



SWIFT ENTERPRISES PRESENTS

Greg “Doc” Simpson’s Young Inventor Repair Guide or... Keeping Tom Swift Running

With T. Edward Fox

Being the medical chief at Swift Enterprises has its up and downs. On the up side, Doc Simpson has some of the most modern and complete facilities of any corporate doctor in the world. His hours are a bit odd at times, but he can’t really complain.

On the down side, it seems like Doc Simpson is constantly patching up Tom Swift, his best friend, Bud Barclay, and any number of the people who live and work around Tom.

But, mostly Tom. You see, Tom gets bopped, banged around, beaten, bruised, bashed and hogtied more than any other person the good doctor has ever met.

And, keeping Tom in top form and able to carry on with his many inventions and adventures can sometimes be a full job in itself.

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This book is dedicated to the folks who make us well, mend our breaks and bind our wounds. While they each take an oath to uphold the dignity and quality of their service to us, without their dedication willingness to go above and beyond, few of us would be the better for it. Here’s to all of the “Docs” out there.

Greg “Doc” Simpson’s Young Inventor Repair Guide or... Keeping Tom Swift Running

FOREWORD

If you have ever read any of the comings and goings of my number one patient—numerically first both in terms of his importance and number of times I’ve had to patch him up—then you should have an idea of what sorts of mischief he gets into. And, what mischief finds him.

Now, I don’t mind doing it. Tom Swift is a one-of-a-kind man, and there is no way I’d miss the opportunity to work with him, or on him, even if I didn’t have the Hippocratic Oath hanging on my wall and buried deep inside of my psyche.

Don’t get me wrong. I do not relish having Tom or any of the other Enterprises people wheeled in to me for emergency care. I would rather live a mundane life dispensing bandages and aspirin for fifty-one weeks out of the year, just to have that opportunity to go on some adventure with Tom. And Bud. And Chow and all the rest. It makes everything else I do worth it!

I am honored that someone decided to take the time to chronicle some of the many, many times I’ve been presented with the cuts, scrapes, bruises, concussions and rope burns, all on or about that wonderful guy, Tom Swift.

Greg Simpson - “Doc”

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CHAPTER 1/**Bumps and Bruises**

“I WONDER why that car is following me so close?” was the last thing Tom Swift, teenage inventor and son of Damon Swift, head of Swift Enterprises, murmured to himself as a sleek, silver coupe came zooming up behind him.

Tom was taking a shortcut he frequently used when driving or walking between his home on the outskirts of Shopton, and the massive, four-mile-square facility that was Swift Enterprises. The road was rarely traveled and provided Tom with ample time to ponder whatever problem he might be working on that day.

Today, he was working on the design for a small repair robot to attend to his giant robot—a mechanical man who had recently been closed inside of one of the reactor buildings out at the Citadel, the Swift’s nuclear research facility in the American Southwest. Soon after completing the automaton, Tom thought up several—he believed them to be vital—improvements that should be made.

The problem was, once inside, his giant robot could never come back out without unleashing massive amounts of radiation.

He got as far in his pondering as, “Would standard relays and actuators be sufficient for something as small as I’m planning, and something that will not be able to be repaired except by yet another robot, or do I need to go with solid state relays?” The radiation that each robot new would absorb would also keep it from ever being able to leave the shielded building.

The sedan following him plowed into the rear of Tom’s convertible at high speed shooting Tom’s car into the air where it made a partial roll to the right before slamming into the ground in between two thick-trunked trees.

The next thing Tom knew, the smiling yet worried face of Enterprises young medico, Doc Simpson, was hovering over him. It took a moment to put things together in his mind, but the feel of heavily-starched sheets combined with an inclined ‘hospital’ bed and the smell of antiseptics helped him realize that he was back at Enterprises and inside of the small dispensary/clinic run by the good doctor.

“Before you ask me anything, let me ask you,” Doc said to Tom, “what the heck hit you?”

Moving his arms to check their functionality, Tom replied, “Last thing I saw was a fast car coming up behind me. Silver job, I think. Probably a Cosmo, but I didn’t recognize the model. Didn’t have time. The world sort of went upside down and I woke up here.” Tom paused and looked the doctor directly in the eyes. “How am I?”

“I am constantly amazed at how tough you are, skipper.” Doc smiled a little grimly at him. “Harlan dragged me out to the wreck. Believe me. You’ve ended up with a small bruise compared to the walloping your little car took.”

Harlan Ames, chief of Security at Enterprises, was the first person the police officer who happened on Tom’s wreck called. He recognized Tom’s little 2-seat sports car and knew that the best and closest help for the young man would be at Enterprises.

“The entire rear end is all smashed up and pushed right into the back of the seats. You just missed a tree. Lucky thing. Harlan says that you could have been crushed if you had hit it.”

Tom tried to stretch his left arm above his head. It hurt. “Ow. Are you sure I’ve just got bruises, Doc?” he asked.

“I was waiting for you to wake up before hauling you into the X-ray room. My guess is that you’ve got a strained ligament or two in there,” the young medico replied, pointing at Tom’s shoulders. “Could be a cracked rib or two. You’re going to be

mighty sore for a couple of days. If need be, I'll ship you over to Shopton General for a MRI, but I'm pretty certain that isn't necessary."

Bumps, bruises and even cuts and gashes were nothing new to either of them.

One of these days, he thought to himself, *Tom's going to get into something that I can't handle. I hope he grows out of this 'nothing can really hurt me' phase soon.* He knew that all teens go through the "I'm immortal" stage of development, he just hoped that Tom's would be mercifully brief.

As he suspected, the peek at Tom's insides showed a couple of strains in his shoulders, a hairline fracture of his left ulna, plus a cracked sternum. The latter would give the young man more discomfort, and for a longer time, than the other injuries.

All things considered, Tom came out in fairly good shape.

This hadn't always been the case. When Greg Simpson, fresh from his residency at John Hopkins, had been hired by Tom's father, Damon Swift, Tom had just turned seventeen years old. The older Swift had hinted that his son was a bit impetuous and prone to recklessness.

Greg had taken the hint lightly until a week into his employment when he was presented with a young man suffering from a head contusion, broken ankle, twisted wrist, and cracked knee cap. After directing his RN to clean up the boy's bloody head, the doctor was shocked to discover that the face belonged to Tom.

The teen had been testing out a new small propeller-driven aircraft that Enterprises was about to put on the market. A misjudged barrel roll stunt had gone haywire and the little plane had ended up scraping along one of the many runways that crisscrossed Enterprises, upside down and eventually flipping several times.

The aircraft was a total loss. Simpson just hoped that the

young pilot wasn't.

One full-leg cast, a wrist/hand cast and more than thirty stitches in different locations later and young Tom opened his eyes and smiled at the doctor he had only been introduced to briefly three days prior.

"Hey, Doc!" he greeted the worried face of his physician. "What's going on?"

With that, Tom had given Greg Simpson the nickname that would become practically universal with Enterprises employees. The newly christened "Doc" shot Tom a stare that he hoped would transmit both his dislike about the overly familiar form of address as well as his concern for the youth's condition.

"Well," he carefully chose his words, "for someone who evidently rolled an aircraft in the air as well as across the ground, I'd say you are doing pretty well. How do you feel?"

Tom glanced down at his encased left hand and leg, then moved his head gingerly from side to side. His sandy blond hair peeked out from under the bandage that hid most of his stitches. Finally, he lifted both his right leg and arm, flexing his fingers. He grinned at the doctor.

"Good, except for feeling pretty stupid. First rule of flying is that you land with the wheels below you, not up and over your head. I goofed. Dad's gonna kill me!"

"I wouldn't worry about that, skipper," came a friendly voice belonging to Tom's best friend, Bud Barclay. "You've got to answer to a higher authority!"

Like Tom, Bud was seventeen. Unlike Tom, Bud had dark hair and exceptionally brown eyes. The two had met a year earlier and had shared several adventures since. Where Tom excelled in science and inventions, Bud's forte was sports and flying.

Turning his head to look at his visitor, Tom replied, “Yeah. Maybe he’ll go easy on me. This is only the third plane I’ve done in. Perhaps it’s some sort of record. So, who is this higher authority?”

Bud came over to the bed and gave Tom a once-over. “There is this nice woman who shares a room with your father at casa Swift. I’ll bet she’s gonna hit the ceiling. Right, Doc?”

Tom winced. “I hadn’t thought about Mom. Or, Sandy for that matter.” He took a deep breath and turned to face his doctor. “What do you think, Doc? Am I going to be a case for pity or for anger?”

Doc Simpson considered the question. “Well, first of all,” he turned to face Bud, “I’m *Doctor* Simpson. I take it that you are Bud Barclay. I’ve heard a lot about you from a couple of the younger nurses working here.” He held out his right hand.

“Hiya, Doc!” Bud greeted him, shaking hands with the doctor. “Don’t tell Sandy about any of your nurses. All perfectly innocent and all, but Sandy’s got a temper on her.”

Not having met any other Swift than Tom and Damon, Doc Simpson could only nod. “Oh, Tom. In answer to your question, you’re in surprisingly good condition given your crash. I don’t know your mother or sister, but my bet is that they will be concerned enough to not come down on you. Your father, on the other hand—” He left the sentence unfinished.

