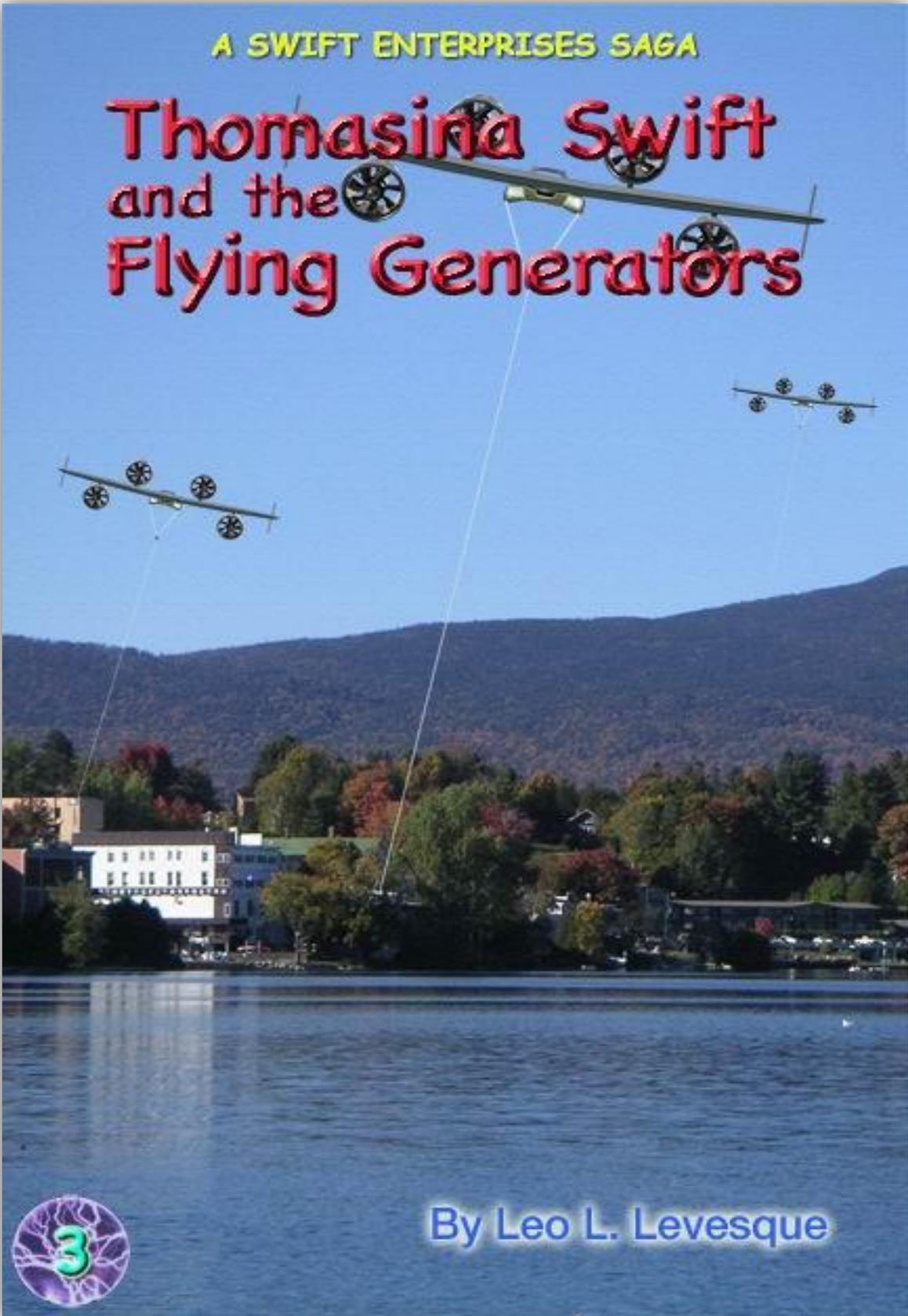


A SWIFT ENTERPRISES SAGA

# Thomasiina Swift and the Flying Generators



*A Swift Enterprise Saga*

# **Thomasina Swift – Girl Inventor And Her Flying Generators**

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By Leo L. Levesque

Dedication

Thanks to all the Tom Swift Yahoo Group.  
These stories are for you.

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## Forward

### The Multi-Universe

The Multi-Universe holds all the probabilities that happen in a person's life. Each major decision adds changes to everyone else's life and adds more folds of probability.

Some people's presence are so dominating that their personality affects unknown numbers of realities. This can be in the past, present or future.

But when five Tom Swifts find out about each other and start to interact in each other's lives there's bound to be repercussions.

A simple story left on a table at a restaurant draws the five Toms together to investigate the existence of a sixth Tom.

Tom Jr., thought to be the original, lives in Shopton, New York and was born in the nineteen fifties. He is eighteen years old, tall, lean, with short blond hair and blue eyes. All the Toms looked alike.

TSL (*Tom Swift Lives*), the closest Tom in probability, lives in Shopton, New York and is in the present.

Tom III lives a hundred years into the future and resides in Shopton, New Mexico, but spends most of his time on board his space ship the *Exedra*.

Tom IV lives in Shopton, California and in the present.

Tom V lives in Shopton, New York, in the present, the youngest at sixteen.

## Prologue Part Three: Thomasina Swift And Her Flying Generators

Tommy looked over to the entrance of Bud's hangar. She was certain there hadn't been anyone there a moment earlier, but now there was a tall, fairly lanky blond teenager standing there with a combination smile and smirk on his face. She was about to call out to him when she realized, with a shiver running down her spine, that he looked very much like a male version of herself, or... wait! No. That couldn't be right! She had it. The kid looked a bit like Sandy's dead brother, Tom.

"Hey, you," she called in his direction. He looked surprised and stepped back outside. Getting to her feet she saw the stranger disappear around the hangar door. By the time she had jogged over and glanced all around, he was nowhere to be seen. Tommy looked at everything in her line of sight and even walked all around the hangar. Nothing. The mystery teen had disappeared.

"What the heck was that all about?" Bud asked when she returned. He tossed her another rag.

"I really wish I knew," she said. "It's like I was seeing my own ghost!"

\* \* \*

"Looks like you're going on a trip, Tom V?" Tom Jr. asked his youngest probability. Three of the five known Tom Swifts were sitting at the bar at Tom's restaurant for a meeting and were drinking coffee and hot chocolate. It was late in the afternoon and the waitstaff was starting to come in, getting ready for the evening dinner hour. Nancy D. was their waitress; she just came back from Arizona and the tricky mystery of the "*Kachina Doll*."

"If you guys are all set, I've got to stock the bar." They told her to go and the three Toms settled down for a talk.

Looking at Tom V's fur parka, gloves and Sherpa hat on the bar, Tom Jr. answered his own question. "Going back to the Himalayans to visit your Yeti friend," mentioning one of Tom V's earlier adventures.

"Nope, it's just winter in my Shopton. I've got to stay warm, you know!" he chuckled in high spirits.

Both Toms took a harder look at their younger companion. They could see all the signs of a formidable Tom Swift beginning to develop. "What are you doing now?" TSL (Tom) asked.

"Working with my Dad. Since the *Chameleon Cloak* incident we've been getting really close, and I like it. Being treated like an adult is great! He listens to

my input and actually uses it. Is that how it was in your world?" He asked knowing that there was an unwritten rule about telling him too much about his probable future and inventions.

"Well you're right at that," said TSL. "As you get older it all falls into place, just don't rush it. It can be a lot of responsibility."

He looked at Tom Jr. who added, "But we haven't met a Tom Swift who couldn't handle it."

Just then a blue folder landed on the bar in front of them and Tom IV joined the group. He reached in the cooler and took out a cold one.

"Tom, is that wise?" scorned Tom Jr. None of the other Toms drank alcohol.

Tom IV took a gulp of beer looked at all of them. "Are you kidding me? I just got shot at out there in the parking lot." He took another swig.

"What! Are you sure?" asked Tom V paling at the thought.

"Oh yeah, I'm sure. A bullet whizzing by your head is hard to forget." He was now as pale as Tom V.

Tom IV looked around the bar. "Where's Tom III?" he asked finishing his beer and reaching for another. Tom Jr. reached out his hand to stop him.

"Coffee. I suggest coffee." Tom Jr. looked into his eyes.

"Yeah, guess you're right! Get me some black coffee." Tom Jr. pointed to the pot under the bar. Tom IV helped himself.

"Thanks, Tom, that's much better," and he smiled and nodded at Tom Jr.

Tom Jr. reached into his pocket and pulled out his quantum radio and touched a button.

"Tom Jr. to Tom III, come in please."

"Hi, Tom Jr. What's cooking? The stars are bright and lonesome up here, want to join me?" He sounded relaxed but lonely.

"Sorry Tom III, we had an incident down here. Better be on high alert."

"What happened? No sign of a Negative Zone up here." His voice was all business now.

"Someone took offense at Tom IV walking to the restaurant, so they took a shot at him in the parking lot. He's all right, but keep your ears open."

"Will do and I have Aristotle stationed on the other side of the sun in a shuttle craft so there are no blind spots. I'll keep in touch, out."

"Well," said Tom IV, "that's settled. We do have an enemy and he's willing to make it personal. Guys, after this is over I think we'd better talk about closing down all the Negative Zone devices and stop seeing each other. I know that I have plenty on my plate without watching over my back for some nut coming out of the Negative Zone to get me." He looked from one Tom to the next. They all looked shocked at this while at the same time realizing that he might be right.

"You're right, Tom IV," said TSL, "we'll have to make some kind of

decision, but not till this is over. Our enemy knows all of us and can pick us off one by one. We're got to find him first and put an end to this. If we have to stop visiting each other after that, then so be it."

"Let me make copies of this folder and we can get out of here," Tom IV said and looking at Tom V asked, "Give me a hand, will ya?"

Both Toms were just about done when Tom IV whispered to his friend, "Did you get me a *Chameleon Cloak* liked I asked."

Tom V hesitated for moment and then nodded his head yes. "I feel funny about this. We should tell the others; we're not supposed to give each other our inventions." He was looking worried.

"I know, kid, but this is life and death. That shot proves that I'm on the right track. One of us is an impostor, so tell no one about this!"

Tom V once more nodded his head in agreement and with shaky hands finished the last folder.

## Chapter One: How Inventions Are Made

The Swift Construction Company's public address system howled three times in quick secessions and then announced, "MEDICAL RESPONSE TEAM, CODE BLUE, ASSEMBLY BUILDING THREE, SECTION T-3," then repeated it twice more.

Sandra and Thomasina Swift, cousins, gave each other a quick look and a nod. They both rushed out of Tommy's lab/shed and into Sandy's white sports car that was out front before the second announcement ended. In less than a minute they were pulling up to 'AB-3.' Section T-3 was located right behind the loading dock of that building. The freight doors were wide open letting in what little cool breezes there were on that hot August day.

The Med Team was just disappearing through the doors and the girls ran to catch up to them. When they reached the edge of the small crowd of workers Mr. Avery, the shop foreman, rushed in from another part of the building. The two medics pushed their way through the workers and found two men giving a prone workman CPR. One man, Harry, was pumping the victim's heart five times and the other one, Bill, was breathing into the lifeless man's mouth after the pumps.

"Keep going," ordered one of the medics and he checked the downed man for vital signs and told his partner there were none. The second medic already had the portable defibrillator out and ready to go. It only took him a second to get into position and place the paddles on the man's chest.

