves, but wasn't much more than a caretaker of each ship under him. You have just run into one of his faults."

"What's that?" Bud asked.

"Stennis—and this does not leave this room—doesn't pay very close attention to details and rarely reads briefing materials. There are, and I helped assemble them, nearly eleven-hundred pages of notes and information regarding the *Demeter* from keel laying to those months with her under your command. It's all there, but I doubt he's cracked any of it open. So, I can believe that he knows nothing about it. But, there is another problem."

"Is the Navy using her for something else?" Tom inquired.

Admiral Hopkins shook his head. "No, Tom. She was sunk off the coast of Virginia about a year after you returned her to us."

Tom felt all the blood rush from his face. "How could that happen, sir? Was it an accident? Did someone use that magnificent boat for target practice?"

Now, and much to the boys' surprise, the admiral leaned his head backward and began laughing.

"No, no, no. First, are you familiar with the spit of land that stands between the main part of Virginia and the Atlantic?" They both nodded. "Fine. Well, almost directly off the tip of that and right were the continental shelf drops off, there is a valley that more gently slopes down to the deep water. The Russians had a real hissy fit over *Demeter* not having been destroyed and we couldn't point to you saying 'They've got it. They built it. It isn't ours!' and so we diplomatically had to dispose of her."

With a sad shake of his head, Tom admitted, "Well, then my latest project is likely doomed. I was sort of counting on her."

"And there is every possibility you can use her."

Tom's head snapped up. "Huh?"

"I told you she was sunk, but I did not tell you that it was a controlled sinking. We took her down, settled her in a spot where she won't go sliding deeper, anchored her firmly to the sea floor and then opened all her ballast tanks. She rests in a natural cradle all nicely covered over with a giant netting that looks like the silt she sits on."

Tom's heart was beating again. "Then, she's operational?"

Hopkins shook his head. "I didn't say that. We left her with the inner air replaced with nitrogen and we added some sensors but

they indicated about a year ago we have a small leak. It is likely she has a foot or more of sea water on her lowest deck. Plus, in order to fill her living spaces with nitrogen, we had to pump her pressure tanks full of it. Now, there is little or no air or gas to blow ballast.”

He looked at Tom and Bud with a hint of sadness in his eyes.

“Sorry that I don’t have completely good news, but it isn’t all bad. We designed a contingency to take down enough pressurized air to blow her ballast just enough to give her neutral buoyancy so we might surreptitiously tow her underwater to some place where she could undergo a refit someday. So, please tell me about the project that could use her, and let’s see what can be done to maybe permanently give her to you.”

“What if the Russians find out?” Bud asked.

“Then, we remind them of their illegal submarine dumping ground you found under the North Pole and tell them to shut the *heck* up about it all!”

Tom and Bud spent the next half hour telling all about the underwater transport system Europe was calling for. He was intrigued enough to call his secretary and ask her to put off his next two appointments until later in the day.

In the end of telling him what was known and what was still to be determined, the admiral smiled.

“I believe that I can convince the three or four people who know the absolute truth about *Dem*— about *Swift Recovery One* who can make the decision about her. Personally, I’d like to give the girl a bit more of a life. She deserves it.”

As he rose from his seat and shook the Navy man’s hand, Tom asked, “Will we have troubles with Admiral Stennis?”

Admiral Hopkins said exactly what he thought Admiral Stennis could do with any objections he might have.

Tom and Bud left blushing furiously at the salty language used.



## CHAPTER 12 /

### RAISING THE KRAKEN

BEFORE ANYTHING could be done about the giant sub, Tom wanted to visit the site and take stock of both the location and the condition of the submerged craft.

“Feel up to a little underwater trip down off the coast of Virginia?” he asked Bud three days after their visit to Washington.

“Of course, When have I ever not been ready for any sort of trip?”

“Fine, then we go out to Fearing tomorrow morning, pick up the *Cousteau* and a crew of five, and fly up the coast to about the Virginia and North Carolina border then take a dive. Oh, and we’re heading for the *Demeter* in case you couldn’t guess.”

Bud smiled innocently. “Never crossed my mind,” he said looking straight up at the ceiling.

The *Cousteau* was one of the Swift’s larger seacoasters and could accommodate a crew of up to a dozen. It also could open at the back to provide storage space for hauling equipment or could be outfitted with a giant curved tank for holding liquids of gases.

Tom, Bud and Zimby met at the Barn the next morning and flew off in Tom’s Toad jet fifteen minutes later.

They discussed the inventor’s plans for the visit and worked out an action list before touching down on runway two at Fearing Island little more than two hours later.

Their crew met them at the seacoaster docks on the East side of the island. *Cousteau* had been fully serviced, stocked for a trip of up to seven days—although Tom planned on it taking just two days—and had the storage tank in the back filled with ordinary air compressed to two-thousand PSI. Hydrogen could be compressed more, so they could have more available, but Tom didn’t want to deal with the explosive gas. Besides, he did not plan to raise the sub at this point, simply give it some extra pressure inside to drive out any water that had leaked in.

“Do you think we should have told the Admiral—and I mean Hopkins, not that new clown—about our trip?” Bud inquired.

Tom placed his right hand on the flyer’s left shoulder. “You know, dad asked me that very thing last night. Then we had a great idea. As soon as we get the *Cousteau* to the dive point, I call him and he calls the admiral to tell him what is going on. He’ll explain that we are going to try to open her, get the leaks stopped and the

water removed, and not much else other than to see if anyone did something horrible like tear out equipment.”

Bud ducked his head as he entered the side hatch, but turned before Tom followed.

“You and you dad and your brains and all. I shouldn’t be amazed, but I am all the time. Let’s get going.” He moved inside followed by Tom and Zimby. The other crew members were inside performing the final checks. Tom had to laugh on seeing two of them.

One very tall man, barely able to stand upright inside the vessel was talking to a most diminutive woman... a dwarf.

“Hey, Deke. Hey, Steff!” Bud greeted the husband and wife Bodacks. “What’s shaking?”

Deke, an acquaintance of Bud’s from a military exercise several years earlier had come to Enterprises as another of the company test pilots. He was already well versed in the aircraft and space-going craft, but had suffered a near death experience deep under the sea and had been overcoming a fear of water ever since.

“Just getting my sea wings, Bud. Hey, Tom. Nobody’s told us much about this trip, but I want you to know I’m feeling so much better about being underwater these days. It also helps to have the squirt with me.” He reached over and bent down a little to pat his wife on the head.

Stefanie Bodack, formerly Brooks, was one of the premier vulcanologists and had helped Tom on the same adventure where she and Deke nearly were trapped in his old Geotron at the bottom of the Atlantic.

She kicked her husband in the shins and rushed over to give Tom, first, then Bud and finally Zimby complete wraparound hugs.

Stefanie was a very demonstrative woman and loved doing things that might cause others a bit of discomfort or embarrassment.

As she jumped into his arms and hugged Bud she also lightly bit his left ear. “Explain that to Sandy!” she dared him.

Bud pulled her off and set her down on the deck where she turned and attacked Zimby. Not married, Zimby didn’t mind her very close proximity.

She released her grip and stepped back. “Aww, Zim, you’re no fun. You actually like having me all over you. Just you wait. Someday you’ll meet a nice woman and I’ll be there with hugs and kisses you’ll want to fend off.”



Zimby smiled at her as Deke placed a large hand on her head and turned her away from the three men.

Tom was curious. “Steff? How is it you work full time at the auto factory and yet I find you here ready to go diving with us?”

“I got so far ahead with my duties, Charlie deGroot let me have a few days off to help the jolly, pale giant here on this trip.”

deGroot was the manager of the Swift Automotive Company, manufacturers of three highly sought after cars where Stefanie was one of the key quality control people on staff. She gladly gave up her globe trotting work with volcanoes in order to become a wife and mother, and the car company—located just a couple miles from Enterprises—was perfect for her.

*Cousteau* got underway ten minutes later heading straight out to sea for one mile before taking to the air and flying at nearly 500 MPH on a direct course for the small city of Hampton, Virginia.

As they approached the controlled airspace around its airport Tom radioed his intent to make a turn to the east and set down on the water three miles off the coast.

“Roger. Lovely day for fishing. Marlin are running, Swift Two. Have a good day.”

They set down on the almost calm water and Tom went to the small communication cabin behind the control room. He radioed Enterprises.

“We’re here, Dad,” he reported once they were connected. “You can make that call. Did you want us to stay up in case there is an outright refusal on this?”

Damon Swift laughed. “Heavens, no. Go right on with what you are doing. I’ll let the Admiral know where you are, and I’m positive he’ll pretend nothing is going on. Have fun and let us know how the old girl is once you come back up.”

With Deke at the controls, Tom ordered a submersion to one-hundred feet and a course of zero-eight-zero, one that would take them to the irregular valley dropping away from the continental shelf where the *Demeter* sat.

“Keep a lookout for other submerged traffic,” he warned. “Deke, get us there only at about thirty knots.”

“Okay. But that’s going to take us over three hours, skipper,” he reported back.

“Not is a huge rush, Deke. Besides, it’ll give us a chance to let you do some maneuvering exercises.”

They traveled at various depths and on several courses for the first two hours, then Tom had Deke stop the giant impeller in the center of the ship and allow them to sit at their current depth.

“That blip we’re seeing on SONAR for ten minutes looks like an incoming nuclear boat. No use our advertising where we are. Let’s just sit here and allow them to pass below us by... it looks like nearly two hundred feet.”

They all knew the durastress hull coated with tomasite would not be detected by a SONAR ping, but any noise the seacopter made could be heard. Tom asked that the steam generators—their steering system—be shut down for the time being.

A half hour later they could hear the slight whine of the turbines in the sub as it passed beneath them and about a quarter mile to their south.

The crewman who was manning the SONAR panel cleared his throat and said in a low voice, “I don’t think that’s a U.S. sub, skipper. Turbine noise is different. Plus, it is on a course that takes them nowhere close to a Navy base.”

Tom frowned and thought about what to do. Bud whispered in his ear.

“Tom. Why don’t we head topside and radio your dad? He can report it and see if anyone wants to come out and chase it off. Could still be one of ours. They are doing great things with noise cancellation and masking.”

Tom walked over to stand behind the SONAR operator. “Where did that sub come from? How far out can you backtrack their route?”

The man held up a single finger and then went to work, calling up data stored in the computer memory. A moment later he had the answer.

“Came on a direct course over where the *Demeter* is supposed to be. Looks like they came down the coast just off the shelf’s drop-off then popped up.”

Tom went back to the radio room but not before telling Deke to let them come to the surface.

“Dad, I need to have you get to the Admiral again.” He told his father about the strange submarine and it’s possibly not coincidental course over the submerged location of the very sub *Cousteau* was headed to find.

“He’ll be very interested. But, I have a message from him for you. Ready?”

“Yes.”

“Tom, go ahead and uncover the ‘Kraken’ and bring her out to play. See if you can get her to your house soon and under wraps. That’s it, son. I think we both know what he is saying.”

“We sure do. Okay. When you call him about this other submarine, tell him we may not have everything to do the job today, and that depends a lot on her condition, but we’ll get her within a week at most.”

When he came back out he called the entire crew to come to the control room.

“As you know we are on this trip to check out the submarine known as the *Demeter*. Two of you were on her when we were on the recovery ops about five years ago. We were just going to knock on her door, let ourselves in and look around, but I have been given the order by our Navy friends to bring her up and get her to Fearing. We’ll see if that is possible. In the mean time that other sub we heard? Might not be a friendly. Whoever is on the SONAR keep a good watch and ear out.”

Bud slid into the control seat taking over from Deke who had spent five hours there already. Normal operations had a man piloting for just four hours at a time.

The seacopter lifted off from the water and headed straight for the point above the *Demeter’s* location. There, Bud eased them into the water and took them to fifty feet. He shut down the impeller for a few minutes so SONAR could get any bearings on contacts within a hundred miles.

“Nothing other than surface traffic, skipper.”

“Okay. Down we go!”

Bud reversed the pitch of the blades and spun them slowly up so they would drop down at about fifty feet per minute. They had about six hundred feet to go to the shelf and another two hundred to the resting place of *Demeter*.

As he got them even with the shelf and over the canyon heading downward, Bud called out, “Norfolk Canyon. Next stop, the biggest darned submarine in the world!”

“Any sight or sounds out there?” Tom asked.

“Nothing.”

Okay. Get us to the up hill end of the spot and then turn on the undersea lights.”

The special lights worked on a wavelength that no living

creature could detect. But, the special coating on all Swift submersible windows, camera lenses and diving helmets made the light visible. It could pierce the darkness of the ocean depths for more than a mile with daylight brightness.

Shortly, the light came on and the seacopter was spun around to sweep the entire area.

“Nothing!” Stefanie declared. “There’s not a darned thing down here. Poop!”

Tom shook his head. He felt a pit in his stomach threatening to make him ill, but suddenly he had a thought.

“Admiral Hopkins told Bud and me the sub is completely covered. I’ll bet a closer look, as in hydrolung suits, will let us find the hidden doorway under the cover. Zimby? You and Bud will come with me, Deke, take over and keep right here. If SONAR spots anything, either lie low or use your discretion and hightail it away from here. Just keep us advised, please.”

The three men went to the airlock in the rear section of the seacopter and changed into swimming trunks before climbing into their clear hydrolung suits. Before they left the ship Tom asked for any update.

“Still nothing, skipper. We are alone other than two large contacts, probably tankers, about thirty miles to the North, and definitely on the surface, heading outbound.”

Tom, Bud and Zimby left the *Cousteau* and swam downward the final two hundred feet. With their helmet-mounted lights and special coatings, everything looked as if it were bathed in late afternoon daylight.

Tom checked their GPS location and found they were possibly several hundred feet too far to the North, so they turned and swam South.

“There it is!” he cried out.

What would look like fairly flat seabed just fifteen feet away could now be seen to be a clever cover stretched over this part of the canyon.

A little searching found a corner and the three men slipped under. Inside was an incredible sight.

The *Demeter* sat fully upright, anchored fore and aft to huge concrete blocks, and with the appearance of having just been parked for a few minutes while somebody went outside to clean the front windows.

Except, she was totally dark. Ghostly dark.

With Tom in the lead they swam deeper until they were under the sub. Built to carry four smaller fast attack subs inside that could be launched down through a set of swing-out doors, *Demeter* was huge. She was the length of several football fields.

“The launch bays are ajar,” Bud reported as they swam over to where the forward set of massive doors had been left open by about ten feet.

Tom pointed his helmet light inside and they each let out a sigh of relief as seeing nothing inside. Bud insisted on leading the way as they now rose to where the access airlocks for the forward pair of submarines were located.

It took the three of them to spin the outer hatch dogging wheel, but finally it opened and they swam inside. Tom hadn’t believed the water evacuation system would have any power so he brought a compressed air cylinder with sufficient air in it to force the water out of the airlock.

Bud worked the bleed valve while Tom let the air out of the bottle. Two minutes later the airlock was nearly empty and the inner door wheel could be unlocked and turned.

To their dismay, as soon as the inner door opened a few inches a torrent of water poured in on them. But, with the hope it was only a few inches inside, they heaved up on the hatch.

The water filled the airlock but inside the corridor it was only about seven inches deep.

Tom popped the lock on his helmet, pulled up on the front and sniffed the air. He grinned as he clamped it back down.

“Stale and salty as can be, but still full of the nitrogen they pumped in to preserve things. Let’s go look up in the control room.

They slogged through the water until coming to a ladder going up. At the top was another watertight hatch they all hoped had no more water above it. They were in luck. On being opened they were met by the same incredible cold nitrogen-rich air in the lower corridor, but everything they could see in their lights was dry. Clean and dry.

“Whoever brought her down here did a nice job of it. Just as if they really intended to come back for her,” Zimby commented.

In the control room it was a slightly different matter. Several panels such as SONAR, RADAR, power systems and navigation were missing, possibly taken for use elsewhere. They had not been ripped out but also had not been carefully disconnected.

Tom chuckled ruefully. “I was sort of hoping to be able to press

the start button and drive her out of here. Looks like we have some work to do, but at least we can get her under tow. Bud? Go back out and get things ready to pump her full of the air we brought. I think we have enough to get her to neutral buoyancy. Also reel out that tow line and get it attached to the nose. Zimby and I will see about getting the anchors up but it might need that we bring over a power pod. Let's go!"

Just as Bud slipped back out from the hidden space Stefanie's voice came over the sona-phone.

"Hey, guys? We have that whining sub come back this way. Deke says to tell you we're slipping down the canyon a little and setting on the bottom. Hopefully Dr. Strange Sub will pass right by. Anyone hear me?"

"It's Bud. I read you. Tom and Zim are inside the sub. Go ahead and tell Deke to shut off the steam generator along with the blades. That will really make you silent. I'm going back under the covers."

Eight minutes later the mystery sub passed over them at about one-hundred feet below the surface. In seconds their SONAR operator whispered, "Another sub is coming in from the northwest. Got to be one of ours. And, it is coming in really fast."

They waited. When the friendly passed over them the sona-phone beeped once and a brief message came through.

"Calvary here. Go on with work."

Bud had rejoined Tom and Zimby during their wait. *Demeter's* outer hatch had been closed back up.

"Let's get the air over here and pump the sub back up to full pressure and fill her pressure tanks as much as we can, then I'm going to call for a few jetmarines to help tow her home."

It required the rest of the day and some small reworking of the air bleed system to allow for backward flow of the uncompressing gases, but by nine that night nearly fifty-two hundred cubic feet of fresh air had been added to the living spaces with enough left over to blow at least half her ballast when desired. A tiny camera left near the airlock showed the few inches of water inside was very slowly receding and would be mostly out within twenty hours.

When everyone was back inside *Cousteau*, Tom headed for the surface. Calls went out to Enterprises and Fearing Island.

Damon Swift was pleased that the sub was in mostly good condition although worried about the slow leak that allowed water to infiltrate the lowest level. He told them to be extra careful when they got the giant sub under tow as it would take nearly three days

to carefully drag her along.

“You don’t want that mystery sub to pester you.”

“I’ll be trying to raise her to two-hundred feet,” Tom informed him. “Deep enough to avoid most aerial detection and also about as high as I dare go without needing to play more with the ballast.”