Tom’s mother and younger sister did, indeed, take pity on him, although Sandy was also concerned about the destroyed little plane. Just one year younger, she was becoming an accomplished pilot having received lessons from both her father and brother and one of Enterprises top test pilots.

“You crashed my little *Pigeon Special*,” she practically wailed at him.

* * * * *

All of that, Doc fondly remembered, had been little more than two years ago. In that time he had come to know and truly like Tom Swift. He also found it a source of pride that Tom had—so far—survived all of the minor and major scrapes and bruises and breaks and strains that his body had endured.

Doc also had gained an appreciation for Tom’s skills and abilities. He now knew that practically anyone else might have died several times from the sort of accidents that befell Tom.

But, the young man, Doc believed, was anything but reckless. Everything Tom did, he did with cool reasoning and forethought.

What gummed up the works was Tom’s ability to attract enemies out to either steal or foil Tom’s inventions and discoveries. And, those people frequently wanted to—and did—cause harm to the inventor.

As it turned out, Tom’s accident hadn’t been his fault; an agent of another, unfriendly, country had gained entrance to The Swift Construction Company, builder of the little place, and *had sabotaged it!*

CHAPTER 2/**Contusions and Concussions**

NOT ALL of Tom's adventures meant putting Doc's skills to the test trying to save the inventor's life.

Although the actual experience had been harrowing and fraught with dangers, Doc eventually looked back fondly at his trip into the jungles of New Guinea to try to rescue Bud and another Enterprises pilot, Slim Davis.

Tom had attempted using his newest invention at that time, his Ultrasonic Hydroplane, to try to overcome the catastrophic weather conditions near some mountains during the search for the missing pair. Ultimately, Doc had joined Tom and several others in a hike through the almost-impenetrable jungle growth.

Much of that adventure had kept the young doctor busy concocting from both his medical bag as well as some supplies brought along to the trip a series of medications and insect repellants.

The insect life had been particularly viscous and proved to give most of the men in the rescue party severe itching and swelling wherever a bite occurred. Since most of the men received more than several dozen bites during the initial insect attacks, he had been kept busy for almost two straight days.

Following several attacks by some of Mother Nature's worst bugs, hundreds of small, carved stone projectiles had struck at the group. The unseen assailants used some method for launching them at high speeds. Wherever they hit bare skin, they left cuts and welts.

Back Doc Simpson went to his makeshift lab and out came more salves and ointments.

While Tom put on a brave face, Doc knew that the young inventor had taken a higher percentage of hits from both the types of attack and had begun running a bad fever.

Jungles are notorious for being hot and damp places, and their current surroundings were made even more so by the proximity to the mountains where Bud and Slim had crashed. Something was making that area violent with storms of both wind and rain.

That extra humidity meant more troubles for the injured team members, but especially for Tom. The supply of aspirin on hand had mysteriously been left open and the moisture had destroyed it.

Something had to be done. The youth insisted on plowing ahead in spite of his condition. Doc realized that Tom was steaming forward on nerves and adrenalin. Not a good combination over a long haul.

He was overjoyed when he spotted a type of willow tree he might have not expected to be in the jungle. The bark of that tree—along with several other types and even some fruits back home—contained salicylic acid, the active ingredient in aspirin.

Borrowing one of the small pans that Chow carried, he stripped off a few pieces of the bark, pounded them into a pulp in the pot and added some of the precious water they each carried and boiled it into a murky tea.

"You're going to hate me at first, skipper," he told Tom as he cornered him during their rest period, "but I want you to drink this."

He briefly explained what it was and why Tom had to drink it.

With a weary sigh, Tom tilted the pot to his lips and drank. Doc knew it would taste bitter and dirty, but when Tom stopped and coughed, he pointed to the pot and said, "Everything. Now!"

Three more times that day and twice in the night Doc insisted that Tom drank more of the makeshift medication. By morning, though exhausted, Tom was bright-eyed and claimed that he felt much better.

“I’ll slack off after a noon dose, Tom, but I’ve filled an empty canteen with the stuff. The least sign of a relapse of that fever and you’ll be gulping the stuff down.”

That had gained the doctor a grin from his young boss. “You’re tops, Doc,” Tom told him.

Two other men in the group required treating with the liquid before they all reached the mountains and finally rescued Bud and Slim.

Back at Enterprises, Doc had a sample he had kept in reserve tested. When the results came back he let out a whistle. It had all been guess work. How much bark plus what amount of water makes the right dose? In the end, his homemade drug had delivered a fairly small dose of the active medicine, but it had worked.

In any given month, Doc could rely on a visit either to or from Tom or Bud. Or both.

During the weeks leading up to Tom’s race to be the first private concern to reach the Moon, he had fallen victim to not one, but two separate attacks.

One had been perpetrated by a man out to injure or even kill the inventor, and one was an accident in one of Tom’s labs.

And, neither had anything to do with the building or flying of *The Challenger*, the massive cube-within-circular-railing spaceship that was powered by one of Tom’s greatest inventions: the repelatron.

One evening shortly after returning from the new Helium City and site of Tom’s hydrodome, he and Bashalli Prandit, his constant date and girlfriend, were walking through downtown

Shopton after having dinner at a small Italian restaurant.

Hugging his right arm with both of hers, Bashalli tilted her head onto Tom’s right shoulder. Sighing with pleasure, she told him, “This is almost the perfect evening, Thomas. Any girl would be jealous. A perfect meal and a perfect walk under the perfect stars. It is just that—” Her voice faltered.

Tom stopped and turned to face the beautiful, dark-haired girl. “What, Bash?”

“It is just that you and I have been dating for many months now, and I finally got you to kiss me. But, you have never come out and asked me to be your girlfriend.”

Tom detected a small tear in her left eye.

“Oh, no!” Bashalli shouted and jerked away. She just missed being hit by the piece of wood being swung at Tom’s head.

His attention had been so rapt toward Bashalli that he almost didn’t have time to react. Luckily, he managed to dodge enough to avoid a direct hit on his cranium. As it was, the blow hit him on the side of the head hard enough to buckle his legs.

Tom slumped to the ground as the attacker spun and ran off.

Bashalli fell to her knees next to him and cradled his head in her lap.

“Just a little headache maker, Bash,” Tom muttered as consciousness slipped away from him.

Several hours later a bright light pierced his eyelids and woke the youth up. He tried to rise up on his elbows only to discover that it made him almost sick to his stomach.

A female voice he realized was not Bash’s said, “Now, you just lie there until I can get the doctor in here,” and two hands had appeared from the fog that surrounded Tom’s straight-ahead vision. They pressed him gently back into a soft pillow,

then disappeared.

With an opening “tsk-tsk,” Doc Simpson came into view. “Didn’t your dad ever teach you to duck?”

Remembering his conversation with Bashalli, Tom replied, “I was otherwise occupied, doc. What gives?”

“Well, this time what gave was a little bit of your skull. From Bashalli’s account I understand that you ducked a bit, only a little too late. I know for sure that you were hit with a piece of *Quercus alba* directly in the right Parietal plate just next to the Temporal plate.”

Tom blinked as he tried to think what Doc Simpson was talking about. “I give up. With *what* and *where*?”

“With a piece of white oak and just above the ear. The wood left a few splinters that we tested, and the location was pretty easy to see. Tore right through the scalp. I had to put in about twenty stitches. Once the bandage comes off in a week you’ll see where we had to shave the side of your head.”

“Good thing I keep it pretty short, then,” Tom said with a slight grin.

“It would be nice if the next time you get yourself clobbered that you do it during regular business hours. I was just about to call it a night and go to sleep when the call came in from Bashalli.”

The girl had called Doc first thing, even before calling the Police. He arrived just behind one of their squad cars and the ambulance that had also been summoned.

Doc left Tom to sleep and headed for his office, thinking, *No use trying to go home now*, as he glanced at his watch, It told him it was almost 6:00 a.m. *I’ll go make some notes and then grab breakfast. I wonder if Chow will bring me something when he hears Tom is here?*

Chow Winkler, former ranch cook, was always ready to accompany Tom on any adventure and was among the first to visit him when ever he found himself in a hospital bed.

Doc sent the roly-poly chef a quick email message suggesting that a light breakfast at about 10:00 might be nice.

And, (he wrote) would it be possible to bring me something? I came in at 11:00 last night and need to stay close. Whatever you’re bringing Tom will be fine.

He sent off the message and turned to his logbook. Even though Tom and Damon had suggested that keeping his notes on his computer would be more efficient, Greg Simpson had always found some amount of satisfaction and even therapy in taking the time to write out each day’s events in longhand.

Doc turned to the most recent page and made a quick notation regarding another patient from the previous day. A trusted and long-time employee had come to him with a health problem and had sworn him to secrecy. She didn’t wish her boss to find out about her health issue and an upcoming operation both she and Doc knew was inevitable.