"Clear!" he shouted and pressed the shock button. The man gave a slight shudder and laid still.

"Nothing," the other medics said after checking for a heartbeat. He reached over and raised the setting on the defibrillator and hit the charge button. It hummed for a second and a green light glowed. "Go!"

"Clear!" and once more the man jumped... the stethoscope touched his chest... "Got a heartbeat and he's breathing on his own. Let's get him on the gurney and out to the hospital, fast!" In a minute they were gone and nothing was left to show that a man almost lost his life on that very spot.

"Okay, people, take an hour for your morning break while we check out the assembly line and be ready to get back to work by ten! Harry, Bill!" called out Mr. Avery who dismissed the workers. "Not so fast. You two were the ones giving the CPR. Did you see what happened?"

"Yes sir," answered the one called Bill. "Hinkle there was taking down the power cowls off the end of the assembly line and placing them on the pallets to ship over to section 6 when it happened. He went to pick that one up," he pointed to the last cawling on the line, "and got a big jolt of electricity." The blades of the

cowl were still slowly spinning in the breeze from the loading dock doors.

“Back, everyone!” warned Mr. Avery, “that unit is still charging. It may overload at any moment.”

Tommy, not even thinking, grabbed a length of chain from an overhead pulley and wrapped one end around an iron support beam and eyeing the distance threw the other end over the forward part of the power cowl that was not covered. It arched perfectly as it flew onto the open cowl and fell directly on the uncovered wire coils. There were several large blue specks and the smell of ozone filled the air.

“Well, Tommy, that was sort of primitive. But it sure worked.” Uncle Hank laughed. The two women called him uncle even though they were not related. “Sandy, please close the loading dock doors, we have to stop that breeze from coming in.”

Sandy did as she was asked and by the time she returned Tommy was trying to take the chain off the now wrecked power cowl. With a final tug it peeled off.

The device was a combination air compressor and electrical generator for Tommy’s new Arc Jet engine. This particular engine cowl was for the private jet aircraft industry and half the size of the commercial ones. As the three sets of forty thin turbine blades spun at high speed they sucked in and compressed the air that was fed into the jet combustion chamber. On the ends of the compressor blades were rare earth magnets that energized the hundreds of wire coils that surrounded the outside wall of thin carbon fiber to generate electricity.

“This hasn’t happened before, Uncle Hank, so what’s different this time?” Tommy asked.

“It’s your new TML hub (Tom’s Magnetic Levitating hub was an idea that Tommy had found in Tom Jr’s diary. He had died two years earlier.) This is the first batch with them in it. We started using them this morning, replacing the old steel bearing hubs.”

Tommy barely touched one blade and it started to spin. She gazed at it for a moment and said, “Without the rest of the turbine assembly this portion is so light it takes nothing to start it spinning. We’ll have to add stops between the blades when they get placed into the cowl. We can’t ground it and still be able to move them around.”

“Can’t you just not connect the wires together?” Sandy asked.

“There’s too many, Sandy, and we’ll still have to keep the blades still if we’re to move the cowls around or they’ll continue to be a safety hazard,” remarked Uncle Hank.

Shaking her head Sandy said, “A thin piece of wood and this accident would never have happened. Who would have thought that?”

“Not just a piece of wood, Sandy, it will have to have a long ‘pull me before

use' flag on it, too. If it is left in place the first time it was started up the stops would get chewed up and clog some of the air intakes. Think what a job it would be to clean that out and to check all the blades for damages."

They spent the next half hour checking out the rest of the assembly line in case the electrical feedback caused additional damage. By the time they were done and had the fried power cowl off the line some of the workers were starting to come back.

Uncle Hank was now busy giving out new work orders and Tommy and Sandy thought it was time to leave. Tommy picked up the turbine and called out to Uncle Hank, "I'll get rid of this for you, Uncle," and he waved his consent.

At the car Sandy got in, and waving goodbye to Tommy and drove off. With her prize, Tommy could not fit into the car. She had to walk back to the shed.

\* \* \*

The turbine sat on the workbench, all black and smelly waiting to be transformed. Tommy was now in her mad scientist mode intensely working at her desk. She was researching both on her computer and in several physics books. Most of the information she needed was already available. Every once in awhile she would look up and stare at the cowl, smile and then go back to work.

She was in her glory, happy to be working at something that was new or intriguing and took her full concentration. Time had no meaning to her. Where Uncle Hank had seen a piece of wrecked junk, Tommy saw a glimmer of a wind power generator. Wind power generators were not new to Tommy, but the way she was planning on putting the components together were.

Most wind generators were simply motors that ran in the center hub. The heavy central axis held three or four coils of wire that spun past magnets. The magnetic field produced the electricity. To produce the power the coils had to spin very fast and step-up gearing had to be used to speed up the slow turning of traditional wind powered blades. That took away efficiency and the metal gears were heavy and worn out.

As in her Arc Jet turbine, the magnets were located at the end of carbon fiber blades and the wire coils were epoxied into pockets all around the cowl wall that surrounded it.

Tommy had to redesign the blade shape from the thin compression shape to a broader, wider size to better catch the wind. This simplified the three rows of thin blades to just one row of twelve. The width of the cowl went down to ten inches from twenty-four, and its total weight was calculated to be only five pounds compared to a regular wind generator of similar size that just by itself with gearing came close to twenty and another ten pounds for the blades.

She then had to reshape the wire coils to a longer and narrower configuration. The nine and a half foot circumference could hold thirty-eight wire coils.

It was supper time by now and her stomach started to rumble; she had missed lunch. She shut down her computer and neatly stacked her papers, and looking at the turbine on the work bench she promised it an entirely new body by tomorrow night.

At seven a.m. the next day and she was already on the phone talking to Uncle Hank, “You do love me, don’t ya, Uncle Hank?” she said trying to tease him.

“Okay, Tommy, I’ll bite. What do you need?”

“A wind tunnel to test out my new wind power generator,” Tommy replied.

“And when did you build a wind powered generator? The last time I saw you, you were walking away with that burned out power cowl.”

“I did the design work yesterday and I’ll start making the generator today and be done by tomorrow. I’m using that casing and TML hub as my starting point.”

“Girl, you don’t need a wind tunnel, you just need a fan. Have housekeeping get you one of their large free standing room fans. When you start making airplanes I’ll make you a wind tunnel,” he laughed.

“I’ll hold you to that, Uncle Hank. Thanks for the advice, bye!” She made the call and was promised a large box fan by noon.

She next turned to stripping down the cowl, removing the wire coils and the inner hub. Tommy cut down the cowl to the new width and reattached the hub bracing. She took the old blades off the hub and formed the new ones out of carbon fiber. This took most of the rest of the day.

It involved making a jig to shape the blades, then vacuum-squeezing the layers of carbon sheets and epoxy. When she had only a couple of layers left to do she fitted the rare earth magnets to the tips and finished covering the blades. When oven-cured they formed one continuous piece. She then had to sand and balance all the blades so they would not cause vibrations. In no time she became an expert at it.

She had to change out the outer casing of the hub to fit the new blade size. By midnight she was asleep at her work bench with several more wire coils to form. At two in the morning she staggered to the rear of the shed, dropped onto a cot she kept and slept till nine when Sandy woke her and took her to breakfast complete with a lecture on her bad eating and sleeping habits.

Normally her boyfriend Bud Kenworth kept her on track but he was off making a delivering to a small coastal airport in Newfoundland Canada of a new electronic set up to replace their antiquated tower communication unit. The

equipment including the latest in Swift radar and storm tracking equipment that was now coming out of the revitalized Swift avionics division. He was the Swift's only cargo pilot and also ran an air flight school out of the Swift's complex.

By noon she was done. The whole thing came in at a final weight of six and three quarter pounds. The new blades spun almost by themselves if you looked at them to hard.

Tommy set up several test meters and the large fan five feet away. An anemometer was set up to help regulate the air speed from the fan. Where most wind generators don't start producing electricity unless there's an eight mile per hour wind, Tommy's started right away but she knew that would happen.

In a wind of five miles per hour she was getting 2320 watts; a house needed almost 5000 watts. In a ten mile per hour wind she was getting 4640 watts! She was stunned. Electrical power was now available to anyone that lived in an area with an average ten miles per hour winds. After a few hours of testing Tommy worked out a wattage output chart for difference size turbines and wind speeds.

	<b>5 MPH</b>	<b>10 MPH</b>	<b>15 MPH</b>	<b>20 MPH</b>	<b>25 MPH</b>
<b>3 ft. Diameter Turbine</b>	2320 Watts	4640 W.	9280 W.	18560 W.	37120 W.
<b>6 ft. Diameter Turbine</b>	9280 W.	18560 W.	37120 W.	74240 W.	148480 W.
<b>9 ft. Diameter Turbine</b>	37120 W.	74240 W.	148480 W.	296960 W.	593920 W.
<b>Hit Size Limit.</b>	Only A 27% Power Increase with Diameter Size Increase.				

But the average wind speed was seven to eight miles per hour at ground level.

Even her turbine couldn't make power without wind. And the tower needed to get the turbine high enough to have access to a more constant wind source was over two hundred feet tall. "What to do?" She thought. "You can't have towers all over the place! What to do?"

## Chapter Two: Kite Flying

The next day was just as hot as the rest of that first week of August. The sun was even hotter on the tarmac of the Swift Construction Company and Sandy, dressed in shorts and a halter top, was running up and down the runway pulling a kite behind her that refused to fly. The air was dead and, within five minutes, so was Sandy. She trudged back to her white sports car and threw the kite onto the passenger seat. She leaned against the sun-baked car to catch her breath and yelped and jumped away. Too much skin and too hot a car— she was not having a good day!

Tommy lowered her binoculars and laughed at her cousin. Patches O’Brian, the control tower operator, was also laughing. They were standing on the catwalk of the runway tower waiting for a plane to come in.

The radio squawked and Tommy ran to answer it. It was Bud Kenworth radioing in his position and landing time. He was coming back from his delivery in Canada. She talked to him for a few minutes and then handed the mic over to Patches.

She left the tower that was located on top of the three story administration building and hopped on her motorcycle. As she pulled up to Sandy’s car she took the kite, let out some string and slowly accelerated. The kite flew up in the air.

Sandy got into her car and went after the thief.

Tommy was laughing and having a good time flying the kite and leading Sandy on a wild goose chase. But finally the kite could not stand the strain of the bike’s speed, crumpled and fell from the sky.

“Oops,” Tommy said to herself as the kite hit the ground in the middle of the administration parking lot. Then Sandy ran over it with her car because it fell right in front of her.

“Double oops,” said Tommy as she parked her bike and went over to Sandy’s car.

By the time she got there Sandy had picked up her mangled kite and looking at her friend with tears in her eyes shouted, “Looked what you’ve done! You killed it!” She held it out to Tommy in mock horror.

Tommy looked at Sandy and shook her head in disbelief. She reached out for the kite, took it gently in her hands and smashed it up in front of Sandy’s face and threw it into the car.

“Now,” Tommy said, “you can act like the woman you are and stop being a kid!”

Sandy looked at her and murmured, “You’ve got no soul. That kite was

going to win me the Lake Copland kite festival on Labor Day.”

Tommy laughed at her, “Sandy, that was just an old fashion stick, string and newspaper kite. How do you think it could win?” She looked at her with a frown.

“It would have won on looks and personality...” and the rest was cut off as Bud’s plane roared in for a landing.

