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Tom Swift's — Walking Texas Ranger

By T. Edward Fox

A rash of mysterious equine illnesses followed by protests by animal rights activists have become a nightmare for the Texas Rangers, one of the country's few remaining mounted police agencies.

In a move that has Chow Winkler scratching his bald head, Tom comes up with a mechanized solution. Self-powered, non-polluting and immune to sickness, the new robot is immediately rejected by the Rangers' union. They want security for the horse handlers and see Tom's invention as a loss of control for them.

Is there any way to save the situation? Can Tom find a happy median ground?

This story is dedicated to the future. And, how necessity becomes both the mother of invention to see that future come true, it also becomes the savior that makes the future possible.

A SWIFT ENTERPRISES INVENTION BONUS

Walking Texas Ranger

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FOREWORD

Movies have featured strange, walking robots and vehicles for years. Attempts to build them have met with varying degrees of success—or lack thereof.

Some are bone jarring. Some are sleek, simple and elegant. None have been completely utile. Until now.

I was shocked to read that equine morbillivirus disease has struck the stables of the State of Texas' Rangers. I only know what I read, but this infectious respiratory disease can be fatal to both man and beast.

I was doubly shocked to learn that a few die-hard people were more interested in a few jobs than in the health of both the horses stricken with this disease as well as for the safety of the people who spend their lives with those same animals.

Call me an old softy, but I would much rather that machines take the place of man, animal or both when and wherever it is advantageous and safer. I'm pretty certain that Tom Swift feels the same.

So, here is the story about how Tom's way of marrying necessity with invention pulled another one out of the proverbial hat. And, how he made even Chow a believer!

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Victor Appleton II

PART 1**It Has Come To This**

TOM SWIFT, young inventor and son of the founder of Swift Enterprises—a four-mile-square facility located in upstate New York State—sat at his desk in the large office he shared with his father. He had been listening to the phone for more than three minutes without interrupting, as the group on the other end argued among themselves over several small points.

Finally, when he sensed that the conversation had taken too much of a departure from the subject at hand, he cleared his throat and spoke.

“Gentlemen. While I don’t directly speak for my father, I am the one you contacted to assist you in this project. I can tell that there is a lot of dissension between all of you over the nature and outcome. So,” he paused for a moment to let his words take affect, “if you have no clear idea what you want, why did you call me?”

The five people on the other end were evidently sitting around a table in the headquarters building of the Texas Rangers in Austin. The call had started a half hour earlier with introductions and then the Rangers Chief of Operations had launched into their problem.

Equine Morbillivirus Disease had struck the main stables and had so far sickened more than a hundred horses; five had died and at least seven others were in danger of being put down.

“I’m sorry, Tom,” came the unmistakable foghorn voice of their Commandant, Rogers Frederick. “We’ve gotten off course. There is a lot of strong opinion about little details, but rest assured the main issue of how to avoid all this is paramount with this committee.”

“We’re going to have to come to grips with the *facts*,” the new voice, that of the Rangers’ head veterinarian, Bob Hills, emphasized that last word, “that this couldn’t have happened at the worst possible time for us. We’re already facing pressure to modernize, downsize and mechanize. My horses and the mule corps of twenty or so we keep are suffering in more ways than from this disease.”

Breaking back in, Commandant Frederick said, “Bottom line is that we are going to lose the horse component of the Rangers in four years time anyway, but this really puts us over a barrel. We still haven’t figured out a way to replace the capabilities of the horses. No company has provided any sort of proposal that meets our specific needs. You may not have a good appreciation about how difficult the terrain of Texas can be, but—”

“Sir,” Tom broke in. “I am very aware of Texas terrain. I have on my staff a man who used to work the range out there. Born and raised in Texas. And, our Mr. Winkler is an absolute fount of knowledge.”

Charles “Chow” Winkler, former ranch and trail cook had come to work at Enterprises when Tom was just sixteen. Now, almost three years later, he had become both a treasured employee and a trusted friend. It wouldn’t matter what part of the state Tom asked the older man about, Chow would have worked it or ridden

through it or was best friends with someone who owned it.

“Well then, that’s a point in all our favors,” the Commandant stated. “So, regardless of what our doctor will need to do to ensure the safe and healthy retirement of most of our horse fleet, we are still faced with, and now on an accelerated schedule, finding a mechanical replacement. In spite of our infighting we are all behind the need for this. It’s either adapt or perish, and the Rangers don’t back down from a challenge. Been that way since 1823, or 1835 if you only count once we were properly constituted. Anyway, we need Swift Enterprises and Tom Swift on this with us. Are you in?”

