



THE YOUNG TOM SWIFT JR. CHRONICLES

Tom Swift and His Tumble Kite

By T. Edward Fox

Tom Swift—just weeks away from turning thirteen—recently completed his solar go-kart and has been having fun with it, but he is growing restless; he wants to dig in and invent something more impressive. He just isn't sure what that might be.

Still thinking more like an adolescent than an inventor, he sets out to have fun with the ever-present winds in and around Shopton by flying a new type of kite he dreamt about one night.

Little does he realize that this will lead him to his very first collaborative effort with his father, Tom Sr., who is trying to come up with a way to answer a difficult new bid at the Swift Construction Company.

©copyright 2012 by the author of this book (T. Edward Fox- pseud.). The book author retains sole copyright to his or her contributions to this book.

This book is a work of fan fiction. It is not claimed to be part of any previously published adventures of the main characters. It has been self-published and is not intended to supplant any authored works attributed to the pseudonymous author or to claim the rights of any legitimate publishing entity.

This story is dedicated to Leo the Lionel (Leo Levesque), author of the *Thomasina Swift* stories, for whom I have been creating cover art. I did the background of this cover for one of his stories and then found out it wasn't even close to what he needed. So, and with apologies for what might seem like a little literary piracy—which it is *not!*—and a request that you forgive slightly similar inventions, I have turned the cover into the nexus of this young Tom Jr. story.

THE YOUNG TOM SWIFT JR. CHRONICLES

Tom Swift and His Tumble Kite

FOREWORD

With each passing month it seems that Tom Swift is growing in mind and capability by leaps and bounds. His methodical approach to invention is coming out and he is able to understand what results he might get from just about anything he does.

And, he seems to have very little ego about things. If he spends weeks on something only to have it fall apart, he just shrugs it off and gets into figuring why it did that.

These are traits of someone many years his senior and I now see how he got to be so trusted with company resources and monies at such an early age. I mean, he had to have proved himself worthy early on in order to be given almost *carte blanche* to build his *Sky Queen*, right?

Although almost all of the marvelous devices he helped create in this story have disappeared, the general principle behind them can be seen anywhere you care to look; from Hawaii to Maine, like the giant tri-armed German car emblem they resemble, you can see them out there, slowly spinning.

Just remember that it was Tom that set the stage for that.

Victor Appleton II

July 15th, 1946

Fun While it Lasted

TOM SWIFT, Senior, the famous inventor and owner of the Swift Construction Company, sat across the desk from his young son, Tom, Junior, and was shaking his head. “I’m sorry, Tommy— I mean Tom. You may be practically thirteen, but by law you can’t get your private pilot license until you are eighteen.” He could see his son’s great disappointment, so he softened his voice and said, “There are provisional licenses available for sixteen-year-olds. And, you can start schooling at fifteen-and-a-half. We just need to figure our a reason why you need to have a license at such a young age.”

Tom Jr. looked up into his father’s face. He could see both the concern as well as a spark of excitement as Mr. Swift felt a wave of pride sweep through him. “I guess that the hard part is going to be getting mom to agree.”

Now, the look of pride was replaced with one of slight dread. “Oh. Right. Hadn’t thought of that.” Mr. Swift drummed his fingers on the blotter of his desk. “We’ll need to strategize that one, Son. You know... take it nice and easy... plant a seed... nurture it...”

They shared a father and son moment and a smile as both realized that Mary Swift was going to be a hard nut to crack. She had, as Tom had often heard his father reminiscing about, been an avid adventurer as a young woman, but had become an accomplished worrier as she grew into her late twenties and her thirties. As Tom, Sr. once told Tom. “Your mother could ‘worry’ for the United

States at the next Olympics! Take at least a silver medal.”

Tom decided it would be best to change the subject, so he told his father, “I’ve made some really neat changes to the go-kart, Dad. Along with changing out the three 12-volt batteries for one 24-volt battery out of that old forklift, which saves me practically ten pounds, I figured out a new circuit where I use a rectifier to change the DC coming from my solar roof to AC power and then run it through a transformer that outputs forty-eight volt power and then back through another rectifier and transformer to drop the current to the twenty-four volts I need to go back into the battery.”

He sat there smiling at his father who had been following his son’s rapid explanation. “So, what do you think?”

“That sounds like a lot of stuff gong on. So... I am wondering why. Why not just use a transformer to put your thirteen of fourteen volts output from the solar panel and bring it up to twenty-four?”

Tom grinned at him. “Because, Dad, I get an increase in the amperage of about two-fold my way and the battery is able to soak up a lot more power in a shorter period of time!” He sat there with the same smile on his face. *Surely*, he thought, *Dad can see that?*

Mr. Swift leaned back in his chair and rubbed his jaw, a habit he had when pondering important things. Young Tom had picked up on it and did the same thing when he was thinking deep thoughts, much to his mother’s amusement and his young sister, Sandy’s, derision.

Tom, Sr., leaned forward. “That is absolutely brilliant,

Son!” he exclaimed. “What is the end result?”

Grinning from ear to ear, Tom told him, “Instead of about fifty minutes of operation—that’s constant driving—from the one large battery, I can go practically an hour and twenty minutes before I have to plug it into a real charger. And, if I stop about half way through and let it sit in the sun for just thirty minutes, I can get a total of about a hour and forty minutes of driving.”

“I saw you and some friends out there the other day,” his father said, referring to ‘there’ as the large dirt and grass area behind the main construction buildings of the company and extending at least half of the length of the three-thousand foot runway that ran the entire length of the back fence.

“Were they impressed?”

“Most of them. Really, all except Pete Woolsey. His father bought him a real top of the line kart for Christmas with a whopping two horsepower engine and everything!” Tom almost seemed envious of the other boy’s gift until he added, “But he left it sitting in their driveway a couple weeks ago and his mother backed their station wagon over it. It’s absolutely ruined!” he finished with a grin.

“Just between you and me, Son, he was about to lose it anyway. I heard at the Rotary Club lunch the other day that the Shopton Police are cracking down on kids running their karts up and down city streets and plan to confiscate any of them breaking the law, starting this Monday. Your safe because you have all that land out back to drive on.”

Young Tom seemed to be considering a new subject, or

at least something a little more important, so his father paused and let his son think.

