

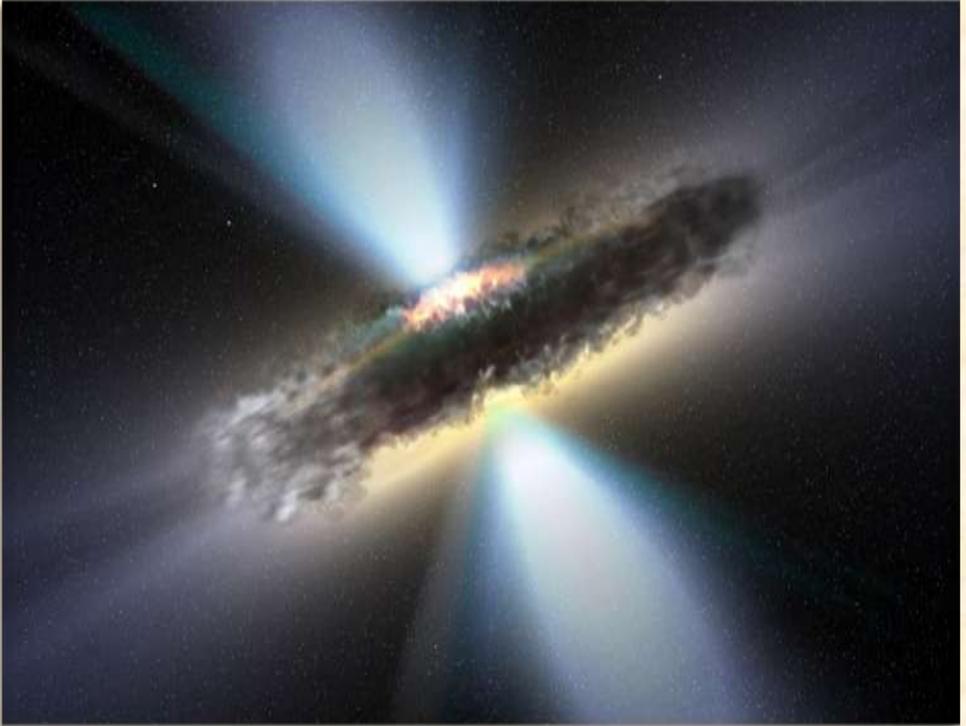
Volume 2, Summer 2009

Moonbeams

Tales from the High Frontier

Published by the Moon Society
and Writers Cramp Publishing
Cover Art by Charles Lesher

Cover: The 19-year-old Hubble Space Telescope has just come back online after being refurbished by NASA this year. This cover is based on one of the first pictures taken by the improved Hubble. It shows a dying star unleashing streams of ultraviolet radiation and superheated gas glowing against the darkness of space. If Hell exists, this is it.



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Editors Note: This edition of Moonbeams, like that of previous editions, has stories that are not strictly moon related, but good enough to share with our readers. Other genre will be given consideration when there are no other submissions.



John P. Gleason

The Big Squeeze

Charles Lesher

We experience night and day because the Earth spins like a top. Days turn into years because the Earth is in orbit around the Sun. We can see the moon, planets and thousands of stars with our own eyes. Beginning with Galileo, humans began building devices to help us discern more of what exists beyond what we can see. We now have the Hubble and other powerful instruments that let us probe ever deeper into space and back in time. What has become evident is that our Sun is but one of billions of stars that exist in a galaxy we call the Milky Way and beyond our galaxy is a universe containing many other galaxies. As we focus our telescopes even deeper into space and time, we see more galaxies seemingly without end, sharing four important facts.

Fact One: All galaxies are moving away from our galaxy like particles in a great explosion.

Fact Two: Our universe is not only expanding, but the rate of expansion is increasing.

Fact Three: At the heart of every galaxy there exists a supermassive black hole millions of times the mass of our Sun.

Fact Four: The mass of the black hole at the heart of a galaxy is simply not massive enough to account for the high rotational speed of the stars within the galaxy.



Hubble Ultra Deep Field
Hubble Space Telescope • Advanced Camera for Surveys

NASA, ESA, S. Beckwith (STScI) and the HUDF Team

STScI-PRC04-07a

In other words, galaxies rotate much faster than they should when applying just gravitational physics. Something else is going on.

At the time of this writing, humans could see almost 13 billion years into our past with no measurable change in the density of the galaxies they find there. Most scientists believe our universe began 13 $\frac{3}{4}$ billion years ago in what has become popularized as the Big Bang. In reality, it was more like the Big Squeeze.

Fact Five: In the instant of our creation, at a single infinitely small point in space, matter/energy in a state of near-infinite density, near-infinite pressure and near-infinite temperature, surged into existence bringing its own spacetime with it.

Where before there was nothing, now there was something and that something was our universe. Thirteen billion years later, humans look deep into the night sky and gaze in wonder at the magnificence of what happened next.

Fact Six: Matter/energy continues to flow into our universe through the Singularity.

Stated another way, the birth of our universe occurred when the first bit of matter/energy emerged from the Singularity. But where did it come from? The simplest and most obvious answer is from another universe just like the one we live in, only different. This begs the question, if the matter/energy came from another universe, did it get here all at once or is it still spewing forth today? Nothing ever happens instantaneously, not even the birth of a universe. Yes, the process must be ongoing even now as you read this, but because of limitations due to the speed of light, the Singularity is far beyond our ability to observe it.

Fact Seven: Matter/energy flows from our present universe into another universe.

The same exact process that created our universe is occurring in every black hole within our universe. At this very moment, matter/energy from our present universe is flowing through our black holes into a future universe. This future universe looks very much like our present universe which looks very much like the previous universe, filled with planets, stars, and galaxies.

From the perspective within a universe, the point of origin always

appears to be a Singularity forever beyond our ability to directly observe. It is only from the perspective of the previous universe that the Singularity is revealed as a great multitude of black holes.

Fact Eight: The openings that matter/energy flow through are called black holes in our present universe.

Our present universe is riddled with black holes, each a portal into the next universe, because you see, one black hole does not a universe make. It takes trillions. Black holes come in many sizes from the ordinary star going nova, to the giants going supernova, to the supermassive black holes at the center of the galaxies that consume millions of stars and eventually billions. Every point in our spacetime that exceeds the matter/energy density threshold will create a black hole and begin transferring material.

What are the other universes made of?

All universes are made from the same matter/energy that our present universe is made of. Endlessly recycled matter/energy flows from one universe to the next. It is the passage through a black hole that restores matter/energy to its primordial state best understood by the mathematics describing the first moments of the Big Bang. A new universe is chaotic and strange indeed. It is only after time has passed that the things we are accustomed to seeing will appear. The end of a universe is lonely and rather boring. The stars are gone, sucked into another universe, only supermassive black holes exist until even they disappear and the universe is again nothing, just as it was before.

Fact Nine: The same physics apply in all universes.

Since every universe is composed of recycled material from the previous universe, the laws of physics that govern them remain fixed. The speed of light will be the same. Water is still water. The Periodic Table of Elements is identical. They share many of the same physical characteristics, in particular, the same evolution of matter/energy in an expanding universe. The galaxies in the new universe will eventually evolve massive black holes at their center feeding yet another universe which in turn will evolve galaxies with massive black holes feeding yet another universe, etc., etc. It goes on in an endless cycle like water flowing down the different levels of a great fountain.

How many universes are there?

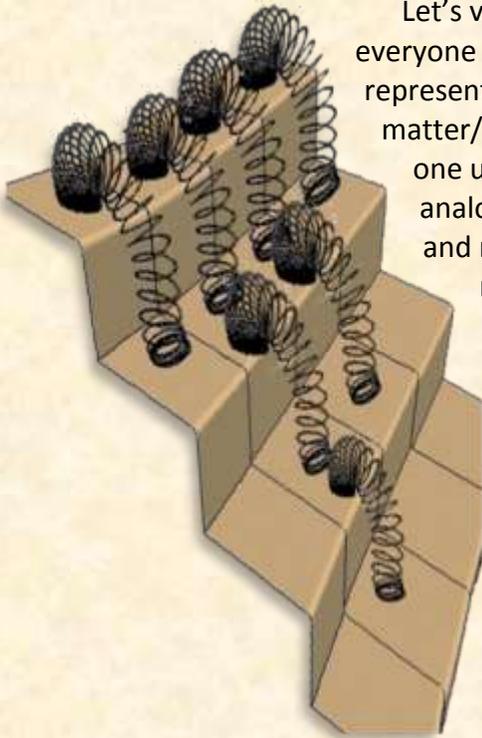
Just as our universe has evolved from the previous universe, all subsequent universes must follow the same basic pattern. It is an endless process like sand through an hourglass. However, it takes time for a universe to progress to the point that the first black hole appears. And it takes time for a universe to completely pass its matter/energy on to the next universe. There exists a natural equilibrium of creation and destruction that limits the number of universes at any given instant in time.

Fact Ten: The mathematics of the very small describes the evolution of the very large.

One universe literally turns itself inside out as it oozes through the black holes like water through a sieve. The matter/energy contained within each universe endlessly cycles forward in time at a rate that stabilizes around eleven universes in existence at any given time. Why eleven? Eleven is not an exact number by any means. Eleven is more an approximation reflected in the complex mathematics of String Theory.

Let's visualize this using a children's toy that everyone should be familiar with, a slinky. Each step represents a universe and each slinky the matter/energy moving through a black hole from one universe into another. To make this analogy work, we will need billions of slinky's and much larger stairs but imagine for a moment as this multitude of slinky's move down the stairs.

