TOM SWIFT

And The

HoverCity

BY

Victor Appleton II

Made in The United States of America

THE NEW TOM SWIFT INVENTION SERIES

Tom Swift and the HoverCity

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Tom Swift is gaining a reputation for unique solutions to the problems of our world. First he tackled feeding millions by creating his incredible sunken growing domes and now he is being asked for an encore.

It is not just another spot to grow food on, it is something huge cities need desperately… room. Room to spread out. Room to grow. Room to give city-bound people a sense of outdoors around them and not just in narrow parks.

Why not just cut down on moving into places like New York City or Chicago? Because politicians love two things: getting re-elected and bringing in tax dollars.

While Tom—and many others—wish they would spend less time on the first and figure ways to spend less, the truth is this is a proof-of-concept project that is fully-funded (by a man who wishes to remain in the background) only to prove viability and not to get him or Swift Enterprises involved in building a bunch of full-size cities in the clouds.

Troubles begin when an old enemy, long thought to have died, reappears to torment the inventor and seemingly trying to destroy anything he may come up with.

This book is dedicated to countless science fiction stories, even a Star Trek® episode (the original series) all pointing to cities being built and magically floated into the skies where the rich, fat, dumb and happy people in their lofty abodes while those below them toil and die keeping them up there. Sometimes those slave workers rebel and their masters perish. Personally, I liked Douglas Adams' solution: Put all those useless people on spaceships and send them on a one-way journey that will end in them crashing into an unpopulated planet.

Mankind had, at more than one time, come up with fanciful solutions to overpopulation on the ground, and the flying city idea was born. **CHAPTER 7**

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TABLE OF CONTENTS

AUTHOR'S NOTE

We did it! We reached for the stars and made it—several times—and into the depths of the oceans of the world—more than twice—throughout our solar system and even beyond and still Tom Swift keeps going and going like some sort of battery-propelled rabbit.

His last few adventures have put him in harm's way quite a bit. This time around he has a simple little project to build a scale model of something that may be impossible. What could go wrong? As if someone would conceive of attacking our hero while he works on it!

Well this is the twenty-fifth book in the series and, the mythical sky beings willing and if the ever-damaging global warming don't cause the creeks to rise more than 540 feet thus inundating my home's ground floor, there will be a few more! Yes, I'm now going for thirty!

Why? Ooooooooh, you'd have to ask *that* question! I suppose the answer is simple to say and difficult to understand. I'll give it a try.

Some people want others to notice them and they become actors or dye their hair orange, or if they are inherently evil, the become politicians. And they bang on about whatever they think will keep them visible and in power and in money. Some people love to just speak and they become storytellers, after dinner speakers, actors, politicians, or one of "those people" you try to avoid at parties.

Then there are those of us who just want to experience the pure joy of putting words out there for others to enjoy at their leisure. Perhaps they enjoy them enough they introduce others to them. Perhaps not, but that is the roll of the dice we authors take every day. Some worry, sweat, experience heart palpitations, or other infirmities over what they are (supposed to be) writing, and some—like me—just love the act of seeing thoughts come together as a story that can be told in the mind and heart of anyone picking up the book. Also, I am *not a politician!*

Tom Swift and the HoverCity

FOREWORD I

Many, many, many (did I mention it is *many*?) people of the authoring sort, and the scientific sort and even the futurist sort, have stated in many—there's that word again—ways that at some time mankind will use up all the land we've been allotted on this planet and will either have to scoot out to nearby Mars or Venus (Burroughs and Heinlein, you got that one *really* wrong!) or into the deep space unknown and form new population groups and then we'll probably start ruining that land as well.

Some point to Mars as our salvation, but I believe the many things to overcome will mean that isn't going to happen. For one, we can't plan on having the necessary fuel around to put thousands or even a million of us heading out that way. So, likely is not going to happen unless someone invents the repelatron!

Some say the answer is in the skies over our very heads. I look up and see many things, but just like the jet backpacks we were promised would be commonplace by the 1980s, I see no cities in the sky. I do see us ruining the land down here and hope that Tom Swift's concepts might someday come to our rescue.

In preparing to write this book, your humble author attempted to provide some things that are feasible and to avoid some of the more fanciful ideas *floating* (really sorry about that pun) out there regarding such endeavors. There is a bit of the dreamer in me that made it into this story so if I missed the mark, I can only apologize and suggest that everyone rush out and take full advantage of the floating cities up there today that managed to "get it right!"

And, for those who were hoping for a longer Foreword, just turn the page and get on with the second one and then reading the story.

Or, read all of these written-just-to-fill-space words. Twice, even.

Victor Appleton II

FOREWORD II

Nobody like a smart-as—*aleck*. And, I have been one of those. When this new series began about nine plus years ago I thought, "Well, interesting double story lines but I can't see how this one author will manage to get more than maybe three or four novels written before taking off for other subjects more interesting, and more rewarding (financially?) than writing books about Tom Swift.

I even told a few people I know, "I'll get tired of it all, just you wait and see."

Famous last words and all that, I now eat them, gladly, and self-congratulate this wordsmith on hitting the quarter century mark. And, this time it is something I could never have conceived earlier on. Wow!

And, that doesn't even count the nearly 50 other books written in that space of time, which hardly seems possible unless I can travel in time.....?

There have been imaginative versions of floating cities or cities in the sky for a couple centuries. Famous science fiction stories and television programs have given us numerous variations. The original Star Trek series had one, *The Cloud Minders*, and even old *Flash Gordon* had the Hawkmen's Sky City.

Do an Internet search using "sky city in science fiction" and you will find more images than you can imagine.

Some are Utopian; some are post apocalyptic; others are beautiful but would be ridiculous to attempt. Then, along comes Tom Swift and with only a, "Can you do something about this?" request, and he just goes ahead and digs in.

That is one of the joys of Tom Swift.

I am so glad to see that joy carries on even if (spoiler alert?) something bad will eventually happen. It generally does.

Sigh.

Thomas Hudson

CHAPTER 1 /
HELPING DAD WITH SOME CHORES

TOM SWIFT had turned twenty-eight a few months earlier and he attempted to barely notice the upcoming celebration that went on around him. That is mainly because there was not going to be much of one. At his request only a small dinner with his wife, Bashalli, their two young children, Bart and Mary, and…

His brother-in-law and *his* wife, who also happened to be Tom's sister.

His parents, Damon and Anne Swift.

His in-laws and another brother-in-law were there.

About nine-hundred close and personal friends and fellow workers at Swift Enterprises, the four-mile-square industrial and scientific complex situated outside of Shopton in the upper lake area of New York, just happened to drop by for the party.

In other words, Tom's hoped for small party turned into a major shindig.

Enterprises' personnel truly liked their young boss and his father, Damon, who they thought of as the big boss. They loved working for and with them and appreciated how they were treated… as valued assets for the entire company and not mere wage earners.

Damon had struggled to build the older Swift Company from its near catastrophic failure at his own father's hands into what had become the Construction Company of today, Swift Enterprises, the Citadel nuclear research facility out in New Mexico, Fearing Island in the Atlantic Ocean off the coast of Georgia, the Swift MotorCar Company sitting less than a mile away from Enterprises, and not one but two space stations.

And so, when Tom said he really didn't want to make a big deal of his birthday, and his father could see the young man only half meant it, he only arranged for about a quarter of the employees to attend a giant party held inside the soon-to-be seventh habitat dome destined for the colony on Mars—also a Swift project—that was going to be test-inflated anyway in the space between the main building cluster and the northeast set of hangars and construction buildings inside the Enterprises company walls. So, why not use it?

As everyone naturally assumed, the company's chief cook and executive chef, Chow Winkler, put on one heck of a spread with no

fewer than twelve different main course offerings, an equal number of tasty side dishes, seven types of salad including the birthday boy's favorite—a potato salad made from five kinds of potatoes including sweet potatoes—and enough desserts to cover twenty tables.

In all it had been, in the words of more than anyone could count, the best darned party EVER!

Even though this was far beyond what he'd hoped for, Tom had to sit there and smile at everything. People wanted to come by and shake his hand and tell him how great they thought he was and hoped he was having a great time and… on and on.

At home that evening as they prepared for bed, his wife, Bashalli, put her arms around him giving him a very strong hug, and told him how much in love she was with the man she'd known now for ten years.

"From the moment Sandy talked Bud into dragging you into my brother's bakery and I looked into your blue eyes, I have been in love with you! I sometimes regret it took me so long to tell you."

Tom blushed even though he ought to be used to this by now. They'd been together nearly that entire decade and married what seemed like most of them.

"Even when I goof and go on some sort of dangerous mission, like the Mars and Venus projects?" He was afraid she might now get sullen. Their marriage had been sorely tried when he decided to go to Venus and risk his life picking up a fallen scientific probe despite her telling him it would break her heart and she might leave.

He'd come home, they had celebrated his being home, and they had been happy since.

"Tom Swift. I might have been mostly at fault a couple months ago. Your sister told me that you and Bud are still the same guys we both fell for and it is the two of us who changed. So, I know I've apologized any number of times and I truly meant them. I love you, unreservedly and only hope you can stay near me while the children grow up."

They had two kids… a boy of five, named Bart—after his great, great, great grandfather Barton Swift—and a girl a month shy of two, Mary named in honor of the wife of the first Tom Swift, Barton's son. Bart was destined to follow his father and grandfather into something either inventive or scientific. He was starting first grade nearly a full year early and the teachers at Shopton Elementary—recalling how they never could stay ahead of his father Tom—were preparing to render advanced studies for whatever the

boy wanted or needed.

Mary was still very much a young girl. She liked dolls, stuffed animals, being fussed over by her two grandmothers, and candy. Her appetite and food choices now she was on solid foods was so limited it bothered her mother.

"She just will not eat anything other than cheesy things and burger patties with no bun, no condiments… nothing! If she doesn't get what she wants she will go without food and not complain. And, she loves corn but I can't get her to even pick up a cob; it needs to be from a frozen bag or box, not even canned, and only whole kernels, smothered with butter. She won't even try creamed corn," Bashalli complained to her mother-in-law, Anne Swift one afternoon. She hoped Anne might give her good advice on the matter.

"Sorry to disappoint you, Bashi, but Sandy was just as bad. It wasn't until she discovered Bud and all the incredible things boys and girls get up to, and found out *he* loves just about all foods, that she began trying new things. And," she now laughed, "finding most of them tasted darned good to her."

"So, I have to wait until Mary gets a boyfriend *plus* he needs to be pre-screened for his desired to eat a lot of different foods?"

Anne nodded. "Or, I hear that a lot of mothers, and even fathers, see success by getting the child involved in the grocery store trips and picking out foods, and then teaching them cooking skills appropriate for their age."

As the ladies were having coffee and talking, Tom was sitting in the shared office at Enterprises he and Damon occupied. They were discussing Enterprises' new partial ownership of an aviation company in British Columbia.

"Robert Whitcomb is a great man and has come out of retirement to handle getting the company back on its feet," Damon stated, "but he really would rather retire. Only he won't if that means the company flounders or goes broke."

Tom nodded. It had been the two Swifts who decided to offer Robert a partial buyout so he might have operating capital and keep the Canadian "administrators" from coming in and closing the company doors after his daughter nearly killed him… and Tom!

"So, we own twenty percent of his company, and I hear he is fully back in command, but…" and Damon shrugged. "For how long?"

Whitcomb had been kidnapped by his hate-filled, duplicitous daughter, Octavia, and her husband—a man wanted in South America for a vicious murder—and she had taken control just prior

to the X-Prize contest for an around-the-world solar-powered flight. During that flight she had attempted to kill Tom, and his copilot Bud, more than once.

Her plane was last seen to spiral into the Pacific Ocean and it was assumed she and her husband/copilot perished.

Unfortunately, the man Robert had chosen to run the company after his actual retirement was not the right sort of person to helm such a business.

Now, Robert was back, his company on semi-solid footing getting better by the week, and the Swifts had to decide what to do about their investment.

"I suppose we just let him go on building his customer base and when the time is right, ask for some sort of payback, or buyout," Damon suggested.

Tom agreed but silently wondered if having a production facility in Canada, where many of that nation's import regulations and tariffs could be avoided legally, might not be a bad thing.

"Do we know when Robert wants to step back down? And, could we put one of our own people in there to run things until Robert finds the man or woman he really needs?" Tom asked.

"We might, but I'm not sure who we could spare. He or she would need to be very proficient in aircraft design along with running a manufacturing company. The only person I know who fits that is Jake Aturian, and we need him at the Construction Company."

They decided to table the conversation for a few days while both tried to think of someone they might suggest.

"So, in the meantime," Damon started a new subject, "I wondered if you have time to assist in a few, well, housekeeping chores around here and also over at the MotorCar Company?"

Tom nodded. He had nothing to take up much of his workday and looked forward to some short-term work.

"Name it."

"Okay. First off, Charlie Van deGroot at the car company tells me he needs some design tweaks to the third in the line of cars they are going into production with next month. It is to be our very first all-electric drive with a very small combustion engine and generator to extend the battery range. As it stands, it can go about three-hundred miles on stored electricity only, and that extends to five-hundred running the generator when needed."

Tom looked puzzled. He had not been in on the design of that system and knew only a little about it. “How often does the generator run?”

His father smiled. “The most efficient combination I found was battery power until it gets to fifty percent charge, generator until the battery gets back to eighty percent, and then to fifty and back to eighty and so on until the gasoline and electricity are exhausted.”

Tom promised to drive over to the car manufacturing plant in the next hour.

“Thank you. I’m sure you can have that well over six-hundred miles total in no time!”

“Anything else?” Tom asked.

“Only that I will need some help tomorrow and the day after working with Arv Hanson on several models that are not represented on our shelves.” He pointed to the eye-height shelves running more than three-quarters of the way around the office.

On them were models of both inventors’ creations. For Tom, everything was up-to-date except for the models of his rebuilt *Crab*, known in the end as *Retriever One,* the device that had assisted in raising the Venus probe and also was vital is saving Tom’s life during that rescue mission, along with his *InvulnoSuit*.

“I see that your take on the HyperLoop car and your air ferry from the New Zealand project are not there… oh, wait! Neither are the Aussie robot cowboy that snake nurse you made and the polar bear robot. Those will make a great addition for sure. What else is missing?”

“Well, I’d rather like to have a model, non-functioning, of that strange alien probe we found when we had to go out past the Moon and rescue that HyperLoop car, and then there is the SEJ.” He meant the Surface Effect Jet he’d created while Tom was involved in the Venus rescue, a surface-skimming aircraft used to scare off some Russian fast attack ships scooting around Norway that turned out to not be manned by Russians at all!

“I’d love to work with Arv to get those done, Dad. Do you want the cowboy to be able to walk or just articulate the limbs for posing?”

Damon chuckled. “In my wildest dreams I’d love to have it able to walk, but will gladly accept the moveable limbs version.”

When Tom left for the car company, he drove around the main building cluster and entered the secure tunnel that would eventually

bring him up inside the car company grounds. It required a valid TeleVoc pin to get the heavy gates at both ends to raise, but they smoothly slid up on his approach down the Enterprises' side ramp. Three minutes later he drove under the opposite gate and up to the parking lot of the Swift MotorCar Company.

The company manager, Charles Van deGroot, met him and they shook hands.

"Great to see you, Tom. I know it has only been three days since the last managers' meeting, but I hear you might be able to help eke out some more miles from our new car. Let me show you the test model and then we can go to my office."

The pre-production model was a beautiful automobile. It was a sleek four door designed to carry five adults in comfort, or two adults and up to four children under about eighty pounds.

Charlie showed Tom how easy it was for the driver to press a button on the all-electronic dash and switch from three seats and restraints to four in back as seat indentations changed, the middle harness points moved and the new set came out from nearly hidden recesses.

The same control could be had to provide for child safety seat hold-down points that were self-tightening when used with most baby and young child seats on the market.

This model was bright blue and, as with the other Swift models, had a body made from a nearly indestructible polymer that resisted scratches, dents and paint chips.

It was when Tom opened the hood he received his first surprise.

"No engine, I see," he stated turning to his host.

"No, it is in the back along with the generator. And, the batteries run in twelve sheets under the floors. They are based on your super flat batteries and can provide the same level of power other manufacturers give but in half the weight they offer! Let's look in what should be the trunk."

Tom closed the front but had already noted there was sufficient room in the front storage area to fit at least two large suitcases and even a computer bag or three.

The back hatch opened to reveal another space at the very back to hold another two suitcases standing upright. Or, five grocery bags. In front of that space and separated by what the inventor believed was a very thin firewall, was the main electrical drive motor pair—one for each rear wheel—along with a compact package of a

gasoline engine and generator fitting in between.

"What's the engine size?" Tom inquired.

"It is a Y-3 of about point-eight liters. We wanted, initially, to use a Y-2 of point-six, but it just could not turn the generator enough to play catch-up."

Tom's Y-series gas and diesel engines were basically a trio of multi-cylinder engines inside one crankcase arranged like an upside-down letter Y. Because at least one cylinder was in the power stroke at any given time, they had enormous torque and did not require a flywheel to keep things turning smoothly.

This car had a total of nine cylinders, three per set. For the engine displacement they used pistons only slightly larger than a typical chainsaw.

"I'm surprised the Y-2 couldn't give the torque and power to turn the generator. I'm going to need to see the specs, please."

"Absolutely, Tom. And, just to let you know, we had only enough room left over for a three-gallon gas tank. I would love to have five or six, but not unless we steal cargo space or do a partial redesign."

The young inventor smiled and shook his head. "Let's not even think along those lines, Charlie. I'll give this a good study and see what I might come up with in the next couple days. Oh," he looked slightly startled at what he just remembered and a little ashamed, "I may need to put this off by two days for something else Dad has me on. But, it'll be as soon as I can."

Charlie nodded. "Fine. I really only need to lock down things by this time a week from today if we are to start on schedule and that assumes, of course, no structural changes to the frame or body."

"I promise those will be the very last things I look at."

Tom's work with Arv was a lot like his involvement in his own scale models and working prototypes. In other words, as soon as Arv had access to the CAD plans and the desires for functionality or a static model, he just got to work on things.

He had five 3D printers of various types in his large workroom and the newest one turned out parts that were so smooth they required zero trimming or sanding, Anything up to three-feet in height and two-feet in width could be turned out in a single piece.

"Any particular order for these?" he asked.

Tom had to shake his head. "I think Dad would like a flashy piece

first, so how about the robot cowboy? Oh, and he said he'd take a posable model, but I'd love to give him one with a remote that can walk around. Nothing fancy."

Arv looked serious for a second as he said, "Of course. Nothing fancy except it needs to walk around and respond to a few commands" He grinned. "Give me three days for that. How about if I also build the HyperLoop car at the same time. I'm guessing it only needs a representative open-sided tube to sit inside. Want it to hover on magnets?"

Tom grinned. "Love it!"

When he left, Arv was busy calling up the designs and programming his printers to get to work.

Back at his desk, Tom opened the file Charlie had given him with all the design specifications for the car.

There were a few things he could immediately see he wanted to avoid tinkering with. One was the battery, which quite literally stretched from end-to-end and side-to-side of all available space under the floor and between that and the bottom pan of the car.

He smiled at seeing a special layer sitting under the battery that could be set to cool the pack if it got warm, and warm it for most efficient electricity provisions. That could make selling these cars into very hot or very cold locations easy as it used almost none of the available battery power.

Tom was puzzled about the lack of turning power the Y-2 engine had been capable of providing. He'd proven the power by placing one in a nineteen-hundred pound mini car—basically a two-seat "around town" coupe—and running it at speeds up to seventy-two miles per hour.

He realized, as he looked at the clock that was approaching six, he had to go home. Tomorrow he would investigate both the engine and the generator separately and in combination. Perhaps, he thought as he stood up to leave, there was something in either the combination or in the application of the power from the engine into the generator.

But, that would have to wait until the next day or even the day after that, Friday.

As he opened the door Tom was startled to see his father reaching for the knob.

"Well, hello, Son. Heading home before six? Bashalli should celebrate that. How was your time over with Charlie, if I can ask and

not delay you more than a minute?"

"Good. I think I have a notion I can get that extra mileage you hope for but it could take a change in one or two components that he has not begun making, and also something I might do in the programming. Uhh, will you be insulted if I change how you have the engine and generator running to supply power to the batteries?"

Damon laughed out loud. "Oh, heavens. Not in the slightest, Tom. Not the slightest. You go home, kiss your wife and my grandchildren for me, and have a nice, non-work evening. See you tomorrow."

Saying that, Damon practically shoved Tom out the office door and closed it behind the young man.

CHAPTER 2 /

A SMALL MATTER

TOM SAT looking at the woman he'd married who was holding their second child, their daughter Mary, in her lap explaining how to sound out some of the letters of the alphabet. To his left sat Bart, their son and first born, who was looking at a long screen of spacecraft illustrations and actual photos on a computer. He was shaking his head.

"Dadda? Why can't people just make pictures of things that will work?"

It made Tom laugh, which made Bart join in and giggle.

"That, Bart, is why there are people who just dream of things and other people like your grandpa and even me who make things and always ensure they *do* work. I hope, someday, that if you want, you can join us and come up with incredible things that *work*. Would you like that?"

Bart's eyes went wide at the prospect and he nodded. "Yep!" He waited a few seconds before adding, "When?"

He looked so serious that Tom stopped reading the newspaper and turned to his son telling him, and not for the first time, about school and how he needed to get through that first. He did not say that he had started inventing things as early as age nine, nor did he tell Bart that he'd graduated from high school more than four years early because they just didn't have anything more to teach him, and that Shopton did not have a college back then so he pretty much had been working at Enterprises since he was that age.

Bart listened, as he always did, with a sly grin on his face as if he were already planning on how to get through this school thing as fast as possible. He might at that.

After all, Bart had been reading at a first grade level at age three and now he could tackle books meant for third and even fourth graders and only need to ask what certain words mean a few times. He was mastering the idea of context.

"When does school start, Dadda?"

"Well, they tell your mom and me that you can start as soon as summer classes begin, in about four months. Then, they will see how you do and either enter you in the first grade, or if you do really

well, you might just go straight to the second grade. The important thing is that you not only learn what is in the books, you learn how to play with other kids and be polite and a good little boy."

Bart looked into his father's eyes. "I'll be the best good boy ever!"

Bashalli had looked over from her alphabet block coloring book she was working on with Mary and was stifling a laugh. She knew how advanced Bart was, just like his father, and how Mary was going to follow Auntie Sandy and go through all twelve years and perhaps college after that. She secretly hoped Mary would be cute, but not so darned pretty as Sandy had been which got in the way of her taking herself or her studies seriously.

With a sudden concerned look at her mother, Mary pointed to Bashalli's stomach. "Mamma, baby?" she asked.

Tears cascaded down the woman's cheeks and she nodded. "Yes, Mary, momma is going to have another baby." It was something she and Tom had found out about only a week earlier. She wondered how the young girl could have figured it out.

Mary seemed to consider this for a moment then shrugged as if it did not concern her and she went back to coloring the letter **G**.

Bashalli looked over to Tom who shrugged at her as well. "Perhaps once you begin to show she'll take more of an interest."

Tom's time at the MotorCar Company and with the specs for the new sedan was going to pay off. In fact, it was going to pave the way to return to the idea of the more fuel-efficient Y-2 engine, give the car an overall mileage rating of six-hundred-plus miles per full charge and full gasoline tank, and increase weight of the overall car by some forty pounds. That seemed a small change, but would affect mileage.

Positively!

Sitting with the car company manager, Tom was detailing his proposed changes.

"My research says that fewer than thirty percent of car owners with the so-called sun-roofs—those non-retracting darkened windows on roofs that you can, and most do, cover to keep glare down inside—ever use them or use them more than a couple times a year. My first proposal is to do away with that in this model and add a special solar panel up there. Now, we have both traditional and non-traditional products thanks to both our Solar Materials group as well as my cousin, Tommy, and her business partner, Betty, in

England."

Charlie looked as if he had a question, so Tom stopped and waited for it.

"Which one is: A, the most efficient and; B, the least expensive to install?"

Tom nodded; he'd anticipated both questions and had come with prepared with some research.

"Well, as to your A, the most efficient during the hottest part of the day is the solar cloth from Thomasina Swift's company. But, the drawback is it requires the sun be at least twenty degrees up from the horizon to start really making power. Over a full day of driving it would make sixty-five kilowatts of power."

"And, the other type?"

"A more traditional solar panel but made from our own special materials starts producing power within about five-minutes of sun up on a clear day and fifteen minutes on cloudy days. Overall, in the same day the cloth approach makes its power, these panels come in at about sixty-one kilowatts. Less, yes, but not appreciably. And, here is the great thing and that is your B question on costs.

"Tommy Swift's solar cloth approach would run each car an additional three-hundred-sixty-two dollars and a few pennies. The Swift solar panel would be eighty-nine-dollars, ninety cents."

Charlie let out an appreciative whistle.

"What if some people truly cannot do without that sun roof?"

Tom considered things a minute before answering. "They won't be able to have both, at least not in one car. If you can swing it, offer two models. One with the tempered glass overhead and no solar panel with the reduced range, and the other with the solar panel. The thing is, that panel is going to give the car enough charge during the day to run it about an extra hundred miles."

"And, as a sales point," Charlie offered, "the solar panel versions could be set to keep the battery pack charged when the car is parked in a sunny place for multiple days. Like at airports. Drive, get there with fifty percent charge and come back three days later to a fully charged car!"

Tom smiled. "My thinking, exactly."

They talked about the deliverability of the panels from the Solar Materials team.

"I've talked to Jim who assures me they can provide them

preformed to the exact curve of the roof making installation a breeze; there ought to be a single connector in corner and it can be adhered with a few dots of silicon sealant. As for quantities, they say they can have a special line and molding equipment ready in a week, then will produce ninety-six of them in an eight-hour shift. If you need more they can bring on a couple new people—but I have to tell you they prefer working as the small team they've always been—and double that number. Or, if you give them money they can build a second line and double their single shift output."

Charlie Van deGroot laughed. "Dear me. I was thinking we'd need about eighty a day once we get into full production. What they can give me means I can double my output without making anybody over there break a sweat. I'll take it!"

The inventor was about to leave when he remembered about the Y-2 versus Y-3 engine.

"Charlie? When you worked with the engineers over here and tried the Y-2 engine, but it didn't work, do you recall why?"

The manager could not.

"That's okay, but a small mistake crept into the design of the overall system and in an effort to get the engine to run slower, saving fuel no doubt, they did not take into consideration the engines, and especially the smaller ones, need to run slightly faster to maintain smooth power without a flywheel."

Charlie groaned and looked defeated when he asked, "Did our people set the original one too slow and the torque required by the generator needed more?"

Tom nodded. "Yeah, just a little. If they let the engine run at nine-hundred RPM instead of the lower seven-hundred it would have easily given the generator the necessary turning power. Even at that setting of just above its normal idle, it would give a fifteen percent fuel savings over the Y-3 you put in. So," and Tom handed the manager a data chip, "here are all the specs with the use of the Y-2 instead of the larger Y-3. I think this combo running at this speed gives the best overall added electricity to the total system."

When he left ten minutes later it was with the promise that the "proper" system pair would be in the test model in two days and he was invited back at that time to give it a full day test drive.

"Assuming there will be no kidnapping attempts, I'd like to bring along Bashalli and maybe take a drive over to Portland. There's a lobster place where you can still get two, pound-and-a-half lobsters, potato salad, corn biscuits and a soda all for twenty buck a head.

She and I went there two years ago and she's been after me to take her back."

"That's great, Tom. It'll be the longest test drive to date. Bud's taken it to Albany and even down to ten miles south of that city, but this will exceed that distance by at least a hundred miles."

That evening he broke the news to Bashalli. She took a look at their kids who were in the side room watching a cartoon and jumped into his arms smothering his face with kisses.

"Yes, please!" she told him when he suggested the kids might be taken to one of the grandmothers and then he and she might even make it a two-day affair.

"There is just a small matter to attend to before that," she told him. "I have a checkup with my doctor to see how well the baby is doing." She was smiling but Tom could see the strain behind it. He knew that only about a month along, this was a time when some complications might show up. If there was anything slightly off he would suggest the trip be put off even though he needed to make the promised one-day drive.

Bashalli came home from her appointment the following afternoon to find Tom sitting in their living room trying to read a magazine while Bart antagonized his little sister.

Bart stood up on seeing the woman who would not hesitate in giving him a little swat on the upper thigh if he misbehaved and smiled at her. "Hi, momma. Mary and me are playing."

"You mean to say, 'Mary and I are playing.' Isn't that right?"

"Yes, momma. I and Mary are playing." He smiled at her in a way telling her he knew better but was teasing her.

"You know, you are pretty good at writing and I ought to make you write that down a hundred times to get it into your head, but right now I'm going to close the door and I need to talk to your daddy. The two of you be quiet!"

Tom's attention was fully on his wife as she set her purse down, pulled a few strands of hair from across her face, and came over to sit, gently, down next to him.

"Everything okay?" he asked in a voice he tried to keep his nervousness from entering, with only moderate success.

She looked into his eyes very seriously and slowly shook her head back and forth two times.

"No, Tom. It is not *okay*," Her face broke into a broad smile. "Everything is amazing and incredible and wonderful and perfect!"

She moved into his arms and his lap and kissed him a long time.

"Dr. Franchetti says I am good to travel. Just like Doc Simpson told me the other day when he checked me over. Both of them agree the baby is the right size, all the signs are great and my blood tests show I'm going to get along with this one just as well as with Bart and Mary. No blood pressure troubles, unlikely I'll have gestational diabetes or any of the other temporary issues some women have. So, what time do we get my mother—who is taking the kids tomorrow with your mother picking them up there the next morning—over here to take the kids?"

They agreed a reasonable time would be around nine and they would take off for the MotorCar Company just after that.

"I figure if we get on the road by nine-thirty, we hit Portland by two, drive up to Freeport for a little shopping and some ice cream, and then get back to that lobster place out on Cape Elizabeth for a 6:45 reservation I've already made."

Everything went well the next morning with Lalisha Prandit, Bashalli's mother, coming by with her little car. The two child seats were installed in moments and hugs and kisses and admonishments to "be good!"—given mostly to Bart—and ten minutes after grandma and grandkids disappeared around the corner, Tom and Bashalli were in their sedan heading for Enterprises where he needed to grab his tablet computer, and then through the tunnel to the car company.

The car was waiting, fully fueled and charged with the addition of one piece of test equipment sitting in the rear cargo hole that would keep tabs on everything happening in the drive system during any moment the car was activated.

Although Tom thought he was being polite when he offered her the first chance to drive the new car, Bashalli refused, looking at him as if he'd asked her to eat a live worm.

"Do you want me and everybody to think you have gone insane, Tom?"

With a chuckle he went to the passenger side and held the door for her. But, to her confusion he simply walked away and did not close it. With a little shrug she began reaching for it only to have her own voice tell her to wait for the car to close and lock all doors.

She had forgotten she'd made that recording months earlier.

The door swung shut, a small click could be heard as the lock engaged, and her voice reminded her that, “The front passenger has not completed the seatbelt process.”

Tom sat there, his face a mask as he tried to not laugh at her.

Bashalli had her own little chuckle at her husband when her voice came on again. “Driver must sign into system for initial start. Please, clearly state your full name.” He did. “Please, clearly state your preferred form of address.” He told the car it was Tom. “Please press both thumbs against the silver sensor pads at the top of the steering wheel.”

This he did and was rewarded by being informed all it would take from that point on was at least one thumb on the appropriate sensor to start the car.

Tom placed his right thumb on the right sensor and the car immediately activated.

“Welcome, Tom. Have a pleasant drive. You may ask me any questions as you drive.”

“And, before we pull out you may lean over here and kiss me,” came the same voice from his right.

He did and they pulled away from Charlie and two of his people a few seconds later.

The car drove like an absolute dream. There was no indication, or even sound, when the gasoline engine came on other than a small blue symbol on the dash. It was soon joined by two numbers: the amount of fuel in the tank and; the level of electricity being sent to the battery pack.

Above that was the power numbers for the solar panel. Together, the generator and the panel were adding to the batteries at four times the rate of use.

Most of the direct route was on smaller highways, but that was just fine. The car handled curves and hills as if it was a high-powered sports car.

They stopped for a quick meal in Manchester, New Hampshire, before picking up a freeway to the Atlantic coast and then another one heading north.

The shopping town of Freeport, some twenty-five miles north of Portland, had changed in the few years since they’d been there before.

Instead of a scattered bunch of parking lots with perhaps two

hundred available spaces, there was a three-story parking structure boasting of, “More than 550 clean and wide spaces!”

Over the next two hours they went to their favorite stores, found two new ones Bashalli absolutely needed to investigate—finding four things she had to take home—and had their ice cream from a world-famous shop.

They got back to Portland about 5:30 so Tom suggested they drive around and look at the small city.

As with cities and towns all over, there were familiar places and things they both swore had never been there before. But, they needed to cut their street-by-street tour short when the car told them their next destination, their dinner place, was twenty minutes away and the current traffic conditions meant they needed to start their route!

“You sound so insistent about that,” Tom told her with a laugh.

“Both she and I do not want us to be late. I want my lobsters and I want them soon!” Then, she also laughed.

Dinner was everything they remembered and wanted it to still be. The lobsters were meaty, the butter was sweet, and the accompaniments were delicious.

Cape Elizabeth was really just a seaside bedroom community but they had reserved a room at a nearby inn overlooking—once you got past the six-hundred-foot deep field—a semi-circular beach and the Atlantic Ocean. Had it been a couple months later in the season they might have brought bathing suits, but the water was bound to be icy and the evening winds too chilly for even a walk.

They tried watching some television but soon gave up and got ready for bed.

It was so peaceful they both slept until nearly 8:15 the next morning.

The inn offered a dining room for breakfasts and dinners with a wide variety of foods, many featuring seafood. After breakfasts of more traditional eggs, bacon, nicely-griddled hash brown potatoes and fresh fruit, they packed the car, signed for the additional fees for breakfast and were offered complimentary teas or coffees to take on the road.

Bashalli made a green tea with honey while Tom opted for black coffee with a little hot cocoa powder in it.

By ten they were heading back home, both exceptionally happy they’d made the trip, and both secretly glad it had been without the

children!

On returning to Shopton, Tom took Bashalli straight home while he returned to the car company, and where he would have a short debriefing with Charlie and his key technicians. There was little to discuss that was not completely positive. The only issue he'd found was in the navigation system that had taken them in a fifteen mile detour to the freeway that morning rather than a more direct, and open, route.

It turned out to be one of the final bugs in the car. The programming defaulted to selecting wider streets and those not running through neighborhoods even if it meant driving ten miles to get to a point two miles away. The odd thing was, it was not an issue with other Swift cars, just this model.

"Well, I'd suggest dumping this nav program in favor of the old one unless you are pretty certain you can have it fixed before going to production," he told them taking his leave.

CHAPTER 3 /
"THERE'S OIL IN THEM THAT ROCKS!"

NEARLY EIGHT months earlier Tom reported to his father and the company's chief legal counsel, Jackson Rimmer, that one of his minor inventions, dubbed Deep Peek by Bud for its ability to give near photo-like images of what was underground by several hundred feet, had found two things to the north and south of Enterprises."

The first was a field of groundwater situated to the north between the northeast corner of Enterprises and the outskirts of Shopton. It was the sort of water infiltration into the soil that might liquefy—turn into a loose slurry—if there was ever an earthquake in the area. It was the same thing that had caused so much damage in the San Francisco area back in the late 1980s.

On the other side of Enterprises, specifically under and to the south of the Swift MotorCar Company, he found a rather large field of shale rocks beginning more than a hundred feet down that contained millions of barrels of oil.

It was a find that, if exploited—an oil company term meaning pumped out—would be worth nearly a billion dollars of profits the Swifts intended should be shared, in part, with both the city and the county.

The tricky part was going to be in getting rid of the ground water while maintaining the structural integrity of the soil in the water field all the while not allowing the lack of supporting petroleum to cause the shale to collapse. And, that was where one of Tom's other discoveries was going to come in very handy.

What was now being called Structural Density Gel, or SDG, could be pumped down into the areas the water was being pumped out where it would expand more than five-hundred times and set as a solid thus stabilizing the ground. It would also squeeze the water along toward an exit well making it easy to remove the liquid.

It was the clever part Tom congratulated himself about. As that water was removed, and also as the oil was made into a pump-able liquid using pressurized steam and extracted from the shale, the former groundwater mixed with a small amount of the SDG was to be pumped into the shale replacing the petroleum and holding it apart as before.

Their ability to go after the oil had been a bit in doubt as the City of Shopton was in favor of it as part of the solution to the dangerous water situation, while the county was opposed to it because they were still disagreeing with the Swifts over the building of Enterprises more that sixteen years earlier. They had tried to bluff and bluster over the use of what they considered to be important county land and lost when Shopton incorporated that land into the township and gave Damon his planning and construction permissions. It had gone as high as the Governor's desk before he told the county they'd shot themselves in the foot by refusing to perform any improvements on the land to keep their hold on it, while the city had.

Now, the county was, again, trying to hold things up even though the land on top of the oil field was mostly owned by the Swifts.

In fact, slightly greater than ninety-three percent of the discernible oil was under Swift property.

Today, Tom and Damon stood in front of the executives of the company in the large boardroom on the third floor of the Administration building in Enterprises.

Tom had just finished going over all the salient points of the finds, the solutions, and the financial results to be expected.

As he sat down several side discussions began which were allowed to go on for about a minute before Jackson Rimmer stood and rapped on the table.

He smiled at them with what Damon called, "That lawyer smile that spreads fear in the other side."

"Lady and Gentlemen. Now you have heard from Tom what we have been dealing with I am here to tell you of the legal side of things. Surely, the county has been a major sticking point, but they also tried to do an end-around that has them in deep trouble with the Federal officials responsible for any findings of petroleum or large-scale mineral deposits in this country.

"In other words, they blabbed about the oil shale to at least one oil company who raced up here last month with a rig ready to sink a well so they might claim it. The issue, from a legal standpoint, is that we had already, more than half a year earlier, laid our claim to the entire field and anything running out at least five miles from the probable end of that area." He looked at those at the table. "The other significant thing was they were trying to drill on Swift-owned property."

