

EMERGENT MARS

RUSSELL KLYFORD



A NOVEL OF MARTIAN COLONIZATION AND INDEPENDENCE

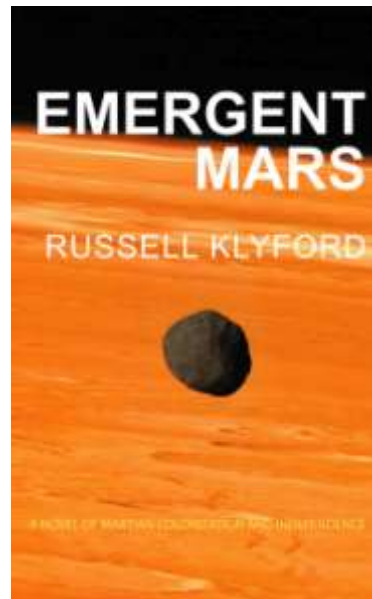


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ABOUT *EMERGENT MARS*



It's 2059 and Ailia Bax, a burnt-out war correspondent whose career has been going nowhere for the last decade, is aimless and suffering from the debilitating effects of PTSD.

When the opportunity arises to report on the unfolding political situation on Mars, she jumps at the chance despite her misgivings about the lack of detail related to the assignment.

After nearly twenty-five years of colonization efforts, Mars has developed a unique society composed of both humans and sapient robots called mecha, living in a dozen settlements dotted around the Red Planet.

But trouble is brewing: someone's prepared to commit mass-murder to stop their society from flourishing; they need to overcome dwindling economic support, intrusive surveillance and increasing distrust by Earth authorities; while internal differences of opinion threaten to derail their dreams of independence.

Mars has already weathered two violent political events; it doesn't need a third.

Finding more than she ever bargained for on the Red Planet, Ailia has to adjust to the complexities of life there while struggling to cope with graphic flashbacks from her past. Gradually she becomes an unlikely ally in the settlers' pursuit of self-determination and must make choices that will shape her life and possibly determine the fate of all those who call Mars home.

Like *Red Mars* meets *Dances with Wolves* with economics and interplanetary politics mixed into the narrative, *Emergent Mars* will entertain and inspire, leaving you pondering a profound question: Will humanity be able to free itself from all the mistakes of its past as it expands into the solar system?

EMERGENT MARS

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Cover art is an Adaptation of an image of the Martian moon Phobos captured during a close fly-by of the Mars Express Orbiter Spacecraft:

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Chapter heading images inspired by Iceworld pixel artwork by Ron Cobb

This book is dedicated to all those working towards a diverse and progressive spacefaring multi-planet human civilization.

ACKNOWLEDGEMENTS

The thoughts and opinions expressed in this book belong solely to the author, and do not necessarily – or at all – reflect those of the people who have generously contributed their time and expertise to checking the factual, technical and scientific aspects of this work and they should not in any way be associated with such views, thoughts and opinions – unless they expressly chose to do so.

I wish to express my deep appreciation to a number of important people who have guided my efforts. I would like to thank:

My wife. As an alpha-reader she suggested essential changes that allowed me to turn a collection of loosely related fictional interviews into something resembling a novel, then as a proof-reader checked for typos and other errors.

My beta-readers, Tim Wheeler, Victor Acnamii, Anoushka Singh, Gion Glasford, and Jasmin Wolfrath provided honest and detailed critiques, challenged my arguments and questioned my assumptions. They not only encouraged me to continue when I was unsure whether anyone would be interested in the book, but also helped me to walk in the shoes of potential readers.

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Lu May from *Campdogstudios* made sure that Rhino was portrayed in a culturally appropriate way by doing a sensitivity check.

My editor, Michelle Marie made suggestions about the content that improved the flow and tone of the book immensely.

I am also indebted to the following organizations, institutions and resources that were essential to the world-building of this novel:

Without the ability to quickly discover and/or verify facts about Mars, this novel would have been dead in the water. All hail NASA (<https://www.nasa.gov/>), JPL (<https://www.jpl.nasa.gov/>), ESA (<https://www.esa.int/>) and of course, Wikipedia (<https://www.wikipedia.org/>).

Kenneth Coles, Kenneth Tanaka and Philip Christensen for their fabulous book, *The Atlas of Mars: Mapping Its Geography and Geology*, for bringing the planet into my living room so to speak and giving me a sense of scale and context of the features of Mars.

Iain M. Banks for his stories about the great machine Minds of the Culture that must grapple with the realities of being sapient and therefore responsible for their actions, as well as suggesting an elegant way that sentient machines might express emotions – through color.

