

## Home Coming

The fog began to lift in Derrick Henderson's mind. It felt like that disorientation when you wake up first thing in the morning in a strange hotel room and don't remember where you are, but it wasn't long before Derrick was fully aware that this was different. First Derrick realized that he couldn't seem to open his eyes. Then as he tried to move his arms he realized that they also did not seem to obey him. He could feel arms, but moving them was a different story. Derrick didn't remember the accident, nor did he have any idea that he had become the first person in the world to undergo the most daring experiment ever attempted.

Derrick had been the lone pilot on a freight run from Mars returning to earth. It had been both uneventful and boring and Derrick was longing for this trip to be over so he could spend his two month leave doing everything he hadn't been able to do the last six months. Freighters were highly automated and only required pilots to handle contingencies and some of the fine points of landing. Many argued that pilots were not really needed any longer and this left Derrick feeling uncertain about the future of his chosen profession. True, it was a boring job, but it had paid well and did provide him with two month leave periods between trips. So as much as Derrick disliked parts of his job he wasn't anxious to find a different line of employment.

Derrick's transport successfully negotiated trans-orbital insertion then made the de-orbit burn to begin the landing phase. At first everything seemed completely normal as Derrick monitored many of the automatic systems prior to taking over the terminal landing phase himself. That's where Derrick's memories ended. What he couldn't remember were the last few minutes of descent as first one alarm and then another began alerting him to problems with the freighter.

First there was an over temperature alarm from one of the fuselage temperature sensors. This was followed by an electrical buss failure alarm. As Derrick was trying to determine what was happening a hydraulic alarm sounded followed shortly by an inertial guidance alarm. Derrick was only able to transmit an abbreviated Mayday before the communication alarm sounded and contact with approach control was lost.

Derrick knew things were quickly going from bad to worse. The navigational displays were telling him that his approach attitude was beyond normal limits. Yaw and pitch were both increasing and nothing he tried was having any effect. All the while the freighter was blazing a trail across the sky as ground controllers watched their displays completely helpless.

Derrick had never lost a ship in his twenty two year career, and he didn't want this freighter to be the first. He tried every trick in the book. He pumped fuel between the various tanks in an effort to regain attitude control. When that failed he purposely locked up one of the gyros hoping it might torque him closer to a controllable attitude. He felt the affect, but it only slightly slowed the worsening of the situation. He even disengaged all the safety interlocks to take full manual control of the reaction control system, but even that could not stem the tide of events.

With just a matter of seconds before it would be too late, Derrick reached down with both hands and pulled the D-ring. The force slammed him back into his seat as the command module was explosively separated from the rest of the freighter. Then there was the moment of disorientation as the command module swung around into its back end first orientation to place the heat shield between Derrick and the high temperature plasma just inches away. The command module streaked toward the ground at Mach 25 and the rest of the freighter began breaking up.

Just as Derrick began thinking the worst was behind him yet another temperature alarm sounded. Whatever problem had crippled the freighter had also compromised the heat shield that was Derrick's only protection during his ballistic re-entry. The automated fire suppression systems activated and Derrick knew the action was futile. The fire suppression was only designed to deal with a fire that might be generated by short circuited systems not one fueled by re-entry plasma. Derrick could already feel the temperature rise in the command module.

The cooled oxygen he was breathing protected his airway, but the temperature was reaching painful levels as the command module streaked across the sky at just below Mach 20. On the ground, controllers had already determined a projected point of impact for the command module and rescue teams were being scrambled to the site. Being unable to do anything else, Derrick clenched his eyes and fists tightly shut while feeling the burning of his skin. The command module had slowed below Mach 15 and was just minutes from impact. Derrick did the only thing left to do. He prayed just seconds before losing consciousness.

The command module was still screaming across the sky, but had now dropped below Mach 5 and the internal safety systems that were well protected and still functional began adjusting the pitch and yaw. A few seconds after the speed dropped below Mach 1 the balloot deployed to dramatically increase drag and put the command module in the right orientation for chute deployment. Within seconds the safety system ejected the balloot and deployed the chutes for the final descent. Barely two minutes later, the command module touched down as search and rescue teams were arriving.

The SR teams were well trained and wasted no time getting into the command module despite the fact that it was still extremely hot from the re-entry. At first they believed Derrick was dead, but to their surprise he still had a pulse even though he was extensively burned. They got him out and transported him to a nearby trauma center.