He again looked around the room before continuing. "A team of

Federal agents from the Department of the Interior came up, arrested the oil company people, confiscated their equipment, including personal vehicles, and filed a lawsuit against the oil company. Those people immediately gave in, agreed to a very large penalty, and apologized. But, they were adamant they had been invited in by the county.

"As of last week, the county has plea bargained with the Government of the United States to cease all opposition and to cooperate in any way they can with the holder of the claim, that being us! In other words, we can go ahead with Tom's plan. It will show our books gaining about three-quarters of a billion dollars in profits and the city of Shopton getting nearly one-hundred million dollars."

He glanced at Damon as if asking if the man were sure about this next part. The older inventor nodded.

"Swift Enterprises does not have to share *in any way* the profits with the county as part of their agreement, but Damon believes that if we do share with them, equal to the monies going to Shopton, it will go a long way toward future cooperation. I disagree, but we are going ahead with that plan."

Chow Winkler had been in the room clearing off the coffee cups and pastry dishes while most of this discussion was going on. Now, he headed downstairs to collect the dirty dishes from the large dumbwaiter across from his kitchen.

He was humming a recent tune as he wheeled the first batch into the kitchen and began getting things into the industrial dishwasher. As he finished the first load he stopped, turned to the mirror next to his refrigerator and smiled.

"Thar's oil in them that rocks!" he told himself thinking it would soon be a lot like parts of his home state of Texas. His smile stopped as he thought of the ruination of large tracts of land down there.

"Mebbe that's not such a good thing after all!" he thought with a frown.

By using a small version of his atomic earth blaster, Tom was able to sink the first eighty feet of ten wells for the removal of water and the pumping in of the replacement foam product in one day. The water exiting the farthest four southern holes would be piped around the perimeter of Enterprises, through pipes set underneath the access road surrounding the property, and then just to the east of the MotorCar Company. After that it was to go into a heater that

turned it into high-pressure steam and boiling hot water to be pumped into the very farthest three holes in the shale oil field.

The idea was to force the oil back to the north where it could be harvested into a very large storage tank that had been built next to the wall of the car company.

A series of tanker cars, on loan to the Swifts, would take the oil from there down the rail line and into Pottsville where it would be transfered into the tanker cars of a major railroad to be sent to New Jersey for refining.

Tom knew things had to go slowly so there would be no troubles in either the water or the oil fields.

Near the end of day eight things were looking successful all the way around. Not only had about five-hundred-thousand gallons of water been pumped away and replaced by a foam product that was still expanding and solidifying the ground, but about sixty percent of that volume in petroleum had been pumped up and into the interim tank and from there into the first of the tank cars.

The young inventor called a two-day halt so he could drill into the set foam to check for its condition and the amount of water that might have seeped back in.

After the first such drilling was made, he determined the state of the foam was better than stable; it was downright solid and in just about every way more stable and stronger than the wet dirt had ever been.

“It is looking very good,” he reported to his father. “I’d like permission to go ahead and start a much wider pump and move of that water. I believe there might be gaps between each foam setting if we do not go for most of the rest of this in one operation. I’m not particularly sure if that will make a difference to the soil stability, but I think we are just about ready to go for it all, water and oil.”

Damon held up a two-page report, “You probably will want to look at this.”

Taking the pages from his father, Tom perused them with a small grin breaking out on his face part way down page one. By the end of the second page he was beaming.

“Wow. Not only high grade but very low sulfur. I’d only seen a preliminary report of what we were getting up and this really says it all.” He read from the report. “The Swift field produces one of the sweetest crude oils at just 9.748% sulfurs making it one of the more important finds of this century. We classify it as Light Crude Sweet meaning it is among the top crude finds available today.”

He looked over at Damon who was sitting back in his chair, smiling. “Not bad for a chance find, huh?”

Tom nodded.

Over the following seven weeks the duel pumping operations continued. By the end of that time Tom and his teams had moved nearly three-million gallons of water and used it to get out and replace nearly two-million barrels of crude oil. At the current market price of some $1.25 a gallon it was looking good at about $375 million dollars coming in so far.

Tom and Bud took the *Sky Queen* up weekly to use the Deep Peek to check to see what was still down there. Their trip at the end of week seven required some heavy computations once they returned, but Tom believed—based on previous weeks—they had managed to get out almost half of the groundwater and nearly thirty percent of the shale oil.

“Now I’m worried we won’t have nearly enough water the fill in for the oil,” he told his wife at dinner that evening.

“Can’t you just pump out what you need from the lake,” she asked.

Tom shook his head. “What we need would make the lake level drop about thirteen inches and the Environmental Protection Agency has rules against that sort of damage. So, I’m going to have to do another round of checks all over the area. It is possible there are other groundwater areas. I really hate the thought of laying the piping for something, say, as far down as Pottsville.”

She tried to think of anything that might help, but all she came up with was to take the oil to Pottsville for transfer and pump water into the rail cars to bring back up. But, she realized that meant there actually needed to be the underground water down there.

She did mention it to Tom as they got ready for bed and he took her in his arms, kissed her and thanked her for the thought, but had to tell her, “We have to do a lot to dry out the shale oil as it is. Adding to that might be more of a problem than a solution. Don’t worry; I’ll get something figured out.”

Within the next two weeks it became obvious that both parts of the drill and pump were being incredibly productive but Tom’s fears of running out of water before he got all the oil out were coming close to reality. By as much as thirty percent of the available oil!

Again, Tom and Bud headed around the area to see what might

be found to assist. They flew all around the immediate area and found nothing. Tom increased the search area to include as far to the north as Thessaly finding nothing of any great note. Then he headed to the west of the Shopton area and found, again, not a lot other than a probable vein of silver running some mile along side the nearby freeway.

Pottsville proved to be a disappointment, as did the small community of Adirondack on the opposite side of Lake Carlopa.

"I'm beginning to believe we might be in for disappointment on this, flyboy," he told his copilot.

"Too bad you can't see any deeper."

"What?"

"Well, you can only see so deep under the surface, but what if, say, there is a lot more water under what you've already dug out? You can't see it, you've never drilled deeper than what you can see, so who's to say there isn't a bunch of water down there untapped, so to speak?"

Tom swung the giant flying craft around and headed for Enterprises. "Bud? You might have hit on something. I've got to see if you are right!"

As the current water came out in less and less quantities, Tom called around and found a well-digging company that had enough drilling pipe of the type used in his rig to get them down another five-hundred feet.

"I've heard tell you've struck oil. That right?"

"Well, we have but it is not in the same location I want to use extra drilling pipe. I'm interested in getting up the water that has seeped under parts of Shopton and even my company that could be a danger if we have an earthquake." Sensing the man probably was going to ask a sky-high price for the loan of the pipes, Tom added, "Or, I can hire your company to do the water drilling for us. Your rig, your people and you get well paid."

The man laughed. "Bet you think I'm going ta jack up the price, huh? Listen, I have a great business but all that subterranean water bothers me. I know it isn't good so here's the deal. You borrow my trailer of pipes for as many days as you need them and I'll accept a letter of thanks and a mention to the City Council about how I cooperated in this water project."

"That's it?" Tom sounded astounded. He was astounded.

“Yep. I’ve lived here in Shopton for going on fifty years and I take a lot of pride in the community. It was starting to go downhill until you Swifts picked up the economy and hired a bunch of people and all that. I just enjoy drilling wells for folks outside the city limits and figure that you’ll tell me how deep you’re going and where, so I can drill at angles or other spots or deeper and still come up with water.”

“It’s a deal!”

So, three days later a truck pulled up at the site of the newest of the water wells and unhitched a flatbed trailer with metal stakes on each corner holding about four-hundred feet of extra drilling pipes.

The team from Enterprises immediately inspected the pipes, found them to all look solid and not likely to break and started to use them to drill deeper. They started on the edge of the gel-infused field and scooted around the rounded plug in the ground.

Ninety feet later Hank called Tom.

“Okay, skipper. We’ve hit more water. I’ll make a guess and say we have another fifty to sixty feet of water under what we’ve gelled and it likely goes all the way back to the start and maybe a bit farther than that.”

Tom thanked his engineer and hung up taking out his calculator and running some figures.

It would just about do.

When he reported this to his father, Damon asked, “What if you increase the steam pressure? Can you force out more for each gallon of water you send down?”

The younger inventor had to think about his. He began speaking twice but stopped himself. Finally he said he just did not know.

“Well, something to think about or we hold off on that last shale oil until some better idea comes along. So, how much will we leave behind?”

Tom said it would be about nine-thousand barrels. “Somewhere in the neighborhood of four-hundred-thousand gallons of the crude.”

“Maybe we ought to be happy with what we can get with this new level of water to pump in.”

It would mean about half a million dollars in no sales, but that was actually insignificant compared to the money the company, city and even the county were making.

The City had declared Swift Enterprises to be the Company of the

Century and provided Damon with a commemorative plaque stating such. Many civic programs could now go ahead to improve streets, add bike lanes to many thoroughfares, and get all the schools outfitted with the newest textbooks available.

The county had barely acknowledged the first "gift," and only bothered to call anybody when the second check, anticipated but not promised, did not arrive when they thought it ought to have.

"I'll tell you what," Jackson Rimmer told the County Commissioner who called, "You keep being a prize-winning horses backside and see when any more money—a *gift* I might stress that you people did a heck of a lot to see that it never happened—comes your way. Good day!"

With the drilling and pumping project winding down—it would last another six weeks—Tom turned his attention to a couple things. For one he wanted to see if he could extend the range of the Deep Peek. It had been all he really needed on Mars, but there were likely plenty of other places around the world where its unique abilities could be used.

Sitting in the large lab next door to the office, Tom was lost in thought when Bud dropped by to see about them grabbing lunch in the company cafeteria. Even though Tom could take him up to the executive dining room any time, Bud never really felt comfortable with the tablecloths, linen napkins and the very nice dishes and tableware. He felt at home in a cafeteria or eating with Tom in the office or lab as they talked over something or another.

"Hey, skip—" he began but saw the faraway look in his friend's eyes. As he started to back out, Tom spoke.

"Yes, Bud? I was gone a bit back, but have been just sitting here, thinking for twenty minutes. I suppose the famous Barclay stomach is crying out for some food."

Bud grinned and nodded.

"And, you'd like to either have Chow bring us something, or… head to the cafeteria?"

"Number two, if you please. And, some conversation."

The headed out of the Administration building and walked around the winding path between buildings until they came to the large, single story dining hall. When they arrived the first wave of employees was clearing out and the next wave would be minutes away. Both young men headed for the carving station where Tom selected some Virginia ham and Bud opted for the roast beef.

Sitting down, Tom took a bite and then looked at his brother-in-law. “So? What is on that mind of yours?”

Bud set down his knife and fork even before taking the bite he’d just stabbed. “You know Sandy and I have tried for a baby of our own and you also know we have started all the paperwork for an adoption.” Tom nodded. “Fine, then can you tell me why my wife—your sister—is suddenly saying things about going to China and adopting what she calls, ‘an unwanted little girl?’ ”

Tom stopped eating. His sister could be a bit self-centered, but he’d never seen her making such rash decisions or announcements before.”

“I don’t know, Bud, but I think this calls for mom and dad getting involved, or at least mom. She’ll know how to approach this.”

“I hope so,” Bud said. “I kinda wanted a boy!” His grin told Tom he was only a little serious about that.

CHAPTER 4 /
ROCKET PACKS, PERSONAL ROBOTS, ETC.

"BUT, MR. Swift. I absolutely fail to see why you are being obstinate about this, and… well, downright rude to a fellow inventor!" The man on the other end of the phone line had not begun the conversation in a manner that had Tom even close to wanting to deal with his caller. Words like, "You have to see this is your opportunity…" and "Don't think I'm beneath you…" and even, "If you have an ounce of integrity…" had been directed at him in an attempt, somewhat humorously to Tom's way of thinking, to convince him he ought to take of a new outside project.

"Then," the inventor stated in a calm voice once there was a slight pause in the near verbal assault from a man calling himself Alexander Jones, "let me see if I can articulate this in small, bite-sized bits for you. One, Swift Enterprises, in general, and me in particular, do not jump up and start panting when someone tries to bully us. You, sir, have been doing just that. 'We have a project you will be so excited about you'll probably not even charge us full price!' That is possibly the worst opening statement in our more than century-long history. It makes you seem to want a lot from us for next to nothing. That is not going to happen.

"We are a business, a very *successful* business, who can afford to select between a great number of project offerings. Besides, we have so many of our own internal things going on we rarely take something on from a non-governmental group unless all the specifications come to us through proper channels. You are hitting us—me—with this absolutely cold. And, I can hear you sputtering with what you believe to be righteous indignation, which I really do not wish to hear, so I will tell you for the third time, you need to go through channels. Write up a proposal with all the salient facts, submit it to our company along with a non-disclosure statement we can sign and return to protect your ideas, and I guarantee it will be given the same attention that all other *properly submitted* projects receive."

There was a great intake of breath on the other end and Tom set his index finger above the phone cup-off. "Now just you listen here, you—" and Tom severed the connection.

After sitting at his desk another moment he rang Harlan Ames' office.

“Hey, skipper. Harl is downtown at the employment office taking a close look at someone we may want to turn over to the police rather than hire. What can I do for you?”

Tom told Gary Bradley, the third in command in Security, about the unsolicited call and the amount of anger the man had tried venting at him.

“I’m transferring over the recording of the whole thing,” Tom said, “and it’ll be there in… well, about now. Let me know what you think about it when you give a listen. It will be in your auto-trace files with a starting time stamp of eleven-thirty-one and about… nineteen seconds. Thanks!”

After hanging up he walked out to the outer office and told Trent to block any calls coming from that number and if the same man called to immediately transfer it to Security.

“Absolutely, Tom, And, I believe I’ll recognize his voice from the slight nasal tone. Consider him blocked.”

Tom and his father had discussed the “Sandy situation” the day after Bud brought up the subject of a quickie Chinese adoption. They’d brought Anne in on a call and she put in her two cents worth, but it boiled down to no decision could be made without having Sandy’s full attention and her reasoning.

“If you want you and Bashi to come along, we’ll all have dinner on the back patio. It may be late March but it is hot enough to be June. Barbecue time, I believe!”

When he was called, Bud agreed to bring Sandy and told his mother-in-law he *would* like Tom and Bashalli to be there for moral support if not a buffer between Sandy’s emotions and the rest of them… especially Bud.

Sandy suspected something was up when she saw Tom and Bashalli’s car in front of the Swift home. Turning, she narrowed her eyes and looked at Bud.

“What is going on?”

Bud was almost afraid of angering her and so he shrugged, but a moment later some level of instinct told him he needed to tell her.

“Okay. You want to know? It’s all your recent talk about heading for China and bringing home a baby girl. You make it sound as if you go to any street corner, shove a ten-buck bill—or whatever their currency is ‘cause I know they’ve got a couple—into a vending machine and press a button selecting the baby you want. Then, you

get into a jet and fly home."

The flyer was almost in tears over his fear Sandy would storm from the car and he'd be in her personal doghouse for days or even weeks over this.

He was very surprised when her look softened and she placed a hand on his right shoulder.

"Have I made it sound that unreasonable, Bud? I honestly didn't mean to. And, if I did, I am sorry. Is this what this dinner is about?"

He nodded and wiped his cheeks.

She sighed and her shoulders slumped. "Oh. I suppose I need an intervention about this. Honestly, Bud, if we never have a kid I can live with that and give you all my loving. Really."

He sniffled. "San, I love you something crazy and I'm not sure this was supposed to be an intervention, but if a Chinese baby girl is right for us, then I'm all right with that. With her."

She hugged him for a full minute. "Come on, goofball. Let's go inside and surprise everyone with how reasonable I am."

The man with whom Tom had the unpleasant call a few days earlier must have decided he needed Enterprises' help so he did submit a fairly complete design and proposal to see if he might garner assistance from the Swifts.

It came through just four days after the call so Tom had to believe he'd had it ready to send but had tried a different tactic first.

The first thing Tom did was add his signature to the Non-Disclosure form and email that back with a request they respond with "Received" once it had been delivered to Alexander Jones.

"I will not look inside the package until then," he'd added below his request and signature.

That acknowledgement came back two minutes later so Tom opened the inner envelope and pulled out the fifty or so pages, starting to read them from the beginning.

Contained in the four-page cover letter was a lot of unnecessary prose regarding personal robots and rocket or jet packs or personal flying cars, and home automation that, "those people…" managed to get working in the 1950s and to even show such things off at Worlds Fairs, intriguing the common man with how great our futures would be, but nobody today could say why they could not be duplicated in modern days and times.

Tom sat back pondering the issue of just flying to the Moon. It had happened over a seven year period from first promise to actuality and lasted for a couple years. Then, decades later the same organization, NASA—that has accomplished it before, even given a rather primitive level of technology in the 1960s—seemed at a total loss for how to do it again!

Once he got through most of the letter Tom found the real reason for the request. The man was asking that Enterprises help him create and market what he called a, "Human Analog Manservant Robot."

He even added, "Although it is not borne out by the acronymic letters, I intend to call them the HOMER." That made Tom roll his eyes and wonder what Bud might call such a device. Probably something like HAM-bot he thought with a smile.

The basic idea was a life-sized robotic machine with artificial intelligence enough to be able to assist its master with many aspects of day-to-day life. This was listed as including cooking, cleaning, laundry duties, intelligent conversation, helping to get its master dressed, chauffeuring, parking the car and waiting to be hailed, carrying his man or woman to the car if incapacitated—Tom realized the man meant "drunk"—get them safely home and finally undressed and in bed before recharging for the following day.

He scanned through the first twenty pages of specifications before setting it aside.

The man wanted all these things in a robot weighing no more than three-hundred pounds that would run all day on a charge from a household outlet and cost the purchaser under ten-thousand dollars.

Tom wasn't sure what to do—send it back with the word, "IMPOSSIBLE" across it, or give it further consideration and an answer detailing why it could not be accomplished within he stated limitations—so he left the pages on his father's desk with a note asking the older inventor if the believed the man was crazy.

Once Damon saw the specification document he only had two questions for his son.

"First, did he ever apologize to you for his phone behavior?" Tom shook his head. "Okay, then second, in your wildest dreams can you imaging building a walking and talking robot with AI for under ten grand?"

Tom shook his head. "No. Not even for under twenty-thousand. Probably closer to fifty-thousand if my other robots are any

indication. It will take a lot of R & D monies to come up with a serviceable design before that! Hundreds of thousands at least."

"Kind of what I was thinking. I suggest you take a day or so, then read the rest of the pages and respond in a week with, 'Unfortunately, this is not feasible at the price you suggest. Past experience with walking robots have shown them to require extensive and costly computer control and servos and other items providing mobility that would severely go beyond your asked for cost and weight.' Or, something like that."

"Thanks, Dad. Just the sort of diplomatic yet truthful wording I will use."

He decided to sit down and attempt to get through the man's document before going home. After two hours, with his eyes nearly crossing over the seemingly endless contradictions and outright fantasies, Tom set the papers down and went to the apartment off the lab next door to splash some water on his face.

In one paragraph the man was asking for nothing more complex than basic level walking, where a dozen pages farther along he stated he must have a robot capable of climbing and descending stairs—both straight and circular—and it must be capable of jogging along as a running companion and security guard.

But, it was the man's stated goal to have these outfitted with "semi-lethal" means of fighting off attackers, "even to the point of ending their life when it becomes necessary," that had Tom ready to scream. He decided he would take part of his dad's approach while stating, in no uncertain terms, the Swift's policy of no weaponry and especially offensive weapons that could kill.

He made a note to quote Asimov's Laws of Robotics as part of his answer.

But, as he came back into the office, he thought it would be better to sleep on it in order to moderate his feelings and choice of words as he declined to entertain the man's project.

The last thing he did that afternoon was take a call from Harlan.

"Just wanted to let you know the woman I went to our downtown employment offices to check turns out to be a known thief from her past employers and is wanted in both Jacksonville, Florida as well as Passaic, New Jersey, on those charges. I turned her over to the police and she spent a night here before getting turned over to the Jersey State Police early this morning."

"So, our screening process is working?"

"Better with each passing week, Tom. Have a good evening."

"You, too, Harlan."

The Security man could only hope all employee checks met with this level of success.

Tom wrote and rewrote his letter to Mr. Alexander Jones. He had his father read it between the first and second drafts and then again once he finished the second version.

"I would make those two small changes I mentioned and give Harlan a chance to see both the original cover letter and even your first draft. He needs to be primed in case this Jones fellow turns out to be a nutcase."

Harlan who had listened to the unsuccessful phone call and had taken note of the man's anger and the words he'd chosen to use, read the cover letter with interest, took a few notes on his computer —presumably in a file he already had on the man—then sat back to enjoy Tom's response:

Dear Mr. Jones;

I must tell you that, based on the way our phone conversation ended, I was taken by surprise to receive your specification. Putting that aside, I and another key Enterprises' employee read the entire package spending extra time on several sections including the ones on functionality, mobility, and the Artificial Intelligence it would seem you understand is mandatory to make such a robot even come close to what you hope for.

There are several points I need to cover so please bear with me.

To begin, both my father and I have created single-purpose robots running from a small rat analog he created to help rid sewerage systems of rat and snake infestations all the way to what some folks called my giant robots for use inside the nuclear radiation jacket of the reactors we operate in New Mexico. So, I believe we have ample experience to be capable of determining feasibility.

The second point is one of AI. That, all on its own detached from any mobility, requires more computers than might be fitted inside a man-sized robot. Add the levels of mobility you require and that robot now becomes some seven or even eight-feet tall and possible about three-feet in width.

Now comes the matter of costs.

Any prototype would run, given our experience, in the half-million dollar range. That alone would drive your per unit cost to recuperate expenses into the realm of thirty-thousand dollars for the number of units you mentioned you hope to sell in the first year, but that does not include the per unit costs of manufacture which we would take an educated guess at being fifty or sixty-thousand dollars with an order of at least one thousand units.

As you can see, we have exceeded both your size (and weight by the way) as well as your hoped for cost.

But it is one final item in your request for proposal that has us sending everything back to you with our decision to not participate. That is the mention of "lethal force." The fact that your specification went on for some three pages on the subject tells me this is likely to be a non-negotiable item for you; it is absolutely non-negotiable to us.

I have included Isaac Asimov's Rules of Robotics, which may be the thing of science fiction, but we adhere to those standards in everything we design and build.

In short, the Swift companies do not ever manufacture anything that might take a human life when used as designed. Obviously we cannot ensure that any of our aircraft might not be used to kill people if crashed on purpose. But, and this is an important point, *even when creating things for the U.S. military* we do not entertain thoughts of adding weapons to what we make.

So, and I know you did not wish to hear this, we politely refuse to participate in your project, but do thank you for thinking of us.

Signed,

Thomas Swift

When Harlan lowered the pages he looked over to his young boss. "How do you think Mr. Hothead will take this?"

Tom had to shrug. "I don't think he'll take too kindly to it, but do I think he might get either snarky about it or try to take this further? I just have no idea. What do you think?"

"Unfortunately I believe he is likely to take this very badly and either send a few nasty letters, go to the press with his gripe, or even

try to come and demand to speak to you in person. I can head off any communications to you, but I believe we need to be ready for a potential press attack and one in which he will outright lie through his teeth to see his lopsided story told."

He strongly suggested Tom consult Jackson Rimmer in Legal to see what, if any, exposure they had if a copy of the original documents were to be made and filed in an "in case" folder.

Jackson first listened to the phone recording before reading the cover letter and fifteen passages Harlan had sticky-noted plus Tom's response.

"What are those lyrics from that song in *The Music Man*? 'Oh boy you've got trouble…?' Yes, that's it. I would like you to leave this matter with me. I will send everything back to him telling him I advised a copy be made and that I did it without your knowledge, and it was for the purpose of defending ourselves from any public attack, including the press and media, where he might portray our involvement and refusal in any other way than with complete honesty. I will also remind him we have his original phone call recorded for Security purposes, an absolute standard for any incoming calls to any executive, and while we might wish him success through another company, we will not tolerate anything other that good business etiquette and behavior.

"Finally, he will be told that if he pursues any negative campaign the world will be told of his desire to build a killing robot."

He smiled at Tom and said he'd take it from there.

"Have a better day, Tom. Tell your dad I've got this one."

When the young inventor got back to the office his father was finishing up a call. The younger Swift waited until the phone had been returned to its cradle.

He informed his father of Harlan's and Jackson's responses. Damon nodded at Harlan's but smiled broadly when he heard Rimmer was taking up the charge on the matter.

"Someplace in the back corners of my imagination I could picture your Mr. Jones throwing a tantrum and trying to make us out to be the bad guys. I'm very happy you took the matter to both of our top people!"

Tom admitted, "Harlan is the one who told me to go see Jackson."

His father smiled, knowingly. "And, it is my assumption that had you gone to Jackson first, he would have strongly suggested a visit

to Harlan was in order. You got the best advice both ways."

In spite of the matter being handled by others, Tom fretted about it until five days later he received a one page letter from Alexander Jones. It had been intercepted by Security and had a yellow sticky affixed with Harlan's signature and the note:

Shock and surprise, He might turn out to be a reasonable man. I've sent a copy to Legal.

The letter read, in part:

Dear Thomas Swift;

I must say your letter shoved a load of reality into my brain it previously lacked. I can understand many of your issues, but notably the one regarding the "lethal capability" I had outlined. On first, second and third thought I can see how disturbing that might be to the public in general.

Should I ever attempt to have this device built, I shall remove that feature and only ask that the manservant be fast enough to step between an identified attacker and the person owning the robot.

I thank you for your time and hope we might work together at some point.

Tom set the letter down and thought about the wording for a few minutes. Then, he picked it up and read it again.

He could not detect any note of anger or something that might lead to problems in the future.

With mental fingers crossed, he put the letter into a correspondence folder in the file cabinet behind his desk and moved on to other things.

CHAPTER 5 /

UNDER ATTACK

FOLLOWING THE weekend, Tom got to the office a little early, heading down to Chow's kitchen near the end of the hall to see if he might grab a little breakfast. The cook was nowhere to be seen so Tom headed back.

Trent, who had *not* been at his desk when the young inventor walked past a few minutes earlier, was there with a covered dish sitting on the corner of his desk and a knowing smile on his face.

"I thought you could use something to eat what with coming in early and your darling wife now sleeping in a bit with the forthcoming baby and all that. Interested?" he inquired reaching over and uncovering the dish filled with biscuits and what looked, and smelled, like sausage gravy.

Tom felt his mouth begin to water. "How did you know about Bash and the sleeping thing?" he asked.

Trent, with another smile, told him, "She was like this the last two times if you will recall. I would have to believe that now with the two other kids to take care of during the day, she is probably exhausted at night and so the extra lie in. Am I wrong?"

With a shake of his head, Tom reached for the plate and replied, "No. You're absolutely correct. I might need to suggest a nanny to take some of the burden off her. Thoughts?"

Trent motioned Tom to put the plate back down before replacing the cover to keep things hot.

"My thoughts are that it is a matter between the two of you, but one of the other secretaries here at Enterprises says after three kids she was so ready to get out of the house and even to come back to work that she jumped at the chance to have a nanny by day and then she and her husband could smother the kids with love at night and on weekends. I recall Bashalli was quite a prominent figure at the advertising agency in town before she gave that up for your first baby."

He looked curiously at his young boss. "Maybe you should bring up the subject, but I strongly suggest you pay very close attention to what her eyes say, not what comes out of her mouth. She might say no, but really mean yes but would feel guilty if she gave in too easily."

Tom picked the plate, and cover, back up, thanked Trent, and headed into the office to think it over. And, eat.

As he ate, various thoughts came to mind including how eager she had been for just the single overnight trip away from all responsibility. Even with the grandmothers, she could not rely on them taking the kids—especially after the third one came—each working day. It wasn't fair to them both no matter what they said to the contrary.

By noontime, and when his father came back from a fast trip to Washington, Tom had decided he needed more advice.

He told his father about the idea of a nanny and waited for him to digest the idea.

"First, if Bashalli is feeling run down, and this pregnancy is making that even more so, I'd say she ought to jump at the chance for some help, even if it is just a few days a week. Of course, she might see it, initially at least, as an insult to her abilities as a mother, but she is intelligent and I think she will see the logic of it, even if it takes a few days to sink in."

Tom thanked him for the advice.

"But," Damon finished, "I will say you need to get Harlan involved in the selection and vetting of candidates. Obviously, you and Bashalli need to make the decision of who seems right, but let him do the dirty work in the background before you start inviting people into your home."

That evening, Tom was almost too nervous to eat much and Bashalli saw this and began to worry.

"What is in your mind, Tom? What is troubling you so much you cannot bring yourself to eat my chicken paprikash?"

Then, looking at her own plate and letting out a small burp, she shove it to the side.

He looked at Bart and Mary sitting there watching their parents.

After taking a deep breath, Tom began outlining how all the work at home seemed to be tiring her and he felt bad that except for most weekends he could not offer much help.

"I was thinking it might be time to hire some help. I know the grandmoms want to do what they can, but I feel like we rely on them too much and that is making them tired as well. What would you think," and he paused looking into her eyes, "about hiring a nanny to help?"

Bashalli hesitated to answer causing Tom more anguish. However, he could see in her eyes she was not opposed to accepting some help.

"It might let you have some fun outside the house and do things like shopping without having to strap the kids in, take them out and haul them around stores. And," here was going to be the 'go for broke' point, "if you had the hankering to go back to work, even part time, you could have that option open to you."

If he expected she might flatly state it would happen over her dead body, or that she might be angry, he misjudged his wife. With tears of—what he found out a little later were—joy cascading down her face, she jumped from her chair and into his lap hugging and kissing him over and over.

Bart started giggling. "Momma and dadda are kissing!"

"Oh, Tom. You can't begin to understand how I have almost made myself sick with worry about suggesting that to *you*."

Tom was completely taken aback. *She* had wanted to ask about getting a nanny?

"Then, it's okay to start looking?"

She nodded and nodded until he thought her head might fall off.

"Can we start looking tomorrow? I could really use some sleep!"

He told her about wanting Harlan involved in the first steps because it was his job to protect them, and she agreed it was a wise thing to do.

"Only, tell Mr. Ames to be fast!"

"Hey, skipper. Want to take a test flight in one of the first of the revamped *Pigeon Commander* planes?" Bud asked stepping across the floor of the *Sky Queen's* underground hangar and approaching the office door.

The *Commander* model of the *Pigeon* line had been the fourth after the original *Pigeon*, the *Pigeon Special* and the sleek and fast *Racing Pigeon*. It was patterned originally after Tom's SE-11 Commuter Jet—his Toad—but powered with propellers. This one featured comfortable seating for six, with a seventh seat or extra cargo storage if folded up, had a pair of very powerful Y-4 engines and prop combinations and could fly more than a thousand miles at a top speed topping three-hundred knots.

The newest incarnation of the plane had slightly beefier engines

—two of Tom's W-Class which had cylinders arranged in a W-formation with either two, three or four of them front to back in each set. It was, in theory, more like two V-4, V-6 or V-8 engines in one case powering a central drive shaft giving the plane enough power, even in the small displacement configuration, to get it up to over three-hundred-eighty knots.

This one had the W-2 configuration.

All in a flat-profile crankcase and the eight cylinders coming it at just 2.8 liters in total displacement.

This smaller yet more powerful engine gave the plane an extra four-hundred miles of flying time at top speed, and five-hundred miles at three-quarters throttle over its earlier version.

Tom looked down at the journal he'd been reading and realized his mind had wandered so much he'd read the same paragraph at least four times and still did not recall what it said.

He sighed and stood. "Yes, but only as long as you promise we don't get into any trouble or have a stowaway in the back seats or that all our electrical systems go haywire."

"It has been in the air for at least thirty-nine hours with Red and Slim and me taking turns wringing her out. No problems, practically guaranteed!"

With a nod, Tom headed for the door with Bud letting his friend take the lead as they walked to the elevator to the surface.

The plane, very shiny with a bright red paint job and ***SWIFT*** on the engine cowling in white and ***PIGEON COMMANDER II*** also in white starting just behind the door heading backward to the front of the stabilizer on that side.

A technician was just closing the fuel panel on top of the right wing.

"Fueled to the top, Tom," she said with a bright smile. "Also checked tire pressure and battery state. You're all set to go."

Like any good pilot, Tom thanked his support person and made all the same checks himself. She took no insult in this, as it was a best practice for anyone heading into the skies.

Bud had climbed into the right side and was running through a checklist of things to turn on and what they should do or show on the status panel.

As his friend also got in, he stated, "We've got nothing but green lights and free movement of the controls."

“Where do you want to go?” Tom asked.

“There is some nice flying and good weather if we head northeast through New Hampshire skirting the Canadian border and then into Maine. Maybe get to the coastline and follow it south out over the ocean a hundred miles or so and then home?”

“Sure,” the inventor said starting their left engine. Like all W-Class engines it was exceptionally quiet. This was in part because it was a water-cooled engine so the crankcase and cooling jacket were fairly thick, but it also was made from smaller bore cylinders that were inherently less noisy than their big brothers.

The right engine started and was equally quiet as it warmed up.

They taxied to the north-to-south runways at the east side of Enterprises. One the way Tom radioed the tower within Enterprises’ walls of their intentions and then made a second call to the larger tower up the hill that held not just the long-range Swift facility, it also held a FAA control room now tracking everything in the northeast of the United States and at least one-hundred miles into Canada.

“You’re all good, Tom,” came the call from above them. “Winds are negligible and almost on your nose, barometer is three-zero-point-five and steady. Runway temperature at eighty-seven and ambient at fifty feet is eighty-one. You are clear as number one. Proceed when you are ready.”

“Swift upper tower concurs.”

Tom acknowledged the towers and thanked them.

“File us in a semi-circular route over New Hampshire, Maine and then nearly straight back starting east of Portland.”

He advanced the throttles stepping on both pedals thus engaging the brakes while he brought the engines up to three-thousand RPM for thirty seconds.

Everything sounded smooth and good so he released the brakes and the plane practically shot forward getting into the air about thirteen-hundred feet down the runway.

Most of the flight was uneventful although they did hit some headwinds shortly after turning west toward Portland. It all smoothed out five minutes later.

“Heading straight for home?”

“No. I think I’ll check the plane’s navigation automation and set a course for the beacon at Brandon, New Hampshire. Then, we can

change to Enterprises' beacon and go home"

"Works for me," the flyer said and yawned.

"You getting enough sleep, flyboy?"

Bud slowly shook his head. "Not really. Sandy has been really nervous about this new medication she's taking and thrashes around in bed. She has no recollection of it in the morning, but I'm about to take to the guest room to get even one night of a full eight hours!"

An hour later as they passed over the intersection of two freeways—I-89 and I-91—the plane shook and seemed to want to turn on its side.

"What's that?" Bud shouted as Tom fought the controls.

A fairly small twin-engine jet had passed very close overhead and was flying away at top speed. The wings featured a sort of half twist at the ends and there was an enormous level of turbulence coming from them.

"Don't know, Bud, but I don't like it. That was too close and too much like an attack. Get on the radio and let the FAA and the folks at Enterprises know. I'm going to take us higher in case I need the altitude to recover from another pass."

As he took them from sixteen-thousand to twenty-thousand, and the plane's oxygen system started pumping more O2 into the cabin, he kept an eye out in the direction the other plane headed. He was concentrating so hard he barely heard Bud's conversation but once the flyer was finished, he offered to take the controls.

"Okay. Turning it over to your joystick in three… two… and now."

"Got the controls. Where are we?"

"Over the mountains to the west of Woodstock. We've got about fifty-nine miles to Brandon and another eighty-six to home. Uhh, I think I see our attacker making a wide turn out there. Be ready to duck if he comes back."

It took four minutes for the other plane to finish its very wide turn and Tom had to believe they had trouble with control due to what he now believed were wingtip vortex generators.

He wished he'd suggested they bring along a pair of the Digital BigEyes, but all they had were their bare eyes.

"Well, they're coming back this way and I'll guess our closing speed will have them over or under us in less than a half minute. I'll try to give you enough time to react."

“Ready to push or pull as ordered,” Bud stated as he gritted his teeth and took a quick look at the control panel. Fortunately, everything still looked very good.

“Get ready to dive. It looks like they have a cable underneath and I want to get several hundred feet under that.”

“Why not above?”

“They seem to have a lot of climb ability so I don’t want to get into a collision position.”

“Got ya!”

“Ready? And… dive!”

The *Pigeon’s* nose dipped about twenty degrees and the plane followed it making the attacking plane pass over them by some three-hundred feet. The turbulence was bad but they flew out of it.

Again, the other plane took a long time getting back around, but the *Pigeon* was more than thirty miles ahead by the time the other plane came back at them. It was gaining on them.

“I can’t see them very well, Bud. But I have to believe they will come in low and so we need to go higher. I’ll try to give you time.”

Time was *not* in their favor. The other plane appeared to have shed the vortex wing tips and was flying at least a hundred knots faster than they could. With a sickening crunch sound it passed over them—even with Bud in a fairly steep climb—as the trailing cable slammed into the aircraft’s tail.

The *Pigeon* began to rock from side to side and buck up and down.

Tom looked out the back window and moaned.

“We’re broken, Bud. Let’s bail out and try to get to the ground before that plane gets back to us.”

Bud looked ahead of them and could not see any signs of population so he nodded, grabbed the handle of his door and shoved it open. With the doors mounted on an inside track it slid to the rear and locked into position.

Tom’s door did likewise.

The two friend wiggled out of their seats and dropped away from the stricken aircraft, and just in time; the plane began a tumble and the tail section broke away sending it into a spiral toward the ground.

As they plummeted down just fifteen feet apart, Tom yelled,

“Open at six-thousand!”

Bud gave a thumbs up sign and moved off fifty feet.

When the time came and they pulled their ripcords, Tom looked up in time to see the attacking plane cross over them by some eight or nine-thousand feet as if looking for them or to watch the *Pigeon* as it crashed, which it did about fifty seconds later.

Bud had maneuvered seventy feet away by now so their chutes would not get tangled. He was floating down by about twenty feet above Tom, but his slightly heavier body was making him lose about a foot of that difference every three seconds.

Tom was looking at the attacker as it turned again and began to descend. He knew their chutes had been spotted. Soon, and just a few miles away it reached their altitude.