Those interested in the practicalities of mining moons like Phobos might wish to read, *Asteroid Mining 101 - Wealth for the New Space Economy*, by John S Lewis

Those interested in economic democracy, post-capitalist economics and alternatives to excessive consumption in our society might wish to read, *Another Now*, by Yanis Varoufakis, *Islands in the Net*, by Bruce Sterling, and *Small Is Beautiful*, by E. F. Schumacher.

Those interested in the idea of using Phobos as a science platform and communications relay station, might gain insight from, *Visibility analysis of Phobos to support a science and explo-*

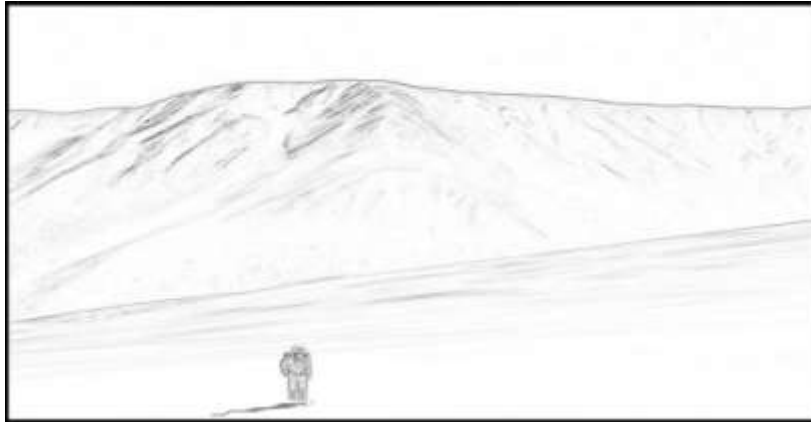
ration platform, by Elliot Sefton-Nash, Guillaume Thébault, Olivier Witasse, Detlef Koschny, Beatriz Sánchez-Cano & Alejandro Cardesin-Moinelo

Those who want to know what it might be like to fly over the surface of Mars, or check out its geological features in detail should get onto ESRI GIS Mapping (<https://explore-mars.esri.com/>).

The Grumman wheels on the Rex 2.0 rover are technically known as Elastic Conoid Shaped Wheels - *Patent: US3698461A*, invented by Edward G. Markow of the Grumman Corporation and patented in 1972. See also: *Design and fabrication of wheels for a lunar surface vehicle. Volume 1 - Detailed technical report*.

Finally, all mistakes, omissions, shortcomings and general tardiness are my responsibility. On some occasions, to benefit the plot or for dramatic effect, I have deliberately ignored or embellished certain facts, comments and concepts.

CHAPTER 1



DATE > EARTH YEAR 2059 - FRIDAY, JUNE 26

LOCATION > GRESHAM, PORTLAND, OREGON (EARTH: 45.50°N 122.44°W)

ARE YOU A daytime moth or a nighttime butterfly? It had been a simple question from my trauma counselor this morning; was I a butterfly or a moth, a daytime person or a nighttime person? Somehow the two concepts became knotted together in my brain and I couldn't find a reasonable answer.

For the past ten years, I've submitted myself to the probing, analytical intrusion of counselors, paying them exorbitant fees to expunge the grim memories and anxieties of my war correspondent past. At first, the diagnosis of Post Traumatic Stress Disorder or PTSD was a relief, a way to corral all my nightmares, flashbacks and agitation into a neat, knowable, scientific quantum; an explanation for the confused and foggy thinking that dogged me daily and still does. Now all these years later, I find myself trapped by the label, unable to escape the restrictions I've placed on myself, or the judgment I experience from others.

Standing before my bathroom mirror in the early evening, that muddled feeling is finding its expression in the form of my worn-down Ailia Bax reflection; some anguished variant that looks almost like, yet isn't quite me. Styled shoulder-length blonde hair slightly lank after a long day at work, gray eyes a little bloodshot, a forehead too high, a nose too large, and a faint facial scar just above my lip that continues down my chin; features that conspire against any verdict of beautiful. Distinctive, that's the word a former—and brief, very brief—lover once used to describe me.

With a heavy sigh, I make my way to the kitchen and pour a glass of white wine; another lonely Friday night to end a dull work week.

This latest shrink—I still prefer to use the old-fashioned term instead of "counselor," even though he cringes whenever I use it—came highly recommended and has made progress where others have failed. Not beholden to a particular theoretical school of treatment, more understanding, he suggests that I seriously consider taking up the Mars gig I've been telling him about.