A moment later, Tom asked, "What should I do next, Dad?"

This took the older inventor by surprise. "Um, I thought you were going to be running and tinkering with that go-kart of yours all summer. What's changed to make you want to do something else?"

Tom looked at his father in mild surprise. "Well," he began slowly, "you don't invent something and then just sit there looking at it and tinkering with it for months on end. Do you?" Mr. Swift thought and then shook his head. "Right. So, I figure that I can always come back to the go-kart, but I have half the summer break to go and I want to do something new."

Mr. Swift asked him what that might be.

"I'm not sure," Tom told him. "I was down by the lake, where they are building that brand new marina and yacht club, and where they're gonna put the parking lot is just perfect for flying kites out over the lake. It is almost always a little windy there."

"Well, then, go buy a kite and a spool of line and have fun. Oh, and ask your mother for some rags to make a tail." He thought this was a good answer until he watched his son's shoulders sag a little. "Not what you had in mind, Tom?"

"Now exactly. It isn't that one of those store kites wouldn't be fun to fly, it's just that for fifteen cents all you get are a couple of thin sticks and some tissue paper. You have to glue everything together just so and then you only

get a kite that's about three feet tall. I want something bigger and a lot stronger, Dad."

"Have you ever built one?"

Tom shook his head. "No, I... Oh. Start at the basics and work up from there?" Tom suggested, paraphrasing one of his father's invention tenants.

Nodding, Mr. Swift said, "Exactly. Give yourself a couple days getting the feel of the build process and even see if you can come up with improvements, but only once you have experienced the standard diamond-shaped kite."

Young Tom asked for permission to ride his bike into town to the large general store that sold everything from food to fishing tackle. Five minutes later he pedaled out the front gate of the company grounds and headed down the road.

There were five different kite types and sizes available but Tom selected one about forty inches tall and almost thirty inches wide, along with a spool of one thousand feet of thin yet strong twine. The man at the counter suggested unspooling it into a bathtub and running the hottest water possible over it, letting it soak for an hour and then drying. This would, he explained, shrink it about fifteen percent but would make the twine nearly twice as strong.

Tom could do that in the evening. For now, he rode back to the Construction Company, informed Miss Trent that he was back, and then raced to his small workshop, an old storage shed near the corner of one of the three main buildings.

During the next half hour he used the included heavy thread to loop crosswise and around, in an increasing X

pattern, to connect the perpendicular main brace pieces. The instructions were quite clear that this join must be solid and at a precise position down from the top of the vertical piece. To make it as stiff as possible, it was suggested that glue be applied in several thin coats and allowed to dry between them.

As he waited for each of the three coats he intended to apply to dry, Tom cut out the proper shape from the oversized tissue paper sheet supplied. This was to be aligned, the edges folded over and around twice to provide added strength, and then they, too, would get an application of glue to hold the edges together.

Before doing that, Tom stood back and looked at everything. "That tissue paper is awfully thin," he said out loud. Having seen several kites tear apart in mid flight, he pondered about what he might do to strengthen it. Then, like a slap on the forehead, it came to him.

Tom held one end of his twine to the top brace piece and then measured it down to the left horizontal, down again to the bottom and then back up the right side until it reached the top. He cut it with a couple inches to spare and then proceeded to fold the twine inside of the edges of the paper.

He knew that there would be little chance that the tissue would tear from any of the sides now, so he laid the cross-shaped braces onto the paper.

Finally, by folding over triple-layer tabs in the four corners and tucking the ends of the sticks inside, the kite took its final shape.

Tom finished things as much as he could before he

headed home. There, after explaining his needs to his mother—and then re-explaining them as she tried to give him short scraps of heavy denim and not a light, flexible fabric that he really needed—Tom was able to fashion a proper tail for his kite.

Before dinner began he ran a hot tub of water and unreeled his twine into it.

Minutes later, and following a little shriek, Sandy came bounding downstairs shouting something about a skinny snake in the bathtub.

It took some minutes before Tom could get the smirk off his face. Even after his explanation, Mary Swift had trouble keeping from laughing at her daughter's reaction. Even Sandy had to admit—but *only* to herself—that it was silly of her to have been scared, but then everything had become either more dire or more joyful to her in the past several months.

Mr. Swift had been able to appear sympathetic to Sandy's plight, but secretly winked at both his son and wife when she wasn't able to see him do so.

The next day Tom attached the now-dry twine to his first kite and took it out back. The string had been drying overnight in the kitchen over the radiator and had been very stiff to wind back onto the spool, but he had borrowed a pair of garden gloves and wound it before he left for work. Now, as he stood near the airfield he faced into the breeze and made his plans.

The first five attempts to launch it himself and then get running had ended with the kite turning upside down and crashing to the ground. One of the company workers,

Gilly—the man who had assisted Tom in the welding of his go-kart frame—was standing at the corner of building number two and saw Tom struggling. He jogged over and offered his assistance.

“Can’t get up a good head of steam if ya also gotta stand and hold the thing. You go out about fifty feet and pull the string taut. When yer ready, just nod and I’ll shove the kite up and you start a-running. Okay?”

Tom agreed, and between them they had the kite in the air less than a minutes later. Tom ran about a hundred feet, playing out some of the twine, until he felt enough tug on it to indicate the kite had found sufficient wind. Then he began carefully reeling out a little more line.

Giving Tom a wave and a smile, Gilly turned and trudged back to work with Tom shouting out his thanks. He kept the kite aloft for more than fifteen minutes, until his hands began aching from constantly holding onto the spook of twine. Taking care to not put too much strain on his thin tissue paper kite, Tom reeled in the kite and took it back to his little work shed.

He raced over to the office building and came to a screeching halt at seeing the raised hand of Miss Trent. “He’s on the phone with some important people from Atlanta, Georgia,” she explained. “Take a seat and I’ll tell you when he’s off.” Obediently, Tom sat in one of the comfortable guest chairs gong over all that he wanted to tell his father.

Five minutes later he was practically gushing out the details of his kite build and the successful flight.

“Now,” he stated, winding down a bit, “I need a bigger

and better one! The only problem is,” he said, looking a little dejected, “nobody in Shopton carries anything bigger. The next larger one is just a box kite about a foot longer than mine, but it cost two dollars including mail shipping up from Albany. I’m not really interested in a small box kite. I want to build something nobody’s ever done before!”