Finishing that, he flipped to the next page and put today’s date at the top. Below that he noted the time Tom was brought in and the patient’s name. With a smile, he added. “*Again!*”

Though versed in all of the ‘proper’ Latin and medical names and terms, Doc preferred to write things out that could be deciphered by almost anybody. For Tom’s case he wrote:

Patient has suffered an open wound and hairline fracture of the right cranium precisely one inch above the top ear attachment point. Scalp tear is 3.4 inches in length and was made by a wooden weapon sweeping in a downward direction. X-rays show that the fracture runs from the forward point of impact/tearing and

then toward the rear for 2.8 inches. It runs completely through the bone plate but is held rigidly together at both ends. I see little need to secure it against further fracture. Outer wound has been sutured (4.0 ND Silk @ 21).

There is no indication (again from X-ray) of bleeding inside the cranium. There is minute swelling of the brain tissue but it has subsided by more than 40% since his arrival at 11:17 p.m. last evening.

Tom received Flubiprofen I.V. @ 50 mg / liter saline over a 3 hour period. Depending on his pain state on awakening later this day, I may repeat this or switch to oral Ibuprofen for pain relief.

Pupil reaction indicates mild concussion symptoms which will be tested for later today. No notice of slurred speech or nausea present. No indication of memory loss or cognitive reduction.

I will keep a close watch on this condition as patient has previously suffered 7 episodes of cranial impact with 6 leading to concussions ranging from very mild to high-moderate in past 19 months.

Special Note: A new project coming soon may place patient in outer space and all inherent hostile aspects. Due to nature of patient's position (Pilot) I may need to place him on forced medical. This may jeopardize my employment, but if it is indicated, I will not hesitate. It is his life and those of others around him that will be in danger.

By the following day it became apparent that Tom's skull had withstood yet another vicious attack and that he would soon recover.

Doc ordered three days of bed rest. When the young inventor objected, Doc brought his log book to Tom's bed and showed him his initial entry.

When he finished reading, Tom gulped and looked at the medico.

"That serious?" he asked

Doc simply nodded.

CHAPTER 3/**Gashes and Slashes**

FOR ANYONE who didn't know Tom Swift, they might find the concept of someone being able to get themselves badly cut sitting at a desk or even underwater or out in space difficult to believe.

Doc knew better than to assume that Tom could remain injury free in any situation. He had the medical logs to prove this and a container filled with more than two hundred of the stitches he had put into—and removed from—the inventor over a three-year period.

And, that only accounted for about three-quarters of the total number of sutures Tom had received.

A typical example ran something like:

- 1) Tom decided to do something by himself rather than wait for anyone to assist him.
- 2) Whatever he was doing—
 - a) jumped
 - b) buckled
 - c) slid
 - d) twisted
 - e) snapped
 - f) or otherwise reacted badly
 —causing said object to strike Tom somewhere about his body or head or both, whereby...
- 3) Tom either walked or was carried into the Dispensary at which time...
- 4) Doc stitched him up while the young man tried to make light of the situation, generally punctuated with a grin.

One day following the stitching of his right thumb where a

sheared bolt had sliced neatly into the most fleshy part, Doc had insisted on doing a thorough exam of Tom's hands using a powerful magnifying glass. As he surmised, there were more than forty individual scars visible from about mid-wrist to fingertips.

“What the dickens am I going to do with you, Tom,” he had bemoaned. “You've now got more scar tissue in some places than you have original skin!”

Tom favored the doctor with a grin. “I swear I don't do it on purpose, Doc,” he stated.

“Well, it's a wonder that Bashalli will even hold your hands!”

Not all of the inventor's escapades ended up requiring stitches. Just as not all of his adventures that did require the application of both dissolvable and non-dissolvable sutures took place within the confines of Enterprises or close enough to Doc Simpson so that he could be the one adding to Tom's growing network of scars.

If pressed to remember any particular incident or set of stitches, Doc found it hard to separate them in his mind. He assumed it was because he wasn't directly involved in the incident that led to the need for those services. Without anything to tie one stitch to, they just all jumbled together.

One adventure, however, sat all too clearly in his memory.

It was the day Tom almost lost his life to a would-be assassin; a suicide knife-wielder; a child of only seven.

It was one of the saddest days in Doc's memory as he had been forced to make a choice that cost the child his life.

Tom, Bud and a handful of employees had been asked to come to Pakistan to look at a failing dam. If it collapsed, it would flood a thousand square miles and probably kill two million people. People who steadfastly refused to move even when their government told them it was necessary.

Years of political unrest along with military and terrorist conflict had left an legacy of disbelievers. They feared more for their land and possessions than their lives.

Doc accompanied them for two reasons. First, he wanted to make certain the Enterprises team had prompt and quality medical care, *just in case*. Secondly, he had never been to the country and wanted to see it.

The dam in question was the Kalabagh. Although still under the final stages of construction, it had been closed off and water had been backfilling the Indus river behind it for many months. While the water was desperately needed for irrigation and electricity production, it also required quick completion of the semi-arch shape to hold back the weight and pressures of the millions of gallons of water. Pouring concrete for the spillways was still underway when the gates had been ordered to be closed.

Now, workers struggling to keep ahead of the rising waters had been forced into taking dangerous shortcuts. It seemed that millions might pay for the shortsightedness of the dam's builders and of the local governments what had insisted on allowing the situation to develop.

The *Sky Queen* set down in the city of Multan, one of the lowland areas that would flood if the dam were to break. It was back in Multan the second day of the visit when the attack occurred.

A small group of children had come running forward yelling out Tom's name. All of them were smiling so it wasn't until the first flash of a knife blade that anyone had any indication this was to be anything but a friendly meeting.

Bud had made the first defensive move planting a solid kick into the stomach of a dirty, thin boy swinging a blade at least a foot long. The initial slash missed Bud's midsection by inches. The second one didn't.

But the flier's kick sent the boy flying backwards and into two boys who had almost cornered Zimby Cox, one of the Swift pilots.

Bud was fortunate. The knife was meant more for stabbing than slashing, so he ended up with a cut shirt and a superficial wound on his left side.

His attacker got up and ran away.

Zimby's pair also ran as did most of the other boys. The one that had targeted Tom did not run. Letting off a series of grunts and yells, he charged the inventor. Tom tried to sidestep but his foot slid on a loose paving stone and he stumbled forward directly into the outstretched knife.

He stood upright, clutched his side and then looked at the blood that was oozing out of his body and onto his hand.

Giving a final yell, the boy who attacked him turned the knife and plunged the blade into his own stomach. He fell to the ground, crying for his mother.

Doc, who had been spared in the attack, jumped forward and pressed a large wad of tissues he kept in his pocket against Tom's stomach wound.

"Get him back to the *Sky Queen*!" he demanded.

A nearby cab pulled forward and they piled in.

"Bring the boy," Tom insisted through clenched teeth.

"Skipper. We've got to get out of here. He tried to kill you—"

"Bring him!"

They got to the giant triple-decked jet moments later and everyone rushed aboard.

Doc immediately went to his small medical station room and pulled the single patient table from the wall. Tom was brought

in and placed on it a minute later.

“Who’s worse, Doc? Me or the child?” Tom’s voice was coming in gasps the pain was so intense.

Doc Simpson could only stare at Tom in disbelief. Only Tom could see past the attack and actually care more for the welfare of his attacker than for himself.

Doc decided to lie. “You’re worse by a long shot, Tom. Got to get you under and patched pronto. Then I’ll attend to him.”

Tom nodded, wincing, and quickly went to sleep when the doctor administered the powerful anesthetic.

After inserting an I.V. to give Tom some blood plasma kept frozen onboard for emergencies, Doc cut and clamped and cut some more as he attempted to reach the inner end of the wound. Finally he found it and was relieved to note that the blade had missed the stomach and intestines. It had, however, slightly nicked his pancreas—something that could be stitched later—and the lower back of Tom’s liver which was bleeding rather profusely. The knife tip had not only cut into the side of the organ, it had torn along for almost an inch or more leaving a jagged tear.

Twelve minutes and thirty stitches later, the bleeding was stopped and a minute portion of Tom’s liver sat in a basin beside the table. The liver would regenerate the missing piece within a month or two, Doc knew.

He turned his attention to the pancreas. As he thought, two sutures did the trick. Finally, he began backtracking up the wound track pulling together and stitching every muscle and bit of pierced tissue that he could. He knew that the more he put back together now the quicker, and with fewer complications, his patient could recover.

His final step was to sew up the entry wound. He really wanted to do a neater job of that, but he understood the need for speed so that he might try to save the attacker’s life.

An hour after it started, the operation was finished and Doc removed his bloody gloves. He took a deep breath, stretched to move a few cramped muscles around, and left the room to find the attacker.

The boy had been made comfortable in the *Queen’s* lounge, but it was obvious that he actually had the more severe wound. Zimby Cox, trained in advanced first aid, had inserted an I.V. with saline, but the loss of blood was severe.

“Daaktar” the boy whispered. One small, bloody hand reached out toward Doc Simpson before faltering and dropping back against the now-lifeless body of the boy.

Doc felt wretched. Not only had he lost the boy, he had practically lied to Tom. He stood there until the tears began running down his cheeks.

A moment later a strong hand squeezed his shoulder. “He wouldn’t have made it if you had taken any time to decide. You had to attend to the skipper first. No questions. Tom first then the person who attacked him.”

Doc looked around to see Bud standing there. Bud Barclay, who was more likely to joke about anything than he was to speak seriously, was standing there telling him he had done the right thing.