Tom thought for a moment. What they were asking was for him to design an all-terrain vehicle that had the ability to move smoothly at slow and high speeds, carry at least one man—two in a pinch—and be able to wind its way through rocks, sagebrush and cactus, across flat and hilly areas and into the mountainous areas of the state. Also, it needed to be capable of operating without resupply for at least three days at a time, the maximum period the Rangers were expected to be without contact or refreshment.

“It’s a tall order, sir,” he said.

“We sit tall in the saddle, Tom. We’re used to tall orders. But,” he said switching to a less bravados manner, “is it something that you can see being a part of?”

“I need to get with a couple of our designers and my Texan consultant, but I believe I can give you an answer by no later than this time tomorrow. Will that do?”

“It’ll have to!”

With that, the phone call concluded.

Five minutes later, carrying about twenty sheets of paper he had scribbled several possible designs on, Tom entered the office of Hank Sterling, the chief pattern maker at Enterprises. An engineer by training, Hank often assisted Tom in determining the feasibility of designs and even of entire projects.

Twenty minutes later they had made a few calls and several other people arrived including Barry Perkins, Enterprises’ lead technologies dealing with solar power, Marc Soderberg, a new addition to the growing robotics department, and three others.

Tom explained the basic issue. “The Texas Rangers are faced with the permanent loss of their horses and mules. And, almost immediately. We’re being asked to come up with a mechanical substitute. It needs to be capable of traveling over all of the terrain expected in Texas, move up to speeds of thirty miles per hour—although I’d like to give them better than that—and doesn’t need to ‘eat’ for up to three days and nights.”

He looked around at their faces. The one thing he failed to see, and was please to note its absence, was any look that said, “Can’t be done.”

“Ideas?”

They came quickly. One of the engineers from Hank’s department, suggested an all-terrain motorcycle. “It could be as big as a horse with wide and heavily-treaded tires—

probably low pressure and filled with a puncture repair gel—with all of the works inside the body. We could gyro-stabilize it so that it would remain upright even when stopped.”

Tom considered it but was more intrigued by the next offering.

“We’ve all seen Star Wars, right?” Hank asked the group. “Well, it may be futuristic, but those Imperial walkers they had, and I’m referring to the four-legged one in the snow scenes, were pretty impressive. With all the modern advancements in pneumatic joints and mini-pistons, I could see us creating a walking robot. A *smooth* walking robot. Smoother than the horses these Rangers are use to.”

“Is that practical?” asked Artie Johnson, a former intern with the propulsion department and now a full-time employee. “I mean, special effects can make something like that look good, but it seemed awfully top heavy.”

Tom nodded. “Right. At least in something that tall. We’ve got to keep these low enough so that the rider or pilot or whatever they get called can still duck under branches that hang down to about the five foot level. Something a horse can walk under.”

“What I’m thinking might looks something like a golf cart, but on four or maybe six articulated legs. After all, we’ve been building articulated legs and arms since the first Fat Man suits,” Hank replied.

Again, Tom nodded as he thought this over. “Okay. Let’s say that we start thinking along those lines. We need

to make a list of everything that might be necessary to achieve the goals using that form factor.”

They spent the following three hours making list after list of the components and materials that might be required. Time after time items had to be struck from the list when weight considerations made it evident that something lighter was needed.

Other items were replace with alternates when Artie pointed out a lack of flexibility would make it almost impossible to have the device move smoothly enough to keep from jolting the rider out of the machine.

Finally, Tom believed they had a definitive list of materials. “Now, he said with a grin, “the fun part begins. Coming up with a design that will not only fit all of this stuff, but that the Rangers will find acceptable.”

Tom, Hank, Arv Hanson—Enterprises’ model maker and the man responsible for all of the miniature and scale models of Swift inventions—and Artie Johnson spent the following two weeks creating design after design. In the end, they had discarded more than thirty and had zeroed in on three possible designs.

“I’m still thinking we’re going to have issues with trying to move this using just solar and battery power, Tom,” Artie said on the final design day. “I agree that a silent, electrical mode is required, but for bursts of speed, long runs and at night we need to think about a small but powerful turbine or something.”

Arv inquired, “How about Tom’s little Y-4 engine?”