“It’s right on our level and dropping as fast as we are,” Tom stated loudly so his friend could hear him. “If it really is heading for us, we’re going to have to cut our main chutes loose and drop below the jet before opening our emergency chutes. Hopefully, by the time whoever has gained control of the jet can get it turned around again, we’ll be near or even on the ground!”

The jet passed over them by some hundred feet and they got a look at the damage it has sustained by its own cable that evidently had whipped up and into the underbelly ripping a huge gash.

The pilot seemed to have lost a lot of control but was trying to get around for another pass at them.

It appeared Tom was correct that their attacker was intent on ramming into them or their chutes, so both young men hit the detach locks on their harnesses when the plane was about a quarter mile away, dropped quickly down and, at least temporarily, out of harms way by some fifty feet.

Even without the wingtips built to provide maximum turbulence the normal vortex buffeted and knocked them around a bit, but they soon were below that and heading for the ground.

Both were experienced skydivers and they each had decided to open the reserve chutes at about twelve-hundred feet above the ground.

Without consulting, they had been trying to traverse farther west across the sky because both men had spotted the end of the mountains under them and the flatter land around Brandon.

Almost as if they had synchronized their watches—or altimeters—they released the chutes on their fronts and braced for the jerking

as the canopies inflated slowing them to a comfortable rate.

Tom yelled over the eighty or so feet separating them, “Steer over this way and head for those trees,” and he pointed down and to his right.

Bud gave an exaggerated nod and yelled back, “Got it!”

As Tom feared, the jet was not giving up on its attacks and he spotted it in the last of its current turn some five or six miles away. He looked at the ground and then at the jet calculating in his head what would happen first; would they land and find shelter in the copse of trees, or would the attacker zoom in and kill them!

CHAPTER 6 /
THE REALLY BAD PILOT

IT WAS going to be a close finish, but the inventor believed he and Bud would get to a point too low for the jet to finish its attack unless, that was, the pilot intended to fly at a few inches above the trees on his final run.

That, unfortunately, seemed to be the pilot's intent.

They both braced for the jolting landing eighty feet from a stand of oak trees in front of them and another swath of them another sixty feet behind.

As they came even with the treetops, the jet approached from behind. With a *crunch* sound it passed overhead now with about twenty branches stuck in the gash on the plane's belly. It missed their canopies by inches but was past before it could drag them too far along. Both hit the ground rather hard but were uninjured.

The pilot nearly lost control but managed to gain a hundred feet of altitude before turning to the south and limping from the area. The last thing Tom saw as he was deflating his chute was that one of the engines, the right one, was nearly torn from the wing.

"That's some really bad pilot," Bud said as he came to stand with Tom.

"Bad in many ways, but also lucky. That contact with the trees and almost losing an engine that might have as easily torn the wing off with it, was luck."

Bud nodded his agreement. "And, our luck because it might have taken us out as well. Too bad about the *Pigeon*," he said, sadly, after a pause of a couple seconds.

"Did I forget to tell you I didn't want to have any more troubles with aircraft, Bud? I mean," and he ticked off on his fingers, "while I was building the *InvulnoSuit* for the Venus probe rescue you and I had trouble with the two-man supersonic mini-jet, Zimby and I got hijacked over France and I made a very rough landing in Ukraine, and… well, this one makes me want to not go flying again for a while! Plus my almost getting stuck on Venus."

Tom took out his cell phone and called Enterprises' main number. They connected him with his father.

As he explained the attack and their safe although scary bailout,

Damon swore and promised to get a Whirling Duck helicopter dispatched that would pick them up in about an hour.

"Stay where you are and they'll home in on yours and Bud's TeleVoc pins. I'll alert the authorities and the FAA."

They finished gathering up their chutes, folded them into bundles and wrapped them in the lines before heading for the trees in front of them.

"Might as well be comfortable and sit in the shade," Tom remarked as he dropped his pack and sat down on it.

Three minutes later they both heard an engine sound coming from the north. As they watched, an ATV with a very fat woman sitting on the too-narrow seat approached. It was hunkered down on its suspension and Bud almost started to laugh but held it in as he saw the serious look on her face.

"You two okay?" she called out as she slowed down and came to a halt just ten feet away.

Tom stepped forward. "Yes, ma'am. Had an aircraft accident and had to bail out. Sorry if we landed on private property."

"Oh, poo on that as long as you're not hurt."

Tom smiled. "Not hurt, and we have a helicopter coming to pick us up. If you'd rather it didn't land here we can go someplace else. If, that is, you can point us to another spot that it can set down on."

The heavy woman looked around and down at the ground. "Ya know, if my fat carcass and this dinky little ATV don't make big ruts in the ground, I'm gonna guess a helicopter won't neither. No, you go ahead and signal them ta land right here. And, if ya don't mind, I never seen one of them up close, so I'd love ta stay around. Won't make any fuss or bother."

The inventor laughed. "No, ma'am, you're very welcome to stick around. I'll even give you a short tour of the thing once it gets here. I'd take you up for a spin around town except I have to get back and talk to the authorities about the other plane… the one that forced us to bail out."

"If that's the one that tore the top of that tree over there," she pointed to one that was now about eight feet shorter, "then that maniac headed south and about fifty or eighty feet above the rest of the trees. I'd guess it headed down over Pittsford, Proctor and Rutland. Nearest airfield other'n the one we got west of here is south of Rutland by 'bout fifteen miles."

"Would you mind if I gave your name and phone number to the

authorities so they can get your side of the story directly from you? Anything you can tell them is likely to be of great help."

"Shucks, I'd be happy to." She took his offered pen and small notebook and wrote down the information.

Tom got back on his cell phone notifying Enterprises of where their attacker might had landed, if he had to land or *could* land, that is.

The man in the tower promised to get straight to Harlan Ames and then on to the FAA with the report and the woman's name and phone number.

"I'm showing on the airfield charts there isn't anything of any use until someone gets all the way down to a place called Great Bennington; that's almost down to Massachusetts. Oh, and a Whirling Duck left here ten minutes ago and has an anticipated time on site of twenty-one minutes from now."

Tom disconnected the call and told Bud and the woman—Bud had learned her name was Missy Westfield—what he knew.

"Sooner we get home the faster we can get on the case to get that jerk pilot!" Bud declared.

Tom shook his head. "Not us, flyboy, but the authorities. We have to get back and come up with a little story for me to tell Bash so she doesn't freak and tell me she never wants me to take another flight in anything other than the *Sky Queen* or *Super Queen*!"

"Yeah… I've got to explain this to Sandy as well."

The helo got Tom on his TeleVoc as soon as they were within range and told him to expect them in four minutes.

"*I have you on a ground chart just north of what's listed as Park Street. Can you confirm*?"

Tom asked Missy about the street and she pointed to the south. "Over there."

"Roger on the street name. We are about five-hundred feet north of there. Plenty of room between the trees to set down."

"*Okay. Be there soon, skipper*."

By the time Tom got back to the office there was a call from the Massachusetts State Police offices in Chicopee.

"Yes, Mr. Swift. Commandant Peter Stevenson with the State Police over here in Massachusetts. I understand from reports you

had a run in with a crazy pilot up in New Hampshire. Is this true?"

"Yes, sir, it is. My copilot and I were forced to abandon our aircraft when we became disabled by that other pilot and his jet."

"I see. Well I have the proverbial good news and bad news situation. I'll spare you my asking which one you want to hear and give you both. That plane, or jet, made a very bad landing at the Old Bennington airport on the west side of the state. We keep a small office in Pittsfield and the officers there raced up when the airport manager called. It seems the pilot of that jet came in, made three passes all tilted to the side before finally pancaking it into the grass next to their runway. Said something about missing an engine. That sound right to you?" Tom said it did. "Anyway, it was pretty beaten up is the report and the pictures the officers sent in say that pilot was one lucky person. That jet should have tumbled and broken up but, and here I'm quoting the airport manager, 'That pilot bounced the little jet up and down twice before it went nose down and just sort of stopped all a sudden.' End quote, by the way."

"Thank you. What happened to the pilot? Was he caught?"

"That's the bad news. Whoever it was, was dressed in a fairly generic black leather jacket and jeans and had a baseball cap pulled down pretty low. Couldn't tell a thing about whoever it was except they must have had the landing site planned. Jumped into an old Oldsmobile sedan with no visible plates and sped off. By the time my men got there, there was a burning jet—that started rather suddenly ten minutes after the driver left—and skid marks. Sorry for not having any truly good news. At least not yet. We've got an APB out for that car."

Tom thanked the man and said he looked forward to hearing any really good news.

When he told his father exactly what happened the older man suggested perhaps Tom might want to stay clear of the smaller aircraft in the Swift fleet.

"We also need to come up with some more private way to be in contact with the control facilities without announcing to the world who is in the air," he stated. "Ideas?"

"Only secret call signs, but that presupposes my voice can't be analyzed by a computer somewhere and the signal tracked. But, I have to come up with something, don't I? I know I'm sick and tired of flying just about anything smaller that the *Queen* and getting shot down, drugged and kidnapped, have secret explosives strapped to the plane somewhere and a bunch of other things that have been

happening this past year. Bash is going crazy every time she hears of another near accident. I'm really not sure how to tell her about this one."

"Neither am I."

Tom snorted. "The only good thing is I haven't been whacked over the head for a good two years. Fingers crossed *that* is in my past!"

Tom decided to be up front with Bashalli that evening, but to do it in front of the children and in a way they would not understand but might keep Bash from getting angry.

"Well, Bud and I took a new version of the *Pigeon Commander* out for a flight and happened on someone who was determined to see that we did not get it back to Enterprises."

She stopped eating, placed her fork on her plate and glanced toward the children. "But, you did get back. Right?" she cautiously asked.

Tom nodded. "We did but in a different aircraft. A Duck came to pick us up. I can go into details later. Okay?" He looked at her trying to portray the incident as one to be mentioned and then forgotten.

"Yes-s-s-s," she said slowly. "Later, indeed, Tom. In detail, please."

Once the kids were cleaned up and in bed they sat in the living room where Tom told his wife exactly what happened and what he was going to do to see it did not happen again.

"The good news," he concluded, "is that we were wearing parachutes. Also, we heard late this afternoon that the jet was not a stolen aircraft, but the registration seems to be to a phony name and address."

She looked exasperated. "How is that *good* news?"

"Well, that aircraft costs about two-million dollars so the total loss of it, and in the commission of a crime, means there will be no insurance to the owner to replace it and try anything again."

That seemed to mollify her a little. She moved over and snuggled into his chest.

"Please fly something larger or talk your father into air-to-air missiles to shoot anyone down who might try to hurt you?"

He responded that he would mostly fly in the *Sky Queen* or *Super Queen* until the attacking mystery pilot was apprehended.

After waiting a full minute, Bashalli responded. “Then, you may come to bed instead of sleeping on the sofa!”

She was in a much better mood the next morning, Friday. The entire house smelled of cooking bacon and her rightfully famous—among friends and family that is—maple cinnamon waffles.

When he got to the kitchen she had already set the table for the two of them and was finishing cutting up some melons and large, red grapes.

“Want me to get the kids?” he asked.

Bashalli shook her head. “Let them sleep in a little. We don’t get the chance very often to have a private breakfast. Sit and I’ll bring things to the table in thirty-seconds.”

Tom had three of the waffles, his entire bowl of fruit, and three pieces of the slightly crisp bacon. When he moved his chair back it was with a smile on his face.

“I’ll do the cleanup since you made this delicious breakfast for us,” he offered.

“Normally I would tell you no, I’ll do it, but today I will take advantage of that offer. So, yes, please and would you refill my decaffeinated coffee, please.”

He smiled, got up and grabbed her special pot. With a baby on the way she was avoiding caffeine and even most drugs like aspirins unless told it was okay by her Pediatrician… or Doc Simpson at Enterprises.

He also refilled his own cup with regular coffee before tackling the few dishes and the two pans she’d used. The waffle iron had to cool and that would take too long so she could either leave it for that evening, or he knew she would go ahead and clean it later.

“Can you stay home today?” she asked with a hopeful smile.

“Sorry, but I have one meeting with Hank Sterling and also one with Arv Hanson this morning. I can probably come home around two?”

She agreed, gave him a warm kiss and said she looked forward to him coming home.

Arv was waiting for him in his modeling workshop.

“I’ve finished some of the models for your dad and even build a small working mini version of the Surface Effect Jet. I know we have the larger one, but this one fits on the shelves in the office and can race over the ground on hidden wheels and will turn left or right via

a very small remote."

Tom was impressed by them all, but it was the small magnetically levitated model of the HyperLoop car and its associated tube that caught his eye the most.

Arv took the top off the alien probe Damon and his crew had found floating in space on the opposite side of the Moon. Inside was the representation of what the team found including small bodies of the deceased aliens in what everyone believed to be the control room.

"If you think those are a little grim, I can take them out," the model maker offered.

Over the weekend Tom, Bashalli and the children had a picnic on the shores of Lake Carlopa. The original home and property of Barton and Elizabeth Swift and their young son Tom—beginning in the 1880s and through the time when the first Tom Swift married Mary Nestor—survived to this day and was still owned by the family.

The three major small buildings, known to Barton as "the sheds," plus the oversized barn—once home of that Tom's first airship—had all been well kept receiving paint jobs every eight or nine years. Rust was not allowed to accumulate on the hinges, and the house had been updated and was used, occasionally, by the current Tom Swift.

But, it was a walk to the private beachfront on the property, two-hundred feet from the house, Tom and family took across newly-planted lawn and the sandy beach.

Everyone in Shopton knew this was a private beach and even the teens, often fond of breaking rules, respected the Swifts and stayed away.

Today, Tom pulled down two of the large lounge chairs from the lawn while Bashalli pulled two sand buckets, plastic shovels and sunscreen out of her oversized bag.

"Momma? Why do I gotta have that stuff all over me?" Bart asked as she covered his right arm in sunscreen before taking the left one and repeating the process.

As she did his face and neck she told him, "Because that beautiful ball of light in the sky, the sun, can be dangerous to young skin. It might make you feel all warm, but it can give you a burn that hurts to high heaven. Now, stand up straight so I can get your legs."

Mary, watching her big brother submit to the slathering, came

over and held out both arms. As Bashalli reached for the first one, Mary slid forward and gave her mother a hug. “Wanna stuff, momma,” she told the slightly startled woman.

With the two young members covered, Bashalli applied the block to herself before handing the large tube to Tom.

“Momma? Why I gotta have that stuff?” he asked her in a small voice with a huge smile.

She slapped at his hand and told him to take off his shirt and turn around.

“I’ll get your back and then you can do mine,” she said with a sly grin. “Slowly, please.”

When the four were protected, she sat down on one of the reclined seats, covered with a huge “beach” towel, and put on a floppy hat.

She handed Tom his favorite baseball cap and put small sun hats on the kids who were standing next to her waiting for permission to play.

“Okay. Go. And no throwing sand on your sister, Bart. Do you hear me?”

“Yes, momma. I’ll be good. Come on, Mary. We gotta leave momma and dadda alone now.”

Bashalli looked at Tom. “Did you tell him that?”

“Nope. Smart kids can figure things out, and Bart is among the smartest of kids out there.” He sat down and reached over to take her hand. Together, they lay there for about five minutes before she reached back into the bag and took out a thick novel she had been trying to get through for more than three weeks.

Tom, chuckling to himself, pulled his smaller computer tablet from his nearby pants and called up a favorite scientific journal.

In the journal was a rundown of what the editors termed, “*The Top Ten Crackpot Ideas of The Century!*”

The first three, in his estimation, deserved to be in the list. One suggested that Stonehenge was actually the landing marker for a super race of beings from a neighboring galaxy. Tom knew that even at ten times the speed of light it would take thousands of years to get from the edge of the nearest galaxy to the edge of this one, but now and for the foreseeable centuries, Earth would be on the opposite side of the Milky Way.

Crackpot idea number two was from a supposed “eminent

scientific mind" living in Poland. His theory was that of a number of people who proposed the "Hollow Earth Theory." It was celebrated in several novels and generally stated there is a special, hidden entrance to this underground world near the North Pole.

The biggest problem with that was if even ten percent of the Earth were not solid under the crust, gravity would not be what it is. If it were not absolutely evenly weighted all around the globe, the world would have a wobble that would be disastrous. Nobody had yet explained how this was circumvented until this person who claimed the beings living under our feet each weighed several tons and it was their combined weight that made up for the missing rocks.

It was loopy enough to make him shake his head.

Number three had to do with the author stating he had "empirical proof" that the Moon was once a sort of rocky wart on the Atlantic surface of the Earth, but some of it was underwater and as it was finally shoved away by the citizens of Lemuria—which Tom seemed to recall was either in the Pacific or the Indian Oceans—from its resting place between what is now Florida and Greenland.

Tom was about to just flip pages to a "real" article until his eyes hit the first line of item number four.

> "If there <u>are</u> flying saucers, and I tend to believe there may well be, they must use some sort of magnetic locomotion, and I believe I understand what it could be."

CHAPTER 7 /
A VERY RICH MAN, INDEED

BUD HAD a huge grin on his face as he stepped inside the big office. "I just heard from Harlan the FBI went over what was left of that jet that knocked us out of the sky and found nothing useful."

"So, why the grin?"

"Because they did find that Olds twelve miles away from the airport in some place called Sheffield, and inside they found the clothing the airport man described along with the hat and inside that had they found some hairs. That was no fellow who tried to kill us; it was definitely female, medium brunette and likely to be in her twenties or thirties." He stopped. "That's really about it for now, but they are trying to do a complete DNA test and will see if there is anything in their databases."

Tom made a sucking sound behind his front teeth. "Anything special about this Sheffield place? Another airport, major freeway access, teleportation pad?"

Bud shook his head. "Just State Highway 10. It runs back north and is likely the way she drove down, and it continues south toward Connecticut. Over the border she could have kept going or split off onto Highway 44 and gone east or west."

"Major places on this Forty-four?"

"Umm, Poughkeepsie to the west and Hartford to the east. Interstates are close to each."

They both realized the female pilot could be anywhere by now.

The next morning Tom went straight to the large lab next to the office after telling Trent where he would be.

"If dad asks tell him I'm working on the aircraft call issue. Thanks."

He sat down at the computer in the lab making notes about both the issues and some possibilities to investigate. On the Issues side he had:

- Too easy ID of key personnel when on radio
- Too easy way(s) to track aircraft based on initial call in
- Possible internal "mole" informing when flights take place

After looking over the short list he underlined the word “Too” in the first of the two items and began compiling a few ideas for how to circumvent the issues. It was mostly the first item on his list he felt needed some concentration, but he also recognized the possibility that number three might also be germane. He TeleVoc’d Harlan and asked if he could come over.

“Actually, Tom, I’m walking to the Admin building right now for a quick meeting with Legal. Uh, could I come to you in about twenty minutes?”

“Sure.” Tom told him where he was.

When he showed up at the lab, Tom pointed to a stool. Harlan sat down.

Following a recap of the most recent aircraft attacks on him, Tom said he was more than fed up with being a target. He showed Harlan his list and gave him a minute to read and think about the items.

“I believe I can fairly easily take care of number one. Number two is a tough one because of Federal regulation for aircraft-to-aircraft and aircraft-to-ground communications. I could have a solution there as well. I can’t come to grips with the last one. That is why I wanted to talk to you.”

Harlan sighed and nodded. “Right. If we have someone in our controller system who is letting… well, people know when you are flying, he or she might also be telling on your father. Heck, on me for that matter.” He let out another, deeper sigh. “Looks like we have to trace all calls coming from the control tower and the cell phones of whoever is working there. Give me a couple days and I’ll let you know if we find anything.”

“Will it help if I go for a few flights? Act as a sort of decoy?”

“It might, but how do you stay safe?”

“That little jet Bud and I once almost took to the ground the hard way can fly supersonic. Not by a lot, but that puts it faster than anything civilian and even some military. I’ll let it be known I am taking a few test flights to check out some new avionics. I won’t stray more than a hundred and fifty miles or so.”

They agreed to give Harlan the rest of that day to set things up, and Tom said he’d take his first flight out at ten the next morning.

When he did it was without any extra fanfare other than to ensure to ground tech was someone he recognized. In fact, she was too familiar.

Tom TeleVoc’d Harlan to tell him, “The ground tech over at the

Barn, Johanna Morrison, is the same tech who has been here before each of my flights ending in a problem."

"Okay. I'm in the tower with the BigEyes and I've just swung them to watch her. If she takes out her phone I'll see it. Unless she steps inside the Barn. Well, I'll get a trace going."

Tom signed off on her checklist and nodded to her as he climbed into the little jet.

A minute after he took off his TeleVoc beeped. "She did not get on her phone, Tom. In fact, she is cleaning up the area and scrubbing down a small fuel spill. I tend to think she isn't our person."

His flight took Tom around in a loop covering north New York, across Vermont to Bangor, Maine and down to Boston before making a diagonal line back to Shopton.

Not only was he not attacked, but Harlan later informed him nobody in the control tower made as much as a bathroom break during the two hours.

It might be a dead end but his Security chief suggested they keep it up a few more times during the coming week.

"We might catch a fish yet."

In the middle of the afternoon the front gate called and Trent notified Tom he had a visitor waiting at the front gate.

"A man whose identity has been checked and he is a legitimate businessman with a desire to, and I quote, 'Speak to Tom Swift about accomplishing the impossible for me.' End quote. Do you want me to have him brought over?"

After looking at his desk that was conspicuously absent of a specific project to concentrate on, Tom told his secretary to have the man brought to the office.

Nine minutes later there was a knock and the door opened.

"Mr. Tom Swift, please meet Mr. Boyd," Trent provided the basic introduction. As the visitor came in the secretary gave Tom a short shrug telling him he had no idea about the nature of the visit.

As they shook hands, the man introduced himself. "I'm William Lawrence Boyd, and if that sounds familiar I have to tell you the great man was my grandfather." When Tom looked askance a moment before it hit him, Mr. Boyd opened his mouth to explain, but the inventor's smile and nod stopped him.

“Ahhh, I see you have hit upon my meaning. Certainly, William Boyd was an actor and best known for his Hopalong Cassidy role, but he was also an investor and a very savvy man, money wise. His own son died in infancy but he had what they call a love child, my father, while shooting a few of his back-to-back Hopalong features in California. My father passed at a young age, barely a year after I was born, and Grandpa Hoppy, as he wanted me to call him, helped my mother raise me. I was born in nineteen hundred and sixty-two, one year to the day before the President was assassinated. Grandpa lasted another ten years minus a couple months. He helped teach me the value of money, friendship, and helping others.”

“Well, it is a pleasure to meet you. Now, what can I, or Swift Enterprises and the family of Swift companies, do for you?”

“Mr. Swift. I’ll come to the point fairly quickly, but allow me to paint a mental picture, if you will.”

“Certainly, Mr. Boyd.”

“Please, call me Bill and if you will, might I call you Tom?”

Tom nodded and smiled. The man had a certain way about him he was beginning to like. Nothing he’d said so far was anywhere close to a brag, it was just facts and background information.

“Fine, Tom. So, if you will picture this in your mind, as portrayed in many apocalyptic movies, TV shows and books, we are using up the available land on this shiny blue planet of ours at an alarming rate. Of course, we could tear down forests but that would play havoc with our air. Tear out farmland and our food supply suffers. Or, we could travel off planet, just as you have, but that is not even close to practical for the number of people it would take to have a successful alternate world.

“We might inhabit the oceans. Even you know that better than most with your incredible underwater growing environments. Mankind has, at more than one time, come up with fanciful solutions to overpopulation on the ground, and the flying city idea was born. Now, I am a realist and understand that I might be asking a lot, even from the man some would call the amazing Tom Swift.”

“If that is idle flattery, I am immune, Bill. But, your opening statement has me… uhh, intrigued. Please go on.”

As his guest rolled out his proposal and dreams, Tom sat with fingertips steepled in front of his mouth, listening and picturing what Bill described.

“In the end, Tom, my belief is that a flying town of some mile in diameter, open in the middle to provide air and winds a way to get

through without tipping the thing over can be built. That… hole, if you will, I see as less than a quarter of the diameter making the habitable ring around it more than a third mile wide. With forests and parklands and everything people will want to keep them from feeling disconnected from the ground below, I'm hoping this first one, my proof of concept, might host in the neighborhood of two-thousand people in roughly eight-hundred homes and apartments."

Tom was bothered by one main point. "Do you *actually* see this ring city floating in the sky? I could come up with lightweight materials and a set of strong towers to hold something like you describe up perhaps a few hundred feet, but *flying*? Well…"

"If it helps, I am what some classify as a very rich man, indeed. I am in that stratospheric level of wealthy men where I can count on my fingers those higher on that particular ladder than myself."

"I'm wondering why I haven't heard of you before, other than the obvious family thing."

Boyd smiled. "Well, there are those among the richest in the world who seek notoriety and fame. They hire publicity companies to make certain everyone knows when they sneeze or buy into some small company or give a few paltry million dollars to some charity. I do not *want* to be known. In fact, if you can help me with my dream, I would wish to remain so far in the background that nothing on or in this flying city bears my name. I wish to do it to show everyone what can be done and what *must* be done before it is too late! I hope other rich men and women might follow my example."

Tom steepled his fingers in front of his mouth and tapped his front teeth as he considered what to say. Finally, he gave up.

"You do realize what you seek to do might be considered to be impossible, don't you?"

Boyd nodded. "Yes, I do, but my belief is that if anyone might do it, then it is likely to be you! You see," and he leaned back in his chair and sighed, "I've gone to more than a dozen concerns with this project. All of them, to a man or in one case a woman, laughed me out of their offices. At least," and he now leaned forward, "you have heard me out without any hint of mirth. I can see in your eyes that the idea of a flying town or city intrigues you and has your imagination working. Am I right?"

Tom let out a short chuckle. "I have to admit to you, Bill, that the idea is intriguing but the science is probably against both of us. But, I'll tell you what I'll do."

Boyd was now looking at Tom eagerly. "What? Tell me."

Tom outlined his thoughts. For a small fee he would begin looking at possibilities.

"I might even come up with a basic design or two or three including your ring concept. I do need to warn you that aerodynamically, what you seek is tricky. Unexpected winds capable of flipping this thing on its side; that sort of problems. What I come up with I'll put into a modeling application and check it against many types and degrees of weather and winds. I'm afraid it is all I can promise right now ."

"But," Boyd now asked, "if you do find something that is even slightly possible, will you agree to—and for the payment of all necessary funds—try to make my dreams come true? Will you at least build me a scale and working model of such a dream city in the sky? Even if it is just a few thousand feet wide, I want to see it a reality."

Tom nodded. "I can at least promise to take this to the model stage. I have to tell you my belief is that only a one-quarter sized model will give us any true data. Something smaller, obviously less expensive, would not give the necessary and pertinent information to tell us if it is a practical solution." He looked at his visitor. "It is more than you have received from others, and all I can give you."

They agreed to a price for the initial investigation and to have the inventor produce at least a trio of likely designs, and then another level of funding to come up with models of the three to do wind tunnel testing with.

"The quarter-sized model would not include houses and people, but it would be weight accurate to account for the likely maximum number of residents, trees and such."

Boyd left five minutes later accompanied to his car by Gary Bradley from Security.

Not wanting to seem like a magpie who jumped at the next shiny object that came into view, Tom knew he had to tackle the, "Don't track Tom" project before he tried to do much on Mr. Boyd's project.

Going back to his list, he believed he had the answer to number one: It was too easy for just about anyone to identify him, or his father, by their voices over the radio.

The TeleVoc was the key to this one.

Because it could, when programmed for a specific individual, provide that person's own voice inside the head of the recipient. Simply add a small circuit to the aircraft's radio and any one of a great number of voices could be simulated across the airwaves.

That was only half the problem. The other half was the identifier of Swift Two, for Tom, and Swift One, for Damon.

That would need to cease and be replaced by an airframe-specific designator such as Swift SE-11 Alpha, Beta, or Charlie, etc. and none of those sub-identifiers would be tied to an individual. Rather, they would indicate the number of aircraft in that series in the air with Swift pilots at that time.

He wrote a report regarding this dual change and forwarded it to Harlan and to his father.

That meant, with Harlan trying to track down whoever it could be giving out information to one or more… could he call them enemies? Sure. Harlan was trying that angle so Tom re-read what he'd put as his second bullet point.

It was too easy to track any aircraft from the time they called in before takeoff and to "watch" that plane or jet as it crossed the sky. A good part of that was the IFF each plane had to broadcast that told controllers who was where in the air.

There would be no way around that.

It was the law, and even though Tom was guilty of turning his IFF off inside the *Sky Queen* on occasion when stealth was mandatory, it wasn't something he wanted to be involved in on a wholesale basis.

The following day Harlan called to ask Tom to take another flight.

"This time I need you to make a big deal of changing your mind from the small jet to your Toad. I believe I have an idea I need to check out."

"When do I go up?"

"How about calling for the little jet now for takeoff at one and then get down there fifteen minutes early and tell whoever is at the Barn you've made a mistake and absolutely need one of the new SE-11s off the line and pronto."

When he arrived at the Barn, Bud was waiting for him.

"Thought I'd tag along, skipper."

Tom looked at Bud but the flyer was the very picture of innocence.

Together they made the standard checks but about half way around Bud suddenly stopped and snapped his fingers.

“Hey, Tom!” he called back to the inventor who was still on the other side of the tail. “I thought I heard you were taking up one of the new Toads. What gives?”

Tom, realizing Harlan had primed Bud for all this came around and stopped. He motioned for the ground tech to come see them.

“I’ve made a huge mistake when I asked for this to be prepped. Can you call over to the final assembly building and get them to rush one of the latest off the line of the SE-11s over here?”

The young man looked confused, but nodded and went into the Barn to make the call.

“It’ll be here in fifteen, Tom. I’ll make sure it’s fully fueled and you can go in a half hour.”

When another tech taxied the jet over to them, he climbed out and nodded to the other ground tech before turning to Tom. “Sorry for the mix-up, skipper. We got the wrong word. Chuck and I will have this ready in no time. I fueled it before bringing it over.”

Tom was about to tell them it was not a mix-up, but Bud put a hand on his right forearm and made an almost imperceptible shake of his head.

When the pre-checks were complete, Tom signed the paperwork and they both climbed in. Bud picked up the mic and made the calls to the control tower and they were given priority clearance for the diagonal runway that started just two-thousand feet away.

The Toad hadn’t been the air for more than ten minutes when a voice they both recognized came over the radio.

“Ames to Tom. Ames to Tom. Come in, Tom.” Then in a voice that said he’d just turned to talk to someone else, he added, “Do I say, over now?”

“This is Tom, Harlan. How are things down there? Bud is with me and we are just passing over Bristol, Connecticut. And, as long as you pause a second or so, you don’t need to say the ‘over’ thing.”

“Right. Well, we have our man and the great news he isn’t one of ours. He’s one of the FAA’s people in the top room of the tower up the hill. As soon as you took off he made a call with the aircraft type and the fact it was you inside. The FBI is almost there and we’ll assume he’s been listening in and will try to make a run for it. He won’t get far, and that’s a promise. I think it is safe to come home now.”

“Roger, Harlan. Many thanks, and over and out!”

CHAPTER 8 /

IT'S ALL GOOD

ASSUMING the need to fly at least fast enough to cover a few hundred miles in a day, Tom realized there was going to need to be some degree of aerodynamics involved in the flying city, but it would be minimal. The main reason was unless residents wanted to experience a constant wind of some twenty or so miles per hour always blowing from the "forward" direction, maneuvering might be a night time thing with only slow and light breezy three-to-five miles per hour flown by day.

Then again, he and William Boyd never actually discussed a specific hoped for travel speed. That made him write down a note to call the man and ask a few questions like speed and where he intended to fly the floating city. Before setting it aside he added:

- Can he get FAA approval for this!!???

No matter what, Tom knew a big, flat, typical high-rise town with all that vertical surface area wasn't gong to be what would work. He liked Boyd's idea of a flying ring and would start there with modeling several ideas in the CAD computer in his office.

He briefly considered an oblong shape where one end would always be considered the "front" of the city as it traveled, but then had the thought people might like a bit of a change now and again.

In the back of the inventor's mind was the need for some sort of safety fence, railing or solid blockage to keep anyone from getting too close to the edge. He pictured maps and charts of centuries earlier that had such things at the supposed end of the Earth listing, "Here Be Dragons!" with ships tumbling over the edge.

Well, there would be no dragons but a precipitous drop at the edge he needed to account for.

Would that same barrier act as a windbreak? Could it? It probably would need to be curved and high enough to send any prevailing or flight-caused winds up and over the top of everything, but would it need to block it all out? He would have to see.

Of course, it was one thing to design a theoretical flying city, and an all together different thing to achieve that plus real flight!

Tom knew he could certainly build enough giant repelatrons to lift such a structure, but how long they could run and how much

power they would consume even in any one hour was going to be so astronomical that continuous flight might not be possible.

There might be, he thought, some magical means to get the thing in the air where it could provide both residential spaces as well as be a continuous tour of the countryside.

Ha! Magic, indeed!

But, he'd recalled that article stating that one man's opinion that flying saucer-type propulsion *was* possible.

If he tried to describe that concept to someone like Bud he'd likely receive a strained grin and an offer to be taken to see Doc Simpson.

He pulled up the electronic version of that issue of the journal and re-read the three paragraph description before the journal's editors gave it the thumbs down and made light of the idea. Sitting back he tried imagining the great counter-rotating magnetic rings the man described with their alternating polarity areas that changed from negative to positive and back again faster than most electrical switching equipment he'd ever built or encountered could.

It wasn't any wonder the man proposing the flying system had never actually built one. It might be all but impossible.

He turned back to the city design. Fortunately, the CAD program was meant primarily for flying vehicles and objects so it could impart a degree of movement and speed and therefore could simulate winds coming over something.

And, while that was originally meant by the application author to help design better aircraft wings and fuselages, it was going to come in handy for this project.

He began with a circle. It probably didn't matter what width for now; that sort of fine tuning would come later. As he looked at it, the words of William Boyd came back to him.

"In the end, Tom, my belief is that a flying town of some mile in diameter, open in the middle to provide air and winds a way to get through without tipping the thing over…"

Tom had both seen and played with solid circle flying toys as well as ones that were more like Boyd's vision of his city and recalled the ones with the wide gap in the middle seemed to be both thinner and flew faster and farther. Aerodynamics at work. So, he started to create the hole in the middle, but that reminded him of a doughnut and that made him hungry for one of the fried, sugary treats.

He got up and left the office heading for Chow's kitchen.

“Hey there, Tom. What kin I get fer ya?”

Tom slightly blushed mostly because he had been trying to be good about his sugar intake.

“Well, Chow, I had a hankering for a doughnut and you generally keep a few at hand. Got anything like that?”

Chow smiled. “Matter o’ fact, I got the dough fer the nut in the fridge risin’ a bit ‘fore I fry it up. Give me a half hour and I’ll bring ya a plate of three right from the oil. Any particular toppin’s ya want?”

Tom told him plain with a small sprinkling of sugar would be fine.

“Okey doke! Three plain, dusted, comin’ up.”

Back in the office Tom went back to the computer trying to concentrate on the task at hand. If he took the concept of the spinning magnetic rings, he would need to allow for those in the outer part of the large ring. How much? Twenty feet? Fifty feet? He really didn’t know and so he settled for thirty feet and would make changes as he figured out more.

So, he had a thirty foot by one-mile disc into which he took out the hole. At first he thought to make it half the width but soon came to the conclusion that large a gap was unnecessary and would detract from the number of build-able square feet on the surface. He made it smaller until it was barely a thousand feet wide.

There, again, he would need a safety fence of some sort just like the outer part of the ring. But, would it need to be as tall? Would being tall keep it from doing the function of allowing air to circulate down and away from the ring?

He called up the airflow simulator and ran a five, ten and twenty knot wind over the disc.

As expected, it flowed well and smoothly but that meant it was rushing along he surface.

The protective fence or wall—he told himself it would need to be clear to allow for views by the residents—was added to the outside of the ring.

Before he could try the simulator again there was a knock on the door and Chow came in carrying a covered plate.

“Got them doughnuts fer ya, Tom. Come n’ get ‘em while they’s hot.”

After taking a bite under the watchful eye of the chef, Tom

proclaimed them to be exactly what he'd been craving.

"These are great Chow."

"Heck. Anythin' fried with either sugar or bacon, or both, is good eatin'. It's all good. Whatcha got over there on the computer? Some sort o' kiddies toy?"

Tom moved over to his desk and as Chow joined him, absently taking one of the fried treats and munching on it, the inventor explained the basic concept of the project the man had asked for.

"Is that William Boyd as in good ol' Hopalong Cassidy?" Chow asked focusing more on the man than the floating city.

Tom nodded. "Grandson. So, he asked me to see if a floating city, something that flies slowly and a few thousand feet in the air, is possible. That ring is the first of the design ideas I'm trying." He described some of the basic issues or problems such a flying place might have.

"So, lemme get this straight in my tiny mind. It flies around an' ya got ta' keep the wind caused by all that movin' from botherin' folks up there? Sure, I see that. I spent three months in a part o' Texas that gets pretty steady winds all day long and it like ta drive me nuts! Blew my hat off ten time a day and made puttin' down paper plates or napkins just 'bout impossible without weighin' 'em down."

"I need to ask you something, Chow. Would you or people you know ever want to live and ride around on a flying disc?"

Chow, who was again wearing a baseball cap rather than his ten-gallon hat, took it off and ran his right hand over the top of his bald head.

"I s'pose most folks would have ta be retired or do their business remote like. So, lots o' Internet connections'll be needed. Then, there might be a few jobs. Store clerks, cooks and waitresses and even a few police types. Most o' the folks I know outside o' work have daytime jobs where they cain't do it from a computer. Then again, I'm a guessin' these folks'll be pretty rich and perhaps not in the workin' mood."

Tom nodded. "Thanks, Chow. You've said one of the things in the back of my mind. This might seem like a utopian situation, but I think Mr. Boyd is going to find that the reality is there has to be more than walking paths and parklands for the residents to see and do."

Chow looked at his young boss with a kindly face. "Ya know,

youngin', that ain't any o' yer concern. Hoppy's grandkid wants ya ta build the thing, not lecture him on the who or the what of it all. I think ya just gotta concentrate on that and see what comes o' it."