\* \* \*

Tommy, on her motorcycle, started to head to the hanger that Bud kept the Swift’s cargo plane. She only went a dozen or so feet when it hit her! “Flying the generators,” she thought, “instead of putting them up on towers! Up around three thousand to five thousand feet, that’s where the winds are constant. Good old twenty to thirty miles an hour winds that would be ideal. What a dunce I am!”

Tommy in her exuberance forgot about Bud, and off to her shed she went. Within seconds of turning on her computer to refresh her knowledge on the aerodynamic of wing shapes and lift coefficients, the world around her disappeared.

“Tommy, did you forget someone?” Bud stood at the door with a grin.

“Oh, Bud. Bud!” she exclaimed. A look of shame crossed her face. “Can you forgive me? I... I... heck, I’ve got no excuses.”

“That’s for sure! I’ve been back for two hours. I saw Sandy and you in the parking lot as I landed and expected you at the hanger... but... no show. Now as punishment you’ll have to take me out for supper and pay for it too! Tortola Flats is having an all you can eat Caribbean seafood night and I’m hungry.”

\* \* \*

Over the weekend Tommy finalized her plans on how she would fly her generators. Flexible wings like paragliders or Rogallo wings (hang gliders) were out. Both types of wings could not take off without some type of outside power assist and the tension lines between the canopy and the load being carried becomes very cumbersome and tangled easily.

The next group of airfoils were kites, basically a flat surface with no place to attach a turbine. But the box kite held some promise. She envisioned two box kites hooked together and flying tandem with the two generators suspended between them. She made a rough sketch of it to improve upon later.

Her next idea was a biplane, a Wright flyer, to be exact, with two spars coming out from the same area of the props. At the end of the spars were the turbines. Attached to, but between the two turbines, was a symmetrical shape wing that kept the generator facing the wind no matter what the angle of attack the

biplane itself was at. While the Wright brothers were experimenting with wing designs they flew their models on tethers, so Tommy knew that it could be done.

Her third choice was a flying wing. She thought she could base it on the 1950's Northrop YB-49. As she sketched the wing, she narrowed the chord length between the leading edge and the trailing edge of the wing. She also changed the design to make it less wide along the center line and added winglets to help stabilize it. On the trailing edge she attached the two turbines about a third of the way out from the center.

On both the biplane and the flying wing she placed the turbines in the back so as not to interfere with the air flow over the leading edge of wings. Tommy was going to use the turbines as both the motive force to get the planes up into the air and then reversing the connections to turn them into generators.

With her ideas on paper, Tommy was now set in making actual flying models. There were to be no electrical generating turbines but small hobby shop electric motors from radio control planes with micro servos and RC hand controllers when needed.

She had the tandem box kite done by Monday afternoon. She attached the two motors a third of the way from top and bottom, letting them swing freely up and down.

Tommy then glued small symmetrical shape wings over the spacing rods that the prop motors were epoxied to. This, like the biplane turbines, would keep them into the wind without any elaborate adjustment systems.

To save time and effort Tommy bought a RC Wright flyer kit and modified it to her needs. That took all of Tuesday.

On Wednesday morning Bud had another delivery to make and would not be back till late Friday morning. While sadder that he had another trip to make, she was glad for the extra free time.

The flying wing had to be hand cut out of a solid piece of high impact EPP foam using a 'hot' wire knife that melted its way through the foam. Micro-planes and fine files finished the job. Electronic servos controlled the ailerons and the prop speed from a hand controller.

By late Thursday afternoon she had all three models done. None of them were of any scale to each other or were they structurally sound. They didn't need to be for her tests. Tommy figured to tidy up those details when she designed and built the first actual flying generator.

That evening Sandy and Tommy went out to the mall to celebrate, had dinner and splurged on new summer swimwear.

Bud flew in right on schedule Friday morning. Just before eleven Tommy hid out near the Swift's hanger. He taxied up to the hanger and hit the remote to open the over head door and slowly rolled the craft in.

Waiting a minute, Tommy scooted out of her hiding place and stopped just inside the door to be in full sunlight. The hanger was dark except for that stream of light.

“Hey, Tiger!” Tommy called out into the vast building, “Where are you?”

She slowly took off her coverlet and dangled it from one hand. Then she raised her other hand above her head and pirouetted slowly in the sunlight. She had on a small two piece red bikini. Her white skin glistened in the light and her blond hair swirled around her face.

She stopped spinning and called out again. “Last chance to take me swimming before I call Haz,” she teased.

“If you do that,” Bud replied as he stepped out of the shadows beside the door and reached out for her, “he won’t do this,” he kissed her passionately.

“Well!” Tommy whispered in his ear when he stopped, “I guess you like this greeting better than the last one?”

“Every day of the week and twice on Sunday,” he huskily whispered back. “But Tommy your sure will get cold in December.”

“You silly man, I’ll have a snowsuit on then.”

Chuckling he asked, “So what brings you here besides me? Do you really want to go for a swim?”

Touching his cheek with the back of her hand, she smiled a “Yes.”

Ten minutes later he was ready to go and as they got into his truck Tommy fluttered her eyelashes at Bud and asked, “I’ve got to take something with us. Can we stop at the shed?”

Laughing, Bud answered, “As long as it’s not Haz!”

## Chapter Three: “Bud, I shot down a plane!”

“No, Bud, take a left here onto that dirt road instead of going to the public beach. Sandy showed me a nice secluded spot to swim. I’m sure you’ll like it.”

He did as she told him and in a little while he stopped the truck on top of a small bluff overlooking the lake. He looked around the large clearing that was in the middle of the woods and saw no one else. Tommy pointed to a spot and he drove over to it.

After they got out and collected their beach gear, Bud looked at the three long duffle bags still on the truck bed. He pointed to them.

“Later, Bud. First we swim then eat. Later we play with what I brought with us.” Tommy showed him to a path that led down to the water.

The path wound down the side of the bluff and opened on a small sandy beach. The ends of the beach ended in rocks and small trees that were struggling to survive. The water ran right up to the edge of the rocks. They chose a spot near the water and set up the umbrella, laid out a beach blanket and towels and place the hamper of food in the shade.

Kicking off their outer clothes, they ran hand and hand into the water and kept on running. After going about fifty feet Bud stopped, the water up to his waist. He looked at Tommy with a quizzical look.

“Isn’t this great! It goes on for another thirty feet. I just love it! I can’t swim, you know.’ She then splashed him. he picked her you and hurled her farther into the water. She came up spurting and thrashing at the water with a look of panic on her face. Bud instantly realized that she wasn’t kidding and rescued her. He hurriedly rushed her back to the beach. He couldn’t stop apologizing as he got her to the blanket and wrapped her up in the towels.

“Bud, stop! I’m all right. It’s not your fault, believe me! I’m the one that never took the time to learn how to swim.” He was looking at her with those hurt puppy dog eyes. She gave him a quick kiss and suggested that he could try to teach her to swim after lunch. He readily agreed and reached for the food hamper.

\* \* \*

It was late afternoon and the breeze was starting to come inland from the lake. Tommy was beginning to swim awkwardly but was learning fast. The hardest part was teaching her that she could hold her head underwater without ill effects. At first, every time she put her face under water, she had a mini panic attack and stood up. Over that now, she was concentrating on her arm and leg movements. Bud was also concentrating on her arms and legs movements.

Her once pale skin was slowly turning pink and then red from the sun. Suntan lotion doesn't work well in water.

With the beach gear now stored in the back of the truck and with their clothes on, Tommy opened all three duffel bags and began to assemble the models of her flying generators. Bud helped her when he could. The breeze continued to build and at the top of the bluff it was stronger higher up off the water.

Tommy took the string to the bluff and Bud held the tandem box kite fifty feet away and flung it into the air. Tommy reeled in some of the string and off it went. It flew up for twenty feet, did a loop-de-loop and took a nose dive straight into the ground.

Tommy looked at it in amazement, shrugged her shoulders and started to reel in the string. Bud walked over and picked up the kite. When they meet he said, "Sorry, kid." She handed him the string and walked off to get the biplane.

To fly the bi-wing model, Tommy had the tether line looped through a clip attached to her belt on her shorts and back to Bud who had the end under his foot. A radio control transmitter was in her hands.

Bud was down wind and holding the plane facing up. The tether line was pulled tight between the plane and Tommy. She waved and he waved back.

Tommy fingered the speed control slide bar, pushing it up. The two props started to spin and when Bud could feel that the plane was pushing hard enough to fly he let it go. Up it flew and he quickly picked up the string and reeled the slack in to keep it tight while walking back to Tommy.

Tommy set a little upward turn on the flaps to keep the biplane going straight up. When it was high enough she stopped the motors and stalled the plane in mid air. She kept the angle of attack high on the wings so the wind would catch the surfaces and pull the biplane back keeping it aloft. When the tether was tight and the plane stable, she started to play with the angle of the wing to the wind to learn how it flew.

Using both the flaps and rudder she had complete control of the plane. She and Bud could even see the now idle props spinning in the breeze. Bud drove a spike into the ground and they tied the biplane off to see how well it would stay on station. Three minutes later, a smile on her face, Tommy turned to the flying wing model.

Following the same procedure as with the biplane, the flying wing was up in the air. Tommy found it harder to keep it flying; it was unstable in the wind. It had a tendency to want to stall out and only Tommy's quick reflexes kept it up. Bud began getting tired of simply watching Tommy went over to the biplane RC unit and started to play with it.

Over the lake a speck appeared in the sky and slowly circled around them

getting closer all the time. Tommy notice it once when it flew by her wing off in the distance. She noticed it again as it seemed to be flying right at them in a high speed dive. It was coming in from the land side of the clearing and heading over the lake.

As it sped towards them a number of memories flashed into Tommy's mind. She called out to Bud, "I've seen that plane before... It's a pylon plane... It's Sergey Levenkov's plane... It has guns on its wings! Bud!" she shouted and without thinking flipped the release button to the tether line on the RC unit. The servo clamp let go of the line on the wing and she pushed the motor power slide on the controller to its top speed. The props spun into life and shot the plane into the sky. She did a high speed one-sixty with a half barrel roll thrown in. The wing now flew right towards Sergey's plane.

Being small, Sergey did not notice the wing at first. He was smiling to himself as he pulled the trigger on the twin 50 caliber machine guns. Bud was fully in his sights.

Bud, a second or two behind Tommy in noticing the strafing plane coming toward them, threw himself off the side of the bluff. The bullets struck a jagged line of pock marks in the ground right were Bud had been standing.

Just before Tommy's flying wing smashed into the prop of the pylon plane, Sergey had a split second of it in his sight. He only had time to evoke one profanity, "Dyermo!" before his prop disintegrated. The plane did a number of rolls before crashing into the lake.

Tommy watched in horror as it hit the water. Her next thought was of Bud going over the bluff. She threw the transmitter to the ground and ran to the cliff's edge. She forced herself to look over and there he sat in about six inches of water just missing the rocks at the end of the beach and he was talking to someone on his wrist phone.

He looked up at her and waved. Tommy waved back and fell onto her knees and sent a silent 'thank you' to heaven and then had a really good cry for them both.

By the time Bud reached her she had composed herself and was calmly kneeling on the ground with her hands on her lap. Hearing his footsteps she looked up at him and meekly said, "Bud, I shot down a plane!"