The crazy part was that Doc knew Bud was right.

When Tom awoke the first thing he asked about was the condition of the boy. Doc told him that it had been too late to save him by the time they got back to the aircraft.

“But,” Tom said with a look of great sadness, “I thought you told me—”

“Doesn’t matter what Doc here told you, Tom,” Bud said stepping forward. “It wasn’t his call. In the event of you being incapacitated I made the decision. Your life first,” Bud’s eyes bore deeply into Tom. “Otherwise I would never have been able

to look at Sandy without feeling like I let you all down.”

Tom blinked, then asked, “If you had taken him first, would I have died?”

All Doc Simpson could do was to nod.

Tom also nodded. “Okay. Let’s get the boy returned to his family, or the authorities, and go fix a dam!”

CHAPTER 4/

Bullet Hole, Anyone?

“HOW MANY WEEKS, has it been?” Bud asked Tom as they sat in Tom’s underground lab. They had been sitting in complete quiet for more than an hour while Bud watched his friend thinking something over.

“How many— uh— *what* were we talking about?” Tom asked, blinking and coming back from what Bud termed ‘Lost in Inventorville.’

“I asked you just how many weeks has it been since you got your brain stuck into a really good invention. So, how many?”

Tom thought it over. “Four, I guess. Why?” They had both recently returned from exploring the phenomenal caves of nuclear fire.

Bud drew in a deep breath. He had been rehearsing this and wanted to get it out in one breath. “You have personally conquered space, the deep seas, and drilled practically down to the Earth’s core. We just got back from spending time in a deep cave, deep in Africa, deep up to our hoo-hahs in radiation that dissolves almost everything around it. We’ve had four glorious weeks filled with dates with the ladies—for which they are very happy—and yet...” he took another breath, “...and yet, you have been spending most of your time moping around like a lost calf.”

Tom looked in surprise at his friend’s face. Bud had gone from his normal coloration to red to pale and back to red. And, his eyes had bulged out at least twice during his little speech.

“I’m not sure what you want me to say, Bud,” was all he could come up with.

“Not sure... Not sure? What I want to hear from you is what

you are going to pull something out of that brain of yours that will get things back to normal. We haven't fought off Brungarians or Kranjovians or South American gangsters or mole men from the center of Krypton for ages!"

Tom had to laugh. Bud was known for stretching things a bit, but Tom kept a straight face as he replied, "As you well know, the mole men came from the center of the Earth. It was Superman who came from Krypton. He met them here."

Deflating, Bud stared at the floor in front of the stool on which he perched. In a soft voice he said, "It's just that you get all drawn in and quiet when you don't have something hot going on, is all. I just want to know if we have anything good coming up."

"I'm not sure what, Bud, but I've got an idea or two. I'm sorry if I've been a little off while I've thought about things. Maybe I just need to get away for a few days. How about you and me and the girls and some parental supervision going up to Maine for some camping?"

"Camping." Bud intoned, disbelieving. "Maine?" he questioned. "Why Maine?"

"I've got a cousin up there in a small town called Norway. Mom's cousin Ed. You've met him once. He's always away on his explorations and keeps telling us we should go use his place. It's only a two-bedroom job so if we took my folks, they would have one bedroom and the girls could share the other. You and I can pitch a tent in the back yard or something."

And so, the four Swifts along with Bud and Bashalli had headed up to Maine three days later.

It had taken Tom a full day to get into trouble, but he managed to do it in style.

Rising early the second day there he decided to take a hike in the woods. There, he encountered two things. Three if you include the bullet that ripped into his shoulder.

He had startled a bear about a quarter mile from the house. That had aroused a pair of hunters—a father and his son—camped out nearby, and they had responded to the bear's roars by shooting blindly into the bushes around them.

It was only when Tom cried out after being hit that they realized what a danger they were and stopped. They plunged into the undergrowth making as much noise as they could to scare off the bear. They needn't have bothered. The bear had run off soon after seeing the young inventor and had been roaring as it ran away.

They helped Tom get the bleeding under some sort of control and then supported him as best they could until they could get him to the Longstreet cabin.

Tom's mother, although not a medical professional, had an advanced degree in biology. She had taken many anatomy courses and knew how to best stop the bleeding so took on that job while Tom's dad called Enterprises to request that one of the company's larger helicopters be dispatched to pick them all up and to arrange for the Shopton hospital to prepare for Tom's arrival.

Doc Simpson arrived with the helicopter and its 2-man crew less than two hours later. On the way back to Shopton he hooked Tom up to an I.V. line and gave him a liter of saline to replace some of the blood he had lost. He also injected Tom with a local anesthetic to both ease the pain as well as to allow him to examine the entrance site.

During the flight he performed a cursory exam. The bullet was still inside of Tom as testified to by the lack of an exit wound.

"Doc," Tom said to the medico. "Just take me back to Enterprises. Okay? I trust you to take out a simple bullet."

"And what makes you so certain that it is a simple bullet wound?"

Tom grinned. He moved his arm slowly forward and back—wincing, Doc noted—and wiggled his fingers. “I can still move my arm so there isn’t likely to be massive amounts of tissue damage. Right?”

Doc had to admit that the younger man was correct. “Just don’t go flexing and showing off for the ladies until we get that slug out of you. No use in you doing damage that isn’t already there. *Right?*” He emphasized the last word to be more of an order than a question.

They arrived at Enterprises and the helo set down on a special pad in the lawn area in front of the infirmary building. A gurney was waiting, and Tom reluctantly let himself be strapped onto it and wheeled into the building.

Sandy and Bashalli finally let their fears get the better of them and broke into tears as he disappeared into the small operating room. Mrs. Swift tried to comfort them but she felt like crying as well.

Inside, Doc quickly scrubbed while his main scrub nurse injected Tom with a more powerful sedative that would not only numb a much larger area but would keep Tom from moving around.

Doc hated the thought of cutting a much larger wound into the boy’s shoulder in order to get at the slug. He picked up a scalpel and set it back down at least three times before coming to a decision.

He had his nurse go out of the room to retrieve a new, special camera scope that Damon Swift had authorized him to purchase a month before. Doc had only wanted it to practice doing keyhole-style surgery and hadn’t planned that it would ever be put into actual use.

Very small in size, it was very similar to the type of device used to perform angiograms and angioplasty operations. It was tiny—it needed to be small enough to snake up through the

arteries of the human body starting at the upper thigh and going all the way to the heart—and featured both a vacuum head as well as a small gripper device normally meant to hold onto compressed metal coils called stents.

He positioned Tom next to a low-dose x-ray machine that would give him a view of the inside of the inventor’s shoulder while directing the little device in and through the hole left by the bullet.

“Skipper. There’s no way for me to sterilize this thing in time. Takes about two hours which we don’t have,” he explained to the groggy youth. “Unless you have a real objection to attacking any infection after the fact, I can only offer this or a trip to the hospital.

Tom gave him a lop-sided grin and suggested, “You stick that in my shoulder and the nurse can stick me with a hypo full of penicillin somewhere else. Okay?”

Doc activated the x-ray machine and inserted the tip of the probe. He guided it forward to where he could see the mostly-intact bullet. For whatever reason it had failed to tumble or to smash flat once it hit, typical for a hunter’s bullet.

Tom was lucky it hadn’t. Extremely lucky.

The probe reached the back end of the bullet. Doc nudged it against the surface and activated the gripper. He could immediately see that it would never open wide enough to grip the bullet. He turned the x-ray unit off and had a good think.

Although fairly certain it would fail, he turned on the x-ray again and activated the suction pump. The probe tip attached to the mostly smooth surface and he was able to pull it backward almost a quarter inch before it detached.

Three additional tried gains him only another few millimeters.

Again, he turned the x-ray unit off. Turning to his scrub

nurse he commented, “It’s too bad we can’t just super glue the probe to the bullet and pull it out.”

She looked directly at him. In the two years they had worked together she had never known him to give up on something.

“Why not?” she asked.

“Well—” he began then faltered. “It’s all wet inside there and —” again he faltered.

She asked him, “Didn’t I see you use that stuff on Phil Radnor a month or so ago instead of giving him a couple stitches in that little gash he got under his eye? That was wet and bloody and it worked there.”

It had. Based on an article Doc had read from the British Journal of Medicine, he had tried a cyanoacrylate glue as a way of sealing the jagged edges of the tear the security man received in a fight with a saboteur who had sneaked onto Enterprises’ grounds. Instead of trimming away skin to make for straight edges, difficult due to the proximity to Phil’s lower eyelid, the glue had been wiped across all surfaces and things quickly smoothed into place.

Five days later the glue had simply dropped off on its own and left an imperceptible scar.

“You’re right, Nancy. Why not!” he declared. An assistant nurse left the room to retrieve the glue while Doc explained what was going to happen to Tom.

“If I mess this up, skipper, the probe will stick inside of you and I *will* have to cut it out. If it works, the bullet should slide out backwards and then I can pack the wound and let you heal naturally.”

Once the tube was in hand, Doc had to figure out how to apply it, then get it inside the body, snake it around the gentle curve of the hole and onto the bullet before it washed off or adhered to other tissues.