Once Chow left Tom sat back down with the last doughnut and continued with the design. The simulator told him the barrier on the outside of the ring could be as short as five feet and as tall as seventeen without greatly impacting the airflow, but the inner hole's barrier had to be at least twenty feet tall or else the winds over the top would drop inside and start swirling at a rate faster than the city would be traveling. That meant turbulence he wanted to avoid.

When he tried the ring as a disc without the hole, Mr. Boyd's suspicion that the hole was necessary was born out. No matter how high the barrier at the edge, the winds swirled and at one point formed a small tornado just aft of the center point.

"Well, that's not good," Tom said out loud.

"What's not good?" Bud asked stepping into the office.

Take a look at this," the inventor invited and showed Bud the test results while he described what Mr. Boyd had come asking to have built.

"Jetz! A flying city? That's pretty, uhh, *avant-guard*." He smiled. "Hey, those You Can Speak French lessons on line work. I just used French words."

Tom congratulated his friend on his internationality and then showed him the ring with hole and how it handled the crosswinds.

"Yeah, that's a lot better," the flyer admitted. "Makes it look like it could actually fly without knocking all the trees and houses down. So, the next question is are you going to build it, with a follow up of *when*?"

"I first have to find out if this is actually the best shape, flyboy. It could be that an oblong might be better. Although," he paused thinking of something, "it might be best to have this so it can fly in any direction so one day people on one part are in front and the next another arc of homes is there. Hmmm?"

After Bud left Tom got back to his design. He tried the oblong shape and while it did marginally better due to the narrower profile, it picked up a tiny wobble in winds—or flight speeds—of greater that twenty-two-point-six knots.

For the rest of the day Tom tried such shapes as a square which he had no thought of being the solution, and he was right. He abandoned non-round shapes, including his oblong attempt, when

he considered that if the rotating magnetic rings were the flying solution, they needed to be round and it would be best to have them at the farthest point from dead center for the best balance.

Probably why flying saucers are disc shaped. At least, that is what he told himself.

On the drive home, Tom started to wonder if the rotating rings could also be as effective if they ran around just outside the central hole. Or, if he might need to have both the outer and inner areas outfitted in order to provide the necessary lift.

"So many things to think about, Bash," he told her at the dinner table. "I probably need to go find the man who theorized the magnetic approach and see what he has to say. The problem is, the editors of that journal have been notorious for not providing any contact information of any submitter who does not add it to their article. And this, the worst ideas list, isn't even anything these people sent in; they were found and the journal is making fun of them." He grinned. "Can't say I disagree with that for most of these. Most of them are either foolish or misguided."

"Not this one, Tom?"

He shook his head, but said, "I really don't know. All I do know is that his reasoning, or the rather abbreviated version they printed, seems to bear some physical possibilities." He shrugged and the matter was dropped until they were climbing into bed that night.

"I think you need to find that man, Tom. Or, is it a woman?"

"Likely a man. Women don't generally talk about their favorite flying saucer locomotion methods."

She grinned at him. "Okay, then this man. Do you have any clues about him? Has he published anything else?"

Tom looked at his beautiful wife. "You may have something there, Bash. I have his initials, F.F., and in order for that journal to get his theory, it must be published somewhere. Tomorrow I'll do a search of the Internet and see."

He kissed her and they turned off the lights.

Tom's search began in earnest by ten the next morning after a meeting with his father and Jackson Rimmer to discuss any legal implications in building what William Boyd had asked for.

"Are we providing all the necessary things to make this supposed city in the sky fly?" Jackson asked. "By that I mean are we creating

the flight systems and safeguards to ensure it flies and does not crash? And, will this Mr. Boyd indemnify us for anything that happens if someone else does something wrong?"

With the answers all in the affirmative, Jackson took a short note and suggested a formal contract was needed and would draft it over the following two days.

"Please send me any notes you took during your meeting so I can capture as much as possible," he requested.

As Tom sat down and started his search he found the journal's "Worst" article reprinted on at least five different "blog" sites that he knew probably did not have permissions. For fun he glanced at one of them and saw the owner of that blog had responded with a scathing set of remarks about the editors of the journal, their possible canine heritage, and the fact they ought to be, "…strung up and flogged and possibly killed for their doubting these fine scientific breakthroughs and groundbreaking ideas!"

He shook his head. Some people thought that just because they had access to the Internet, they had the right to make threats against others while hiding firmly behind a wall of anonymity.

He himself had been the butt of one such rant about three years earlier when he had published a paper regarding the feasibility of an underwater train. That soon became his HydroWay and proved his contentions. The blogger, to whom he sent a nicely worded request to get an apology, had not done so but had published a, "Tom Swift is trying to bully me into silence," letter online.

That, with a little prodding from Jackson Rimmer, had been taken back down the following day and the rather sour apology put up in its place.

It's in the past, Tom thought as he returned his fingers to his keyboard.

With a deeper search he found a second, lengthier article on the Internet, privately published by the author, on the same subject.

The author had identified himself as "FF" and said it was because of the massive level of personal abuse he used to take from his detractors and, "the enormous cadre of those who would shout down anything new. Once the Flat Earthers and recently the hatred deniers, these people and groups cannot be allowed to censor free thought."

As soon as he'd sent off the list and information to Jackson, Tom sat back and looked over the first page summary of the article, which was so intriguing to him he printed the entire piece out,

moved to a comfortable chair in the conference area of the office, and settled in to read the entire twenty-nine pages.

If he believed the summary was intriguing, he was in for a few surprises as he moved from page to page. Several of them were filled with scans of entire pages of computations and notations.

It took many minutes for him to follow each formula from beginning to conclusion and with each completed one, his interest grew nearly by exponential proportions.

The author was, in *brief*—Tom did not consider the phrase "in a *nut*shell" to be a fair assessment of the man's work—stating that if all known laws of physics were to be believed and followed, then they not just pointed at, but failed to deny that, gravity was a byproduct of mass and it also included some levels of magnetic attraction and repellance. This being the case, it should be possible through the application of "…a counter magnetism force, and at a high enough rate of change (i.e., a shift back and forth in the positive and negative polarities in narrow bands) at a high enough power level, and two identical sources rotating counter to each other, gravity might be made to counteract with the device or vehicle providing such a high-speed magnetic disturbance."

He reasoned that magnetic attraction, or the opposite effect, worked on a specific cycle. If it were possible to produce a force so wildly faster than that normal sine wave, it could be possible to counteract gravity. "Counteract gravity and you can float anything directly over a mass," the Earth was his example, "using proper equipment that should not require massive levels of power to sustain."

Tom put the papers in his lap and closed his eyes trying to imagine the device necessary to prove this theory. The author admitted he did not have the wherewithal to build the device for testing, but he had created computer models of the interactions and they did show such a thing *should* work.

But, as the young inventor well knew, beliefs and proof are often two very different things.

The compelling thing was the man who had written this lengthy paper had included all the math to back up his assertions.

Tom like things that were written down.

CHAPTER 9 /
A RADICAL APPROACH

TOM COULD barely catch his breath he was so excited—after reading the entire article—at the possibilities. If this method of creating lift had any merit, and he found the way to exploit that, it could be the force he needed for his floating city of the skies.

But, science fiction and supposition about how the so-called UFOs could fly, silently at that, through space and also into the atmosphere was one thing; coming up with a workable version of something never really tried was another.

It was something he did not feel ready to take on all by himself.

The day before he'd picked up his phone and dialed the number of the man he knew who might tell him if his thoughts were way off base or not.

It required help from Harlan and his network of acquaintances to find the man behind the article and to get a phone number—his was unlisted, at least as far as the general public was concerned.

"Farley Fairchild," a man's voice answered the call.

"Mr. Fairchild, this is Tom Swift in Shopton, New York. Perhaps you recognize my name. I was wondering if you have a few minutes to talk to me about polar opposition hyper-interrupted magnetism?"

There was a moment of silence and then, "Trying to build the mythical flying saucer?"

"Something like that. Might I fly down to Richmond and visit you tomorrow or the following day? I have a possible application for it, assuming your calculations are correct, and have the financial backing to make, at the very least, a test model to prove the concept. Interested?"

"Well, assuming this really is Tom Swift and I am not being spoofed by another of those people wanting to poke fun at something they are ill-equipped to understand, then yes. Uhh, might I call you back in a few minutes?"

"Certainly. Call the main operator number which I can give you or you can find on our website and ask for me. Tell whoever answers this is a Tom Priority Call and they will get you through as quickly as they can."

"Great. I'll call the number if you can give it to me. I will also

check to see it is the same one on the site if you don't mind."

"Not at all, Mr. Fairchild. I'm looking forward to continuing our talk in a few minutes."

When he got connected to Tom five minutes later Fairchild seemed a little overwhelmed.

"Wow. I wanted to believe it was you, but you never know. So, of course I'd love to have you come see what I've got. Now, it might take me a day or even two to dust off all of my papers on the subject, but… well, today is Tuesday, so can we make it this coming Friday?"

"Certainly. I'll fly into RIC at about eleven and catch a taxi to your place, if I can have the address, that is."

"Actually, I am a lot closer to Richmond Executive Airport to the southwest of the big one; I'm just a five minute drive, so I can come pick you up unless you need to have a car."

Tom did a quick check of the online charts for the airport and agreed. "See you Friday at eleven, then."

When he landed at the airport he found there were several dozen private planes and jets already there and he was directed to a parking spot in a small strip of tie-downs to the left of the small terminal.

As he closed the canopy of his Toad jet he noticed a man standing against a late model car parked on the side of the access road just next to the terminal. The man waved at him and Tom waved back. He walked the two-hundred feet and introduced himself.

Farley Fairchild was a mild-mannered man of about sixty with a pleasant and omnipresent grin.

"A pleasure to meet you. Should I call you Tom or Mr. Swift?"

"As the saying goes, it's my father who answers to the Mister part. So, please, it is Tom."

"And I'm Farley. It is a bit of an odd name but my mother loved the old films of a man named Farley Granger. Said he was the most handsome man on the silver screen." He pointed at his slightly overweight body and then at his somewhat plain face. "I never did live up to her dreams, but that's my burden to bear. I must say," he said as they climbed into his car, "that I am more than a little intrigued anyone would want to try to see one of my wilder theories put to actual use. You see," and he turned them around to leave the airport, "I never had enough money to build a model to prove my theories. I'm almost certain they are sound, but can't prove it."

Tom nodded. “I think I might be able to help you with that. All assuming, of course, that the basic physics of your written materials can be proven.”

They left the airport, headed north on Interstate 10 and soon made a right exit, another right and a final right into a neighborhood. A few more blocks saw them tuning into a cul-de-sac and then the driveway of a modest home at the end.

“We are here,” he announced shutting the engine off.

Nearly every spare inch of space on the main floor was given to electronics, mechanical devices, and computers. Farley explained he lived on floor two and did all his research and work downstairs.

Tom marveled at the copious amount of notes and formulas on nearly twenty blackboards spread throughout the house. There were some notes he had to look at twice as they seemed all but impossible on first glance, but they appeared to be complete and came to logical conclusions and answers.

Seeing his guest’s interest, Farley pointed to one board that was particularly crowded with symbols and notes.

“That the one you’ll be most interested in, Tom. That is where I conclude what it takes to create an anti-gravity field like our friendly out-of-this-world visitors use. Come. Let’s take a closer look.”

After giving the inventor ten minutes to look at the data, Farley looked at him and smiled. “Interesting, isn’t it?”

Tom could only nod. It was idea shattering if the theory held up. The mathematics certainly looked viable with no false bits or over-extensions of known facts. He set the papers he had in his hands down on a relatively empty surface.

“So, please tell me just how fast you consider to be hyper fast when it comes to switching the magnetic poles of the outer and inner rings?”

Fairchild nodded, rose with a motion for Tom to keep his seat and said he’d be back in thirty seconds.

He was, and had an old laptop computer under his arm.

“Give me a minute to plug this old girl in; the battery is shot and there have been no replacements for this model for about a decade. Still runs, though.” He set the laptop on his desk after using an elbow to clear a space for it, got down on all fours and fished the end of an old power cable up behind the desk.

“Can you come grab this, please?”

Tom got up and took the end piece in his right hand. Fairchild climbed back up and took it from him shoving it into the side of the slate gray computer. It was dented, scratched and looked pretty dirty on the outside, but once he opened the screen Tom could see the keyboard and all surfaces inside were immaculate.

They waited for about a minute while Farley told him it took that long for enough power to build up to actually boot the thing.

With a sad *ploing* noise, a bit of a grinding as the old-fashioned hard platter disk drive spun up, and finally the screen lit up and a series of numbers and images flashed on the screen. It took another minute but the home screen—a photo of Fairchild and a Great Dane dog—came on.

He searched for and found the file he wanted and clicked on it. Second later a page with some figures and a spinning animation showed up.

"There. There's your answer. It depends on the overall size of the magnetized rings—one of which must be an electromagnet while the other a metallic one with alternating polarity bands—but the basic formula for it is for each ten feet of diameter the change in polarity must rise by one-point-nine-two-seven-three-three-three percent. All starting, by the way and to anticipate your next query, at six-hundred-fifty-two-point-six times per second."

"Okay, but how much power, err, lifting power does that supposedly generate?" The inventor was getting more and more curious because he could not immediately spot anything pointing to this *not* working. Admittedly it was highly doubtful from the outside looking in, but now he was on the inside looking at the actual functionality, he had an inkling this could be real.

"Well, my initial calculations show that a twelve foot platform, and I believe circular is necessary which is why so many so-called UFOs are round, can lift a total of ninety-seven kilos. About two-hundred-thirteen pounds and a few ounces."

Following his visit to the scientist and bringing back a copy of Fairchild's notes and computations, Tom studied them trying to find any fault. For the third time he could not; it just looked feasible.

It also looked so simplistic he could only believe the incredibly fast switching necessary to make it work was too expensive, or impossible, for most people to attempt.

However, Tom had an enormous company filled with some

extremely talented people to assist him. He began calling some department heads to set up a group meeting to be followed by individual ones.

When the five people were assembled in the office, Tom stood and told them what he was going to lay before them was a practical impossibility, "…and might make you think I've goon a bit loopy. I can assure you that this, and I, are serious business and a very large contract with a billionaire is at stake. So, with that, let me tell you about this crazy concept."

He set forth the notion that there obviously are flying saucers, a known thing because the Swift's former Space Friends flew in them and over great distances. He reminded them of the strange, symbol-covered rocket that had crashed at Enterprises ten years earlier and how he and his father theorized that just because it did not seem to have any rocket motor or a fuel source did not mean it had not come to Earth by being shot here from a long distance.

"The very fact it changed course before coming down in an unoccupied part of the grounds, and we know it actually slowed from its entry speed, says it was powered by something. We did get the back end opened three years ago, but whatever had been in there had silently self-destructed so we can't know the how of its delivery.

"But, I have located a scientist and have all of his notes and computations regarding a theorized possibility I want us to investigate."

He told them about the polar opposition hyper-interrupted magnetism concept of Farley Fairchild going into a high level of detail regarding the spinning of the opposing magnetic rings as well as the speed at which the polarity of one of them had to change.

"We must find a way to make a foolproof switch that can change the way the DC current flows at just under seven-hundred times a second."

There was a small gasp from his managers, but none more so that his manager of the Electronics department.

"I have to say that we have achieved nearly six-hundred switches per second in a small circuit and have been working on an eight-hundred cycle one, but for something the sheer size and amount of power you're talking, all I can say is wow."

"Wow, indeed," Tom responded. "I know the larger the switch mechanism, the longer it takes to make the adjustment. What about, instead of mechanical, we make it a computer-based switch?"

“Let me get my head around this. Are you suggesting the computer, and I know they can make changes in the millions of times a second, but are you saying that can be used to make the positive to negative switch?” He looked suspicious. “That sounds like voodoo electronics.”

That made Tom smile. “Yeah, it sort of does, but I have in the back of my mind that it can be made to run this far out flying saucer engine thing of Mr. Fairchild.”

He told everyone he’d like to meet with them each the next day and set out the schedule for possible development.

His meeting with the Electronics manager went better than he’d hoped.

“So, Geoff, you are now saying it might not be all that impossible? What changed in your mind?”

“Last night I told my ten-year-old boy his dad was trying to make something change back and forth faster than ever before and he asked if it would use a computer. I was a little take aback, but I asked him how that might work. You’re gonna love this. He asked what I was switching and I suggested it was two kinds of liquid. One blue and one red.

“He told me it was easy. Put two tubes next to each other with the two colors, and a back and forth valve of some sort. Have the computer just flip it to the blue side for whatever time and then to the red side and back again.”

Tom had a big grin as he said, “So, you’re now thinking that we put positive on, or in, one wire and negative in the other and have the computer open or close a single switch? How is that any different than what is available?”

“Here’s the part I came up with, Tom. We have one side that is pos-neg and the other that is neg-pos and the switch is actually a rotating gate. We can run that hundreds or even thousands of rotation a second using the proper electrical motor. As it turns it changes from one input to the other as fast as those leads are uncovered.”

“Okay. Now I have to go back and think about this,” Tom told him. “I absolutely see the concept, it’s the application I’m unsure about. Give me a couple days and I’ll come see you and we can discuss how to build this.”

That evening Tom asked Bart the same theoretical question, and his son came up with about the same answer although his was more complete with his description of the rotating gate switch.

If children could think of it, and they were not held back by adult negative thoughts or prejudgment regarding an impending failure, then it might just be possible.

Back in the smaller underground lab the next day, Tom built a small model of a rotating switch, powering it using a model racing car motor that would turn at up to twenty-thousand revolutions a minute. That would mean the switch would change three-hundred-thirty-three times a minute and if he placed three such gates around the circular switch that would mean nearly a thousand changes were possible.

That meant he could slow down the motor to the specific speed giving him the theorized proper number of switches per second shown in the Fairchild's papers.

He next had to rig up a sensor for another computer to measure the changes and to see if enough actual power came through or if the spinning, fast changes restricted it.

It was near the end of the day before he was close to having everything ready and he was tired. He remembered his promised to be home by five because the first of the potential nanny's was coming to interview.

After making certain everything was turned off he sprinted to the elevator, took it to ground level and ran to his car.

He made it home with three minutes to spare, but had been smart enough to call on his way so Bashalli wasn't worried he'd forgotten.

The young woman was from Canada and spoke with their particularly unique Saskatchewan accent. She even added the occasional "Eh?" to her sentences.

She was a pleasant-faced woman of twenty-five, had been a nanny since she was seventeen, worked for three families and was between assignments, as she put it.

"My most recent family were from Bahrain; that's in Iran you know, eh? Anyway, they had to move back to France because of his work so they gave me an extra month's wages and took me to dinner and then I was on my own a week later. Too bad, too, eh? I really loved little Babak and Bita." She looked at Tom and Bashalli, hopefully.

"Umm, you're not Iranian, are you," she said more as a statement than a question.

Bashalli explained her Pakistani birth but her assimilation into

American ways since the age of ten.

"Well, you sure are beautiful, Mrs. Swift. What else can I tell you?"

They asked her a number of questions and she answered each one with what they believed to be the truth.

At the end of about an hour they thanked her and told her she was only the first person they were speaking with. She told them that was fine and gave them her aunt's phone number where she was staying for the spring and summer.

The next morning Tom tested his spinning switch and sat back watching the results with great satisfaction. Not only was it switching at the needed cycles, it was passing through just as much power as was being sent in.

He called Geoff Stratton and told him of the successful experiment. Stratton laughed.

"You want to know something? I did the same thing. Found a motor that turns about the right speed, choked it down a little, built the switch and ran it last night."

"Did you make the poles top and bottom or side by side?"

"Top and bottom. I couldn't think it would work the other way. Why? Did you do it the other way?"

Tom admitted he had not, "Just curious, Geoff."

With the switching mechanism designed, it went to the Electronics people to build the one sized right for the model Tom was having Arv Hanson build.

It was a mini-ring with room around the perimeter for the two counter-rotating magnetic rings and for proper scale weight had three carefully arranged Solar Batteries stuck to the top for the necessary power.

Lab tests showed the magnetic rings could rotate for up to a half hour with that power, so Tom had three more pulled out and attached. It brought the weight fairly high for the size, but Tom felt it was a needed test of the lifting power.

Tom stepped forward, taking the remote control from Arv's hand and studying it for a moment. When he believed he understood the

various controls and the handwritten labels for them, he nodded. A flick of a switch on the model was taken care of by Arv and he also stepped back to stand nest to the inventor.

He'd worked with the inventor to create the four-foot-diameter flying ring model, something he's fashioned from just two circular pieces.

Inside were the two magnetized rings—one inside the other–connected to two electric motors and a pair of mechanical switches to change the polarity. Both rested on a super-slick sheet of a materials generally used in non-stick pans. Another such pad was attached inside the shell above them.

"Well, here goes either something… or absolutely nothing," Tom stated as he pressed a button marked **SPIN**.

As the five men stood near or slightly behind Tom, they all could hear the motors inside as they spun the strange, magnetized ring inside the outer part of the ring. It began as a long almost rumbling sound before proceeding to come up in pitch—and speed—over the following twenty seconds. Faster moved the ring and higher pitched the noise became until it settled down and went mostly silent.

Tom flipped the switch turning on the switching power and started to slide the speed switch upward.

He looked over to Bud who had an anticipatory grin on his face. Their eyes met and the pilot mouthed the word, "Go."

Tom watched the model knowing that the other ring of metal inside, running in the opposite direction and at a speed exactly equal to the outer ring was working or else the model would go spinning off, likely to be destroyed.

The only thing left to do was to energize the opposing magnets inside.

With the sliding up of one controller, those both energized and caused the sort of incredible fast polarity switching and interference Tom needed.

The model, all fifty-two pounds of it, began rising off the ground.

CHAPTER 10 /

MATH DON'T LIE

EVERYBODY IN the small group witnessing the first flight let out a cheer. All except for Tom. He was, frankly, disappointed at the very slow rate of rise the test piece was showing them.

Given the amount of lifting power Farley Fairchild had outlined in his papers, he'd believed his small ring might jump into the air, not lift off almost lugubriously as if it were on a tether that was only slowly being let out.

He was even more disappointed when it slowed its rise before it had reached thirty feet and seemed to come to a hover at under forty. Even if that was scaled up to a mile-wide ring, it would never get above a couple thousand feet and possibly not that high.

Seeing a little look of dismay on his friend's face, Bud came over and asked in a low voice, "Something not right?"

The inventor let out a small sigh. "It ought to be flying better, Bud. As in, it should have headed up faster and gone higher. I don't know what's the matter."

Bud chuckled. "Skipper? Just how many of these impossible machines have you built that you have so many to compare it to?"

Tom took his gaze from the hovering ring. "Uhh, okay. I get it. Maybe this is exactly how it is supposed to fly. Nobody has made something like this so there is no test data to compare it with. I guess I just need to now see if there are improvements to be made, or if Farley Fairchild's facts and figures point to exactly this."

He announced to the small group the ring was coming back down.

Arv stepped closer to the landing spot and flipped the switch to the **OFF** position as soon as it touched the ground.

Bud, Arv and Tom picked the ring up and set in on the low flatbed of the utility truck on which it had come out. Before strapping it down, Tom unplugged the batteries.

Bud excused himself; he had a flight demo for an important visitor who might like to purchase a small fleet—seven—of the longer range SE-11 "Toad" aircraft for a regional airline in Tennessee that was looking to fly a couple routes to Las Vegas and down to some of the resorts of Eastern Mexico.

It was left to Arv and Tom to return the ring to Arv's workshop where Tom suggested pulling it apart to check on the magnetic rings, or mag-hoops as Arv had dubbed them. As Tom inspected them, he noted there was no sign the rings had come into contact with each other; their natural repelling forces kept them separated enough while their natural attraction kept them from moving too far apart. This was a good thing.

The not very good thing was the slippery upper sheet had been worn almost to nothing.

He was going to make a note about both but forgot when Arv asked him to examine the small electrical switch. It had been partly scorched.

"That might have given up the ghost in another few seconds," the model maker stated. "The whole thing would have come crashing down. We were lucky you had the foresight to bring it in when you did."

Tom shook his head. "Not foresight, Arv; I was getting sick of watching it just sitting up there as if mocking me. I'd really expected something more spectacular from this."

Arv said nothing but was thinking, *Yeah, we all did, but maybe that's for tomorrow. The skipper will think of something to make it work.*

When lunchtime came the following day, Chow wheeled in his food cart and began setting up a meal for Tom on the conference area table. The chef sniffed appreciatively at the aromas coming from the French dip-style prime rib sandwich and the aromatic crab bisque soup he uncovered. He knew both were favorites of the young man and just happened to receive a shipment of frozen Dungeness crabs from a friend in San Francisco, so…

Tom looked up as the great smells arrived in his nose.

"Is that what I think it is?" he asked favoring his friend with a hopeful grin.

"Shore is, unless, that is, ya think yer smellin' a hot dog and sauerkraut with mustard along with a big old bowl o' chicken noodle soup!"

Tom got up from his desk where he'd been looking and looking at all the computations and formulae provided him by Farley Fairchild. Certainly the small model had flown, at least up a few dozen yards before it ceased rising, but that did not mean a larger

version was going to either fly or if it did, it might not go any higher and that would not be acceptable to him or William Boyd.

As Tom came over and sat down, Chow sat on the edge of the next chair and watched the inventor enjoying his meal. But, about halfway through everything, Tom set the sandwich down and sat back with a sigh.

"What's the matter? Somethin' wrong with the food?"

Tom shook his head. "No, Chow. It is great as always. I'm just a little bothered by the test of a new flying ring we did yesterday. It flew, but not by much and that is not a good thing."

He told the chef about William Boyd's hopes for his flying city and how he could design the actual city part—that was very easy—but it was the mechanism by which it might fly through the skies where he needed a lot of help.

"Ya cain't use yer repellertrons? Ya use 'em fer yer own flying saucer space ships."

"Not this time, Chow. I hoped I had something better. Something that will allow a flying city to just float above everything and move around the countryside."

He told Chow about Farley Fairchild and his theory about flying saucer locomotion.

Chow snorted. "Them flyin' saucer things don't use no locomotives!" he told Tom.

That made the younger man laugh. "Sorry, Chow. You are of course right. What I meant to say is the means by which they fly, their *motive* power, is what I'm having a bit of a time with. Fairchild has set forth a theory that such saucers have a couple magnetic rings that rotate in opposite directions, all the time making one of them change from positive bands—and there were fifty of those in the test model I tried—to negative ones and as fast as I could manage. I've been looking through Mr. Fairchild's numbers and equations to see if I either missed something, or if perhaps his formulas need a bit of fine tuning now that a real-world example has finally been built."

Chow took off his ball cap, something he'd been wearing more since his weight loss because his ten-gallon hat started sitting on his ears he'd lost so much weight even in his head. He fanned his face a moment with the bill as he thought of what he might say.

"So, are ya sayin' this Fairchild galoot never even built something ta test his idea on?" Tom shook his head. "That's jest plain stupid, if

ya don't mind me sayin' so."

Tom shook his head. "No, you are right in that most people who have an idea for a device or mechanism do build a prototype of it to see if their ideas are right, but Farley Fairchild doesn't have the financial wherewithal to do that. So, he's spent about six years working and reworking his equations to see if he can find anything new.

"That's what I was doing when you came in." He reached for the last third of his sandwich, dipped it in the au jus and took a large bite of it.

The bisque had disappeared before the first half of sandwich was finished.

"So, you find anythin'?"

Tom stood again and gave his back another stretch. "Perhaps. For one I am not certain, now, that the rings have to be solid. That adds a lot of weight and in a full-size city that means about ninety-five or one-hundred tons!"

"Jumpin' jehosaphat!" Chow exclaimed. "How's that possible?"

"Solid metal, Chow, that can be magnetized is heavy. And, the fact it is a pair of rings each nearly a mile wide are *really* going to be heavy. In his numbers, Mr. Fairchild believes they need to be about four-feet thick, each, and that really adds up. What I was trying to figure out was if they really have to be that thick, or that solid. But," and he shrugged, "if they are not solid, that brings up a whole new set of issues with stability. Of course, anything a mile wide and even four-feet of thick, made of solid metal, is going to have problems unless you give it plenty of support all around. Traditional support means possibly metal bearings and those build up heat and friction and all that goes against keeping them rotating freely."

The cook nodded. "Cain't have it throwin' a bearing way up in the sky, huh?" He was thinking about his old jeep that finally succumbed to a set of badly scorched bearings in the rear axel.

"You're absolutely right about that, Chow."

Chow thought about this a moment before asking, "So, what can ya do?"

Tom shrugged. The fact was, he was unsure how to proceed.

"I know I'm not one o' yer brain boxes, but I can lissen while ya thrash it all out. Gimme the grand tour?"

Tom smiled, clapped the older man on the shoulder and headed

for his desk. “Come on over and take a look.”

Sitting there over the next thirty minutes he moved from formula to formula describing what they either proved or at least added to other formulas. Chow, although he didn’t have a lot of faith in his ability to follow along, actually found his brain was grasping a fair amount of what Tom told him.

At that point Tom stopped and took a closer look at a particular part of one page. “Hmmm? I wonder how that really works?” he muttered.

“Whatcha mean?”

“Well, this section,” and he tapped the spot he meant, “works from both a mathematical and logic point, when self-contained, but I can’t see how that then fits into the next part.” He looked at it for five minutes while Chow sat silently, all the time scowling.

Finally, he shoved the pages forward on the desk and sat back, looking as if he’d just lost his favorite toy.

Chow looked at Tom and worried about the younger man’s resignation.

“You lissen here, Tom Swift. Ya got so many durned things ya done that was all great an’ only a few things that didn’t work out fer ya. But with it all, one thing ya told me years ago comes to mind. Ya say it all sounds impossible and yet you think ya might be onta somethin’? Wahl, if yer doin’ it with them mathematics then what ya said still goes. Math don’t lie! You jest remember that!”

He started to get up, but Tom’s voice stopped him.

“Mighty thankful for the reminder, oldtimer. You’ve been very important to me all these years. You’ve believed in me when I’d given up on myself a few times.” He reached out his right hand, which the old Texas range cook took and shook. “I hope you’re with me for a lot more years, Chow. I sometimes need to be reminded about, well, a lot of stuff!”

Chow smiled. “Any time, Tom; any time at all!”

That evening as he was sitting in the living room glancing at the TV show Bashalli and the kids were watching—one of the people-send-in-embarrassing-videos programs—Tom’s mind recalled something he’d thought of earlier, during the test flight.

He did not need to do anything to keep the two rings from touching; they could and possibly would do that themselves even in the full-size pair.

That was one significant thing off his list of items to work on.

Another item centered around the fast switch he and the people in Electronics had come up with. There had not been time to build one small enough for the model flight so he'd relied on a more mechanical approach he knew did not switch at the needed rate.

In fact, now he thought it over, he was actually surprised the ring lifted off at all.

Tom walked to the Electronics department and had a talk with Geoff Stratton. Geoff had not come out to watch the slowly rising ring but understood Tom's surprise that it had worked.

"So, I'm supposing you need me to make a switch of the style you and I came up with that will work in that model and at the voltage and amps involved. Right?"

Tom smiled. "You are very correct. I'd make it myself but I have been told I need to pass off some things to others so it makes it worth paying all your folks. Do you have an estimate on time?"

Geoff nodded. "This time the day after tomorrow. I'd say late today or early tomorrow, but we have something that needs to be fabricated for the *Space Queen* and she needs it pronto." He explained it was a replacement circuit for the docking spot on the opposite end from where most ships locked on.

"Someone was bringing in a new type of crystal mined out at the asteroid belt by one of the automated ships and it arced right into the lock as they moved it close, frying the board needed to close the outer door. They had to have someone come out the emergency hatch with an anti-static bag and bring it in that way then hand crank the hatch shut."

Tom shook the man's hand. "Obviously they have first claim on your team's time. If this needs to wait three days, that is fine. I have a few other things I want to do inside that model before she flies again. And, this next time, you and your people are invited to see if what I think is needed, works."

As he turned, he thought of a question, so Tom turned back. "Any information about that crystal?"

Geoff shook his head. "None, but I understand they now have it in an isolation chamber and have been running tests. Seems to have some amazing properties for absorbing and storing energy."

Tom stopped off at Communications before heading for his office. He had the on-duty radioman set up a video call with the

giant tubular space station.

"Hello, skipper," the face of station commander Ken Horton greeted him. Ken had been the commanding officer of the older Outpost in Space and when the new facility was built he was the natural choice for moving over at its commander.

"Hey, Ken. I've heard you had a small electrical arcing at the far end dock. What can you tell me? I'm a bit curious about that crystal."

"Well, all I can tell you is this. It absorbs energy where it can get it. We thought that was only sunlight, but it can absorb LED light as well and even stray electricity and static electricity. It seems to be insatiable, so we've had to isolate it in a perfectly black, glass chamber.

"The experts up here are studying the thing to see what the mechanism is for releasing energy, and that is a pretty great wallop when it does! One odd thing is the techs trying to bring it in swear it arced in a straight line, not all zig-zaggy like standard electricity."

Ken offered to transfer Tom's call to the group studying the object. When a bright-faced young woman appeared, he made the introduction.

"Corissa Myers, you probably recognize the face, but let me introduce you to Tom Swift."

She blushed deeply red and stammered out a hello.

"Corissa, I'm not sure you recall it," Tom told her, "but we nodded to each other when I came up for the dedication ceremony. You'd been there, or so I've heard, since a couple days after the place became habitable inside. Nice to see you again, and also to make your acquaintance."

She was still red, and evidently flustered by being presented to a man she had idolized since she was fifteen and decided on a career in space science based on her feeling for a man she'd never met.

Tom could see her distress and sought to dispel it. "I've been hearing about this strange crystal, and Ken tells me you are the one to fill me in. So, what have you got up there?"

The compliment helped her find her voice. "Well, what got brought in by one of the auto-miners is certainly crystalline in nature, but it is not, as we have found out just in the past hour, a single crystal. It has been difficult to study because it wants to absorb anything in any light spectrum we shine on it. And, we know how bad it can be when it discharges."

She told him of the visible light they had first used, the infrared and ultraviolet light, and finally of their experiment with x-rays.

"Everything it can find that has energy, it takes in. The greater the amount available, the more it seems to want to gobble it." She started to giggle and then remembered whom she was speaking to. Her face became a mask.

Tom laughed. "Good word, gobble. And, by the way, you have the same sort of giggle my own wife has. It is nice to hear someone who is not afraid to giggle. Don't lose that. But, back to the crystalline thing. Have you folks come up with any conclusions or solid observations that might lead to discovering what this is?"

"I'm afraid we haven't, yet. We're working on this but as I said we have problems with putting any light on it for study. I have a theory if you want to hear it." She bit her lower lip.

"I do. Anything to help."

"Well," and she took a deep breath, "it is obviously, to my way to thinking, some sort of storage piece. Natural or otherwise, it wants to pull in energy. My theory is not about that. It regards the need for us to take it back outside and find a way to bleed some of that stored energy off. If we don't it may try to find a discharge path and who knows what terrible things that might cause."

Tom nodded. "Thank you for that. Go ahead and rig a darkened transport container and get it outside and a few miles away from the station. Then, contact the Moon and talk to the people at Cordillera City about the crystals they found when excavating for their newest underground dome. Tell them I said you need that info for your study of this one. They might be able to identify your object and give you hints about handling or abandoning it."

Her eyes went wide. "Ab... abandoning it?"

Tom nodded. "It seems to me the lunar team found that there was no containing the energy in their crystals and had to send them toward deep space before they had problems."

He thanked her for her time and information and even her candor regarding removing the crystal from the station.

It's just too bad that can't be used as a power cell for this floating city. Imagine the level of energy it might provide from just basic sunlight!

CHAPTER 11 /
THE EXTERMINATOR COMETH

THE KNOCK on the office door was strong and followed by the heavy wood structure opening to admit somebody dressed in what looked like a Faraday suit of meshed metal with a high-domed mesh helmet that partially obscured the wearer's face. The wearer also had a rubber or plastic inner suit that was studded inside with hold-offs so the suit could not make body contact.

"Hey, skipper," came a voice sounding like Phil Radnor's. He held up a sign stating:

Please say nothing about suit.
We have a bug problem!

Tom understood and greeted him. "Hey, yourself, Phil. I haven't seen you since you got back from vacation. How was it? Hawaii, right?"

The Security man had stepped into the far corner of the conference area and was sweeping a small box with an antenna back and forth, and up and down. As he'd turned Tom spotted a hand-lettered sign on his back reading: UNCLE PHIL'S EXTERMINATION SERVICES.

"Yeah. Maui. Pretty good considering the place we thought we had reserved turned out to be closed due to the owners taking everybody's money and disappearing!" He now started to move along the wall shared by the office and Tom's large laboratory.

"That's terrible. Did you find anything else similar?" Tom was now standing beside his desk knowing Phil would soon be "sweeping" over and under it.

"Yeah. Found a spot a block away. Maui has a lot of places and we picked a slow time of year. Got a condo at a motel price, which was good since we lost a bucket full of deposit on the first place." By now he finished the wall and had examined Tom's and Damon's desks.

"I have a question, skipper. If you don't want to talk about it, fine, but I hear you and your dad are thinking of moving into different and separate offices. Gonna give up this huge space?" He turned and nodded his entire upper body at the inventor.

"Yes," and Tom let out a heavy sigh. "While this room has been great, the fact is I really spend a lot of time in the other small office anyway, but need a big space of my own, and dad thinks he'd rattle around in this one by himself. We'll be just down a hall from each other and have a separate conference room between."

Phil pointed at a place behind the curtains covering the floor-to-ceiling triple-paned windows. He pulled out a small box and peeled off four strips as he spoke.

"Is there going to be a place for Trent so he can attend to you both?"

"Of course! Outside the conference room we'll build a new space a bit larger than he has now. I hear there will be side doors he can use to step into either of our offices. You know, now I think of it dad's been suggesting you folks could use an office here in the Admin building along with your own building. Be closer to the bosses sort of thing."

He'd watched as Phil pressed the box over what must be a listening bug. There was a small flash that arced out of the box and the smell of ozone told him why the wire mesh suit. The charge had traveled up Phil's right arm and only dissipated as it got to the head of the suit. The sticky tape had all but disintegrated in the flash.

Next, and while Tom kept talking, Phil swept his detector box up and over the curtains, finding another bug he climbed onto a chair and also covered. It, too, flashed as something in the box zapped it.

Tom almost chuckled thinking this was a real life "bug zapper."