The Y-4 was a revolutionary design that was actually a small, 300 cc, twelve-cylinder engine arranged to look like an upside down letter “Y” from the front. Each arm contained four cylinders arranged so that at least one piston from each arm was under power stroke at any given time. This meant that the engine had incredible torque for its size, but it was also amazingly light having no need for a heavy flywheel. At 300 cc, it achieved the highest MPG of any combustion engine in existence.

“Let’s look into that for certain, Artie,” Tom told him. “I also want to investigate a closed-loop steam generation system using one of our smallest atomic power modules.”

First created to provide power in locations that had no access, these modules were small, sealed reactors that turned heat into steam, drove a small generator that made the electrical power, and then recycled the fluid inside back to make more steam. Sealed inside of a capsule that could withstand a drop of several thousand feet onto sharp rocks without more than small, superficial scratches, they had become a highly sought after product.

And, Tom’s father had just perfected the smallest module yet. Barely larger than a football, it could provide 220-volt power twenty-four hours a day for up to three years before it needed to be refueled and serviced.

Five days later Tom was working with Hank in Tom’s office and lab in the underground hangar when they heard the voice of their favorite cook.

“Chow!” they greeted him as he wheeled in a cart laden with service dishes, at least one, Tom decided from the smell, must have turkey in it.

“Howdy, fellers,” the Texan boomed. “Mighty fine day out thar. Too bad you’re stuck down here a-workin’ on whatever gizmo ya got going. What is it, by the way?”

Tom pulled over the computer monitor so the roly-poly man could see the screen.

“A mechanical horse, oldtimer,” he told the now bewildered man.

Scratching his bald head, Chow considered the 3-D drawing in front of him. “Cain’t see it, Son,” he told Tom. “Ain’t no hoss in that picture. That’n looks like one o’ them seating cars on some car-nee-val ride. Only, with legs. That cain’t be right.”

Tom took a look at the screen. “No, Chow. That’s what we’re building for the Texas Rangers. They’re losing their ponies soon and have asked me to come up with a substitute.”

Chow stood there trying to decide if Tom was putting him on, or if this was a serious thing. “Ya ain’t funnin’ me, are you, Tom? I mean, if’n this were old Buddy-boy I’d take a swipe at him and laugh about it.” He looked deeply into Tom’s eyes. “But, I kin see yer serious right down to the bone.”

He sat down and stared at the screen. While he was pondering the design Tom and Hank told him about the disease that was affecting the horses and about how funding cuts meant that the days of a horse-mounted Rangers was coming to an end.

Chow pointed at the design. “An’ that thing’ll walk

around the panhandle and the plains and the hills o' Texas just like a horse?"

Both men nodded.

Chow considered something before nodding. "I allus known it'd come to this some day. Cain't say I like it. Not at all. But, ya cain't keep chasin' the bad guys on horseback when they're all on them ATV cycles and surplus military jeeps and such." He shook his head sadly. "Don't like it, but I understand it."

He served them their lunch in silence taking frequent glances at the screen. As they ate, Chow stood in front of the screen. Finally, he turned to face Tom. "Leastwise, ya don't gotta carry any hay!"

PART 2

First Steps

IT TOOK ten days to get the Rangers' committee to agree on a date for Tom to come present the design, and a further week before the day finally came.

The day before, Tom asked Bud if he wanted to come along. "I can use the moral support, flyboy," he told his best friend. "All that I ask is that you let me do the talking. These men seem to have some problems dealing with themselves, and I want us to just sit back and listen and let them wind down before hitting them for a decision."

Bud promised to keep quiet. "As a mouse, Tom."

The trip to Austin took place that evening so they could be at the 8:00 a.m. meeting. The pair flew down in one of the Swift commuter jets affectionately known as the Toad. Bud had dubbed the SE 11 with that particular name after seeing it from the front. Its squat, underhung fuselage and twin above-wing jet engines did give it a front-on appearance of an amphibian.

On the way to Texas, Tom briefed Bud on the latest design and its capabilities.

"With the exception of the width thing, it sure sounds better than a horse," Bud commented.

"I just hope they can see beyond that. We went over dozens of possibilities and nothing came as close to meeting their requirements," Tom told his companion.

When the time came for the meeting, Tom and Bud found themselves alone in the conference room that had been reserved for the meeting.

Helping themselves to coffee and pastries, they sat at one end of the table, waiting. By 8:30 it was apparent that something was going on. Tom went to the door and opened it.