His call to Fearing was expected and the promise of three of the most powerful jetmarines to leave within the hour was made.

“Your dad said to add a medium-sized power pod in case you can use it, skipper. Do you want it?”

“You bet! Make sure to have about one-hundred feet of power cable with that special connector we made the last time. If there is nothing wrong with the electrical system I’ll be able to get some lights on and the air purification going. Thanks!”

It took nineteen hours for the trio of jetmarines to arrive plus another five to secure the two tow cables to the front and one aft to allow them to control the braking maneuvers. Finally, the anchors were drawn into *Demeter*—thanks to the power now available for the winches—and Bud and Zimby went outside to release the upper points on the cover.

With very little sound, or turbulence stirring up the mucky bottom, the sub was lifted a few yards and began its slow movement toward the light.

Admiral Hopkins’ “Kraken” was on its way up!





## CHAPTER 13 /

### REPAIR CYCLE AND OUTFITTING

Fearing had sent Tom's two most powerful subs for the towing duties along with the twin to his original jetmarine to "hold onto the tail" of their prize.

Like the original, the newer *Sea Cub* was under thirty feet long, powered by a small atomic reactor that superheated seawater and jetted it out drive nozzles on both sides and also in the front, and featured a wrap-around clear tomasite nose. Designed for two or three people, it originally held a pair of Tom's Fat Man diving suits. These days the twin air lock/docking points had been replaced with a single fast acting airlock large enough for up to four people.

It also had been updated with a more powerful generator and could keep up with even the largest jetmarines and nuclear submarines.

"We'll use her power to simply maintain position," Tom explained, "until we need to brake, then she'll go into full reverse. If we keep the entire caravan under six knots, I believe she can slow our cargo to a halt in sixty-three seconds," Tom explained.

The three submarines got their load underway at midnight on the day they arrived, hauling it along at Tom's suggested depth and pleasantly discovering that, by chance, the amount of air pumped inside had given it complete neutral buoyancy for and aft that they could get up to eight knots without difficulty.

They skirted the continental shelf drop off for the first ninety miles then headed over shallower water on a direct course for Fearing.

The total distance was just about four-hundred twenty miles and they began slowing their load a full twenty-five miles from port some fifty hours after setting off.

Tom was glad they came in under cover of darkness as for the final seventy miles they had to raise the convoy to a depth of only fifty feet above the *Demeter's* "sail."

Tom and the *Cousteau* crew had gone ahead to the island base once the convoy reached the fifty miles to go mark.

The first time they had "borrowed" the *Demeter*, Tom and his father had authorized the entrance and port for the submersibles kept on the island to be dredged to a new depth of two-hundred feet from its normal eighty feet.

That allowed *Demeter* to be submerged to within five feet of the

tip of her sail and still clear the new bottom by about ten feet at low tide.

They also had a cover made to go over the entire length of the hull that camouflaged it by appearing to be several seacoasters and a jetmarine widely spaced in that area when viewed from any reasonable altitude.

Of course, that altitude should never be occupied as the U.S. Government had declared Fearing Island and an area extending eight miles all around it to be a no fly zone. The only exceptions were aircraft with declared emergencies and military aircraft above five thousand feet.

By the time the sub slipped up to the dock at 3:00 A.M. everything was ready. Tom went onboard to check her ballast and to release the heavy anchors. Their weight, combined with the neutral buoyancy of the sub, were enough to hold her in place.

The cover was pulled over the top before 4:00 and everyone left the area between then and 5:00. When the sun rose there was no hint anything was different than the day before to the casual observer.

Tom asked that the entire team involved in refitting and preparing the sub to meet back at the nearby equipment staging building at noon. Then he, Bud and Zimby took a jeep to the visitors' quarters and dropped into their beds.

When they got back down to the dock it was to find the refit crew had been in action for more than five hours. A second, larger power pod had been taken on board and connected to the power systems now providing the sub nearly its total electrical requirements.

The atmosphere had been purged of all excess nitrogen and everyone inside could work without a breathing mask.

"Well, I'll be," Bud stated as they took the central ladder down to the lowest of the three levels. "Almost bone dry!"

"Hey, skipper. Hey, Bud," called out one of the technicians. "We suctioned about eighteen hundred gallons of seawater out of here and have rinsed everything. There's going to be a lot of paint scraping and repair near the floor and it's likely the carpeting in the various offices and cabins will need replacing, but she's in pretty darned good shape."

Tom smiled at him. "It sure is looking good, Alvy. Did anyone start the search for whatever it was that leaked all that water in?"

"Yeah. Pretty simple to find, actually. The farthest aft access

hatch down into the cargo space had a scrap of wood lodged in the gasket. It was about the size of a pencil stub but the pressure down where they kept her was enough to probably start letting two gallons or more a day come in. All taken care of and the gasket has been replaced from stores.”

Tom patted the man on the back and thanked him for the update.

They walked to the rear of the sub looking into any number of the cabins on either side of this starboard corridor before crossing over and repeating their inspection on the way up the port side.

Everywhere it was the same sight. Offices with just the bare bones furniture remaining or crew cabins with no mattresses or other soft goods. And, noticeable deterioration of the paint and carpeting up to about the one foot mark.

The one thing Tom decided to not visit on the next deck was the space with the old nuclear reactors that took up the last sixty feet of the sub. Extensive testing and measurements would need be made before anyone went in the two-and-a-half-levels space.

The second deck was clean but also devoid of the things that make a submarine habitable.

Floor three—the uppermost of the fore to aft decks—was the same.

That left the control level that extended from the control room up front to a point just behind the sail. Behind the sail sat the mass of equipment devoted to drawing in seawater and turning part of it into fresh water and the rest into hydrogen and oxygen. For the original expectation of the sub, the hydrogen would be compressed and turned into fuel for the torpedoes. Those and their tubes had been removed as a concession to NATO requirements before the sub was reported to that body as having been demolished. Now, the excess hydrogen was returned to the sea and only the O<sub>2</sub> used to resupply the breathable air inside.

The single central passageway on the upper deck ran down the middle until about thirty feet behind the control room. There, it took a right and then left jog around what was the captain’s cabin and private office.

The two men opened the hatch to the control room and stopped.

It was a sight nobody got over. The tall, wraparound view windows—unique in standard submarines—gave a view of the lush underwater area in front of the sub. Bud chuckled as a trio of smiling dolphins swam from right to left, all looking in to see what sort of things this strange tube might contain.

Throughout the large room men and women moved around checking, repairing, or replacing instruments. Tom had asked that Hank Sterling head up the repair teams and he was standing to their right near the defensive measures station. He turned and smiled.

“Well, welcome back from the land of sleep and into the... uhh, are we going to go back to calling her *Swift Recovery One* or keep her as the *Demeter*?”

“I’m not sure right now, Hank,” Tom replied. “The world, such as the small number of people who knew her before, knew that first name and her size. I’m thinking that the name ought to go back to that even if it is a bit of a misnomer.”

“That gets my vote, too,” Bud piped up. “Tom told me on the trip here I couldn’t rename her the *Atlantis Express Paving Services*.”

Hank gave them a brief tour of the room pointing out things that had already been replaced and discussing what needed to be built.

“Our friends in the Navy took several of the stations we built for our use and left us with cut cables. You’d think the apes could have at least unplugged things!” he grouched.

Pointing at two stations nobody was working on, Tom told him, “Dad says Admiral Hopkins knows where those two panels are being stored and will have them shipped up to Enterprises next week. So, other than possibly new wiring harnesses, we should not need to do anything other than plug and play.”

He asked about the status of the nuclear reactors. The two power stations had been used to some degree the previous time they had the submarine, but only for auxiliary power. They had been mostly decommissioned but not de-fueled. Now, they were without any fuel rods and Tom was of the opinion they ought to remain that way.

“Someday I want to take them out and give them back to the Navy,” he stated.

They left Hank to his work and went back to the lowest level. Next to the same airlock they’d used the other day to gain access were several of Tom’s state-of-the-art hydrolung suits. The boys slipped into them and entered the airlock.

“We looking for anything in particular?” the dark haired flyer inquired.

Tom checked his helmet lamp. Satisfied it was charged and putting out bright light, he replied, “Just a general status check. I want to see if they left the winches in there and if we still have the

giant claws we built. I don't think we need the claws, but I do know for certain those winches will come in mighty handy at some point."

The compartment was flooded and the outer door unlocked and opened. They drifted out and down shining their underwater lights all around.

Two of the three winches with their bright yellow multi-fingered claws were attached and in their retracted positions against the ceiling. The third set was missing and even the retaining cables were gone. To Tom's dismay it appeared that some damage had occurred when they had been removed.

"See what they did there?" he asked, pointing at a bent support beam.

"Yeah. Why is it some people can't be trusted with nice things?"

"I don't know, flyboy, but there might be a ray or sunshine. We are going to need to mount a giant tank of the extrusion materials, perhaps more than one depending on what mixture we end up using, plus the mixing tank and air supply and that might take a lot of space. So, we might have removed that third winch ourselves."

"Hate to be practical, but what about the weight of that tank? Shouldn't it be amidships?"

Tom thought about it. If he hadn't been in a suit he might have rubbed his chin right now. "Bud? I think you have just pointed out the need to go ahead and remove the reactors from this ship as soon as possible. I only hope the Navy can come retrieve them because we just don't have the time or the proper vessel to do it."

"How much weight would that save?"

"Well, given the typical reactor weight plus the steam generation equipment, shielding and liquid metal cooling, I'd guess somewhere in the neighborhood of nine-hundred to one-thousand tons. Per reactor!"

"Jetz! So, how much would your mondo liquids tank come in at?"

"It depends on what the contents are and how much space we can give up to is, but probably about that same amount or slightly less. The end result is we may need to re-balance her ballast and take on a bit more in the rear, but she won't go nose up and tail down, that's for sure."

"Or, vice versa?"

"Yes. Or, that. Now, the main thing to come up with is what to use to extrude whatever it is we are going to take down, plus how

do we resupply at sea and test the tracks. Of course, there is the old problem of how do you keep something that will be filled with air attached to the tracks?"

"Just that?" Bud asked with a grin.

"Those things plus about fifty others that all need to come together in the coming month or so. Come on and let's get back inside. I see we have a visitor I'd prefer to not play with."

Bud turned to where Tom was looking in time to see a large tiger shark, perhaps twelve feet long, slowly heading in their direction. It, like a lot of smaller marine life, was freely accessing the underwater bay that had been opened for ease of access by workers.

The next week went past in a blur of activity. For reasons of security, all workers had to check in with the control tower before leaving the covered area, or moving from the storage building out to the cover. An air sweep was made each time before permission to move was given. Then, each group had only three minutes to get back inside something. If not, any speeding jet the drone protective system could not intercept would be able to get overhead; Harlan Ames and all of Swift Security services wanted to avoid high-flying snoops or, worse yet, reporters getting photographs using long-range camera lenses.

While it wasn't exactly standard procedure, everyone understood the importance of not "getting caught out."

Tom and Bud spent some of their time on Fearing and more back in Shopton. Tom had his wife and son along with his other work to take care of while Bud had Sandy Swift Barclay who would make his life miserable if he stayed away too long.

Each time they headed back to the island base more and more progress was being made on the *Demeter*.

Bud had suggested several new names but each time when the subject of previous public knowledge came up, he had to agree—although he really liked a few of his sillier ideas.

As the fourth week approached Tom received a personal call from Admiral Hopkins.

"Tom, it's Admiral Hopkins. I have some good news for you. At least, I believe it to be."

"Sounds like something I'd like to hear about, sir. Does it have anything to do with our latest acquisition?"

"It does, and it also has to do with taking out the trash, so to speak. If you are determined to replace those components then I can have a special ship pull into your harbor in seventeen days.

Without going into the minutia of everything, we have a portable processing and hauling facility available out of New England. The only thing is it comes with an escort. A mighty big escort.”

Tom was trying to picture what sort of big escort a ship capable of taking away the two unneeded and unwanted reactors might include, and then it hit him. “We’re talking something like Harlan Ames provides us, correct?”

“On steroids, Tom.”

“Okay, then how can we help?”

Hopkins outlined a plan including bringing the main ship into the docks where it would tie up and appear to be offloading a lot of hardware like pipes, fittings and other large-scale water and sewerage components.

“I’ve probably gone into too much detail on this semi-secure line, Tom, but we need four-hundred-ninety feet of dock space. Is that available?”

Tom had to think a moment. “It will be by the time you get here, sir. How long will the delivery take?”

“Exactly twenty-four hours. The ship arrives at eight in the morning and leaves at eight the following day.”

He also suggested that a meeting at his Pentagon office might be advisable within the next few days.

“I can drop by tomorrow on my way down to Fearing if that works.”

It was agreed that a noontime meeting would be preferable. “I know it isn’t your Mr Winkler’s cooking, but senior Navy staff enjoy the artistry of a wonderful master chef in our dining room. I’ll arrange to have your escort take you directly there at a few minutes before noon where I’ll meet you. Good-bye.”

Tom hung up and explained what he believed was the plan to Damon Swift. Without many of the details all he could do was make guesses.

“I think they intend to make their deliver by day and take the reactors into their hold under cover of darkness.”

“Sounds like a workable plan, son.”

“Yeah, but in order to accommodate their ship I’m going to have to move the *Demeter* out. And, that means we have to offload the reactors and all the associated gear a few days early, seal the hull back up to dive pressure standards, and take her out about a half mile and set her on the sea bed.”

Damon smiled. “Just as long as you pass over all my undersea

garden beds and don't put that giant boat down on anything, it would appear you don't have many options."

Tom received a detailed description and an information packet, marked **STRICTEST TOP SECRET**, during his lunch meeting. As he surmised, the "delivery" ship would offload everything on her deck during the day and then appear, using cleverly-arranged lights, to be continuing throughout most of the night. In reality, a second crane, disguised under a false on-deck building, would be bringing the reactor equipment onboard and stowing it in a central hold. Hopkins asked that everything be secured on special pallets—the specifications were in Tom's documentation—and staged in a specific order—again, in the paperwork.

"We find that properly staged and secured equipment can be transferred in a couple hours rather than a full day if *we* have to do everything." He stopped and looked at Tom. "You do understand, Tom, that we can never bring those, umm, *pieces* back. Once we have them you can't."

Tom nodded and smiled. "Our own nuclear power pods are already on her, attached and powering everything. When she was mothballed all fuels were taken off so it is just the residual dirty nature of the metallic coolant and the steam generation equipment. Plus, we intend to blanket everything in flexible tomasite covers that will keep any stray radiation inside and not visible to any overflights using Geiger counters or other detection devices."

The Admiral reached out and shook Tom's hand.

"It is a distinct pleasure to deal with you and your dad. There aren't more than one in a thousand other companies or executives at companies we deal with I can even discuss things like this with. Or, that have helped us out of as many jams as you have. Thank you."

Tom was blushing as he thanked the Admiral for his confidence.

Once he got to Fearing and spoke with Hank, the engineer agreed they had mostly planned to do what the paperwork called for and would get right on things as soon as the actual reactors were pulled from the hull.

"We've got the hole cut through the entire outer hull and about halfway through the pressure hull. I halted any further cutting until we can get a couple of pieces of equipment out of the way. When they build these things they don't give you a lot of extra room, that's for sure. Then we pop her up above the water and do the extraction."

Tom asked, "Is there anything that can come out without using the big hole? Basically, can we start dismantling and carrying small



things out via other hatches?”

Hank shook his head. “No. At least, not safely. Don’t worry, skipper. According to this rundown the Admiral gave you, we are three days ahead of schedule. Besides, he have to wait for the tomasite blankets to arrive and that isn’t until day after tomorrow.”

Tom was about to say something when an alarm siren began blaring.

*“Attention,”* loudspeakers positioned all around the island blared out. *“This is not a drill. Incoming aircraft spotted that does not answer our calls. Take cover. I repeat this is not a drill. Incoming unknown aircraft not answering repeated calls. Take cover immediately!”*

Tom tapped his TeleVoc pin and made a call to the control tower.

“Where is it coming from and how long before it is here?”

“Coming up from a vector tracing back toward Miami at near sonic speed, and due to overfly us in two minutes.”

“Make the announcement again, please and try to get the drones out for intercept as fast as they can go.”

He could already see the six autonomous aircraft streaking to the south and knew they were already going as fast as they were capable of.

Thirty-seconds later a puff of smoke and a streak of additional smoke coming toward them told Tom the intruder was firing off one or more missiles.

The drones, made with tomasite fuselages, could not be electronically targeted, but anyone with a visual lock, or advanced laser-guided air-to-air missiles might make a lucky hit.

The drones were programmed to dodge and evade. They did, but the weapon streaked past a few more seconds before the motor burned out.

With a dismaying groan, Tom watched as the missile began losing altitude and seemed like it would hit the island.

Seconds later an explosion in the middle of the second runway confirmed his fears.

The missile had hit, and one of the cargo jets that had been held for takeoff was very, very close. Perhaps, *too close!*



## CHAPTER 14 /

### USELESS CARGO IN; PRECIOUS CARGO OUT

NORMALLY very quick to react, Tom had only been able to stand and stare at the destruction. He looked to the sky in time to see the attacking jet climbing almost straight up into the sky. A minute later it rolled over, steadied at whatever altitude it had reached, and headed back to the south.

Hank stood beside him brushing his shirt and pants off.

“Skipper, you really took a chance standing there all defiant like that.”

Tom snorted. “No defiance, Hank. Total shock. I know I’ve outfitted the Citadel, the Construction Company and Enterprises with the attractatron-based drones but we’re still enhancing them for use out here. I have to get on the ball, again, and get this place covered. That jet just streaked in, didn’t seem to be affected by the drones, and made that shot.”

“Nasty but pretty good shot.”

“I don’t think so,” Tom replied shaking his head. “I think it was more a shoot and hope, but the drones had at least some small control of it. The only problem is they were so far out they couldn’t make electronic lock on. It dropped right on the island. Come on. Let’s go see what the damages are.”

As they ran for the jeep Tom was using, he added, “And we have to see if that cargo jet was damaged.”