Like herding cats, the number of steps populated by slinky's at any given moment reaches equilibrium while occupying about eleven adjacent steps. So too does the matter/energy flowing through the universes. The natural rate of matter/energy moving through the many black holes from one universe to another has a natural frequency that works out to be approximately eleven universes at any given moment in time.



Do these other universes affect ours?

The eleven universes are distinct but highly interdependent. The adjacent universes do affect their neighbors in three major ways.

One: Scientists frequently use the analogy of an inflating balloon to describe our expanding universe. Extending that analogy to fit the multi-universe theory, the relationship between parent universe and child can be envisioned as one balloon nested inside of another, nested inside of another, nested inside of another, etc., etc., for a total of about eleven universes.

The balloon analogy is useful because it shows how a child universe will affect the parent universe. As the child universe grows, it forces the parent to grow at a rate faster than the local laws of physics can account for.

In the slinky stair analogy, our universe is early in the process, much closer to the lowest step than the highest. The influence of our child universe occupying the step directly below ours, or one balloon expanding inside the other, can be measured in our universe by the accelerating rate of expansion between our galaxies. The rapid spacetime expansion of a child universe forces the galaxies of the parenting universe to accelerate away from each other. The effect is highest at the moment of conception and rapidly declines as time goes by. However, a newly formed universe doubles in size every few nanoseconds which exerts tremendous pressure within the parenting universe, forcing its galaxies to accelerate apart at tremendous speeds and accounts for much of the size of the parent universe. This in turn affects the universe that spawned it in the same way but with lessening results, which in turn affects its parenting universe, etc., etc., rippling backward in time across all eleven universes from the newest to the oldest.



Two: Not only does the rapidly expanding child universe force the galaxies apart, it also exerts a torque within individual galaxies, revealed by the increased rotational speed of the stars that make up the galaxies, far beyond what normal gravitational physics can account for. The stars closest to the supermassive black hole at the center of our galaxy swarm like bees around a hive, making it possible to very accurately measure the mass at its heart. However, our galaxy is a big place and as massive as the black hole is, it cannot exert sufficient influence on the great majority of stars that make up our galaxy to account for their speed of rotation. This becomes increasingly apparent the further you get from the supermassive black hole. If the gravitational attraction of the black hole was all that was keeping our sun in the Milky Way, we would immediately fly off into the void between galaxies. In fact, if gravity was the only thing holding the Milky Way together, it would fly apart, losing over 99% of its stars this way.

Instead, we find that the rotational spin rate of the galaxies is proportional to the age of our universe and increases over time. The older the Milky Way becomes, the tighter the stars will spin about the supermassive black hole, like an ice skater pulling her arms in to her body causing her to spin faster and faster. The force of attraction is proportional to the matter/energy that has already passed through all the black holes from the parent universe to the child. It's the ultimate cosmic whirlpool that will end only when the last star has passed through the black hole.

Three: One universe never simply gives its matter/energy to the next universe. There is always a thread of connection tying all eleven universes together into a Super Universe. These echoes are strongest from the universe that gave birth to our universe (the step directly above ours) and can be seen only at the subatomic level as revealed in Quantum Mechanics and the Uncertainty Principle. This also explains why String Theory and the mathematics of the very small actually describe the evolution of the very large.

Where are these other universes?

When we look out into the depths of space, we catch a glimpse of the distant past within our universe. When we delve into the mathematics found at the bottom of a black hole we get a peek at a universe beyond ours. When we magnify tiny bits of matter and peer

down at the very small, we see an echo of the universe that spawned our universe. When we study the vibrations of the extremely small, we get a glimmer of what lies beyond our universe.

Some people like to think of these universes as simply another demension but this is in error. Every self respecting universe contains three dimensions, share the same dimension of time with all universes, and follow the rules discovered by Albert Einstein and the other great scientists. Yet, each universe is defined by its own spacetime and trying to visualize the physical relationship between two universes is humanly impossible.

Neither the slinky nor the balloon analogy is an adequate model. Imagine a two dimensional being trying to explain the idea of a third dimension. Now expand that grain of understanding into three dimensions and an entire universe filled with galaxies and black holes. Now multiply that by eleven. The best we can say is that our universe and all other universes are independent but not self-sufficient.

If you could survive a magical trip though a black hole, you would find another universe expanding and evolving much the same as our own, only at a stage less advanced than ours. If that other universe has evolved enough, you could find another black hole and use it to move forward to yet a third universe. But moving back the other way to previous universes is much more problematic and may be impossible even for a magical being like you. The trip is one way.

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This story is more than just another science fiction tale. It is a yarn with just enough truth to be dangerous. The author challenges you to determine where fact ends and fancy begins.

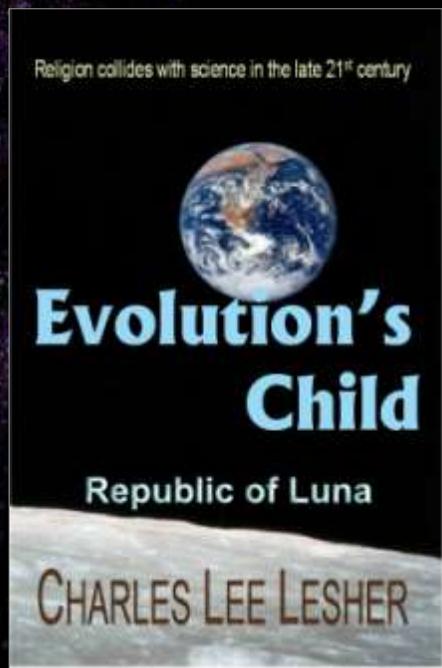
May the force be with you!



Evolution's Child is Chuck's debut novel and begins the Republic of Luna series. It is set in 2092 and explores the high tech society that will develop when people are separated not only by great oceans of water or massive mountain ranges, but the harsh unforgiving vacuum of space. It is available at all major bookstores and direct from the publisher at:

[Writers Cramp Publishing](#)

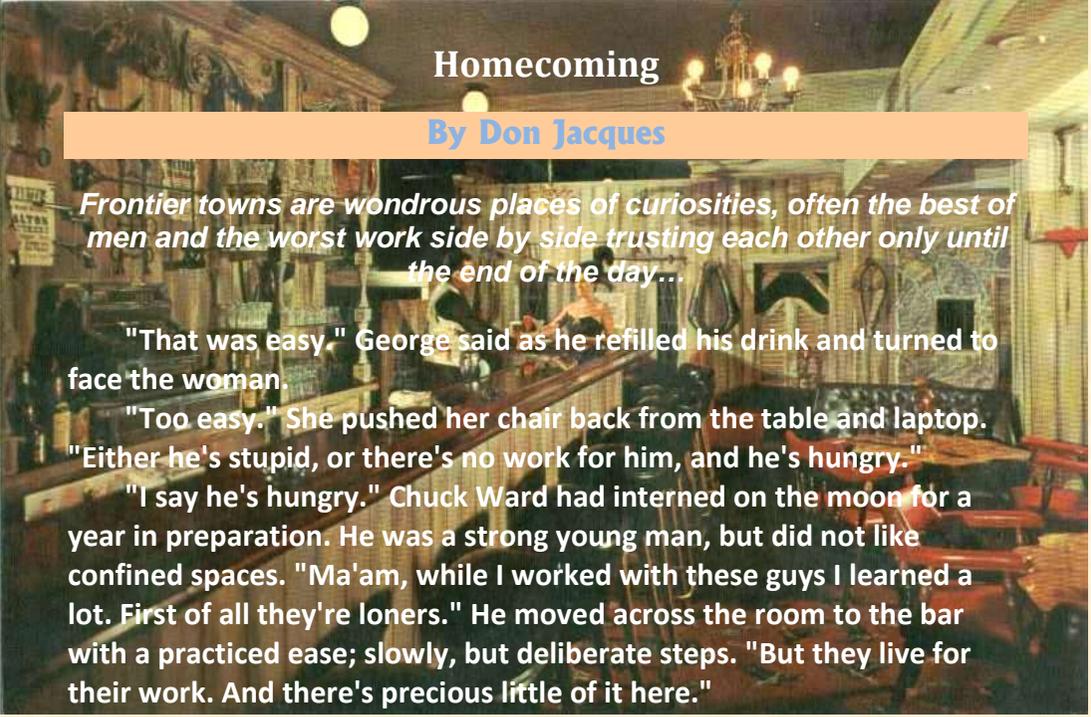
ISBN-10: 097772350X



Revelation's Child, the second novel in the Republic of Luna series, is due out late 2009.

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Homecoming

By Don Jacques

Frontier towns are wondrous places of curiosities, often the best of men and the worst work side by side trusting each other only until the end of the day...

"That was easy." George said as he refilled his drink and turned to face the woman.

"Too easy." She pushed her chair back from the table and laptop.

"Either he's stupid, or there's no work for him, and he's hungry."

"I say he's hungry." Chuck Ward had interned on the moon for a year in preparation. He was a strong young man, but did not like confined spaces. "Ma'am, while I worked with these guys I learned a lot. First of all they're loners." He moved across the room to the bar with a practiced ease; slowly, but deliberate steps. "But they live for their work. And there's precious little of it here."

She eyed the other man in the room. Mick was from Australia - one of the big ranches. He even stayed with the aborigines for a while. Spent a lot of time working on their behalf with the government. He was a quiet one. But, he watched people, and noticed important things. "Well, Mick?"