\* \* \*

It was night now and Bud and Tommy had finally been given permission to go home. The last four hours had been tedious in all respects. First the local police, then the state and finally the FBI had grilled them. Haz showed up with that group.

He was all apologetic for being so late. He believed it was vital that agent

Wallis be back on the case as he had handled the Russian racketeering investigation at the Flagger carnival and air show that past spring. Agent Wallis needed to be pulled off another case to take this one back and that took several hours.

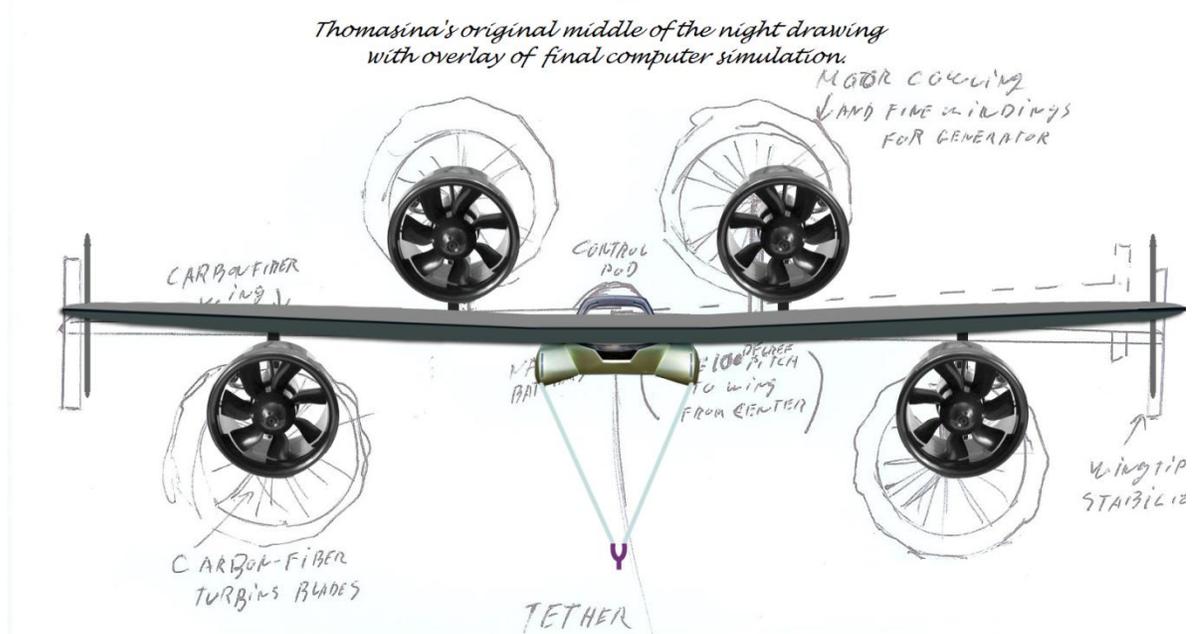
The Sheriff's lake patrol sent divers down to the plane's crash site. No body was found. The canopy of the plane was shattered and the restraints were undone so he could have gotten out, but Tommy and Bud had not seen anyone swimming away. They had watched the crashed area constantly.

In fact they had not moved from where they sat on top of the bluff except when Bud had shifted Tommy onto his lap so he could hold her tight.

\* \* \*

The next day found Tommy on one of the computers in the assembly building second floor offices. She wanted to use the CAD computer that was located there. She scanned in a drawing she made in the middle of the night.

Using the sophisticated art mode of the CAD unit Tommy overlaid her sketch with a computer simulation of the new flying generator wing. It was a loose combination of both the biplane and the wing. Hopefully the best of both.



Tommy had shortened the wing core width even more than originally on the first wing model she made. She included the deep curvature or *camber* of the

biplane wing to give it the most possible lift in slow winds. By adding a ten degree dihedral bend to the wing it became stable. At least, according to her vision and the computer. Time would tell.

She removed the turbines off the trailing edge of the wing and placed them on top of symmetrically shaped pylons, two above and two below the wing leaving it as clean as possible to air flow. The two turbines on top were positioned a quarter the way out from the control pod in the center of the wing. The bottom two motors were a quarter length farther out.

She left the two end rudders alone at the ends of the wing where they could not only provide stability, but also steering.

Located in the center of the top side of the wing were the guidance electronics pod and radio control units and a emergency parachute for the wing in case of catastrophic failure.

Underneath the pod were the generators control units and the nano-battery packs. The undercarriage had an arched bottom with extendable edges that would act as skids when the wing landed.

The tether attachment was a 'Y' shape arrangement to help spread the tension force laterally throughout the internal bracing. The hardest part was that the tether still had to have the ability to separate from the wing on command without doing any damage.

Luckily, structural integrity was a well thought out engineering science and Tommy only had to apply the appropriate structural math.

Toward the end of the day Uncle Hank came over to talking to Tommy about her new project.

"Is Mr. Hinkle going to be okay?" Tommy asked first thing, hoping for the best but prepared to hear the worst.

Hank Avery chuckled. "Hinkle is doing just fine, Missy. I visited him last night. He got a little scorched on the hands from all that electricity, but his doctors have told his wife that his heart is strong and in good shape. He'll be taking a month off to heal, but he swore to me that he intends on reclaiming his job, even if you've done something foolish like hiring a replacement. By the way, I wouldn't do that if I were you."

"No way, Uncle Hank, Mr. Hinkle was hurt while working for us. If he wants his job back, it's his!" Tommy was forceful about it.

"Anyway, Sandy tells me you've turned into a kite killer."

"Uncle Hank, it's all her fault. If she wasn't trying to fly that ridiculous kite of hers... but then again, I wouldn't be here now."

"Tommy, how do kites and generators go together?" He took off his glasses and squinted at her. "I thought you were trying to make a better wind turbine for home use?" He couldn't see a connection between the two.

“I am, but the main problem with wind turbines is wind or lack of it. At ground level it’s not constant and you have to go as high as thirteen hundred to eighteen hundred feet get a steady wind. The tower is the biggest drawback in most wind generator systems.” And off she went explaining her new approach. At last she came to her one remaining problem.

“The tether becomes a quandary, because the higher you go the heavier it gets. It has to be extremely light but with a very high tensile strength. The weight to wing size ratio that keeps the tether and the generators up is exponential. The tether has to be strong enough to keep from breaking in very high winds. You just can’t reel it in every time the wind starts to blow. Higher flight means a longer tether means a thicker tether means more weight and a larger wing, and so forth.”

“So what is your solution? You must have one, or you won’t be going to all this trouble to design this new wing.”

“Like always, you’re right. When I finish my design plans for the flying wing and generators set up I’m going back across the pond and do a little research at my crystal factory. If I am able to modify the crystal sheets we used for the phone bracelets to form a continuous crystalline cable and keep the tensile strength up, I may have an answer.”

“An answer!” Uncle Hank burst out. “It sounds more like you have the whole thing wrapped up with a bow on top.” Uncle Hank knew Tommy too well by now not to know that ‘impossible’ was not in her vocabulary.

“But, Uncle Hank, I can sure use your expertise right now. I can’t find a way to be in two places at once. I’d love to be here forming and curing carbon fiber sheets, building and overseeing the wing construction and such, but there’s no way our new cable is going to become a reality if I’m not over there.”

“Well, Missy, I wish I could help you, but your Uncle Damon has me so busy I can’t possibly do it.” He was shaking his head and had such a sad look on his face that she wanted to take him into her arms. He was slightly quivering, but she could quickly see that it was from restrained mirth.

Tommy’s jaw dropped open in astonishment as Uncle Hank looked at her face and burst out laughing. “Got you this time, Missy, didn’t I?” and he continued to chuckle.

Hitting him lightly in the arm, “You sure did, you old rascal!” acknowledged Tommy. “What is it you say here in America? I owe you one? Actually I owe you plenty for everything you’ve done to help me save this company. I guess that I have faith enough in you in turning my design into reality and besides... if you really need a Swift next to you, you can always grab Sandy.” She smiled mischievously at the older man. “Just don’t let Haz hear about it!”

They shared a good laugh.

“Okay then,” showing him the plans and explaining, “I would like to use

carbon fiber throughout to keep it light. The motor/generators are located on top and below the wing. For now just copy my test turbine in the shed. We need four motors but we have to have two of them counter rotating to stop the one sided pull from the torque from the blades.” Tommy stopped and looked at him.

He nodded and she continued

“With no heavy geared motor in the middle of the turbine pod the wing should weigh less than a hundred pounds. Oh yeah, the overall length is thirty feet. I’ll have the rest of the specification done by tomorrow. Can we go over the details then?”

“Sure, Tommy, just give me a call and we’ll get together here and if I need help I’ll get that nice young man that’s been hanging around you lately and put him to work. I might as well see what kind of education our tax dollars get these days.”

## Chapter Four: Swift Enterprises International

“Tommy, I hope I didn’t interrupt an importing meeting with Hank?” came the greeting as she and Sandy came to Mr. Swift’s office two days later.

“No sir, you didn’t. We were just wrapping it up. He knows what to do while I’m in England and anyways, I’m only a call away.”

“Yes, that’s true and that is why I needed both you and Sandy here today before you leave tomorrow. It may have an impact on your trip.” An “Oh” appeared on Tommy’s lips. Mr. Swift ignored it.

“Please, for now I’m so glad that both of you could come to see me.” Mr. Swift held out chairs for the young women.

“Why so formal, Daddy?” asked Sandy as he sat down behind his desk. He shuffled a few papers before answering.

“I’m closing Swift Construction Company.”

“No, Dad! We went through this already!” Sandy shouted, as she stood up in rage.

“No! No! Sorry girls, I said that wrong. Let me start again,” he pleaded. Sandy sat back down and both women held their breath in fear.

“I want to start fresh, a new company. To update our name and image, as they say nowadays. I know that I spoiled our reputation with my antics the past two years...”

“Uncle Damon, no...” Tommy started to say but Mr. Swift held up his hands to stop her from saying more.

“Let’s all be adults here, and realists. We can agree that I didn’t help the situation. We’ll leave it at that.” And the girls nodded in agreement.

“Good! Now, Tommy I need your help. You and your holdings in England are the crux of the matter. In the last six months you have put us back on our feet with your inventions and innovative ideas and that gave me the chance to restart our electronics division. You’ve proven that our name still means something but once a name is blackened it’s always somewhat tarnished.”

Tommy wasn’t sure if she should say anything just yet, so she kept silent.

“A new name with international holdings is a formidable combination. Instead of manufacturing just here or in England, I would like us to go worldwide and make our products for the people that can use them. We’ll use their experts and their knowhow. We won’t just take their money and run, we’ll give them the jobs and a feeling of self reliance. All our products are high-tech and we’ll teach them, if we have to, so they will not need to bring in outsiders.”

“Dad, this all sounds great, but we don’t have that kind of money.” Sandy was starting to worry about her father’s mental condition. This was so farfetched. Had he been over doing it in the last couple of months?

“Sandy, Tommy, don’t fret.” Mr. Swift reassured them, “I’m not alone in this. I’ve consulted an expert in world trade, but I digress. Let’s go back to Tommy and the name change.”

He took a deep breath and said, “Tommy, can I buy out your holdings in England?”

“Uncle Damon, that company for all intents and purposes is part of Swift Construction Company. I wouldn’t want it any other way. Give me the papers and I’ll make it all yours, nice and legal.”