The secretary who had directed them to this room was coming down the hall. "Ah. Mr. Swift. Perfect timing. It appears," she said as she walked up to him, "that the committee members are all in a side meeting. They told me to ask if you could come back tomorrow."

Tom could feel the blood rising up his neck and face. Anger, he knew, would be misplaced on this woman, only the messenger. He looked at her while he sought the correct words.

"It appears that your committee has little regard when it comes to dealing with vendors such as Swift Enterprises. That may be because it is a new experience for them. Or, it might be that they simply have no regard. I don't know. But, and I ask that you pass this message along to them, I have been asked here to a meeting where I will present a design that I and my people have undertaken at their request. If they don't feel it proper to take the time to meet with me now, then I have no issues with leaving and not returning."

The woman, a petite blond of no more than a year or so older than Tom, blanched almost completely white. It was evident that, even though delivered in gentle tones, Tom's words had greatly shaken her.

"Just a minute, please!" She turned and practically ran down the hallway.

Tom returned to the room and told Bud, "If they aren't in here in five minutes, then we leave. Dad will be angry that I've spent money on this project only to walk away, but I won't be jerked around like this!"

Bud nodded and grinned. "I'm with you, skipper. No matter how this shakes out." He was about to continue when the secretary came into the room. She was almost in tears and was shaking. Bud pulled out a chair and helped her sit down.

She looked up at Tom. "Sir? The Commandant and the rest of the committee can't come here right now." She sniffled and wiped a small tear that had begun drifting down her right cheek. "Um... it's... well, you see, they're all in the Commandant's office yelling and arguing and such like." She gave a small shrug and broke down into tears and sobs.

Letting out a sigh, Tom told her, "I'm sorry, Miss. I didn't mean to put you in this position." He sat down and looked across at her. In a gentle tone, he continued, "It is just that your boss and the rest of the committee are asking a lot of my company without providing a uniform front for even the smallest of details. But," he said looking at Bud who was about to say something, "the truth is that if they can't play nice with each other, then I doubt they will play well with others. I won't burden you with telling them that. I'll communicate with the Commandant tomorrow by phone. When they get out of their argument, just tell them that I left."

The girl got up and departed. Tom and Bud gathered up all of the design materials and replaced them into the large portfolio. Tom was in the process of zipping it up when the door swung open.

“Sorry!” It was Commandant Frederick. He had poked his head into the room. “Little disagreement about procedures for this meeting. All settled now. Meeting will start in three minutes.” And, with that, he backed out of the doorway and closed the door.

Tom looked at Bud. They both shrugged and sat down.

It took five minutes but the committee all trooped into the conference room and took seats. Quick introductions were made, and Tom noticed the veterinarian was missing. He decided to not ask.

The presentation started with Tom reiterating all of the operational requirements for the mechanical replacement for the horses. He followed that by showing the group the 3-D rendered color drawings his computer had printed the day before. He showed the three top candidate designs to the group.

He noticed one man getting ready to make some sort of negative comment. Tom could tell by the man’s body language and expression that there could be no mistake about his reaction to the designs. Tom held up a hand to stop the man.

“Before I take questions of comments, please let me tell you this one thing. In order to accomplish the same things that a horse can, common sense and the state of engineering today dictate that a high level of form follows

function must occur. Certainly, none of these designs looks or is configured like a horse. In fact, the best of the bunch looks a bit strange, even silly by comparison. But, and I stress this, the form is there so that the function can be achieved.”

The angry-looking man was now quite red faced. He stood up and pointed at Tom. “You obviously have no idea what we want. As the authorized union representative, I and my union members totally reject your supposed designs and tell you this. As long as we have a say in it, the Texas Rangers won’t be dealing with your company!”

With that, he picked up the notepad in front of him and stormed out of the room.

Tom was thunderstruck and speechless. He simply sat down, staring at the Commandant.

“Hmpff,” the man said. “Well, that’s Crowley heard from.” Turning to Tom, he explained, “Crowley is the past head of the mounted division. He has been a bitter man since being replaced by Captain Duffey to my right. He has two years to go before retirement and is determined to be a thorn in everyone’s sides until then. I’m not sure his union members will even back him up on this. Pay no attention to him and his little tirade. None of us do. Except, I have to say that I agree with him on your designs. They’re really not what any of us envisioned.”