Not wanting to hurt his son’s feeling even though he knew that there had been only small successes over the many, many years of kite design with anything other than diamond shapes and box kites, but unable to stop himself, Tom, Sr., said, “Then design one!”

The effect was anything other than what he expected. With a yelp of glee, Tom bounded around the desk, gave his father a big hug and ran out of the room yelling “Yipee!”

Miss Trent, the secretary who had worked for Tom, Sr. these past seven years poked her head into the office. “That was one happy boy,” she said with a smile. She was very proud of young Tom and, having never married or had children of her own, enjoyed watching the boy’s successes.

“Indeed, Miss Trent. Indeed. I just wonder what he’s going to come up with.”

August 2nd, 1946

“My God! What Have You Done, Tom?”

IT TOOK Tom a full two weeks of experimenting and drawing on a lot of scrap paper he was able to get from Miss Trent before he came up with a solid design. The more he sat looking at it, the more he worried about the practicality of the thing. It was... well, it was huge to begin with. And, it was unlike anything he had ever seen.

Even a visit to the Public Library and an all afternoon look through as many books, journals and magazines as he could find showed him nothing even slightly similar, unless you considered a few things used back in the war.

Somehow, though, it “felt” right to him.

He set the design aside for a couple days and figured he’d take a fresh look the following week. It was obvious that nothing could be done for a long time. His computations showed that it would take him a week or perhaps two to build his flying behemoth. With school starting back up in about five weeks, that left him enough time.

Twice a week Mr. Swift brought a food service company to the Construction Company to feed the many employees. While the company was changing directions from being a wartime supplier to one dealing with peacetime needs, it was not possible to give the employees raises, so everything he could do to ease their financial burdens was greatly appreciated. It was on the first Friday of the month that Tom sat with his father at one of the

picnic tables eating fried chicken and coleslaw that the older inventor confided in his son, “Tom. I’d like your input on something. Quite frankly, I’ve run out of ideas and we have a possible contract that we may need to refuse to bid on—a contract, by the way, that could be very, very important to the company should we win it!”

“What is it, Dad?”

Mr. Swift pulled a ten-page document out of his sports coat’s inner pocket and handed it to his son. “Wipe your hands really well, Tom, and then read this. The first page is just a letter stating timelines, so you can skip that. And, the last page is just the form for us to submit, so ignore that as well. But, pay particular attention to pages three through seven; that’s the real meat of the project!”

Tom carefully wiped his hands on the napkin in his lap, looked at them, and then excused himself to go to the restroom to use some soap and water.

When he returned his father handed him the document. Tom read it with great interest and just a little nervousness. *What if he couldn’t come up with any ideas to tell his father? Would Mr. Swift be disappointed in him?* Tom shook his head to clear such thoughts.

“What wrong?” his father asked.

“Oh, nothing. Just clearing cobwebs, Dad,” Tom replied and tried to concentrate on the papers. By the time he had reached the third ‘important’ page, Tom was riveted.

The document, a Request For Bid, came from the large multi-state organization that controlled and provided electricity for most of the southern U.S. states. Long

known for using a combination of hydroelectric dams and numerous coal-burning generator stations dotting the landscape—and as Tom remembered from a trip when he was about five, sending up dirty smoke that obscured the landscape—they were asking for proposals and bids to increase their electrical capabilities “...without the use of fossil fuels, the damming of additional waterways, or any solution that may propose to utilize the power of the atom...”

Tom asked what that last part meant.

“You remember the atomic bombs that were dropped on Japan?”

Although not fully understanding the concepts, or the ramifications, Tom remembered the resulting public outcry of equal praise and condemnation very well. “Oh. Do you mean using atomic bombs to make electricity? Is that possible?”

Tom, Sr., shook his head. “Not as such, but it is theorized by many, including your old man here, that a tightly-controlled environment can be built that safely contains the reaction, obviously minutely small in comparison, and then to use the enormous heat that comes from the reaction to run electrical generators. But, as you can see, these folks absolutely do not want any part of that!”

Tom nodded and went back to reading. When he finished and looked around, most of the employees had headed back to work and the three ladies and one man from the food service company were cleaning up.

He walked back to his father’s office with the head of

the catering company, where that man received a check from Miss Trent for that week’s services.

“Always a pleasure, Mr. Swift. Miss Trent. Good day to you all. We’ll see you back here next Tuesday. It’s going to be chopped beefsteak with gravy and potato salad with pickled green beans.” With that, he left the building and Tom followed his father into the office.

“Well. What do you think, Son?” Tom asked his boy.

“About the food?” Tom asked.

“No. I mean about the possible project. What do you think about that?”

Uncertain where to begin, Tom shrugged his shoulders. “I don’t know, Dad. If they had places with waterfalls I could see building paddlewheel-like generators that the spilling water would turn. But, if I remember my reading correctly, the American South isn’t geographically set up for that. Maybe build little offshoots from rivers—not like dams or anything—and have big paddle wheels there. Maybe not. Can I have a few days to think about it?”

“Sure. We’ve got another two weeks before we need to let them know if we *are* going to bid, and then another two after that to create the actual proposal. Take a couple days.”

The following day Tom spent both in thinking about the issues with the project and also about building another kite. By now, he felt that he wanted to try out his new and strange design he believed might give more lift. Basically, it was a kite version of a biplane with the main kite body acting like the lower wing of a plane, and a second,

slightly smaller surface staggered backward a bit and hopefully adding lift like an upper wing.

If viewed from the side, Tom's new kite looked fairly odd. The main body lay flat but four stanchions set at a forty-five degree angle back toward the tail, each six inches long, held the upper kite away from the main body. Tom knew that all kites remained aloft by virtue of wind power, and that the wind that hit the center of the kite face worked its way to the edges and spilled over them, replace by the next bit of wind. It was a continuous process and the even spillage of the air was one of the things that kept a good kite stable.

His new design would, he felt, have the smaller, offset kite closer to the flyer and therefore the first to catch the wind. It would provide some lift and then spill its wind over the edges and onto the main body. That would fill the pressure area in front of that sheet of tissue and then spill outward and over the edge.