“Thanks, Tommy. I don’t intend this to be a straight gift from you. Just to let you know, you and Sandy are both going to be joint owners in this venture. Equal shares for each of us.”

Sandy and Tommy looked at each other, mouths agape.

“Now that that’s resolved, on to the name change. It’s subject to change like I said and we all get to vote on it.” Mr. Swift reached under his desk and pulled out a poster board and held it up for them to see.

“It’s a little crude, I did it myself.” The picture was a long blue banner rippling at both ends and the new company’s name in red totally visible along the arch of the banner:



“Well, it’s striking enough, don’t you think, Tommy?” Sandy asked with a smile. Tommy just nodded her head in agreement.

“Girls, if you don’t like it, just say so.” He was all smiles and proud of his artwork.

“No, Daddy, it’s good. I was just trying to imagine the label size and company letterhead, that’s all. I say it’s a go. Tommy?” and she handed it to her like a red hot potato.

“Uncle Damon, you’re the best. Use it.” As long as it made her Uncle happy, she was all for it.

“Thanks, girls.” He put the sign down and buzzed his secretary. “Is my next appointment here?” he asked.

“Yes, sir,” she replied.

“Please, send him in.” He flipped off the intercom. As the door opened he announced, “Ladies, meet my global marketing expert and soon to be vice president of our European division, Mr. Samson.”

“Haz!” Both girls spoke at once, jumping up from their chairs.

“Hi, girls! Surprise!” He gave them hugs and pulled up an extra chair.

“Daddy, please explain...?” Sandy’s mind was a whirlwind of emotions.

“I think I’ll let Haz do the talking from here on in.” Mr. Swift nodded to Haz to take over.

Haz looked at both women and cleared his throat. “I know you’ll find this hard to believe but your father came to me with this crazy scheme back in May and I initially turned him down. He persisted and wore me down. But he’s right. If we deal directly with the European, Asian and American markets and include them all in the manufacturing, we can’t lose. Each region has its own needs and ways it likes to see a product. You can’t expect to sell something and not make cultural changes for other countries. The best ways to do that is to bring them in on the design process and let them build the item and make the changes they want without a lot of rigmarole.”

“That’s all well and good, Haz,” said Tommy, “but aren’t you running the risk of doing too many things at once? I mean personally. You’re in the stock market trading business; you have your communication company and I don’t know what else you do, and now this! Help running a multi-national conglomerate?” Haz smiled but said nothing. Yet.

“Even if Uncle Damon runs the Americas, both North and South, you have a heck of a lot to oversee. Just the European region with all its diversity is a headache. Believe me; I’ve dealt with it all for several years.”

“True, Tommy,” and he smiled at her. “But I have a plan.”

“Of course you do,” Tommy smiled back.

“I’m getting out of the stock market. I’m selling the brokerage firm to my managers. As for my other stuff, I’ll just ask my father to give it back to his people to handle. I was managing it for him as a favor anyways. I’ll tell him I now have other commitments. Oh, sure, he’ll squawk for a while but he’ll give in. He’s likely to sit back and keep tabs on me. Before he finally retires and gives up the reins of his shipping empire to me I’ll have to prove myself. The company is as old as when clipper ships roamed the seas before the turn of the century and as near as I can tell, he’d rather give it to an outsider than to an incompetent son.

“So,” Tommy asked slowly, suspicion in her voice, “you just toss all that aside for us?”

“Tommy, I’ll be tossing nothing aside. The stock market was just a quick way to make money I don’t need. What I really want is the challenge of a lifetime, and this is it!” Sandy and Tommy had never heard or seen Haz so serious or

determined.

“The communications network is well enough along that my VP’s can handle all the day-to-day management. As a bonus, we’ll tie together all Swift Enterprises’ holdings into our own private network using my satellites.” He grinned broadly. “At favorable rates, of course! With all the up-links throughout Russia and Asia we’ll have instant news on all that is happening in those markets.”

“Sounds like you’ve thought this out,” Sandy said, a gleam of pride in the man she was more than fond of.

“I have. As I said, your father came to me with this scheme three months ago. So, now that I’ve set things in motion at my end that frees me to work for your father. Yes work! I will have no financial holdings, stocks or shares. I’ll be making a base pay with a percentage based on profits. The companies we’ll start up or buy and convert to our use will be based on what products will sell in that region. We won’t make Arc Jet engines for the trans-Pacific market, but Europe and mainland Asia are wide open. Most of their flights are short hops and the speed limits of our jet won’t bother them a bit. We can make our phone bracelet and nano-batteries worldwide. We just have to pick and choose the best product for the best location.”

“How long will it take to get this off the ground?” Sandy asked still in a daze.

“We’ll register our new name, and apply for our new licenses, do all the legal work to fold in Tommy’s company and were on our way. Her crystal and battery plant in England really does the trick. It already has all the export and import licenses we need and England is part of the Euro trade market. So, I give it four to six month if we don’t run into the inevitable political bumps.”

“Are you sure, Daddy?” Sandy just could not believe he had put this all together without her knowing it.

“It will be a lot of work, I’ll admit. But I want to do this. So between Haz and me we can get it done. Right, Haz?”

“You bet we can! So ladies do you want to play?” Haz was only looking at Sandy when he said that.

Sandy slowly turned red as his innuendo sank in.

“I need a glass of water,” Sandy said turning to Tommy, “come with me.” Tommy nodded her agreement.

They got up and crossed the room to a small sitting area with a table holding carafes of coffee and pitchers ice water. Reaching for the water Sandy whispered, “What do you think?”

“As I said before, you Swifts sure run your lives at full speed.” Tommy grinned so that only Sandy could see her.

“At full speed is right and with Haz now part of the company I better put on

my high heel sneakers. I think I'm in for a good hard run to keep that man where he belongs."

"And where's that?" Tommy asked with a gleam in her eyes.

"I don't know! And I don't want to know, yet!"

## Chapter Five: Murder!

“Haz, I tell you, this just doesn’t feel right! Bud should be the one coming to England with me, not you.” Tommy was putting her overnight bag in the compartment above their seats.

As they settled down Haz replied, “I wish you were Sandy too. No offense, but this is strictly a business trip for me, and you have knowledge of your holdings I just can’t duplicate.”

Tommy smiled at him and nodded. It made sense.

“After I talk to your people at the crystal plant and organize the management there, I’m off to France, Germany, Russia and then throughout Asia, including a visit to China’s rocket launch site in the Xichang Province to see it for the first time. The Russians are launching the first two of my constellation of four satellites from Plesetsk Cosmodrome to cover the northern Russian territory at the end of the month and the second two in September. The Chinese will launch the next four over the Sino-Russian border area before the end of October, also in two separate launches.”

“Any problems trying to get cooperation from both of them?”

“Not from the Mother countries, but a lot of political tongue wagging is going on over this from the border countries between Russia and China. It seems they think that the last four satellites are going to be spy satellites and not just for communication. They’re all up in arms over it. The Russians hoped that by selling that particular network to the West it would calm things down, but it hasn’t. There is a lot of suspicion going around.”

“I have every confidence in you being able to ride out the storm, Haz. So does Sandy.”

“Enough of politics. While I’m in China I’ll be sending feelers out about setting up several nano-battery factories and one for the Arc Jet engines. Their air pollution rate is so high that I think they would be the first ones to want to start making electric cars and trucks. With your new heavy duty nano-battery and hub wheel motors, the cars can be as small as they like. They could even make motorized rickshaws,” Haz chuckled to himself over the picture that formed in his mind over that one, “and with the Arc Jet, the fuel they’ll save on in-country hops would be tremendous.”

The small talk lasted for a while but even the talkative Haz finally ran out of steam and took a nap over the now dark Atlantic Ocean. At six a.m. London time the plane arrived at Heathrow International Airport and a train ride took them to their destination.

\* \* \*

“Yes, of course Professor Albert, I’ll gladly stop by this weekend and I’ll clear my schedule for next week, too. To work with you again will be the highlight of my trip back here. Your quantum physics classes were always so fascinating... and you have new theories that you want to publish and to demonstrate? You’re really that far along into it? Yes, I understand that you don’t want to talk about it on the blower... Yes, ten o’clock at the north end train station. I promise I won’t be late. Yes Professor, it’s been nice talking to you. Goodbye.”

Tommy hung up the phone and sat back in her chair and looked at Betty Rawlins whose office she was in. Tommy had already been there a week and had done all the preliminary work on the new tether cable.

Haz had come and gone, leaving everyone with a feeling that they had been hit with a tornado. Everyone found him to be dynamic and enthralling, but his energy level and no-nonsense approach stunned them.

Betty was the University ‘sister,’ friend and fellow researcher that Tommy turned to when she’d needed to help the Swifts out of bankruptcy. Betty had supplied the money and the factory space for Tommy to make her crystal phone plates and nano-batteries.

A researcher in crystal formation she’d been invaluable in helping Tommy at that time. Since then she’d been managing of the plant for her. Even after Tommy paid her back and formally took over the plant, she’d stayed on letting her own research fall to the side.

“Professor Albert... now that’s a name from the past,” murmured Betty over her tea. “The last I heard he was semiretired and still living in that quaint little cottage of his, outside the university. The Dean likes to keep him around as he still brings in research grants. But lately he’s been behaving very erratic and secretive, he claims that he’s being spied on and his papers taken. The authorities looked into it but found no evidence. His papers always turn up, but not where he claims he left them. I’m afraid he might be over the bend,” Betty sighed. “He’s been acting a little potty, you know?”

Tommy sat there biting her lip. She didn’t know how to respond.

“Poor man, he was so brilliant in his time. So be careful with him. If you have to, humor him and call Pamela Elise in the Science Department. They were close at one time and I’m sure she’ll help you out and see that he gets the care he needs, if he needs it.”

“Thanks, Betty, I’ll be careful with him. He did sound a little off, even afraid, maybe. Oh well, I’ll see him tomorrow and let you know.” They dropped the subject.

Sipping her tea, Tommy looked sternly at Betty. “Sister, the absolute truth,

please. Are you sure you don't mind not running the plant anymore? I know you gave control of it to your foreman, and Haz approved of him whole heartily, but I don't want you to feel pushed out. It was because of you that all of this exists. I still have the say so, so if you still want it, it's yours!" Tommy was determine to know her friend's true feelings.

"Tommy, I couldn't be happier. The pay out that Haz offered is outrageous and I'm still going to keep my research lab and he's willing to pay all the bills. What can I say? I hope he can afford it. Actually, I hope *you* can afford it!"

"Betty, at what this plant is bringing in, we could afford five of you! And you don't mind giving us the first crack at your research, if it pans out?"

"Tommy, you're paying for it! It's yours by right. That you're willing to pay me for it is unheard of. So what if it's only a percentage... twenty-five percent is unthinkable. Why would I want to sell to anyone else. I can't lose. If I never turn out anything worthwhile I'll be making out like a bandit, and if I do come up with something, I still get paid for it. It's a sweet deal for me. I'm rich and getting richer by the day, thanks to your company."

\* \* \*

"Professor Albert, please report to the information desk." This was the third time in twenty minutes that Tommy had the Professor paged. He wasn't answering his phone either. She made her decision. She was not going to wait at the train station anymore. Leaving a note at the information desk for him she called a cab. Tommy first went to the campus business office to see if they knew where he was. They had not seen him for a week or two but offered to page the eccentric professor.