The vehicle approached the scene of destruction, and the first thing either man saw was the cargo jet. It sat about two-hundred feet from the blast area and had a very bad dent in the side where a chunk of concrete from the runway struck it. The good part was there was no actual hole.

Tom swung the jeep around to park next to the access hatch on the left side. He had just braked to a halt when the hatch opened and the two pilots stepped out looking around cautiously. They spotted Tom and Hank and trotted over.

“That was close, skipper,” Red Jones remarked as he turned to look at the damaged jet. His copilot, Randy Scott, nodded his agreement.

“I’m just glad you had the presence of mind to stop where you did, Red. And to turn her to the side. I can’t imagine what might have happened had you been face on to that blast. The piece that hit you might have come right through the cockpit.”

That seemed to be a concept Randy had not thought of, and when he did consider it, his left leg buckled from under him. Red grabbed his jacket and eased him to the ground.

“He’s been a bit excitable,” the older man explained, “since he found out his wife is having their first baby.” He chaffed the man’s right wrist and nudged him in the chest with a knuckle. Randy, who had not actually fainted, opened his eyes and grinned.

“Oops. Guess I’ll need to report to the dispensary for a flight check. Sorry, skipper. Oh, and hi, Hank.”

Tom replied, “You go get checked, but tell Doctor Carmen I said it wasn’t a full episode, just a surprise.”

“Thanks, skipper. Sorry to let you down like this. You, too, Red. I know you’re anxious to get home.”

Tom looked at the side of the jet. “Not in this bird, Randy. I’ll run you both back later today in the Toad.”

Hank had wandered off to look at the destruction on the runway. The missile left a hole about eighteen feet wide and three deep with a lot of cracking and charring of the concrete for several dozen feet all around.

“That,” he said pointing at the hole when the inventor walked up, “can be fixed in a couple days, but we’ll have to use the other runway until the patch completely hardens. I can get a crew out here in an hour to start cleaning all this up and finally have the chance to drive that monster street sweeper we have out here.” He referred to the version of the device Tom had created. It brushed, vacuumed and slightly wetted a path fifteen feet wide instead of the civilian units and their eight foot paths.

Tom looked at him. “Surely, Hank, you’ve driven the one we have at Enterprises for cleaning our runways.”

“Nope. I’ve wanted to but the opportunity never presented itself. So, listen... about the sub.”

As he and Tom returned to the jeep and then the dock area he outlined the next steps to be accomplished. He agreed the only way to accommodate the large cargo ship was to take *Demeter* out of port.

“I may have an idea about how to disguise her, Tom.”

“I’m all ears.”

“Well, how about we declare a day of cleaning and maintenance in the seacopter and jetmarine pens?” Everything pulls out to an area about two thousand feet on a side and anchors while workers scour the entire docking area. Could take more than twenty-four

hours and would provide an excellent hat for *Demeter* to wear. Not even a high-quality spy satellite would be able to see her for all the other craft and their shadows.”

Looking his friend in the eyes, Tom stated, “You are one devious man, Hank Sterling. And, a great tactician. I would imagine in an earlier age you would have been an exceptional general or admiral and strategist. Let’s go with your plan by all means!”

Two hours later Tom got word the attacking jet had been traced to the small airport on Bimini in the Bahamas.

“The field manager reported it was an unmarked fighter jet of a type he had never seen before.”

“So, we’re out of luck on an ID?”

“No,” Gary Bradley from Security responded. “He was so taken by the shape he snapped a couple pictures of it, and even got a cell phone shot of the pilot as he was fueling it. We’ve run the pictures through a database and came up with a real poser. That jet is a Chinese J-Fifteen, also known as the Flying Shark. They produced only about two dozen and all are accounted for!”

“What? Wait. Does that mean we’ve been attacked by the Chinese?” Tom was both astounded and now very worried. This was the sort of things wars were fought over.

“No. The reason is the factory where they were built suffered a series of losses, financial, and it turns out the manager decided to sell off a lot of spare parts to high bidders. Enough, so the CIA tells us, to actually build another two whole aircraft.”

“Okay,” Tom said, relieved somewhat, “but where is that jet now?”

“As soon as it was refueled it took off. The last thing the field man saw was it on a heading that would take it toward Guatemala or Honduras or possibly Belize.”

After telling Gary to keep him informed of any location the jet may have landed Tom hung up.

By four in the afternoon the hole had been cleaned, all debris removed and the concrete around it scrubbed clean of all marks. Where it was possible to fill the hole with a single truck load of concrete, it was better, and would end up stronger, to do it in three pours. So only a small portable mixer was brought out and the first eighteen inches of space filled by the time Tom, Red and Randy flew home.

Everything was ready for what Bud termed, “The Great Switcheroo.” Beginning an hour before sundown and going on

through the night, every submersible was pulled out of its docking position and moved to a parking zone about a quarter mile out to sea. The ocean was nearly three hundred feet deep here and their anchors were set so very little movement would be possible.

Unseen, at three in the morning, the great bulk of the *Demeter* slipped silently from its mooring place and was towed out, only the top of her sail visible. In the deeper water she was allowed to sink thirty additional feet until there was about forty feet over the top of her highest point. A thirty-foot launch was towed to her and floated right above the only potentially visible spot, providing perfect invisibility for her. A small crew of workers remained on board continuing their repairs.

By the time the sun came up, the cleaning and maintenance teams were mustering on the docks and work began as the large cargo ship was directed in and docked. Her cargo master checked in with the dock master—Hank for this operation—and the first of the three-hundred, six-foot-wide, forty-foot-long pipes began coming off to the loaded onto a series of heavy duty trucks by 9:00 A.M.

Offloading continued into the evening and night. Then, as planned, numerous large containers and wrapped platforms were rolled from the nearby storage building. Each time the cranes swung something onto the dock—by now merely inflated tubes that were quickly deflated and returned to the ship where they were re-inflated for use again and again—it quickly picked up a load of the outgoing materials.

By 3:00 in the morning the operation was complete and the ship's deck and the docks cleared out until 7:30. The large ship left port with her upper deck now clear of its cargo and her secret consignment lurking in the ship's bowels.

Invisible to all during this time were the seven fast attack submarines standing silent guard in a semi-circle two miles out to sea.

The dock maintenance finished late that second day and by the second morning, all submersibles had been returned to their places with nobody the wiser as to what had gone on.

“What do you intend to do with all those heavy plastic pipes, son?” Damon asked in the large office a day later.

“I intend to use some of them for my track laying machinery,” Tom explained. “When cut into semicircles and heat laser back together at wide angles, I can construct my storage tank from them. The added curved shapes will give it the strength needed and we end up not spending very much money building it.”

“How are you going to lay the track? More importantly, what is it going to look like?”

“The easy one is the how question. Extrusion of a new durable polymer I’ve been toying with. The basic materials are fairly light, but once it is exposed to seawater it absorbs heavy metals like gold, nickel and iron making it about five times heavier. I’m hoping to core drill anchor points every hundred feet or so injecting the same materials down into the holes. Oh, and as it absorbs, it increases in size by a specific amount so we can plan for proper track sizing and to have the anchors self-lock into their bores.”

“Hmmm? So, your trains will ride on these rails just like on land?”

Tom shook his head. “No. That wouldn’t be safe or wise. Kind of like a roller coaster, the wheels will ride on top of these rails and a smaller keeper wheel will run under it.”

“And have you figured a way to increase how fast you can run this sub-ocean rail system?”

“Computer tests say we can get to about ninety-five miles per hour if the locomotive is shaped correctly before building up too much dynamic pressure. I want to go faster, perhaps up to one-twenty, but I haven’t been able to crack that particular nut yet. Any ideas?” Tom looked at this father as if expecting the older inventor to have an immediate answer.

“Don’t look at me for this one, son. All you’ll see on this face is bemusement and a little doubt right now. I have every faith in you and your brain, but I cannot for the life of me see how this can work properly and with complete and utter safety at the kind of speed you are aiming to achieve.”

One week after the old reactors had been hauled away Tom received two important phone calls. The first was from the Admiral.

“I’m happy to announce the gift packages came home and have been placed into hiding. Your folks did a bang up job, Tom. Made it the easiest thing the team has ever done. Congratulations!”

The second was from Hank.

“I thought you’d be interested to know we now have the hull back together, it is sealed and we’ve both positive and negative pressure tested it. It’ll hold down to the known crush depth of the rest of the boat. Probably a couple hundred feet more for my money. We also sprayed the patch area with more tomasite so she’ll remain undetectable.”

“That’s wonderful. How about the rest of the refit?”

“Tank is built and will go in night after tomorrow. We have to raise the boat to full surface level to get that monstrosity under and inside. As it is we’re filling it with fresh water so it will sink on its own and not have to be forced down. My thought is to pump all that back out to fill the freshwater tanks on the sub for the first trial run.”

Tom could not agree more with the idea and said so.

He also said he and Bud would be down in one week to take that test run and dive.

“We’re going to need to fill in for those Navy folks we had before but can’t get back. Besides, I hear that many of them are out in civilian life. Good people like Millie Blair who ran the winches along with, oh, what was his name? Went by E-Squared.”

“You mean Evan Evans, skipper. Nice kid as I recall.”

“Yeah. Both of them. I wonder...”

Hank knew what Tom was contemplating. “Go ahead and have Personnel look for them. We’d all be proud to have them as permanent coworkers. In the mean time I’ll fill out the rest of the crew from our own people.”

The inventor made the call. Enterprise’s new Personnel office was located off premises in downtown Shopton where anybody looking for a position could come but not need to be escorted around by Security within Enterprises’ walls.

“Of course, Tom. Give me their names and I’ll check with the DOD for forwarding addresses. What can I tell them if I strike it rich and locate one or both of them?”

“Well, tell them we are going on another cruise and perhaps they would like to join us for old time sake. Be sure to mention it can turn into permanent employment if they want that. I’d say to offer them grade nine pay for starters and let them negotiate up to grade ten if they need that.”

Personnel found Millie Blair the next morning. She had moved to her folks home in Connecticut and was unemployed. She jumped at the invitation.

Evan was a bit more difficult, both in locating him and in interesting him.

“It isn’t that I wouldn’t love to work with Tom and everyone, it is just that I got out of the submarine service a year after I was with them because of an accident that nearly killed me and fifty other sailors.”



It was left that the invitation extended for a full month if he became interested.

When Millie arrived at Enterprises three days later she had already been to the downtown offices, done all the paperwork and only needed a brief background check to make certain she hadn't become a notorious industrial spy or gone on a murder spree since leaving the Navy eleven months earlier.

Tom met her at the gate where she gave him a hug and thanked him over and over for the opportunity.

"I really think you guys have the best company around. Times have been a little discouraging for me. Only an hourly waitress job was open in Mystic when I got home, and that also required a little of what they call *exotic* dancing. I had to pass." They were walking across the pavement heading to the large office. "What can I be told about this forthcoming adventure?"

He stopped and she turned to face him.

"Millie? What would you say if I told you—and this is company top secret—that we have the *Demeter* again, but this time it is for keeps?"

Here eyes went wide as saucers and she smile practically from ear to ear.

"Golly! It almost takes my breath away, Tom. I guess I have to ask why and what and when and all that?"

He laughed and they continued their walk. Once in the office Tom introduced her to his father.

"It's a pleasure, Mr. Swift," she told him. "We never had the chance to meet the last time I worked with your remarkable son."

"The pleasure is all mine. May I call you Millie?" She nodded enthusiastically. "Then, please call me Damon when we're not in any sort of meeting or if I am with a customer. We're sort of built to be mostly informal around here."

By end of the day she had been filled in on the specific project and had been offered an opportunity she never expected.

"I need a boat's Chief, Millie. Sort of the liaison between crew and command, but also the one most responsible for the day to day operation of the entire vessel. Feel up to it?"

She shook her head but it turned into a nod that wavered to a near shake before she smiled. "I'd be honored, but only if you are certain."

"I am!"

The next morning she and Tom were joined by Bud and they flew out to Fearing where she was assigned quarters and registered as a permanent base employee.

As they toured the completed boat, she asked several questions about the old winches and various other things inside the sub. She was curious about her work station.

“You will still be operating a variation on the old winches but this time it will be to direct our track laying machinery as we move across the ocean floor.”

“Wow. I’m really excited about that. Can I see the equipment?”

Tom smiled. “I haven’t exactly finished the detail work on that so there is nothing to see. Yet. We need to do a shakedown cruise which starts two days after tomorrow. We’ll be out three days. I take it you’ve been through sea trials before?”

“Yes, twice.”

“Good, then you understand the nature of testing everything and doing it more than once. Let me show you the operations room you’ll run. It is no longer in the bottom of the boat; we’ve moved it up to the control deck but in a separate room amidships.”

Where the old room had been a cramped dials and knobs and levers affair the new room was built like an aircraft cockpit complete with a wrap-around all-glass control panel that worked with the mere touch of a finger or two. She agreed it would be a challenge to go this far into the technological future from what she had become used to, but was thrilled at the opportunity.

She remained at Fearing to work with Hank on completing the outfitting and supplying of *Demeter* while the men headed back to Shopton for two more nights.

Tom spent that time working on the design of the new extrusion machine. He had the original transcontinental rail and tunnel extruder as experience and knew this one was to be substantially less complex. With the chosen route requiring no complex tunnel boring, except at both ends, it would be a matter of slow and steady reading of the terrain coming up and programming the computer to create the best and most level set of tracks.

He also felt it would be necessary to place safety stops along the route. Perhaps as many as one per fifty miles. These would be large enough for crew on the hydroway trains to escape to in case of emergency.

He sat back thinking to the European Commission meeting several months back. They had not gone back on needing or

wanting to offer passenger services.

An idea occurred to him. He might not need those emergency stop stations after all. Freight cars could be left on the tracks for recovery but people had to be rescued quickly. *What if, he pondered, I made the locomotives and passenger cars fully functioning submarines in their own right?*

It was ingenious and very easy to do. Each engine would already have a power pod supplying necessary motive power for the wheels, so why not simply add an auto-ballast system, a retractable propeller—or better yet an impeller system—along with a release mechanism that could not be tampered with and only activated in an emergency?

The same thing could be done with passenger cars. All they needed do was release from the tracks and slowly float to the surface.

He made several sketches of possible passenger cars. They would need to have portholes so people could see outside, and probably some sort of forward view screen to give a look ahead of them. The thought of adding lights outside so people could see something rather than the eternal darkness at the operating depths came to him as he began scanning his designs into the computer.

With the height of the surrounding cars being quite tall, it would be possible to make the passenger cars 2-level affairs which meant a great deal of leg room could be offered.

By the time he headed home that first night he had worked out most of what the self-contained cars would require.

All he needed was the signed agreement for funding required to make them come true.



## CHAPTER 15 /

### A TEST TRACK GONE SO VERY WRONG

ONE OF the first things to do in the process was checking the validity of both the track as well as the underwater train was to have Arv build a miniature version for testing. Since the above ground one was long ago finished he had some of what he required in the computers it took the combined efforts of him, Hank and Tom only three days work to get things ready to go into his small scale production.

The locomotive was going to be a fairly radical departure due to the hydrodynamics involved and could need to utilize more than just drive wheels to provide the motive power. Wet wheels, everyone knew, were slippery wheels so they should not be thought of as the main propulsion source.

The nose was changed and the length of the locomotive shortened accordingly. Inside there were a variety of changes... most invisible to the casual observer.

It wasn't the most difficult part, though.

Tom wasn't about to build even a short five or six car train at full size to test until he had proved a number of things, including his track laying mechanism.

He only needed to test the track configuration and not things like cutting through hills, but he also needed to find a way to anchor the test track to the sea floor without it becoming a permanent fixture. The solution was to keep the width of the bed the same as it might be for a side-by-side set of tracks and yet mount the single test set down the middle. Heavy weights would serve to hold down the bed.

He and a team swam out from Fearing one morning to plant the markers for the test lay. To avoid his father's undersea gardens it was necessary to head to the south nearly even with the southern tip of the island.

This time the test train would be a one-tenth scale model because he was not certain anything smaller would give him accurate results. There was no need to put in multiple curves to test track banking since there would be no places in the real system where a turn of more than one or two degrees over a mile or half mile would ever be anticipated.

The waters where the track would be installed ran from thirty feet to eighty feet deep and out to about three-quarters of a mile. It

leveled off far enough to accommodate his curve to bring the track back to shore. Tom had the survey team mark out a straight stretch running that distance and then having it curve slowly around to the left until it came back near the starting point.

Although Tom disliked spending the money necessary to make a small-sized track extruder, it was necessary to properly test the ability to lay smooth continuous tracks, test the actual track design, and also to test one of two formulae for the extrusion materials he had devised.

The *Cousteau* was outfitted with a special tank filled with the same extrusion material he had used for the transcontinental bullet train. It would be pumped the short distance to the equipment it would lower to the ocean floor. Fortunately, and for whatever reason nature had in mind, the test area had limited underwater plant and animal life. But, what there was would be carefully moved to the sides to make room for the track. After the tracks were removed it would begin to move back into the eight-foot-wide area again on its own.

A small hydrodome unit was mounted to the extruder to keep water away while the materials were curing.

With Tom at the controls, *Cousteau* left the dock at eight in the morning, meeting up with one of the larger boats at Fearing that had the extruder on its aft deck. Hoses and control cables were connected along with the four support cables as the seacopter hovered over the boat.

The downdraft from her central blades made it difficult for men to work underneath, but they had things hooked up quickly and the seacopter rose lifting the extruder off the deck and setting it in the water fifty feet away.

A few seconds later, both objects sank below the calm water surface.

The start point was close by so Tom maneuvered them to that spot while Millie sat at the temporary controls for their cargo. It would be up to her to follow the terrain and slight slope in order to keep the extruder on the bottom.

“Okay, folks,” Tom said to the four others in the control room, “it is time to lay down our track. Is everyone ready?”

Five answers of, “Yes,” came and he nodded turning back around to face the front view screens. “Millie, she’s yours.”

The seacopter settled another dozen feet until the extruder touched down and she announced she was starting the process.

On screen they watched as a bubble of air formed around the extruder supplied by air coming down through one of the hoses. Tom had not wished to get so detailed that he needed to create the osmosis unit to make air from the surrounding water for this version.