His hope was that there would be enough extra lift from the pair of kite faces to fly even in lighter breezes, or to pull harder and therefore allow him to run it out farther, supporting the weight of the extra twine easily.

Using some spare materials from one of the scrap piles and several colors of tissue paper he purchased using his allowance, Tom had the new kite built by the following afternoon.

Mrs. Swift stopped by to ask her husband a question, so Sandy walked over to the field where Tom was setting things up.

"Need help, Tom?" she asked. She sounded so sincere

and earnest that Tom did a double-take.

"Uh, sure, San. Happy to have you here. Have you ever helped launch a kite before?"

She shook her head, but smiled at her brother in a way that made him wonder if she had good or evil intentions in her assistance offer.

He explained the procedure to her. She listened carefully, asked a good question about timing, and then told him she was ready. Tom unspooled about fifty feet of line and walked directly away from her into the light but steady breeze. When the line went taut, he turned around.

"Okay, Sandy. This is a teamwork thing. As soon as I nod my head at you, push the kite straight upwards like I showed you." He could see that she was a little exasperated at the continuing instructions, so he added, "You look really good holding it there. Perfect angle, too. We'll get it up quick!"

It required two tries. Sandy pushed up a little too hard the first time and the kite tipped to one side, but the second attempt saw great success. The kite soared skyward and Tom was able to pay out almost three hundred feet of twine.

Sandy joined her brother as he stood there, carefully watching the kite's performance.

"Can I try it?" she asked.

Tom took a deep breath, mentally, and replied, "Sure, San. Now, when I hand you the spool you have to promise to hold on really tight. I mean, it's gonna pull back at you and your fingers are going to get tired, but you have to

hold on until I can take it back. Okay?”

She nodded, saying, “I’m stronger than I look, Tommynomo.” He cringed at the nickname she had given him the day he declared he no longer wanted to be called “Tommy.” Fortunately, nobody else called him that so he tolerated it from her.

He suggested that she duck under his left arm and stand right in front of him. She did and he noticed for the first time that she was almost as tall as he was. *That must’ve happened in just the past six months*, he said to himself.

Tom moved his hands to the outer ends of the spool handles and Sandy placed her inside his. Slowly he let the pressure off from his hands and Sandy’s grip seemed to tighten. Once he knew she had the kite, he stepped back and to the side.

“That’s really great, Sandy. You’ve got it. You’ve really got it!” he complimented her.

Sandy’s grip began to tire about two minutes later so Tom took the spool back. They stood together flying the kite for another ten minutes until a voice behind them said, “I love seeing my children playing together.”

“Hey, Momsie,” Tom said to her over his shoulder. “Sandy’s been helping me fly this new kite. She even took it for a spin herself.”

Sandy began telling Mary Swift about how *desperately hard* it had been, and how *incredibly tiring* it all was, and how she almost couldn’t believe how *excellent* she had proven to be.

Mary smiled. Like Tom, she had noticed that the eleven, almost twelve-year-old, Sandy had been changing this summer. *My little girl*, she sighed to herself.

They stayed watching Tom reel in the line with Sandy taking the spool for a minute to give him a chance to rest his fingers about half way back in.

At dinner that night Tom and Sandy reported to Mr. Swift about their shared success.

“That’s great, kids. So, Tom. Did you have a chance to think over the power bid?”

“Well, the one thing I thought of is the pulling power of the kite. If there were some way to harness that pulling power to turn a generator, and then reel it back in for another go, that might be something.” He looked at his father, a little regret showing in his eyes. “I really spent more time thinking about my kite than the electricity project, Dad. I’m sorry. Tomorrow I’ll think about it all day. I promise!”

Day after day went by with the two Toms discussing many alternatives. By the morning of the 9th of the month they agreed that one very viable alternate power source lay in the use of propane gas. For one, it burned almost completely clean and for another they had found out—through some research young Tom had performed in the small technical library right on the grounds of the Construction Company—that a large natural gas well could be found in upper Louisiana that could be a perfect source. The real plus side was that it was close to an existing major power trunkline and a new generator station could be built there taking advantage of the gas

coming in from just a few thousand yards away, and an easy connection for sending the electricity back out.

Tom, Sr., thanked his son and suggested, “Why don’t you go back to your kite project. I need to sit down with the engineers and draftsmen and come up with the proposal and figure out if there is a way we can get more heat out of gas. At least now we can tell them we will be bidding on this. Thanks, Son!”

Tom had been spending most of his evenings in his room sketching out another brand new form of kite he had never seen before. It was not only a radically different shape, his computations showed that it would be at least seven feet across and four feet tall.

And round.

Not like a ball, round. Like a cylinder, round.

He also had spent some time at work looking through all of the scrap and building materials piles and shelves. The kite needed to be fairly large because it should need to lift heavier and additional materials, and it needed heavier materials because an object that large need stronger building components.

It was a design and results circle that Tom had spent most of his time trying to come to grips with. And, he finally did.

So, beginning Saturday morning, the 10th, he asked for permission to go to the Construction Company and to work in his shed.

“Tell you what, Son. I need to go in myself. How about I drive us in, you can spend, oh...” he glanced at his wife

before saying, “... let’s say five or six hours. Will that work for you?”

Tom agreed and a half hour later they were at work. Tom first formed three hoops out of thin but strong aluminum wire. These would form both ends and the middle of the kite. After that, he used some thin yet strong hemlock wood strips to build the framework for four flat wing-like panels. These he covered both top and bottom with tissue, which he had just enough time to coat with ‘dope,’ a gluey substance that would tighten and greatly strengthen the panels, before they went home.

Bright and early the next morning Tom and Mary Swift gave permission for him to bicycle to work as long as he promised to be home for dinner. Mary prepared a lunch bag for him with a deviled ham sandwich and an apple and some carrots.

Tom worked steadily, barely taking time to eat his meal, as he assembled the large paddle-wheel kite. Seen from the end it looked like a forty-four inch letter X with a thin circle around it. His original intent had been to run the central shaft through slightly larger tubes in all three rings to allow the center to freely rotate, but he decided to use a stationary shaft for this first test kite.

Glancing at the wristwatch he had received for his previous birthday, he saw that he had at least two hours before he needed to be home, so he decided to take the kite outside for a test flight.