He stared into his drink. This low gravity stuff was just no good for him. Staying seated was so far the best policy. He looked up and met her gaze. "Look, the guy's the first to actually live long enough to get his green card. That says something." He tipped his head back to drain the glass. The liquor burned his throat on the way down. He shook it off. "You folks wanted someone you can trust - well, I say he's trustworthy. Just be careful."

Morgan sat up on the bed smoothing the pillows. "What do you mean?"

"Well, he's smart, like a fox, strong, and young enough to be willing to take certain risks, yet old enough to know when it ain't worth it. And, yes, he's hungry, but he ain't starving. Especially with the money he's just got."

Chuck was leaning against the door. "But even so, he'll get bored quick."

"Yea," Mick stood and moved toward the bar. "But, he'll be cautious

with what he considers - but when he makes up his mind - "

"Watch out Nellie!" Chuck grinned.

"He's gonna come out the gate like wild fire."

Morgan stared into her drink as she swirled the last dreg in the bottom of the glass. She couldn't escape the fact that he was an eyeful as well. She looked from one to the other of the three men. "Yup. He's the one." She stood and placed her glass in the sink. Ok boys, let's call it a night." She opened the door.

The young men nodded, leaving their glasses in the sink as they exited to the hall, nodding to her. George paused at the door. "Morgan," he whispered. "We're here to get the job done. I noticed your, ahem, attraction. Remember what happened the last time you took a shine to a target? What was his name? Woolfie?" He winked at her.

"The job first, George. And I'll be careful" He patted her hand as she closed the door behind him.

The buzzing just wouldn't stop. It kept going on and on, and ON! "Damn it!" he shouted from under the pillow. He grabbed it and threw it hard in the direction of the desk. It bounced off the back of the chair, and careened into the wall, the chair fell over against the desk and with a clatter to the floor. He lifted his elbow and looked down his body to survey the damage. Nothing broken. "Crap." He pulled his feet up and set them on the floor. His hand found the remote on the nightstand and then the button to silence the com. The shower beckoned, and he answered the call.

As he toweled off, the com buzzed again. He wrapped the towel about him and stepped over the desk. Leaning down, he keyed his access code to read the messages. Seven messages were displayed from his fellow miners all calling for him to join them in the cafeteria for a homecoming party. He smiled. Any excuse for a party. Cool, he thought. He dressed in the usual jeans, polo shirt, and sneakers; flashed a comb through his wet hair and set out.

From the noise at the end of the hall, he could tell they were already bouncing off the walls. At the door, it was clear as one sailed across in front of him trying to beat the record for somersaults across the room. He made six of them and bounced off the opposite wall, the record was seven. It was Bill who held that record. He clapped with everyone else.

"Well now, Billy!" Joey called from behind the bar. "They still can't get that last turn in." He said grinning.

"Nope, " he answered. "Ya gotta know the secret." He tapped his index finger to his temple, grinning. Joey responded with a great oversized wink and they both laughed. The other men had gathered around him.

"Welcome home, Billy."

"Good to see ya back."

"You're buyin, right?"

Bill laughed and shook hands with them all. "When have you Ever seen me buy a round of drinks? Eh?"

"Now that you mention it - never!" Wilkie jostled himself close. Bill held up his hand suggesting an arm wrestling match. "Whoa now Billy, You'll not sucker me into that again." Wilkie was a distant relative to the Wilkinson blade fortune. Though he had been long removed from that life and living his life on his own terms. The family business never suited the five foot stout man. In fact, the only time he'd ever called upon his family was to get the height exception that allowed him to come to Luna. He was his own man, now, and only 4 years away from his own green card. He just couldn't arm wrestle worth a crap.

"So's what's it gonna be, Billy? Ya wanna dance with the stick?" They all laughed as the man referred to as the Stick jumped lightly in the air and spun several times before alighting back on the floor. He bowed to clapping from all round. The Stick was a former NBA pro who got creamed in a playoff game. His knees have never been the same, so he ended up here so that he wouldn't be subject to the stress. Back on earth it hurt to walk. Here, the guy could even dance. "I even took a shower this week!"

"No, No - " Jonesy screwed up his face. "I could give him a pony ride on my knee!" Jonesy had been here the longest. He'd spent 8 years here mining when an accident sent him home for major surgery. Three years later, he came back - thanks to an exception from Wilkie's family.

Bill leaned back to guffaw, then, "Naw, Jonesy, and wreck your hip all over again? You'd NEVER make retirement then." Jonesy was next to retire and get his own green card in just three months. His wife had divorced him and taken the kids after 20 years of marriage. She found a younger guy. So the porky guy up and committed lunny-cide. He'd been here ever since.

"You're quite right, I'm a short timer now! Lets drink to that!" they all raised their glasses and threw back their heads together.

The other men all had similar offers, each trying to be more ridiculous. It was Donny, the newbie, who stopped them all.

"So Billy, now you're retired, tell us how to do seven somersaults."

They all roared. "To the ignorance of youth!" shouted Jonesy. And they all threw their heads back and glugged. Donny smiled, and drank. But Bill could see, he didn't understand. He motioned for the young man to sit beside him.

"Look, Donny." He had only been on the moon for a year, just out of internship. He was all of 23 years old, and green as an Irish clover. He had got into a spot of trouble, desertion from the army. Oh well, judges liked giving youths an option. "The secret is that you gotta be first, young enough, second stupid enough, and third able to tuck yourself into a tight enough ball." He looked around to the group. "Hey guys, I think Donny here just might be able to do it!" They all rose to their feet and cleared a channel across the room.

Bill led Donny to the end of the group, and turned the boy to face the channel. "Now, remember, you gotta tuck yourself tight, and" he pointed to the center light fixture. "Aim for the light as you push off, and try and roll yourself as fast as you can." He slapped the boy on the back and stepped back.

The men all began to chant, "Don-ny, Don-ny, Don-ny" a clap sounded in unison to each syllable. The boy gathered his courage, looked at the light, then Bill, then the light. He took a big breath and blew it out as he launched himself at the light. He followed Bill's advice and tucked himself as tight as he could, throwing himself forward. The men's voices counted,

"One! - Two - Three - Four - - - Seven! Eight! - " There was a tharump as the boy hit the wall half way into another tumble. He sat up rubbing his head. The men were cheering loudly and rushed to lift the boy from the floor.

Bill looked at the boy and lifted a thumbs-up to him. The boy smiled weakly. "Now, Joey! I AM gonna buy a round of drinks!" They all gathered round the boy to let him take the first one, clapping and cheering for the boy. Bill made his way to the table in the corner, and sat, pushing the chair against the wall. He sipped his drink gingerly as the men drank greedily.

It was Jonesy who came to join him first, nodding and lifting his glass as he sat. "Been a long time since you set that record, eh, Bill?"

"Yea." He sipped, gently spinning the glass between his fingers as he set it down. "Wasn't I bout his age?"

"Yup." He pulled another chair over and crossed his legs in the seat. "Now you're free, Bill. Even your somersault record's been broke." He chuckled. "Nothin' left for you here, eh?"

"Well, actually, now that you mention it, " He watched the party go from game to game and the drinks began to slur their speech. He turned to his friend. "Got me a new job yesterday."

Jonesy pulled his feet off the chair and faced Bill. "Really now."

They both looked up as Wilkie approached, chair in hand, and straddled leaning his arms on the back of the chair. "There's a rumor you picked up some cash - and a new client yesterday."

Bill smiled. "Seems there's a new player in the habs, boys."

"Wadya mean, Bill." Wilkie sat up taller in his seat. "Everyone knows you can't really build a hab without a crew to man it. Just a waste of money."

"Seems there are several crews waiting - with this company, at least." Said Bill.

"We've seen 'em come and go, Bill." Jonesy chewed lazily on a piece of grass. Bill always wondered where he got it. "You look like you think these folks are different."

"I do."

"So what makes them different that all the others?"

"The boss." He slurped the last of his drink into his throat. "Best damn red-head I've seen in years."

Wilkie chuckled. "Ain't none of us seen a red-head in 5 years!"

"Hell, Wilkie," Jonesy slapped the other's shoulder playfully. "Do you even like girls?"

Wilkie ignored the jibe and looked seriously at Bill. "So what now. You gonna keep the team together?"

"Not sure. Since I got my ticket, they'll be assigning a new mole soon."

"Rather work with you." Wilkie said.

"What if they made you mole, Wilkie." Bill looked dead at him. Wilkie had been the one member of his team that he had hoped would take the lead. He knew more than everyone, honestly, he was the guy who saw troubles before even Bill could spot them. And more often that he cared to admin. Wilkie had a knack for this work.

"No." His answer was flat, matter of fact. "Don't want it, never did."

Jonesy was fidgeting. "Hey, Bill. You know we all - an I mean all of us. We've done more habs than any other team. We're the best, and its cause of you. You made us a great team, and it works." Wilkie harumped agreement.

"Thanks guys. I'm all aflutter with your bein so buttery." He watched the others winding down the games. They were a great team. And the bylaws never said he couldn't take his team and go private. "Look guys, I gotta stew on it a day or so. Not sure how the bean counters are gonna take it all." He stood to go.

"Let em rot," said Wilkie sourly.

"Sure, Wilkie, then I'd be the one to clean up the mess. You sure won't." He looked up at Bill. "We're here ifn you want Bill. If they got teams for habs, well, we can build the best habs around."

"I know." Bill said. "Look, talk it over with the guys, and I'll see to the bean counters and the new player."