Taking a deep breath, Tom stood up. “Commandant. Gentlemen. I, my companion Mr. Barclay and, indeed, Swift Enterprises are here as a favor. So far, your organization has not issued a purchase order. You haven’t signed a contract. You haven’t given us very much to work

with. This isn't the way business is done in this day and age. Not even—and I checked—in Texas. So, and until you sign and return the contracts to us, I believe that Swift Enterprises has done more than enough on this project. We will be leaving now.”

Bud stood up. He hadn't heard Tom take such a commanding stance before and liked it. “I will add one thing to this,” he said to the stunned group. “Tom Swift has been working on this non-stop for weeks without so much as an iota of input from any of you. You say that the designs aren't what you envisioned? Have any of you put in writing what you *envisioned*?” He glanced around. “I thought not. I'm going to have to change my beliefs about the Texas Rangers. I always thought you were squared away guys, riding high and proud. Turns out you're a bunch of quarreling old men with no idea how the real world works. Come on, Tom. Let's get out of here!”

With that, the two walked out of the conference room. Neither said anything until they exited the building. “Think that will shake them up enough?” Bud asked under his breath.

Giving his friend a slight grin, Tom muttered, “It had better!”

A shout came from behind them. “Swift! Tom Swift!”

Tom and Bud stopped and turned around. The Commandant was jogging toward them. It was obvious that years behind a desk had taken its toll; the man was puffing and out of breath before getting more than twenty yards from the door.

Gasping for breath and bright red, Frederick stopped and bent over. “Give me a minute, please.” He took in a few more gasping breaths before straightening up. “Please... wait one. Everything you two said is right. We haven't done any of this the right way. And, we can't come to any decisions.” He took two more deep breaths. “Used to be I made the decisions. Period. Now, everything has to be by committee. Isn't working. You see that. I see that. They all see that.”

“Let's get you back inside,” Tom told the older man. The three of them walked back to the main entrance and went back to the conference room. Everyone was sitting in absolute silence. Nobody had moved.

Sitting down, Commandant Frederick announced, “I have assured Mr. Swift and Mr. Barclay that we will move ahead and do things in a proper manner. Beginning with my signing the contracts authorizing—” he held up one finger and glared at the man across the table from him, “—authorizing the design phase and the creation of a prototype. In spite of what my Comptroller wishes, we will spend the money. We have to!”

He pulled out a set of papers Tom recognized as a standard Swift Enterprises contract. After initializing each of the fifteen pages he signed the final one and pushed it across the table. “Sign it, Davidson!” he ordered. The other man reluctantly signed it and passed it over to Tom.

“Right,” Tom said. “Now let's talk about your impressions of the designs. Oh, wait. Before that, let me show you a page with smaller printouts of about thirty

that we rejected.” Bud got up, set a large cardboard-backed print on the easel next to the table and then sat back down.

Tom spent almost an hour talking about each one and why it had been rejected. In the end, everyone except the finance man was nodding in agreement.

“Pardon my Texas language, but you did one helluva lot of work on your own nickel. Good looking stuff, too. And, once you explained all of those design considerations it is plain to see that the three you showed us first are the best of the lot for what we want. Can we ask some questions and make a few requests?”

Tom nodded. “Of course.”

In the next hour many of the aspects of the main three designs were commented on. In the end, it was agreed—unanimously among those remaining in the room—that the third design was the one that made the most sense.

“It’s gonna make folks laugh at first,” Captain Duffey said, “but if these go like the blazes you claim they will, that’ll get folks nodding and saying stuff like, ‘There goes a Texas Ranger. Wish I had me one of those gizmos!’ I’m all for seeing this one in action.

Tom and Bud returned to Enterprises with the good news. Hank and Arv immediately set to work trying to build a scale model. Within a matter of a few days it became obvious that nothing smaller than a full-sized version would be able to maneuver as intended. There was no clear way to miniaturize things properly and get all of the controls and components into a smaller package.

So, Tom authorized them to build the full size prototype. He generally disliked doing things like this, but felt that they had no choice.

Every day, as the machine grew in size and neared completion, Chow would wander into the shop room where a team of five people were assembling the walker from parts hand-machined and formed by Hank and Arv.

On the day the main chassis was mated with the set of four legs, Chow stood nearby and let out an appreciative whistle. “Ain’t no horse, but it ain’t no carny ride, neither,” he said to nobody in particular.