The two men talked about what a pain the move would be, but in the long run it would be beneficial for both.

In that five minutes Phil found no other bugs, but put his current small box away and pulled out something looking like a flashlight, which he swung around the room as he stood in the center. When he completed that sweep he pushed back the helmet and Tom could see there was a heads-up display inside.

"We're clear, skipper. Those covers temporarily kept all noise except for a phony air circ sound from going anywhere while I was working on the thing. Then, they let off the zap you saw to totally kill themselves. Man, I hate when we find out there is someone who has planted some other bugs, but not these. And, the worst thing is they have some sort of sensor that detect anyone too close and can go boom all on their own!

"We know who it was, by the way. A new woman in the cleaning staff. Margat Pimm. First and second checks showed her to be an

exemplary hire, but we found out this morning the actual Margat died from food poisoning three years ago. This one immediately took her place and worked several jobs in the city until this one got posted. Ours is not the only facility that she has bugged."

Tom was sad. In the past nine years twenty-two employees, some barely vetted and some scrutinized down to the dirt under their fingernails, had been ferreted out and arrested. With a total payroll of some 5,900 employees in the various facilities it was not a huge number, but some had been industrial espionage agents, some had been employees with debts they figured could be easily paid for if they just did “a little something” for someone, and a few were "girlfriends" or “male suitors” of unscrupulous men and women who had talked them into taking things, "in the name of our love!"

All but one person ended up in FBI custody and of them all but two headed for lengthy prison terms.

The one person Tom decided to not have arrested was a young man who thought he was innocently removing, just to photocopy, a few designs of Tom’s. What he had not realized was the woman suggesting it would be okay just as long as he only wanted to have them as souvenirs had plans to steal the copies for herself. Fortunately it never got to that point.

The two who avoided long prison terms both took their own lives while in jail awaiting their court appearances. It was a source of sadness for Tom and Damon, but some people were desperate and could not imagine being imprisoned for a long period of time. Or, felt such great shame over their actions they decided to end it all. Whatever their reasons, it was not anticipated and not the reason the Swifts wanted to prosecute people who would steal from them.

Phil looked at his young boss. “We’ve found five other bugs in this building. The two in here, one out under Trent’s desk he bumped his knee against and that got us over here and starting to do our bug hunt. Oh, and two more in Sales.”

Tom was curious. “Why the great electrical zap? Just like the fireworks effect?”

The Security man let out a snort. “That came from the bugs. Sort of a self-destruct mechanism and one meant to disable or possibly kill whoever tries to peal one off. That's why the box and phony A/C sounds so they don't detect that I’m here and go boom in my face! Nasty business and we are still trying to track where these might have originated. The phony Margat isn’t talking. I believe she fears what might happen to her even in prison if the people behind these find out she gave them up. Pity as she might find some leniency if

she does tell."

Tom had another question. "So, why the talk of moving offices? A bluff of some kind?"

"Pretty much. We're trying to lay a false trail to the two offices at the other end of the hall that really would be great for you if, but only if, you both got tired of sharing this one. We have that staked out with video and audio surveillance, even infrared capability to catch anyone trying to go in there to plant anything. We plan to bring in some fake boxes of office stuff to make the illusion a bit more realistic. If there is anyone else inside they may take the bait and try to get into those offices to set up bugs before you," and he made finder quotes, "*move in*. So, please play along with us for a few weeks. We'll get to the bottom of this."

Tom nodded and sat back down.

"So, what are you working on?" Phil asked. He'd seen the strange plans on the drafting table as he'd moved around the office.

Tom told him what he could about the flying city he was trying to come to grips with.

"It's the sheer size and weight I'm going to have difficulty with. Right now I'm looking into anything that can be made lighter. Part of the issue comes from our customer's insistence that this be a very park-like environment. Parks mean dirt and trees and shrubs and grass and flowers and bees and probably worms and ants, and… and every one of those weighs too much. I mean, they weigh what they weigh, but put all of them together and they weigh far too much."

The Security man looked at Tom. "Is there any way to get all that into the air and keep it there?"

"Good question and one I have been researching. I've given up on the idea of repelatrons as being far too power hungry. But, I'm not giving up on this. I've been reading about a hundred scientific journal articles a week, and at least fifty on-line pieces from everyone from absolute crackpots to studied intellectuals. The line between might be and forget it runs about down the middle. A few deserve more investigation because their authors have, at least, added some calculations and explained the physics. A bunch of the other 'yes' sorts want you to nod and agree that just because UFOs are powered by something we don't yet have, it is out there and we just have to keep trying. One man seems to have it better thought out than most."

"Where do *your* instincts lay? I ask because I've found your instinctual things to be more possible than many of the, '… and

here's why I think someone will prove this,' people out there. Both you and your dad."

Tom thanked his Security man for his faith.

"Actually, I have to believe there might be something to make this possible. After all, until I came up with the first repelatron—that thing I did for the Baltimore Police to be used for crowd control—nobody thought a repelling force beam was at all possible."

Phil smiled. "Yeah. And nobody thought anyone could survive going through a black hole before you and Bud did that, and still those same people said it would be impossible to ever capture and control one… and we all know that's a bunch of hogwash. The *TranSpace Dart* is only possible because you've done exactly *that*!"

He asked if Tom might share any particular article or group of them. "I'm getting pretty curious to see what sort of stuff is out there."

Tom said he'd send a reading list of what he considered to be the top five and also the most negative one or two he had found.

"Call if you need a bug sweep. Can't guarantee it'll come to much as far as weight goes, but it's likely to be a good measure before you take it up and discover someone is tracking you."

Phil left with his helmet under his arm to go on to his next search, the Executive Dining Room upstairs.

Once the Security man left, Tom sat down and made the list.

Half an hour later Tom had finished and was back to studying the formulae of Farley Fairchild when a thought came to him.

He reasoned it out and then made a TeleVoc call to see if his father was available.

"*Just coming back into the Admin building. Are you in the office*?"

"I am. See you in a few minutes."

When Damon came in, and poured himself a cup of coffee and had sat down in the visitor chair in front of Tom's desk, he looked at his son, curiously.

"Well?"

Tom pulled out and turned three of the written pages around and pushed them over.

"Take a look at the lowest, middle formula on that first page. Let me know when you see what it is trying to tell us."

He waited. Damon took out his tablet computer and did a few calculations in the scientific calculator application before he smiled and looked up.

"Yes. I see what that is telling us. What's next?"

This continued through five major set of calculations before he moved the pages back toward his son.

"I believe I understand the theory a lot more than I have before. So, tell me what it is you wanted to run past me?"

"Really just a question for starters. Do the rings appear to work best when nested one inside the other, or stacked? Or, do your instincts believe one is better than the other?"

The older man's eye grew narrow as he ran over the question, and implications of the answer. For a moment he pulled back one of the pages and looked at the numbers and symbols on it.

When he was satisfied, he looked at his son. "I'd say, without studying absolutely everything for the multiple weeks you've spent on it, they would appear to work best if you stacked one atop the other and separated them by, well, I believe one-fiftieth the thickness of either ring."

Tom nodded. "That is what I thought I'd figured out, but you know how it is. Once you get tunnel visioned on a little thing it is sometimes hard to see what is around you. The difference in my calculations, and guesses, was a separation of about a thirty-second of the diameter of the rings. I can see how your fiftieth would act to build a more powerful force."

Damon had to agree, which is one of the reasons he liked having others, especially his own son, check some of his more difficult or obtuse work. He appreciated that Tom had always felt inclined to reciprocate; it made him feel very good about the boy and man he'd raised.

"The question I would have is just how you keep the rings, especially when you scale up to full size, apart and stable?"

Tom smiled. "I only have a notion about that, and it starts with a vacuum environment and repelatrons."

Damon got a sly grin on his face.

"And, that will also avoid friction buildup and therefore a natural slowing. I like it. The next question is can you do that in the large application? Mostly, I mean the vacuum and the clearance with all that weight to manage."

Tom explained that he believed there was nothing in the formulae that demanded the magnetized rings be solid. “They might work just as well as continuous tubes of metal. Keeps down the weight and makes controlling them easier. There is nothing in Fairchild’s works that say the amount of lift equates to the sheer amount of metal. It only points to the magnetic fields and how they create a repelling force both up and down. The down force works to press against the globe and the up force pushed the total ring up.”

Damon looked at his son. “Are you really proposing these rings be tubular? As in continuous circles?”

Tom shook his head. “No. They need as much surface area interacting so they will be square or I might even try triangular with the widest planes against each other. That’s an experiment I need to make to see if the pointed shape is a help, hindrance, or it just doesn’t matter.”

“Generally in physics, shape plays a part, but I will be very interested to see what it does in this alternating magnetism application.”

In the back of Tom’s mind was the thought any shape might work, but to what extent he would need to find out. All he believed was the most adjacent surface area possible was going to make the most of the lifting force needed to operate the flying city.

That evening Tom and Bashalli had their second and third nanny interviews. Neither was particularly successful.

It required two days of computer designing, all necessary so the extrusion machine at the Construction Company could begin producing the requested shapes and automatically bend them so they could be hand-welded together at the ends.

He wasn’t absolutely certain how wide they ought to be, but Farley Fairchild’s computations showed that an eight-foot total width was likely to provide the amount of lift needed. In the final mile-wide structure. He believed from his small model that there was not a direct relationship between ring diameter and lift so he did his own calculations and came up with slightly under a three-inch diameter for a circular magnetic ring.

Tom decided to try four shapes to see what was most effective.

The first was just a tube, but hollow rather than solid this time.

Number two was square—hollow, and about two-inches wide.

Number three was a rectangle of two-inches width and one-and-

a-quarter inch height.

The last one was the triangle and it was the one he spent the most time deliberating over. Should it be a perfect equilateral with three equal length sides and angles, or an Isosceles with a longer base but two equal sides and lower angles, or something else.

There were two other major triangle types but one, the obtuse triangle was lopsided so it would be difficult to control and the final one, a scalene triangle but it also would be heavily weighted at one point and have no balancing weight point so Tom rejected those two.

In the end, he decided to try the Isosceles triangle giving both of the rings a wider interacting plane.

It required longer to extrude curved pieces and so Tom set the machine up for the first tube type, pressed 2 to get two identical rings, and headed back to Enterprises.

It would be about an hour for the rings to be built and set into a padded cradle awaiting retrieval. He would need to do the final welding of the two ends but that wasn't beyond his skills.

Hank told the inventor he had to be over at the Construction Company a little later and would set up for the next tubes, then bring everything over to Tom late in the day.

In the meantime, Tom rigged a device to hold the rings, support them on jets of compressed air, spin them at high speeds and then switch their polarities at the fast rate required.

Before he headed home he spoke with Hank who told him the final, triangular pieces needed some special trimming to fit together and agreed it would be fine to get them the following day.

Tom headed for home.

Bashalli was feeling queasy from her pregnancy and had not made anything for dinner. In fact, she told him she had sat down and then laid down more than three hours earlier.

"Somehow Bart sensed I needed him to be in charge of Mary and they've mostly been very good," she said giving Tom a rather apologetic and tired smile.

When he suggested he could go pick something up, she shook her head.

"All I'm thinking I can or want to eat is macaroni and cheese. If you can make that, we all can have that… even Mary will have some as long as it is nice and orange." She smiled weakly at him again.

Tom busied himself in the kitchen and by dinner time he'd made exactly what Bashalli wanted. She ate it like she wasn't feeling bad and Tom felt good about that. The baby needed nutrition as well as the mother.

Bart and Mary dug in and ate it with Mary getting equal amounts on her face and in her mouth.

He got the kids cleaned and in bed and then helped Bashalli get up from the sofa and up the stairs where they both fell asleep before nine.

When Tom got to Enterprises and saw the stack of different four-foot-diameter rings he shook his head knowing Hank had either stayed late or come in early to get them finished. Finished from the extruder and welded together and ground evenly. Even the triangular ones appeared to be seamless. Tom was very satisfied.

His rig, located in the big lab next door to the office, received the round, hollow rings and after stepping behind a clear tomasite shield—only a precaution in case of an accident he could not imagine happening, the young inventor turned on the power and started the rings rotating.

The air jets held them in place above the bottom of the rig and he considered that might be a better solution than repelatrons in the large model and even in the final floating ring.

Faster and faster they spun until the indicator told him they were at top speed. Now came the time for the polarity switching.

Tom laughed both for joy and because of the unexpected reaction with both rings jumping up and hitting the ceiling.

"Right," he said as they fell back down sustaining no noticeable damage. He'd forgotten they would naturally want to rise and had made nothing to either contain them, nor had he actually built anything to register the amount of lift being generated.

He spent the rest of the day and about four hours on Saturday designing and building a top piece with the necessary sensors to tell him what amount of lift each set gave.

On Monday, and with Hank standing by watching, Tom restarted the sequence for the round rings.

Once they were at full speed and energized, the meter stated they had a lift coefficient of 39.87333.

That was good, he thought, as his belief was they might provide about 30.00 on the scale. The first version registered just 18.7766.

Square tubes gave him slightly more and at 40.45; he theorized it was due to the greater amount of adjacent magnetized materials.

This was borne out with the rectangular tubes topping 42.3.

“Now comes the great test, Hank,” he stated as he set up for the test of the triangular tubes. In the end he’d only asked for the Isosceles triangles. If necessary he could also try the equilateral ones.

As they spun the noticed their natural repelling tendency was greater and they were rock stable with zero wobble. He considered that to be a very good sign.

And, it came out that these triangular rings, even as difficult as they had been to smoothly connect, gave an astounding 46.9666 on his lift scale.

With a huge sigh of relief, echoed by Hank, Tom did some calculations.

He looked up from his tablet. “Hank? Always assuming the scaled up version of the triangular tubes gives scaled up lift, I am now confident we can lift the quarter-sized ring and also the full-sized one.”

“Looks like your Fairchild guy isn’t so crazy after all.”

“No, Farley Fairchild is the sort of person I think we could use here at Enterprises. Even if not a full-time employee, perhaps an Enterprises’ Fellowship where he gets to think of new things and come in when he is ready to test his theories.”

“Think he’d take something like that?”

Tom smiled. “I believe it is just the sort of thing that will make his life complete.”

CHAPTER 12 /
A QUARTER RING IS CREATED

TOM WAS overlooking the laying down of the first layer of materials for the bottom shell from a vantage point up in the old control tower perched on top of the Administration building. It was a favored, private and silent retreat he visited with some frequency, and had the very best view of what was happening outside.

Due to the dimensions of even this quarter-sized ring, building it could not be accomplished inside any available hangar or other space at Enterprises, and so it was taking place in the same spot Tom had—with a lot of help—assembled the first of the huge habitat domes for Mars years earlier. Namely, this was to the west of the main building cluster and before the ground sloped up for the westernmost runways.

Chow had gotten into the action by bringing his food truck to the site four times a day with delicious foods and cold drinks for anybody working at those times.

The success of the small model of the flying ring had provided important data from the added sensors that told the young inventor stepping up the size of the flying disc along with the addition of more power to the anti-gravity whirling rings inside the outer edge meant there would likely be no problem when up-scaled to the full mile-wide final version.

But, a wise interim step was this thirteen-hundred-foot-wide version that could have enough weight added to the upper surface to represent the final amounts of dirt, plants, the anticipated living quarters *and* their residents that would be built—some to specific requests—but most even before the flying city ever took to the skies with inhabitants.

His TeleVoc pin *pinged* him and, on hearing who it was, Tom answered.

"S*kipper, it's Arv but you already know that. Anyway, I have the rebuilt small ring you wanted to give a final test to. I can bring it just about anywhere as long as I can cajole Hank into helping me carry it. It is now just over seventy pounds, which is what you told me was the proper scale weight. So, where to?*"

"Take it out to the Barn and let's set up there for a flight in about a half hour. I'll call Bud and dad and see if they want to be there."

By the time he finished his calls, he had Bud, Hank, Arv, Geoff, his father, Munford Trent—who had stated his curiosity was piqued and he really hoped it was okay to be there (Damon assured him he was *very* welcome)—and himself coming over for the test flight.

Out on the asphalt to the east of the building cluster, the seven men stood near to the refitted four-foot model of the flying ring. The major changes had been in:

- √ stacking rather than horizontally nesting the magnetic rings
- √ making those rings hollow tubes with an outer metal skin of about a quarter-inch
- √ turning them into triangles with wider base planes for more interaction
- √ using four of the smallest repelatrons made at Enterprises that were mounted to the shell top to hold the rings down as they naturally wanted to head up
- √ sealing the two shell halves and pumping out the air
- √ and adding the new small and fast switch from Electronics.

Just as with the first, not very successful test flight, Arv stepped forward and, at a signal from Tom, toggled the power switch on the model to the **ON** position.

Also, as with the first time they could hear the electric motors whirring up as that vibrated through the shell, but this time the lack of air inside made the noises of the rings nearly indistinct.

When a small red LED flashed before it turned green, Tom announced the test was about to commence. He moved his finger up the power slider control and held his breath.

"If you already have a lot of data saying this is the best configuration," Bud asked as Tom readied to send the ring up, "why come back to the small model?"

"Good question, Bud, and the answer is just to verify things. There are some new changes inside and I need to make certain the added repelatrons don't cause invisible friction as they hold the rings down and the lift is transferred through them into the shell."

"Right. Thought it was something like that. Invisible friction, huh?" He was looking at Tom with one raised eyebrow.

Tom slid the one control switch up about halfway and the ring rose. It kept right on rising until Tom's controller told him it was nearing the maximum controller range. He slid it down to about one-quarter setting, fiddled with the slider until he was satisfied with the setting, and it went into a hover.

Now, he turned his thoughts back to his friend's question.

“Invisible friction, flyboy, because there is something, as invisible and intangible as repelatron force is, in the pressing down action of the beams that might slow the rotation of the rings. But,” and he pointed to a small readout, “my temperature sensor shows no heat buildup in the rings and that is very good. Heat would mean friction, and they would be slowing down; they aren’t. It means I can use repelatrons to hold the rings down when they are turning. I also plan to not have the vacuum inside, but rather use compressed air to hold them off the bottom of the shell whenever the flying city wants to land and turn things off for hours or days.”

You don’t need to run the compressor all the time?”

Tom shook his head as he took a glance up at the disc; it was sitting right were he’d left it. “No. Now, you tell me why, and I’ll give a hint in that we are using repelatrons to hold the spinning rings *down*…”

Bud considered the question and the hint and it came to him “Right! Once they give lift they no longer need to rest on anything; they spin freely and those repelatrons hold them down.”

Tom smiled and handed the controller to his friend.

He showed Bud how to control the ring and suggested the flyer take ten or fifteen minutes to fly it around.

“Probably best to bring in down from where it is to about five-hundred feet first.”

Bud had difficulty in doing that as there was so much lift inside the ring the power almost had to be set at a fraction under fifteen percent. Twice he set it too low and the model began to drop only to shoot skyward as he overcompensated. He finally got the hang of it and was moving it around in circles and zig-zags in no time.

Noticing something that was very different from flying an aircraft, Bud had to ask, “So, no tilt into the corners?”

Tom shook his head. “Again, I’ll ask you to think about that, Bud. What might happen if the entire ring does tilt?”

It hit the flyer almost immediately. “People and things would want to tilt and that wouldn’t be good, would it?”

“No, it would not. As it is, your question brings up a good point and one I have to deal with. When the real thing is up there and whoever is piloting wants to turn to a new heading, I have to accommodate that input and balance it with what it will do *inertially* to the ring. It is probably going to come down to no turn is possible unless the ring is slowed to about two or three knots

forward speed. Can't have the people thrown to one side or the other."

Bud frowned. "So, how *does* it turn?"

Tom lightly laughed. "I put four electromagnets in opposing locations just outside the rotating rings. Turn one on and it interferes and slightly redirects the down force outward in that area, and that pushed the ring around. They can rotate ninety degrees and are the same things that drive it forward or slow in down."

It was something for the forthcoming quarter-mile model ring to test for the most efficient number and power to these electromagnets.

The biggest measurement would be in the ponds and how the water reacted to turns.

In fact, he would really need to see how that same water reacted to acceleration or deceleration.

I'm probably going to have to build up the sides of the ponds maybe two or three feet above the water level so it does not slop out, he thought as Bud handed him back the controller.

"Bring it home, skipper."

Tom, in turn, handed it to Arv because the model maker had put so much into the build. "I bow to my model maker and his fabulous creation. Have a spin, Arv."

After Arv, Hank took over for five minutes where he flew the ring in a wide and lazy circle over their heads, and finally Tom brought the ring back to the tarmac in front of them all.

"I'd say that was a success," he told his audience, and all agreed it had been a very good proof flight. "The one thing I want to see is if adding more direction control magnets will give us finer turning capability. As it stands, the model *does* make fairly accurate turns, but to my eye they are sort of... hmmm. I think the best description is they are too definite and that might translate into a jerky or uncomfortable ride for the people on the real disc."

The next morning he took the model apart, checked everything inside to ensure there was no wear and tear, and wired up four additional electromagnets. He knew they would draw a bit more power because three of them would be used in any turn—the outer two would be at about half power while the center one for that set would power on high—but that was well within the ability of the battery set to provide for.

All *that* left was the programming, and it would take Tom about

half a day to make the necessary changes.

Tom would take the slightly changed model for a short flight over the weekend; Bart would love coming to Enterprises to watch his *dadda* fly the disc, and Tom even considered it might be a good experience for the boy to get a short hands-on session.

He worked four hours that afternoon and had the two disc halves back together before five when he packed up and left for home.

At dinner Tom turned to his son.

"Bart? Do you remember that flying model we gave you a couple years ago? The one with the little control box you used to fly it away from you and back?"

The boy had been concentrating on a chicken leg and was doing considerable damage to the meat. But, as much as he loved his mother's baked chicken, he loved anything having to do with flying.

His eyes went wide as saucers and he nodded to Tom. "Yep! I liked it until that dog make it broken in the park." He looked a bit sad at the memory of a large dog—allowed to run loose even through the Shopton park was an on-leash-only place—leapt into the air snatching the low-flying toy and running away only to sit down and savage the thing.

Its owners were only slightly apologetic stating that, "It's just a toy. Here's five bucks," before taking their dog away.

Tom was also sad and still slightly angry over the incident because it was not just a toy, it was a scale flying model built by Arv Hanson for Bart and had cost Tom nearly five-hundred dollars from his private fund.

"Well, I'm making something bigger and it flies a lot higher so no dog will get it," he told the boy. "If you are very good tonight and all day tomorrow, and that means being nice to Mary and obeying your mother, then we can all go to Enterprises and fly it around. Okay?"

"Yep-okay-yep!" Bart said slurring the words together in his eagerness.

When Sunday afternoon came, and Tom had checked to ensure there would be no winds or only light breezes, the four of them got into the family sedan and drove to Enterprises where Tom had left the four-foot model sitting on a bench in the Barn.

With Bashalli's assistance it was taken a dozen feet in front of the structure and set on the ground.

Tom went back and brought out the controller. He squatted

down to Bart's level and explained the different parts asking Bart to describe them back.

The boy explained it perfectly on the first try.

"Okay. I'm going to do the take off but you get to fly it around us." He told the boy how far away he was allowed to fly it and made certain Bart understood the controller might be taken away for a short time if things were not going right.

Bart rolled his eyes, something he'd seen his aunt Sandy do when she already knew something others were telling her, and smiled at Tom. "I'll be a good boy so you won't have to take it back."

Tom stood up and turned to his wife. "You can have a go if you like. After all, it is easier than flying an airplane and you're qualified for nearly everything that flies through the air we make. Which reminds me to take you up in one of the flying saucers and get you checked out on piloting that."

Bashalli tilted her head as she answered, "I suppose I'll take a little try at that disc, but I am not so sure about the saucer. But," she said after a short pause and a sly smile, "maybe."

Bart was fascinated at the sounds coming from the disc as Tom switched the power on and stepped back to stand next to him.

"It needs about a minute to come up to speed and then the sounds almost go away." When they did, Tom sat down on the ground so Bart could watch what he was doing as he made the saucer fly up and go into a hover nearly fifty feet in the air.

He handed the controller to Bart and told him to move his finger across the control surface to the right. The boy did it a little too fast and Tom asked him to be more gentile but in about a minute the boy had the concepts down and was moving the disc around left, right, ahead of them and even backing up very close to the Barn causing Tom to start to reach out, but Bart was faster and moved the disc away again.

"I know what I'm doing," he told his father most definitely.

By the time they left an hour later, Bart was flying the disc like a seasoned pro and even Bashalli had to admit it had been quite a bit of fun.

Even though it was a weekend night, Tom and Bashalli had one more potential nanny to interview from the ones Harlan had cleared.

Her name was Amanda and she seemed on first glance to be a little young, but her resume stated she was twenty-five.

She openly stared at Bashalli and neither Swift knew if this was because of her heritage, but the woman finally held up a hand.

"I just need to clear the air. I am stunned at how incredibly beautiful you are, Mrs. Swift. I really mean that and forgive me if I have been staring at you." She blushed. "Like I said, forgive my staring."

"Nonsense. As a woman yourself, and very pretty, you should know how a little flattery make you feel good. So, let's get to the tough questions…"

An hour later Amanda left with a job offer saying she could start two days later.

The larger ring was taking shape. Panel by panel the lower shell was nearing the three-quarters complete mark. Sitting next to it were the two triangular rings that would be lifted using the *Sky Queen* just as soon as the lower shell and its various systems had been completed. That was likely to be in two weeks.

One could be set atop the other, but in order that they nest as intended, the first one would need to be taken high into the air and flipped over, slowly, until it was apex down and flattest surface facing up.

That was going to be quite a task and would be more than amplified for the full-sized flying city. Tom was considering actually welding the bottom magnetic structure sections in place for that endeavor.

Those rings had been extruded in one-hundred-foot lengths so they could be transported to Enterprises on large, flatbed trucks. Even so, their curves meant the trucks and their loads covered both lanes and both edges of the road between the two facilities, so everything was trucked over in the dead of night.

Once on site, they had been painstakingly welded together with both the inner and outer welds ground down to a shiny smooth surface completely indistinguishable if you ran your hands over them from the surrounding tube.

After they had been installed, it would be on to building the top shell—again, it would be panel by panel—and everything that must contain including the three large power pods that would take the place of the larger and more powerful reactors to be installed in the

full-size floating City.

He left the area of the build and headed to Arv's workshop.

"I had an idea," he told the model maker.

Arv snorted. "You're always having ideas. Can we narrow this one down a bit?"

Tom had to laugh. He realized he was being a bit obtuse.

"Okay, try this. We know this thing can fly," he said patting the model on one of the workbenches, "and I have to believe the full sized and quarter sized ones will as well. What I or we do not know, unless you've done some testing you haven't mentioned, is how it behaves in a wind."

"As in wind over the surface that might inconvenience the residents? Or, how wind affects the actual disc?"

"The second one," Tom told him.

"We can always take this over to the wind tunnel and give it a test… or two or three," Arv suggested.

"Why don't we do that?"

Together, they lifted the model from the table and headed out the large double doors to where Arv kept his flatbed truck. It was used to transport most models that were a little too large or awkward to be hand-carried by one person.

There were two wind tunnels at Enterprises, One was designed for high-velocity winds to test aircraft, and even though this was technically an aircraft, it would be the slower speed and more gentle second wind tunnel in which it would be placed.

They carried the model inside and told the duty technician what they intended to accomplish.

"If you want to attach it in there," he told Arv, "I suppose Tom can tell me what the action plan is." When Arv nodded, Tom picked up his side and helped get it carried inside the test room. He came back out as Arv was attaching the hold down bracket he'd just so happened to have already attached to the bottom of the model and then to the tilt-able mount inside.

After telling the tech what they were basically after, Tom told him, "I'd like to start with half-knot winds and go up to forty, but in half-knot increments and very slowly so we can test that in turns.

"Also, just so you know, it can fly but I think we will not energize that today. Ah, here comes Arv so I guess we're about ready."

Sensors placed on the contoured surface of the floating city gave a good indication that the planned clear fencing around the outer part of the ring in conjunction with the one around the inner hole served to keep winds from swirling too much inside the living area. Up to about twenty-six knots, that is. After that, all winds seemed to blow right over the top and the only places registering any appreciable buffeting were the top ten percent of each of the three hills.

Everywhere else seemed calm and almost serene.

The problem encountered was in the way the winds, when allowed to change direction and oscillate speeds wanted to pick up the nearest part of the disc and shove it upward.

Tom had the machinery stopped while he and Arv went into a huddle. After nearly four minutes Tom made a decision.

"Go back to your workshop, bring the batteries here, and we are going to turn on the disc to see what happens.

Twenty minutes later everything was set. Arv had even brought the remote control with him, which he handed to the inventor.

"Give her a whirl, Brad," he told the man at the control board. To everyone's surprise, as soon as the power got to the point where the model would normally hover, it seemed to stabilize in the various breezes. It wasn't perfect, but it told Tom there was something else going on with the magnetic flight system.

Something he hoped he could use.

They thanked the tech and took the model back to Arv's workshop where Tom suggested they change out the higher profile Swift Solar Batteries which he knew were providing some wind resistance, with a flatter pack and some metal weights to give the same weight.

"I'll get right on that," Arv promised.

The inventor wasn't certain if he actually needed more wind tunnel tests, but he did need to give the model a complete breakdown and measurement of everything inside and how it had held up to the tests.

But, first would come the final flight of the four-foot model this time with Farley Fairchild in attendance to see what Tom's various changes meant in the real application of his theories.

CHAPTER 13 /

MAKING DIRT

BUD, HANK, Arv, Geoff Stratton, Farley Fairchild and Mr. Swift all let out great whoops of joy as Tom piloted the model up to an altitude of about one-hundred and twenty feet before carefully modulating the eight directional magnets that would control all horizontal movement.

Tom barely heard his friends and father as he moved the model to the right about fifty feet before giving the model an exact opposite charge causing it to halt over the next five feet.

"As near as I can tell, I'm moving it at a scale speed that would equate to twenty-three miles per hour in our one-mile-wide final version, which I believe is about the fastest safe speed," the young inventor said to his audience. "That means a stopping distance of almost a full mile, give or take a few hundred feet. Something to keep in mind when developing the flight control software."

Damon stepped forward to come to his son's side. "Perhaps the final product needs to be held down to a speed it can stop in about half a mile," he suggested out the side of his mouth so only Tom might hear him.

"I agree. Or, I might make it so when stopping is desired it puts some braking power into the forward direction."

Damon nodded. "Or, you could do that, which is probably the smartest course of action."

Over the next five minutes Tom flew the model around their heads, lowered and raised the model from a foot above the ground to more than five-hundred feet up.

When he offered the controller to anyone else, all declined with the agreement it ought to be Tom making this successful flight test all on his own.

He brought the model to within two inches of the asphalt and finally set it on the ground. After that Arv shut off the **POWER** control and they all heard it wind quietly down until there was no more sound.

When he got back to the office he sat at his desk smiling at Farley Fairchild.

The scientist and would-be inventor listened to the changes or

adaptations Tom had made in his formula and in the actual flying ring.

"Well, I saw it with my own eyes, and if you're telling me the basic way I set things out was only a tiny bit effective, then I need to change either my formulas or at least the description of how to apply them." He stopped speaking as his eyes glistened.

"You have given me more of a sense of self-respect than anyone other than my late father. He believed in the teenage Farley, but when he passed away I had no more true support. My mother thought science was a bunch of… umm, poop. None of my other relatives could understand what I wanted to do, so they all told me I was going to waste my life and that made *me* a waste of their time."

Tom had grown up with nothing but support and encouragement from family and friends. He'd dated and married a very smart woman who might not understand everything, and might not agree he should be the one to try out dangerous things, but she gave him love and encouragement and her support.

He could not imaging growing up in the emotional vacuum Farley had.

"The way I see it is you are like me. A dreamer. Where I've been blessed with the financial backing to pursue my dreams, you have made them come partially true via perseverance and willingness to share your materials with me. It is a pleasure and an honor to see your ideas come to life."

Over the next three hours Tom shared everything he had discovered, and Farley made notations, changed at least two of his complex formulae, and in the end they both were satisfied he had something that should be patented.

"I'll have our legal folks work with you to get that registered as soon as possible. I'll turn the hand-written pages into scanned and printed ones for the submission and get them to you for checking."

Farley Fairchild left Enterprises in a jet piloted by Zimby Cox heading back to Virginia just before five that day with a smile on his face and a song of immense relief in his heart.

Tom sat back and considered the need to keep weight down—in both the quarter-size test model as well as in the final—wherever possible. He told Bud, as they sat having coffee in the big office, "To keep things light I have to ensure anything planted all around the giant circle needs to be as shallow as possible or the very dirt they are in must become less than half weight."

Bud nodded. “So, make lightweight dirt.” It seemed logical to him and even Tom had to stop and consider that.

Over the next four days he and a couple scientists at Enterprises worked on the problem. There were any number of commercial products available but he wanted them to outdo those and weigh at least half what good topsoil might.

It was a tricky undertaking. Dirt was, well, just like dirt. It had certain properties as far as gravity were concerned, acted in a special way when water was introduced, and could be made to loosen up or be made very firm.

Tom knew he might have to sacrifice the “loosen” aspect if he was to create something that would be supportive of anything taller that perhaps a daisy plant.

On the other hand, he had to come up with a substitute that did not pack so firmly that it kept out moisture or that it became too much of a block of material.

After those days he and the small team looked at the latest test data. Their soil substitute was allowing all surface water to be absorbed and not to run off, it maintained structure integrity without compacting, and had several other properties he believed were exactly what was called for.

“We’ve come up with what I’m calling AeroLoam,” he explained to his father over dinner at his and Bashalli’s home the two older Swifts came for that night, “a composite material that is only 30% the weight of even screened topsoil, holds onto water like a magnet, and can break down old leaves and other organic matter and absorb it into the mix enriching it even more. It ought to never require fertilizer because of that capability. It is compact enough to provide the sort of support plants need.

“A lot of lightweight planting mixtures contain vermiculite and possibly a lot of tiny Styrofoam beads,” Tom explained to his wife and parents. “This new mix contains neither of those. Instead, the individual particles, acting like dirt for all intents, bears a slight magnetic field that repels all the other particles. Pour it, it becomes a certain thickness. Pack it down and an hour later it is back to that original thickness. Water it, and the water droplets are suspended in between the AeroLoam particles and remain there until some living matter, like plant roots, draws it out, or if more moisture comes into the material, what was already there drains to the bottom where we will allow it to be collected for future use.”

“What about stability to support more than ground cover? Trees,

for example."

Tom smiled. "The same repel force also locks onto the surrounding particles and hold them tightly. It self packs to a medium firm density, firm enough to hold up most shrubs, and returns to that state if dug up and loosened, all within about three minutes. Enough so that a tree can be supported as long as it is also anchored by the roots to the underlayment using a system of micro thread cables. Nothing that is going to hurt anyone walking into them; they'll be slightly glowing at night and a bright red during the day. Each one will probably be anchored only three feet from the trunk and the mount is going to be designed to allow for growth."

Damon clapped his son on the shoulder. "Looks like you've thought of just about everything. Perhaps, unless this is on your agenda, there ought to be distinct pathways for the people to walk on, and the understanding that anyone venturing off path will be liable for any damage they might cause by breaking any cables."

By the next morning a thought had come to the older inventor. He told Tom about it.

"I don't think Mr. Boyd is going to like making anything mandatory for his paying guests, but I agree," Tom told him. "I'd like to make those cables thicker, but he wants minimal impact on people and maximum peace and quiet. I'd also like to make them stronger, but at their current thinness, stronger might cause harm to anyone running into one. I guess it is going to need to be understood the non-path areas are for looking, not exploring!"

"If it comes down to him getting his flying city with or without all the trees he has planned, he will need to accept a few facts and realities," Damon said giving Tom a look that said they both knew he was right. After a few seconds, his face took on a scowl. "Say, did you tell me these wires will only be a few feet from the trunks? Will that give the right support?"

With a nod, Tom replied, "Yes, because of two reasons. First, all trees will be of a kind that spread out their roots and only a foot or so under the surface, so that gives a lot of stability. Then, the underlayment will have anchor points built in with the larger roots held down, so this isn't going to be a wire and wooden stake sort of thing."

Damon considered this and smiled. "Good." He glanced at his watch. "Got to go. I'm due in Chicago to speak in front of the Board of a new electric car company. They have been trying to come up with a solution to become a competitor to us, but have hit a lot of walls. Now they want to see if we will supply them with some key

components."

Tom wasn't certain this sounded like a good idea and told his father that.

"Well, what they want are things that will not necessarily allow them to jump ahead of us. Some structural items and electric motor windings that, at least what I've seen of the specs, will make them about twenty percent underpowered compared to what we build. But, that's their plan, so I'm going out to find out if what they are saying on paper and on the phone is a true match for what they really want."

He left the office a minute later carrying only his tablet computer in his coat pocket.

A call came in from his "dirt team."

"Yes?"

"Tom, it's Alex. You'll remember I told you we were going to do some more tests like what happens with natural bacteria and even wild seeds? Well, I have some data regarding the bacteria thing. It turns out the fifty types we introduced and tried to culture all seen to hate the AeroLoam. We think it may have something to do with the magnetic attraction of the particles, but something in the absolute neutrality of the pH factor could also have something to do with it. We want to do an outside, uncontrolled test, so I'm having a forty-by-forty test patch set up to the west. I'm adding a short, sealed, clear plastic dome cover to contain anything we don't like."

"Great. Also, once you get more results from that, I want to try a two-week-long test with some lightly sprinkled seeds and also allow it to pick up whatever is floating around out there."

The man said it would be done.

Tom sat thinking about the arrangement of things on the platform he would—he fervently hoped!—get off the ground. Something his mother told him about arranging things to be most attractive came to mind.

"Put things in threes, Tom. It is balanced and aesthetically pleasing to the human eye."

He glanced at the list of "I want" items from Bill Boyd and came upon one in particular that could use both the aesthetic aspect as well as helping balance the floating platform:

◇ Lake (1 or 2?)

He thought about that and quickly concluded that a single lake

would overbalance the ring so moving to the drafting table he created a circle within a circle on a piece of drafting paper and placed an unevenly-shaped lake or pond at one point, then created two more only slightly different at the other one-third points around.