She got back into her cab and requested that he take a slow drive around the campus and then past the Professor's cottage. As they approached the cottage she practically screamed at the driver to stop.

Police cars and an ambulance with their flashing blue lights horrified Tommy. She threw money at the driver and ran to the house.

A constable stopped her at the door, "Sorry miss, you can't go in," he held his arm across the doorway.

"I must see the Professor. Is he all right?" Tommy was trying to squeeze past the officer.

"I can't let you in, but if you behave and stay here I'll go get one of the inspectors for you." He had moved to block the door with his body and eyed her skeptically.

"Yes, sir, I'll wait," Tommy tried her hardest to compose herself. The constable returned a few minutes later with another man.

“Miss, I’m inspector Ames.” He was in his mid thirties and looked somewhat rushed.

“I was supposed to meet him. He didn’t show up,” she told him, sadly.

He looked her over for a moment, then took Tommy to the side of the house, out of the way and out of view of the front of the little cottage. The rose garden was in full bloom and no one was there to appreciate them.

The inspector took out his note pad and inquired about her name and other vital information he needed, and most of all why she was there. She answered in as much detail as she could and asked the inspector a question of her own. “Is he going to be okay?”

“Well, miss, I guess you have the right to some answers, being as you at least explained why he had his coat on. If he was leaving to pick you up at the train station that gives us an approximate time of death.”

“Death! No! I thought he was just injured,” Tommy turned as white as a ghost. The inspector reached out to steady her.

“I’m all right! It’s just a shock. He was the gentlest man in the world. I can’t think of anyone who would want to hurt him.”

“We think,” continued inspector Ames, “that his death was accidental. No windows or doors were jimmied, so the suspect came in by the front door as the professor opened it to leave.”

“But, if there was someone who came in...” Tommy started to say.

“We don’t know what happened next except that it led to a struggle. Somehow the professor was killed. It looks like he hit his head on the hallway table. There’s blood on the edge of it and he was laying underneath it. There are a couple of partial foot prints leading into the house and some faded ones on the carpet.” He looked directly at her. “Whatever the culprit wanted he didn’t find,” the inspector closed his pad and put it into his pocket.

“How do you know he didn’t find what he wanted?” Tommy was having a hard time thinking straight.

“All the rooms were ransacked. If he had found it he would have stopped and left. He wouldn’t stay a second longer than he had to.”

“Can I see the professor?” Tommy found herself asking the inspector.

“I’m afraid not, miss. The coroner has first dibs on him, then the family. I don’t think you’ll be seeing him until the funeral. I must go now, miss. Just remember if you think of anything, call me.” He handed her his card. Nodding a farewell, he walked back to the front and into the house.

Tommy was so dazed by the past hour that she just wandered around the university. After a time she found herself in front of the lecture hall that the professor used. On a whim she went in. The classroom was gloomy with most of the shades pulled down.

She walked around the class touching familiar things and slowly made her way to the desk on the side of the lecture platform. The drawers were empty of all papers and the chalkboard was clean. The room looked unused.

As she passed the chalkboard she remembered the professor's favorite hiding place. She walked to the back of the board and unfolded the side leaves that extended the chalkboard size and there it was.

The back of the board was covered with formulas and notes. You could tell they had been added to at various times and some erased and modified. It was total chaos. It would take days to unravel the mess.

Tommy took her phone off her wrist and set it to high resolution video with the motion stabilizer on. She then turned the back of the board to the windows and slowly videoed the whole board. She then turned on the infrared mode and repeated the process.

As an extra precaution she e-mailed it to her work computer at the Swift Construction Company. Satisfied at last, she started to close up the sides.

"No," she thought to herself, "someone killed the professor for this, I just can't leave it for him to find." Taking the eraser from the front of the board, Tommy, then meticulously cleaned off every speck. She closed it up and turned it back to the way it was.

She stopped at the door and took one last look at the classroom. Tommy now knew that this chapter of her life was closed forever.

She opened the door and stepped out into the hallway. The lights went out as she was violently slammed into the wall. The breath knocked out of her.

She was pulled back into the room and forced against the wall next to the door. An arm was holding her there by her throat; the other hand was holding her wrist that had her bracelet.

Tommy's eyes focused on a face as she grasped for air.

"Sergey Levenkov, the rat surfaces at last," Tommy manage to whisper. "And I see you get a nice new scar across your face. It becomes you. I wonder how you got that."

He pushed his arm harder against her neck. His deep red scar pulsed with the beating of his heart. It ran across his forehead, through his left eye and down the side of his face. The patch that covered his eye was black in color.

"Your quick tongue won't save you this time, girl," hissed Sergey into her ear in his heavy Russian accent. "So you know the professor, and it's so fitting that you are the one to give me those formulas after what you did to me in America. I liked that little plane that you forced me to ditch into that lake. You even forced me to leave the country with all those cops after me."

He shook his head and sighed. "But it doesn't matter. My work was almost done. I already had my people in key positions in the Flagger organization.

Someone else is now running that part of the operation,” Sergey laughed out loud. “That stupid Flagger is so gullible. I’m surprised he can tie his own shoelaces.”

He pulled Tommy’s bracelet from her wrist and placed it in his pocket. “I was going to let you walk out of here, but once you saw and cleaned that board that ended that. I can’t possible leave you as a witness. I enjoyed our little chat, but all good things must come to an end.”

Sergey’s arm pushed against Tommy’s neck, and she knew she had to do something now or not at all. Summoning all her strength she jerked her knee up into Sergey’s groin. He pulled back like a shot and stumbled over as he grabbed his lower extremities.

Tommy did not waste any time, she gripped the door handle, pulled it open, stepped out and slammed it shut. As she ran down the hall she tripped the fire alarm. Out in the street she started to yell for help and the police.

## Chapter Six: Revelation

After a long, miserable train trip, Tommy was back in Betty's office. Even a hot cup of tea couldn't soothe Tommy's nerves.

The second interview with inspector Ames didn't go well. Too many coincidences to please him. Tommy was now on his radar. If it wasn't for her bruised neck and wrist she would have been in the bulls-eye. After hours of questioning she was let go.

Even after all she had gone through Tommy hadn't told that she had found what the killer wanted. She could only hope that the formulas and notes were useless or that Sergey and his people couldn't figure them out. Both big ifs.

"So that's all of it, Betty. I called Sandy Swift and she checked to see that I have a copy of the video of his notes on my computer and to keep it safe. I just wish that I had some way to remotely wipe my bracelet's memory chip." Tommy yawned and looked sleepily at her friend. She bid her goodnight, or rather good morning, as the sun was about to rise.

The next few days were busy ones for both women in the lab. The work that Tommy had done the week before when Haz was there, and when Betty had spent so much time with him, was now bearing fruit.

Tommy had mastered making minute string pieces out of the new crystal configuration. The next step was to make enough of it to be useful in tests.

Both woman worked well together and before long three trays of crystal were forming under controlled heat and a special liquid growth medium. The trays had to be etched out with a fine laser beam of just a few microns wide and deep, the bottom of which was the collection and formation area.

Two trays had a mixture of minerals and carbon nanotubes to allow it to conduct electricity. The third tray was just the regular solution of minerals that were non-conductive and would be used as the outer shielding.

The growth medium had to be injected into the tray grooves with a super fine needle with two different types of crystal seeds to be added. They were laid down, one of each type just touching followed by a double space before the next set was laid down by a robotic device that Tommy had constructed by hand. They could only view the procedure by video monitor at high resolution. Everything was painstakingly slow.

As the two crystal seeds formed into a dumbbell-shaped nodes, the trays dried out. One end of the nodes were solid spheres and the other end were partially open sockets. Next came two probes of different polarity and they touched the ends of an adjacent dumbbell-shape node. The negative charged sphere shrank and the

positive socket expanded and both pieces magnetically joined together, lost their charge and returned to their normal size locking them together. This formed longer, stiff crystals, but they were able to swivel around in the joint.

This had to be repeated for every set of nodes. Only robotic equipment could do this precise job over and over. Two hours later the dried trays held the first segments of filament finer than a spider's web. The ends of each segment were then joined together using electrical probes.

The two types of filament were taken up onto different spools. A one foot length of conductive crystal was placed in a twisting machine and the rest of that line was twisted around that center one. When that was finished, the non-conductive strands were twisted around the first bundle and sealed together to make a finished micro-cable.

The two women tested the micro-cable in every conceivable way. The results were astounding! The ultimate strength (MPa) of Nylon is 75 MPa, of high tensile steel alloy 1860 MPa, and of multi-walled carbon nanotubes 62,000 MPa, but Tommy's micro-cable tested well over 120,000 MPa. The end result was that it was almost uncut-able. Diamond tip blades could cut the smaller Crystal Carbon Nanotubes (CCN) cable but it took a special saw and epoxy compound together using the CCN cable itself to cut anything over several cables thick.

This work took the major part of the week; they only stopped for Professor Albert's funeral. On the train ride back from the funeral, Betty asked Tommy the one question for which she had no answer. "What did you name the CCM cable or is that its name?"

"I was considering it, but I think because Sandy was the cause of all this, I'm going to call it SanCrys Cable." Tommy then spelled it out to her.

Betty chuckled and replied, "I've never had the pleasure of meeting the woman, but I don't think that name will fly. CCN cable is going to be it."

\* \* \*

It would take four months to get the new production line going. Mr. Dodd, an industrial engineer and the new plant manager, was well qualified to handle it.

Tommy, Mr. Dodd and a small staff of engineers had to create the layouts and blueprints of quite a few pieces of new equipment. A lot of it had to be robotically controlled and several new computer stations also had to be installed. The curing ovens had to be custom made by an outside firm and wouldn't be ready for two months. After three weeks all the 'paper engineering' was done and Tommy was ready to go home.

Mr. Avery had called a few times with technical problems on the generator wing that were resolved over the phone. The air waves got hot every night when —

even after a hard day's work — Tommy would call Bud at two in the morning, Greenwich Time, to spend a moment with him.

While Tommy was busy with the layouts, Betty kept busy in the lab reformulating the growth mixtures to match the super size trays. With the help of a lab assistant, she made Tommy a roll of CCN cable to take back home to use on the generator wing. It took the whole three weeks even with refinements to the manual process. It was slow work and they could only create a few meters per hour.

Mr. Dodd would oversee the actual construction of the production line and if problems arose he would consult Tommy to see if she needed to come back to England.

A lot had happened back home. Mr. Avery had finished the wing generator test model and was waiting for Tommy's return with the CCN cable. Haz had returned from his travels and he and Mr. Swift were mapping out their strategies for the new production plants. And most of all, Haz's first four satellites were launched from Russia without a snag. Satellites five and six would be launched in a few more days from China.

Betty and Tommy were sharing their last cup of tea together before Tommy left for the train in the morning and then her flight back home that afternoon. As they finished their cup, Betty finally bit the bullet and asked Tommy if she knew what Haz's family business was.

"Sure," Tommy answered with a frown, "his father is in shipping. Haz told us that himself. Why do you ask?" She was completely mystified with that question.

"Yes, he's in shipping, as in 'Atlas Freight & Transport'." Betty let that sink in before continuing. "He's one of the top five shipping moguls in the world. Trucks, planes, trains, container ships and anything else that moves goods around the world, he controls them. You said he's working for a base pay plus a percentage of the profits and he's going to arrange all the shipping that your company does. Do you see my concern, Tommy?"

"Betty, do you really think he'll overcharge us by using his father's businesses and pocket the over fees?"