"Mars might be just the thing," he utters with a professional nod of his head. "Something to break the patterns in your mind and get you back onto the world stage doing important work." He coughs, realizing the faux pas he's made and backtracks. Not that what I am do-

ing as a technology reporter isn't extremely valuable, he's at pains to point out. "It's just that you're a thoroughbred and the work you are doing is, well, let's just say, less than challenging of your capabilities."

He's trying hard not to be condescending, but it isn't working.

Instead, he's making me angry. Wasn't the point of my safe and predictable reporting job to help me get over my PTSD? If not, then what have I been doing for the last decade?

Sensing my growing annoyance, he taps quickly at his data pad, presumably delving deeper into my file before reassuring me in his soothing counselor voice, that yes, going to Mars is the perfect opportunity for me.

So here I am, preparing to leave in about three week's time.

It sounds simple, *the Mars gig*, as if it might be like following a music band around the country and firing off occasional missives to head office. It's not simple at all. It's three years of my life, a two-year—or one Martian year—stint on the red planet until the next Earth-Mars transit window, and the months of transfer time getting from Earth to Mars then back again when I'm done. All of which doesn't include the recuperation time I'll need after I return, to reacclimatize to Earth's heavier gravity.

Intersolar Discovery magazine, or *ID* as it brands itself, has engaged me to create a series of feature articles. Apparently the magazine's silent backers want to capture the social and political changes currently unfolding on the red planet.

Whilst light on details, my briefing notes from *ID*'s editor, Freddie Costigan, indicate that the situation there is reaching some sort of crux or tipping point. There's talk of succession from Earth, compounded by some minor sabotage attempts and ongoing, low-level civil unrest.

When I queried Freddie about the scant data, he maintained that's one of the reasons why they want a reporter on the ground—to get better first-hand intelligence.

Also sketchy are the biographies of the high-level people that *ID* wants me to interview. Instead of the extensive personal and professional synopses I'm usually provided with, these are stick figure descriptions with scant, name-rank-and-serial-number details.

It vaguely worries my lethargic mind that I'm making such a big commitment without much background.

Then again, when did I ever have all the facts before heading into a war zone? Obviously, I've gotten soft over the years, too used to comfort and having information spoon-fed to me.

It occurs to me that I've always had a fascination with Mars. As a child, I was captivated by the images sent back from that distant red world. As a teenager, I dreamed of being part of the teams exploring it.

Then as an adult, my career covering conflict and unrest around the globe became all-consuming.

Before I knew it, any chance of actually going there had passed me by, although that didn't stop me from keeping tabs on the place.

Decades of steady scientific progress occurred on Mars, until about five or six years ago. That's when the Colonial Rebellion hit the headlines. A militant group, consumed by a sense of manifest destiny and calling themselves the Colonialists, orchestrated a simultaneous rebellion at each of the dozen human habitats.

Their aim apparently, to pursue an accelerated agenda of taming, exploiting and terraforming the planet. The rebellion was quickly put down—with the loss of only one life—yet it created an outcry here on Earth. People were polarized; either agreeing with the Colonialists' aims or condemning them, the controversy fuelling the media for weeks.

Quietly furious about the demise of the Colonialists, the Chinese government secretly sent an assault team to 'pacify' their Red Star base about six months later. They claimed it was their justifiable and measured response to a counter-revolutionary resistance movement that had illegally seized control of their sovereign assets; a movement that was blocking their access to the bounty of Mars.

Naturally, the massacre of the entire population of the base appalled everyone else, from presidents and prime ministers, to the average Joe on the street.

Since then however, very little news about Mars has been reported. And with the flow of information diminished, my attention, like most people's, shifted elsewhere.

Now I'll have the opportunity to reverse that trend.

Suddenly the reality, the full impact, of what I'm soon to attempt hits me. This isn't just packing up and heading off to another town or another country. This is leaving Earth. This is interplanetary travel. This is going to a new world.

And in this moment I'm torn.

Part of me can't wait to get going; no longer willing to watch the depressing days of my uneventful life ebb away, with nothing to look forward to, and no one special to share it with.

The other part of me knows that I'll miss this place terribly if I go. Not just Earth, but this house. It's the only home I've ever known, the center-peg around which my life has always revolved.

Another sip of wine and looking around, I take in the large framed photos of Kazakhstan desert landscapes, festooned throughout the house; pictures taken by my father, an avid photographer, while posted at the US embassy there. Another thing that hasn't occurred to me till just now; these images are so much like the Martian panoramas I used to ogle over as a child.

Absently my gaze settles on that special photo of my mother, father and myself, the three of us grinning like idiots, taken on my tenth birthday with the Baikonur Cosmodrome launch gantries rising up in the background.

If they were still alive, they'd be urging me to go, and would have every detail of my itinerary meticulously planned.