Tom knew how much pull his other kites had given, and realized he needed something that could take the strain off his hands. He found it in a safety harness some of the

men who serviced the large crane that ran in the ceiling of Building One used. It was fairly large on him, but he could easily clip the new and larger spool of thin rope he would be using to one of the buckles on the front.

The kite only weighed about five pounds so it was easily carried outside. A yoke had been prepared to attach to each end of the central aluminum tube. Since he wasn't using a free shaft on this kite, his only problem had been in coming up with a way for the two ropes to easily move along and the central shaft ends. This he addressed by forming two wooden spindles with thin centers—shaped on one of the company's wood lathes—where the rope could be tied loosely enough to let the shaft move but tightly enough so it could not slip up and out of the grooves.

These two ropes came forward almost twenty feet before they were attached to a six-foot aluminum rod holding them far enough apart so the lines didn't run on the kite hoops. The rod featured screw-eyes, one near each end for the ropes coming from the kite and a single one on the opposite side of the rod to which the down rope was tied.

Tom had even built two triangular braces out of scrap lumber that would hold the "kite" a few feet off the ground and that would fall away once it launched.

It took just one try and Tom had the kite soaring and spinning up and up. He was very happy he had thought to attach the down rope to his harness. Even at that, the pull practically yanked him off his feet several times as stronger breezes hit the kite.

Everything was going amazingly well until it suddenly was not.

It was discovered later that the down rope had a seriously weak spot that parted during one of the gusts. With no pull on the rope, Tom fell backwards sitting down hard enough to jar his teeth. In dismay he watched as the now free falling kite spun and dropped away.

Already out on more than five hundred feet of line, it soon disappeared behind a stand of trees a quarter mile away.

Tom ran back to his shed and his bicycle, and then rode like the very devil to see where his kite had come down. The mystery was quickly solved when he turned a corner on the old county road only to see the kite dangling from a nearly power line. As he watched, sparks flashed and set the paper and wood parts alight and the kite was soon a twisted skeleton.

He raced back to the company and used his special key to get into the offices where he dialed the Swift home number and told his father what had happened.

Without anger in his voice, Mr. Swift said, "My God, Tom. What have you done?"

August 12th, 1946

Together We Stand Before You...

TOM AND TOM arrived at the county Power Commissioner's office at nine the following morning. The evening before, Mr. Swift had young Tom go over and over the entire kite design and the ill-fated flight. At seven, they were about to sit down to dinner when the phone rang.

It had been the Commissioner, personally requesting them to come tell them what had happened.

"Fortunately," he told them to start their morning meeting, "the only people who are without power are your own company and three lakeside cabins that are not occupied at the current time. It isn't at all good, but it might have been worse."

First Mr. Swift and then Tom told them what had happened. Mr. Swift finished their dual presentation by telling the commissioner, "We have been working together, sir, on a totally new way to generate electricity. That kite my son was unfortunately testing on his own was the prototype of a new type of airborne power generator we have been contemplating. The Swift Construction Company will pay for all the repairs; we can even lend your crew a few of our own electricians. As I understand it, the prototype took out a single line of the dual powerway for just about two hundred feet."

"That may all be true, Tom," the Commissioner, a many Tom, Sr., had known for more than fifteen years, "but you

have to admit that if this gets out about you letting your son fly that thing, willy-nilly and without supervision, that the public is going to demand I do something to ensure this never happens again. *And*," he emphasized the word, "they'll probably want some sort of punishment meted out."

Tom, Jr., spoke up. "I realize I jeopardized a lot of things, sir. I had just finished the kite and wanted to give it a small-scale test. I examined the rope I was using last night and found that it had three spots where it had not been properly braided. It broke at one of those spots. While I can't actually use that as an excuse, after all I did fly it without supervision as you say, it was a cause. It will not happen again. Either more unsupervised flights or using line that has not been totally checked out. By an adult."

The commissioner leaned back in his chair, fingertips up to his mouth and eyes narrowed. He reached a decision.

"Here's how it is going to play. You have your team out there in one hour. Get the metal down first and then replace the length of cable between the two poles. I'll have a small crew there to turn things off and on. And, as far as we know it was some sort of crazy Government weather balloon that was being launched from your facility. Got out of hand. Okay? Do we understand each other?"

Both of the Swifts nodded. They left moments later after Mr. Swift had made a call and assigned a nine-man team to go to the downed line.

As they headed to their car, Tom started apologizing

once again, but Mr. Swift stopped him.

“First, we’ve got an emergency power generator at the company so we have enough electricity to run things like the phones and the circulation system for air. Second, I’m not sure if it registered with you, but I told Commissioner Gordon that this was a new power generating project prototype.”

Tom’s eyes opened fully as the realization of that comment hit him. “Did you mean that?”

Mr. Swift favored his son with a big smile. “I most certainly did, Tom. It hit me last night as your mother and I were discussing whether to punish you for this. Think of it like I did. We build giant free-spinning kites. Build them like dirigibles with a framework and covered with airtight fabric, fill them with helium and float them in the air. All based on your design, of course.”

Tom thought a moment then asked, “Would you put some sort of generator inside. To capture the spinning?”

“Exactly! What do you think? Can we work together on this one? It’ll mean no playing and a lot of research and computations, but I think we might just get a really good contract out of this.”

Tom was all smiles by the time they arrived back at the company. The team that had gone out for the repair had just sent one man back to say they would be finished in a half hour. The power line had not been cut through, the outer cover had simply been sliced open and the contact with the metal in Tom’s kite shorted out a relay on a nearby pole. A little work applying a liquid rubber sealant where the overhead cable had been nicked was all that

needed doing other than replacing the relay, and that was something the electrical company linemen insisted on doing themselves. Fifteen minutes later all power came back on.

Young Tom had, of course, jumped at the chance to work directly with his father.

“Do you really mean it, Dad?” he asked, excitedly. “I know you said you do, but... do you?”

“I most certainly do, Tom. In fact, since you told me your... uh, have you given any thought to what you want to call that thing? Anyway, since you said the kite was flying very successfully and spinning at a fairly high rate of speed, I want you to take charge of the actual design. What *are* we going to call it, by the way?”

Tom thought hard. He had come up with several names the day before and all had abandoned his memory once the kite broke free and the mini-disaster occurred.