"I hear that the senior Mr. Samson is ruthless in his dealing and it has me wondering, can the apple fall far from the tree? I hate to bring this up and I was hoping not to. But Tommy, you're my best friend and I can't just let you leave without telling you."

Tommy got up from her chair and went over to her friend and took her hands in hers. Looking her in the eyes she said, "Betty, you're my friend, and sister for life, nothing you tell me from your heart could ever hurt me. I'm glad you told me and I'll talk to the Swifts when I get back to the States. Haz has always been a little crude, but I think it's a shield he uses to keep people away. I have never seen him

hurt anyone deliberately unless it was to find out their motive for doing something. Actually he's gone out of his way to help on more than one occasion. Maybe there is a reason he's in the States doing business and not with his father."

"You're right, Tommy. He may be a knight in shining armor but then he may not be. Please, be careful."

"With you to watch my back, how can I not be?"

\* \* \*

"Attention, attention please! First Class passengers for flight 1952 to Kennedy International Airport please report to gate A-9 for boarding," the announcement came. Tommy, with a sigh of relief, grabbed her overnight bag and headed for the departure gate. As she was handing the attendant her pass she heard her name called out. Looking around she spotted inspector Ames jogging over to her.

Out of breath he wheezed, "I thought I missed you. Can I talk to you for a couple of minutes?" Tommy looked at the attendant.

Ames flashed an apologetic smile at the airport employee. "Five minutes, miss," the woman said and she handed Tommy back her boarding pass back. The inspector took her arm and led her over to a secluded spot.

"Miss Swift, I had to talk to you before you left. I shouldn't, but you've been a great help to us, especially to Interpol. That Sergey Levenkov is a tough nut to follow. Interpol lost him about a year ago. They thought he was in the Arab countries selling black market weapons. Boy, were they wrong!"

Tommy was starting to get worried.

"Interpol has called in the CIA and your FBI about this. You said Levenkov has his people inside Mr. Flagger's Communication Company, and that's bad. Your defense department has quite a few contracts with Flagger for high-tech equipment and communication systems. They now feel that they may be in a compromised situation. Your government has already moved in on Flagger headquarters and subsidiary companies. At this moment he's completely shut down. A dozen or so employees have disappeared and they have taken several others in for questioning."

"What does this have to do with me?" She was really getting upset.

"Look. Levenkov is going to go after revenge for all this. You have interfered with his plans three times already. Twice in the states and once here. He'll want you out of his life! You're as good as dead to him. His attack at the university proves that. He'll have your family killed one by one. You've seen in person what he's capable of doing. He'll drag it out till you're the only one left. He'll kill you himself — he has to. His position in his mob is at stake otherwise."

"Miss," called out the attendant, "You have to board now, and we must close

the loading ramp door.”

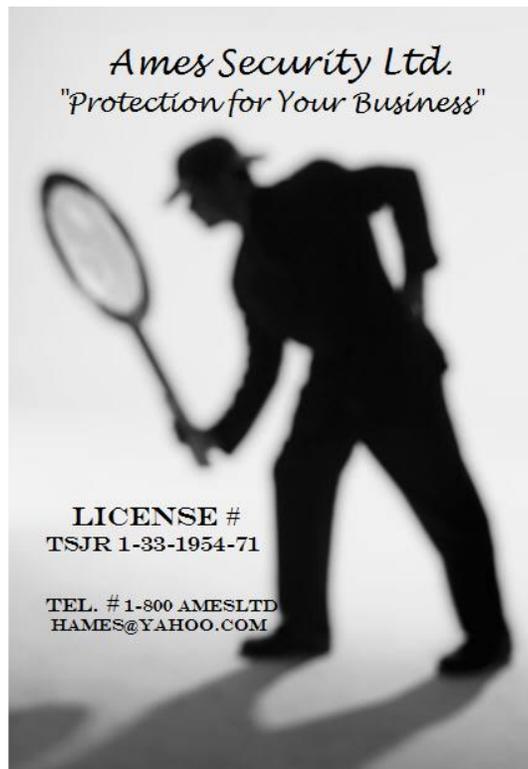
“Why are you telling me this? Won’t the U.S. Government protect me?” Tommy was torn between running for the plane or finding out more information. Inspector Ames reached into his pocket and handed Tommy a business card.

“When you get home immediately contact this man... he’ll know what to do. I made sure of that. Now get on the plane. It will be safer for you in America than it is here right now. At least we know that Levenkov is not there!” He once more took Tommy’s arm and walked her to the gate. He showed his credentials to the attendant and told her to get an Air Marshal for the plane.

The flight attendant took Tommy’s pass first, stamped it and then ran to get security. The inspector took Tommy slowly down the ramp. A minute later a rather inconspicuous man followed them down with the flight attendant bringing up the rear.

At the plane door the inspector stopped. “Tommy, get aboard. I hope everything turns out well for you. Call that man and watch yourself. Go, get on board.” Tommy stared at the inspector for a moment, turned and ran into the plane. A couple minutes later the man she now assumed to be the Air Marshal came aboard and the attendant sealed the door. The man took one quick look at Tommy, noted where she was seating and nonchalantly went down the aisle to his seat.

She was in a tizzy, afraid for all the people she loved. It was hours later that Tommy remembered the card in her pocket. She took it out and looked at the rather elegant written business card.



Printed on semi-translucent vellum, it simply had a company name and contact information. She needed to talk to Sandy and Uncle Damon about this and then decide what to do.

As Tommy pulled her luggage off the airport carrousel a tall, athletic looking man approached her. His first words were, “Miss Swift, don’t be afraid. My cousin Jim Ames called me to escort you back home and possibly have me look over your security.” He handed her his business card — a match to the one in her pocket — and the card of his cousin back in England. “If you don’t trust who I am, I’m to tell you the rose garden was in full bloom at Professor Albert’s cottage and the constable would not let you into the house.”

Tommy gulped but relaxed a bit.

“Does that quell your fears? My cousin is a cautious man and takes great pride in doing his job right. If he says you need protection then you need my help.”

Tommy felt safe with his explanation and she let him carry her luggage and he took her to a waiting car.

Several hours later he let her out at the Swift’s home. It was late morning by now and she was exhausted. She hadn’t gotten much sleep in the car coming back from New York.

Mr. Ames took her to her door and then asked permission to look around. This disturbed her a little, enough that she messed up the security code for the door. Mr. Ames smiled and told her he was glad to see that the house had some type of protection.

A half hour later he was ready to leave, as he left the house he nonchalantly told her that from now on he or an associate of his would be at hand watching over her and all the Swifts. His cousin would tell him when it was safe to stop and not to worry about paying for the services... he owed his cousin one.

## Chapter Seven: “Up, Up And Away!”

That night found the Swifts and friends at their favorite Italian restaurant. Bud didn't leave Tommy's side all night and Haz could not help himself about razzing Bud about it. Not that Haz was ever that far away from Sandy.

As it turned out it was a welcome home party for Tommy and a farewell one for Haz. He was leaving in a few hours to catch the 'red eye' to China's Sichuan Province to watch the launch of his first two satellites from Xichang Launch Center and to firm up SEI's (Swift Enterprise Int'l) position in the Chinese market.

It was around midnight — everyone was getting ready to leave — when Tommy noticed a familiar face sitting by himself in the corner of the restaurant. She went over to him and said, “Mr. Ames you should have come over and joined the party. I'm sure my family would have liked to meet my newly appointed shadow.”

“That's all right, Miss Swift,” Ames answered back with a smile, “I met them all this afternoon while you slept the day away.” Mr. Swift, seeing Tommy talking to Mr. Ames came over.

“So, Hardin, did you tell Tommy the good news?”

Tommy flashed a look from one to the other. “News?”

“Why yes, Tommy, my dear, Mr. Ames has graciously excepted my offer to become our new security chief. He did point out to me our total lack of safeguards with our work. He almost laughed himself to death when old man Jenkins just waved him in when he stopped at the gate this afternoon. By the time Hardin got to my office he had a list a mile long on what has to be upgraded. He did like our monitoring display system in the lobby of the administration building. Too bad we record no videos of what's on the screens.”

“Now, Mr. Swift,” interrupted Mr. Ames, “considering all that's been happening around you the last few years and not having an incident to bring it your attention, your lack of security hasn't hurt you. Unfortunately, I have a feeling that all that's going to change. And I'm more than glad to take the job of bringing you into the twenty-first century. Now's not the time to talk shop, your guests are ready to leave and I'll be around from now on. I promise not to be hard to find. As a matter of fact you just might get tired of seeing my face!” and at that Mr. Ames bid everyone good night and left the party goers.

Tommy noticed him sitting in his car as everyone left to go home and she thought she saw him following her home.

The next day Tommy felt too sluggish to work, so she did nothing but catch up on her paperwork. She deliberately stayed away from the wing. She wanted to

be in tip top shape when she finally looked it over.

She was in her work shed at the combined computer and desk station when Uncle Hank came over to pick up the CCN cable. He stared at it a moment, then assured her he would have it attached to the wing's coupling system and to the truck winch by tomorrow morning.

As he left she heard him say almost to himself. "Missy, I think you missed the mark this time! There's no way this cable can do it!" and he kept on talking to himself as he walked away.

Tommy knew for herself that if she was given that spool of cable and told it held slightly over three thousand feet of high tensile strength tether line, she might think that person was crazy too! He wheeled it away on the hand cart he'd brought even though it weighed only twenty-five pounds, half of that was the spool. An hour later he was back, looking sheepish he asked, "Missy, how the heck do you cut that thing? I wrecked almost everything we've got trying to. A torch doesn't do it either!"

"Sorry Uncle Hank, I forgot to give you this," and she reached into a box next to her desk and took out an old fashioned hack saw.

"You've got to be kidding! That won't work!" he burst out.

Tommy just handed it to him and said, "Try it, you'll like it!" and went back to her papers and organizing Professor Albert's formulas and notes.

And hour later Sandy showed up and asked how she was doing. Tommy just shook her head and said, "I can't make sense out of Professors Albert's notes. There are formulas about gravity and the absence of gravity at the sub atomic levels. Then bits about four and sixteen dimensional universes. As well as Cooper pairs and Bucky balls. He's all over the spectrum in sub-atomic and gravity physics." She shook her head.

"Yet, he called on me to help, as if he knew that I had the expertise to make it happen. What did he think I knew that would lead to an answered to this mess? I just don't know!" she was exasperated.

"Tommy, you're trying too hard — sleep on it — let your mind wander. I'm sure you'll find the answer."

"I hope so, Sandy, I hope so."

\* \* \*

The next morning even before the sun rose into the sky, Tommy, Bud and Uncle Hank were going over the finished generator wing. Tommy was more than pleased with the results.

Uncle Hank and Bud even took the time to make a scale model of the craft before they built the real thing and took it over to Astros Aerodynamics, a leader in

building private owned jet aircraft and now the Swift's best buyer for Arc Jet engines. They tested it in their wind tunnel and, except for a slight off balance at the tether line attachment points, fixed in the real wing, it was air worthy. The lift coefficient of the wing at the slow wind speed in which the craft would hover into was right in line with Tommy's figures.

She even smiled at what she saw stenciled on the wing rudders:

## *Sandy's E-Power*

\* \* \*

By six thirty they were out in the middle of the runway. Bud and Uncle Hank separated the generator wing transport/launch trailer from the heavy duty truck and Tommy drove fifty feet away and parked it so the back end faced the wing.