Tom came to the rescue. “You need a little, teeny, tiny tube to take in there. Then you use the little pincher things and squeeze it on the bullet and then shove the probe against that!”

“Well, that’s a good idea, Tom,” Doc told him, “but I don’t have the facility to make a tiny tube.”

“I do!”

Both Doc and his nurse looked at Tom. Then, they looked at each other before Doc asked, “What do you mean?”

“I created a mini squeeze tube to support the miniature working models that Arv Hanson makes. They need lubricant to keep working and you can’t be taking them apart to oil them all the time. So, I made little squeeze tube, four millimeters across and ten long with a snap-on top. Doesn’t hold a lot... maybe a good drop is all. Would that do?”

Doc closed his eyes and shook his head in a combination of belief and disbelief. Leave it to Tom Swift to ‘just happen to have’ exactly what he needed on hand.

Several of the micro-tubes were delivered and the operation moved ahead. As he hoped, the small amount of the acrylic glue did solidly stick the probe tip to the bullet. In less than ten minutes it had been extracted and the hole cleaned and packed.

That evening, before going home, Doc wrote a journal entry about his day:

Today I used one of the most untraditional approaches to getting a bullet out of a human body I might have ever dreamed of. If I had been working on anyone other than Tom Swift, I would have mentally slapped myself across the face, told myself to ‘get a grip’ and then just gone in with scalpel and forceps and cut and dug the thing out.

Luck was with me. The bullet was a plastic-coated 'youth' round meant to be fired by children. A solid steel center propelled most likely by a smaller than normal gunpowder charge. They're designed to be cleaned up and reused after hitting a soft target like a bale of hay and to not knock the kid over backward even though fired from a full-size rifle.

What am I saying? Tom had luck on his side today. Bullet wise that is.

What I had was a determination to not slash into the boy I have cut and stitched more times than should ever happen. To doctor and to patient.

I'm not sure why, but I would have normally knocked Tom out to dig the bullet out. This time I decided to perform under 'awareness anesthesia.' Good thing because it was the patient that gave me the clues and tools to make this a successful surgery.

Can you imagine what this world of medicine might be like if Tom Swift turned all of his attention to making us the things we don't yet know we are desperate for?

CHAPTER 5/

Zero-G Resuscitation

NASA EVENTUALLY sent almost two-dozen physicians into space by the end of the Space Shuttle program, but Greg Simpson was the first full-fledged doctor to go into orbit. It happened during the early days of the outpost in space.

As it was with all employees who would take part in the monumental task of launching and constructing the many huge components of the space wheel, Doc had to go through a battery of physical and mental tests, many of them developed by him.

The tests partially prepared men for the rigors of the launch forces and even what to expect from zero-G conditions thanks to a special chamber built by Tom.

What nobody could train for were the many, many ways in which the men—and later, women—could and did injure themselves. And what to do about it.

In looking back it was a wonder that no one lost a life in the process. Doc had trained one out of every five men in the first group of fifty in the art of first aid up to and including how to suture major cuts, set broken bones and diagnose a variety of anticipated medical conditions that might necessitate evacuation back to Earth.

His own turn to go up arrived in the form of a seat on the last rocket to take up a spoke for the wheel.

He emerged into the open from the cockpit of the rocket and looked up and around. Nothing, but nothing could have prepared him for the vastness of space, the bright, piercing pinpoints of millions of stars, or the vertigo-inducing sight of his mother planet below.

Also, nothing could have prepared him for his first emergency in space.

He remained at the station for three weeks on that first trip studying his own reaction to the zero-g environment. The worst thing he treated was a broken finger during that trip.

It wasn't until almost a year later that he had occasion to go back. One of the original spokes, the one that housed the receiver and transmitter equipment for the four television networks that rented the space, needed to be replaced. The equipment was already out of date and it had been deemed less expensive to just replace the entire spoke—with the equipment already installed—than to ferry up the new units, go off-line for whatever time it took to replace each piece, and then to ferry things back to Earth.

It was on the third day after his arrival that an alarm went off.

He immediately looked up from the crossword puzzle he had been amusing himself with. The klaxon stopped, followed by the stationmaster's voice.

“Man over... ah... overboard! Man overboard! One man adrift off of spoke three. Ninety feet out and increasing. I repeat, man adrift off spoke three. Looks like a suit tear. Get out there!”

Doc had already begun getting ready. Everyone wore their space suits but removed and stowed their helmets when inside. He was just reaching for his when the final words of the alarm made his blood run ice cold.

“It's the skipper!”

Doc felt completely impotent. He knew that he couldn't go outside of the outpost and simply run to his patient. He couldn't even be of any help until the rescue team was able to bring the stricken man inside.

With a calmness that didn't come close to what he was really

feeling inside, he clipped his helmet to his suit and drifted through the station to the small infirmary in spoke five.

While he was taking out everything he could imagine might be of any use he reviewed what he knew about the deadly dangers of space.

The first thing was the almost absolute vacuum anyone tearing their suit would encounter. In the world of science fiction and the uneducated minds of some, anyone exposed to that vacuum would immediately have their eyes explode and the blood in their veins and arteries begin to boil. Fortunately, Doc knew that the truth was nothing like that.

If given ample time to take a deep breath, a man could survive the vacuum of space for about as long as he could hold that breath.

The faster killer would be the death-coldness of space. But, that would take a major tear. A smaller tear could be managed, somewhat, by simply grabbing onto the punctured area and holding it tightly.

Doc hoped that whatever had befallen Tom that the young inventor had been able to grab the affected area and could hold it until help arrived.

Three minutes later—a seeming eternity for everyone on the station but specially the young doctor—the call came through the station announcing system, “He's onboard! Everyone clear a path to the infirmary! Doc Simpson? You'd better already be there!”

The next fifty seconds, the time it took to maneuver Tom and his suit through the station and into Doc's workspace, seemed to last for hours. Finally, the patient was inside the room. Doc ordered everyone except for Bud Barclay, Ken Horton—the station commander—and a young pilot/worker who had been his first trainee in first aid from the room.

“Get him out of that suit. Pronto” Doc ordered.

In seconds, and thanks in great part to the lack of gravity, they had Tom out of his suit and laid down on the examination table.

Doc pressed a button and a small pump began to draw air down through hundreds of tubes in the table. This would stick Tom's body to the table by suction. It was something the young medico had insisted on, knowing how impossible it would be to work on anyone if they tended to float off.

Tom was pale blue and not breathing. Doc pressed his stethoscope to the boy's chest.

"He's got a pulse," he sang out. There was an exhalation from the other three in the room.

Doc strapped on an oxygen mask and turned the flow up to full. He pressed the mask to completely seal it around Tom's nose and mouth and was rewarded by seeing Tom's chest begin to rise.

Soon, the mask sensed the back-pressure from the inventor's filled lungs and stopped pumping, letting the lungs expel their content.

But, to Doc's horror, Tom's chest didn't appear to be going back down.

Then, it hit him. Without gravity to press the chest down, it would either require outside pressure or Tom would need to breath on his own.

He made a mental note to see what might be designed to overcome this.

He pressed down on Tom's chest and could see the inside of the clear plastic mask fog up with the moisture from Tom's lungs. As soon as he stopped pushing down, the pump took over and refilled Tom's tortured lungs.

"Bud, watch what I'm doing here," Doc ordered. "I need to

check the rest of his body but he needs help breathing." Doc showed him the process and Bud quickly took over.

During the next twenty minutes, Doc checked Tom's body. It became evident where the tear had been. His back showed all the symptoms of the power of the vacuum. The skin between his shoulders and extending down to his waist was a livid purple, mottled from the sucking forces, and also blistering. Doc recognized the last as a symptom of frostbite.

Whatever had hit Tom's suit hit it in the absolutely worst place imaginable. Right in the backpack that held the precious air tanks and maneuvering jets.

Seeing Tom's back, Ken told Doc, "His backpack was pretty mangled. Must have taken a meteorite. Ruined the pack but didn't go right through him."

Bud was soon spelled by Ken who was still pressing Tom's chest every ten seconds when Doc finished his examination. There was no puncture wound. The frostbite could be treated later, once they had the youth breathing on his own.

Doc was beginning to realize just how many instruments he did not have access to up in space. He wanted to look down Tom's throat to see what damage might have occurred to the delicate air sacs in the lungs. But, that required a bronchoscope, the flexible camera and light device that could be snaked down the throat to give a look.

Ken looked at the doctor and could see him contemplating something.

"Don't worry, Doc. He's alive now and we'll keep him alive."

"It isn't that, Ken," Doc replied. "I need to get a look inside his lungs but we don't have the necessary tool." He described what he needed and was surprised when the station commander asked him to take over on Tom's chest.

"Be back in a couple minutes," the man had called over his

shoulder.

Two minutes later he reappeared holding a small box with a tube attached. “Will this do?”

Now, Doc was completely taken aback. It was almost precisely what he needed. “Where? How?”

Ken laughed. “We keep a couple of these around so we can look into the backs of some equipment without de-racking it.

The small box was a battery-powered TV display. The tube featured a small camera surrounded by a light ring. Four thin cables extended from the bottom of the display box, each ending in a thumb-size ring.

Doc put four fingers into the rings and wiggled them. As he expected, the camera head moved back and forth responding to his fingers.