They could be formed into the under layer so they would lose no water to seepage. The real plus was any water getting through the AeroLoam would naturally travel along under it and end up in these lakes. Rain would naturally be added to the disc's water supply and would mitigate evaporation from the lakes and ground.

That would work! As would another item:

◇ Hills to walk and build on

It would not, he realized, do to have them placed right between the lakes. So, he would need to balance things by making them of different heights—and then planning on making the interiors hollow—and moving them to different locations.

They would be made hollow and would contain not just the power reactors but a lot of the systems making the city run.

He stood and rubbed his hands together.

Things were beginning to come together. Now, all he really had to do was crack that pesky, "Can the giant one really fly?" issue!

While he got working on the flight system, William Boyd contacted Tom to ask if the one-quarter-size example of the flying city might be made ready to host a video drone flyover tour.

"I not only want you to have that for flight testing when that time comes, Tom, I also have my ulterior motive. I want to be able to show the thing off to prospective residents."

"Even if it is not ready to fly?"

"Even then. Even if only virtual reality or whatever it is called. You see, the people I know I can entice are the dreamers in this world, like me and I believe like yourself. They only need to see a proof-of-concept, not the real thing, to be ready to set their minds on that thing. I also hope we can create a drone flyover tour of the city that can be shown in three-D to people so they really get the feel of the place. Please tell me this is possible."

Tom had to think a moment before he told Boyd it was very possible but he needed to be prepared for the plants and grass and such to be artificial.

"There is no way to downsize things like trees and even shrubs for this, but if I am to make this a realistic quarter-size model, or one where Augmented Reality might be used for your tour. I will want to outfit it with mini structures and everything that might go into understanding wind resistance in the real thing. So, Mr. Boyd, assuming you are as generous with funding as you've been to date, I cannot think of a reason to not built this as the very best scaled-up model for you."

They agreed what the additional costs would likely run and Boyd promised to have that money transferred to Enterprises within three days.

Now, Tom chuckled to himself, *all I have to do is finalize the magnetic rings, figure out what sort of power it is going to take, both for this and the final version, and get something ready for Mr. Boyd.*

With the success of the four-foot model and Tom's having made the necessary changed to the concept of the magnetic rings proved, he believed the next step was to come up with the mechanism for keeping the rings centered in the outer channel of the larger model and then the real floating city.

The concept of using repelatrons both on top and underneath the rings had been made earlier so he started looking into that. It was going to take about fifteen of them spaced around the outer rim to keep the ring-tubes from touching the bottom of the ring, and likely another nine or ten of them to hold the rings down so they did not lift themselves into the top of the shell.

He stopped and wondered why there would be a different number of repelatron units for bottom or top. Tom erased that part of his notes and did some calculations as to the weight of the ring pair and found that it was probable that just nine units under and another nine above would keep the rings in perfect position.

That, in turn, reduced the amount of power necessary to run the repelatrons and that all went into his computations about what total power was going to be necessary.

Besides, he reasoned, when power transfers from the bottom to the top repelatrons, it will need to remain in balance at a single level for both.

The number of houses had to be taken into consideration, but modern power management and requesting that residents keep to a maximum amount of power draw for personal electronics would mean that each house could be figured at just four kilowatts per day

of power.

That times the number of homes, along with lighting for the pathways around the ring, and the recycling equipment and the repelatrons and the motors to rush the rings around and the electricity necessary to change polarity and…"

Tom sat back nearly dazed at the prospect of what was going to be necessary.

For the quarter-sized model all he needed for the pathways and the homes were about three-hundred very-low-voltage LEDs to represent people in residence and the outdoor lighting. All the homes could be outfitted with small representative television and computer screens and empty shells for those plus appliances and basic furniture.

He made a note to tell Mr. Boyd he would prefer to keep the total number of units with such indoor furnishing to a maximum of a dozen that could be looked into by his drone camera. It was not, he told himself, unreasonable and would keep some of the costs down.

This was going to call for another meeting with a number of managers from various departments at Enterprises and at the Construction Company.

"At least we won't need to create vehicles for this or for the actual floating city," he told them after going through what was going to need to happen to make the quarter-mile-wide ring and all of its visible surface parts and all the necessary inside things.

"How's this smaller one going to be powered, Tom?" came the question from Jake Aturian of the Construction Company.

"I believe our quarter-size hills will be large enough for a trio of the largest self-contained power pods we make out at the Citadel. They can give us more than enough power, and possibly by a factor of an extra fifty percent so all we need to do is create a self-operating and balancing computer to run them at just what is needed. It is just about guaranteed we'll need that for the reactors that will go into the full-size ring."

Dianne Duquesne from Propulsion Engineering, not absolutely certain what her role might end up being, asked, "Is your benefactor certain the people will agree to be riding on something that has not just one but three active nuclear reactors? I mean, we all know how foolproof ours are, but the public perception is a fickle thing."

Tom smiled. "Our benefactor, as you have termed him, has been told of the high level of power and that such things as solar are not only not practical—they'd cover the entire surface—they do not

produce at night and the intent is not to park on the ground from an hour before sundown to an hour after sunup. So, he knows this will include nuclear power and has said the people he wants to attract will be told everything including being given our latest report on overall and complete safety records in the running of our reactors."

Everyone left with their assignments and all agreed this was not a difficult project from a build point other than the size of the interlocking panels that would make up the bottom and top shells. Those would be vacuu-formed by Hank Sterling in his two large-scale machines over at the Construction Company and transported vertically in groups of about four dozen pieces each day. "Or night," he said thinking about the logistics of moving such behemoth pieces in full public view.

For this model it was requiring nearly a month of creating the individual pieces, but only about a day extra to complete the build as pieces would be fitted and seamed together as they arrived.

The giant extruder at the Construction Company had also been working around the clock to make the magnetic tubes that were also be fitted together as they arrived, made absolutely true using lasers, and then large sections had begun to be laid into the bottom shell as it was completed.

All things considered, this was not going to stretch the capabilities of anyone within the Swift companies.

"Besides," Tom told Bud as they had coffee a week later, "we've built bigger," and he pointed straight up.

Bud nodded knowing Tom meant the giant tubular station, the *Space Queen*.

CHAPTER 14 /

UP FOR A DAY TEST

THE QUARTER-sized ring, complete with weights representing what might be on top of the flight platform, took to the air from the western staging area at Enterprises at 5:00 in the morning. It was thought that anybody seeing it taking off a little later might confuse it with some sort of UFO.

The FAA and the U.S. Air Force had been notified of the flight so there would be no problems, and the actual flight had to wait one full day while photographs of the ring, top, bottom and sides, were distributed all over the eastern part of the U.S.

One measure of ridiculousness was that another hour was taken up in waiting for a small Coast Guard station in the Bahamas to acknowledge they had received the pictures. Pictures of something that would not travel within nearly nine-hundred miles of that station and more likely a thousand miles.

Tom was sitting next to Bud who was flying the Whirling Duck, the point from which the ring was being remotely controlled. The idea was to keep the ring either at a low enough altitude so nobody could see it over any of the nearby hills surrounding the Lake Carlopa area, or to fly it near Enterprises in the darkness of morning or night.

It would, assuming all tests came off successfully, not land until around 11:00 that night.

To keep it out of sight, Tom was flying it within one-hundred feet of the hilltops as he piloted it east over Pharoah Lake and then to the northeast until they were over Putnam Lake then to the north and over Eagle Lake. Since the test ring was flying at just three to four miles per hour in the calm skies, this part of the flight test took until after one in the afternoon.

“So,” Bud asked as he took a quick glance at Tom, “do we continue north or take a left turn and fly over Thessaly. It’d give them quite a jolt to see the ring overhead.” He was smiling and Tom knew he was only kidding.

“No. In about an hour Zimby and Slim will be taking over for us until it comes time to land the thing. We’ll keep going north until the ring gets to about even with Tub Mill Pond before then. After that we head for home and will get there with about thirty minutes

of fuel left.

"Their orders are to go another thirty miles north then head for home on a reverse of what we've done. If all goes well they'll be over our east hills at ten-thirty, and I'll bring the ring in from that point sitting up in the tower."

By mid-afternoon Slim, piloting the other Whirling Duck, reported they had made the turn around and were now heading back.

"We're about a half-hour behind schedule, skipper. Coming into a little headwind. Permission to speed up a little?"

Tom considered things and gave them the go-ahead for a half-mile-per-hour increase.

"But, only until you are back on track. Then I want that down to the slower speed. We'll speed test it one night next week."

Tom wanted to let his other pilots do their thing, but he was nervous about the flying ring. So far, things looked good, but he had a nagging thought in the back of his mind that it was a calm before a storm situation.

Within two minutes of the schedule, Tom took control and brought the ring down inside the walls of Enterprises and to within about fifteen feet of the intended landing spot.

At a debriefing the next morning, Slim admitted he'd enjoyed the experience for all but ten minutes.

"We hit some side winds and the ring started to get away from us. I'm pretty sure it was those winds swirling inside the open hole causing the problems. If there is any way to prove that by covering the hole it might be a good test."

Tom considered this but knew he had a small ace up his sleeve. The real floating city ring would have what amounted to a forcefield that would keep winds from coming up through and down through that hole while still allowing some movement of air, and certainly letting people look down at the land below their flight path.

The following night, Friday, Tom took the ring straight up from the grounds and to its maximum altitude. That turned out to be just over three-thousand-eight-hundred-seventy feet. It was able to maintain that altitude with ease, but no matter how much power he added to the rings, it steadfastly refused to budge upward another foot!

He realized his theory of flight using the magnetic repulsion concept by Farley Fairchild was going to be correct based on how

close the minerals it worked against were to the surface over which it traveled.

He also arranged for a cover made from fabric to be tied down over the hole for one flight into winds he knew were going to be measured at about thirty miles per hour.

As he believed, that partial blocking of airflow was enough to keep the ring steady and it drifted with the wind until Tom set one of the auxiliary systems in motion and that brought the ring under his complete control.

Even so, he made notes to include warnings to anyone piloting the ring to avoid as much as possible, stronger winds. If necessary, the ring would need to ground itself until such winds passed, and might also be best suited for areas that did not have strong seasonal winds such as close to the Gulf of Mexico.

With the success of the lifting system, and the relative ease with which it did its job, Tom was certain a full-sized floating city was just a matter of building it and getting things planted.

The actual structures could come after that and be made from lightweight materials but constructed just as traditional homes and apartments are built.

When the day came for a publicly announced flight of the quarter-mile ring, Tom decided to take a path the weather services practically guaranteed to be wind free. That meant the ring lifted off at 10:00 a.m. and headed to the southwest, over the railroad tracks that connected the MotorCar Company with Pottsville to the south, then a northwest course past the freeway and the hundreds of small ponds and hills on the way to an overflight of Oswego on the shore of Lake Ontario.

The local press had requested photo opportunities there and in Rochester to the southwest. To appease them, Tom flew the ring to within fifty feet of the ground, or in the case of both cities, over the nearby lake where photos and videos could be taken from nearby office building rooftops..

Buffalo came next before the ring headed back to Shopton.

On several occasions, helicopters and small planes with camera crews came to within three-hundred yards of the ring... the taboo zone. They did not venture closer as both the FAA and the Governor of New York demanded that separation. To ensure they remembered that, Tom had signs mounted to the upper area of the ring saying:

This is Private Property and is
NOT to be approached
for any reason WHATSOEVER!

In all but one case it worked.

That single instance happened over Buffalo when a news helicopter pilot, later found to be operating within the no fly area at the demand of the station's General Manager, flew over the top of the ring.

He learned a valuable lesson when, on landing back at Buffalo Niagara International Airport, he and the two-man reporting and camera crew were arrested and escorted to jail cells for three days and loss of his license for sixty more.

The General Manager also learned to not go against Federal orders when he was fined two-hundred-fifty thousand dollars and was given his marching orders by the station's owners.

Fortunately, nobody was injured and the flying ring headed away for its intended landing that early evening. To Tom's way of thinking it would be none the worse for the flight of that unwanted helicopter.

Something almost totally unanticipated happened about three hours into the flight. While the ring was passing over an inland waterway next to Rochester known as Irondequoit Bay, a sudden and heavy wind coming down from Ontario in Canada and across that same-named lake hit the floating city broadside. At more than sixty miles per hour and without any warning, Tom had a moment of near panic. About the last thing he needed today was to have his flying ing city tilt up on one side, go out of control, and crash with the world's press watching. He knew it would not go down in a populated area if it went straight down, but that was the only consolation he could think of at the moment.

But, to his utter amazement, the ring took the wind hit coming directly north to south without a wobble.

Nothing other than a soft and slow bump, the sort a car might encounter if gently moving forward over a piece of garden hose, was registered by the myriad of sensors placed all over the ring.

The wind lasted for a full five minutes during which time Tom slowed it down and tried to keep it over an unbuilt area just east of Highway 590 where it combined with and branched off to the west on Highway 104.

When Bud saw his friend's reaction, he had to ask, "What the heck was, or rather wasn't that? And *why* wasn't it getting tossed

around or shoved to the south?"

The inventor though the matter over for a brief moment before answering.

"Bud, something Arv and I saw in a wind tunnel test of the small model gave me a little idea, but it wasn't until just now it all comes together. That model just didn't have the mass to tell me what this seems to be.

"Here's my theory. That magnetic force that shoves the ring up and lets it move around must also, well, for lack of a better concept, it locks the ring to the surface and if the wind can't move the ground underneath it, it stays straight and steady!"

The only thing Bud could think to say was, "Jetz!"

All in all, Tom declared it to be a perfect test of the ring and all of its systems devoted to flying. It had been programmed before the flight and other than the three hovers it followed its programming without interference from any outside source.

"Happy about it, Son?" his father asked when the Swifts senior and junior had dinner the next night.

"Incredibly so, Dad. It was everything I wanted it to be and it functioned perfectly. Next stop, the full sized flying city!"

There were only a few things that would eventually be salvaged for the large ring from the smaller one, but that was okay. William Boyd had paid for everything and was happy to allow Tom and the Enterprises people to take the smaller ring apart for whatever they could reclaim or recycle. But that would take place in the future.

But, Tom was not yet at the point he was willing to begin dismantling the ring. He new it would have further uses.

What he was interested in was proving that a flying city could be built, and he had the finances to see that one was.

"You can't imaging how I feel at this moment," he told Tom when they sat down a week after the latest flight. "Perhaps you can as I understand you have a couple children. Mrs. Boyd and I never felt the desire or the need because we enjoyed each other so much, but when she passed away two years ago, she left a giant hole in my life. So, I shall assume you love your children with all your being, and that is the way I feel about this flying city.

"Of course," he added looking at Tom, "we will need to find a better thing to call it than 'That Flying City.' I also do not want a

hint of my name on it and I will ask that you not suggest placing the Swift name on it either. So, have you any ideas?"

Tom leaned over and in a low tone stated the name he felt was appropriate.

Boyd laughed at the name and when tears came to his eyes he finally nodded.

"An excellent name and the very name that it shall be known by. It is true that when you come to Tom Swift you get everything you need out of whatever he makes. Congratulations!"

The inventor reached up and tapped his TeleVoc pin, answering silently, "Tom. Go."

"*Skipper. It's Mike Jayston in Communications. I have a woman named Clarissa or Carissa or something like that up on the Space Queen and she is trying to get you. Says it is important and that you would know what she wants to talk about. Should I put her through*?"

"Is she on an audio-only link?"

"*No, full video*."

"Okay. Tell her I am on my way to the video center and will be there in… oh," and he looked at his watch calculating the distance to travel, "about seven minutes. She can hold or I can call her. You don't need to get back to me. Thanks!"

When he arrived at the Communications Department building the receptionist pointed down the hall to her right.

"Mike is waiting for you in room six."

Tom grinned at her and jogged down the hall.

"Okay," he said on entering the room. He saw the face and upper body of Corissa Myers on the large screen in front of the four chairs inside the room.

"Hi, Tom," she greeted him as he sat down.

"Hi back at you, Corissa," Tom said slightly emphasizing the proper pronunciation for Mike's benefit. "What's up?"

She smiled. "What is up is that blasted power crystal we talked about all those weeks ago. We've had a pretty big, umm, a sort of breakthrough."

Tom, instantly alert, sat forward. "Tell me more."

She did and it was fascinating to him. The crystalline structure—which he finally found out was just about a foot long and slightly under three inches wide—had been taken by a robotic ship to the dark side of the Moon and set down in the surface.

It had not remained there very long.

"It doesn't have any sort of artificial intelligence," she said, "but it really did not like being left in the dark, so to speak."

"Where did it go and where is it now?"

"Where it went was around to just outside the libration zone and into the light. It has been sitting there not moving now it can absorb sunlight for more than five weeks. We've detected a pattern in its discharges, but that is based on the exact level of light it sees in that spot. I've been trying to calculate what it might do in other situations but have not finished that work."

Tom nodded. "So, why the call today, Corissa? Not that I am not happy to hear about this, but I was wondering."

"The crystal has been arcing its discharges in various directions and the last two—about four days, six hours and thirty-nine minutes apart—have been pointed right back at this station. We expect another one in two days, and I've got all sorts of measuring devices set up, but I wanted to tell you it appears to me that it remembers where it has been. As in the *Space Queen*. Could it be trying to signal us?"

Tom let out a whistle. "That's a pretty big assumption based on just two measurements, don't you think?"

Her face turned downward but she rallied and looked up and into the pickup. "Normally, I'd agree. But the previous discharges have been bracketing us. First one was way to the aft end of the station and the next one was way to the forward end. Both about the same distance, passing about five-thousand miles away, but not exactly.

"Then, the next pair, and again that four-plus day interval, were about one quarter of the way closer to us and closer to each other's relative distance. Next pair were closer still and by the seventh pair they were exactly the same distance from the station, like to within an inch, and just fifty feet fore and aft."

"And, any more?"

"The most recent two have been pointed right at the midsection of the station. If we get a third also pointed there, I'd say we have some sort of searching ability and… well, maybe a signal?"

"But, that might suggest it remembers where it has been and is

trying to find that location again. Astounding if true!"

She agreed.

"So, do you have a plan for watching and cataloging our crystalline friend?" Tom inquired.

"We, or rather, I do, and I have Commander Horton's permission to concentrate on that crystal until I can figure it out. I can give you daily briefings if you like," she stated hopefully.

Tom grinned. He could tell she was attracted to him. "I think a good discussion in three or four days will be best. Unless, that is, something happens like it spontaneously leaps from the lunar surface and come racing toward the station. In that case, call at any time of day. Not until you dispatch an Attractatron Mule drone out to intercept it!"

He thanked the young woman and signed off.

Tom sat thinking about the strange crystal for an hour before he was interrupted by a visit from Arv.

"Got the last of the models for your dad's shelf finished. Sorry it took months instead of a few weeks, but with everything else going on…"

"Not an issue. Dad just wanted them at some point. He understands I've been monopolizing your time with the flying city project. So, what have you got?"

Arv went back out the door and wheeled in a multi-level cart with at least four covered items. He pulled the lowest cover off.

"The Surface Effect Jet, a little larger and now with removable fake missiles. It is so true to the real thing it works if you put a battery in the back. Does a scale one-hundred knots over water or even a solid, flat surface."

Tom admired the workmanship of the two-foot-long model. The two hatches opened and he could tell even the seats swiveled inside when he reached a finger in and touched one.

"Beautiful Arv. He'll love it. What's next?"

Next was the little robot cowboy from one of Damon's adventures in Australia. It could walk—demonstrated by Arv—and even draw its replica drug-dart gun.

As he'd once described, the HyperLoop pod and open-fronted tube had the pod floating on magnets. This version was more intricately detailed, something the perfectionist in Arv had been bothered about with his first model.

Even the model of Damon's Air Ferry was perfect in every detail including the front and rear doors that could be opened to show miniature cars parked inside.

Arv uncovered one final model.

"I was never really satisfied with the static folding autocar I made when I first came here," he explained picking up another two-foot-long model. "So, I have been working on this over the past few months. At the press of this hidden button…" and he pressed it causing the model to begin to fold up, "it does what the real cars did. And, it can drive forward, backward and turn left or right using this remote," and he took one from his shirt pocket.

He helped Tom arrange the models on the shelves. Those shelves were now almost ninety percent filled.

"Guess you two can't invent but about three more things before we have to either pull some and downsize them, or put up another layer of shelves." Arv smiled at Tom in a way telling the inventor, "But, we both know you won't stop inventing!"

CHAPTER 15 /
A LITTLE BADNESS GOES A LONG WAY THE WRONG WAY

THE QUARTER mile version of the floating city had been proving its mettle over a series of seven flights all up, down and around the northeastern states. It had naturally made news—and got another helicopter pilot in hot water and *his* boss a hefty fine when the ring traveled to within thirteen miles of Newport, Rhode Island.

"I guess these news people either don't believe rules apply to them, or the lure of what they believe is an exclusive story overcomes all sense of propriety." Tom was talking to Harlan as he debriefed the Security man about the latest close encounter.

"Seems every TV station has access to a helicopter and are constantly getting in the way of rescues, the police and even fire fighters. Set up one or two of your drones to fly around the ring as it soars above it all. They have the ability to disrupt all electronic and electrical system. Give interlopers an automated radio call and warning and then force them down," Harlan suggested.

Tom considered it and said he'd look into it.

"The thing is once this goes up filled with residents I don't believe they'll want those shadows. Perhaps I need to call a press conference and make it clear to everyone the seriousness of failing to follow the rules. It'll also give everyone a chance to see what they have only had glimpses of so far."

He left to call William Boyd and ask the man if his news coverage was okay with the financier.

"It'll give the nosy parkers a chance to see and drool over the place, Tom. So, sure! Give them a chance to see what it is all about. But, I'd hate to have them traipsing all over the place with it only partway complete. Ideas?"

They had discussed using the Artificial Reality tour of the quarter-mile version for the press tour as well as for potential residents, and Boyd said he though it was an inspired idea.

Tom was asked if he had a notion of how this could be accomplished.

"I have. My idea, and based on something William Boyd once said to me," Tom told his managers at the staff meeting two days later, "and that is to put up a fairly large camera drone everyone can

see and give them a side-by-side tour in both standard vision and in Artificial or Augmented Reality where a computer fills in what will be there… eventually."

* * * * *

One week later and after George Dilling in communications blanketed all media outlets and all television stations, plus the major international news agencies, Enterprises cordoned off a roadway to the western side of the building cluster where the quarter-mile floating ring sat. They would not be given access to even seeing where the full-size ring was taking shape on the other side of Enterprises. Lots of parking was available and there were bleachers for the audience so they could watch the five giant television monitors on which the video tour was to be shown.

Harlan came out first to give a short talk on proper comportment and to notify everyone they would most definitely not be allowed to approach the flying ring at any time for both safety and security reasons.

"The Augmented Reality tour you are going to see, and will be provided with on a memory stick containing that same tour as you leave and always assuming you behave, is going to start after Tom Swift comes up and tells you a bit more regarding what you all have read the rumors about. He'll explain Augmented Reality to you because I'm damned if I can. All I know is I've watched a rehearsal of the drone flyover and am still in shock. Oh, and the presentation you will receive includes a canned interview with Tom Swift because we do not have the time for individual interviews today or over the next few weeks. Enjoy. Now, here is Tom Swift."

There was polite and scattered applause as Tom came to the microphone, which soon stopped.

"Well, if you aren't excited to see me or hear about this, I suppose I can go back to my office," he told them bringing out renewed and much louder applause lasting a full minute.

"Okay. I'll stay. So, what you are all looking at over to my left, your right, and not paying attention to me is a one-quarter scale model of the eventual flying city we are building for… well, for a financier who wants to remain anonymous. This is only a Swift Enterprises project in that we are building it for him and the people who will someday populate this proof-of-concept city in the sky."

He told the assembled crowd about some of the history of the so-called flying city and how it played a part in myth as well as science fiction.

“This is not science fiction. We have flown this along with a small model and know for a fact even the full-size, one-mile-wide flying ring with its population and homes and parks will also fly. Today, I want to give you a tour of what we have, or will have, but it is impossible to get you onto the thing. So, on these screens around me,” and he swept his right hand around, “you will see the AR or Augmented Reality computer-generated view of what will soon be a reality. In the center screen right behind and above me will be, for comparison purposes, just a standard camera view from the drone we will shortly launch.

“You will be treated to a total flyover of this scale version of the flying city of the near future that will last about thirty minutes complete with some close-up views of the housing to be built, the lakes and hills and paths and trees and… well, suffice it to say this is going to be a green parkland with houses and apartments for a planned two-thousand people where they will live and remotely work via an extremely high-speed and constant satellite Internet hookup.

“Oh, and in case some of you don’t believe this can fly, we will be taking it up and over the nearby Lake Carlopa and down to a town to our south before coming back. The drone will follow it and give you a view down through the central hole.”

He described the why of the hole and also how it was protected from curious or thrill-seeking or suicidal pilots by shield that would cause them to crash to the ground below.

“It is for that among other reasons we want you all to understand this is not to be flown around, over, under or through. Not only is it forbidden by both the U.S.’s FAA but also the Canadian TCCA agency providing those same services to our north. So, stay clear and make due with the tour you will see in a moment and will, as Harlan told you, take a copy away in 4K high definition. You may freely use the video for your station or paper’s own purposes, but may not sell it or post it online. We have that covered anyway as of ten minutes ago.”

Tom was about to turn to pick up the control board for the disc when a shout came from the back of the crowd.

“You’re a phony, Tim Swift, and you’ve always been a phony and you steal other people’s ideas!”

All but one of the five-hundred and seven heads in the audience whipped around to see what was going on and who had shouted out that accusation.

Most attentive were Harlan and his eleven Security people sprinkled around the perimeter of the crowd.

Calmly, even though he could feel the agitation rising and believed his face must have turned red, Tom stepped back to the microphone. “My name is Tom and not Tim.” He shook his head.

“And, whomever that was, would you care to come down here and provide some proof of your rather outlandish accusations?”

The audience was murmuring quite a bit but nobody stated anything, and nobody stepped out of their seat and came forward.

“Well, then,” Tom said with a smile, “it would seem our rabble-rouser is not quite so certain who I am or where he stands with his accusal, and is, hmmm, would *chicken* be too strong a term? Anyway, I see our Security people have homed in on our shouter and if we give them a moment, I believe they will be taking that man away. Forgive us all if he starts yelling accusations again or uses profane language; he has brought this on himself by his bad behavior.”

A moment later Phil Radnor and Elizabeth Andrews were standing on either side of a man who was trying to hunker down and not look at them. When they each grabbed an arm he did not resist and allowed them to take him to the nearest aisle and down some back stairs.

“I guess he didn’t want his moment in front of this nice crowd. Shall we get to the demonstration?”

There has a cheer and some applause so Tom did pick up the controller board that was about the size of a small portable keyboard, and he put the strap behind his head and neck with the board hanging in front of him at about navel level.

He asked those in attendance to turn their attention to the big screens as he energized the magnetic rings. On hearing the whine everyone turned their attention to the ring. Soon they were looking back at the screens.

Better to have them up to speed and ready to fly now than to have people wait for them later, he had told himself when he rehearsed the flyover demo.

As the crowd watched, the level of side conversations dropped from noticeable—from Tom’s position—to absolute silence.

The drone lifted into the air, flew over the audience and crossed over the edge of the large disc, the views on the outer monitors changed from the white and light gray to full color.

As the audience watched they were treated to seeing computer-generated people walking around and enjoying the gardens and greenways. The drone worked its way around the entire ring showing them the lakes and hills, clusters of homes, the several two-story apartment buildings, and even zoomed into the large picture window of one "house" showing the people moving about inside along with furniture and other personal items.

Almost at the same moment the drone came back to the starting point, the people were awestruck as the ring lifted in near silence heading into the air and up to an altitude of one-thousand feet.

The drone rose with it showing a view over the edge and it even scanned to the crowd—with Tom asking them all to wave—just to show people this was a live feed.

When the ring passed over the beach at the old Swift property and headed over Lake Carlopa, the drone did something Tom narrated and told people this was the one and only time such a thing would be possible; it dropped through the large hole in the middle of the flying ring before coming back out and over the edge and again showed them the top, living areas.

When both the drone and the flying ring came back over the eastern walls eleven minutes later and lightly set down, the audience erupted in a cheer that lasted three minutes before Tom was able to get their attention.

He thanked them for coming, said a tent behind the bleachers could provide light refreshments, and told them a special high-capacity electronic link had been set up and they could avail themselves of it over the next hour to file stories. And, there would be their press kits to take with them.

"And that," Tom said to Bud when the flier met him in front of the seating area where Tom had been shaking hands and answering a few question, "is hopefully going to stop people and TV stations from trying to get close-up pictures and videos of this smaller ring and the final one as well!"

Dan Perkins and the *Shopton Bulletin* had been nicely quiet as far as the Swifts were concerned for more than a full year. Earlier on, Dan had tried to gain attention by slamming just about anything the Swifts did using unfounded information and even stooping to paying for industrial espionage to find out what he wanted. Damon and Tom told him numerous times that if he just played nice and stopped making things up he would be invited to all press events and could call to check facts.

He had been rather bad over a protracted period of time and found himself in both financial trouble with lawsuits, and also doing some time in a Federal prison for his having printed details of at lest two top secret U.S. military contracts he had found out about through illegal means.

When he had returned after seventeen months he was a changed man.

Or, so everyone thought.

It was quite a surprise for all concerned when the Friday morning edition of the now three-times-a-week paper came out with:

ARE THE SWIFTS AT IT AGAIN WITH GIANT FLYING DEATH TRAP?

> Do they never learn that there are people out here who will not be bamboozled by their smiles and rhetoric when it comes to the creation of things destined to crash and kill thousands? And, what if this newest monstrosity crashes in a populated area like our very own Shopton? Could it kill every honest citizen making this area just another big lifeless hole in the ground? Think of your children!

That was as far as Damon got before he picked up the phone and placed two calls. The first was to Jackson Rimmer who said he was already on the matter.

Harlan picked up the phone fresh and dripping from the shower and said he had not yet read the paper but would do so immediately and for the Swifts to not worry about it.

The rest of the article, some two columns wide and five inches long talked about what a foolhardy endeavor putting a city in the sky up where it might be at the mercy of foreign agents intent on killing honest Americans because it could be taken over and used as a floating gunship. It did not outright accuse the Swifts of planning anything ominous, but did make it plain that anyone with, in Dan's words, "A powerful rifle," would be able to bring the giant ring to the ground where "innocent people will definitely be harmed and killed."

Twenty minutes later just before Damon headed for work, Tom called, naturally outraged by what he'd just read.

"I thought Dan was finished with the attacks. Did his time in prison teach the man nothing?"

Damon told his son about his calls with the lawyer and Security

leaders and suggested they adopt a wait and see attitude.

"This could all blow over by noon," he said.

It did not take until noon. By ten that morning the FBI called to say they had taken Dan Perkins into custody at the man's own request when an angry mob of Shoptonians descended on *The Bulletin* and demanded the man's hide for his scare-mongering article.

"He is pleading for us to save his skin, Tom," Agent Quimby Narz told the younger inventor. "I've told him I am more inclined to chuck him out into the streets, but that would be very naughty of me and he knows it. Put a good scare into him, though."

"Has he mentioned printing a retraction and going on television and radio to tell everyone he made all that up and it was a lie?"

"Something similar without personally admitting to having been the writer and liar, but I'll tell him what he is to say and then personally escort him to each outlet for his groveling. Also, we have informed him he is to bear the cost of printing a one-page retraction of the story with admission of culpability and acknowledgement that he made it all up… and getting it delivered. It will be on people's doorsteps before six this evening."

A little later Tom and Damon received a personal call from a very contrite newspaper editor. They put it on speakerphone.

"You have to understand that I got this information from someone I believed to be in the know. He assured me he had been dealing with Tom on another matter when he overheard a report from a manager in there stating that the flying ring is a death trap."

"Who was that?" was the simple and direct question from the older Swift.

"Uhh, well, I don't seem to be able to find that right now, but he did tell me what he was working with Tom on… some sort of robot servant."

Tom, turning beet red in anger tried to calm himself as he asked, "And, was this man's name something like Jones? Alexander Jones? No lies, Dan! Give me the truth right now or I'll go on air with you and accuse you of everything you've ever done that we let slide. You hear me?"

Perkins could be heard to gulp. "Yes. It was Alexander Jones. If he lied to me, I am sorry but it all sounded like he had inside information straight from you."

"Which you did not try to check," Tom said accusingly.

After Damon told him the printed and televised or broadcast retractions were going to be closely monitored and anything that sounded or read as if Dan was trying to get out of taking full responsibility would be met with a lawsuit that would close down the *Bulletin*, they hung up.

Tom took a moment before calling Harlan to tell him about Alexander Jones and his backstabbing work to discredit the Swifts and to cause panic among the population.

"I guess his letter stating he understood was more on the lines of a lie than anything," Harlan said. "We have been keeping close tabs on him and he was curiously, or not, seen to be leaving his home in Connecticut about six this morning and taking a train down to New York City. I'll contact the airlines and the train stations and see if he had secured tickets to someplace he hopes he will not be found. Back to you in a bit."

Even with Dan Perkins doing what he was being forced to do and say, by Saturday there was a small but vocal protest going on outside the main gate at Enterprises.

When a truck with a large monitor mounted on the back was driven out and the video of one of Dan's TV appearances played, the crowd shouted over the sound and refused to believe any of it. Of course, they seemed to believe, if it was printed then it had to be true and it must be the Swifts putting pressure on a good American like Dan Perkins to make his counter claims.

The police arrived and went inside the gate to speak with Gary Bradley, the number three man in Security and the one on duty about the situation.

"We can clear them out because they do not have city permission for this protest," the senior officer told the Enterprises man.

"No. Mr. Swift called with orders that they are not to be disturbed unless they attempt to gain entrance to the grounds. We are having the print shop make a few signs stating just that and they ought to be posted out there in about ten minutes… except I see their car coming now. Let's see what the effect is."

The signs were poster size and had stiff backings. They read:

You have the right to protest.
We will not interfere with that.

Swift Enterprises has been wronged
by a report in the Shopton Bulletin and
the Editor, Dan Perkins, has retracted
it. Even if you refuse to believe this,

it is the truth.

Please contain your protest to the area outside our gate and walls and you will not be harassed.

Thank you.

As soon as the first ones were taken out and placed on tripods, some of the more unreasonable members of the crowd shoved them to the ground.

When the police went out and put them upright, one young woman tried to grab a poster and tear it apart only to find the printing had been made using a plasticized paper product that resisted tearing or even crumpling. Try as she might for more than a minute she could not destroy the poster, so she let it drop and jumped up and down on it a few times.

The policeman standing behind her was not pleased and placed her in handcuffs, taking her to one side and sitting her down, telling her she was not yet under arrest, but any further problems with her and she would be.

She sat, pouting, for another full hour before they let her go back to the main group, sans the cuffs.

By six the crowd dispersed, rather quickly it seemed to the Enterprises people, and they did not come back the next day or even on Monday.

When Harlan debriefed the two Swifts Monday morning, he ended with, “I had such hopes for this Jones character to behave, but a little bit of badness seems to go a long way.”

“Yeah, the wrong way,” Tom added with a weary shake of his head.

CHAPTER 16 /
TOUCHDOWN AND THE FINAL SCORE

TOM TOOK control as the flying ring headed back to the east, being hit broadside by the unexpected winds.

It was five days after the demo and four after Dan Perkins' retraction of his story. A lot of bad feelings had come and gone as people listened to and watched the independent reports on the national stations and in larger, more legitimate newspapers.

Saner heads, and the general public's tendency to forget things they had been told to panic over rather quickly, led to the feelings toward what the people at Enterprises were doing, getting back to normal; in other words, it was positive.

Even two of the protesters sent short notes saying they had been misled and promised to be better about who they protested against in the future.

Harlan made a notation in his records next to their names to give them a little slack if they should come back in the future.

The one fallout from it all was that circulation of the *Shopton Bulletin* dropped by nearly forty percent once people realized they had been played once again by Dan Perkins. Dan received so many hate calls that he left town for what he called, "A month long, well deserved vacation." Someone spray painted the front doors of the paper with,

TAKE A HIKE AND MAKE
IT PERMANENT, PERKINS!

Now with the three nuclear reactors mounted, connected, and operaing atop the mile-wide ring, Tom was test flying the lower shell with a temporary upper cover atop the rotating flight rings of the full-size soaring city to see how it handled. He was alarmed by something he believed he was seeing in the winds and that was the ring flexing a little. Nothing severe, but even a little flex where it was not expected could lead to materials failure at some point in the future.

It could also be deemed a sagging in the middle and it was not a good thing at all.

It would only be more pronounced in this full-size version once

all the weight had been added to the surface. Even with the full upper shell attached he was certain the flex would be noticed and potentially dangerous.

When they touched down at Enterprises, he raced to the data port on the one side and inserted a cable between that and his tablet computer. The data downloaded and he headed for his office.

Twenty minutes later and he was not liking what the numbers were saying to him.

Tom was looking at the designs of the flying city with a very serious scowl on his face when Bud came into the large lab three hours later. Seeing the concentration on his friend's face, he stopped and stood there not wishing to be a disturbance.

"Come on in, Bud. I'm just getting very angry with myself over a possible blunder that might doom this flying ring city."

The flyer came to stand next to Tom. "Uhh, anything I might understand or at least lend an ear so you can talk about it?"

Tom uncrossed his arms from over his chest and let them hang at his sides.

"Possibly, Bud. If you are ready, then here goes. The small four-foot ring was stiff and it flew without any problems; the quarter mile test ring also flew and maintained its integrity and nothing deflected, or rather, bent or drooped. Or, it was so slight we did not detect it."

Bud grinned at Tom's simplification; he'd been about to ask a question.

"The trouble begins in the full-sized version. We have ample lift coming from the existing pair of rotating magnetic rings for the entire structure. That's the good news. The not good news is, the overall ring is going to want to flex downward in the middle, around the hole, and that is going to put stresses on everything from the shell to the plumbing and electrical wiring. Even the ponds and drainage system for all the plants. The terrible news is, I'm at a loss right at the moment for what to do to overcome it."

Bud asked about some way of strengthening the shell.

"I suppose if all else fails, but that will add more weight to the ring and *that* extra weight could negatively affect flying to some degree. I just don't know by how much right now."

They stood looking at the plans showing the upper and lower

shells separated and the indications of the magnetic rings and all internal systems.