The machine stood almost five feet high, was just over three feet wide and featured a reclined bucket seat for the rider. A second seat could be pulled out from the back and a second man could be carried along. Or, a prisoner could be manacled to the back of the machine and carried to jail.

When Tom arrived to admire the current state of the machine, Chow asked, “Any hopes ‘o my gettin’ to ride her?”

Tom looked at the rotund chef figuring that it would be a tight squeeze, but he could see that Chow was earnest.

“Of course you can, Chow. I’ll need the input of a real cowpoke anyway. We need to know how it feels compared to a horse. Plus,” he stared at the chef’s belly, “to be honest it is going to need a stress test to see how it handles extra weight.”

Chow laughed. “I got that in spades!” he declared.

By the next Wednesday the machine was complete. Tom, Bud, Chow and the assembly team all stood around the machine as it stood next to the unimproved area at the north end of the Enterprises grounds.

Tom pulled on a helmet, climbed up the right front leg and swung into the little open cockpit. He flipped a pair of switches and placed a special coded fob up against a marked area on the dash. He could feel the little generator begin to spin up. Five seconds later he had a green light.

All control of motion—forward, back, left or right—was made via a joystick on the right side of the cockpit and the speed was controlled by how far the stick was pressed. Tom moved it forward slightly and the little walker began ambling away from the group.

In minutes, Tom had gained enough confidence in the machine that he pushed the stick farther forward and increased from about 2 MPH to 10 MPH. Everything felt smooth. The combination of springs and immediate-action hydraulic pistons, all controlled by a powerful computer, meant that there was almost no perceptible rocking or jostling movement.

All in all, the machine felt good if only a little harsh.

Tom trotted back to the group and swung down to the ground. “Yours, I think,” Tom said patting Chow on the shoulder. You get on up and I’ll point out a few things.”

Five minutes later Chow eased the joystick forward and the machine started moving.

“Got a name for it yet, Bud?” Tom asked.

“I keep thinking about the Lone Ranger, skipper,” Bud admitted. “It’d be wrong to name the thing a Tonto, and even though it’s white, I was thinking about the Silver. Not very imaginative, I admit.”

Hank spoke up. “If I may, how about Range Rambler?”

Several people looked at him, but after a moment’s thought most nodded.

Meanwhile, Chow was having a wonderful time. He had slowly increased his speed until he was almost at a gallop and heading away from the group.

Suddenly, Tom saw that the old ranch chef was getting into trouble; he had evidently pushed the stick to one side to turn around, but was going too fast. The Range Rambler began bucking and appeared to be ready to fall over.

Then, as quickly as it started, it stopped. Chow had let go of the stick and the computer had righted the machine. The cook brought it back to the group and stopped a few feet away.

“Got a lot o’ spunk!” he declared as he climbed down. “Mebbe a bit too much fer an old feller like me, but she’s a darned nice little filly.”

PART 3**At The Gallop**

AFTER CHANGING some of the control programming over the next few days, Tom asked Chow to perform another test.

“She’ll be gentler on you now,” he explained. “I’ve set things so that the faster you go, the more it will automatically slow down as it makes tight turns. I’ve also beefed up the hydraulics in the hip joints to allow for heavier riders and tighter maneuvers.

Chow’s second ride went like clockwork. He was cautious at first, something Tom was glad to see, but finally let things rip near the end of his hour ride. He alit with a beaming face and gave Tom a big hug.

“Ah, youngin’. That’s one fine piece o’ machine. Other than missin’ a good set o’ reins in my hands, she’s not skittish and reacts like a good filly. Legs are a bit stiff. Nothin’ too bad. I’d be right proud to ride her around all o’ Texas. I figger that them Rangers need to take a few o’ these to some rodeos and parades and do demonstrations. That’ll git folks to likin’ ‘em right quick!”

After a few more days of refinements to both machine and programming, Tom called the Commandant.

“Feel up to coming to Enterprises for a demonstration, sir?” he asked.

“Well, I’d rather see this machine of yours in action out on the plains of Texas, truth be told.”

Tom thought. “How about we meet sort of half way, so to speak. We have a huge facility in New Mexico. Same sort of semi-desert area you have in parts of Texas. We’ve done demos of other vehicles out there. Lots of things to dodge around like rocks and cacti. How does that sound?”

“Let me get back to you. It’s hard enough getting my people together here in this building. I’m thinking it might be too much to corral them onto a plane and get them to your site. But,” he sighed, “I’ll give it a try. Be back to you by this time tomorrow.”