“Track will start coming out in fifteen-seconds,” Millie reported. As they watched and silently counted, the first of the pale white-gray material began to exit the extruder in the exact shape desired. It was bathed in a strong ultraviolet light as it traveled along the midsection and was nearly hardened as it slipped out of the bubble.

Natural sunlight would do the rest over the next hour or two.

A pair of arms in front of the sled kept gently moving the living matter out of the way as things progressed at a rate of about six-hundred feet an hour. During the first three hours Tom took many notes about things that would need to be changed or tuned for the real track extruder or their progress would be far too slow.

Nearly nine hours later Tom called out, “Just coming to the one-mile mark. Time to start the big curve. We’ll go on for another three hours then call it a night.”

Millie glanced at some notes she had in a binder and made several adjustments to her controls. The results were only noticeable if you kept looking at the viewscreen for a minute or more, but they were beginning to turn.

“Skipper? We’re going to need to call it a day sooner than you thought. We’re down to ten percent of a tank of materials,” Bud stated, “enough for about forty more minutes.”

Tom, astounded by the news, said, “That can’t be right. We should have at least twenty-five percent left in that tank. What the heck is going on?”

Millie, looking embarrassed, spoke up. “I think it’s my goof, Tom. It looks as if I have us laying down a thicker bed plate than you specified. I’m so sorry.”

Tom looked over at her. “I’m not angry, Millie, just mystified. Thank you for clearing that up. Uhh, is there a reason you have things set for that thicker plate?”

She nodded still looking unsure if she was in trouble. “The sea bed undulates a lot out here and I noticed with the first fifty feet we had a small deflection in the bed before it could be cured. The floor sort of crests about every thirteen feet by as much as a foot. I thickened things up as a test and that worked, but I never tried to go thinner again.”

Tom laughed. “You’ve probably saved us from having to pull this track up and replace things from the starting point. Good call, but next time whisper a word in my ear so I don’t freak out.”

As their supplies ran out Tom called an end to the day. He had the hoses disconnected and capped, and Bud and one of their technicians went outside and released the four cables. They left the entire sled on the bottom, sealed up, where it would be the following day.

The next morning he did a few quick calculations and came to the conclusion they could finish the work that day if he made the rest of the curve only minimally tighter—by a quarter degree per three-hundred feet.

Resupplied, they headed out from the dock at seven-thirty and reconnected things. By eight they were back underway with Millie being told to keep up with the thicker pad of materials under the tracks.

“I noticed you left a gap of a couple inches between the end of day one track and the stuff we’re putting down now,” Bud said more as a question than a statement.

“Yes, I did. That is because we will need to go out and manually fill in that gap so the connection is as smooth as possible. In the real-life unit that will be taken care of by the equipment, but this small unit can’t manage a good interconnection.”

Work continued at the same pace as the day before and they halted both the process and the track at seven in the evening. With the exception of a half-hour break during which they went up and took on another third of their capacity of the extrusion materials it had been non-stop.

“Now, we give everything two days to make certain it will all be at top strength,” Tom told them as the small crew disembarked from *Cousteau* that evening. And you, young Millie, did better than yeoman’s service. You were rock steady from start to finish. Thank you.”

She performed a small curtsy and smiled at him.

The next morning Tom, Bud and Jerome Howard donned their hydrolung suits and took forms and a tank of the extrusion material out and patched the two places where the track had been halted.

As they stripped off the suits back at the dock, Bud asked why the extra couple day’s of waiting.

“Mostly because Arv has had to work with Jake Aturian at the



Construction Company to build our short train. Just a smidgen too large for him or Hank to turn out without major assistance. The locomotive and five cars will get here in two days, we'll check things out and get it on the tracks and then do a full day of testing at various speeds."

Tom returned to the splices the following afternoon, nudging them and poking with a small sharp tool he'd taken along. They seemed to be solid so he came back in satisfied that nearly everything possible to do with the track had been done. But, not everything.

"I believe we need to detail a crew and a boat to take out either concrete blocks or sand bags to place along the edges of the track plate. I found a couple spots where it looks like a current is lifting it a little. I want that tightly down for the test."

He called the base scheduler and was promised a six person team and appropriate boat and sandbags to be ready in the next hour.

"We'll also drive in some temporary spikes if you think that'll help, skipper."

Tom wondered if that might be a good thing. Finally, he said, "Sure. Put the sandbags every fifty feet and spike in two places between. Thanks!"

On schedule the *Super Queen* landed and disgorged its two large cargo pods. Inside were the engine and cars along with enough steel bars to give Tom the option of inserting full scale loads down to empty cars. A lifting helo was flown over to pick each train piece up and then took it to the staging area at the start of the track. The morning before, Tom had Bud take Millie and the extruder back out and connect the two track ends. They had originally ended about fifty feet apart so the new curve was sharp, but it could be taken very slowly.

Lunch was eaten on the run so the testing could begin at 2:00 o'clock.

"Skipper? We may have a small issue with weight and buoyancy," Hank said as he approached Tom and Bud.

"Too much or too little," the inventor inquired.

"The locomotive seems to be just about right, or within maybe two-hundred scale pounds of being correct, but the freight cars are looking a bit too light to behave properly."

Tom was puzzled. All computer simulations pointed to the load being right, but somehow was not. An idea came to mind.

“Could this be because our scale model is not in scale water?”

Now it was Bud’s turn to look puzzled. “What’s that mean?”

Tom grinned weakly. “I think I programmed everything to look at the full-sized train and cars and didn’t take into consideration that things like water density and trapped air and such all react a little differently in a small version.” He shifted his gaze to Hank. “Do we have enough extra weights to add to those cars?”

“Not right here, but I can either get some over from Supply or...” and he tilted his head a little, “...we can just flood each of the cars and get rid of residual air. I think that ought to be sufficient.”

“Go ahead and flood a couple of them and then check the buoyancy. If it looks good, do the rest. If it comes up short still, get some sort of extra weight into all those cars.”

As the engineer walked briskly away, Bud turned to his friend. “So, and I know you really don’t want to do them, but assuming this commission still insists on you making passenger cars, those obviously can’t be flooded to get rid of the air.”

“Right. And your next question is going be, what to do about them.”

Bud nodded eagerly.

“I actually have thought about them and have come up with a solution that ought to work. The regular freight cars rely on the weight of the merchandise inside to hold them solidly down. I believe the air in the passenger cars can be offset by using much heavier bottoms.”

Bud smirked as he pictured passengers with broad backsides.

“Get the silly look off your face, flyboy. What I mean is everything from the floor down will be much heavier. Possibly rather than just the durastress and polymer construction everything low down will include a core of good old heavy iron. I’d say lead but International maritime law says that is a no-no. Those cars will need about five tons of extra weight and we can get that inside the floor, the trucks for the wheels and even inside the wheels themselves.”

“So, that plus the big-bottomed customers will keep things down?”

“Ha-ha, Bud. Actually, people with large posteriors float more than others. So skinny people would be a better choice, but that is beside the point. We need a specific amount of weight per car. So \_”

Tom stopped talking and pulled out his tablet computer. He

tapped the screen in several places and began scribbling with his fingertip. Three minutes later he looked up.

“Got it?” his friend asked.

“Yes, I do. I was just making a note to add measuring devices to all cars to do their own load balancing. We have them in this test train so why not the real one? Each car is filled with cargo or people and knows what it needs to weigh. If a freight car is too heavy it will notify the loaders to move things to another car. If it is too heavy in the front or back, it will tell them to shift things around more evenly. And, if a load is just a little light, it will tell the ballast tanks to let in some extra water, just the right amount, as the train goes into the water.”

Hank came striding back to them. “Got the water in the cars and they all check out within specs, skipper. Whenever you’re ready we can start the first run.”

Tom and Bud got up and followed him to the waiting seacopter. It had been decided to use a small one to go underwater for the start and then to be able to rise into the air and race to the far end of the straightaway to watch how the train handled the curve and gently-tilted tracks.

They arrived at the location in time to watch the last of the model freight cars being lowered from the back of a tug and down to the tracks and waiting train. Sinking to the bottom, only fifty feet down, they looked out on an eerie sight.

The tracks sat on a wide flat plate and were raised about a foot. On one side the track was colored red and the other side a deep blue.

“Why the two colors?” Bud asked.

“The right ones are on the inside of the big curve and contain an iron core of pea-sized pieces. If this first test circuit is successful then we reset the train up and energize those inner wheels. They have an electromagnetic core.”

“Extra hold in corners?” the flyer asked.

“Exactly that. It might not come to it but that’s how we can do two types of rail testing in one day. I’ve added all sorts of sensors to see just how much more or less grip we need.”

Over the speakers came the announcement, “Test to start on your command, skipper.”

“Thanks, Peter. Give me a moment to slide to the outside a bit. I think I want to follow along underwater and keep a constant eye on things. I’ll give a thirty-second countdown.”

He carefully brought the seacopter up about ten feet and used the maneuvering jets to shove them to the side with a minimum of stirring of the silt below.

While they waited for the last of it to settle Tom checked over the control panel that had been added for control of the train. Along with the speed control and the slider switch to manage the amount of magnetic grip, there were nine readouts showing everything from real and scale speed, battery power, and the weight load on the wheels of the locomotive and five cars.

“Okay, everyone,” Tom announced over the radio and loudly enough for Bud and the two others in the seacopter to hear. “We start off thirty-seconds from... now!”

The next fifteen-seconds were spent readying all the systems in the train. As the ten-second point neared the radio came to life.

“Stop, skipper! We sent out a small sub drone and it is just gliding over the mid point in the curve. We have a visitor out there. A seal seems to have taken an interest in the track and looks like it wants to taste it. I’ll have the drone buzz it and chase it off. Wait a sec—”

A minute later came, “All clear. Didn’t taste of anything nice so our little friend shot off to find his breakfast elsewhere.”

“Okay. Let’s start at ten-seconds.” He counted down the last three and pressed the necessary button to activate the locomotive.

Cameras mounted on posts near the start and one in the nose of the train showed the slow, but steady, start and acceleration of the train.

Within the first nine-hundred feet it was running at a scale speed of sixty miles per hour and still accelerating.

Tom kept abreast of the engine but slightly farther away than when they began the run so the seacopter didn’t provide turbulence.

He intended to take the train around the big curve at a scale speed of ninety, but the train just would not accelerate beyond about seventy-six miles per hour.

“Are you going to give it the gas the next time around?” Bud asked.

“As a famous television engineer once said, Bud, ‘I’m giving her all I can!’ It appears that wheel drive alone is not going to do it, But, let’s finish this run and then check the results.”

He barely slowed the train in the big curve. It seemed to take the gently-tilted tracks well with the magnetized inner wheels staying

right on the track. But, Tom noticed that the instant he energized them, the train slowed down by a full eight miles per hour.

It was disappointing, but he believed there might be a few things to do over the next day to improve the next run.

As Tom brought the train to a halt, greatly disappointed at the inability of the track to control the train, the island and radio rang out with an announcement.

*“Attention, Attention. We have an unidentified boat off shore about two mile. A chase boat is being dispatched, but the tower believes they can see an elongated tube on the side. All hands out of the water and away from docks by one-hundred feet...”* The voice paused but in the background you could here someone say something indistinct, followed by a muffled, *“You sure?”* and then, *“Attention. Incoming torpedo. Emergency actions for incoming torpedo! Get everyone out of the water, NOW!”*



## CHAPTER 16 /

### THE SUBMARINE TRAIN

TOM THANKED their luck everyone was in the seacopter and he had placed nobody in the water as an observer, so he lifted from the surface and headed in the direction of the boat and incoming torpedo. A flash of light and concussion from an explosion told him the boat had been destroyed. It had likely been radio controlled, or he hoped so.

The torpedo zoomed under them. Tom spun around and headed back to shore keeping sight of the trail of bubbles from the back of the weapon.

They barely caught up with it when an underwater explosion blew tons of seawater into the air right in front of them. So much water came up that it was sucked into the central turbine blades and the seacopter lost lift.

He was able to gain control before they pancaked onto the surface and took them back up to two hundred feet.

“Check all systems and report,” he called out. He got on the radio and asked to be connected with the fast patrol boat now coming out from the docks.

“This is Tom. The boat out there exploded but that doesn’t mean it is harmless. Proceed with care. I’m going to check out what blew up under my current position. Skirt this area for now.”

“Roger, skipper. We’re pouring it on but will be careful.”

Tom sideslipped the seacopter a couple hundred feet before dropping onto the water and reversing the blades to take them down.

Behind him Bud let out a groan of dismay. “The track’s been blown to bits!”

Over his shoulder, Tom replied, “We were going to have to come out and chop it up anyway, flyboy. That version of track was a failure. That torpedo did two things for us.”

“Good or bad?”

“Well, you decide. It just showed me that the material the track is made of cannot withstand an explosive force... and it hit the track rather than going father in and hitting the train or the docks.”

“Oh. Right. Not all bad, but annoying none the same.”

The train, undamaged but knocked off the track by the concussion of the underwater explosion, was pulled up onto the

deck of the tug and taken back to the docks.

It would be checked over for any damage before the locomotive was shipped back to Enterprises.

Three days later Tom was looking out the door of his underground office and lab at the small locomotive as it sat in front of the nose of the *Sky Queen*. He was trying to think of ways to increase the speed of the train. A few things had come to mind but no single one appeared to hold much promise. And, the sum of all the possibilities would see the locomotive becoming twice as long as the current design.

His answered his phone on the third ring. “Tom, this is Trent. Your father just received a couriered message and is about to go ballistic. Get over here as quickly as you can, please.”

Without saying anything, the inventor hung up and raced from the room. The elevator was waiting for him, otherwise he might have tried dashing up the many flights of stairs.

He did run across the tarmac and up the stairs and finally skidded to a halt at the outer office.

“Go on in,” Trent urged.

When Tom opened the door his father looked up, red-faced and angry.

“Look at this!” he demanded shoving a single sheet of paper across the desk.

Walking over and picking it up, Tom let out a cry of dismay.

Across the top was a hand-drawn logo with the words *PANGEAN SOCIETY* scrawled under it.

As he read, he also became very angry.

Swifts! You will not succeed. Stay out of our ocean or suffer the consequences. Your little test machine was destroyed by our superior technology and we will do it again and again until you publicly announce you are abandoning this underwater train of yours, or until we eventually kill you.

Be warned!!

Tom sat heavily in the chair opposite his father.

Mr. Swift shook his head. “And, idiot that I am I just opened it and handled the page without thinking.”

Tom let out a single, rueful chuckle, “Just like I did! I suppose



Harlan might get something off it. Did they open it or did it come straight here?"

"They did their usual slice the end open and sniff for toxins, but I do not believe they pulled out that single sheet. I've called them anyway and they are bringing over that machine of theirs to look for fingerprints. I doubt there are any." He sounded disgusted.

When Harlan and Phil came in a minute later they wheeled in a strange box on wheels. Using tweezers Phil picked up the sheet and placed in on a tray at one end. It was taken inside, the door closed, and a haze of gas flooded the first chamber. When it cleared the page was moved into another chamber where the sides went opaque for a minute. At the end the sheet exited at the far end and the screen sitting on top began showing a series of fingerprints.

As Damon believed, the only prints on the page were his and Tom's.

"Excuse me, but I'll take that flat envelope," Phil announced retrieving the nine-by-twelve inch cardboard piece the letter arrived in. It also went into the machine.

When it came out there were no fewer than fifteen sets of prints on the outside, but the flap was another matter. A single print, likely a thumb, was found on the adhesive strip.

"That could possibly be our sender," Harlan told them. "I'll have the FBI and Interpol run that to see if there is anyone matching in their systems."

A minute later he, Phil and their box left.

The two Swifts discussed their options and came to the almost immediate conclusion that the so-called "Society" was filled with nut cases who possibly saw the attack as a way to claim responsibility for something they had nothing to do with. But, Tom held up a finger.

"That would mean someone talked to the press and as far as I know, and what I ordered out on Fearing, there is a complete clamp down of reporting the incident."

Damon sadly shook his head. "Then, we either have a blabbermouth, which I personally doubt, or this Pangean group has the sort of financial backing to buy a torpedo, or build one, and a remote controlled boat with enough range to avoid detection of the controlling boat, ship or... whatever."

Tom got up and started to go to his own desk when his father stopped him.

"If you have another minute, this hopefully more pleasant

message came in early this morning from your Monsieur Pierre Artois. Here,” he said holding the two-page document out.

Taking it, Tom took a deep breath. The last thing he needed right now was a demand or a change or something to get him off track.

But, as he read, a smile and then a shrug came to the young man.

Tom Swift,

Hello from your favorite Commission (and I hope you might read the sarcasm I have tried to convey in that). I wanted to let you know of three developments. They are:

1) We want *you* to select the final route to be based on your experience and on the timeliness of probable completion. This includes the terminus at the United States end of the line. Those who would have treated this as a personal conveyance to the Florida amusement parks have been defeated.

2) If at all possible by opening day, we wish to double our order for a total of four complete trains. If not, the original two will be used until delivery might be made, but our primary shipping agents now see a much greater need for this novel transportation method. Funding is approved.

3) In order to secure the necessary votes for item 1 (one) above, the rest of our group has given in on the passenger car issue. We now must have at least carriage space for 80 - 100 persons (and luggage) per train. Further, and apologies for this complication, if this is divided into 2 or 3 cars, 1 of them must be outfitted with First Class appointments including:

...and the list ran on like an airliner wish list. Everything from top notch leather seating to an increased wait staff and deluxe sleeping arrangements. However, at the very bottom was a hand printed note stating:

Tom, please let me know that some or much of this is impossible due to a ‘technical issue’ you can somehow back up. We have several members who are too wealthy for anyone’s good and demand the world treat them as special cases. One of them, Tdsalkis from Greece, can be quite nasty if he feels he has been slighted.

*Pierre*

Tom sighed. “So, I guess that means we go ahead and build two cars for passengers. One can have the equivalent of tourist class

seating, but with a lot more leg room than on a jet, and the other can have the same first class seats we put in the first of our quiet turbine skyliners.”

Damon nodded. “The ones with the leg rest that almost turns the seat into a comfortable reclining bed?”

Tom nodded. He next placed a call to the Construction Company to start the order for the necessary cars and said the plans would be adapted with the new layouts and sent over that late afternoon.