“Well, sir, I was trying to think of what it looked like, and paddlewheel came to mind, but it isn’t really like that, I guess. Ummmm... it sort of tumbled up there like the new tumble clothes drier you bought mom at the Sears store last month.”

Mr. Swift considered it for a moment before commenting, “Then ‘tumble kite’ seems to make sense to me. What do you think?”

Tom smiled broadly. “I like it!” he declared. Then, more cautiously he inquired, “Are you sure you want *me* to be in charge of the design?”

His father nodded. “Yes I do. Now, that doesn’t mean

you call all the shots, or that you work solo on this. I'll have a small team of draftsmen working with you to create the actual dimensional blueprints and to ensure all the engineering things are accounted for, but you are the lead in researching and fine-tuning your original design. Just remember that there will be a whole slew of safety considerations you'll need to take into consideration as well as the power generation and handling aspects. I'll have Miss Trent set you up in that small office just down the hall from mine." He looked at his son's eager face and added, "I'm going to commit us to this project so that means you have until the 29th of the month to complete the entire design, including giving your team a couple days to finish the blueprints, so get cracking!"

Tom really dug into the project, first meeting with his 'team,' three men he already knew. The first was Allen Peterson, a giant of a man standing at six foot nine inches. Peterson had been a professional basketball player before the war but had sustained a career-ending injury to one of his legs while training for the D-Day invasion of France. Once released from the service, he returned to Shopton and came back to his previous job as an aircraft engineer.

The second man was just out of college. Brian Brent was, in young Tom's opinion, the epitome of a "bookworm" individual. Thick glasses, almost no social skills and a young man who spent practically every spare minute pouring over book after book. Even he admitted to his few friends that he was almost in a constant panic that some amazing fact would pass him by if he stopped studying.

Brian was also an amazing fine drawing and technical

artist and was the Swift go-to man for creating the functional and stylish outer case designs for most inventions, including the small two-man airplane the Construction Company was about to begin building.

Finally came Anderson Andersen, a frail-looking Swede, born in Stockholm but living in the U.S.A. since he was three years old. Tom and his father knew that if anyone could put structural blueprints together fast, it was the man everyone called "Double A."

Tom called the team meeting to order and passed out copies of the request document that Miss Trent had graciously typed out. He gave them five minutes to read it through before asking the first question.

"Since the knowledge of my, um, wayward tumble kite is probably well known to everyone, do you think we can come up with a design using those principles, filled with somewhere close to one hundred cubic feet of helium, and fly a fifty pound generator up to about one thousand feet?"

Allen pulled out his pocket slide rule and slid both the hairline and the slide back and forth a couple times. He looked up. "But, that's just about thirty-two pounds of lift, Tom. And, you say it needs to lift fifty? Plus the kite? The math doesn't work."

Tom nodded. "I know. But the kite will provide somewhere around forty pounds of lift in a wind of just three miles per hour."

All three men stared hard at Tom in disbelief.

"You certain of that?" asked Brian, voicing the question

they all had for the boy in front of them.

Tom ran down all of the dimensions he envisioned, a scale-up of fifty percent over his kite. Three slide rules worked furiously and notebook pages covered with figures before all three looked back up, surprise and respect in their faces.

“How much do you suppose this balloon thing is going to weigh all by itself?”

Tom shrugged. “That’s where I really need you men to help me. I’ve never worked with special fabrics and whatever coatings will be needed to keep the helium inside. Even all the necessary bracing is an unknown to me. I’m really going to count on everyone to help me get the plans and everything ready for dad to submit.” He paused and then thought of something else. “Costs as well.”

“I’ve got a question,” ‘Double A’ said. “If this thing is just going to be a big balloon, why the lines at both ends. Why not just one central line?”

“Oh. Maybe not everyone knows about my kite. You see, Mr. Andersen, my kite freely rotates up there using the power of the wind. That rotation not only stabilizes it, a lot, but it also creates a low-pressure zone above the kite lifting it some more. If we are going to create electrical power, this can’t be a Benjamin Franklin key in a storm affair. It needs to actively and constantly turn so that the generator I plan to put inside spins—oh, and we’ll probably need to figure out some sort of gearing for that—anyway, and that generates the power!”

Through the rest of the day and the entire next one,

Tom and his team performed research, calculations and more research. By Wednesday morning it became clear to all of them that a simple upscaled version would not do the trick. Although perfectly capable of lifting both the generator equipment as well as the power cabling necessary to get the electricity down to the ground, the plain fact was that the small generator Tom had so carefully located and specified fell a little short on creating enough electricity to warrant the cost of building the balloon kite surrounding it.

To make matters worse, a generator that *would* work, and work fairly well, ended up being about thirty-seven pounds too heavy for the combined lift to handle. And, as Tom realized, if the wind were to stall for even a minute, a balloon incapable of supporting its own weight would come back to the ground, probably with bad results.

He reported to his father as they ate lunch together in the senior Swift’s office.

Mr. Swift was disappointed, but not discouraged.

“Have you looked into making the kite even larger?” he inquired.

Tom nodded. “Yes, sir. But if we do make it much larger, according to Mr. Andersen, we run the risk of it being too influenced by the wind. So much so that it might get unbalanced and that wouldn’t be good!”

“Let me see those drawings,” Tom, Sr. requested. Taking them from his son’s slightly trembling hands, he softly said, “It’s okay, Tom. If it works, it works. If it is impossible, then we have to live with that. Right?”

Tom nodded again, but with little conviction. “Yes, sir. ‘You can’t beat gravity, physics or reality,’” he quoted one of his grandfather’s mottos.

His father hid a small smile behind his hand. Although rarely spoken in public, Barton Swift had peppered all of his teachings to the then-teenage Tom with many such sayings.

Five minutes later, Mr. Swift passed the three drawings back to his Son. “Alright. I think we might be able to salvage this, but I really want you to put on your thinking cap and study these drawings. If you spot the same thing I did, then... well, it might be the thing that makes this all work. See if you spot it.”

Tom spent a full twelve minutes studying the drawings showing three different views of the kite. Like his paper version it had a central axle with vertical and horizontal planes extending outward and a trio of hoops holding the ends and the middle out. Everything was fairly streamlined if just a little square-ish and bulky looking.

Tom was about to set them back down and give up when he spotted something. He turned and looked in wonder at his father, who smiled down at him and nodded.