Having said that, the phone went dead. Tom looked at the receiver for a moment and then hung up.

Tom and Bud had a dinner date with Sandy and Bashalli that evening, and Tom needed to make up for having missed a date the weekend before. Although outwardly understanding, he knew that Bashalli had felt hurt by his lapse of memory until his apology call the next day.

He called Bud to remind the flyer of their obligation.

“Already showered and dressed, Tom,” Bud replied. “Brought my clothes in this morning because I just knew that I might be a bit sidetracked. You?”

“Well,” Tom cleared his throat, “I actually just remembered it a few minutes ago. I’ve got to run home in a few minutes. Want to come along? We can pick up Sandy and then go over to Bash’s.”

“Take a look in your washroom, skipper. Your mom was so bothered by you goofing up on the date last Saturday that she had me swing by the house and bring your fancy duds. Just hop in your little shower and make yourself all

clean and nice smelling, then get dressed. I'll pick you up at the Admin building in forty-five minutes. See ya!"

Tom made a few phone calls and sent off two emails to Hank and to Artie asking them for several small refinements that had come to mind that afternoon, and then he got ready for the double date.

When he emerged from the building, Bud was waiting there in his convertible. To Tom's amazement, sitting on the back seat were two bouquets of flowers; one for Sandy and one for Tom to give to Bashalli.

The flowers and the excellent dinner—followed by several hours of dancing—went a long way to repairing any hurt feelings. After they left the dance club, the foursome went for a leisurely walk through the downtown of Shopton.

"I would offer the proverbial penny, Tom, but I just know that you will tell me something about your latest invention or upcoming adventure. Tonight, I'd rather just be here with you," Bashalli told him as they stood at the edge of the Shopton City Park, watching other couples, young and old, walking together and enjoying the balmy evening.

"Sorry. It's this Texas walking vehicle. Something is nagging in the back of my mind but I can't figure out what it is. Give me a hug and I'll stop thinking about it. Promise!"

The dark-haired beauty swung around and wrapped her arms around the inventor's neck and gave him a big squeeze.

With her head resting on his chest, Bashalli said,

"Maybe you need to tell me about this thing of yours. I believe I remember learning something when I first came to America about a shared problem is just half a problem."

He told her about the walking robot as they walked along, trailed by Bud and Sandy who were deep in their own conversation.

As soon as he mentioned Chow's comment about the legs being stiff, she stopped. "Have you studied a horse's legs?" When he shook his head, she laughed. "Well, I had to for one of my drawing classes. Anatomical skeletal drawing. Want to know something *I* know that you evidently don't?"

Tom laughed. "Among a whole list of things, let's hear the one about the horse's leg."

"Well, for starters, a horse has three jointed areas. The shoulder, knee and the ankle."

"With you so far. We've got those... well, we've got the first two but did away with the ankle in favor of a curved foot with traction around the eighty degrees of possible contact."

Bashalli thought this over. "Well, that might be a good shortcut. But, and it is a big one, the bones in a horse's legs are springy. They bend to absorb impact and to allow the horse to lean over farther into tight turns. I'll bet that your legs are made of some sort of totally stiff material. Right?"

Tom verified her assumption. "Sure. Magnetitanium and Durastress. It has a deflection rate of just a half-millimeter per thousand pounds of force. Did we get that

really wrong?”

She nodded. “If I understand the horse anatomy, and you might want to talk to someone who understands equine anatomy a little more than I do, the upper and lower leg bones act independently of one another and provide an amazing amount of flex. Several inches in some cases.”

They talked about what she knew for a few minutes more before Tom rewarded her with a kiss.

The following morning Tom contacted Doc Simpson. “Doc? I need to get some time with a leading expert in horse anatomy. Do you know anyone like that?”

“Wait. You’re not calling me with some horrible injury you managed to incur? No ‘Help me, Doc, I’m bleeding?’ or anything like that? Just a simple ‘Do I know someone?’ request? Well, color me amazed and relieved!”

“Okay. I know that I have more than my fair share of bumps and cuts—” he could hear the doctor snort on the other end of the line, “—but this is just a simple request.”

Doc promised to make a couple calls to find a local expert. Twenty minutes later Tom had a name and number in hand.

Doctor Jonathan Russell was one of the northeast’s leading equine physiologists and an acquaintance of Doc Simpson.