The thought makes me smile.

But the happy moment doesn't last and the next mouthful of wine seems to have less flavor than the last one.

With a mental command to my neural implant, I dim the lights and reduce the reflectance of the balcony glass, only to find myself eyeing with distaste, the high-rises and apartment buildings spreading towards my property like a cancer.

There's a huge premium on elevated land in response to evermore devastating floods and relentless sea-level rise that's affecting the city center and low-lying neighborhoods of Portland.

A pile of real estate pamphlets, pestering me to sell, sits on the corner of the kitchen bench, testaments to the critical property shortage sweeping the globe, as populations everywhere seek higher ground.

I know these jumbled, seesawing thoughts and emotions are a symptom of my PTSD, but I've had quite enough of them, thank-you very much.

If my shrink is confident that Mars is where I'll find respite, if not resolution, and if my parents would be encouraging me to go, that's good enough for me.

Flicking through the *ID* brief on the kitchen bench, I take another sip of wine and notice the data pad has dozens of flat and holo images of high-tech rovers speeding along causeways next to spacey habitats, where happy people seem to be living contented lives.

Yep, that's what I want, what I *need*; someplace where I can think new thoughts, lay down new memories, and meet new people.

If I do this, I'll have to start adjusting my thinking to be Mars-centric: sols instead of days and 24.66 hours in a sol; tosol, yestersol and nextersol instead of today, yesterday and tomorrow; seasons of unequal length because of Mars's elliptical orbit around the Sun; and a four-sol week.

With equal parts excitement and trepidation about what the future holds for me on the red planet, I raise my glass and finish what's left of my wine.

CHAPTER 2



DATE > MARTIAN YEAR 56 - SOL 501

LOCATION > LANDING FIELD 1 - LINEER BASE - (MARS: 3°S 206°E)

MY KNOWLEDGE OF Mars has turned out to be just a collection of hand-me-downs. I realize that now. A paltry understanding stitched together from other people's technical details, other people's research, other people's images, and other people's stories, all found wanting against the vast desert landscape stretching out before me.

Even though the noon sun is noticeably smaller than and only half as bright as it is on Earth, it's still dazzling in the endless rice-paper sky overhead.

Past the outer markers of the landing area, a boulder field rises gently in front of me to a crest about 400 meters away.

The rocks appear weathered, probably by wind-blown sand or from ancient flowing water. They're lying around as if they've been dynamited from a nearby quarry at the beginning of time, and left scattered haphazardly across the ground by the blast. The rocks range from gravel, ones the size of my fist, all the way up to great slabs that are twice my height, all of different shapes and jutting at different angles and directions of repose. Most are bluish-steely-gray in color, with their fractured appearance tempered by a light coating of pale sepia dust that's built up in the dents and creases on each horizontal surface.

Beyond the boulder field and over the crest in the middle distance are row after row of gigantic linear dunes rise about 50 to 100 meters above the surrounding plains.

The dunes eventually give way to steep scree slopes that sit at the foot of a massive escarpment. Rearing up, it looks like the ancient walls of an abandoned mountain fortress, with the scree slopes resembling piles of bleached bones left after successive waves of doomed sieges. Stretching off from left to right as far as I can see, the natural rampart eventually merges with the horizon, the crags and crevices of the rockface softening into ever paler sepia tones with the distance and the dust haze.

The shuttle I've just arrived in, sits behind me on the landing field. It and its attendant loading-unloading vehicles, look tiny in this immense landscape; a child's toy left behind on a beach, surrounded by curious, scuttling crabs.

My eyes are seeing what appears to be a blazing hot desert, yet I know it's cold and poisonous out there. The low-pitched Martian wind murmurs to me over the light hum of mi-

cro-pumps and rustling of fabric inside my environment suit or e-suit, a quieter and more muffled version of a light breeze on Earth.

I feel like a tourist at a new destination trying to inhale exciting, exotic scents and aromas, sampling the quality of the air, only to remember that I'm breathing the sterile contents from my e-suit.

It's a fleeting disappointment until I notice near my boots, fine grains of sand and dust being blown along in the light Martian wind. This microcosm of activity playing out against the macrocosm of the stark grandeur around me; two vastly different scales inextricably linked.

Squatting on impulse and scooping up a glove-full of red sand, I get a sense of its weight and texture, feeling a faint hint of its warmth on my hand through the thin glove material. Tiny grains glint in the sunlight, as they join the little dry cascades that trickle through my fingers back to the ground.

Staring at my hand long after the last grains have trickled away, I feel as if I've drifted into a little bubble of non-time where nothing is happening, nothing is changing—complete stillness. There's something profound about this eternal moment; that this might be the locus of all of my past and every moment of my future.