"Ok, boss." The two lifted their glasses in salute. Bill nodded and turned toward the door.

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Don Jacques is a lifelong fan of colonizing space and believes the final frontier is humanities biggest challenge. He worked for 15 years as a computer programmer and developer of artificial intelligence. He loves ancient history and contemplating the social evolution of our species. He currently resides in Scottsdale, Arizona employing his many talents as a maintenance technician where he prides himself at being able to fix anything. He serves as webmaster for Weavers of Dreams and is the President of the local Moon Society chapter. Don has two books being published this summer, Ancestors and Moonstone.



Don welcomes all correspondence.

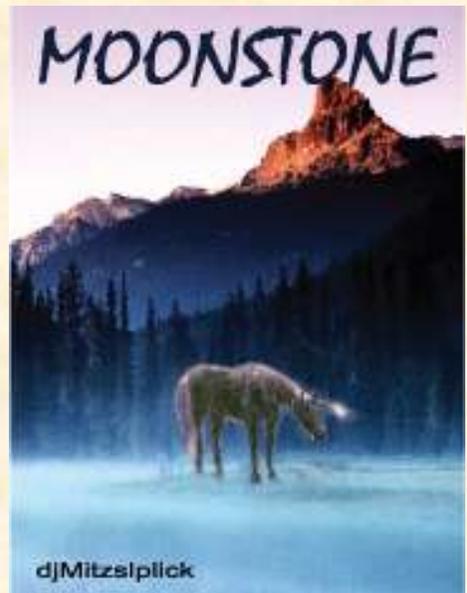
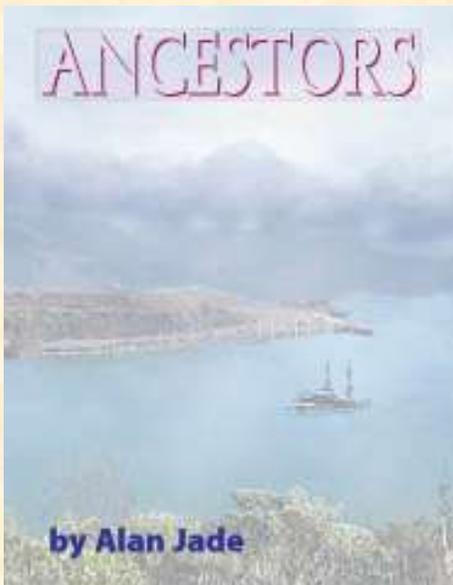
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Letters Home

Dear Diary

6/9/28 The shit really hit the fans yesterday morning. There was a landslide out on the North Slope. It buried two trucks and took a day to get the crews out. Some fun! I haven't slept since it began and am so tired. Will write more later, maybe.

From: Silas Pak
To: Henry Pak
Subject: Physical Exam

Dear Uncle Henry;

Shortly after I wrote to you about my application to October Moonbase, I caught a cold! I was on pins and needles trying to cure myself before my physical. I had heard that if you are affected by any kind of illness, your spot on the base is rejected. While they do have a clinic on the base, its purpose is to stabilize you so you can be shipped back to Earth for treatment.

Just like the old days of NASA, our health is monitored constantly. But instead of the old fashioned monitors with electrodes stuck on us, we have software on our wearable computers. The software sends info via wireless to the clinic. We simply will wear a wristband to monitor our hearts.

Well, to make a long story short, my results came back. Guess what? I'm going to the Moon! I'll e-mail you about the details of getting there in my next letter.

Love, Silas

Mining the Moon

By Gary Deatsman

Jack found himself singing as he worked:

In a cavern, in a canyon,
Excavating for a mine,
Lived a miner, forty-niner,
And his daughter, Clementine.



The tune had been on the minds of his co-workers for weeks, ever since his company's New Year's Eve party. After all, they were mining a valuable ore deposit by excavating in a canyon, and the year was '49. However, none of them had a daughter named Clementine; the year was 2049, not 1849; and their mine was a long way from the pioneer gold fields of California. It was on the moon. And if you want to be picky, their "canyon" was actually a crater formed when an asteroid bearing high concentrations of precious metals managed to smash into the moon at such a relatively slow speed that it remained mostly intact.

For an eight-hour shift, Jack drove a truck loaded with ore up out of the crater and back down for another load. He followed a road which spiraled up the crater wall. The road had been blasted out to a width of thirty feet, providing an ample one-way path for Jack's enormous truck, one of only three which served the mine.

The trucks were masterpieces of engineering. They were built of extremely light, strong materials, many parts recycled from the rockets which brought them from earth. Electric powered by highly advanced rechargeable batteries, each was charged to slightly over $\frac{3}{4}$ capacity after dumping its load at the smelter on top of the crater rim. On the way back down, electric brakes acted as generators which brought the batteries up to full charge. Including delivery, each had cost Lunar Mines, Inc. nearly three billion dollars. They were used as efficiently as possible, with a minimum of "down time". While one truck was being loaded, a second truck would make it to the top, dump, and begin charging after the third truck finished. While the second truck was charging, the third truck would drive back down the road to arrive just as the loading of the first truck was finished. Each driver knew that the slightest delay would cost "big money", and they did their best to stay alert and keep on schedule.

Jack found the stress of driving was relieved a bit by enjoying the view as his truck was recharged at the smelter. Jack was supposed to watch the meter showing the progress of the charging, but since a chime sounded when optimal charge was reached, he felt that he could take this much-needed break. If he parked at just the right angle, his viewscreen provided a panorama of the nuclear power plant, the smelter, and the electromagnetic launcher which sent its products to Earth for only a few dollars per pound. His eyes would follow the launcher track to the nearby horizon. Just above it in the black lunar sky was the beautiful blue and white ball of his home planet.

When the chime alerted him, he would disconnect from the charger and drive to the edge of the crater. There he parked so as to line up aimed straight down the road. If everything was perfectly timed the truck driving up would arrive within a few seconds. As soon as it was out of his way Jack would start down.

Jack was one of those fortunate people who truly love their work. His friends envied him, and he certainly ranked as one of the twelve (three shifts plus weekends) most highly paid truck drivers ever. However, the job was actually somewhat monotonous, and after four years he was beginning to lose his edge a bit. He had caught himself in occasional brief episodes of daydreaming. He kept this a secret from everyone, and tried his best to maintain full and constant attention.

Now as his truck was being charged he noticed that the launcher was about to fire a load to Earth. Although he had never been able to do so, other miners had told him that it was possible to see the cargo capsule after it left the other end. He watched intently, focusing his eyes on the end of the track. There it was! A faint speck of reflected sunlight soared into the blackness. Jack imagined the capsule splashing into the Pacific two days later. He had been aboard the recovery ship during his training and witnessed the entry, splash, and retrieval of several loads. He remembered most vividly a night entry when the blazing man-made meteor lit up the sky.

Suddenly Jack was jolted out of his reverie by a buzz on his com link. The chime which normally signaled him had failed. His truck had received a full charge, and next one had dumped its load and was approaching the charger. Jack managed to disconnect drive out of the way quickly enough to avoid significantly delaying it, but by now he should have been starting down the road into the crater. If he kept the loader waiting he would

have hell to pay for his lapse of concentration. Even if he made it down in time he would be in some trouble for not having kept his eyes on the meter and wasting power. He drove toward the road not recklessly, but at what seemed a maximum safe speed.

Normally he would have started down the road from a position parked pointing the right direction. Never having started down without first parking, he failed to slow sufficiently for the sharp left turn he would need to make. He hit his brake pedal just a moment too late. The full charge in his batteries made the electric generator/brakes slightly sluggish and by the time they brought him to a stop his two right wheels had already slipped to the very edge of the road. Not realizing this, Jack steered sharply to the left away from the brink and continued forward. The four-wheel steering caused his right rear wheel to go over the edge, and seconds later the truck started a long roll down the wall of the crater. Jack's view screen went blank.

His career as a remote control driver over, and unable to face his supervisors, Jack left his control console, ran down the hall to the main entrance and out into the warm Arizona sunlight. He was consoled by the thought that he could still easily find work driving the biggest rigs on earth. They would be no challenge at all without the three second reaction delay he was used to.

Gary Deatsman is a retire math teacher and student of history. He resides in Mesa, Arizona and enjoys hiking, computers, and photography.

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Harry's Time

By Richard Neale

Part 2 of 2

Indio California 2010

Harry Miller stared into the face of a police officer.

"What'er you doin' sleeping on this bench?" the big man asked.

"Aint got no other place to sleep." Harry said.

"How about home?"

"Too dangerous."

When Harry sat up, the officer saw a black eye and a bruise on the boy's chin. He knew that this would end up being trouble including a lot of paperwork.

"It's against the law to sleep on a bench in public. How old are you anyway?"

"Sixteen."

"How'd you get them bruises?"

"My old man came home drunk, as usual, an' started pushin' my mom around. I tried to stop him."

"What's your old man's name?"

"Horrible Henry."

"The professional wrestler?"

"That's him, an' if you plan on arrestin' him for this," he pointed at his face, "ya better call out the SWAT team."

"We'll have to hash this out at the station an' call in the child welfare people; besides, you'll get much better sleep in a cell than on that bench."

"They'll just send me back an' it'll happen all over agin'."

The officer took Harry by the sleeve of his tee shirt and said "Sorry, that's what we have to do."

Harry thought, *I can out run this lumbering man if I can only get out of his grip.*

"What's that light on your shoulder radio?" Harry asked.