“Thought you would be pushed in that direction,” Jake Aturian told him. “I’ve already had the seat designs pulled and things are staged in the production computers to start cranking the seats frames out any time. The floors will have to be swapped out, however.”

That reminded Tom of his decision to put heavy weights in the floors and into the trucks and wheels. He told Jake about them and received a small laugh. “Hank Sterling is ahead of you on that, Tom. I’ve got the design specs right here in front of me. Do you want to check them?”

Tom declined saying he trusted Hank’s judgement.

When he hung up his father was looking at him. “Can an old man make a small suggestion?”

“Of course, Dad. Suggest away!”

“Fine. Then I was reviewing your test data before the, uhh, accident, and see the train did not get anywhere up to the speed you wanted. True?”

“Yes. I was pretty disappointed but there are a few things I can do to help including adding a second type of propulsion. I also spotted a slight wobble in the wheel stability in the curve I need to solve.”

“Well, we can discuss that a little later. What I have in mind—and I beg your forgiveness if I have been experimenting with one of your inventions—but have you considered keeping the actual water off of your train?”

“How?”

“To answer that, let me ask you a question. What do you feel if you run your hand over the engine or any of the freight cars on the bullet train?”

“That depends on whether it is ready to run or sitting in the station.”

Damon looked at his son to encourage him to think about this.

“Oh!” Tom said standing up. “When the trains are ready to run, and are running, you feel nothing except a little electrical charge.”

Now his father was broadly smiling. “Uh-huh. All courtesy of your negative to positive and back again shift in the polarization of the skin.”

It was true. What had started out as reversing polarity one-hundred-twenty times a second had recently been upgraded to shift the charge at twice that rate. The result of this technology, when applied to an outer skin capable of allowing an almost lossless flow of electrons, was that everything trying to touch the skin was repelled and held about a millimeter from it. Air flowed past without friction. Dust and dirt never stuck. Even bugs hit and flaked away almost instantly.

“Okay,” Tom said carefully looking at his father, “are you telling me you’ve been playing around with that? *And*, underwater?”

“Indeed I am. The experiment I did was on a jetmarine model. The one-eighth scale one Arv built way back when. I had him pull it out of the museum building, give it a good going over, put in a fresh solar battery and then do the coating with that metallic elastomer you came up with. We took it over to the water tunnel tank while you were down in your lab all day yesterday. The tests look very promising. Almost exactly what I think you need. Take a look.”

He invited Tom over to look at the display on his desk. To begin with, they watched the two test runs. The first was with the model not energized and the second was with. From the standpoint of a casual observer there was no difference.

But, when the side-by-side statistics were called up next, the tale was exquisitely told. Without the electronic repulsion, the drag coefficient was nearly .40. That exceeded normal submarine designs by many times. Even Tom’s full-size jetmarines had a drag of .177.

With the electronic “skin” that drag dropped to .008 or so low as to be unnoticeable.

“I believe that alone will give you an added twenty MPH.”

Tom thanked his father, first shaking the man’s hand and then wrapping him in a big hug, before running out the door, the issue with the Pangean Society’s threat mostly forgotten. Bud located him in the underground hangar looking at the scale locomotive model and making some changes to a sketch he’d printed from the computer files.

“You look like a man with a renewed energy, skipper. So,” he said looking at the sketch for a moment, “what changes are you

contemplating?”

As he pointed to parts of the sketch, Tom went back over a few things Bud knew and some he did not.

“There will be two types of locomotives, sort of like we have with the land trains. Identical pointy-nosed ones at both ends and them special pusher cars every ten or maybe fifteen freight cars in between.”

He reminded the flyer the locomotives would be round-nosed like a jet airliner, but the nose would be fairly low. In that nose would be the forward-firing repelatron to move water out of the way and create vacuum gap of about five feet.

“The secret is that we need some of that water at the top front, and the repelatron is going to be shaped so it gives the intakes up there ample water.”

“Okay. You’ve got me wondering why that water, Tom. It can’t be for cooling, can it?”

“No, it is water intake for the hydrojets that help push the thing along. There will be eight intakes about twenty inches each up on top and another six on each side of the engine. They will feed a series of high-speed water pumps that will expel the water at five times the intake speed from smaller ports along both sides behind the intakes.”

Bud’s mouth formed the letter “O.”

“So, and I may be wrong as can be about this, does that mean the other loco-cars farther back are intake and jet output cars, too?”

Tom smiled broadly. “You have it in one, Bud. Each of those will have eight inputs on the top and four outputs on each side. They, like the locomotives, will have their own power pods. Bigger capacity ones for the locomotives—in fact I’m going to outfit them with a trio of our larger pods—and mid-sized pods for the interim what you just called ‘loco-cars.’ Then, each individual car will have a small pod to power everything and run the individual computers and also the air circulation systems for the passenger cars.”

“Will there be a way to get between cars like on a real train?”

“Yes and no, Bud. Obviously we need to give access to the entire area behind the control cockpit. There will be a central passage there. I suppose I could rig an airlock system between the engine car and at least the first car behind it. All I know for certain is the pilots will have a jetliner-like cockpit with two positions, then some fifteen or sixteen feet behind that for living space including a

bathroom, bunks for the six-person crew, and small kitchen. All on one level as we need the upper area for the water intakes and plumbing.”

Tom looked at Bud who obviously had more questions. “Go ahead, Bud. Ask whatever you want to.”

“Okay. Didn’t you mention one time not so long ago the wheels would provide forward motion?”

Tom nodded once. “I did. In fact they will provide about sixty percent of the forward motion. But in our test model I could never get the train to my low target of ninety-five miles per hour as you witnessed. Between generating a vacuum space in front of the nose to help that cut through the water much easier, the hydrojets give us enough extra power to get this train to nearly one-twenty-five.”

“Jetz! That means a quarter of the travel time cut right off the top! Neat.”

“Anything else on your mind?”

“Yeah, sort of. Visibility, and I mean outside the train. We’ve both scooted along the shelf that deep and it is darned dark. If you are using the nose for the repelatron where will the lights go. Or, is this a SONAR-only thing?”

“Oh, no. Definitely lights, Bud. An entire bar of them above the cockpit windows on the front of the locomotive and every passenger car will have at least four spaced evenly front to back pointing out. All view panes will be coated so the illuminated area will be quite visible. I will, however, allow passengers to darken their individual windows if the motion or the light is a bit too much for them. Oh, and there *will* be SONAR for safety.”

Bud let out a sigh. “It’s all sounding like a dream. Climb into the train at noon on Monday and arrive in France at noon, their time, the next day. All it needs now is gourmet dining and a dance floor with jazz combo.”

“That’s not going to happen without a lot of pain and hassle, Bud, but speaking of food, there will be meal dispensing stations in each passenger car. Sort of like we have when we go into space and can’t take Chow along.”

“You can’t tell me you want to tempt fate by having the Texas poisoner fill our honored first guests with chilies and spicy peppers.”

“Well, no, but he *is* going to be heavily involved in creating the five meals that will be offered on our first trip.”

“Okay, but I’m taking a stomach seltzer before we leave. Oh, and

I have a question for you from Arv. He's off today but he called me this morning to see if I could take something out of one of his 3D printers. But, that's not why I bring the man's name up. He said he's got a question having to do with the keeping water off the train. He believes you might have an idea about that but he isn't in the know and hopes to add it to the working model this week."

"I believe Arv is talking about the same fast surface charge switching we do to the skin of the bullet train from a positive charge to a negative one over two-hundred times a second. Dad suggested that to me a little while ago."

But suddenly looked happy. "Right! I have it now. It gives the train that 'I can't quite touch the surface' feeling. Can you really do that underwater?"

"I know I can do it in shallow depths like Lake Carlopa and the water test tunnel—dad proved that—but I need to pressure test the concept down to over a mile. And, who knows but we might someday do another route across the Pacific where the water is even deeper."

Tom momentarily got a far-away look in his eyes as he envisioned a global network of ground and underwater bullet train tracks all moving freight and people at incredible speeds.

He shook his head and focused back on his friend.

"Well, that's for the future. For now I will tell Arv what I need to test. Thanks for letting me know."

Late the next day Tom stopped in at Arv's workshop. The modelmaker was working on several parts that had come from his 3D printer.

"Just doing a spot of trimming, skipper. Be with you in a sec." He expertly ran a tiny plane over a bumpy edge, held it up to the light, and smiled with satisfaction. He set it down and turned to Tom.

"I heard from Bud that you'd be filling in a few blanks. What can I tell you? Better yet, what can you tell me?"

Tom took a seat next to Arv. "I have decided to test the positive to negative surface switching on the train model so I need you to work that into what you're building. Along with the repelatron I see on the table over there."

"Hmmm. I'll need to surface spray all the external parts with that metallic elastomer glaze, then. It'll put things back a day, but the drying time will give me a chance to pull the right circuit board out of storage. I cannibalized the original bullet train model for a few spare internal parts, and that's one of them."

“Fine. I’ve got to see if the Construction Company folks can work that into the full engine supposing the test model on a new track pans out. We’re going to replace the two-mile loop test track out at Fearing with the new track configuration. The problem is, I don’t know what will be right now.”



## CHAPTER 17 /

### REPLACING THE TRACK

WITH TWO miles of the track to be replaced, Tom was glad he had started small while he was testing the track and testing the smaller train locomotive and freight cars.

At least, that is what he said to his father when he, Bashalli and little Bart went to the senior Swift house for dinner that evening.

“What’s just so darned frustrating to me,” Tom told them over the pot roast with potatoes and green beans Anne had made for them, “is that it’s the second failure. I think with the changes dad and I have discussed I can tackle the speed problem. But, if I can’t get the track right the entire system will never work!”

Damon pursed his lips and said, “You and I have faced worse problems with things not working the way we imagine in the past, Tom. Somehow, either through luck or, as I prefer to believe, incredible strength of character that keeps us at it, we come through. Speaking of that first track, my guess is it is of minimal use as is...” and he glanced at Tom, a sly look in his eyes, “however, I can still repurpose it for a slower moving vehicle and extend my underwater gardens by a factor of ten times.”

“That’ll be great, Dad. In fact, before I dismantle the current track laying sled, tell me how much you need and I can produce that right where you need it.”

“I’ll have a diagram on your desk by tomorrow morning, son. Thank you for taking some time for this I am very close to an incredible breakthrough in ocean hydroponics and this will let me complete that.”

Tom was handed his father’s input by nine-fifteen the next morning and was about to leave the office when the door opened and Harlan came in saying, “Please stay, Tom. I have something for the two of you.” He took a seat in the conference area and the two Swifts joined him.

Harlan laid out two photographs separated by a single sheet of paper. As Tom sat down he pointed at the photo on the right.

“That’s one of the commission members. Uh, I think his name is Tdsalkis. Right?” Tom asked.

“Yes. That man is Anastasios Tdsalkis and his is, as you’ve indicated, a member of that European commission you’ve been working with. Anastasios, by the way, means resurrection. And, that is germane because he is the resurrection of, wait for it, *Oleg*

*Belishnikov!*”

Tom and Damon were stunned.

“Are you sure?”

Harlan tapped the other photograph. “This is a photo of Belishnikov just before he disappeared from sight about a decade ago. And, as you can see, this recent photo shows that same man only about ten years older.”

Damon spoke up. “Are we certain this Belishnikov is responsible for the Pangean people and therefore probably behind the attacks on Tom and his train?”

Ames admitted it wasn’t an absolute certainty, “But everything points to that. The money to buy enough black market components to built and operate that Chinese fighter jet? Money for a remote torpedo boat? Even the letter you received and that fingerprint we pulled? Not quite enough for a full match but Interpol says it is Belishnikov’s with eighty-seven percent certainty. Tom, you aren’t scheduled to meet with the commission again, so please do not agree to any individual meetings before discussing it with me.”

The younger man agreed and Harlan left them a minute later.

An hour later Bud located Tom down in the underground hangar.

“Anything new to report?” he asked.

“There is. For starters I going ahead with something holding our current model back. I’ve been using just the wheel drive and as I’ve told you I’m going to install the secondary drive, a set of powerful hydrojets that will push back and slightly up giving great traction as well as the extra push I need to get to my speed targets.”

“Neat. What about that stability problem and the slight wobble?” Bud asked.

“That,” Tom told him, “is frustratingly infrequent and all I’ve been able to measure is a little side-to-side travel of the wheels on the tracks.

“Can’t you just set things to bring the tracks a little bit closer together?”

“As much as I’d like to do that, getting them too perfect is a recipe for danger. As you know, even the tallest of building have to flex a bit or they would come crumbling down from fatigue. Same thing with the tracks.”

Bud wandered around the upturned underside and wheels. He looked carefully at everything and nearly said a few things but shut

his mouth as he figured out they would not be helpful. Finally, he looked up to see Tom staring at him, amusement in his eyes.

“What?”

“You’re trying to do what I spent three days at, and that is trying to locate something to tighten or realign or that sort of thing. Right?”

Bud nodded and pursed his lips. “Nothing to find?”

“Not as far as Hank and Arv and dad and I can tell. But, I did come up with what may be the solution for both the cars and the track. Come take a look at what I’ve got on my computer.”

They walked into the underground office and Tom swung the monitor around so this friend could see.

After nearly three minutes, Bud looked back at Tom. “You’ve put some sort of teardrop on the bottom of things.”

“That isn’t just a teardrop, Bud. It is an extremely powerful, electron-excited neodymium permanent magnet. One between each and every set of wheels. That,” he said pointing, “fits into a corresponding channel in the tracks running right down the middle.”

The flyer nodded but it was evident he wasn’t quite certain if he understood. Finally, he asked, “And, that does... what?”

“The channel by itself doesn’t do much and the thing you call a teardrop also doesn’t do everything I need, but together, and with the secret I haven’t told you about, they do wonders.”

Bud’s forehead scrunched up and he looked toward the ceiling as he attempted to figure out the almost riddle Tom was presenting. Finally, with a shake of his head, he admitted he gave up.

“Not to worry, flyboy. You see, the neodymium magnet can attract at least one ton on its own. That is per magnet. But the first secret is in the channel. As we extrude that, a laser will super heat an iron source and spin in around the inside of the channel. The magnet will be attracted to it equally and will want to force the teardrop to remain perfectly centered. By itself it wouldn’t amount to that much, but along with the special wheels and the track it adds just the stabilizing influence we need.”

“You just said that’s the first secret. What else?”

“We will tightly wind each magnet with fine wire and pass a charge through that, coming from the individual car power pods. That turns everything into a very powerful electromagnet and that more than doubles the attraction power without causing much

drag.”

He added that the power pods were also necessary to provide the electricity to the skin of each car to ensure the water shedding capabilities were always on.

They went back out to the upturned model and now Bud could see exactly what Tom was talking about.

“I do have one last question, or at least the last one for this five minute period of time,” the flyer said. “You’ve told me a couple times how all these cars will be recoverable in case of anything bad happening. How will you do that if this teardrop is stuck in the channel?”

“The cars are each ninety-feet long. The wheels are set exactly ten-feet in from each end, which means they are located at a seventy-foot spacing. I am setting the extrusion machine up so it will put a pair of openings, seventy-feet apart, about each five thousand feet. If we need to halt the train and bring the freight cars up, all we do is move the train so one car is over these openings and then release it to float up. Move the train a little more and the next one goes up.”

“What about the passenger cars? Not that I want to bring up a sore subject...”

“Not sore anymore. Bud. I’ve come to terms with the mandate to do those. Each of those cars will be a fully self-contained submarine capable of maneuvering on their own. For those cars I will make these teardrops detachable.”

“So, why not add those to all the cars?”

“If there is an accidental misfire of the releases I want only the two cars to detach. All other cars and locomotives will remain held down.”

“I like safety measures. Saved my skin many times in aircraft, so I look forward to never needing to use them on these trains!”

The track Tom agreed to lay down for his father was a straight stretch running from a loading point on shore, down to the water and into the ocean, then out fifteen-hundred feet to the beginning of the undersea gardens Mr. Swift kept and then out two more miles. Later, Tom would construct loading stations at three-hundred foot intervals to make working the gardens as easy as possible.

He had decided to turn the test train over to him as well.

Tom next added an additional SONAR receiver to the end of the

track. Fearing Island was ringed by these receivers set into the sea floor one-thousand feet out, so this one would be the farthest in the array. He hoped that the low profile of the tracks would not be a target for anything in the future.

Once complete he also laid down an additional five-thousand feet of track in one-hundred foot sections plus a pair of ninety-degree turns and had them stacked on the shore.

Tom's new concept for the tracks was radical, to be sure, but he'd methodically attacked each of the failings or weaknesses in the first track design and this new one—with the magnetized center channel—along with thickening the actual tracks for a stiffer ride all tested out in computer simulations.

Only a real-world test would prove this, but that could be accomplished inside of a week.

Over the years the inventor had learned from mistakes and underestimations and so he now built all test equipment in modules that could be swapped out for alternate ones, or reconfigured in many different ways. The only difficulty he anticipated was with the iron to be melted to coat the inside of the channel.

His own sister came to the rescue on that.

“Why not use iron rods and treat them the same way a glue gun treats the individual glue sticks?” When Tom looked at her with little comprehension, she said, “The sticks are all stiff at room temperature and go into the back. A squeeze of the trigger moves them forward into the heating area and it comes out the tip as a liquid that solidifies quickly. The thing is, and this is the important thing, brother dear, is that you can shove another stick in as soon as the first one goes all the way inside the actual gun. There is still about half that first stick inside but now you've got the next one primed and ready to melt!”

Sandy held both hands in the air like a gymnast just finishing a dismount and said, “Taa-daa!”

It turned out to be fairly simple to accomplish. Gravity would drop each one-inch by twelve foot rod down a stiff pipe and into the top of the track extruder. Tom toyed with using lasers to melt the metal but settled on an electric arc to do that work just before the metal was spread inside the channel that had been hardened two-seconds earlier.

The test team reassembled on the dock at Fearing Island ten days after the first test and destruction.

Harlan had not only brought over a large team of his own

security people, he had contacted the U.S. Navy and requested a submarine patrol.