They had both spotted it!

August 14th, 1946

But, Will It Fly?

THEY SAT THERE staring at each other, neither one speaking until young Tom broke the silence.

“There are two things that need changes, aren’t there?” he asked.

Mr. Swift, who had spotted only one, confessed, “I only see a single thing. Tell me what you see, Tom.”

Tom pulled the drawing that showed the kite from about forty-five degrees to one side. Pointing, he said, “For one thing, the two hoops that cap the ends are not only unnecessary, I think they act to slow the spin down. That ends up making the generator inside put out less electricity. If the ends of the vanes can curve a little as they spin, more air can escape off the ends and that air will be moving faster so it will help push the vanes around. Is that what you saw?”

Mr. Swift grabbed the drawing and stared at it. He looked at Tom and then back at the drawing. “No. That isn’t what I saw. My goodness, Tom, you’ve spotted a real winner there that I entirely missed! Now you’ve got me wondering if the thing I did spot is as meaningful.”

Tom cleared his throat. His mouth was very dry from his nervousness. Finally he said, “Well, the other thing I spotted is that the vanes don’t have to all be the same. We could make one pair, right across from each other, puffier. More room for more helium. Was that it?”

Mr. Swift nodded, giving his son a wry smile. “I thought that was the one and only thing. I have to hand it to you, Tom. That flexible angle is pure genius! Get you team working on the specifics and let me know by, oh, Friday, if it works.”

Tom jumped up, gave his father a hug and ran off to have Miss Trent call the three men to a meeting.

They met an hour later where Tom detailed what he and his father—and he was careful to give credit to the older Swift—had spotted as points to work on.

Allen, Brian and ‘Double A’ looked on in amazement as Tom taped a large sheet of tracing paper to the wall and sketched out the revised kite.

Another furious session of slide rule computations followed, at the end of which Brian Brent told them, “I think if we upscale this by just another ten to fifteen percent it will give us more than enough lift to put in two of the smaller generators. After all, if one of the larger ones weighs as much as two of the smaller ones, but only increases power output by sixty percent or so, why not put the two smaller ones in there?”

Allen Peterson asked, “What about the balance thing? We can’t put them too far out. Oh... and will we need dual downloads?”

Tom spoke up. “I’m certain, well, pretty certain, that we can not only combine the output safely, I have a voltage rectifier that will turn the DC power into AC to get it down and then on the ground we use a transformer to bring it up to voltage high enough to feed right into the giant transformer the power company insists be part of any

winning bid. They won’t need to do much other than to plug in.”

Everyone was now excited. The three men rushed off to perform their duties, promising to get back with the youth on Friday morning so that Tom could report their findings to his father.

Things went so well—they only had to make slight modifications to their current computations and diagrams—that they arrived as a group at Tom’s office late Thursday afternoon.

As he suspected, an increase in the overall balloon body of about ten percent combined with the change in the configuration worked. At just three miles per hour of breeze, the generator could output more than six thousand watts of power an hour. And, for each increase of just one mile per hour, the output went up by a full kilowatt.

Allen looked down at Tom. At the best of times he looked *down* at everyone, but this time he was looking down with consternation.

“It’s getting mighty big, Tom. You really thing this bird will fly?”

“Yes I do,” the young inventor stated.

“Okay. That’s good enough for me. Looks like a pretty good day to make a little history. Let’s get this thing built!”

Everyone agreed, and Tom considered that to be good news. They had a serious conversation about maximizing the potential for the kite generator with all of the men

looking to Tom to lead the talk. He realized that many adults might not take a young boy seriously. But, they did and that was good.

The really good news was that they all believed the tumble kite generator could remain stable at wind speeds up to twenty-five miles per hour. Of course, Tom felt they needed to design an automatic winch system attached to an anemometer—a wind speed gauge—to pull in the kite during higher-than-allowable winds and to let the kite out to the proper altitudes to find the best breezes. It would also freely turn so that the kite generator would always end up in the most advantageous orientation.

Tom asked them to accompany him to his father's office. He wanted to make certain Mr. Swift realized what an amazing team he had.

Their report, led by Tom but contributed to by all, had Mr. Swift grinning from ear to ear by the time they finished.

“I don't know if any of you realize,” he told them, still grinning, “that the lowest cost generators out there capable of providing as much power as your tumble kite run about twenty thousand dollars. They use surplus war diesel engines, are noisy and belch out smoke, and cost as much in fuel and maintenance in a week as they manage to produce in three days.”

Tom piped up. “Ours doesn't need any fuel.”

Mr. Swift nodded. “Exactly! So, the first big question is how much will these cost to make?”

Anderson Andersen pulled a sheet of paper out of his

briefcase. “We believe that between materials and labor, these can be made for about three thousand dollars each—crated—and then will require maintenance to the winch and helium refills four times a year for an annual cost to the power company of about three hundred dollars.”

“Has anyone done the computations for payback time?”

“Yes, sir,” Tom said. “If they take our recommendations for placement of these, in areas where we know what to expect all year long as far as wind goes, then I figured an average of four point three MPH of wind making... um... I wasn't able to find out what they charge of power. Does anybody know?”

While Tom's father was leafing through several documents, Brian asked, “Where are these sites you're suggesting?”

“A lot of them are along the Mississippi River and others are in some of the mountainous areas fairly close by. But, for best results and little loss of electricity as it is transmitted, dad and I think that in and around major population centers right on the river. They can be moored to roofs of tall buildings, in city parks... just about anywhere they won't interfere with any airfields. Even private companies that want their own source of electricity. Let's see. There was another place...” Tom screwed up his face trying to remember the other information.

Mr. Swift came to his son's rescue. “Three cents per kilowatt, Tom.”

“Okay. Give me a minute,” he said pulling out his own slide rule. Finally, he looked back up. “If we sell them for

five thousand dollars, they start making money from them in about seventeen and a half months. Is that good?”

Mr. Swift laughed. “Good? Most generators don’t begin paying for themselves for a decade or longer. Less than one and a half years is better than good... it’s downright great!”

“What do we do now, Dad?”