After more than seven minutes Tom was about to turn and leave the lab when something came to Bud.

"Uhh, Tom? There's a lot of room in there next to the Great Hole of Hoppy, or whatever you are going to call it. Can you put another pair of the magnetic rings in there? I mean, smaller, obviously, but could they sort of hold up the middle and work in concert with the big rings?"

Tom stared at the plans for another minute before reacting. When he did it was with a barking laugh and a little dance of joy.

"Bud. That's it! It's perfect. And… no, really!" he said seeing Bud's look of disbelief. "The really great thing is we have more than enough electrical power for a smaller set for everything from the motors to spin things to the repelatrons to hold them down in position. And, you are right. They *can* be scaled down so instead of being nearly eight feet tall, each, these smaller ones can be… well, perhaps as small as just two feet tall each. That's just four feet plus an inch when separated and we have nearly sixteen feet of open space at that point. Great idea, Bud! Absolutely great!"

"So, score another point for good old Barclay?" He didn't sound like he totally was on board with the idea that he'd come up with was a winner.

"Plus, bonus points for spotting something I might have taken weeks of worrying to find." He smiled. "Now I am also congratulating myself for planning to put solar panels on all rooftops. That will give us plenty of spare electricity to run things without compromising anything."

He was about to go on but the door to the lab opened and Harlan poked his head in.

"Hey, Tom. Oh, hi, Bud. Do you have a minute, Tom?"

Tom set his mechanical pencil down from having taken some notes and nodded. "Sure. Here or the office?"

"I think the office would be better. You can come, too, Bud, as long as you don't get all jumpy and angry about what I'm going to tell Tom."

Bud had needed to be calmed down when he'd come in after reading the first article by Dan Perkins. Words like, "I'll go down there and punch his skinny, weaselly, lying face in," and, "I'd like to sneak up on the jerk and rabbit punch him in the head until he falls

on his face," had been heard to come from him.

"I'll behave. It's just that sometimes I need to vent and I hope you both know I wouldn't actually go hit that slime ball, Dan Perkins… right?"

Tom looked at Harlan and they both shrugged.

"Come on, flyboy.

Once they'd taken seats in the conference area, Harlan leaned forward and nodded.

"Right. So, this is about several things we've recently found out starting with that heckler in the crowd at the demo. He's an ex-con from New Jersey out on parole who may be looking at going back inside for his final four years over this. It took a couple days before he'd admit to having used someone else's press credentials to get in, and that he was hired and paid anonymously by 'some man' on the phone and had picked up the money at the telegraph office that morning. Five-hundred bucks, by the way.

"He had been emailed a script of what to say. We could not trace it back because it came in on a library computer and for personal protection they do not gather transmission or user information."

Tom asked where the man was now.

"Still here in Shopton at the city jail where he will be picked up by the county tomorrow and taken to their jail to await trial. But that is the tip of this iceberg. It is entirely possible he was hired by our old friend, Dan Perkins, and this is because those credentials the man used? Meant to be used by a reporter for the radio station Dan also manages."

Bud was getting angry but he calmed down when Tom looked at him and shook his head slightly.

"Does the plot thicken?" the inventor asked.

"It gets very thick and it all points to Alexander Jones from this point. And, while he might actually be the person behind the heckler and not Dan, he is behind some rather nasty things like the phone call to Dan with the accusations about the flying city. The man has, or had a rather sizable fortune that he seems willing to put toward harming your reputation, or possibly harming you."

Tom was now alarmed and his face showed it even if he kept silent for the time being.

Harlan continued. "As you know, we had Jones followed when he left town. He also tried to leave the country after lying low for four

days in Manhattan. He was picked up by the FBI at LaGuardia Airport heading for a flight to Honduras with a connection to Chile. It's an odd choice because unless he was then heading by car or on foot to Argentina, we have a nice extradition agreement with the Chilean government. Anyway, he is not outside the country but is in a Federal prison awaiting charges. I've submitted a list of seventeen."

He stopped and looked first at Bud and then at Tom.

"Here's the bad part. As he was being locked up he told two of the agents something along the lines of, 'If Tom Swift thinks this is over, there's a whole world of troubles already set in motion that will bring that young punk down to his knees. He'll beg me to forgive him but I can't stop them,' Or, words to that effect."

The three men sat looking at each other for a couple moments before Tom spoke.

"Do we have any indication what he might mean?"

Ames shook his head. "No. Except for a small tidbit and that regards the purchase of a small personal jet, a RadAir Typhoon, Jr. That is not the type that first attacked you and Bud, is it?"

Both young men shook their heads. "No," Tom answered for them both. "We haven't yet been inconvenienced by a Typhoon, Jr."

"Well, his personal finances are tied up inside a labyrinth of accounts, shell companies and the likes. The Bureau has a Forensic Accounting department working to see what else he might have spent money on that is directed at doing us and you no good."

"You'll keep me and dad involved in anything you hear?"

Harlan smiled. "Don't I always?"

He left a moment later leaving Tom sitting in thought and Bud silently counting to ten, seven times to get over his anger. The truth was he absolutely wanted to go ballistic at any possible threat to any of the Swifts—including his wife, Sandy Swift-Barclay—or even the company.

Tom spent the best part of five days doing load balancing computations and trying to find the best size and power for the inner spinning rings as suggested by Bud. The idea was very sound, and stress checks told him it would provide the needed support for the inner portion of the large ring.

But, he needed to make certain they were computer controlled

and linked and matched with the main rings or else he could put undue upward stress on the inner area of the flying city.

It turned out that the inner rings could be quite small, smaller in diameter than those used in the quarter-mile ring. Half that size, in fact. Tom's guess of two-feet was very close to the twenty-two-point-nine inches of the actual required rings.

Everything he figured pointed out to about ten-point-five percent the power and lift of the outer, main rings was perfect for the job.

Finally he had the answer and could get the extrusion equipment and people on the project.

Three more weeks came and went as the inner magnetic rings were made in their sections—again they would be made as a pair of triangles—transported to Enterprises and welded together. The *Sky Queen* used a series of cables and remote operators to turn the bottom ring upside down and lower it into place. The following Thursday the upper small ring was hoisted into the air and set into the bottom shell.

Each operation took the best part of one afternoon.

With the upper shell still several days away from start another small cover with repelatrons was built and added over the inner flight rings. This one was held down at the inner hole edge by the same system of grooves as the upper shell would incorporate, but a little farther out it was necessary to construct a set of hold down clips to keep the cover from being forced up and away as the repelatrons and the magnetic rings did their job.

A dozen ground hover tests showed that the modified lower shell with the two different lifting sets of rings could fly as easily as before, and laser sights showed that at least when different levels of power were put into each there was zero warping or bending of the shell.

"It's just what the ring needed, and it is all thanks to Bud's sideways insight into what I was missing," Tom told his father the afternoon after the most strenuous of the low altitude tests inside Enterprises' walls.

"He's more clever than he gives himself credit for, and sometimes I think we also short change him."

Tom nodded. It was true.

"I've told him I'm calling his part in this the Barclay Solution. I believe he thinks it will stop at just that mention, but I intend to

immortalize his contribution by putting that into the operations guide. Or, do you think that's going a bit too far?"

Tom looked curiously at his father trying to decide if the slight twitching he could see in the other man's face was good, or not.

Finally, Damon looked into his son's face and smiled. "It is, as your cousin Thomasina might say, a capital idea!"

The next day was one in which the temporary covers for both sets of rings were removed and huge pieces of plastic sheeting were used to protect the rings from the weather and dust and whatever else might need to be cleaned off in the end.

At that time, the upper shell was started with the first thirty-foot-wide section—measured at the outside and would eventually connect to one of just seven-feet one-inch at the center hole—was brought from the Construction Company, along with five more sections that had been made in the vacuu-form beds, and they were attached to the lower shell.

Section by section, the top of the ring was completed and the associated plastic protective covers removed.

By the end of week four the upper shell was almost complete and a slight variation in the total spacing of the shell had to be manually trimmed so the last pieces fit snugly.

A large suction vacuum was brought in and set at one point while a crew moving slowly along inside and using compressed air blew off all traces of anything that had settled within the shells. That was whisked away and the fifteen pounds of dust and even pollen collected was dumped in a small hole just inside the company walls.

"Finally," Tom announced at a company-wide audio address, "we are ready to test fly the city—naked, to be sure—but it is looking as if it is ready for its final bits and pieces. To everyone who had a hand in any of this, from the first model to this ring as it stands today and what it will become in the next month or more, you have my gratitude and thanks."

He suggested that all work ought to stop while both the flying ring and the *Sky Queen*, its escort and control center for now, took off thirty minutes later.

"You are all welcome to come outside and see it finally rise more than fifteen yards off the ground."

Nearly everyone within the walls of Enterprises stopped what they were doing and made certain equipment was shut down or in standby, and they all headed outside.

Bud stood next to the port side hatch of the giant flying jet waiting for Tom to arrive. The inventor had taken one of the escalator-like stairs up to the top and was walking around the surface just looking at what was there.

When he came back down and gave those within view a thumbs up, Bud headed inside to get the jet turned on and the computer checks started.

Tom entered the cockpit four minutes later as the first of the bright green LEDs came on to indicate things looked good.

As he stood there, he looked at Bud sitting in the copilot's seat.

"I think you're in the wrong seat, flyboy. You take pilot position so I can fly the ring from the right seat."

Bud got up and stepped over the center console before sliding into the left seat. Tom took his place and checked the temporary control panel situated to his right. It also showed nothing but green lights.

The ring as ready.

A minute later they had clearance from both the lower tower as well as the FAA controllers up the hill. Both craft rose into the sky and headed over the lake and the far side hills east of Carlopa. In two minutes both were out of sight to all except for the upper control tower personnel.

Their planned route for this flight was to the northeast across the northwest corner of Vermont, into Canadian airspace and then back over the upper portion of Maine and across New Brunswick on their way to Prince Edward Island and then home.

Everything went wonderfully with the big ring proving the ability to remain rock steady as it traversed over land and water even when hit by gusts of wind in the forty miles per hour range.

P.E.I. came and went and it wasn't until the approached Moncton, New Brunswick they had any indication of trouble.

It came in the form of a small twin-engine jet aircraft of a type Tom had seen many times. The engines were mounted atop the wings and gave the aircraft a top speed of about four-hundred-eighty miles per hour.

It zoomed past the *Queen* as if the pilot decided the giant jet wasn't there and circled tightly around the ring.

As Tom and Bud watched in horror, and it seemed to be slow motion to the two of them, the small jet performed what could only

be a strafing run, sans bullets, before it took to the sky heading over the edge and out about three miles.

The small jet made a tight turn as the inventor tried turning the ring and taking it lower down to try to evade the jet.

Whoever was inside the other jet was a maniac. Or, at least someone who flew like they had nothing to lose.

That, as it came to Tom's mind, told him it might only be one person and she had proven her hatred of Tom on numerous occasions.

The jet came in but it appeared the pilot misjudged the elevation of the ring as it was now dropping below one-thousand feet and heading down at a rate of about three-hundred feet a minute.

It dove a little too much then got to the edge and made a last-second attempt to pull up, but the clear ring cover for the outer flight edge was just a foot too high and the bottom of the small jet hit it, spun completely around horizontally, and began to tumble slowly out of control across the surface.

It hit the inner ring cover, bounced once and flipped over on its back, still on top of the flying city ring's lower shell. It teetered there as Tom got the ring to within thirty feet of the ground before tipping off and hitting the ground almost upside down.

Tom set the ring on the ground a few hundred feet away and Bud set the *Queen* next to it as close as he could to the place the small jet rested. Or, rather it had rested until a small explosion tossed it into the air ten feet and back over on its belly.

Tom and Bud raced to see if they could render assistance.

The side door was missing and the lone occupant hung in the seat, moving but obviously injured.

As they eased the pilot out and to the ground, Bud let out a curse.

CHAPTER 17 /
"WHY WON'T YOU DIE?"

A COLD SHUDDER went through both young men, as sirens could be heard not too far away. In a minute two police cars and an ambulance came to a halt twenty feet from the now removed pilot.

The police got and one called to hurry up the fire fighting services. They arrived in four minutes and concentrated on putting out the jet fuel fire.

Tom made a motion calling one of the police officers over to them. He gave the man a brief explanation of who the crashed individual was and how she had not only attacked the flying ring, she had been involved in a murder plot against him more than two years earlier.

"Her name, no matter what she tells you, is Octavia Whitcomb and while I don't believe she's been officially declared as dead," he told the shocked officer, "I do know there was a warrant out for her immediate arrest and transfer to Washington State… if alive. She is also wanted in British Columbia on kidnapping and attempted murder charges. I'll call my corporate legal folks and get that order sent to your office, if you'll give me the email info, but you absolutely have to hold her. She just tried to destroy that floating ring—" he pointed up at the ring that had taken back off was now floating a quarter mile away, "—by possibly crashing into it, or, and I'm guessing from the explosion of her jet when it hit the ground, she was getting ready to drop some sort of explosives on it."

"I-I think I need to get my Sergeant out here," the younger of the two policemen told the inventor. "Can you two wait?"

Tom said they would before turning to make his call to Jackson Rimmer in Enterprises' Legal department. Three minutes later and everything was in the works.

"And, don't worry, Tom. I'll let Harlan know what's happened."

Four minutes after that another police car came across the dirt and grass of the field and a large man emerged, pulling out his hat and nightstick before putting them in their places and adjusting his uniform shirt and coming to see Tom.

Six minutes later he nodded. "Yeah. Heard about her and you and that sun race you all had a couple years ago. My money was on you all the time!" He grinned at Tom and Bud, and then scowled as

he looked over to Octavia who was now on the gurney. He stalked over to her.

He must have said something that Octavia did not want to hear as she began shouting at the top of her lungs about police brutality, a plot by Tom Swift to have her murdered in prison, and even how the ambulance attendants had purposely wrenched her perfectly good leg until it dislocated and how she was going to "...sue everyone for a billon dollars!" once her lawyer got her out of jail.

Tom ambled over at the end of her tirade. "Hello, Octavia. How wonderful to see that your crash and disappearance at sea hasn't reduced your bile and anger at the world... and at me."

"Why aren't you dead?" she demanded. "That net hit your little plane and should have taken you down." She was breathing heavily and it was looking as if she intended to spring up and attack Tom.

The police sergeant nodded at the attendants and tapped his handcuffs on his belt. One of them went to the back of the ambulance and brought out a red plastic box marked RESTRAINT KIT and set it on the ground. From it he removed something looking like a wide Velcro-covered belt that the sergeant and the other attendant ran over the gurney's end and Octavia's legs and cinched down so tightly she could barely squirm them around. And, when she did the pain in her hip made her quickly stop. Then, with the ease of practice first her right and then left arms were secured to the sides of the gurney.

Octavia continued to scream abuse at all those around her.

"Now, lady, I can either slap a gag on your mouth, or you can shut the heck up and just lay there. Your choice."

When she spat at him he deftly sidestepped it, nodded to the attendants and a heavy cloth mask was added to her restraints. It did not stop her shouting and swearing, but it kept her from being able to assault anyone with her saliva.

The sergeant stopped smiling as his radio crackled to life.

"Sergeant Delmonico? Headquarters. From the Lieutenant. We have paperwork to detain the woman known as Octavia Whitcomb, and a bunch of aliases, with an armed guard, full restraints and twenty-four hour 'within direct sight' coverage until she can be transported by the FBI. You get that?"

The man looked at Tom and Bud, nodded and then replied, "Does it say anything about slapping a strip of duct tape over her foul mouth?"

"Uhhh, no Sarge. But, I guess from the 'full restraints' part that is allowable. Lemme call the city attorney and get back to you."

The call came shortly telling them that—given her spit assault attempt—a gag was allowable in this case and so several strips of wide surgical tape were added to Octavia's mouth. She squirmed and screamed but nothing was intelligible. The hatred in her eyes came through in spades.

The ambulance pulled away with one of the officers leaving his car to accompany her, riding in the back.

Turning to Tom, the large officer stated, "You've brought a bit of excitement to our little town. What with tourist season over a month ago it was starting to look like we'd be having a boring fall and winter. I, ahh, hope your flying rig is okay." He glanced at it floating lazily in the air as if nothing untoward had happened.

Tom took out his tablet computer and signed into an application. He scanned the data on the screen and looked up. "She's fine. I really want to thank you and your people for helping. And, have the fire department send Swift Enterprises the bill for any supplies used to put out that jet fire. The TCCA up here will probably call your office today or tomorrow to okay my people coming here and taking the wreckage away." He and Bud shook the man's hand and they headed for the *Sky Queen*.

"Well, a bit of excitement to start the morning," Bud exclaimed as they neared the side hatch.

"Not the sort I want, flyboy. Not in the least." Tom scowled again as he stopped walking. "If Octavia is still alive, then I wonder who was in that jet that crashed during the race?"

"Remember her husband, the South American murderer? Bet it was him and she was all safe and snug hiding out back on shore."

With a nod Tom started walking again. "I'll just bet you're right, Bud, and I'm thinking she didn't shed a tear over his loss. Poor Robert Whitcomb. This won't sit at all right with him. Maybe I ought to call and give him a heads' up."

As the giant jet rose vertically to rejoin the forthcoming flying city, Tom put in a call to the Whitcomb Aviation Company out in British Columbia and asked to speak with the older owner. As soon as they were connected, Robert began effusing about Tom's invaluable assistance in getting their little helicopter fixed and available for sale.

When Swift Enterprises offered a partnership deal to buy twenty percent of the company to "bail" Whitcomb out, Robert had

suggested he only needed about the value of fifteen percent of the company, and so Damon Swift had flown out and signed the deal. At twenty percent. It was money Whitcomb gratefully accepted in the end.

And, it was just in time for two reasons: first, it kept the doors open and paid off a lot of debt; and, it allowed the company to remain in business for another year at which point sales suddenly rose by astronomical amounts.

"Sales figures have us with a backlog of orders for not just that little helicopter to cover the next sixteen months! But," Robert sobered a little, "I guess you didn't call about this or what kind of money you are making from our deal. What can I do for you, Tom?"

With regret noticeable in his voice, the inventor told Robert Whitcomb about his daughter being alive, but having just tried to attack the flying city and then crashing. He also mentioned the earlier episode when the *Pigeon Commander II* had been lost.

"I have to think that was her as well."

There was a moment of silence on the line.

Sighing, Robert spoke. "I had come to terms with her level of evil and even with her death. Now, knowing she is alive and still out to harm you makes me sick to my stomach. Perhaps it would have been better had she perished when we all thought she had. If I'd just given her more of my time when she was younger. I am so sorry—"

Tom cut him off. "Robert. This is not anything of your doing. She went horribly wrong at some point and it isn't your fault! Lots of kids manage to get through having working parents who can't or even won't pay attention to them. This was *all* her decision and *all* her doing, so stop castigating yourself. Unless and until you suddenly turn into a monster and try to kill someone I have to believe you are the honorable man I've always thought you are."

He gave the man the basic information about where she was being taken and that the FBI would be collecting her within a day or two before ending their conversation.

"He really can't get over what that Octavia became, can he?" Bud asked as he swung the nose of the *Queen* to the south getting her ready to head back to Shopton with the flying ring trailing behind.

Tom had a sudden idea and made another call to his father. He explained their run-in and his conversation with Robert.

"Dad? Can you invite him out to Enterprises? I believe it might do him a world of good to meet a lot of our people and see that

nobody hates him or his company and we are proud to be a partner, even a silent one, with Whitcomb Aeronautics, we just hate Octavia and her possibly late husband."

"And what about your wife and sister?"

Tom chuckled ruefully. "Well, yeah. They sort of hold a grudge, but you told me once that women do that. I'll have a talk with mine and Bud'll try to make Sandy see some sense, but I still think I'd like Robert to come out."

It was agreed that Damon would make the call the following day and set forth the invitation.

They touched down just after five in the afternoon in a spot next to the elevator platform that could take the *Sky Queen* down to its underground resting place.

The flying ring came in on its own three hours later.

Even as they were climbing out of the side hatch, a small team had the nose wheel assembly attached to a low tractor and were preparing to pull her into place.

As he alit on the tarmac Tom asked the technicians to get her ready to another trip the following day.

"Might just as well leave her up here," he suggested.

When Tom, Bud, Hank, Zimby and Chow landed at the airport just north of Victoria, B.C., they came down on a special reinforced landing pad that had been recently added between the X intersection of the two shorter runways and the normal parking apron in front of the terminal. It connected to that tarmac with a short, two-lane road.

Robert Whitcomb was not there, yet, so Tom called the office.

"Uhh, oh, well, Mr. Swift, umm, you see… well…" the secretary Tom had met on several occasions stammered.

"Millicent? First, it is Tom, but you seem to be flustered or bothered by something. What can I help with? If it is transportation, we have a small vehicle in our jet and can use that to come to your offices if Mr. Whitcomb is busy."

He heard her let to a little squeak that was also a sob.

"Oh, Tom! It's terrible. Mr. Whitcomb got a phone call this morning and it made him so anxious that he… he… oh, *god*, he had a heart attack! I don't know who it was, other than it was some woman who I think was disguising her voice, but he came out of his

office a minute later with his eye bulging and just collapsed! I thought he'd died, but he was still breathing and I called the paramedics and they came and took him away and—"

"Millicent? Please calm down. Take a couple deep breaths and listen to me. Okay?"

" 'kay."

Tom steeled himself to be the voice of calmness and reason. "Fine. Let me tell you a little about most hospitals and most doctors in general. When dealing with someone who has no stated family and has been picked up at a business, they have to call that business with any updates. Since it does not sound like that has happened, I have to surmise Robert survived and he is in Intensive Care and once they have a moment, you will get that call.

"I will head straight to the hospital if you can give me the name of the place. I'm having our car set onto the tarmac and will leave here as soon as I hang up with you."

He could hear her trying to take deep, normal breaths. It seemed to be helping. "He was taken straight to Royal Oak Medical Center, but the ambulance driver said they would stay there and transport Mr. Whitcomb to Victoria General once they stabilized him. He could be at either by now."

She read off the two addresses. The first one was a direct drive down the number 17 highway. As he was transcribing the number Tom was also TeleVocing the addresses to Bud who had rushed back to the hangar.

"*Got it, skipper*," he called back. "*Twenty-five minute drive or four minute flight*."

Since they'd brought along a Model 3 Atomicar it would be an air trip.

Three minutes later Tom popped out of the side hatch on the left side and ran to the back where Bud had the "Tommycar"—Sandy's nickname—ready to go.

They lifted once Bud got control tower permission and headed for the medical center.

As they landed in front, Tom could see it wasn't a very large facility. The two men jumped out and raced to the front desk. After identifying himself and showing the receptionist a letter from Robert Whitcomb stating that Tom was a Board Member with legal rights regarding Whitcomb (not strictly a lie but a stretch of the truth) the young woman pointed to the elevators and told him they

needed to go to the second floor.

"Then, turn right and go around that corner, halfway down the corridor and take the other elevators back to this floor. Sorry, but there is no direct route!"

At the front desk of the Emergency Room Tom went back through the identification process with a far less trusting woman. She pointed to a trio of chairs, well within her sight, and picked up her phone. She held a thirty-second hushed conversation with someone before hanging up.

"I don't know who crowned you King of the country, but you are to go back through those doors—use the paddle switch on the wall and *not* the handles!—and then to the Doctor and Nurse station in the middle."

The two men from Shopton rushed though the barely open doors and to the indicated station. There, a young and very harried doctor met them.

"Mr. Whitcomb is being prepped for transport to a facility where they can actually help him," he said resignedly. "I'm afraid all we can do is stabilize so people like him can make it to the real hospital. Oxygen and fluids and pain medications. Come with me."

They crosssed to a room with only a curtain for a door, pulled it aside and stood looking at the young nurse who was working with Robert's three IV lines.

Tom looked questioningly at the physician. "Three IVs?"

The man rolled his eyes. "At the M.C. it is protocol to have a primary line, a backup line in case the first one sees a collapsed vein —something we only do in the over-sixty patients—and a smaller one for meds." He shrugged as if he had no really good reason it could not all be handled with a single line.

Robert, evidently awake, had heard and recognized Tom's voice. "That you, Tom?" he croaked. "Damn oxygen thing up my nose makes my throat raw!"

Tom stepped forward and to the side of the nurse who was just getting ready to leave.

"Yes, Robert. I've got Bud with me. I hear from Millicent you decided to come here rather than meet us at the airport." He had a smile on his face and Robert understood he was making light of the situation.

Robert paused. "Right. Did she tell you what caused all this?"

Tom came closer taking the man's right hand. "Not really, but don't tell me if it is going to upset you. Think of anything but. Remember that great dinner we had in downtown Victoria to celebrate the helicopter's completion?"

Robert seemed to relax and he nodded with a little smile. "Great food and wasn't that waitress I told you about a humdinger?"

"She was great and she even made Bud blush when she gave him the hug at the end of the meal. Gave us all a hug. As I recall, your smile did not leave your face even by the time we got back up to Sidney!"

Robert took three deep breaths through his nose to get the maximum oxygen.

"It is moments like that keeping me hanging on in spite of my *daughter* trying to make things otherwise!" He took a few more cleansing breaths and seemed to get over the momentary anger. "Did you know she told me she's still trying to kill you… and me?"

"I didn't want to bother you with that right now, but yes. Bud and I ran afoul of her yesterday. We spoke after that on the phone. She is, in case she did not say, in police custody on the other side of the country. But, let's forget about her for the time being and concentrate on getting you to the larger hospital where they will have you hooked up to more machines than you can count."

"Mostly because they hide the good ones behind your head so you can't see them," Bud quipped coming closer. He accepted Robert's hand and gave it a small, gentle squeeze.

Robert was smiling at them both. "I am sorry for being vague. I do recall that conversation. You two are good medicine for me. Oh," he said spotting the two paramedics that had brought him in standing at the door, "I think my taxi is here."

"They're getting the paperwork together Mr. Whitcomb," the taller of the two told him. "Maybe five minutes. We just had to come see how many things we're taking with us."

"Will you excuse me, Robert?" Tom asked.

"Sure. Go chase a pretty nurse," he said, and then added under his breath, "if you can find one in this place!"

Tom went out with the two paramedics and explained about his atomicar.

"I can set the rear seats to recline about sixty degrees and get him, through the air, to the other facility with no bumps, no delays and all in about three minutes. One of you can come and I'll bring

you right back here."

The two ambulance men went into a short conference. "What about if he has another… uhh, attack?"

"Bring a portable defibrillator. The vehicle can concentrate O2 and his cannula can be attached to a point on the side of the compartment. We have that because we can fly above where oxygen is required."

Another brief conference took place.

"And, you can land…?

"Helo pad, front doors, ER entrance. Anywhere you could vertically park a sedan."

Tom suggested Bud take them out to see the car while Robert was still being prepared.

They came back in six minutes later.

"I brought the car around to this entrance," Bud stated.

"It's a really neat car, Mr. Swift. So, if it flies as smoothly as the fifty-second spin around the area Bud here gave us, then I think it would be a very good thing for Mr. Whitcomb's health to get him over the Vic General as quickly as possible. Ummm, could we both go with him? Just in case?"

Bud said, "Go and come back for me. You have to come back anyway and I'll bet the other place wants to have Robert all to themselves for an hour or so before we can go in and see him. We've got time."

Seven minutes later, and with the medical center staff looking on in dismay, Robert Whitcomb was gently loaded into the atomicar and flown away.

"Is he going to be okay?" the doctor asked.

Bud looked at him. "Perhaps better off than if he remained here."

The doctor nodded, sadly, and walked back inside.

CHAPTER 18 /

FLYOVER

LATE THAT afternoon Tom and Bud returned to the airport after visiting Robert's offices and assuring Millicent her boss was in great hands and would likely be back at work in four or five days.

"Of course, he is to *not* receive any more calls regarding or from his daughter. And, yes, she is still alive and it was her who called causing Robert's attack. I am going to have my chief engineer come in tomorrow morning and do a little rewiring job so you can transfer anything along those lines directly to our head of Security."

When they finally got to the *Sky Queen*, Chow had dinner almost ready.

"I figgerd you'd both be gettin' back too late ta plan fer dinner out, so I'm fixin' some o' my soaked beef ribs 'n smashed taters. Hope yer both hungry—what the heck am I sayin'? Buddy is just about always hungry!"

The men sat down, Chow included, for dinner twenty minutes later. They all enjoyed the food but the cook's fresh rhubarb pie afterwards was the hit of the meal.

"Got me a friend in Alabama who grows the stuff, an' this is his last o' the season. Nice, bright red and all the same size so they cook evenly. I got another fifty pounds back at Enterprises in a cold storage fridge and plan on makin' 'bout twenty-five pies when I get home. Just ask fer seconds if'n ya want 'em. I made a big pie an' got enough fer us all ta have another piece!"

Everyone except for Hank, who has been trying to lose ten pounds, had that second piece.

After the meal and with Zimby offering to help clean up with the cook, they all sat around the lounge enjoying the memories of the flavors, some light jazz music, and peace.

That peace was broken when Tom's phone rang. He stepped out of the lounge as he answered the call.

"Mr. Tom Swift?"

"That's me."

The woman on the other end told him, "I'm Doctor Helena Darling of the Victoria General Hospital. I'm Robert Whitcomb's attending physician."

"I sure hope this call is good news," Tom told her.

"Well, it is news and I have to preface this by saying he is in good condition given his heart disease. Tomorrow he will undergo something that will insert a small device in a blocked artery."

"Sure, Angiogram, possible angioplasty and stent insert. I'm familiar with them."

"Oh, good. Sometimes telling people we're going to shove a small spring inside their friend or loved one is difficult to comprehend. Anyway, Mr. Whitcomb has been awake the rest of this afternoon, hungry, and anxious to talk with you. I told him no visitors until tomorrow afternoon and he told me to do something very naughty. So, after I stopped laughing I agreed to get a message to you. May I read that now?"

"Absolutely. Anything I might need to write down?" She assured him that was not the case.

"Tom," she read, "Wanted to let you know even with Octavia in jail she is threatening to get out and kill me, you, Bud, your family and anyone she can find from either of our companies." The doctor paused and said, "Whoever that woman is she sounds horrible! Anyway, to continue, I've asked for her to be transferred to the most secure holding facility possible, even if that is the Black Hole of Calcutta, and to have her double guarded even if that means I have to pay for it. I'll see you tomorrow. That ends the message. Is there a reply, even though I am not used to being a messenger?"

"I don't think so other than to say we all wish him well. And, thank you, Doctor Darling."

When he returned to the rest of the group he only mentioned that Robert Whitcomb was going to have a stent and he was expected to recover.

As Tom and Bud walked around some of the perimeter of the full size ring, the flyer stopped and pointed. "So, Tom, and in all seriousness, what the heck are you going to call this. Floating ring is not what I call a good name. Neither is Flying City Ring. Now," and he held up his right hand to stop the inventor from telling him he was not to give it some horrible pun name, "I know you want this to bear some reasonable name so I will not try such things as Ring-a-Ding Town or even Frisbeeville. But, I do have a suggestion and it is based on what the thing is and what it will be doing. Want to hear?"

Tom shrugged. "Might as well. Go ahead, Bud."

"I'd like to call it the HoverCity with my usual running the two

words together and a capital C and all that." He looked at his best friend in anticipation of either a grin and agreement, or a serious look and shaking of the inventor's head.

He got the nod and grin. "It's a good one, flyboy. A very good one. HoverCity it shall be!"

Bud sensed Tom was too accepting first thing and he asked about it.

"Come with me." They walked about a hundred yards to the construction manager's office/trailer and stepped inside. There, on the main table, sat the plans for the build, and right in the corner with the rest of the Title Block information were the words, "***Swift HoverCity***."

"Ah, you already had that. Nuts!"

"Actually, Bud, I only came up with that last night and had Jack, who's managing this for me, reprint the top sheet. Looks like we both came up with the name at about the same time."

They spent another half hour in the trailer looking at the blueprints. Bud had not seen the plans before and was amazed at the overall simplicity of the thing. There was a lower shell with structural ribs built right in, the open mid layer where all electronics and utilities ran, or at least to within fifty feet of the outer edge where the shell curved upward and would be more than twenty feet high.

Inside that open rim area would run the counter-rotating specialty magnetic rings that—using Farley Fairchild's ideas plus Bud's idea for the second sets—offset each other's natural desire to repel and that was at such a high level it "leaked" out and down, repelling the very magnetic nature of the planet.

Bud noticed the notation of "Barclay Solution" and pointed at it. Tom shrugged.

"To power this we will have three very large power generators, which are basically self-running nuclear reactors. They are buried deep inside the three hills of the HoverCity, and excess heat generated will go to heating water and homes, at least in winter, and the rest used to turn power turbines to provide a little extra power."

"Jetz!" Bud exclaimed. "Uhh, so how much is this behemoth going to weigh?"

Tom gave a noncommittal shrug. "Give or take a few tons, about three-and-three-quarters million pounds!"

"Double that previous Jetz, skipper. And those rings will lift that

up?"

"Sure will. Over land I believe the city can float up to about four-thousand feet, and over at least the part of the ocean above the continental shelf, about three-thousand-three-hundred. Over the deepest part of the Atlantic it might come down to five-hundred feet and there are some really deep parts of the Southeast Pacific it just can't fly over!"

Bud considered what he'd just learned. "Okay, I have another one. If this had to be built with traditional wood houses and real dirt, what then?"

"It likely would not get off the ground. If we used all those old-fashioned materials this would be twice as heavy or perhaps two-and-a-quarter times as much. Not good."

"When will it be finished?"

"For the ring and the dirt and trees? Seven more weeks. It is not a very complex build, just there's a lot to go in still. Then it gets twenty construction teams to build the structures over a month while a giant workforce of plant experts come in for the addition of short shrubs, plants and grasses. We have a company down in Schenectady growing the sod using our AeroLoam as the base along with a structural netting of durastress threads.

"All total, I think the HoverCity will be ready for her unmanned yet completed maiden flight in four months. Pretty darned good if you are asking."

"I am, and I am giving you my heartiest congratulations, Tom."

With each passing week the HoverCity took more and more of its final shape. By week three of the final push the flight control room and systems were installed and tested by Tom climbing into the control room and lifting the ring fifty feet in the air before he slowly spun it around. The next week saw the upper level access doors installed and sealed where they needed to be and hallways inside the ring allowing access between the three reactors put in place. The power stations were complete after that.

The next week, and working only at night to protect the roots, AeroLoam was produced and blown into place and the trees set in place, their roots anchored to the disc, and more of the fake dirt piled around them.

The watering system had been previously installed and now the lakes were filled so they could become the main sources of water for the entire small city. That water was now being used to water the

trees and as it returned to the purification systems it was recycled back to the lakes.

When people came onboard, their drinking, washing and cooking water would come from those same lakes plus hidden reservoirs between the two main layers of the flying circle. Each person would have access to one-hundred-twenty gallons of water per day and no more. Households would be monitored and shut off until the following day if they went over allotment more than two days in a row.

The central opening, spanning some twelve-hundred feet had a nearly invisible ten-foot fence around it with what would be grassy areas with pathways meandering around. Anyone wishing could step right up to any of the eighteen lookout points and look down, but they would never be able to fall through.

Even the very opening was protected by an Attractatron shield that would grab and then repel anything trying to come up from below or down from above.

As an additional safety and security precaution Tom decided to add a semi-dome over the top and bottom of inertite fibers that would hold off any radiation that might be directed at the great disc. They also marked the limits to where anyone could fly and had tiny lights arcing through the fibers to act as a warning at night.

By the end of week fifteen Tom was satisfied they were nearly ready to try a fully-loaded test flight. Like most others it would be remotely controlled from the *Sky Queen* and would start in another week after final checks were completed.

Only one thing went slightly into the negative category during this time and that was the strange crystalline object that had once been on the *Space Queen*, had been taken to the Moon and then had evidently attempted to return to the giant station.

Whether it was constant exposure to direct sunlight, or some fault in the crystal, it got to within two-hundred miles of the station before it exploded in a flash so bright several observatories on the planet below made immediate—incorrect—announcements they had seen a supernova in the skies. Most suggested it came from at least fifteen light years away.

That sort of misinformation and mistake actually made Tom smile even though he had really wanted to study that thing.

As the unoccupied HoverCity approached the coastline and the town some three-thousand feet below, Bud had to rub his eyes. He

could make out trees and greenery and several structures. He realized it was all the real thing, but something wasn't right.

"Skipper? I'm seeing a slightly blurred image out there. It's a lot worse near the front. A lot of the HoverCity isn't in focus. What gives, and until I get my eyes working, you'd better take the controls."

Tom chuckled. "Not your eyes, flyboy. Because all the flying around would cause a near constant wind that might swirl across the disc, I put a small sort of force field surrounding the upper area of the hole. A combination of Inertite fibers and a series of small repelatrons keeping them at a constant distance. But, what you are seeing is a combination of atmosphere buildup on the, well, let's call it a shell or wall around the outside of the ring and the curve of that wall. Octavia misjudged it on the smaller ring and crashed."

"Whew! That's a relief. I thought I was going blind. But," he paused, "what's this about build-up? Out at Nestria, and they use the old Inertite fibers trick, there's no hint of that."

"Just what I said. Atmosphere buildup… on the outside. Outside of Nestria's atmosphere cover there is nothing but the vacuum of space so there's nothing to build up. Think of it like a fine, misty rain and a windshield. As you drive through it, the tiny droplets start to coat the glass and pretty soon it makes it difficult to see. So, you turn on the wipers. The dome has no wipers, but as soon as it stops moving, at least during daylight, the sun dries things and the covering becomes clear again."

As they had been talking they had slowed to the same twenty-five knots speed as the flying disc. All around the surface were trees and the small lakes, and six-hundred-seventy-eight single- and multi-family houses and apartment buildings scattered in clumps of twenty to forty-five.

But, the most noticeable aspect was the giant ring hole in the middle. Through it they could see the ocean below. That, and the enormous shadow the ring projected on the town.

The inventor knew that on the ground, people would have streamed from their homes and shops, or stopped their cars and got out to look up at what might seem to be an unscheduled solar eclipse. Enterprises' chief Communications director, George Dilling, had done his best to announce the HoverCity flight and even to detail the towns over which it would likely fly, but there would be the inevitable flurry of phone calls reporting everything from at impending attack from either a terrestrial enemy or from space, or the visitation of space beings.