When the officer turned his head too look, Harry wrenched his arm away from the officer's grip and started running as fast as he could. The cop started to run after him but quickly realize it was a lost cause.

Oh what the hell, he's saving me a lot of paperwork, he thought, and turned to walk back to his police car.

Harry ran until he was sure he had lost the cop. As he walked down the street, he saw a tiny man about three feet tall approaching him from across the street. This guy was so small, it alarmed Harry and he started to run again.

“Hey, wait,” the small man shouted in a high pitched voice and a very strange accent..

Harry slowed down, turned and said, “What dya’ want?”

“Just want to talk for a few minutes.”

Harry moved closer to a street light so he could see better and said, “Okay, let’s talk.”

When the small man was in the light, Harry could see he was dressed in a suit and tie with shined shoes and a derby hat. “You gay?”

“Yes I’ve always been a happy man or maybe I should say midget?”

Harry burst out laughing.

“What were you running from?” the midget asked.

“A stupid cop that wanted to take me to jail.”

“Did you hurt somebody?”

“No, my old man hurt me.”

“I don’t understand”

“That’s okay I’m tired of explaining it. What do ya do in that get up an where are you from?” Harry asked.

“I work in a carnie a few blocks from here and just got off work. I’m from Hungary originally. Do you want to have a few beers?”

“They won’t serve me. I don’t have any ID.”

“I know a place near the Salton Sea that will serve you, but it’s off the highway past the edge town. Do you want to go there?”

“Sure, sounds like fun, if you don’t get too friendly and I don’t have to walk far.”

“I have a motor scooter chained to a telephone pole at a bar down the street. They were harassing me in there so I took a walk. It’s hard to ride because I can’t easily reach the pedals. I have to use extensions on my feet and that scares me. Maybe you could drive it better. I could ride on back and tell you where to go.” The little man was out of breath after he finished speaking.

“You all right?”

“Yes. I have a lung problem.”

“It’s not catching is it?”

“No it’s a birth defect.”

“The beers sound good and I’ll be glad to drive your scooter.”

They walked to where a scooter was chained to a pole in front of a bar. It was noisy inside for being so late. The little man breathed deeply after the walk. He put a nasal inhaler to his nose and took a big breath.

“I lost the keys but I can unlock it and start it easily with this special tool.” He held up what looked like a lock pick.

“You aint stealin this are ya? I’m in enough trouble with the cops.”

“No, like I said, I lost the keys.” He leaned down and unlocked the chain then he fooled with the ignition and said “I think you can start it now.”

Harry got on the seat and the midget got behind him. It made Harry nervous when the little man wrapped his short arms around him but if he got too friendly, Harry was sure he could run away and easily loose this weird guy.

“What should I call you?” Harry asked.

“I don’t understand.”

“What’s your name?”

“Oh yes, it’s Norton.”

“Okay, Norton, Here we go.” Harry stood on the starter and stomped down. The scooter started and they rode off.

After about twenty minutes, they were on a dirt road.

“Where is this bar?” Harry yelled over his shoulder.

“It’s just a little further, this is a short cut.”

About a minute later Norton said “stop!”

They were out in nowhere, so Harry did not stop.

“Stop! Stop!” Norton screamed and jumped off the back of the scooter. Harry hit something very hard with his head and fell unconscious on the ground.

When he regained consciousness he found himself in a small metal enclosed cell with one door. Someone touched him on his arm.

“You all right?” a feminine voice asked.

He turned and saw a young woman sitting on the floor next to him.

“Where the hell are we and who are you?”

“My name is Maria. Some weird little man drugged and kidnapped me. I’ve been in here for hours when the little man brought you in a few minutes ago.”

"I know, Norton." Harry said. Then he heard the click of a key in the small door. It open and a midget about three feet tall, stood in the doorway. His skin color was a light blue and his eyes were large and green. He was dressed in what looked like a white jump suit.

Harry's mouth dropped open and the young woman moved into the corner.

"Don't be afraid, I'm Norton in my natural state."

Harry spoke up in a loud voice, "What the God damned hell is going on here?"

"I'll explain later. Right now I want to know if you're all right."

"I got a helluv a bump on my head and a headache but it's not bleeding. What did I hit? I didn't see anything."

"You hit our shuttle and you didn't see anything because it's cloaked. I told you to stop several times."

"What do you mean 'cloaked' and where's your dumb suit.?"

"You are on the shuttle of our starship that's parked on an asteroid near the orbit of Mars. I took off that uncomfortable suit and the fake skin. This is the real me. I know it's shocking to you but you guys look weird to me. If I can take your looks, you can take mine."

"Bull shit, let me out of here!" Harry started to get up. Norton raised his short arm and shot some sort of laser beam at him. Harry, temporarily paralyzed, fell back to the floor.

"Don't make me do that again. We're going to spend a lot of time together and I want us to be friends."

"The hell you say." Harry tried to get up again with the same results but this time the beam made him dizzy.

Maria cowered in the corner.

"I'll come back when you can be more cooperative." With that demand, Norton closed the door.

"What do we do now?" Maria asked.

"I'm going to find a way out of here." Harry got up pulled his jack knife out of his pocket and started pounding on the walls. They were metal of some kind and the effort was futile. Then they heard a hissing noise and saw a gas pouring into the room through a small hole. Harry plugged the hole with his finger. The pressure increased significantly and pushed his finger out again. He tried it again pushing harder this time with the same results. The skin was scraped off his finger and he said "God damit." They both became very sleepy and lay down on the floor.

Harry woke up and felt a vibration along with a roaring sound. It felt like the tornado that passed by their house several years ago. The door opened and Norton was standing there. "We are on our way to the mother ship and it will take several earth months to get there so you'd better get used to your accommodations. I want you to be comfortable so I'll give you some amenities." With that statement he pushed a button on a device in his hand. A toilet rose out of the floor in the corner. He pushed another button and a device that looked like a T.V. set rose in another corner. He kept pushing buttons and pretty soon the room was full of furniture with a bed, a love seat in front of the T.V. and a sink.

"Where's the toilet paper and how about some privacy." Harry demanded."

"You humans with your privacy. We don't spy on you, and the toilet has a device that squirts water in your anus to clean you. Just push the button on the side."

"You call that an amenity? I call it an enema"

Norton laughed; it was a weird chuckle,

"I'll return the room to the original condition if that's what you want."

Harry didn't say anything.

"We'll bring you some food soon." Norton said and left.

Maria began to cry. "He said we would spend a lot of time together, what about my family?"

"How old are you? You should be angry not sad."

"I'm eighteen and just graduated from high school."

Harry took a good look at Maria and noticed she was quite attractive with her tan skin and brown hair.

"How old are you?"

"I'm eighteen too" He didn't like the idea of being younger than this girl. "You an illegal alien?"

"My folks are, but I was born in San Diego. By the way, who gets the bed?"

"I guess we both sleep on it. Don't worry, you're not my type."

Norton returned with food. There was a little larger being with him who stood in the doorway.

Their captors left and they ate the food. It was very good, and tasted like a pot roast but didn't have any meat in it.

When Norton returned to pick up the empty containers of food,

Harry asked him what his beings were called and what they were going to do with them.

“We’re called ‘The superior ones’, as best it can be translated into your language. Our purpose is to spread intelligent life throughout the galaxy. We are going to transport both of you to another planet around the star that you call epsilon Eridani about 10.7 light years away. There are several planets in that system where you could survive nicely. We average about 90% of the speed of light and it will take about 12 of your years to get there. That’s why you better settle down and accept the inevitable. The longer you resist us, the longer you will be cooped up in this compartment.”

“Wow!” Harry shouted.

“Will you bring us back some day?” Maria asked.

“No, you will complete your life on the planet you decide to live on.”

Maria started to cry again.

“Even if we did bring you back, about 28 of your earth years will have passed, based on time dilation that is due to our velocity.” Maria cried harder.

“What are we supposed to do on this dump for twelve years?” Harry asked.

I thought I told you it will take us several months to get to our starship on the asteroid near Mars.

Two months later

They had let Maria out of the compartment but kept Harry inside. He would not give them the satisfaction of knowing he’d given in. He was weakening however, because Maria had told him how much more pleasant it was to be outside even though they wouldn’t let her go everywhere.

Norton entered the compartment and said. “We are at the asteroid and about to dock with our starship. We will keep you in this compartment unless you promise us you won’t be any trouble.”

Harry hung his head but didn’t say anything.

“Amazing, I’ve seen some stubborn beings but you are the worst. We’re going to let you out but with a behavior collar. This collar will shock you if you go anywhere or do anything you’re not supposed to.”

Three captors came into the room and grabbed Harry. He struggled

but they were bigger than Norton and had him subdued in a hurry. When they left, Harry had a collar attached around his neck.

“Just so you’ll know how it feels, here it is”

Harry grabbed his neck and cried out.

That’s what it feels like right now, but every time it’s energized, the power is boosted up a little. If you have more than a hundred shocks, it will probably render you unconscious. Don’t leave the lower deck on the starship.”

The three captors grabbed Harry and escorted him out of the compartment and through a tunnel. When he resisted they shocked him again.

The starship was much more spacious and had large windows on the walls. Harry could see out one of the windows that the ship consisted of two very large cylinders, one in front of the other and each rotating in opposite directions. In the center of the cylinders was a huge tank and mechanisms that he assumed were the engines.

Maria walked up to him and with a big smile on her face, said, “They say I’m pregnant.”

“Congratulations, if it’s a boy we’ll name him Norton.”