“Let’s get this wrapped in sterile plastic and down his throat,” Doc stated.

In minutes he had the device inserted into Tom’s nose—the best place to start and least likely to cause any gag reflex. Soon, the display showed him what he needed to know. More than half of the delicate alveoli within sight of the scope were damaged.

He was relieved to see that they had not been destroyed and could fix themselves. Given time. And gravity? Doc wondered. Would it actually be more beneficial for the boy to remain in the station during his convalescence?

Doc pulled the makeshift bronchoscope back out and set it aside. He was about to thank Ken when the larger man nodded at him and stated, “Just happy to be of some service, Doc.”

The sincerity of the man’s voice almost brought a tear to the doctor’s eye. He said, “Thanks,” anyway.

Bud piped up, “I don’t want to complain, but how long will we need to keep pressing on Tom’s chest?”

“We can’t stop until Tom is able to breathe on his own, Bud. We don’t have anything to take over for good old manual labor. Before you ask, it could be five minutes or five days before his lung tissues recover enough to take back over.”

Bud nodded. “Then, put me down for a shift every hour or so.”

Ken, who took over for the athlete providing the downward pressure turned to Doc. “Describe what you need. If we don’t have it, we will either build it or ship it up on the next supply rocket tomorrow.”

“Well, it needs to be something that is doing just what we are, and at the level of pressure we are giving it. I’d say it needs to be adjustable so that I can determine just how far it presses and how often. Got anything like that?”

Ken smiled. “Bud, take over, again, please.”

With the transfer of duties made, he disappeared again. This time it took more than twenty minutes. When he did come back he was empty handed.

“I’ve got the men in the machinery shop working on it. I hope that it’s okay to use an air pump instead of a mechanical linkage.” Doc nodded eagerly. “That should give you a wide range of settings.”

He promised that it would be finished that same afternoon.

When it did arrive, Doc checked it out while the two men who had taken over from Ken and Bud helped with Tom. It was almost exactly what he needed. After asking for two small changes, he handed the unit back to Ken Horton.

“Have it back in ten minutes, Doc,” the man promised.

Good to his word, he returned just nine minutes later. The unit featured a vice-like bracket that could be attached to the side of the examination table on the bottom with a vertical arm up one side and a plate perpendicular to that. Several pistons and a box Doc assumed held the pump, were arranged on the outside of the vertical arm, and a foam pad covered the underside to the upper plate.

With Ken's help, Doc lowered the upper plate onto Tom's chest and clicked it into place. He pressed and held a button on the side box and the arm began a slow decent.

"Once it reaches the point you want it to stop and retreat back up, let go of that button."

Doc did just that and was ecstatic to see that the machine repeated the proper motions over and over again.

It required the best part of two full days before Tom was able to breath fully on his own. He remained at the space station where Doc was now certain the zero-g environment was helping his healing processes. Tom stayed at the station for another week before being taken back to Shopton where he could finish his recovery in a full-fledged hospital.

Later, when he had time to think about it, Doc realized that Tom's survival for even a moment was a miracle. Deprived of air and with a tear in the one location he could never have reached, he should have died in space.

CHAPTER 6/

A Crushing Blow

TOM RARELY did things in a small way, and such it was with his invention to revitalize and repair the miles and miles of runways, taxiways and roads within the confines of Swift Enterprises.

It was a large, wide, kong and heavy piece of equipment meant to grind away the old paving, crunch it up and mix it with new tar, spread it back out and compact it down in one pass.

As with a few of his more recent inventions, it was meant to operate in as green a manner using the fewest possible resources while delivering great results.

Unlike many of Tom's inventions, this one suddenly turned against him one morning as he worked around it. Sitting on special stands that allowed the team constructing it to move underneath, it lurched to one side and tumbled down, onto Tom Swift, partially crushing the youth.

By the time Doc Simpson arrived, Tom's father, Damon, had been summoned and was supervising the careful lifting of the massive machine. Doc noted, with a note of bitter irony, that the teen had escaped death by dint of being positioned directly under an indented area along the side of the machine.

It was bad enough, though. Tom's entire right leg had been crushed and his torso had sustained dozens of deep gashes and tears. There would likely be internal damage. Doc took Damon aside and told him, "Just let us do our stuff. Okay? I'll get Tom to the Dispensary and then to Shopton General once he has stabilized."

The older inventor, feeling useless, had moved aside and eventually left the large construction area to go call his wife.

By the time Damon Swift arrived at the Dispensary, Doc had Tom under full sedation and was in the process of washing up to perform emergency surgery. To Damon's horror, Tom had at least four I.V. lines attached to him at various locations, three of which were filled with the blood that was being transfused into the unconscious youth.

The sheet that covered Tom's lower body was red with the inventor's own blood. Coming out from the scrub room, Doc said to Damon, "He's sustained more than three dozen deep cuts on his torso and right leg. All that blood is because one of the cuts nicked his femoral vein in the left leg."

With a promise to get things under control immediately, Doc motioned the nurse to wheel Tom's gurney into the small operating room.

One of the best things that could have happened, and the thing that now saved both Tom's life and that of one other employee a month earlier, was the state-of-the-art operating room Damon Swift authorized a year before. It had everything necessary to perform practically any sort of operation. Doc knew he would be taking full advantage of its capabilities.

When Tom had first toured the new facility, he immediately offered to come up with some enhancements.

"You know. Things like a holographic ultrasound unit."

Doc had simply stared at the young inventor. He tried to picture what the inventor was talking about, then gave up with a shrug. Finally, Tom explained.

"I've made all of those different inventions and some use 3D projected imaging, right?" Doc had nodded. "Well. Then, why don't I hook up something to your ultrasound machine that can project a 3D image of whatever you're passing the transceiver over?"

"It's not that simple," Doc had told him. "For one, the resolution probably can't support what you want to do."

Tom had smiled at the doctor and had patted him on the shoulder. Then, just a week later he had delivered an enhanced, 3D, full-color ultrasound scanning unit with movable readout projector. When he showed Doc how it worked, the medico was stunned into silence.

"I want to call it a 3D SoniScope. Or, a SimpsonScope. What do you think?" Tom asked him.

"If it works like you say it will, you can call it Old Lady McGillicuddy for all I care," Doc told him.

And, it did work just as Tom had described. Even better.

Three small ultrasonic projectors were positioned around the subject on the table. These were able to be gently nudged out of the way when necessary, and then would reposition themselves once the area was clear. Three others were positioned in a pad that could be placed under the area to be scanned.

The readout was a full-color hologram floating in mid air and could be positioned anywhere it suited the surgeon. It showed a wide field of focus and, with the touch of its 'controls'—projected images that interacted with special gloves Tom had provided—any portion of the scanned area could be zoomed, turned and rolled over to give a full view of whatever was being operated on.

This was the technology that Doc insisted Tom patent and release to the world. And, it was the technology that had seen Tom being placed on that year's Nobel short list for Medicine. He had not won, but had received accolades from all over the world.

Doc put this technology into full use during Tom's operation.

After several hours, Doc came back out of the operating room. Damon was waiting for him.

"Well?"

“Well, Tom is a strong boy, as you well know. He had a partially crushed leg, all of those visible cuts, plus a tear in his intestine. We got them all. He’ll recover, although there may be some residual issues from the bone breakage.”

“Can I see him?” the worried father wanted to know.

“Give him a bit. We’ve sedated him into a comatose state. It will help keep him still and let him recover faster. I’ll want to partially wake him in ten hours or so. You can see him then.”

Mr. Swift told the medico he didn’t need to talk to his son, he just wanted to see him. Doc could see the anguish in his employer’s face and gave in.

“Give us about ten minutes to finish cleaning him up and getting him into his bed. After that I want to call for an ambulance to transport him to Shopton General. You can see him while we’re waiting for them to arrive.”

In the end, Tom had required one follow-up surgery to complete the alignment of his upper femur bone along with a three-week period of complete bed rest.

Two of those weeks were spent at Shopton General Hospital followed by three days back at Enterprises’ Dispensary before Tom was finally allowed to go home.

Peeking in on his young patient the first night back in the Dispensary, Doc was pleased to see that Tom had a pretty visitor.

“Good evening, Bashalli,” he said to the dark-haired Pakistani girl. “Is our patient being good?”

“Oh. Hello, Doctor Simpson. And to answer your very astute question, I would have to say, no. He has asked me to sneak him out of here. I, of course, refused.” Her voice said this almost in jest but her eyes told the doctor all he needed to know.

“Tom?”

“Yeah, Doc.”

“We kept you asleep for almost ten days so that you could heal. If you don’t behave I’ll have the nurse slip you another mickey and put you under for another week!”

Tom grinned in mock shame. “Gee, Doctor Simpson,” he began in an innocent tone of voice. “I promise to be a good little patient and to just lay here and be very quiet for as long as you want me to.”

Doc let out a little snort. He knew better.

“Really, skipper. You need to heal. Just about anyone else might have died in that accident,” he said, taking note of the look of worry that crossed Bashalli’s face. “Sorry. I meant to say that you got off lucky. Just give yourself another few days, and we’ll see how you’re doing. Besides. You get to rest at home starting day after tomorrow. Then, your mother will sit on you and keep you quiet!”