The response he received—from a different Admiral than Stennis, who had suddenly decided to retire—was, “Absolutely! The Swifts have saved more of our men and women than we can ever repay. We’ll have that area so covered not even a crab could scuttle in without our hearing it!”

The *Cousteau* had been used the first time but the extra weight of the iron and its handling equipment meant operations were now on the tug that would also lower the train cars to the tracks. It easily took the extruder and all of its hoses and pipes to the start point and lowered things to the floor. Bud and Zimby Cox swam out and directed the exact placement before coming topside and climbing up onto the boat.

“Looks all set to go down there, Tom,” Zimby reported.

Tom looked over to Millie. “You ready to try this again?”

She smiled and told him she was. “I’m going inside now so give me a minute to get situated then I can go on your command,” she told him.

The start of the track came from the extruder ten minutes later. As always it required a few feet to get things settled, and Tom kept the ultraviolet light off so that portion of track could be easily sliced away later.

Everything worked as designed and even a little faster than the first track had gone in. Overall they finished the run nearly two hours earlier than the first one bringing the end back to connect with the newly trimmed starting point. Because Tom wasn’t ready to test his rescue abilities he only had included cutouts for the teardrops to be inserted or pulled up in four spaces at the beginning.

Assembling the train down on the track went swiftly and by the second late afternoon they were ready for a test run.

The team boarded the *Cousteau* for the test, but Harlan asked Tom to hold off for twenty minutes until a Navy fast patrol boat could come around the side of the island and make a surface sweep.

What came into view was like some very futuristic PT boat. Wide, low to the water and very sleek, its five-man crew all waved as they passed near the seacopter. Tom and Bud were topside watching and waved back.

“That is one slick little racing boat,” Bud commented.

“That is one slick little killing machine, flyboy. Supposedly

hidden below deck is a Gatling gun capable of a four-hundred rounds a minutes with a magazine of five-thousand shells and a little birdie told me once that behind their control cockpit is a launcher with surface-to-surface and surface-to-air missiles. And, she does about fifty knots. That's why her designation is Patrol *Fast Attack*."

"Jetz!"

They watched the patrol boat race out several miles and make a back-and-forth sweep of the area.

Down inside the seacopter the radio came to life. "Swifts? This is Lieutenant Dave Schrader of the PFA-3. You are clear of surface contacts out to at least ten miles. We will continue to monitor."

Zimby answered them with the thanks of his captain, Tom Swift.

"Let's do this!" he inventor declared as he and Bud slipped down the hatch and closed it behind them.

This test went better than the first one, but the speed was still under what Tom hoped to offer even with the hydrojets. However, the idea of the magnetized channel came through with perfect numbers.

That evening Tom fine tuned the control program looking for ways to eke out a little more speed. Testing the following morning showed he'd managed another four miles per hour, but he was still just making one-hundred-six and not the one-twenty-five he felt the train was capable of achieving.

Bud suggested they grab coffee the next morning. Once in the cafeteria and with mugs of it in front of them, he said he had come up with another question.

"One in a never-ending line, it seems," he admitted. "You once said you were going to test out a couple formulas for the track materials. What ever happened with that?"

"What happened was the need to find something to absorb metals from the surrounding seawater went away. All I was looking for was on increase in the weight of the track bed and rails by about fifteen percent. My iron-coated magnetic channel gives everything nearly sixteen-percent greater weight, so along with pretty good strength we have what we need."

"Uhhh, hate to mention it but you said the tracks weren't strong enough to handle that torpedo blast."

"I did," Tom replied, "but for the final track laying machinery I am undersizing the tracks and channel by about a millimeter and then we'll be pumping down liquid tomasite to spray coat it all. We'll

use a secondary hardening system since it needs to be sprayed on very stable tracks, but it will give us tracks that cannot be targeted and will withstand a lot of abuse.”

“Have you come up with anything to increase speed?”

“I think I have, actually. You remember we have the water intakes on top of the locomotive and near the front on the sides?” Bud nodded. “Well, I’m placing four of them in a row right above the cockpit, adding more to the top and using all the side ports as drive exits. My calculations say I can increase hydrojet power by nearly fifty-percent. That is going to do a lot, but the biggest thing, and something Bash asked about last night,” he grinned and blushed a little, “is we have been testing with a single locomotive dragging everything. In the real trains there will be the interim drive cars as well as another full locomotive at the back. I never factored in their effects. Now, one-twenty-five or even a little more, looks more than possible, it is downright likely!”

The final days passed as Tom and his team prepared to send *Demeter* out to lay the tracks. At the Boston end the additions to the existing station were nearly complete and the TBM had been eased into the ground the previous week. It was currently at a point eleven miles out to sea waiting for the first tracks to be set down before breaking through and allowing the ocean to flood the tunnel.

Airbags would then float it to the surface for retrieval.

Over in France, things were not going as smoothly. Workers, unused to American-ordered timetables, had been purposely working at a slower pace. When the entire crew was fired and replaced, the word finally got into people’s heads that this was not something to play games with and that absolute solid work ethics was the only thing tolerated.

That TBM had been shipped over in thirty-seven pieces and assembled on site. It would be heading into the dirt in another three days and its tunnel and tracks would be complete just two days later. It would be coming out only three miles offshore but the tunnel would feature a thirty-degree turn to the northwest before exiting into open water.

Tom took advantage of a couple days of down time to fly Bashalli and Bart to France to see the progress. The *Sky Queen* was met by protesters at the airport, mostly the former workers who refused to believe it had been their attitude and poor work habits that led to their dismissal.

But, the appearance of the local Gendarmerie sent them rushing off on other, more important things and they did not reappear the rest of the day nor back at the airport that evening as the Swifts



headed for home.

“In spite of those people who were booing us,” Bashalli told him as they sat in the lounge of the giant jet—Red and Zimby were their pilots—“I very much enjoyed seeing that beautiful town. And, the architecture of their station is much nicer than the big, square building on our side.”

It was true. Where the U.S. terminal was in keeping with the idea this was a warehouse and cargo transfer station, the French architects had designed a showpiece of a station. It might have been something from the 1930s but was being constructed from modern materials. Wrought iron was replaced by an aluminum-chrome alloy that was a fifth the weight and twice the strength. It would require no cleaning or de-rusting. But, the beauty was only on one side of the tracks and at the farthest point inside where passengers would be boarding and debarking. Elsewhere, behind walls, it was much like its U.S. sister facility.

As she fell asleep leaning against his right shoulder, she muttered, “Make our side pretty, Tom...” and her soft snoring told Tom she was not going to finish that thought.



## CHAPTER 18 /

### MID ATLANTIC ADVENTURE TIME

TOM DECIDED the best route to travel was not going to be the straightest one. A direct route might cut hours off the travel time but the logistics of laying tracks that needed to descend and ascend the precipitous drop offs at both continental shelves would have been nearly impossible unless he opted to dig tunnels starting fifty miles from the edge coming out several miles onto the lower plain.

Instead, he described to Pierre Artois a path that would take advantage of the shallower waters to be found on the shelf at both ends as much as possible, It would mean nearly forty-seven percent of the route would be in water only hundreds of feet deep and not thousands and thousands of feet.

“In fact, it will mean we take advantage of the Earth’s curve so the actual mileage of track is about the same or slightly shorter.”

“Excellent! And the progress on the trains themselves?”

“The locomotives are complete for the first train and about three-quarters complete for the second one. Numbers three and four will be a month out. Our cargo carrier cars are coming off the production line at the rate of three every other day and we’ll have the full compliment of one-hundred of them for two trains in time for the first runs. The other trains are still scheduled for delivery one month after that.”

“And, now for the difficult one, Tom. What of the passenger cars? Will we have them or are they the pipe dream of fools?”

“Not a pipe dream, sir, but not as easy. As I described to you months ago they each need to be self-contained submarines that can provide breathable air and heat to support life while also detaching themselves and rising to safety without human intervention. They are taking time, and I do have to say some of the requested changes are getting to be annoying. Things like, ‘We do not like the color of the fabric you have selected,’ and ‘Why do we not see a refrigerator for caviar?’ or my favorite, ‘Can’t you make the aisle and the seats wider?’ That one made everyone here laugh.”

“Yes, How can you make things wider when the carriage is already at a set width. I apologize for many of them and will do my best to see they cease.”

“We will all appreciate that. I would like to invite you, but possibly none of the others on your commission, to come visit the large submarine that is laying down the tracks for the system. Do

you have the time or desire to do that?”

Artois sighed heavily. “Would that I could take that time, but I fear even one day away from this gang of *personnes stupides* might allow one or more of the ones who would try to usurp control the opportunity to do so. So, sadly I must remain here for now. However, I would hope to be given the chance to ride along on the first train to come to France. Is that possible?”

Tom answered, “Sir, that is not just possible, I hope to get you and the entire commission to come over here for that special trip. It will give everyone the opportunity to find out just how this train they have been asking for will work for the rest of the world.”

“Then, by all means set aside twenty seats for us. I would say to arrange for more but I do not believe I wish to have my fellow members of the commission think they can bring along their families, or other persons of *personal* interest to them. *Comprenez-vous?*”

“*Oui*, I believe I do.”

*Demeter* pulled away from the dock and slowly turned to the east. Ten minutes later she slipped beneath the waves and took her course north to the point where her work would begin and the western TBM would come down and tie into the start of the track.

Inside her belly was an incredible array of machinery. Taking up the front half of the bay and hanging from the forward and middle winches was the modified boring machine. In the front was the roller-shaped cutter, behind that was the necessary equipment to move anything they sliced through to the sides before an array of extrusion nozzles would lay out whatever amount of the dual tracks plus the bed and sides necessary to keep the tracks clear.

Should they have to go through a hill of other feature, the retaining walls could arch up and over creating a short tunnel.

But the secret to stability for the track system was in the high-powered vaporizing equipment—a technology borrowed from Tom’s Tectonic Interrupter—that would create an almost instant hole some two-feet wide and forty feet deep into which more of the extrusion material was pumped along with a special hardener.

In seconds that material expanded and formed a pier on which the tracks were solidly mounted.

There were very few places along Tom’s selected route where more than about eight feet of silt was settled over nearly solid bedrock.

In other words, the tracks, once set and anchored, were going nowhere.

The exception to this would be for a span of about fifty miles near and across the Atlantic Rift, the tectonic divide between the European and North American plates. There, special dies would be added to the track laying equipment to create slip joints to accommodate any movement of the ground under them.

Tom knew that his addition of the electromagnetic center channel/probe to the trains and the tracks would allow the computers to briefly lift the wheels of each car fractionally over these joints so passengers, crew and delicate cargo would never feel the transitions.

He halted the sub one-hundred feet above the marker indicating the start point.

“Millie,” he called back to her control room, “stand by for the outer doors to open. I’ll call when we are ready.”

“Okay, skipper. I’m standing by.”

The giant doors covering the lower bay split down the middle and swung out with almost no sound. Once hanging down, ultra-quiet gears drew them upward and into the interior sides of the bay by about half their width. They locked into place.

“Millie, we are now ready. I’m turning over fine control to your panel. Call out when you are ready for the first extrusion.”

“Roger.”

She skillfully used the forward and midships winches to lower the assemblage of equipment. Foot by foot it dropped until her sensors told her it was five feet above the floor. She stopped it. Even though she had not been asked to, she reported, “I’m maneuvering us about three feet on a magnetic heading of zero-six-three... nearly there... and we’re stopped. Okay, the sled is going to the ground.” She took a deep breath to quiet the excitement she was feeling. “First support pier will commence in five seconds...”

The rapid disintegration beam lanced down making a small zinging noise barely heard inside the submarine.

“I’d like to give that pier three minutes to solidify before we start laying track, Millie,” Tom told her. “And, can you override the program and place a second pier ten feet out from this first one just to satisfy my desire to overbuild this thing?”

“You can’t see me right now, but I’m smiling and nodding, skipper,” she stated.

Soon, she had the boat moving forward and away from the

double anchor points. The underside cameras showed everyone near a monitor that the first few yards of track had been laid down and appeared to be coming out the rear of the cutter/extruder at the rate of a few feet every five seconds.

Tom now headed back to her control cabin and stood behind her watching as her hands moved over the entire control surface making adjustments to all phases of the work.

Without turning around, she told him, "I hope you are right about the computers learning from what I'm doing, because I don't believe I can keep this up for the three months this little adventure is going to take."

Tom laughed and set one hand gently on her right shoulder. "Give it an hour and then we'll do a short test. It is registering everything you do based on every input coming through. I have great hopes that by the end of a four hour shift it will take ninety percent of the workload off of you and leave you to manage the unexpected things."

As he watched her continue to control everything, Tom felt a little tingle of pride in having recognized her talents and his decision to offer her this job. It had been fully his decision and his father had told him about this nice feeling. It was something the older inventor often felt when a hiring decision proved to make a significant contribution to the company.

When he called for her to turn over the controls she nodded and touched three switches on her control panel. The first injected a small metallic marble into the track at the point where she relinquished control. If need be they could come back and cut the track at that point and replace it under her guidance.

The second switch turned over control of the maneuvering of the sub. The third released a small device that sat on the track and traveled along with the extruder. Its job was to use a modified laser to check track alignment. She trusted her own judgement and eye for the tracks being laid straight and true, but wanted confirmation her work was not being subverted by the computer.

She also slowed the track laying speed down. They had managed to get up to fifteen feet a minute but she took it back to just eight.

When Tom asked why the slowdown, she replied, "I want the computer to have enough time to succeed. I'll speed it back up over the next half hour or so."

He left her to run things her way and returned to the control room.

"It's looking good," he reported.

At the end of the one-hour test time Millie retook control. She called forward to report the computer needed a bit more watch and learn time so she intended to run things herself for the next two hours.

When the time came for her to turn over the room to her relief, she had reached the conclusion the computer could manage most things, but told the new man to keep a close eye on the places where the boring head needed to cut through anything.

“The computer seems to underestimate how much wall to shoot out. We do not want silt to drift down and cover the tracks so take control and be sure to put up a wall at least two feet higher than the side of what you’re going through.”

Tom remained on *Demeter* for the rest of the day. When the time came to rise to the surface to take of a refill of the extrusion materials, he and Bud left the boat and climbed into the small seacopter sitting on the helo pad of the supply tanker.

“It seems to be going great, Tom,” Bud commented. “So, how are we doing on supplies?”

“Well, that massive tank we built seems to hold enough for about twenty-four hours of track work, but that might change if we need to go through a lot more small hills or some mountains. It’s the mountains I’m worried about. Those will require not just groves cut through but tunnels and that means releasing the boring and extruding equipment at some point, withdrawing the connectors and the reconnecting them on the other side. The issue is I don’t think I added enough line to do that.”

Bud could see he was worried about it but tried to smooth out the mood. “So, you send the thing in one side, go as far as you can, then back in out and go in from the other side. It ought to be able to find the end and connect them, right?”

Tom shook his head. “No. Once the track is laid down the boring equipment can’t back out; it can only go forward.”

“Well then, I guess the train won’t go in an absolute straight line but might need to meander around a couple things.”

“Let’s hope the route you and I surveyed by eye hold out to be the best workable one.”

Over the following week the sub traveled on its north-northwest course passing under Nova Scotia and heading for the twin small islands of Saint Pierre and Miquelon where they would turn due east and head for the continental shelf drop off.

A hundred miles before that drop off was a canyon that needed

to be negotiated. Fortunately Tom's calculations had deemed its slope to be gentle enough to only require that trains traveling down and up it reduce their speed by about one-quarter, the same as they would need to do when going down the slope of the shelf.

Tom headed back out to discuss a change of plans with the current captain of the sub, Bob Carlton—one of the two test captains for all submersibles produced on Fearing.

He brought his undersea charts along and rolled the main one out on the plotting table of *Demeter*.

"See that canyon? Well, I've had a thought I'd like to get your opinion on." He had both Bob and Millie with him as he tapped another location not very far from the canyon.

"That spit of land is only about fifteen and a half miles wide but heads directly for a much gentler slope down to the seabed than the original course I plotted. I'd like to ask you to wait up here with the supply ship until I can take Millie out there for a good look around."

"Fine by me, Tom," Bob replied. The crew needs to do something exciting like a good old fashioned game or hide and seek but we can't take the time while we're working. So, take our track demon with my blessings. How long do we have for fun and games?"

With a grin, Tom told him they would be gone about six or seven hours. "But, we're going out in the seacopter I arrived in. Once I get her back here she'll need a couple hours to plot things and then I want her to be given another eight for sleep, so her relief will have to do this shift, have your fun time and Millie will take the second shift once you get back underway."

She and Tom transferred to the *Sea Skip* and quickly sank out of sight.

The new track would take them a hundred miles out of their way, but Millie agreed—after studying the sonar soundings and finding this ridge to be made of solid bedrock—that it would make track laying go faster and would end up with a safer and faster train transition to the deep water.

"The great thing about this route is that it lets us go down that slope with hardly any drop off at all!"

"Thought you'd like it, but I want to show you one more thing." He surfaced and flew then to the East. Two hours later he settled back into the water and dropped to the sea floor.

"This is the Atlantic Rift and the one place I have been worried



about, but when I got the latest charts I spotted this place.” He pointed out the front window. “Where most of the rift is an indentation about three-hundred feet deep, there is this spot where it is practically flat. I propose we take soundings and see if it is solid under there.”

When the results were in, both of them were smiling.

“That seems to be a very solid spot, Tom,” Millie said.

“It does at that. We’ll still use the expansion joints approach, but I think we can expect very little movement other than the eleven millimeters of continental drift each year.”

They returned to the *Demeter*, True to his word Bob Carlton had the crew playing games like tag and treasure hunt for at least half the time they had been gone. Now, after a hearty meal, everyone was taking a rest break except for Bob and a couple of crewmen in the control room.

As Millie went back to her workroom to update her track plotting, Tom explained what they had found both along the ridge and over the rift.

“It is going to add a few extra days to the track laying, but in the end we have a much easier to run track system. Millie and I did soundings and she knows what to expect from the sea bed, so let her make the decisions as much as possible.”

Bob motioned Tom to come to one side. “Skipper, I have given her practically free reign since I stepped aboard. She is a marvel and I can see the day coming when you should give her command of something of her own. Obviously, from her previous experience she knows this boat better than anyone, but I say all she needs is to attend a few courses in leadership and she’ll be brilliant.”