Maria’s face fell and she turned and walked away.

Twelve years later

Harry was in his room studying the books his captors gave him so he could learn about them and their society. It had taken him a year to learn how to read their language. It was very difficult to speak and his captors couldn’t understand him very well. He loved school and had done well at home on earth but his father teased him and it destroyed his ambition to learn. Now that his father was no longer around, he became absorbed in to books. At the present time he was reading about the two planets they had to consider living on. He went outside to play catch with Jose, his eleven year old son.

Norton and Maria approached him, “It’s time to decide which of the two planets you and Maria will live on,” Norton said.

“Tell us about them,” Maria asked.

“No, I’ll tell you about them”, Harry said.

“The inner planet has an average temperature of 32.3 degrees C or 90.2 degrees F. It has a lot of oxygen and there is a danger of fire, about

the same as that on Earth. Twenty percent of the surface is covered with water and many various fish are crowded into it. It's humid and rains often. The gravity is about sixty percent that of earth's. There is mostly jungle and carnivorous animals are present."

He continued, "The outer planet is colder, at an average temperature of 5 degrees C or 41 degrees F. It's much dryer and has a lot of snow and ice but not many carnivorous animals. There are not many plants and you might have trouble growing any. It rotates much slower around the star than the inner planet. Neither planet is tilted on its axis like earth so there aren't large temperature changes due to summer and winter conditions. We will need: seeds, weapons, and tools to survive on either planet. I insist on being part of the selection process."

Norton interrupted, "Well, you've learned a lot, reading the books I gave you. Of course you know that sixty other humans are going to join you. Forty have decided to go on the inner planet and ten on the outer one. We're having trouble with the other ten, they haven't made up their minds. You're next on the list to decide. Which planet do you want?"

"I want to go on the inner planet. I hate cold weather and the inner one sounds more exciting." Harry said.

"I want to go with Harry and of course Jose will go with us." Maria said.

Harry spoke up, "As I said, I want to be part of the equipment selection process."

Forty six humans were placed on the shuttle to be put on the inner planet. They were left standing around a collection of weapons and tools in a field surrounded by a jungle.

"The first thing we must do is protect ourselves from any animals," Harry said to the crowd around the pile of equipment.

Harry had grown to be a large man like his father and was an impressive figure. He started to pass out laser weapons to all the men. "If you don't know how to handle the laser rifles, I'll show you; even though I haven't ever used one myself."

"How are you going to show us if you haven't ever used one yourself?" William, another large man demanded.

"Because I read their books about it, watch this." He made some adjustments to the weapon and fired it into the jungle. There came a

gasp from the women. "You have to remember there are three settings on these rifles; low medium and high, or in other words, get his attention, stun him or kill him. The shot I just made was a low setting. Here is a high one." He pointed the rifle at the sky and a bright flash temporarily blinded most of the people.

One of the women screamed and Harry thought she was scared by the laser shot, but one of the men on the other side of the pile of equipment yelled, "Look out!" and started to run. Harry ran around the pile and saw a huge cat-like animal running at them. He fired the laser set on high and it went clear through the cat.

The animal dropped dead a few feet from Harry and he said, "Let's hope it's good to eat."

Maria spoke up and said, "Oh, Harry, what a thing to say."

"I'm serious," he answered. Then he said, "We need to teach all the men to use the rifles right now and stand in a circle around the group. Why don't the women try to find the temporary shelters in this mess?"

The shelters were erected on a flat area in the field where they had landed. They were placed close to one another at the women's request.

A meeting was held with all forty-six people attending. It was decided they would use the book of laws that had been given to them by their captors, to live by. The book suggested a republic type government where there was a president and a congress. The president made the decisions when there was time to safely do so and the congress approved or rejected them. If no time, the president was boss.

They decided to vote for the president in an Eridani week (twenty earth days).

William Hannigan (the large man that challenged Harry about the laser rifles) took a rifle and started into the jungle.

"Where you goin?," Harry asked.

"To investigate the country"

"I wouldn't do that, too dangerous."

"Not with this." William answered holding up the weapon.

"Still dangerous, why don't you get at least two others to go with you."

"I tried. Nobody will go, their all busy"

"I don't advise it"

"Who died and left you boss?" and William continued into the jungle.

One Eridani day later, William had not returned. Harry asked two

other men to bring rifles and they all went into the jungle where William had entered. Not more than a mile inside the jungle, they found what was left of William. Apparently he was killed by some animal and eaten; only some bones were left. They knew it was William because most of his head was still there.

A loud crackling of branches came from the tall trees. Harry turned and saw one of the men fire his rifle. A large baboon-like animal fell to the ground, barely missing the group. The animal must have weighed 400 pounds and there was blood on his snout.

“This must have been what got William,” the man that shot the animal said. “I’m glad we got this monster, William was hard headed but I liked him. Who’s going to tell his wife?” No one volunteered. They left his remains because no one wanted to carry them and they couldn’t bury them. Back at the camp, Williams wife ran up and asked if they had found him, Harry told her no, but we’ll go back later and look some more.

They held elections and Harry was made president.

He collected the men who went with him earlier and returned to the jungle. He tried to conceal the shovel. They found just bones this time and it was easy to bury them.

Returning to the camp, William’s wife ran up and Harry broke the news to her as gentle as possible. She ran off crying. Harry asked Maria to follow her and see if she could be comforted.

When Maria returned she said, “I think she’s going to be all right, but she’s afraid to be alone. By the way Harry, I’m pregnant again.” His face lit up and he shouted, “hallelujah! Why don’t you go back and tell Missus Williams she can live with us, we are going to need extra help now.”

“Do you remember what you said to me the last time I told you I was pregnant?” Maria asked. “You’ve changed a lot over the years Harry Miller.”

“I remember. My father taught me not to be a bully and ‘the superior ones’ taught me how to live.”

Richard Neale was born on the island of Corregidor in the Philippines in 1927, a time when the area was still under control of the United States. Born into a military family, Neale spent much of his childhood traveling and lived in nine different states while growing up. It was an ideal childhood to foster a lively imagination and a daring sense of adventure.

Neale graduated from Purdue University in 1951 with a bachelor's degree in mechanical engineering.

In 1964 he attained his master's in mechanical engineering from San Diego State College and earned a professional engineer's license in California. With this expertise, he went on to explore the nuclear and aerospace industry working for companies including

Paisecki Helicopter, General Atomic Co. and Rohr Aircraft. Neale also worked as a civilian engineer with the U.S. Navy. There, he tested catapults and arresting gear on aircraft carriers and was recognized by the Navy for his meritorious work.

Neale's adventurous spirit and experience in aviation also led him to the skies. As a hobby, he began flying lessons and soon became a skilled light plane pilot. This love for action, coupled with his vast knowledge in science and technology, inspired Neale to write short stories. He wrote about everything from space travel and aliens to war and terrorism and soon found he had collected a volume of tales.

[Sci-Venture Anthology](#) (Infinity Publishing, February 2006, ISBN 0-7414-3012-6, \$12.95) is a collection of fast-paced adventure and science fiction stories that take readers from the moons of Jupiter to the battle lines of the Vietnam War. Inspired by authors like Tom Clancy and Isaac Asimov, Neale hopes to put the "science" back in science fiction. Neale's expertise enriches each story with vivid scenes and detail. Rapid plot development and likable, even humorous characters make these stories appealing to a wide audience. His goal is to teach readers, while entertaining them at the same time.

"I include a lot of action, humor and contemporary science in my stories," says Neale. "The style may be simple, but I want anyone to be able to pick it up and understand the language."

Neale is retired and currently resides with his wife in the San Bernardino Mountains in southern California. He is the father of three grown children and in his spare time, he continues to write and fly light sport aircrafts.



Moon Dust My Eye

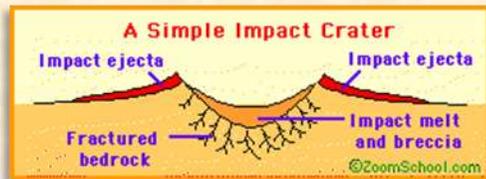
By Frederick Hills and Charles Leshar

Astronaut First Class Jeff Miller carefully guided the rover up the sloping side of crater 415A west of Scottsbluff. In the seat next to him was Shirley O'Hara, a young astronomer tasked to build one of the Deep Space Grid telescopes. She had arrived on the moon just five days before and taken a shuttle from Aldrin Station. This was her first surface excursion in a lunar rover.

"Thanks for putting up with the greenhorn Mr. Miller, I mean Jeff," Shirley said as they reached the edge of the crater and pulled to a stop. "I owe you one."

"You don't owe me anything, Shirl. Happy to do it. Looking at the same four walls in that base will drive a person to drink. Seriously, you do what I tell you and everything will go fine," Jeff replied. He left the rest unsaid.

"Oh, don't worry, I will. Does crater 415A have a real name, something a little more glamorous than 415A?" Shirl asks.



"Not that I know of. What would you like to name it?" Jeff looks over at the young woman curiously.

Startled, Shirl says, "Oh, I don't know. Maybe after my dad."

"What was his name?"

"Robert Cormac O'Hara"

"Robert Crater?" Jeff said and cocked his head as though listening to how it sounded. "Cormac Crater... I like that! Cormac Crater it is!" He grinned at Shirl. "What's the spelling?"

"C. O. R. M. A. C. It's really that simple? We can name it anything we want?" Shirl asked.

"Yes, it really is that simple. What did you expect, a government panel or something?"