Now, three weeks later, Derrick was trying to make sense of his situation as he realized that he could see, but everything seemed distorted. As he finally managed to open his eyes, he could see light and dark shapes moving around him and realized that he must not be alone. Attempting to ask what had happened, Derrick only heard himself making gibberish noises. In response the shapes also seemed to make gibberish noises as several of them came close to him. Derrick tried to get a better look at them, but as he attempted to turn his head to the right he seemed to look up instead. So he attempted to look up only to find himself looking down. The shapes made more gibberish noises and Derrick wanted to reach out and grab them, but nothing happened. He could feel arms, but they wouldn't move. Was he paralyzed? That didn't seem right since he could feel arms. He tried to move his legs instead, but again nothing happened. The shapes seemed to be saying gibberish things to each other. Apparently in response one of them moved to the other side of the room and then returned. The other shape said more gibberish to Derrick so he tried to grab the shape. He saw something flash past his field of view. Could that be an arm? It didn't look like an arm.

"He seems to be trying to move voluntarily," Dr. Henry Twain observed. "Leave the power switched on to the arms."

"Yes, sir," Med. Tech. Kathleen Holmes acknowledged as the two of them continued to observe the movements being caused by Derrick. "Do you want anything else switched on?"

Dr. Twain said nothing for a few moments then added, "Yes, I think we should try the video motion control."

Derrick was frustrated that he could not understand anything that was being said then he noticed one of the shapes move back across the room again.

“Motion control active,” Kathleen reported.

Derricks view went wild. He was no longer able to see the shape. He saw lights swinging past then noticed one of the shapes but he couldn't tell which one it was because it was quickly out of his field of view and looked like a double image.

“They are not tracking together. They are close but off several degrees,” Kathleen observed while watching a pair of monitors through stereoscopic glasses. “He's seeing double pretty badly.”

“That's OK. Leave the motion control on and give him time,” Dr. Twain said while continuing to observe the medical monitors.

“Yes, doctor.”

Derrick tried to steady his vision so that he could focus on the shapes. The way things kept moving reminded him of the bed-spins he had back in college when he used to try to go to bed when he was drunk. Yet slowly he began to slow the action, and as he tried to focus on the nearest shape he was able to bring the two images together.

“He's got tracking now doctor.”

“Excellent. I had no idea how long that might take. He's doing great. Ladies and gentlemen,” Dr. Twain was speaking to the observers in the overhead viewing area of the operating theater and to others watching via video links, “it is clear the Mr. Henderson is indeed conscious and is exerting voluntary control.”

Derrick was trying to focus on the nearby shape and was finally able to discern the outline of a person along with a few features of a distorted and blurred face.

“Derrick, can you hear me?” Dr. Twain asked.

Derrick heard more gibberish, but it seemed directed at him. What did the shape want? Derrick tried to say that he couldn't understand, but only succeeded in making gibberish noises himself.

“Excellent, Derrick. I know you are trying to understand and I know you are trying to answer me. Just be patient and we'll take this one step at a time.” Dr. Twain tried to reassure Derrick. Derrick responded with a noise.

“You know what doctor?” Kathleen asked.

“What?”

“If the voice range was higher, that would sound just like baby talk,” Kathleen observed.

Derrick swung an arm toward the shape in response.

Over the next eight months Derrick made excellent progress. Each day there were improvements. However, even though Derrick was learning he still didn't fully understand the extent of his injuries. As he had been able to begin making sense of the gibberish it began sounding more and more like normal speech. It was still rather mechanical, but very recognizable. At the same time he was able to speak and make himself understood. He could now focus pretty clearly on things he wished to see. However, the doctor had not allowed Derrick to see himself. Also, he discovered there was a Plexiglas shield that was preventing his arms and hands from touching any other part of his body. In addition Derrick also realized that his arms were fully prosthetic. The best he could tell it appeared that he had lost both arms right from the shoulder but that the replacements seemed to be responding to nerve impulses. He was also sure that his hearing and eyes had been damaged, but they seemed to be recovering although things still looked and sounded odd. He wasn't sure if the odd sound of his own voice was because of vocal chord damage or just because his hearing wasn't quite normal.

A little at a time Derrick learned more and more of the circumstances surrounding his

accident. Ultimately he was thankful that he couldn't remember any of the last fifteen minutes before his command capsule had finally reached the ground. He could only imagine the pain that he must have felt, and this one fact caused him to speculate frequently about his current situation. The one thing he had not felt since regaining consciousness was pain. Derrick knew the damage must have been extensive, but from day one there had been no pain whatsoever.