Tom thanked him and replied that he agreed with the assessment.

When he flew back to Shopton, Tom arranged for additional supplies of the extrusion materials be prepared. He had to justify it with his father, but once the older Swift heard about the benefits he signed off on the expenditure.

The only issue the sub ran into over the following week was small dip in the ridge along the new path. After consulting with Tom and Damon, Bob Carlton decided to move back about two miles, cut the track, and make a slight turn to the south and begin their downward track run a bit sooner than planned.

“We still come out at the same point but the trains will need to start their slowdown a minute sooner and start down at the same

spot they make a five degree starboard turn.”

“Go for it, Bob.” Damon told him as he and Tom studied a 3D version of the chart on the telejector display over the conference table. “In fact, can you back up an additional half mile and make a two degree turn there and another two degrees about even with where you are currently? That appears to give the same basic result with less of a turn.”

“Millie says it’s a go, Damon and Tom. And now I have a bit of news for you. I read the account of the foreign sub that moved over you when you were recovering our fair lady, Tom. High pitched whine not in keeping with U.S. Navy boats.”

“I absolutely do remember it, Bob. Too bad the Navy never could track it down.”

“They don’t need to. We found it.” He sounded neither bothered nor sad about it so Damon asked why.

“Because it is an unarmed boat, Damon. They buzzed us a couple days ago but disappeared soon after. We got a really good look at them with the underwater lights. Definitely no torpedo doors or any sign of missile tubes. They came back yesterday only to have some sort of trouble. There was a muffled boom sound then it headed up. When we went up for a refill, some sort of tender had her along side. Oh, and that tender has markings one of the crew believes to be Indian or possibly Pakistani. Must be a research sub or possibly something covert, but not an attack vessel.”

He described the sub as being about one-hundred feet long, probably two decks high and about twelve feet wide. Several heavy cables had been spotted coming from the tender to the sub, possibly electrical cables recharging their batteries.

“No sign of any damage?” Tom inquired.

“None. Though, to be fair we didn’t take much time to look. But nothing reported topside and nothing on the floor around her. I just don’t know what to say, skipper, but I had listened to the recordings you made when you were retrieving *Demeter* and they match the noises this sub was making.”

“Go on with the track laying, Bob. Tom says he’ll be out there about the time you surface again.”

For three weeks straight Tom and Bud or sometimes Tom and Zimby made visits to the *Demeter* every four days when she was on the surface and twice while she was working at depth. Each time the inventor was amazed at the straight and smooth path of the

tracks and how Millie and her counterpart—plus the computer—had been adding just enough side materials to keep the tracks as clear as possible.

He had a thought, though, and quickly designed something he ought to have thought of before.

A repelatron “cow catcher” set just above track level to reach out a few hundred feet in front of the locomotive’s nose and shove away anything on the tracks.

To achieve the same level of hardness of the test tracks at depth, Tom had Hank and Arv turned out a small self-contained robot to ride on the rails shining high-intensity UV rays onto the materials all around it. It was the only way to give a final harden to things without the support of sunlight.

“Run that out to where the tracks are being completed and back again. Then, once everything is finished we’ll take it to the French side and run it out and back. By golly, we’re almost finished with this!”



## CHAPTER 19 /

### BUD NAMES IT

WITH ONLY a few weeks to go, a call had come to Tom's desk from Jake Aturian, manger of the Construction Company and a close family friend.

"I don't want to put any pressure on you, Tom, but we've reached the point where I need to move some of these boxcars and at least the first locomotive out of here, and we will do not have the official name to stencil on the sides. We're going to be using that new colored polymer that's based on tomasite to maintain the non-detection integrity, and I have to apply it in a sealed environment. Can you get back to me before end of day, please?"

Bud came into the office holding some pages Tom asked him to locate. "Got the latest reports on who wants to ship cargo under the waves. Not looking really great right now."

Tom played Jake's message for his friend. "I think it is time we put our foot down, Bud. That commission has been stalling for weeks."

"Then, let's go see your dad. Trent'll know where he is."

As Tom and Bud started for the office door, Trent opened it and said, "Tom, your father is up in Legal discussing your submarine railroad. He asked to have you come on up." Seeing Tom's eyes flicker toward Bud Trent added, "And he said to bring Bud with you if the two of you were here together."

They thanked the secretary and headed to the far end of the hall, took the stairs up to the next level two and a time, and entered the outer offices of Legal a minute later.

"Hi Tom. Hi, Bud," the cute receptionist greeted them. "You're to go on into the big office. Coffee, tea, and a couple doughnuts should be on the side table."

Bud bowed to her as Tom headed own the inner hall. The flyer caught up with him as Tom's hand reached for the door handle.

"Hello, you two. Thanks for coming," Tom's father said as they took seats. "We've had a communique from the Europeans. They still haven't finished fiddling with things, so don't ask. What they have sent is the official nomenclature for the train system, should it ever be completed," He added that last under his breath but loud enough for all to hear.

"Is it something catchy like Trans-Atlantic Speedy Freight? Oceania Express? SwiftSub Euro Rail?"

Damon shrugged and told the young men the official name for the underwater system.

Bud wanted to laugh but he could see his friend wasn't putting him on. He shook his head sadly.

"I say that naming this soon-to-be wonderful accomplishment The Trans-Europe-America High-Speed Underwater Rail Line sounds both pompous as well as is miserable to get your mouth around. What's going to be painted on the side? TEAHSURL? Put the entire thing on there spelled out and it'll take up three cars! Why can't it all be simple. Something like the Atlantean HydroWay, with the extra capital W like I generally put in?" He stared at Tom and Damon first then swung his eyes to Jackson Rimmer.

The lawyer shrugged and shook his head. "Nothing to keep us from calling it that but the Commission over there likes the long, drawn-out name."

Damon placed a hand on Bud's shoulder and gave it a fatherly squeeze. "Sometimes we get the final say and sometimes we don't, Bud. Personally I think we all would prefer your name. It says exactly what it is. Well, nearly exactly."

Tom had kept quiet but now softly spoke up. "I'm going to tell Mr. Artois what the name will be. Our choice, not theirs."

"What?" his father asked, surprised.

"I said," Tom repeated softly, "that I am going to tell Mr. Artois exactly what is going to be on the sides of each locomotive and car. He and that commission of his jerked us around all over the place this last five months while we risked out lives building the thing. So, he is going to either live with it, or—"

Tom got up and walked from the office.

Bud looked at Damon and then Jackson. "I didn't mean that to happen. Honest."

Damon tried to hide a small smile and really did not succeed. "Go find him and tell him we are behind him on this. Go ahead, Bud. He'll either be heading down the corridor to the side stairs by now or he's headed upstairs."

Bud knew that *upstairs* from the Legal offices was the original control tower for the airfield when Enterprises had been built. It was replaced within a couple years and gutted of all equipment, but it offered sound-proofed triple panes of glass, a three-hundred-sixty degree view... and solitude.

Tom had, years earlier, hauled a short sofa and an overstuffed easy chair up there.

“Right,” he replied rushing from the office.

“Both sides make a good point,” Jackson told Damon as he poured them both another cup of coffee, “but that commission’s shenanigans and beyond-last-minute changes give us a real advantage. Probably we’ll need to forgive them the additional charges from the final change order, but that’s what? Fifty-thousand dollars? I’d say we wipe that off their slate and put Bud’s name on the outside and inside of everything!”

Damon held his mug up in salute to the idea.

Bud decided to try the tower first and was rewarded on seeing his best friend standing at the western windows watching a pair of Swift cargo jets coming in for parallel landings. One would be from the Citadel, he knew, and the other one from Fearing Island.

“They are almost like watching a perfectly choreographed ballet,” Tom said sensing his presence.

The flyer stood next to the inventor and nodded. “Yep. Looking out there at that and all around this company makes me proud to be part of it.” He paused before adding, “You do realize your dad and Jackson agree with you, don’t you?”

Tom took a deep breath letting it out his nose in a sigh.

“Yes, I do. I had to get out of there before I said something I might have regretted. Or, sworn and you know how hard that is for me to do.”

Bud had to grin. “Yep! We’re a dying breed you and me, skipper. Last of the door holders, chair puller-outers, and not swearing in front of people. Heck. They even let loose with some good ones in movies and television shows these days. But, you know what? I’d rather be like we are than someone who has no filter for what they say.”

“So, do you really think dad and Jackson are behind us naming the train system your Atlantean HydroWay?”

“If what I heard them saying as I left the office is an indication, they practically are gonna insist on it.”

Tom turned and Bud could see the smile on his face. “Last night dad asked me how locked in I was on having a good name that we might come up with. I told him I could live with a lot of things, but the first list they sent had things like the one they settled on... and worse. He told me to be firm when we spoke with the Europeans and also with our own Legal folks to get the point hammered in that I am tired of the niggling little junk that commission keeps tossing at us. I may have gone overboard.”

His friend nodded. “Everyone knows how tired you are. Heck, everyone is tired. Nobody is going to take you to task for walking out in disgust. It was like putting a great big exclamation mark at the end of a sentence.”

“Let’s go back down, flyboy. I need to tell Jackson and dad I’ve cooled down.”

When they got to the front door of the Legal department, Damon was just opening it to leave.

“Oh, I see Bud found you. Good. Jackson and I talked a few minutes after you left and came to the conclusion that we can name the train anything we darned well want to. We’ve been given permission to send out a press release on the work you are completing and due to a technicality, their paperwork only requests that we call it by that lengthy and terrible name in correspondence. So, we will send out the release later today with the Atlantean HydroWay—including Bud’s capital W—then let them decide if they want to issue a counter-statement about the name.”

“Are you sure we’re not treading on toes, Dad?”

“Well, we discussed that and I made a quick call to your Monsieur Artois. He wants me to tell you to go ahead. The other name came out of a disjointed committee and even he thinks it has a terrible odor.” He smiled at his son.

Tom had his eyes on the carpet. “So, my little tantrum wasn’t necessary? Sorry about it.”

“Nothing to be sorry about,” Jackson said from inside the offices. “I wait until I am alone and let fly with some pretty bad words. Some people punch things. Some have strokes and heart attacks holding their frustrations in. You got up and left and did what you had to do to calm down. Again, nothing needing an apology.”

Tom returned to his underground office to contemplate the latest change requests for the trains. One he could not accommodate was their request to make the cars all twenty-two centimeters less tall so that the station these trains would share with standard trains did not have to undergo any construction changes. Their architect called for exactly a two-meter gap between train top and their decorative arches.

Their architect was about to be disappointed.

He made a brief note to let them know the train car and locomotive heights had been agreed to months earlier and more than eighty-percent of them were built or near completion. Besides, trying to scale them down would mean many of the calculations for



operating the trains would be useless and it would all go to huge cost overruns and a lengthy delay in the completion schedule.

Next on the list was a demand that all locomotive crew absolutely needed to have access to the rest of the train for inspections and other, unspecified, purposes. He studied the undercarriage plans and spotted a place that could be used for such purposes. Between the center magnetized stabilizer and the left wheels was a space nearly three feet wide and twenty inches high.

Given the needed strength of the walls at depth and that left about seventeen inches of vertical space. It would be enough to install an electric sled a man could recline on that could travel back and forth.

That would, he knew, require new airlocks to provide for compartmental safety. A call to Hank and a computer-to-computer sharing of information told him it would require an additional three days per car plus four per locomotive and cost nearly fifty-thousand dollars in refit fees per car.

Checking his watch the inventor realized it was too late to call Pierre Artois, so he sent him an email with the details.

Within five minutes he received an answer.

Tom,

This is another committee issue that many believe they do not have to pay for. Although we do have the largest transportation budget ever in European history, we cannot spare what would amount to many millions of additional US dollars. To placate the noisy members, can you devise a way to connect the current two passenger cars with the forward locomotive and then add that feature to all other human-carrying cars in the future. We shall cover the expense of these initial three by my personal guarantee. Please ignore any other change request costing more than US \$10,000.

P. Artois

Tom nodded as he read the message. He did a quick scan of the remaining five items and found that all of them would run into figures much higher than the new limit.

He wrote a quick reply of thanks along with agreement to the inter-car connector, and offered to send a crew to help rework the station in France if necessary (at cost.)

The next morning he and Bud climbed into the *Sea Skip* seacopter that was being kept at Enterprises until the train project

finished and flew to the point close to where *Demeter* and her crew was approaching the continental shelf of Europe.

As they descended Bud remarked, "I'm hoping that gentle slope up toward England is going to make things go fast and easy."

"Having it rise at a much smaller angle than on the U.S. side will help a lot. It has meant no need to do more tunneling to provide for an even surface or to shore up the walls of any channel we might have needed to dig."

When they reached a point one-hundred feet over the floor *Demeter* was not to be found. However, the tracks she had already laid pointed right to where she was currently, and that was a full twenty-one miles farther along its course than Tom thought.

He called to *Demeter* and soon was greeted by Zimby Cox.

"Welcome to our little undersea realm, skipper! Are you coming over for a visit or did you just drop by to see how we're doing?"

"Both, Zim. I'm impressed that you've managed the extra distance in the past week. I'll getting into a Fat Man and coming over."

Even though they were still referred to as "Fat Man" suits, the second models bore no resemblance to the original golden egg-shaped deep diving suits. Now looking like a bulkier hydrolung suit, they were made from a polymer that was stretchy and flexible when pressed on from inside, but outside pressure stiffened it up to the point where it could not be crushed even at great depths.

Of course, the deeper the dive, the greater the pressure and the stiffer the suits became. So, Tom created this third variant that included special hinged joints and an exoskeleton to move the diver's arms and legs. That skeleton was only a few millimeters thick and operated on small electrical charges that curled and uncurled bi-metal strips.

He entered the underside of *Demeter* and swam past all the gear inside to the forward airlock. Once inside two crewmen helped him out of the suit and promised to have it ready again when he departed.

Tom climbed to the control level and went forward.

"Okay," he said on entering, "who's going to tell me the secret of your success?"

Not directly answering his young boss, Zimby tapped his TeleVoc pin and mouthed a few words. Two minutes later the hatch opened behind Tom and Millie entered.

Zimby pointed at her. "You tell the skipper what got us this

much farther along.”

Tom turned around to face her. “I’m anxious to know, Millie. It is very impressive.”

She blushed at his praise. “Well, it’s like this. We have been scooting along letting the extruding equipment dictate our speed. I noticed that the last time we headed up for a refill that the machinery moved forward a few dozen feet after we shut off the flow of materials. And, it went faster.”

Tom thought he could see what was coming.

“So, if you don’t mind me butting in on your story, once you got back down you suggested trying to feed it faster and let it run at the speed it wanted to go?”

“Yep! We now figure to finish everything nearly two days ahead of schedule. Partly because of this and partly because we lucked out on this route you picked and made three small course changes—like a degree or so—to get around two undersea hills we might have needed to cut through.”

Tom looked at the young woman, probably just his age, and snook his head in wonder. “Millie, I know this isn’t appropriate behavior, but I’d like to give you a big thank you hug.”

“Bring it on, skipper,” she told him holding her arms open. “You’ve given me a new lease on life, Tom,” she whispered to him as they parted.

He nodded but was suddenly too choked up to reply.

So, he turned to Zimby. “By my reckoning you are about a half day from heading up the ramp. There is that crevasse in the middle of it I was going to have you skirt to the North, but now I think if you make another slight correction and take the slope to the south of that you can slip between a small mountain and the edge and cut off about eighty miles in total. It also slopes more gently to the south starting half way up and you can begin that turn sooner.”

“Sounds great. I’ll plot it on the map, but I have to ask why the last minute change?”

Tom tilted his head a little to the left and took a deep breath. “We have been fielding about five change orders a day since you folks set out. I haven’t wanted to bother anyone down here, but a couple of them we’ve had to do, and the cost overruns are mounting up. By taking this shorter route we save a small bundle that I’ve had to spend on nonsense things.”

He stopped. “Really nothing for you to worry over, but the changes down here help immensely.”

“Got it! So, can you stay and have lunch with us?”

“I’ve got Bud holding station out there...”

“What size seacopter did you bring?”

“We’re in the *Sea Skip*. Why?”

“Have our Mister Barclay bring her into the hold. There’s enough room to come up to the forward starboard docking point. As long as he doesn’t clip our cables or the feed tubes, he’ll be no trouble at all.”

Bud was inside *Demeter* twenty minutes later.

Over lunch Tom, Bud, Zimby, Millie and three of the other senior team discussed a few of the findings along the way.

“We located something you’re going to want to look into, I think,” Darren Garver, the boat’s master electrician told Tom. “Back along our track something like eight hundred miles we were cutting through one of the ridges—maybe a mile across—and cut into a vein of gold. Not gold rich ore, but a solid streak of gold. It’s close to the western side of the Atlantic rift. I asked our captain at that time to set a marker. And, we covered the vein with as much silt as possible. No idea how far it stretches, but the sample we brought up,” he reached in his pants pocket and brought out a small plastic vial filled with chips of gold, “shows it to be about ninety-six percent pure. Traces of copper, palladium and tellurium in there as well as a few impurities.”

Tom saw that Zimby was smiling. “Okay, Zim. Why the teeth?”

“Because once I took over three days after that encounter and reviewed things I had Jackson Rimmer and the Legal eagles at Enterprises register a claim on an area approximately one-hundred miles on a side. I just so happened to have read something last year about mining rights in international waters and this qualifies us for a one-year claim to prove viability. If we can bring up more than half a ton of gold, we get a twenty-year extension.”

Bud looked at Tom. “Sounds like the ocean floor is going to be the next California or Alaska!”

“Not if we can help it, Bud. I think it is intriguing, but in a way, I hope it doesn’t, pardon the pun, pan out.”

Tom and Bud left half an hour later returning to Enterprises. A message was waiting for the inventor when he got to Trent’s desk.

Tom,

Please ignore all further requests from the commission unless they come from me. We have had a small revolt by the Eastern

Europeans because they feel the trains should continue past to coast and head East. Of course, they are in dispute as to where it should end, but the result is each one is compiling a list of things they will insist on or withdraw their cooperation. It isn't you worry. Full funding remains to complete the project. Please advise me as to date you feel first test run can happen. I wish to be on that train.