"Yes, actually."

"I will enter it into the system..." his hands flew over the keyboard. "and submit the name for final approval," he hit the enter key smartly. "But these things never get disproved. We had some British guy last year

name a rill Old Nuns Twat from a line in a 1660 satirical poem, *Vanity of Vanities.*”

*“They talk’t of his having a Cardinalls Hat
They’d send him as soon an Old Nuns Twat”*

“You’re making that up!” Shirl said with a grin.

Jeff crossed himself Catholic style and said in his best Irish brogue imitation, which wasn’t all that good, “I swear on me mother’s grave, tis the honest truth.”

Shirl smile broadly and said, “The view from the summit of Cormac Crater must be stunning. Can we go outside and look around?”

“First we run through our suits check list. I do yours, and then you do mine.”

“Deal!”

Shirl was the first through the door and down on the surface. She could hardly believe it! Beneath her boots lay regolith never before disturbed by any human. This is why she came here! To be the first! To walk where no one has walked before!

Shuffling around the rover, she gazed outward from the top of Cormac Crater’s rim mountain back the way they had come. Shirl exclaimed, “The view from up here is fabulous! And the base looks so close!”

“It’s about ten kilometers and there beyond it is Faye Crater,” Jeff said pointing. They stood in silence for a few minutes gazing at the beautifully stark lunar vista.

“I hate to interrupt but we do have work to do. What say we get started by taking the topography of the crater?”

“That would be fine.” Shirl said turning away reluctantly.

From the control panel at the rear of the rover, Jeff input the coordinates and stepped back, watching the electromagnetic rail gun mounted on top of the rover silently elevate and rotate until it pointed across the crater. The rover lurched under the force of the launch and the projectile moved quickly over the crater disappearing beyond the far rim almost two kilometers distant.

Walking back to the control panel, Jeff soon had an image on the monitor.

Shirl moved up beside him to examine the data. Elevation lines curved across the screen in full color creating a three dimensional grid of the crater and the surrounding terrain. Linked in with the Lunar GPS, the data detailed the topography to a few centimeters accuracy. Jeff rotated the image making its true shape jump out of the screen.

Shirley was impressed and remarked, "You guys have some great tools!"

Jeff looked at her and laughed from his gut, "Yes, and we know how to use them!"

His tone and laughter made Shirl look at him. Realizing what she had said, her face turned beat red. "I meant your equipment!"

Jeff howled louder.

"Mr. Miller!" Shirl says and turns away.

Regaining control, Jeff points to a flat section along the east side of the rim, "This looks like a good place to start. We will need bedrock for the observatory, and a camp module could be placed here. It's far enough away to isolate human caused vibrations." He grinned at her.

Ignoring the smirk, "That's fine Mr. Miller. Let's get started." Shirl said tersely and headed for the door, her face still a deep shade of red.

"Oh now, Shirl, don't be like that. I didn't mean nothin' by it." Jeff said watching her stalk away.

"Yes, Mr. Miller, I'm sure you didn't! Perhaps I will put it in my report that you didn't mean it! I'm sure the University of Arizona would be quite interested in what you mean and don't mean!"

"No need to go to all that trouble for me, really." Jeff said, quickly stowing the launcher and securing the panel.

"Do not talk to me, Mr. Miller," was her cold reply. She was finding it extremely annoying that she couldn't just walk away from an argument. The suits communications made that impossible.

"Hey, get it through your head, I'm going to talk to you. We are on a mission on the moon for crying out loud. Get over yourself!"

He knew immediately, he should not have said that last thing.

Jeff finally gave up trying to get past the incident. He must have apologized ten times with no effect. The hours passed in terse silence broken only when absolutely necessary. His mini vacation had quickly turned sour. He found out the hard way that Shirl could hold a grudge better than most.

Eventually, they collected the data needed by the construction crew and turned towards home. As Jeff headed down the side of the crater, he gunned the rover and took some chances he normally would have avoided.

“Shouldn’t you slow down?” Shirl asked, gripping the arms of her seat.

“You have your seatbelt tight. Don’t worry about it.” Jeff replied.

He swerved the rover to miss a rocky outcrop and felt the wheels come off the surface as they crested a ridge.

“Mr. Miller! Please slow down!” Shirl said frantically, her eyes round pools of fear. Her face flushed with excitement as the rover plunged downward.

Jeff laughed as the rover touched down. A few moments later they were off the mountain and on flat terrain.

“See, wasn’t that fun! You can’t find a ride like that in Disneyland!” Jeff said grinning ear to ear.

“You really are a juvenile Mr. Miller!” Shirl said.

“Can we drop the Mr. Miller crap? That was my father. My name is Jeff.”

“Whatever!”

“Darlin, I only have your best interests at heart!”

“My best interests? How is it in my best interests that you kill me two days after I get here?” Shirl asked indignantly.

“First, you were never in any danger, and second, if we hurry, I can get ready for your presentation. I know I could use a couple shots of something stronger than this lemonade before listening to you speak about astronomy for an hour.”

Shirl looks at Jeff and shakes her head. “You’re a piece of work, Mr. Miller.”

Jeff tips his head, looks at her intently, and grins. She cannot help herself, she grins back.

Director John Marsh was seated with Shirl at the table in front of the room as the people filed in. In a matter of minutes there were over a hundred and they continued to arrive. The talk was brisk filling the space with human sounds until the director stood signaling that the meeting was about to begin. A hush settled over the crowd.

“Good day everyone. Thank you for joining us. I will get right to it. As

you know, the Deep Space Grid is being constructed to see further into space than ever before. With it we should be able to see the Singularity itself! We may even catch a glimpse of the Big Bang!"

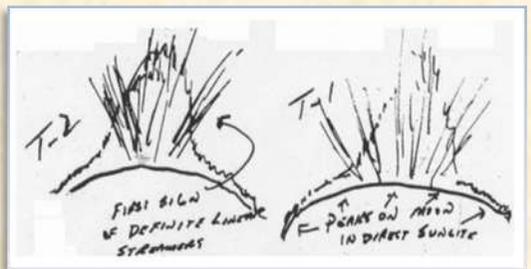
The men and women of Scottsbluff listened politely. Most of them have heard this many times. However, these presentations are part of the integration of all personnel, a way for the group to become acquainted with a new arrival and vice-versa.

"Four of the sixteen Grid telescopes are to be built within thirty miles of Scottsbluff so Scottsbluff will become a major part of the project. Jeff Miller... stand up Jeff... Jeff will be setting up the local Grid Control Center in the Arizona module delivered last week and supervising the construction crews. Any questions, ask him."

"Today we are going to hear about something a little different. We think that the moon has perpetually clear skies but we will soon learn that it does not. Please welcome one of our newest astronauts, a professor from the University of Arizona, Dr. Shirley O'Hara."

Stepping to the forefront amid polite clapping, Shirl looked out at the crowd. These were the people she would be with for the next year. Some she already knew, Jeff in the third row back, and Mary, Cindy and Mona sitting together to her left. Others sprinkled among the crowd. Most she depended on without knowing who they were but realizing she needed these people to keep her alive in a way that never occurred to her on Earth. For everyone in Scottsbluff, the nearest help was almost 400 kilometers away at Aldrin Station. These people were dependent on each other as only true pioneers could ever be. She takes a deep breath and begins.

"Thank you all for coming. As an astronomer, I'm always looking for clear skies, but the viewing here on the moon is not as clear as you might think. The Apollo astronauts were surprised to see a bright haze and rays right before sunrise as they orbited the moon and recorded their observation in a sketch."



Behind her, as she spoke, a large projection screen showed the grainy video of Apollo 11 and the other early moon missions, ending with the sketch.

“You are all well aware that moon dust is a major problem. It’s worse than asbestos or coal dust. Many of the people in this room have helped perfect devices and techniques that allow us to keep most of the dust outside. But every lunar morning, after two weeks of frigid night, just as the sun peeks over the horizon, a strange phenomenon stirs the dust in a global storm that stretches from pole to pole, swirling across the surface following the terminator.”

Shirl takes a drink of her water.

“Mian Abbas studied moon dust for NASA in 2005. He concluded that ultraviolet light combined with a radical increase in temperature caused moon dust to become electrically charged. The moon’s weak magnetic field is strong enough to repel the charged particles causing them to swirl high above the surface. The smallest particles, 1 or 2 microns in size, are propelled upwards for hundreds of kilometers and can stay suspended for eons.”

The video of the lunar storm began with faint stirrings in the dust as the first sunlight illuminated the darkness. As the terminator swept across the land, more and more particles leaped skyward in a long skinny dust storm. After sunrise things rapidly calmed down and returned to relative quiet but leaving a percentage of the particles suspended. The terminator was in relentless motion like a clock sweeping out the hours in a day, stirring up the dust just as it has done for over 4 billion years.

“And at night the solar wind swirls around to the dark side and bombards the moon with electrons, recharging the dust grains and keeping them suspended. We think that some particles have remained suspended for millions of years. Needless to say, the particles are a constant challenge to astronomers and something the Deep Space Grid must account for.”

“So we have photon driven dust rising at the terminator and electrons from the solar winds keeping the particles charged throughout the night. The lunar skies are anything but clear. There is enough dust in the sky even at its lowest count to affect astronomical observations in infra-red, visible, and ultra-violet light. At the height of a terminator storm the affect is dramatic and will need to be avoided.”

“Observation problems are not new to astronomers, be it clouds, passing aircraft, or meteors, we have learned to deal with it. As always, the key to solving the problem is in understanding the cause.”