Tom had eventually agreed to behave during his recovery. True to his word, Doc gave him the go-ahead to return to work—a few half-days at a time at first—exactly twenty-one days after the accident.

Doc looked up from his computer screen a few days later to see the young inventor entering his office. He was still in a cast and on crutches, but he looked good.

“I wanted to thank you for taking care of me, Doc,” Tom said. “You’re some kind of miracle worker.”

“To tell you the truth, skipper, it’s you that do the miracles. I just patch you up when you get broken. You know, it was thanks in big measure to your 3D SoniScope technology. Without that I might have had to dig far deeper than I did. It even let me use minimally invasive techniques for a couple of the trickier procedures. All that went into your speedy

recovery.”

“Listen,” the youth went on. “Dad finished the machine that almost did me in and I’ve got a week or so before I need to be elbow deep in this new weather control project. Is there anything else you can think of that I might try to knock together for you?”

Doc had been giving this much thought. Each time he passed the operating room he recalled the excellent 3D device and pondered what other refinements could be in the near future.

“Well, Tom. To tell you the truth, I can only think of one thing that is feasible. I could come up with a bunch of sci-fi gone wild things that even you might have problems with, but just the one realistic device.”

He went on to describe a new type of surgical instrument. “Sure, we have laser-powered scalpels that cut and cauterize all in one step, but there are a lot of times we need to go back and cut away that cauterized materials so that we can stitch things up. Otherwise, you get incomplete healing and a lot of scaring.”

“How would the new one differ?” Tom inquired as he took a few electronic notes.

“For starters, it would cut but not with enough heat to burn the surrounding tissue. It would exude some sort of tissue glue—a very fast acting glue—that would seal the edges while the surgeon works inside the body. Then, either a second pass, or even just wiping on some sort of solvent, and the glue dissolves letting the sutures hold fresh tissue together.”

“You find me the glue and I’ll make you the scalpel,” Tom promised him.

Tom worked for several days on the project before giving up. His other commitments got in the way. It wasn’t until he had finished with the launch of his newest project that he picked up his notes.

In minutes, the solution hit him and he plunged into making just what the doctor had ordered.

Two days later he breezed into the outer office of the Dispensary and asked to see the good doctor.

Doc Simpson came out and immediately was suspicious. Tom and Bud stood there, each holding a box, and looking as innocent as possible.

“Okay. I’ll bite. What gives?” he asked them, motioning the pair into his office.

Setting his box on the doctor’s desk, Tom asked him, “Do you recollect our conversation a couple months ago right after my accident?”

Doc thought but could not come up with an answer. “Not really,” he admitted.

“Well, I did. Finally. You told me you needed a new type of laser scalpel that didn’t burn the tissue where it cut.”

“Of course! I do remember that. Don’t tell me you made something for me,” the doctor said.

Opening the box, Tom removed a small device consisting of a cube-shaped unit, a tether or hose, and a small coupling piece. Taking another item from the box, Tom snapped it into the coupler and then showed it to the doctor.

“This uses ultrasonic waves to separate the skin or muscle via the head unit. That, in turn, extrudes a very thin coating of a surgical tissue glue that seals both edges off, just like you asked for.”

“It uses meat glue,” Bud stated happily. “The same stuff that holds turkey chunks together!”

Doc looked at the dark-haired teen and scolded him, “I hardly think that Tom would use meat glue, as you call it—”

“Uh, actually, Bud is right, Doc. It’s just a stronger, fast set version that has been sterilized,” Tom told him. The substance, approved by the FDA, actually was used to hold pieces of meat together to form deli loafs and such. It could be cooked, frozen or used at room temperature. Perfect for Doc’s needs.

Tom showed the startled medic the basic operation. It was everything the doctor had asked for. It cut, it sealed and it even could be used to quickly remove the glue by a careful modulation of the sonic waves that turned the substance back into a liquid that could be wiped away.

“And,” Bud said proudly as he opened his box, “Tom also made this for you!”

“That looks like—” Doc began, faltered, and then continued, “some sort of air splint?”

“Better than that, Doc,” Bud beamed. “Tell him, Tom.”

“Your chief nurse mentioned when I was being held hostage here that you were very frustrated about how badly the air splint had worked in the field when you wanted to use it to stop my bleeding.”

“That’s right. The all-around pressure couldn’t exert enough force on the spots that needed the most direct pressure.”

“Well, this is a new type of splint that can be programmed in the field, immediately by the way, to exert pressure exactly where you want it.” Tom explained that a series of micro-wires divided the ankle-to-hip unit into more than three hundred thousand separate little squares. By pressing on them using a magnetized glove, they would react and hold the same level of pressure that the glove wearer had used for as long as required.

A playing card size box on the upper area held a small computer and the batteries for the pressure splint.

“It can still be used as an air splint, if necessary. But it will easily take the place of a dozen hands and give the sort of

pressure needed to stop bleeding. Think you can use it?” Tom asked. “If so, I have an arm and a torso model almost ready for you.”

“I am flabbergasted, Tom. Absolutely flabbergasted. Something like this could be used in the field to save hundreds of lives each year!”

Before departing, he warmly shook both of their hands and thanked Tom for his gifts.

“I promise to put them to good use, even if it is *just on you!*”

CHAPTER 7/**Off Hours and House Calls**

THE ART of the house call fell by the wayside some time ago. At about that same time large companies and investment groups began buying up local hospitals and “allowed” doctors to rent space on site. It was with the expressed understanding that if anyone was going to call the doctor up in the middle of the night, it was going to be the hospital.

And, the hospital was going to make some sort of profit from it.

With that, the standard of medicine across this country took a nosedive. The only thing that offset much of this were the strides made in development of medicines and techniques that could help people who were in desperate need.

From day one Doc Simpson’s attitude was that he worked for Swift Enterprises and that meant he worked for and with each and every employee and their family members. Whenever and wherever.

Damon and Tom Swift had equipped him with an excellent facility, a generously large staff and an almost blank check for obtaining whatever was necessary to provide top notch medical care for everyone.

He frequently stayed late at work dispensing advice and medications to employees who had put off seeing him until near the end of the work day. Plus, on numerous occasions he had been ready to leave when word had come that someone had been injured or fell ill. He always stayed when needed.

After hours calls usually meant late nights with little sleep. Fortunately, most of his daytime drop in patients could be handled by one of his nurse practitioners so that he could catch up on lost sleep. He kept a small side room with a bed for this

purpose.

It meant a lousy standard of personal life, but a wonderful standard of medical attention.

One of the things Doc prided himself on was his attitude about office hours and about making—selected—house calls. He realized early on that the just couldn’t be at the beck and call of every man or woman who called at midnight about a child with sniffles.

And, of course, his primary concern was for the welfare of the Swift family members and the senior management at Enterprises. In that capacity, he had visited the Swift home on at least ten occasions during his first three years of employment. Most had been in conjunction with whatever Tom was recovering from at that particular time.

Twice he had been called to attend to Damon Swift; both times to demand that the overworked man accept the fact that he was “going to the damned hospital whether you like it or not!” when the older inventor had come down with a particularly virulent influenza one year and had contracted pneumonia the next.

He had called on the Swifts one night when Sandy had been kidnapped and had dispensed tranquilizers to her mother, Anne, who had become desperate and panicky. Fortunately, the girl escaped and had walked home, unscathed, the following morning.

Each of those house calls had gone smoothly and Doc had treated his patents in a professional manner.

The one call that completely flummoxed him was when he received a call from Anne to come see Sandy. Anne couldn’t tell him what was wrong, just that Sandy was in great discomfort and didn’t want to get into the car to go get it checked.

When he arrived, Anne suggested a quick cup of coffee. Doc knew she really wanted to have a talk with him, so he accepted.

“I’m worried, Greg,” she confided in him. “As you know, Damon and I had wanted to have a third child, but I developed ovarian cysts, and the operation did us in as far as more kids was concerned.”

“Yes. I’ve seen the scar,” he replied.

“Sandy is so young and has the whole of her life in front of her and—”

“—and we don’t want to assume the worst until it gets a proper diagnosis. Let me pop upstairs and look at her, then I will let you know about how medicine has progressed in the last fourteen or fifteen years. Okay?”

She smiled wanly and swept an arm toward the door.

Doc knocked on Sandy’s door and waited. “I don’t want anything, mother,” came her tired-sounding voice.

“It’s Greg Simpson, Sandy. I’m here to see what’s up. Can I come in?”

There was a pause. He could hear the girl getting out of bed, then opening a drawer. “Just putting on some underwear, Doc.” She evidently sat back down and painfully so.

He heard a muffled “oooff!” noise, and then was asked to enter.

“Sounds like that hurt,” he commented as he set his standard-issue doctor’s black bag on the foot of her bed.

Sandy was pale and slightly yellow. Doc already believed he knew what might be going on but proceeded with a basic exam. The problem was that, although almost nine years his junior, Sandra Swift was one of the most attractive girls he had ever met. He soon found himself slightly sweating as he poked and gently prodded her bare abdomen.

“Okay,” he told her standing up straight. “I need to have you

do something.”

The look on her face told him that she wanted to know more.

“I am going to have you stand on your tip toes for me,” he explained.