Pierre Artois

Tom went to his desk and sent off a reply.

Pierre Artois,

Received your last message. Appreciate the notification. Track work to be completed in thirteen days time assuming boring complete from France station down to continental shelf. Have not received word if your construction team is finished with station work. We will be ready for test train in three weeks from tomorrow, the 29th of this month.

Tom

He then sat back with his check list and ticked off about fifty percent of the outstanding items. A smile crossed his lips as the now could see everything was coming together.



## CHAPTER 20 /

### RUNNING STRAIGHT, TRUE AND ON TIME

WITH FEW companies willing to trust a large amount of costly cargo on the first run of an unproven underwater train, either Tom was going to need to shorten the train from the current fifty total cars or put in dummy weights. The decision would need to be made by the following day.

Late in the afternoon he was sitting in the shared office when Trent buzzed him.

“Other than your late great-grandmother, I have someone claiming to be your favorite woman named Mary on line three.”

Tom laughed knowing who it probably was.

“Hello, Mary,” he said into the receiver. “How are things up north?”

“Well, things have settled as has the dust from the departing Minister and the imprisonment of several industrialists who had been paying for his services. But, that isn’t why I called. A little bird tells me that the train system you did manage to get built over to Europe is about to make its inaugural run.”

“That is true. Want to come along?”

She laughed. “I hardly have any time these days for sleep. Without an actual minister here it’s finally possible to get things done! Now, the reason I called and why I mentioned your train is that I have a challenge I hope you can help with.”

When he asked what it was, he heard her take a deep breath.

“Okay. We have our first shipment coming from the Elliot Lake Two mine of what is known as ‘lightly-processed ore’ that needs to be shipped to France. It, uh, will be in sealed containers and is safe for transport, but we have run into a problem with delivery. Far too much promised with substantial penalties that we now believe were set that way so a few people could make a lot of money out of failure. It was that famous straw and camel’s back thing that led to the minister’s downfall.”

“But, you still have to make it happen. Correct?”

“That’s the opinion of the court. Lawfully signed for by a governmental minister even though it is a primarily crooked deal.”

He asked her to send the shipping figures and to see if there was a way to get it to the new transport yard. He told her to mark it for immediate transfer to the Beverly Cove Terminal north of Boston,

and that he would arrange for the rest.

When he told his father, Mr. Swift shook his head in wonder.

“They pretty much play us and then cancel the project, yet you are going to bend over backward to help?”

Nodding, Tom replied, “Yes I am. Here’s why. They have one-hundred metric tons of this ore to ship in standard containers that will fit in our cars. I need at least twice that to make running the HydroWay work correctly and the Construction Company can only supply about fifty-eight tons of that.”

Damon sensed there was something more. He prompted his son. “Go on...”

“I told Mary the only way we’d help them is if they reinstate the trans-Canada route and let us put it in where it makes the most sense. I needn’t have even asked. She had that one right in front of her as an enticement.” He smiled. “She said the Prime Minister and his staff were all over her once they found out her former minister had ruined things like he did. Said to get it done, no matter what!”

Damon had to laugh. It was noting less than he expected from his brilliant son.

“Okay, so what do you fill the last forty-two tons of space with?”

“There are twenty people from the commission plus I’m hoping to convince you and mom and the two wives to join Bud and me. That’s twenty-six plus the six-person crew and I thought we’d take along six attendants to help serve food and beverages. So, thirty-eight at an average, with their luggage, of two-hundred fifty pounds. So I only need to make up another thirty-three tons. Any ideas?”

Damon shook his head. “Wait. If the Construction company is maxing out at fifty-eight, then all I can say is to check with Charlie deGroot and see if he needs to ship any cars over. If I recall, your carrier boxcars can handle twelve vehicles each. So, that times about one ton per car means if he can send over three rail cars full, you’ve got your weight!”

Tom promised to make the call as soon as he took care of one other item.

He made a call out to Fearing. Once he was connected with *Demeter* he asked for Millie.

“Hey, skipper,” she said picking up the phone. “What can I do for you?”

“I would like to have you get a crew organized for a final check of the tracks. You’ll go by seacopter for both speed and visibility and I



trust your eye to tell me if anything is even slightly amiss.” He explained that with everything riding on this first trip being a success, he believed it would be the most prudent thing to do.

“Plus, I’m taking my wife on this trip as is Bud. Once you get the out run finished fly back at top speed. I would also like to ask you to join us for the inaugural trip if you feel inclined. You did great service for us in getting the tracks set in place. I think you deserve a paid vacation even though you’ve only worked for us four months.”

She hesitated, then asked, “Can I bring my boyfriend?”

“Of course! But, when in the world did you find time to get a boyfriend. Or, is he from your time back in Connecticut?”

“No. He’s from my Navy days. You know him, too. It’s Evan. I’ve been working on him since I came to Fearing and he finally believes he is ready to go back into the water. He won’t panic once he’s down; it is just the thinking about what almost happened that gets him.”

“I don’t want to stand in the way of true love, Millie, but you do know once we shut the doors they do not open for anything until we reach France?” Tom sounded worried.

“I do, he does and we promise there will be nothing but smooth sailing from him.”

Tom still wasn’t certain it was a wise thing, but he relented when she made her final offer. “If Doc out here gives me an injector with some sleepy juice and I promise I’ll jab him at the first sign of panic, and yes he agrees to this, *then* can he come?”

“Sure. And if he finds he is over his issues, my job offer stands. I’m not saying you will both be on *Demeter*, but the job opening is for a Fearing Island post.”

Everything was happening with lightning speed. The final five cars arrived at the new terminal and were set in place. They already held the shipments from the Construction Company and were brought in by standard rails on special temporary wheels. The Canadian shipment had been given U.S. clearance and would arrive in the next day and be loaded eight hours prior to departure.

Even the food and drinks for this first trip was in place in the two cars that would carry the first ever passengers.

*Cousteau* made the out and back trip in record time arriving back at Fearing about midnight, just nine hours from departure. Millie flew to Boston where Evan met her at Logan Airport and they took the earliest commuter rail out to the terminal getting there at six.

Tom greeted the young man and tried to keep his apprehension from showing. Even so, Evan could see it.

“If you really don’t want me on this trip, Tom, say it. No harm, no foul and no guff from Millie. We talked about it and I want you to feel you don’t have to keep an eye on me.”

Tom’s face relaxed. “No. You’ll do fine. Just be as up front as possible with Millie in case you, well, get into trouble. You’ll be fine!” He slapped the young man on the back and headed off to greet the members of the commission.

The tour bus hired to bring them from the airport arrived but when Pierre Artois stepped off first, Tom could see the man was greatly bothered.

“Ah, Tom,” Artois said shaking hands. “Only four other the other commissioners would come. They received word from someone in Canada that a deadly shipment of highly radioactive bomb materials is secretly being shipped. Please tell me this is a bad rumor.”

“The nature of the shipment is confidential, sir, but it is not nuclear bombs, warheads, or even fuel. It is simply a shipment of ore going to France for refinement at your facility near Golfech.”

Artois’ face went from concerned to relieved. “Oh, then there is no issue. They only bring in low grade ore. There is no problem.”

“Other than to find out who gave out that false information,” Tom told him.

“Why, that is simplicity. It was the Minister for Transportation. He called the commissioners at their homes last night.”

When Tom told him that minister had been fired and someone else most likely made those calls to cause trouble, the Frenchman was saddened.

He and the other four ministers now standing around joined others who were being taken on a brief walking tour of the forward portion of the train and a chance to peek into the locomotive.

As time neared Tom had the announcement made and everyone not yet inside entered the two passenger cars and made ready to leave.

“Bud, can you please be my representative back with the passengers?” Tom asked. “I think I need to be up front with the crew in case there are questions or to handle anything not planned.”

“Just call me Conductor Bud! Of course I’ll stay back there. Otherwise I’d catch absolute you-know-what from Sandy at the

other end.”

They shook hands and Tom walked with him to the door. Bashalli was waiting for them and gave Tom a very passionate kiss. “I know you cannot be back here with me,” she said, “but look what I have.” She flipped up her shirt collar and Tom laughed on seeing a TeleVoc pin. “Mr. Dilling said I should have this so we can talk. I won’t bother you, but please call me?”

“It’s a promise!”

He went forward and climbed into the engine car shutting and sealing the large hatch behind him.

In the cockpit he took a look at the monitor showing the passengers and noted everyone was now seated. He picked up a headset and made an announcement.

“Ladies and gentlemen. The Atlantean HydroWay will depart in thirty-seconds. While we will be traveling smoothly through the water it is highly suggested you remain seated as much as possible and keep your lap belt fastened. Bon voyage to us all and I will come back on once we are at depth and at full speed.”

He set the headset back in place.

“Captain? You have permission to depart as soon as you get the signal from the controller.”

That green light flashed a few seconds later and the man reached out and moved his index and middle fingers up a scale on the panel before him. With not much additional sound the train began inching forward. It remained under five MPH for the first three-hundred feet. Then the tracks angled down and the train entered the first tunnel that would take them down and out onto the continental shelf coming out some twenty miles out to sea.

The nose went into the water a moment later and the pilot made the necessary adjustments to turn on the repelatron and also the hydrojet systems.

“We are running smoothly and all systems report green, Tom. Permission to increase speed?”

The inventor glanced at the indicator lights and digital readouts. Everything was exactly where it ought to be.

“Permission to go to normal departure speeds.”

The bubble of vacuum formed in front of the nose and extended up to the top of the view window in front of them. As it reached full size they could feel the tug of the vacuum drawing the nose of the train into it. This was accompanied by the increased sounds from the drive wheels underneath.

The hydrojets were idling at present and would not be employed until they exited the tunnel.

After only one minute in the water they were traveling at fifty miles per hour.

Tom made an announcement about their speed and position. He then TeleVoc'd Bud asking, "How is it back there?"

"Smooth as the proverbial baby's bottom, skipper. And, you won't believe it by our E-Squared is actually excited about what's going on."

Tom TeleVoc'd Bashalli, told her he loved her and said things were going to be busy for the next hour.

"This is very odd, Tom. Hearing your voice but it isn't exactly your voice and it is right in the middle of my head. I am glad to have you inside me like this."

They sped from the tunnel twenty minutes later and Bud reported an appropriate amount of ooo-ing and aww-ing.

Now, with the hydrojets in action, the train took another speed up and soon hit one-hundred miles per hour. Tom asked that they stay at this speed for two hours before seeing just how fast the train could really travel.

Halifax, Nova Scotia, came abreast of them about the time he gave the go-ahead. With little to indicate it other than the readout, the train hit then exceeded one-twenty-five. A slight shudder was encountered at one-thirty so Tom had them dial it back five MPH.

"We'll remain at this speed until we head down the ramp."

He meant the somewhat steep decline at the end of the continental shelf when they would drop down to the regular ocean floor all in the space of just fifteen miles.

But, as they neared the last point of North American land, the copilot shouted, "We've got company, Tom. Submarine contact above us and on heading of zero-two-two."

Tom stood up from the jump seat he had taken earlier and leaned over the copilot's shoulder. "Not a biologic?"

"Definitely not. We do have a whale almost at the same depth but on our port side. It's hanging around making some lovey-dovey noises. This other one is practically shouting with an electrical motor whine. See?"

He pointed at the dot their special SONAR was returning. It was heading their direction and dropping down as it came.

"Closest point to us?"

The man did some calculations on a multiple-wheeled hand computer and replied, "On relative heading of our three-two-five and eleven hundred yards. If we speed up we'll open that by another four hundred yards." He looked at Tom. "If they have torpedoes, skipper—"

"Bring her to one-thirty." Tom picked up the headset again "Ladies and gentlemen. I need to have everyone strapped in good and tight. We have a visitor out there and no indication if it is friendly or... not!"

He was about to add that the lights outside, even though not detectable by others, were going to be extinguished when the copilot shouted, "It's an Alvin! That looks like the one Woods Hole uses that can carry a small crew of two or three. Look!"

He pointed to a side screen that showed the underwater scene from a camera outfitted with Tom's SuperSight technology.

Sure enough. The odd shaped white hull with its telltale orange conning tower was coming to see them.

"Slow us down to a stop," he ordered before making another announcement to the passengers. He told them about what the research sub was and that they were stopping so it could come down and see the train.

A great number of cell phone cameras got a great many photos of the small submarine as well as some video clips. At one point, the Alvin pulled along side of the passenger cars where the people in the train could see at least one smiling face in one of the five round view ports on its front.

Tom gave them five minutes while he communicated with the sub using the sona-phone.

"Sorry to drop in unannounced, folks," a deep and jolly-sounding voice came through, "but word has it that that scamp, Tom Swift, is in there somewhere. You there, Tommy?"

Tom had a huge smile on his face. "Yes, It's me, Dr. Dobbs. And, yes, you did give us a moment of not knowing what to expect. We're going to need to get going in a minute, but it's nice to know you are still active in the research."

"By gadfry, Tom, they'll have to tie me to an old anchor and sink me in the deepest part of the ocean to get me to stop coming out here. Good to hear your voice, even with the aqua-distortion. Have a good trip!"

As the train picked up speed Tom TeleVoc's Bud. "That was Dr. Robert Dobbs from Woods Hole," he explained.

"The guy who we had lunch with and looks sort of like Santa?"

“That’s the one. Well, we’re underway again and will only lose about twenty minutes. So, let folks know we are going to head downward in a bit.”

The rest of the trip was so smooth Tom barely realized he had been awake all but two hours of it.

As the train began it’s final incline into the European-side tunnel and eventual rise to Saint-Nazaire and the eastern terminal he arranged to ride down the inspection tunnel under the floor of the cars and come to be with Bashalli and the others for their arrival.

He opened the access hatch and lay down on the low electric platform. It slid silently to the first hatch which opened slowly but automatically then to the next and finally to the first passenger car. Coming out of the access closet he was greeted with a long hug that felt very nice.

They had managed to get the train to run at one-twenty-eight without the vibration so they came into the station right on time.

As Tom stepped from the train behind Bashalli, a cheer went up from the crowd gathered to greet the first ever trans-Atlantic underwater train. She stepped to his side and allowed him to acknowledge the smiling people standing on the other side of a barrier.

Pierre Artois came out behind them. He clasped a hand on Tom’s shoulder and then shook his hand vigorously.

“We have done it,” he said but his face clouded and he shook his head. “No. *You* have done it, Tom. You have given us the impossible and we will need to be the careful curators of this masterpiece!”

A small platform had been built and a podium with microphone stood in the middle. The four commissioners who had taken the journey were heading there motioning Mr. Artois and Tom to join them.

“Go on, skipper,” Bud urged as he and Sandy came out ahead of Mr. and Mrs. Swift. “You’ve made enough of these, ‘It was a pleasure to work with all the fine people,’ speeches before. Give ‘em the three minute one and then say we all have to get home because...” He stopped.

“Because why, Bud?” Tom whispered from the side of his mouth.

“Well, because your next great adventure awaits, and you have to get back to it.”

With a small chuckle, Tom kissed his wife and followed the

Frenchman to the stage. His was to be the last speech so he stood there as the commissioners not only lauded him and Swift Enterprises, they all mentioned the “hands across the seas” cooperation it took to see the project through.

Pierre Artois took the microphone and stood there looking at the crowd. In it were seven of the commissioners who had refused to take the trip. One of them was Oleg Belishnikov. He made a tutting noise with his tongue.

“I look upon your many faces and see mostly happy, smiling people eager for what this great achievement brings. Then,” he shook his head, “I see among you my fellow politicians. The nay-sayers and the ones who said they would have no part in this historic first running of Tom Swift’s Atlantean HydroWay. ‘We’ll be drowned.’ ‘We’ll be crushed.’ ‘The sky is falling!’ Pah! There is no man nor woman on the commission that started the ball rolling, as our American friends might say, and who refused to join us that deserves any of your praise or congratulations. Only the five of us you see on this stage. The rest proved how useless they are and I, for one, will be glad to see the commission dissolved in one week’s time.”

There were a lot of murmurs and some booing. The commissioners that had been called out now turned and made their way as quickly as possible from the hall.

Perhaps only Tom saw the five dark-suited Interpol men accompanying Harlan Ames as they quickly surrounded Belishnikov and ushered him to a waiting van. The man’s face was a mask of hatred but he said nothing.

After they left and the crowd settled down, Pierre continued.

“Good. They are gone. Now, I must tell you of the incredible sights to be found when traveling on this incredible train.” He launched into five minutes of the fish, crustaceans, cetaceans, and even the small research submarine they encountered. Finally, he turned and pointed at Tom.

“Without this young man’s hard work and dedication, none of this would be possible. I present to you, and ask for your applause, Tom Swift!”

Tom took the podium and smiled out at the crowd of perhaps three hundred people. He gave them a brief rundown of some of the things that had to be invented to make the project possible and praised Pierre Artois and many of the commissioners for their support.

His speech ended with, “There always have been and always will be naysayers. Do not condemn them outright. Some of them are

right on occasion. Some of them see things those closest to a project just go blind to. I am fortunate to have a father, Damon, my best friend Bud Barclay—waive both of you—and several thousand employees who all work to keep my eyes open. And, I have the emotional support to achieve such things from my wife, Bashalli, my mother, Anne Swift and my sister, Sandra Swift Barclay.

The women acknowledged the added applause and both Sandy and Bashalli received more than a few wolf whistles.

At the hotel that evening Damon raised a glass of wine and toasted his son. There were several “Here here!” calls and a few people in the lounge raised their glasses in silent salute to the American inventor.

“I know I generally ask you this at about this point, but what do we do for an encore, skipper,” Bud asked with a grin. “Heading back into space any time soon?”

“Just about anything is a possibility, flyboy,” Tom answered but he could scarcely know what was in store for him in the coming months as he, Bud and everyone in the country would be dealing with some clever and seemingly invisible terrorists.

“Before you go flying off, Tom,” Bashalli whispered in his ear, “you need to spend some time with our son and in figuring a way to explain that he is going to have a little brother or sister.”

Tom smiled and nodded, but froze a second later as her words made their way into his brain. His head whipped around and he looked into her smiling face, as she nodded and happy tears spilled down both her cheeks.