The winch was at the end of the truck and a launch control station was located behind it facing the winch. Tommy hopped out of the truck and released the clutch on the winch flywheel. She pulled the end of the CCN cable that was fastened to two large swivel balls at the end of a "Y" connection line to the wing and connected them to the clamp tie points on the undercarriage. The two men in the meanwhile had released the wing from its tie down straps on the trailer.

Stepping back from the wing Tommy looked around, "I wonder where Sandy is? I told her lift off was at seven sharp. The FAA is only giving us a three hour window to test the wing."

Bud shrugged his shoulders, "Maybe she's at the tower with Patches. I'm sure she doesn't want to miss this."

Tommy clicked open her wrist phone and speed dialed the tower.

"Patches here, Tommy."

"Is Sandy there?"

"She was, Tommy. She just left, and told me that she'll be back in time to watch the test flight."

"Do you know where she went, Patches?"

"Nope, but she didn't leave the building. I've had seen her if she did."

"Thanks, Patches. Lift off is still set for seven so get final clearance from the FAA at five of and let us know."

"Will do."

Tommy looked at her watch. "Come on guys. Let's get up on the truck and fire up the control systems."

From her position on the truck Tommy admired the look of the wing. It was all black and gray except for the engine cowlings that were bright yellow.

Production ones would be made completely from black carbon fiber. The blades were white with red tips. The overall length of the wing ended up at thirty-two feet and the engine cowlings had a six foot cross section.

The radio control electronics and computer guidance systems were in the teardrop shaped blister on the wing top while the generators control units and nano-batteries were in the aerodynamic undercarriage. The tether link ran through the sides of the undercarriage and was intergraded into the wing framework. It was all just as Tommy had designed it. Nothing had to be changed.

Tommy's phone rang, "Time, and wave at Sandy," was all Patches said. Tommy hit a start clock, and looked over to the air traffic control tower. Sandy was standing there with a high-definition camcorder. She waved at Tommy and went back to recording the take-off of Tommy's generator wing.

At one minute before launch Tommy stepped back from the control board.

"Uncle Hank, this baby is yours; you built it, now you fly it!" He took her place at the controls with a big grin on his face.

At the five second mark he hit the electric motors start up switch.

"Three, two, one and lift off!" he touched the hold down release button.

Motor/generators spinning, the craft shot into the air. The cable sang as it unreeled from the winch.

He provided a play-by-play description over the next five minutes. "Five hundred feet and climbing, one thousand, fifteen hundred," he sang out. "Closing in on three thousand feet... Mark! Transition commencing. Horizontal flight established, motor off, cable locked down. Tension on tether building, hover mode established," he sighed in relief—the wing was flying!

"Now, to see if it would generate electricity! Flipping motor polarity, releasing brakes." He watched the power output meters from each generator. "Power going up," he looked at the wind gauge, "wind speed over the wing at eighteen miles per hour... power leveling off... steady at 55 kilowatts per generator! We did it, Tommy!"

He was so pleased he hugged everyone. Bud even hugged him back in all the excitement. Tommy's phone buzzed again. "Well," asked Patches, "how'd she do?"

"Oh, Patches, It's just great! The wing is providing enough power to run fifty houses. Wait till you see what my super wing will do!" she replied with glee.

## Chapter Eight: Hide And Seek

A couple of hours later all the arrangements with the FAA were complete. They had a twelve hour window to fly tomorrow starting at noon. Then if all went well they could fly it for twenty-four hours. After an inspection and flight demonstration with FAA officials, they could set it up for a two month trial run at the Shopton women's shelter and food bank and kitchen out by Lake Copland. It had been Mrs. Swift's favorite charity and Sandy knew they could certainly use the free electricity.

This was an unheard of speed for the government to start to approve a new power generating system. Tommy was flying, her mind floating on air. She felt as if she was in two places at once, on the ground and in the clouds.

Then it hit her. She froze, eyes wide with astonishment. Professor Albert's formulas and notes. "Yes!" she screamed, "that's it!" and she danced and twirled around her lab. As she turned and spun she hit something. It went, "Oomph!" and a crashing sound could be heard and a stool fell over. "Darn!" was heard next and then what sounded like footsteps running out the door accompanied by a final, "Ouch!" of pain.

Tommy hit the new security alarm now built into her phone bracelet; part of the new upgrades being implemented by Hardin Ames and his security force. She then called Sandy and Bud and told them to get to the shed fast!

Meanwhile Ames and his three new helpers showed up. "Mr. Ames, you won't believe this but there was an invisible intruder here. I bumped into him and knocked him down about there." She pointed at the floor. There were too many marks and scratches to see anything. "And he turned over that stool as he fell. I heard him say 'Darn!' where he went down. Next I heard his footsteps running out the door."

Tommy walked over to the door frame, "Look!" she exclaimed, "there's blood and skin on that protruding nail. I heard an 'ouch' sound when he ran out. He must have grabbed the door frame as he left."

"Don't touch it, Tommy," warned Ames. "We'll need to get that to a forensic lab for a DNA breakdown and a possible match up." He waved one of his men over and he opened his forensic collection kit and went to work.

Bud and Sandy were standing outside listening to everything that Tommy said. "Oh, my!" Sandy blurted out as she covered her mouth with her hand.

"What is it Sandy?" Tommy asked. "And if it's about ghosts, I think we better have a round table discussion with everyone there!"

"It is Tommy. Have you seen him too?" Only a nod was her response.

\* \* \*

They all gathered in the conference room on the second floor of the administration building. There were six of them. The three Swift's, Hank Avery, Bud Kenworth and Hardin Ames.

Five of them were staring at a large, blurry, black and white photo that Sandy had brought with her. Ames was standing and questioning Sandy about it.

"You said you took this months ago?"

"Yes, sir." She felt like a kid being questioned by a teacher. "About a month after Tommy came to us from England."

"And you didn't tell anyone?"

"No, sir."

"Why not?" his voice was cold.

"Would you?" she questioned back. "It looks so fake! Like a double exposure. But it's real!" She again started her story.

"As I said, one night I was working late trying to get the company's books in order and I needed some old records that were still in boxes in the storage room on the first floor. I went down to get them and the storage room lights were on. I could see the light under the door, but when I tried the door it was locked. As I put the key in the lock the lights went out. I figured we had an intruder and since there was no one else around I decided to handle it myself."

She shuddered before continuing. "But first I took my brand new bracelet phone and turned it on to photo mode and charged the flash. Then, I threw open the door and took a picture. I thought if I could blind the thief I could take him out." Sandy laughed at that memory, "And when I looked, to my surprise there was no one there! It was a week or two later that I actually looked at the photo," she said as she stared at the picture that showed a black window set into the outside wall. An outside spot light appeared in the left hand top corner as a white blob.

In the window was a rectangular block of black. It floated within the window frame, recessed a couple of inches all the way around. And in that blackness was a young man walking away as if in a tunnel.

He was looking back and had a smile on his face. His hair was short, like an old fashioned crew cut. You could tell it was light in color, blond. Tall looking and lean, his face was too grainy to see most of his features. But Sandy knew who it was. Uncle Hank and Mr. Swift refused to believe it.

Tom Jr. was in that photo!

Tommy cleared her throat, "I've seen him too. At Bud's hanger one day while I was helping out on the plane. Do you remember, Bud?"

"Yes, Tommy, I remember it quite well. I never saw him but you were out of

sorts the rest of that day.”

“That is why I’ve asked for this meeting. If Sandy saw him and I saw him, and if that unseen visitor was the same person, we’re in a lot of trouble!”

“Missy, I don’t believe in ghosts. I know that no one on this Earth has that type a cloaking ability and ghosts don’t leave blood!” Uncle Hank exclaimed.

Only Tommy seemed to grasp the importance of part of his exclamation. “And, Uncle Hank, you hit it right on the head. This is beyond our present abilities. But it’s not beyond someone’s!”

“Hey, guys,” spoke up Ames, “before we all go off half cocked there’s one bit of information that I’ve been holding back.” He instantly grabbed everyone’s attention.

“Scotland Yard has found a connection between Sergey Levenkov and the Professor. Tommy, do you remember Professor Albert’s last student he mentored before he retired?”

“Well... it was after I left the university... a foreign exchange student... Russian, I think.”

“Russian is right,” retorted Ames. “Does the name Peter Levenkov ring a bell?”

“Darn, I knew I heard Levenkov’s name somewhere before! I just couldn’t place it. Is it Sergey’s son?”

“Close, but no, it’s his brother Kirill’s son. A real genius from what we can find out about him. He never made friends, so it’s really hard to learn what kind of person he is.”

Ames looked at each of them before continuing.

“From what information that’s available it seems that he went from one school to another, always latching onto the most prominent scientist at that school, impressing them with his brilliance. He would stay for a semester or two and then transfer out.”

His gaze settled on Tommy. “So, does he sound like the type of person that could be behind this?”

Tommy thought about it for a moment before answering, “I still stand with what Uncle Hank said about it not being feasible at this time. But if Peter Levenkov found out about what Professor Albert theories were and/or helped the Professor with them or stole them from him... well that could cause trouble. Like all new groundbreaking discoveries there is both a good and a bad side to it. It depends on whose hands the information falls into.”

“But, Hardin,” injected Mr. Swift, “if he had stolen the theories from the Professor, why would Sergey go back there? No one knew about either of them being involved until the murder.”

“You’re right, Mr. Swift,” answered Ames. “But you’ve forgotten that he

told Tommy himself that he needed the hidden equations. So that means that Peter didn't get them, or get them all. Something was missing and when Sergey went to get it from the Professor, they must have scuffled and Albert was accidentally killed."

"The only question now," he turned to Tommy, "is what did the Professor discover?"

Tommy looked at all of them individually, trying to find the best way to explain what she herself had a hard time wrapping her mind around. "Do you want the quick and dirty or the more scientific explanation?"

"Please, Tommy," implored Bud, "the quick and dirty."

"You asked for it, Bud. How about a way to transmit any energy force from simple electricity, light, up to any electromagnetic energy and even gravity waves from here to anywhere else instantly."

"Gravity, Tommy?" Mr. Swift asked. "We don't even know what gravity is, never mind controlling it."

"Look, the only thing I know is that Professor Albert postulated a sixteen dimensional universe instead of four. We know the basic four, length, width, height, and time. Gravity is assumed to be the fifth. We also assume that both time and gravity are leakage from the other remaining dimensions. That is why there is no physical form present for them."

Bud and Sandy looked from Tommy to Mr. Swift. When he gave them a small shrug and shake of his head, they turned back to Tommy. Uncle Hank's eyes were narrowed in thought, and Hardin Ames was watching them all, saying nothing. This was beyond his areas of expertise.

"We live in three dimensions. Time we sense but only in one direction and gravity only exists after a certain size or mass is achieved. In quantum physics, particles are not affected by gravity or time. That is why light is both a wave and a particle and that no two electrons can occupy the same quantum state."

"If that's the easy, Tommy," quipped Bud, "I hate to hear the high brow one. So does that give us the man in the window that's in the picture that Sandy took?"

"Yes it does, but how it does is another matter all together. I'd hate to name the 'who' before I know the 'how.' I can tell you that I absolutely need to understand this, but that it may be both beyond my time and ability. I'll be lucky to just transmit energy from one place to another. Let's get that ball rolling first. Then we can add more balls and learn to juggle them together."