“During my year in Scottsbluff, I will be overseeing the installation of

four Keck class 10 meter telescopes. The first will go on top of Cormac Crater about ten kilometers west of Scottsbluff. The machinery to cast and grind the mirror will arrive sometime this month and some of you will be assigned to operate it while it is here. Others will help at the construction site. The entire community will benefit from the project for years to come.”

To her surprise, the room erupted with questions. A man shouted out, “When can we start carving out a city in the rim of the crater? We need to get underground as soon as possible!”

“Aldrin Station has been working on it for years and they just completed the second tunnel through Alphonsus Crater rim. If we don’t start soon we may never get it done!” a woman added, concern etched in her voice.

Director March stepped up beside Shirl. “Folks, calm down. We are receiving the first shipment of explosives next week.”

“Sorry director, but we’ve heard that before,” a man in the front row said softly.

“I know Don, but this time I believe them. Chris and Monty are there overseeing the packaging and will fly in with it.” The director assures him. Turning back to Shirl, he sees that she doesn’t understand. “Your dust notwithstanding, there is nothing between us and the hundreds of thousands of micrometeorites that pummel the surface every day. We have had two serious incidents and it is only a matter of time before someone dies from them. The only safe place is underground and the folks over at Aldrin Station have proven that carving out living spaces under a crater’s rim mountain is safe and fairly easy to do. We have plans for doing the same thing in Faye Crater’s rim.”

Don adds, “And your project, as important as it is, takes workers and resources away from that goal.”

“I see,” Shirl said. “I will do everything within my power to see to it that the Grid projects do not impact your construction schedule.”

Now the room erupted in clapping and words of encouragement. The meeting lasted a few more minutes then broke up.

Shirl put oatmeal, peaches, and hot chocolate on her tray as she passed down the line. Spotting an empty table, she shuffled towards it. She congratulated herself that she was adjusting nicely to the low gravity on the moon. She could walk now without hopping and had even tried

running on the track in the gym with limited success. As soon as she sat down she saw Jeff coming through the line and headed towards her.

“Good morning,” he said as he sat down opposite her.

“Please, why don’t you join me?” Shirl said sarcastically.

Ignoring her, he motioned for a young lady to come over.

“Sashi. Have you met Dr. Shirl O’Hara?”

“Not officially. I was at your briefing.” Sashi said remaining standing.

“Shirley, this is Sashi Goyal. She’s Scottsbluff’s Quartermaster.”

“Very pleased to meet you,” Shirl said offering her hand.

“Likewise, I’m sure,” Sashi replied touching hands briefly. “I have a couple of computer servers that are marked for you. You can come by any time today and pick them up.”

“Good. I was wondering when I would get those,” Shirl said. “Where exactly is your office?”

“Use your handheld to find the warehouse,” Sashi said. “Or get lover boy here to show you where it is.”

The way she said it made Shirl wonder what history these two had. Glancing at Jeff, he grinned at her and said nothing.

“Thanks Sashi, I will find it myself,” Shirl said.

“Later then,” Sashi left and joined a table with several other people, taking a seat with her back to them.

“Jeff, do you know the status of the meter telescope?” Shirl asked.

“It has been assembled and is in the shop,” he replied. “I checked out the control and drive system late yesterday and everything seems to be working. I will thoroughly test it before moving it outside.”

Picking up Shirl’s handheld, Jeff quickly programs the unit to navigate to both the Quartermasters warehouse and his shop. “Come by in an hour or so and we can go over the specifications for the camp module and I will show you your telescope. Follow these directions and you will not have a problem finding your way around the base.”

An hour later, Shirl walked through the door to Jeff’s shop. Positioned prominently in the center of the space was a large LOX tank, sitting on supports in the midst of a major refit.

“Is that my camp module?” she asked.

“It is. Before we are done, it will have a bathroom, food, air and water storage, recycling equipment, living space, two beds, table, stove, refrigerator, etc. We are preparing to add the airlock today unless

something comes up.”

“It seems adequate,” Shirley replied matter-of-factly. “Of course people will only be there for short visits so it doesn’t need much.”

“Those people will depend on it for their lives. I’m not cutting any corners just because it will not be lived in permanently.” Jeff said wondering if Shirl had the same effect on other men that she did on him. All he could think about when she was near was...

“I am not suggesting that you cut any corners. I will be one of those people soon enough and I don’t want to worry about your workmanship.” Shirl said coldly.

“Look, we may have gotten off on the wrong foot. Will you please accept my apology and let us move on?” Jeff watched as Shirl stood silent staring at something across the room.

He was about to say something when she finally turned to him and said, “Mr. Miller, pleased to meet you. I am Doctor Shirley O’Hara from the University of Arizona.” She held out her hand.

Jeff grinned and accepted the offered hand. “Very pleased to meet you, Dr. O’Hara. May I call you Shirl? And you call me Jeff?”

“We’ll see. For now, can you show me the telescope?” Shirl asked.

“Right this way,” Jeff replies leading to a workstation against one wall, the telescope sitting close by. He motioned her to sit in front of the screen.

Taking the seat he offered, Shirl quickly pulled up the software and initiated the auto-tracking system. The small telescope hummed into life and she input the celestial coordinates for Jupiter. She watched as the telescope swung around and pointed towards the far wall.

“The internal location has been input so that should be the current position in the sky to find Jupiter,” Jeff said.

“I’m sure it is. You have done a magnificent job Jeff. How soon before the telescope can be mounted outside?” Shirl asked almost nicely.

“It’s ready now and on the schedule for next Thursday. I have three technicians slotted to help with the deployment so it should go fast. Maybe a couple hours,” Jeff said.

“Fine. Let me know if anything changes,” she said, walking away without so much as a backward glance.

As Jeff watched her go, he wondered what Shirl would be like if he could ever thaw the ice, what treasure lies below that frozen exterior. He was a patient man and knew that some things were worth waiting for.

Jeff released his construction crew as the final bolt was torqued down. The telescope was only a meter in diameter but much bigger than the one he had as a kid. His father had helped him build a 24 centimeter telescope from a kit. They had ground the lens and everything.

But this little telescope was a powerful instrument, not a toy, even if it was only a tenth of the size of a Grid telescope.

“Ok Shirl, turn it on and let’s see if it works,” Jeff said

“Roger, powering up the azimuth motors,” Shirl replied. She was inside at the control console on the far side of Scottsbluff.

The telescope responded by rotating.

“Now for the elevation,” Shirl said.

The body of the telescope smoothly pitched upward and stopped.

Inside, Shirl instantly recognized the Pleiades star cluster.

“Perfect!” Shirl exclaimed. “The auto-tracking system is only off by a few seconds. I will calibrate and drop that to a few nanoseconds over the course of the first few days of observations. Great Job! Truly Magnificent!” Shirl said. “I owe you guys, Big!”

Jeff chuckled, “I’ve heard that before,” he said.

Shirl didn’t hear him. The young astronomer was already deep into the equipment feeling as if she had just opened the most amazing Christmas present ever. She played with pan and zoom, and tested out some of the filters included in the system. Within moments she had measured the color and magnitude of each star in the cluster.

“Very nice,” she said with a smile of satisfaction.

“How about going to the dance tonight with me,” Jeff asked.

“What?” Shirl said, engrossed in her new toy.

“I said, why don’t you come with me to the dance tonight. Don and the Handy Men are playing and I swear to god, they sound just like Crosby, Stills and Nash. Great harmony!”

Tearing herself away, Shirl asked. “Are you asking me out?”

After a moments silence, “Ya, I guess I am.”

Shirl smiled, “I’ll tell you what, Mr. Miller, I will meet you there. Is that acceptable?”

Jeff grinned, “Sure! Meet you there! It starts at 21:00 hours in the same room as your presentation!” It’s not who you come with, it’s who you leave with that matters most. He can sense the great ice age may be coming to an end.

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Frederick L. Hills has been fascinated by space since he first saw the Moon through his father's telescope. One of the earliest models built from scratch was that of Werner Von Braun's proposed space ship. Later he studied electrical engineering and participated in many space related projects including the development of XM satellite radio.

Fred believes fiction is the best way to help people think past putting yet another short-stay lander on the Moon to the day when large numbers of people live and work there. One day it will seem no stranger than living in remote spots on Earth such as Alaska or the Antarctic or Los Angeles.

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When Chuck first read this story, he was amazed at the similarities between it and one he had written months earlier. With just a few changes, Chuck was able to meld the two stories together. Chuck and Fred hope you enjoy reading about Jeff and Shirl as much as they enjoyed writing about them.

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Submissions Guidelines

editor@writerscramp.us

Moonbeams preferred genre is Science Fiction as it relates to colonizing space and the moon but we will accept other genre including nonfiction. You do **not** have to be a Moon Society member to submit.

Moonbeams is about two things: authors getting their work published, and making the case for space colonization

Successful submissions must stick to accepted physics: no faster than light warp drives, no worm holes, no time travel, no transporters a la Star Trek and no alien monsters. No magic, no fantasy. Last but not least, no social, political, or religious diatribes. Send us a plausible story about the colonization of space and the moon and we will publish it. But don't stop there. The subtitle "Tales from the High Frontier" indicates that stories can be set anywhere in the Solar System. Nonfiction submissions on science and technology must be thoroughly referenced.

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These guidelines are subject to review and will be adjusted as we go along. Moonbeams is YOUR magazine. Let's have some fun with it, shall we?

The Editor