He not only verified what Bashalli had told Tom, he offered to email both a detailed chart of flex-to-weight ratios along with a fairly complex formula Tom could use for his specific requirements.

“Tell Greg he owes me a steak. Porterhouse. Two inches thick. Medium. Good luck with your project!”

Tom and the engineers sat down with the data and looked at what they might need to duplicate it. Nothing currently manufactured by Enterprises or any other U.S. company could duplicate the strength *and* flex.

As the meeting was breaking up, Tom’s TeleVoc beeped indicating an incoming message. The Enterprises operator informed him of a call from the Texas Rangers’ commandant.

When he was able to take the call in his office, the first thing Rogers Frederick said was an apology. “I know I promised to get back to you in one day, but I forgot that it was Friday. The good news is that I have agreement from four of the six to pack up and go out to New Mexico in ten to twelve days, whatever works for you.”

Tom told him that the team was doing some redesign, “—in order to give your men the most comfortable and most stable ride possible. I can demo what we have now in ten days, but it will be another two weeks of so before I feel we might be able to show you the improvements. What’s your choice?”

“Sooner the better, unless you think the current machine is inferior.”

Tom told him this was definitely not the case. The date was set and the conversation ended a minute later.

When Tom called to the Citadel to arrange for the demonstration he was informed that Dr. Timothy Slade, the facility’s leading expert in metallurgy, needed to talk to him.

“Dr. Slade. Nice to speak to you again,” Tom greeted the man when his phone was answered.

“Good day to you young Mr. Swift. I hope you are well. I have something I wanted to talk over with you or your father, whichever one called first. Nothing dire or drastic, but a small issue I’ve run into.”

He explained that a recent experiment in which he irradiated an interwoven Durastress and carbon fiber material—something Tom’s father was working on for the automotive industry—had ended up with surprising results.

“The fabric is supposed to cure with an equal and constant flexion top and bottom, and zero compression or torque side to side. Your father believes that it can replace all outer metal in cars and trucks saving at least six hundred pounds of weight.”

“I remember dad mentioning it a month or so ago. What is the problem?”

“The problem is that it flexes at different rates depending on the vertical or horizontal pressure exerted on it. It holds its strength, but I’m afraid that, say, a front impact might cause it to flex so much that the car would compact too drastically.”

Tom laughed out loud. “Dr. Slade. Dad’s loss is going to be my gain. I need exactly that reaction for something I’m building.” he gave the scientist as many details as he believed necessary to appreciate the requirements.

“Could you fabricate eight chassis pieces for me if I send you the specs? Plus, I will need about eight square yards of the sheet version to cover everything. As long as the

pieces are at least thirty inches wide and forty inches long, it can be cut up.”

“Send me your specifications and I’ll have it all in your hands three days later. Tell Damon I’m still working on his material.”

After notifying his father of the setback to the auto project, Tom called the construction team to a meeting in the workroom next to Hank’s offices.

They listened with great interest as he told them what he had learned and what he believed would be the results. They promised to get right onto rebuilding the walker with the new leg sections and to have everything ready for the demonstration.

The day before everyone was to be at the Citadel, Tom and the team packed up the Range Rambler, complete with its new legs, and flew west.

“Hope this is what we need,” Commandant Frederick told Tom as his team found seats in the small bleachers set up for the observers. Most of them looked slightly bored.

Fifteen minutes later when Tom pulled back up in front of the group, he climbed down to a group of men with mouths agape and excited expressions.

Starting with the Commandant, each of the Rangers’ group got the chance to take the RR out for a five-minute ride.

Chow, who had accompanied Tom on the trip, was seen to be talking to the commanding officer at one point, making wide and emphatic gestures punctuated with laughter and more than one knee slap.

When the final man came to a halt, the Rangers went into a conference at one end of the bleachers. Less than a minute later the Commandant approached Tom.

“I have to hand it to you, Tom. You got it in one. It’s a might wider than a horse, but I’ll tell you the truth. Rangers hate riding in between tight rocks. Too many chances to get ambushed. We prefer wider spaces so the one foot difference is no difference at all.”

Tom smiled. “Do you have any improvements in mind yet?”

“Oh, I’m sure that once we’ve had a couple hundred of these for a year or so we’ll come up with something. Probably some fool asking for one of those espresso machines to be built in. Anyway, you give us the costs and we’ll give you an order for as many as we can afford!”