“Well, now your team members get to create all of the intricate designs and drafting blueprints that I need to send in with our proposal and bid. And you, Tom, will oversee a team of five fabricators who are going to work with your team and hand build a prototype of this. If we are one of the top five selected, we’ll have to demonstrate a working model so we might as well have it soon.” He looked thoughtful, then asked, “Are we still calling this a tumble kite generator?”

Tom spoke up. “I couldn’t think of anything better, but if someone else has an idea...” He looked around. Nobody made a suggestion.

Closing the file on his desk, Mr. Swift declared, “Well, then. That’s it. Officially we will designate it a *Swift Construction TKG-1*. It needs to have some sort of serious name, but we all know what it means. Okay with you?”

They all nodded.

The meeting broke up and they went their different ways.

August 30th, 1946

Taking To The Skies

TOM SPENT the next two weeks watching the team of fabricators first build a lightweight yet very strong framework for the kite, then mount the dual generators and carefully balance the entire thing.

“Got the center of balance less than an eighth of an inch, Tom,” the leader of the team said to him. “Can’t do better than that!”

He had spent three days very carefully building the electrical circuits that would be mounted inside the kite as well as inside the controller and winch box that would be anchored to the ground attached to a concrete slab.

He was momentarily dismayed early the next week when he saw that the team had cut away part of the framework five days after completing it, but was satisfied with the explanation that a new material had been located that would be nine percent lighter and almost fifteen percent stronger, especially important in areas of greatest stress.

“We let your old pal, Gilly, swing on it. Figured that his one hundred fifty pounds would be about equal to the stress on those parts during higher winds. We had a little deflection, that’s bending, Tom, that didn’t snap back. So, instead of doubling up on the bracing and adding another seven pounds of weight to that part of the frame, we cut out the old bits. The new stuff goes

back in tomorrow, just in time to get the nifty outer covering. Have you seen it?”

Tom said he had. It was mostly white with blue accent panels on the ends of the main body and the company name, **SWIFT CONSTRUCTION**, stenciled in two places. Made from thin yet incredibly strong nylon fabric and coated with a sticky artificial rubber paint inside and out, it was mostly white, slightly shiny in direct sunlight, and would hold the helium inside for months at a time.

The next morning, Tom reported to the final assembly point where he watched in amazement as the fabricators pulled, tugged, stretched, swore at, and finally sewed the outer covering over the completed frame.

A coat of the sticky paint that covered the final seams needed two hours to dry before they could fill it with the light gas, so Tom ambled over to the office building to ask if his father wanted to watch the test flight.

“I’ve just sent off the proposal and bid by courier, Son. It has two names on it, yours and mine. You are now officially an authorized submitter of the company.”

Tom smiled. The day was turning out to be a beautiful one. First, the completion of the *TKG-1*. Second, on the way into the building he looked at the thermometer on the side of the building. It read just 72° which would be perfect for the test. Not too hot and about what might be expected seven or eight months out of the year in the locations Swift Construction was suggesting in the proposal.

Third, the little weather station by the airstrip out back showed a fairly steady four MPH breeze.

And, now, he finds out his father is giving him one of the highest compliments he could think of; trust enough to put Tom’s name on the official documents!

“When’s the test flight?”

“They will start filling it just before the lunch break and then will check the pressure after an hour wait to make sure it isn’t leaking. If everything goes well, it should get attached to the anchor point and the test equipment at about three and up it goes at three-thirty. Can you be there?”

Seeing the expectation in his son’s face, Mr. Swift couldn’t resist a chance to tease him.

“Sorry, Tom. I’m going into town for an important shave and haircut just before that.” And, before Tom’s face could totally fall, Mr. Swift winked at him. “Just kidding. Of course I’ll be there. You’ll know, too. Just listen and you’ll hear the bells I’ll have on!”

* * * * *

The pressure test went very well with no measurable leaks in the envelope. Right on time, Tom was given the honor of throwing a large switch, allowing power to flow into the control box and operating the winch.

With the help of four men, the *TKG-1* was aloft in seconds, floating partly from the lift of the helium and then quickly gaining speed as it moved up and away when the gentle breeze caught it.

Before it was even fifty feet up and about ninety feet down wind, it began spinning. Slowly at first and then gaining speed.

Tom did a quick calculation and announced that it was spinning about fifteen percent faster than the breeze was pushing, so the idea of allowing the ends of the vanes to flex was paying off.

Finally, when it reached the end of the one thousand foot cable, Tom pressed a switch and everyone crowded around to look at the dials. They jumped and then swung back and forth but settled down within a couple seconds, now showing that just a bit more than the anticipated amount of electricity was coming down the line.

They all turned to look at the large box fan and twenty industrial lights that were attached to the final output. Everyone found themselves with huge smiles as they watched the lights glowing bright and steady and the fan whirling around and around.

Tom looked at his father who looked back with immense pride.

It was definitely a good day!

EPILOG

"I HAVE been led to understand, young master Swift," Mr. Arbuthnot, the Principal at Shopton High School was saying to Tom, "that during the summer break you have been a very busy young man." He raised an eyebrow, questioningly.

"Yes, sir!" Tom proudly stated. He had been called into the office on this orientation day because the Principal wanted to make certain that the boy would be able to handle jumping several grade levels without any study or social issues.

"Well, good for you, Tom. Yes, indeedy. Good for you. Now, for some more serious issues. You are just thirteen while our youngest student is typically fifteen. That may not seem to be much to you, but let me tell you that....."

Tom's mind went into neutral. He had heard much the same speech from his previous Principal on the final day of school at the end of May. And, again from his mother and one more time from his father just the evening before. He could practically say it himself.

As he let the words pass right through him, he placed a look on his face he hoped would spell out, 'I am listening to you and finding everything you say to be vital to both my wellbeing and to the safety and success of the entire Western world.'

Then, he let his gaze move up just slightly from the man's eyes so he could look out of the large window behind the desk. There, about a mile away, he could see

the unmistakable shape of a Lockheed Constellation and the exhaust trails of its four powerful engines. The muffled sound of all those incredible pistons could be heard slightly rattling the window pane.

Young Tom let out a small sigh knowing that his dream to pilot such a magnificent aircraft was still years away.

And, as he watched it traverse near the horizon, his thoughts turned to what sort of airplane he could build during the cold, winter months in Shopton, New York.

Bigger, he thought. Oh, yes indeedy. Much, much bigger!