“Doc. I really don’t feel like dancing with you right now. Besides, Bud would be jealous.” she teased him through gritted teeth.

“If what I believe is going on, actually is, you won’t be thinking about dancing in a minute.” He assisted her in sitting up and getting out of bed. “Let me get my hands under your armpits first, then I want you up on toes. When I tell you to, come down right onto your heels as hard as you can. Okay?”

She shrugged then did as he requested.

He caught her as she practically passed out and fell into his arms. Easing her back onto the bed, he pulled out his cell phone and made a call. Then, he went downstairs.

“Appendicitis, Anne. Ninety-eight percent certainty. I’ve called for an ambulance. She’ll go to Shopton General and a good friend of mine, Doctor Stanley, will take out the offending bits. She should be good as new in four days!”

The operation had been exactly what Sandy required, and the inflamed appendix had been removed through a small incision in her navel, something that would be mostly invisible a few months later.

Most of Doc’s after hours calls were along the same lines. A few, like the recent evening call from Enterprises’ chief of security complaining that he was having chest pains, had caused him concern, but most were for things that could easily be handled the following day.

One, however, involving Tom Swift, had caused the loss of a promising date with an attractive young female surgeon from

the hospital over in Oswego, New York, along with three nights of lost sleep and a missing tooth.

Doc Simpson had returned to his small but modern home a few miles from Enterprises one late afternoon, showered, shaved and dressed for his upcoming date. They had arranged to meet at Chez Enriqu e, a stylish French restaurant near the marina on Lake Carlopa.

Just as he was opening the front door to depart, his phone rang.

Doc's shoulders sank. He knew he wouldn't be able to ignore the call, so he closed the door and quickly picked up the phone.

"It's Harlan, Doc. Tom's been electrocuted. It's kinda bad. I've got him loading into an ambulance, but wanted to let you know. He's heading for General. Can you get there and let Damon and Anne know what is really going on?"

Sighing, Doc said he would leave immediately. On the way he called his date. While she was understanding she was also slightly annoyed. Working for a large medical conglomerate her hours were steady and easy to plan for. Doc's willingness to bend and flex around everyone else was foreign to her.

By the time he reached the hospital, Doc was feeling miserable. Certainly he was worried for Tom, but the erstwhile date was a beautiful and fascinating woman. He hoped she would give him another chance.

Tom had been working on enhancements to his famous Solar Battery technology when a mis-positioned aluminum armature had suddenly fallen across several exposed terminals and arced the entire charge through the air and into Tom's left arm.

Doc scrubbed up and joined the attending surgeon in the operating room where the boy's injuries were being mended. "What have you got, doctor?" he asked the man standing over Tom's prone body.

"Superficially, flash burns from the electricity arc along with a small super-heated bone explosion just beneath. I'm just going in to work on the cephalic vein. The heat blew out a small portion."

Doc knew that where the electricity had concentrated, both tissue and bone temperatures would have soared. Skin would burn but bone was known to rupture as the marrow inside heated and its moisture expanded dramatically. Arteries and veins usually had enough flexibility to withstand pressures, but weren't immune to rupture.

"That's not the worst, though," the surgeon continued. "They had to shock him three times on the way here. Twice for fibrillation and once for near cardiac arrest!"

Doc was dismayed. He knew that in spite of what TV and movies portrayed, anyone going into full cardiac arrest only had about a one in seven chance of surviving if treated outside of a hospital and a one in three chance if treated inside one. Tom had been treated in the ambulance. Technically, that was an 'outside' treatment.

But, the boy had several things going for him. His youth and relative good condition was paramount, but having been given the defibrillation shock within mere seconds of the cardiac event meant that there was little chance of actual tissue death.

"How is he doing now?" Doc asked quietly.

"Looking pretty good, so far. I'm getting a little arrhythmia but I'm going to attach a temporary stimulator once I get his chest opened up a bit."

"Keyhole or full open chest?"

"I'm pretty sure I can do this all keyhole. It will certainly make his recovery simpler," the surgeon told him before calling for a small scalpel to make the first incision.

In all, three operations and three different surgeons were

necessary to complete the repair work. The first, a thoracic surgeon, had implanted the tiny electrodes in the side of Tom's heart and were then attached to an external pacemaker that would monitor the heart rate and administer, automatically, a small shock any time it detected an abnormality.

The second surgeon had been an osteopath. His skills were needed to repair Tom's 'blown out' bone. As he described to Doc Simpson during that operation, "We used to take a donor piece from the heel, or even cadaver bone, for this sort of thing. Now, thanks to the wonders of modern plastics, we embed a shaped mesh piece where we removed necrotic or destroyed bone and then let the body fill it all in."

"Is it true that it only takes three weeks to replace that bone material?" Doc asked.

"Actually, just a little over two to replace it and another week or two to strengthen it. In the end, it will be stronger than the surrounding bone material."

Operation number three, occurring in the hours before sunrise the following morning, was to remove Tom's damaged outer skin and to place an artificial skin substitute in its place. Doc was well versed with the pseudo skin. He had used it on several occasions himself.

By seven a.m., Tom was still under sedation but had been moved into a private room.

"Anne," Doc began as he finally had the time to give Tom's folks another update. He managed to call them near ten to let them know Tom's basic condition but had been tunnel-visioned since that time.

"How is he, Greg?" Anne Swift, normally a very strong woman, was obviously worried for the safety of her son.

"He's doing jut fine. In fact, with the little bit of artificial bone and skin they've given him, he'll be better than new."

He told her as much as he thought prudent, omitting mention of the pacemaker for the time being.

Doc called his office and had all of his appointments either rescheduled for a couple days hence or arranged for them to be handled by his nurse practitioners, and then arranged to work some time at Shopton General in return for access to Tom.

Several cases came in that evening that kept him from getting more than a few hours of sleep. By the next day, Tom had been taken off sedation and was awakened. The first face he saw was Greg's.

His voice was somewhat croaky as he tried to ask what was going on. Doc shushed him and then explained what he knew about the incident.

At several points, Tom nodded. His memory of the event, though sketchy, had begun to return and he was able to help piece together the timeline.

He received several visitors that day including three visits from his girlfriend, Bashalli. His voice was returning and he was able to assure them all that he was feeling fine if only a bit sore.

That night, the attending physician paged Doc as he was just drifting into a weary sleep. "Do you want to be here when we detach the pacemaker, Doctor?"

Greg took a deep breath and acknowledged that we would like to be there. "I'll scrub and meet you in the O.R. in ten," he stated.

Standing at the operating table, watching as the surgeon removed a pair of supporting sutures, Doc was amazed at how quickly and easily the electrodes had been pulled out and the incision sutured.

It was so easy that, as his legs buckled under him from exhaustion, his last thought was, "A lot easier than hitting my

fact on that instrument tray...”

He awoke in a bed next to Tom’s the following afternoon.

“Hey, Doc,” Tom greeted him. “I hear you took a nose dive over me.” The boy grinned at the doctor.

“Uh, I don’t remember what happened,” Doc admitted.

“They told me you probably wouldn’t but that every time you looked at that gap where you knocked a tooth out, it’d all come flooding back.”

Doc’s eyes told Tom that he had no recollection of the event.

“Don’t worry,” the boy continued seeing his friend poking around his own mouth with his tongue. “They put in a small bridge with a fake tooth while you were asleep. I can’t tell the difference! Now, I’m going to order you to take twenty-four hours of bed rest...”

EPILOG/

Notes to Self

I have been looking back over my notes from the past four years here at Enterprises. In that time I have seen over a thousand employees for everything from a splinter to a massive heart attack and hundreds of things in between.

I am proud to say that nobody had died on my watch, at least of the people I have attended to. We have had several deaths due to foul play, but those victims had been deceased before I could have made any difference.

Still, it is sad for any doctor to know that folks you have attended to are no longer living.

And, in that time I have worked on Tom Swift more than fifty times. He’s had his share of bumps and bruises, and my guess is that I didn’t get to see even half of those. What I have dealt with have been the obvious cuts, breaks, head-bashing and the occasional case of the bends.

I’ve tried to keep a good, professional look on my face at all times but there have been at least two occasions where I know I’ve looked astounded or totally shocked as something my Clinical Diagnostics professor told us made absolute sense. He said, “There are times when you will pull a miracle out of your hat and times where you will lose a patient. The odd ones are where you know the patient is a goner, but forget to tell them, so they go ahead and survive in spite of all your knowledge and education. Live with it!”

Those two times both concerned Tom and serious injuries. So serious, in fact, that I was all but ready to pull the sheet over his face.

Both times he surprised me and I found myself looking into those steel-blue eyes telling him he would actually be okay, and starting to believe it myself.

I have been involved in the patching or repair of all four of his limbs, many sutures to many body parts, several surgeries—routine as well as life-saving—and have seen more concussions occur than with any sports figure I might every encounter. Still, he pulls through.

Thankfully, now that he is in his twenties, he is beginning to take fewer risks.

Sometimes I can sit back and smile and tell myself that I fixed him. Sometimes I just sit and scratch my head. In any case, I am honored to work with Tom, his father and mother, his sister, Sandy, and with all of the wonderful employees—and many family members—here at Enterprises.

And, yes. That does include Bud Barclay!