As Derrick waited for Dr. Twain to arrive for more therapy he wondered what was in store for him. The doctor had said that tomorrow was going to be a big day but had refused to elaborate further. Now tomorrow had arrived, and Derrick saw Dr. Twain entering the room.

"Morning Doc," Derrick called in his odd sounding voice.

"Good morning Derrick. How are we doing today?"

"Well, I'm doing OK, but I can't speak for you."

"True. Are you ready for the big day?" Dr. Twain asked with a smile.

"I guess. What's this big day all about?"

"Well, we've decided that it's about time you saw yourself."

"It's pretty bad isn't it?"

"Well, let's just say you're different. Also, it's going to take some getting used to, but I think you can handle it."

"OK. So where's the mirror?" Derrick quipped.

"First I am going to cover your... eyes. Then we are going to move you into the operating theater. There will be others observing if that is OK with you?"

"Yeah, OK, I guess."

"Fine. Here we go," Dr. Twain said as he turned to Kathleen and nodded. Derrick suddenly found everything going dark and figured the doctor had covered his eyes although he couldn't feel anything being done to them.

"I'll be wheeling you into the next room. It will be just a few minutes," Dr. Twain reassured Derrick.

Derrick could hear things being done and eventually could hear wheels squeaking on tile and sensed movement as he was apparently being moved into the operating theater. Eventually the noises stopped.

"OK, Derrick. You will be in a little different orientation than you have been the last few months. You will be in more of a... sitting position."

"Great, I was getting tired of the old view," Derrick responded.

Dr. Twain looked up as several observers in the operating theater chuckled. "I understand, Derrick. OK, now you are going to be able to see again."

Just as quickly as the lights had gone out earlier they reappeared for Derrick. He could see that indeed he was in a different position. He also noticed that he felt a number of other things that he had not previously felt. He could sense that he had legs, but that he was not able to move them. He seemed to be standing, and the Plexiglas shield was gone.

"Derrick, I'm going to remove the curtain from that mirror right in front of you when you are ready. You say the word, OK?"

"Go for it Doc."

"OK," Dr. Twain said while removing the curtain.

Derrick stood there in shock as he took in what he was seeing. Surely this was some kind of mistake, or a joke. "Doc, what's this? I thought you were going to let me see myself. Why are you showing me this?"

"Derrick, I know this is hard, but that is you."

“That?”

“Yes, Derrick. The damage was extensive. You were burned over virtually one hundred percent of your body. All the major organs except your heart, lungs, and brain had suffered irreparable damage. Even your heart and lungs had been badly strained, but they were keeping you alive as you were brought here in a coma.”

Derrick stared into the mirror. Then he moved his right arm only to be mimicked by the apparition in the mirror. He raised his arm to touch his head.

“Your brain is not in you head. That houses the visual, auditory, and vocal systems. Your brain is actually in the torso. It’s more protected that way. Your brain is the only part of you that survived.”

“But I see and hear, and feel?”

“Stereo cameras, microphones, and sensory feedback systems.”

“And I talk?”

“A vocoder system connected into the part of the nervous system that used to control your vocal tract and larynx. We’ve tried to match it to recordings of your own voice before the accident.”

Derrick stood and stared, or rather his mechanical body stood there and stared while Derrick tried to make sense of what he was seeing, hearing, and feeling. “What about my legs. I feel them, but nothing seems to move?”

“We’ve just got them locked in the standing position. They are functional, but you will need to learn how to use them. It will be kind of like learning to walk all over again, but I assure you that they will work when the time comes.”

“So how long can I expect all this stuff to work?”

“Well, actually we don’t know for sure. You’re the first. Everything was developed and ready to use, but the need and the opportunity never came together.”

“And what is keeping my brain alive?”

“There is a biomedical system in the torso that keeps your brain supplied with an oxygenated blood substitute along with various nutrients that it needs. You have a thirty day supply in a cassette that is placed right there.” Doctor Twain said pointing to the stomach area of the torso. “All of your electromechanical and hydraulic systems are powered by a small thermonuclear generator that is placed in your back and should last at least a hundred years.”

As Derrick stood staring it began to dawn on him that his current situation had some interesting benefits. “Hey, doc, do you suppose we could make a few modifications to this stuff?”

“I suppose. What do you have in mind?” Dr. Twain realized the pun even as he said it.

That was thirty seven years ago and these days Derrick Henderson is no longer unique. In fact, there are another fifty two cyborgs handling the freight runs throughout the system where they feel quite at home as freighters that no longer require human pilots.