The last one was courtesy of several science fiction movies that had played with the idea that spaceships capable of traversing interstellar space would need to be miles across.

Bud looked puzzled. “Okay. I understand how and why repelatrons work. Find out what’s under you and project an exact opposite of the atomic resonance and all that. I know that ring has no repelatrons but big whirling magnets, so what is the two dollar explanation about the forces that are keeping that thing up? Does it hate dirt? And, no deep physics, please. Sandy asked me to find that out because she is too afraid you’ll laugh at her, but doesn’t mind me being the butt of the joke.”

“In the simple explanation, Bud, the magnetic forces of the spinning rings—including the ones you suggested—repel metals such as Chromium, Magnesium and Nickel. There’s a lot of those in the Earth’s shell and it is just close enough to the surface to be of great use to us. Before you ask how much force, the answer is ‘not a lot.’ It gets really spread out. There is so little actual force against, say, nickel that if a person had five coins in their pocket, it will only feel as if they have suddenly gained about five more of them. Once the ring passes, that apparent weight disappears.”

“How about chromium? My sports convertible has chrome valve covers.”

“The forces are spread out so much and so evenly that even the most heavily chromed bumper on a passing hot rod would only feel about four pounds of downward pressure. And, for things like stainless steel surgical blades, the downward forces ignore all the known combinations with things like steel and aluminum and titanium.”

“So, no surgeon suddenly cutting a half inch too deep?”

Tom shook his head. He was about to say something when a gleam in the sky to their right caught his attention.

“We might be having a visitor,” he said, sounding unsure if this were a good thing.

The new aircraft was a small, single engine jet that had been on the market over a decade. Capable of carrying four people, it had a top speed of about three-hundred knots. Its recognizable engine-between-the-V-tail was easy to spot.

“Isn’t that a Typhoon, Jr. like the one that Jones guy bought… and what the heck are they doing?” he asked under his breath. Bud realized it was not directed at him and remained quiet other than to nod.

The small jet must have noticed the *Sky Queen* from many miles away and yet it proceeded toward the ring as if it were the only thing in the sky.

"What happens if they hit the Inertite fiber dome?" his copilot asked.

Tom shook his head. "Nothing good, Bud. If they hit it directly, as in if they intend to crash on top of or below the ring, the Attractatrons will react just before they get there and focus right on them to shove them away. That's what is on top of the three peaks and at five points on the underside of the ring. If they try to skim over the surface they will be eased away but will likely pick up a bunch of the Inertite fibers that will certainly clog their one and only engine. Get on the radio and warn them away."

Bud attempted to raise the other craft but nobody other than Eastern Control answered them.

"*We show you plus that giant flying thing and a small contact, Swift Queen. A general warning went out to all pilots within eight hundred miles earlier and we continue to have all airports warn pilots of the area your object is flying and to stay away.*"

The little jet passed over the ring at high enough altitude it was safe, but soon it made a sweeping turn to the right and dropped its altitude several hundred feet.

"I'm getting between them," Tom declared. "Hang on!"

The giant jet swooped into a position to block the little jet, but that pilot nimbly avoided them by going underneath. Then, the crazy pilot swerved under the ring and attempted to come up through the central hole.

It was a mistake, and the pilot realized it far too late. The special security Attractatrons meant to keep just such a thing from happening came into play and the little jet all but crumpled as it hit the invisible wall and was pushed away.

As it fell away, the door on its left side opened and a single person detached from the now tumbling wreckage.

"Pilot's got a chute on," Bud announced having picked up a pair of BigEye electronic binoculars. "And… there it goes. It's open and although whoever that is, is wearing a helmet—and that's suspicious from the start—I can see his arms moving. He's heading down awfully fast; I wonder if the chute was damaged. Let's get down and see who was so stupid."

It was obvious that the parachute was going to carry whomever it was down to a location about a mile from the town and Tom spotted

a field perhaps five hundred feet away from the probable landing area. He had the giant ship on the ground twenty seconds after the pilot landed hard and crumpled to the dirt.

He and Bud hustled down the stairs and out the side hatch. Tom grabbed a First Aid kit—containing three of his revolutionary pressure splints and a medical multicorder—on the way out and they ran to the downed man.

As they arrived, the former pilot was rolling over, clutching his right leg that was obviously badly broken from just below the hip, and screaming in pain.

When Bud eased the pilot over onto his back, he noticed that the supposed man didn't appear to be built like a man in the front, chest area. He rolled his eyes dreading who this might be.

Once he got the helmet off he could see he was right. The raven-haired woman glared at him and tried to spit in his face, but Tom chose that moment to move her leg to try to get a splint around it and she could only scream and wince.

Bud, as a precaution mostly closed the visor again.

"I'll have your license *and* that giant menace you were in!" she screamed at them. "You had no right…"

Tom pressed on her hip mostly to mold the splint but it also served to make her stop talking. She winced again and tears leaked from the corners of both eyes.

"I hate to add insult to injury, ma'am, but *you* were in the wrong. Totally. That object up there is off limits to flybys. And, you tried doing something that the FAA will strip you of flight privileges over, flying up through the open ring. It resulted in the destruction of your little jet and you being rather badly injured. Now, I'm no doctor but I can give you a small injection for the pain. Or, if you believe threatening me again will make things better, we can dispense with the shot and give that broken leg a good shake. Oh, hang on. I hear a siren so perhaps we'll just wait."

He stood, brushing the dirt and grass from his pants knees.

Coming down a nearby road were two fire trucks, an ambulance and three police cars.

The fire trucks kept going to the site of the crash about a quarter mile further on while the police and ambulance vehicles turned off and headed for Tom. There was little or no fire but the fire fighters jumped out and unreeled a small hose.

As the two men from the ambulance began working to straighten and then brace the dislocated limb, Bud tugged on Tom's right

sleeve, leading him away from the others.

"Skipper? You do know who that is, don't you? I mean, back from the dead and escaped from justice and all?"

Sadly, Tom nodded. "Yeah. The black hair, a new shorter cut and even the deep blue contact lenses can't hide the face and the hatred in Octavia Whitcomb's eyes! How the heck did she get away from the FBI I wonder?"

Before anyone could react, Octavia jumped from the gurney and shoved the closest attendant into the other, toppling them both. In seconds she was inside the already running ambulance and *was racing away*.

CHAPTER 19 /
PREPPING FOR DELIVERY

"HOW IN the world did that vile woman get out of jail?" Damon demanded, anger evident in his voice when Tom called in to report the latest incident. "And then, how did she manage to get away from *four* of you on a broken leg?"

"As for the first jail escape, she evidently begged for a day release to get her affairs in order, which a sympathetic Canadian judge gave her in spite of the FBI demand, and then she skipped town. She's kept out of sight since then. Until today."

Damon was practically steaming he was so angry. That anger came over the radio in every word he spoke.

"Do we have the name of this boneheaded judge, or does their Canadian law protect whoever they are from being found to be an idiot and having the general public know about it?"

Tom shrugged even though his father would not see it. "The FBI is working with the Canadian Security Intelligence Service to find out who it was and why she was allowed to leave and why she wasn't supervised. Harlan says we might never know. He did say a full financial check of that judge's accounts will be made in case a bit of money changed hands to facilitate Octavia's freedom."

After landing Tom went to the office to continue the talk with his father. Damon first gave his son a hug then stepped back.

"What about this latest escape?" He looked at Tom as if hoping it was not his fault.

Tom looked sheepish as he answered, "Bud and I had walked maybe thirty feet away to give the ambulance people a chance to work on her. That was after I applied one of the self-shaping splints to stabilize the leg. We were talking about how to avoid her if she ever got out when we heard the commotion. She was in the ambulance and racing off before either of us got to within ten feet of it. One of the bad things about leaving it running."

They talked about what this continuing lunacy could mean in terms of Tom's safety but could not agree he should remain on the ground and not in the air for all future HoverCity tests.

Damon reasoned Tom should continue to make all flights in the *Sky Queen* from this point as she had proven to be just about invulnerable to missiles and EM attacks.

"How about a suicide attack with another fast jet?"

Damon raised his left eyebrow in question. "Then, you *must* take the *Queen* and outrun anyone foolish enough to try that!"

"I had a better idea, and Jake at the Construction Company is helping me. Over the last three weeks we've been outfitting an even faster version of the little two-seat jet and making the outer shell completely from tomasite. If Octavia is out to get me and finds me flying around at about three-hundred-fifty knots I can easily outrun her by going to Mach-1.4. Plus, if she's gotten her hands on a missile or two, no lock on!"

Damon nodded and gave his son a nod and a wise grin. He was thinking, *Fat chance of that missile thing happening!*

"Ready to go see how the full-size HoverCity is coming along, flyboy? She's practically outfitted," Tom asked as Bud strolled into the big office.

The flyer did an immediate about-face and headed back out the door making a "follow me" motion over his shoulder. Tom smiled, got up and headed after his friend. He caught up with Bud halfway down the hall.

"You really don't have to go full tilt, Bud. After all, I not only have the key code to the Whirling Duck we'll be taking, I am the only one who knows where the HoverCity is supposed to be right now."

"Do you mean she is already flying?" the flyer asked incredulously.

"Yes. She is not absolutely complete but with enough on her to give a good final test. And, I have all sorts of instruments checking to make sure the Barclay Solution of that inner lift ring is doing what it's supposed to. You'll be among the first to know how well she flies with nearly a full load. It will be about twenty percent shy of what it will eventually have as housing, but it'll be a great test."

Bud stopped a split second and then headed forward.

"Thanks for that honor, Tom. As for whether this is one of many or the final test flight, it makes no difference to me. I figure as long as I get to the Duck first I get to drive no matter what we're going to see. Then, you can put that location knowledge you have of the planned flight path to good use navigating for me. See? Easy."

They entered the stairwell and headed to the ground floor.

Twenty minutes later the twin-rotor helicopter pulled away from its traditional parking place outside Hangar 3. Tom and Bud had

checked out one of the small electric runabouts and driven to the northwest portion of Enterprises where the ground crew had the helo fueled and checked out.

"She's got a full belly and we charged up the port side battery. It was a little low, but you ought to be just fine. Have a great flight!"

Tom made an all-around outside walk checking the things no good pilot leaves to even the best ground crew in the world. Nobody minded as they all knew it was the only prudent thing for the inventor to do.

As he climbed in and took the front passenger seat, Tom gave Bud a thumbs up. "Looks great!"

Bud had tower permission a minute later and they were in the air within a few more seconds.

"Gonna tell me what direction to head?"

Tom nodded. "Sure. Take a heading of, oh, about zero-eight-three I believe. Get us up to eight thousand as we enter Maine."

Bud got the helo pointed in the indicated direction and radioed Eastern Control for flight altitude permission.

"*Roger, Swift Two. Are you certain you don't want more than just eight-thousand feet?*"

"Swift Two. Roger. We are a rotary aircraft and your query on altitude is near the top of our range. Just looking for a bit more air under us."

"Understood. Maintain course and head up to eight-thousand feet starting in three minutes."

About ninety minutes later Tom asked Bud to change their course to zero-two-five.

As soon as the craft swung around Bud's jaw dropped. Perhaps some fifty miles ahead was the Canadian coastline just south of St. John, New Brunswick, and hovering over the coast at perhaps three thousand feet was the incredible sight of the HoverCity in all its glory.

The nearer they came the more details they both made out, except there was the anticipated layer of haze between them and the floating disc so things looked a little out of focus.

"How—how many buildings are on that now?" Bud asked.

"Well, you did a tour when we had fifteen and now it has all but about fifty of what we're going to put on, totaling six-seventy-eight once finished. If you look, the area directly to the east has three of

the eight clusters matched for the most part on the west end."

"Yeah, and I can see the smaller clusters at the north and south edges. What I can't believe is all the greenery. Those trees and bushes and grass. Jetz!"

Tom chuckled. "The grass is artificial for now, Bud. Each area is finally planted with real plants and trees, so the fake sod will be removed and taken off with the real sod being added next week or the week after."

Bud put his hand up to block out the reflection of the sun, now behind then, as it hit the metal ring that encircled the entire mile-wide structure. Seconds later the glare was gone and the HoverCity gleamed in the mid-day sunlight.

"Are we seeing success?" he asked.

Tom looked at the readout for his sensors, "We are, Bud, seeing *great* success. Not only does the Barclay Solution hold up the middle allowing zero deflection, it also appears to give the ring greater stability in the winds we've been seeing out there. You have saved the day, Bud."

"Aw, shucks. Pretty words like that will go to my head, Tom."

After landing in New Brunswick and turning the helicopter control to Red Jones and Slim Davis, Tom and Bud climbed into the new little supersonic jet they had been flown out to the airport to the east of St. John.

As they took off to the northwest on that field's number 3-2 runway, Tom headed to a cruising altitude of ten-thousand feet and circled the area.

A few minutes later they had come completely around the area and were heading west when, and to neither of the young mans' complete surprise, another small jet took off just two minutes behind them. As it climbed in accelerated in an effort to catch up to them.

"I thought I saw that sort of lurking half in and half out of the last hangar in their line before we headed up," Tom told his friend, who was piloting. "My guess is that's Octavia and she'd been shadowing the HoverCity in hopes of catching me nearby."

"How about I lead her around and just stay a little too far in front for her to do anything?"

Tom thought a moment. "How about we head basically west until

we are in U.S. airspace? I'll give a call on the PER to Enterprises and have them alert the Air Force."

As Bud swung them around, Tom activated the Private Ear Radio system, which worked on a tight beam up to the older Outpost in Space where it was relayed back to Enterprises with a delay of just point-eight seconds overall. Nobody could intercept such a call.

In a minute he had been patched through to the local National Guard air base in Bangor, Maine, where the Base Commander took the call and agreed to scramble five fast strike interceptors within the following ten minutes.

"It'll give the men and women here some real-world action they need. And, unless you have another suggestion, they will work to an Air Force intercept and surround scenario where one remains in a circle in front of you, two go to the north by about fifty miles before curving around and two south. On your word, they converge. Will you be able to bug out when the action begins?"

Tom smiled to Bud. "Yes, sir. We are mach-capable and our pursuer seems to be in something I believe can only do point-five Mach. Please stay on this channel and not on an open one; I don't want our shadow to get any idea of what is happening."

"Roger that, Mr. Swift. I'll be in stand-by and have our jets on a military-only channel." He gave Tom that channel so he and Bud could listen to the intercept.

It took eleven minutes before the five jets were in the air, and when the word came Tom and Bud were just forty miles inside of the border of Maine.

The pilot they both believed to be Octavia Whitcomb sped up and started to close on them. Tom took the pair of Digital BigEyes he'd packed in the cockpit and turned around to look out the back of their canopy.

He let out an exasperated groan. "Yep! Old Octavia is loaded and ready to shoot us down. The jet has a pair of not very large missiles, and I can't identify them, but I don't see any indication of laser aiming, so they probably are heat seekers."

"That means the tomasite isn't going to keep them from lock on, is it?"

"No," Tom replied, "but we can try to head straight up and outrun them, or at least go fast enough they burn out before they can catch us." He was mentally betting they had a very limited range.

"How the heck does she seem to have an endless supply of little

jets?"

Tom couldn't come up with an answer, but he silently believed it probably was one of the threatened actions by Alexander Jones to bring about his injury or death.

A minute later he asked Bud to be ready with the throttle.

"Here one comes. Let's go!"

The little jet surged forward pressing them both back in their seats, which was amplified when Bud pulled the nose straight up and headed skyward.

"We have been fired on," Tom said in the microphone. "Climbing to outrun and I think we'll be okay, but can you have your jets come in now?"

"Roger that. We had a report from two of them about that missile. It is, in case you were wondering, heading up but you are outpacing it. Our jets are going in for the surround and capture. Please leave the area as quickly as possible when you can."

Bud leveled them out at forty-two thousand feet and turned them to a new course due south.

They flew for five minutes before anything came over the PER, but they'd been listening to the talk between National Guard pilots as they maneuvered around and above and below the small jet of Octavia Whitcomb. At one point she let loose with her second missile but it exploded just a thousand feet in front of her jet, and she flew into the shrapnel which, according to the other pilots, disabled her jet.

"That little dirtbag is gonna have to set down pronto. Considerable right wing damage. Someone alert Lincoln Regional they're about to have a problem landing and also at least two of us. Charlie flight and Echo, head in now and get off the runway ASAP."

Tom checked the electronic chart of the airfield and could see it only exited from the single runway at the southern end of their strip.

"The Air Guard jets are going to have to go in fast and Octavia is going to have to hope she can get turned because her current heading isn't going to do anyone any good," Tom exclaimed.

Shortly after that it became obvious the two jets were on final approach and one would come in and land to the southwest and would park at the far end of the field while the other would come in opposite and park at the small hangar and terminal area.

The PER came to life.

“Swift flight? If you’ve been listening to our chatter you should know this might not be a good ending. Please go home and we’ll take care of this no matter what the outcome. Don’t really want you around if the jet goes in hard. Thank you for the opportunity to help you. Out!”

And, the circuit *clicked* indicating the other end was gone.

Before they headed for home, Tom asked Bud to go back to forty-thousand and circle over the airport. By the time they were overhead it was possible to see that the jet, they still felt certain it was piloted by Octavia, had landed hard and taken a tumble, but there was no sign of fire and in the BigEyes Tom could see the Air Guard Pilot from the northwest end approaching with what looked to be his sidearm drawn.

As they left the area, an ambulance could be seen approaching the field.

“I suppose it’ll take a bit of work from Harlan to find out what happened,” Bud said as he relinquished the controls to Tom for the flight back to Shopton.

“We shall see, Bud. We shall see.”

It took two days but the word was the pilot was indeed Octavia Whitcomb, that she survived the crash landing, had been taken to the small hospital in nearby West Enfield and from there, in shackles and under heavy FBI guard, had been transported to Bangor and their Eastern Maine Medical Center, the only facility it the state with a full lockdown medical suite for important prisoners.

For three weeks working in two shifts the teams at Enterprises put as many of the finishing touches into the HoverCity as they could.

The final twenty of the finished pre-fabricated houses were erected and connected to basic water, sewer and electricity services —made incredibly easy by snap-and lock fittings placed exactly where they needed to be.

The built-in solar roofs began making electricity immediately and the excess had to be bled off into Enterprises’ power station to avoid overcharging each abode’s battery storage.

“They’re creating enough electricity to just about fully power all

those homes and outdoor lighting for twenty-four hours a day," Tom announced at a meeting of the project managers near the end of the week. "Also, I goofed a little when computing the water needs and capacity. I forgot the overall system of pipes into each house and apartment will be filled and so what I believed might be slightly under hot weather needs is going to exceed them by nearly ten percent. That, by the way, is very good news."

He reported that the sod had been fully grown and harvested and was replacing the fake grass. That would take another nine days to complete but a lot of other work was going on concurrently.

"How about furnishings, Tom?" came the question by the woman in charge of the eighty-six apartments around the ring.

"We're on track to start trucking the cabinets to the site tomorrow, with bathrooms by this Thursday and for the apartments we are pre-furnishing living rooms, bedrooms and kitchens a week from tomorrow. Is that going to work for you?"

"Absolutely. Umm, what about optional stuff like tables, chairs, TV and audio stands and even bookshelves?"

"That is still three weeks away and just about in a tie with completion of everything else. We're hoping to get the initial residents in to pick and choose a week early, then start moving that stuff in as it's available. We might need to just place it in the living rooms and let them move it where they want it. Everything will be light enough for one adult to get it from one spot to another."

"That'll give them a bit more of a sense of ownership," she stated with the others agreeing it was to much too ask that Enterprises do all the work of moving people in… but they would help.

"To that end we've contracted with a company down in Albany to come up and provide the final lifting and moving in of boxes for the new residents. It'll take at least five days but they are bringing in fifty people for the job."

Word arrived via the local FBI agent, Quimby Narz, that Octavia Whitcomb's injuries were nothing exceptionally bad other than she had re-broken her left leg, the one Tom had tried to splint after her crash into the flying city and it might need amputation.

It had not healed properly the first time.

"She has been moved to FBI headquarters in Reston and she is going to be there for a long, long time before she gets to go, under about the heaviest guard so there will be no slip-ups, to a Federal

prison offering her twenty-three-and-a-half hours each and every day of locked in highest security. No visitors, no computer. She'll get a half-hour exercise period away from everyone once her leg heals, or she gets outfitted with a basic prosthetic, and only her meals with the general population… unless she does something stupid and antagonizes other prisoners."

Tom worried how Robert Whitcomb might take the news but Narz told him the older man had already been notified. His statement to the agent calling him had been to the effect, "That little misery practically killed her mother with her hate, so let her rot! She ceased being my daughter ten years ago!"

When he heard this, Tom looked at Narz. The agent looked back and shrugged. "He really *has* given up on her, which is possibly better for him than agonizing about her for the rest of his life."

Tom had to agree.

CHAPTER 20 /
CERTIFIED: OFF THE CITY GOES

THE WORD came two weeks after the latest incident with Octavia Whitcomb that three important things were going to happen or had already happened.

First, now recovered and feeling better, Robert Whitcomb finally agreed to come to Shopton. Second, the FAA had completed all their inspections and stated their report would be issued within three weeks regarding flight-worthiness.

When he was told about this final all-important step being so close, Bill Boyd had set his phone down and danced around his office in joy. Tom heard him chanting, "Yes, yes, yes," interspersed with a few "Yippies," that would have mede Chow proud.

The third item was that Octavia Whitcomb had broken under FBI interrogation. Her anger and hatred came pouring out and could not be contained. After denouncing each and every person in her life she spent three hours uncontrollably sobbing. Then, her head snapped up and her eyes slitted as she began going over the incredible hatred she had for her late mother.

The woman who gave her life was evidently so horrible that she had failed to give little Octavia absolutely everything she wanted, no matter how large or small. She had denied a five-year-old Octavia a bicycle and a cellular phone. Octavia's life had been irreversibly damaged in her eyes by such things as not being allowed to wear make-up as an eight-year-old. She also could not have her ears pierced before turning twelve, nor did she receive a very expensive Italian sports car for her sixteenth birthday and that placed her mother in the same level of disgust she also had for homeless persons, worms, and boys.

When her mother died a day before Octavia's eighteenth birthday, the girl flew into a rage at the thought she was not going to be the center of attention for a few days, and her mother's funeral was.

She was and had been red-faced for most of her tirade and a doctor was called to check her out. Her blood pressure was sky-high so he gave her—with a bit of help holding her down from five agents—a shot to calm her.

It barely had any effect.

Everything Octavia told her FBI agents made them want to laugh in her face. There were absolutely no substantial things that had happened to the girl. No beatings. No abuse. No horrible experience with boys or men… or women. Only denial of what Octavia wanted at any particular moment in her life. Many things had been so important to her and then they were not important at all within days.

But, Octavia Whitcomb had kept a detailed diary of all the instances she felt were punishable. She even told the agents of her rating scale.

"She deserved everything from beatings to death and I rated her with B when she ought to be beaten until she apologized and swore whatever it was would never happen again, with BB when I wanted her beaten so much she would bleed, and R, run over by a truck but not killed, and OK, for those times I wanted Octavia to be allowed to kill her!"

It was too much for the agents. They broke down in howls of laughter at the woman manacled to the chair across from them.

That reaction to her personal distress made her furious but she could not get up, could not hurt them, and could only scream and yell. Which she did for more than six minutes.

And then her mind sort of snapped, her face went blank, paled, and she sat down only staring ahead, saying nothing. Not moving. After a few minutes one agent got up and checked her pulse.

"Well, she's alive, but she might have had a stroke or something. Call the doctor."

The physician on call came on the run and checked her out.

"Nothing appears to be physically wrong with her. Her heart rate and breathing are normal, blood pressure is thankfully back into a good range, her pupils are not dilated so I don't believe she's had a stroke; in other words her body can be moved. She is in a deep state of emotional lock in. Notice that if I shine this bright light in her eyes she does not respond in the slightest. Whether she will ever come out of it is a matter for time to decide. I believe she needs to be confined, and strapped down for her protection, until we can get her in for a brain scan."

He shrugged and left.

Five days and nights of continuous finish work took place on, inside of, and next to the HoverCity. The control room, located in

the forward-most hill—as seen in normal flight mode—was outfitted with seats, a bathroom and even a mini-kitchen so the two-person crew could spend their eight hours in comfort.

The twelve people who would share the piloting duties came in for three days of intensive training that included one of Tom and Bud's favorite things: 3D total immersion headsets that simulated everything the pilots would see inside the actual control room. They even wore tactical response gloves that gave physical feedback to their hands and arms. It was the closest thing to actually flying something possible.

As they departed the grounds for the two houses they were sharing up the hill from the main gate, one man turned to Tom.

"Tom? Is it really going to be that easy to fly the real thing? I only ask because I do, as you know, have my pilot's license and about nine-hundred flight hours. So, I'm just asking, I guess."

Tom patted the man on his right shoulder. "The real thing will be just like that except if you turn completely around and look behind you, you will see the other person in the cockpit and not just the static shot of the bathroom door. You'll be fine."

"I want to thank you two for asking me to come out," Robert told Tom and Damon as he stepped from the SE-11 Commuter Jet they had sent to pick him up. It was now takeoff minus four days for the HoverCity, but both the Swifts felt they owed the man their time and undivided attention. They ushered him to the waiting car and drove from the civilian terminal around to the Administration building.

Upstairs in the large office with a sweet chamomile tea for Robert and coffee for the two Swifts, they sat in the comfortable leather seats in the conference area. For a few minutes they made idle chit-chat until Robert leaned forward.

"I have to ask what the ultimate motive was for getting me out here. It isn't that I don't appreciate it and that I can't take the time. Good golly, I found a perfect woman to take over the day-to-day operations of the company and she's going to make it possible for me to finally and properly exit from the company in another three months. Before that I hope to repay about half of your loan. So," he said picking up his mug and taking another sip, "is there some ulterior motive or is this what it seems, a nice visit?"

Damon smiled and nodded his head to Tom. "It was his idea. I'll let Tom tell you."

"Okay. You asked us to help you with the Dragonfly helicopter. We did even if the first version was less than a satisfactory experience. And, let's forget Octavia and all that. We wanted to have you come out here to see that nobody holds a grudge and that you are respected, even by a major competitor."

"Who happens to also be a partner?"

"Yes, there is that," Damon replied with a smile.

Damon and Tom took Robert on a grand tour of Enterprises, the MotorCar Company and the Construction Company. The older man's eye nearly popped out of his head at each location. He insisted on getting out and walking around to see everything.

"My doctor says the heart thing was not a full heart attack but a wake up call for me. No more fatty foods, I'm now on a cholesterol lowering medication, and I'm supposed to walk at least a mile each day for three months and then two a day after that. All things considered, I'm feeling find so the two of you stop looking at me as if you might need to catch me and call for an ambulance… or a hearse!"

As they drove back to Enterprises, Robert brought up a subject Tom had considered when the partial buyout happened.

"Are there any products I can make up in Canada for you that you currently get taxed on to the point it almost doesn't make sense to send them up?"

That started a full hour of discussions ending with the agreement that several of the smaller aircraft components the Swifts manufactured for two Canadian aircraft companies could easily be built in the Whitcomb factory and both companies would benefit financially along with a slight reduction in costs to the customers.

It was a very fruitful day before Robert asked to be taken to where he would spend the night.

The next morning he flew home a very happy man.

Two days after Robert's visit and a full week earlier than expected, the FAA certification was granted with a few limitations.

William Boyd came to Enterprises to go over things with Tom as well as to tour the now-completed HoverCity as it sat on the ground inside Enterprises' walls.

The tour came first as Tom could see the man was nearly bursting from excitement.

When they pulled up to one particular spot on the hull, Robert laughed to see what appeared to be an escalator running up and inside.

"That," Tom told him, "is one of six entrances/exits to the ring above. They can go fast enough to evacuate everybody in two minutes if ever necessary but normally run about the same as something you'd see in a big store or a mall. Come on; let's go up."

Boyd needed no more invitation than that. He stepped forward and made it to the bottom step before Tom got halfway there. Up they traveled in silence coming out from what looked like a simple garden or equipment shed on the surface.

Tom was forced to step around his visitor when Boyd stopped short staring in absolute awe at what he was seeing.

"It's…" and he stalled because he couldn't find the words.

"What you wanted?" Tom made a guess.

"Oh, Tom. More than that. It is absolutely beautiful. And, you say it does fly?" He looked at the inventor with hope in his eyes.

"Yes, it flies, and now that the FAA tells us it's okay to take it up, we can send it off as early as tomorrow once a few supplies get loaded. Let's take a walk. Are you up for a long one or just a bit around one representative area?"

"Let's start with this area and those homes over there," he replied, pointing at a cluster of about thirty structures. "May I ask one aesthetic question? Why are they all white?"

Tom laughed. "They are white to reflect the sun's heat and not require as much air conditioning. Besides, I just couldn't bring myself to dot this landscape with reds and blues and yellow. Could you?"

William Boyd shook his head. "Nope. It's perfect!" They headed out for what would be a two-hour walk around the parklands and one neighborhood plus the closest lake.

Tom explained everything as they went along, even about the water system that used the lakes for the plants and the people.

"They are about twenty feet deep and the total water on this disc accounts for about twenty percent of the overall weight. And, I know you wanted to have this support more people, but I think you are going to need to limit it to about eighteen-hundred people. Both for weigh and water purposes."

"I can live with that, Tom. And, so can the people I've been

interesting in moving here. I have, by the way, nearly four-hundred small families wanting to participate in what I want to be a three-year test of this HoverCity you've built for me. For mankind."

They walked along multiple paths, over to the central hole and into three of the homes plus one apartment building with eight units.

Everywhere he went Boyd reached out to touch things almost as if reassuring himself this was all real.

When they got back to the office Tom went over the FAA's restrictions.

"As you would expect, no flights within two miles of any commercial airport. This is certified to fly at four-thousand feet at the high side and fifteen-hundred on the low side except for declared emergencies and pre-notified landings. Oh, and a few more of your residents will need to be trained to fly this. It is pretty much automatic except for deciding on where to go. Then it is just for general safety the control room has two people in it around the clock."

"I'll make certain that is strictly followed. You see, I am to be one of the residents on this magnificent HoverCity of yours."

"Yours, actually," Tom stated surprised that Mr. Boyd even considered it anything else.

"Then, *ours*. But, yes. I am moving in as resident Bill Smith. Nobody knows me as anything different who will reside here and I can run my finances via a single computer in my house. When I was talking to potential residents, they knew me as Bill Smith and so Bill Smith I shall continue to be. That's the way I want it."

He grinned at Tom and nodded his head as if the matter was settled.

"This is going to be the best era of my entire life!"

For five days before the planned launch ceremony, the new residents moved their personal items into their homes and apartments. Everything coming in was placed on scales as each house had a weight limit, but only two homes seemed destined to have an excess, and with most other under their weight by half a ton or more, that was allowed for now.

"Mr. Boyd says it is an early buyer's bonus that stops as soon as the city takes to the air," Tom told Bud as they sat in the big office looking out the windows at the incredible sight of the HoverCity.

Tours took place every three hours showing the new people every part of the HoverCity including pointing out the thin wires holding up the trees. Nobody took exception to the request to always remain on the paths. There were more than nineteen miles of them meandering in and around everything. Before they departed, each family was taken to the community center and gymnasium and allowed ten minutes to just look around and figure out where things were.

Nearly the entire workforce of Enterprises, plus several teams of people driving over from the Construction Company and through the tunnel from the MotorCar Company, were on hand to watch the HoverCity lift off with its first inhabitants.

Good to his word, William Boyd had enticed nearly enough people to fill seventy percent of the homes on day one, and everyone was excited at what lay ahead for them.

Boyd, Tom, Damon and Farley Fairchild—who had accepted Tom's invitation to become one of only three Swift Fellows—stood on the raised platform ready to give short speeches.

William Boyd was standing slightly behind the other and asked to go last as he wanted to give special thanks to the others plus the men and women who saw his dream become reality.

"Please don't give out my name here. Remember I am Bill Smith. I'm sure the news people will have a field day finding out who is behind this, but I'd prefer to be semi-anonymous as long as possible."

"I'll introduce you as the City Manager, then, if that's okay?"

Boyd nodded.

Damon gave the first four-minute talk simply stating that he hoped that more dreams might be fulfilled with the use of science and industry and that, of course, Swift Enterprises would like to be part of many of those endeavors.

Tom spoke next and he praised both the unnamed sponsor as well as everyone who had taken part.

"I especially want to acknowledge the next man to speak to you. His name is Farley Fairchild and he is the man behind the technology that makes this flying town, the HoverCity, possible. He looked at the barely possible and spent several years making calculation after calculation until he believed he could prove his theory. It is a pity that until today, the general public around the world has only poo-poo'd his notions.

"I think men like Mr. Fairchild, today, are like the Galileos of the past. Their thoughts about the universe around us get rejected and put down to foolishness, devil worship, bad nutrition or worse. Many of these forward-looking individuals, going back hundreds of years ago, were imprisoned or killed. Mr. Fairchild was simply either ignored or badmouthed. For those who would outright condemn anybody's ideas, and especially if they have something along the lines of actual proof, shame on you! And now, I would like to introduce the man who actually made this all possible. Mr. Farley Fairchild."

He applauded and the crowd went wild as the shy man stepped forward. He nervously tapped the microphone causing feedback which the man on the sound board squelched quickly.

"Uhh, hello, folks. I guess Tom said most of it. I sort of looked at the idea that flying saucers could be real—not in the kidnapping and probing way—and then set out to figure out how the heck they could possibly fly. They do some pretty impossible to believe things, you have to admit.

"Anyway, I'm grateful to Tom Swift, to Mr. Swift and Swift Enterprises and the man who funded getting my wild theory proved and in use. Thank you and have a great time living on that impressive city of the skies."

As he stepped back Tom stepped forward ready to introduce William Boyd, but caught the man stepping down the back of the platform. Boyd turned and waved but shook his head and made a "zipping my lips" motion before climbing into the limo that had brought him to the company. It scooted behind everyone and he got out and went into the HoverCity as Tom finished the addresses.

"Well, folks, the man behind all this prefers to remain just that, behind it. Please, all you media types, respect the wishes of someone out *only* to do a good thing for the world and do not pry into this. I can tell you he received no profit or even payback for what he invested. This is not a self-serving project. It is one made for the world.

"Now, I'm being signaled from the top of the HoverCity they are ready to go. I'll tell you that there will be a bit of sound as things get started, but that goes away after a minute or so.

"Let's get this thing in the air!"

The crowd cheered as they all turned to face the HoverCity. Some stuck fingers in their ears for a few seconds before realizing the noise was not that loud.

As everyone waited in anticipation, Bud and Harlan came over to stand next to Tom. He acknowledged them with a nod.

"Well, you've done the impossible yet again, my friend," said the pilot.

"Not impossible when you have a good design to start with, great people around you, and really good and true friends to tell you where you've missed something."

"And a pretty great wife?"

"Yep. And, Bash!"

"And, Sandy."

Harlan cleared his throat and spoke up over the whining noise of the rings as they sped up. "It would seem that Octavia Whitcomb had a financial sponsor as well, Tom. Of course you remember Alexander Jones and his statement of deadly intent?" Tom nodded. "Well, Mr. Jones was not fooling around like I hoped and it looks like he already knew Octavia and her hatred of you. She asked for money for a couple aircraft and he gave it to her in hopes of, 'Getting back at that Swift punk!' And, the reason I know this is the FBI found his name and phone number in her cell phone. When they called it, he evidently answered from his prison cell, 'Is Tom Swift dead, yet?' Such a nice man… not! He is, even as we speak, going to be transferred to an even higher level of custody."

"However angry he is at me, he'd bankrolled her to the tune of at least five million dollars in destroyed aircraft. Will he go away for a long time?"

Harlan nodded. "Conspiracy to commit two murders—you and Bud—and at least three times, that's fifty years more than life without parole! He and Octavia will never get out, and you can take that as a promise."

The loudest part of the launch ceremony came a minute later as the HoverCity lifted into the sky, turned to the east, and disappeared over the hills on the other side of Lake Carlopa to the seemingly endless cheering of the crowd.

"With everything that happens to you in space, I can't imagine how it could be any worse here on Earth," Bashalli told Tom as they lay in bed that night. He had admitted to all the Octavia Whitcomb attacks. They appalled her but she was happy to have them over.

"And, so, if you want to go back out beyond the space stations, or the Moon or even Mars, I suppose I can make peace with my tummy

and nerves, but you'd better not have anything planned for at least the two weeks before I am due and a month afterwards."

Tom could tell she was serious about this and so he held up his hand in what was recognized as the Boy Scout Salute.

"Promise!"

And, even though he would test that to the final minute in his upcoming adventure out to the distant mystery planet, Neptune, it was going to be a promise he kept.

This has been book 25 in the ***New TOM SWIFT Invention Series***. Read them all, and look forward to the next books, also listed here:

{1} TOM SWIFT and His EvirOzone Revivicator
{2} TOM SWIFT and His QuieTurbine SkyLiner
{3} TOM SWIFT and the Transcontinental BulleTrain
{4} TOM SWIFT and His Oceanic SubLiminator
{5} TOM SWIFT and His Cyclonic Eradicator
{6} TOM SWIFT: Galactic Ambassador
{7} TOM SWIFT and the Paradox Planet
{8} TOM SWIFT and the Galaxy Ghosts
{9} TOM SWIFT and His Martian TerraVironment
{10} TOM SWIFT and His Tectonic Interrupter
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{12} TOM SWIFT and the High Space L-Evator
{13} TOM SWIFT and the IntraEarth Invaders
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{15} TOM SWIFT and the Yesterday Machine
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{20} TOM SWIFT and the Electricity Vampires
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{22} TOM SWIFT and His SeaSpace HydroFarm
{23} TOM SWIFT and the Martian Moon Re-placement
{24} TOM SWIFT and the Venusian InvulnoSuit
{25} TOM SWIFT and the HoverCity
{26} TOM SWIFT and the SubNeptunian Circumnavigation (2019)
{27} TOM SWIFT and the Marianas AquaNoids (2019)
{28} TOM SWIFT and the Starless Planet (possible title-late 2019)
{29} TOM SWIFT and His HyperSonic SpacePlane (possible title-2020)
{30} TOM SWIFT and His Space Friends Return (possible title-2020)