After a period that could just as easily be minutes or days, time seems to move forward again and as it does, there's a shattering inside of the disquiet I've been living with for the last ten years—unhappiness that has silently and relentlessly filled up my life, as I naively substituted the real needs of my psyche, with the trinkets and baubles of modern life. Now, at last, I'm free from the nine-to-five, the bland social discourse and interpersonal niceties that have become part and parcel of my safe reporting career, as well as the regrets of go-nowhere relationships.

Awakened by the transcendent reality around me, I almost ache with the need to walk over the crest of the boulder field to see what's there. Humans have always walked over the next rise, the next ridge, and the next mountain, to see what lies beyond.

The feeling is so strong and euphoric, I'm tempted to ask my suit persona to check the air mix and make sure I'm not experiencing hypoxia. Most probably it's a beautiful cascade of neurotransmitters in my head that previous generations would have mischaracterized as some sort of religious experience. I have only one word for this feeling—beguilement.

I guess this is why we cross the light-minutes and light-hours of our solar neighborhood, why we explore. That spur-of-the-moment decision to go *this* way instead of *that* way, to make a chance find, to trace a line in the wafted sand with a finger, or throw a small rock to see where it lands, experiences that no amount of remote sensing or immersive telepresence can reproduce.

Coming out of my reverie with a start, I'm conscious of my name being called several times over the comms in my helmet.

Turning, I come face to face, or suit to suit, with the person I believe will be our driver. At first glance, I pick him as an African because his skin is the color of prestige dark chocolate, only, the facial features are different.

He's going to take us from the landing field to the habitat.

Without conscious thought, I've shuffled a considerable distance upslope into the boulder field away from the rest of the inbound travelers huddled near the shuttle. I expect him to be angry with the stereotypical absent-minded tourist, but through his visor, I can see a broad smile. White teeth in an ebony face.

"Quite a view ain't it?" he says, in a gruff Australian accent that seems to have some German inflection. "Nothing ever really prepares you for this. One sol it just becomes ... your turn," he muses quietly, almost reverently, sweeping his arm to encompass the panorama. "Sorry, just paraphrasing a favorite Ty Murray quote. I get so caught up in my daily goings on, I sometimes forget what it was like the first time I landed. Thanks for reminding me."

"No problem," I say. "Anyway, I shouldn't have wandered off—compromising safety and so forth."

"Apology accepted, now we're even. You're the reporter from that magazine." He knows perfectly well who I am and why I'm here—he couldn't not know.

"Yes, that's me, Ailia Bax, fresh-off-the-shuttle," I quip, and he chuckles. "So, I guess being here makes me an Areian now," I comment enthusiastically.

He looks at me sidelong and winces. "Hmm ... did y'know the ancient Greeks hated Ares's guts? He was the most despised of all the Greek gods."

I make some non-descript noise, momentarily wrongfooted by his response.

"It wasn't until the Romans gained majority ownership of the Greek pantheon franchise and rebranded him as Mars, that the God of War gained some respectability. The Romans recycled Ares, plastered over all the ugly parts, and sold him to the masses as Mars the master strategist, a general of generals, and a God you could look up to."

"What was so bad about Ares?" I ask.

"The problem was that he represented the bloodlust of men during war. That bizarre madness that makes ordinary blokes go on killing long after the battle is won, compels them to assault, pillage, maim and massacre innocents. Yep, I kid you not, Ares was a right *arschloch*. The differences in the public perception of Ares and Mars are the same as say ... between a child molester and a child mentor. And as for Ares's two demented sons, Phobos and Deimos, the less said about them the better."

"Oh, right then," I say, slightly nonplussed.

"Hey, look, don't sweat it. It's just that we're a little touchy about names and namesakes around here. We're not superstitious, just sensitive to the images and histories we want to associate ourselves with. No biggie. Oh, I forgot to mention, the name's Reinhardt Gurooman. You can call me Rhino if you like, most people do."

Wait. *The Reinhardt Gurooman*, key figure in the quelling of the Colonial Rebellion? Although he's high on my interview list, I hadn't expected to meet him on my first sol. Inwardly, alarm bells are ringing. I recall that several top journalists over the years have tried to interview him without much success. On each occasion the conversation quickly dried up or he simply stormed out of the studio, so I'm certainly not going to rush into any kind of deeply probing conversation with him right now, or the foreseeable future for that matter.

He puts his right fist forward in greeting. I return it by bumping my gloved fist with his, and our suit personas exchange contact details and messaging protocols so we can stay in touch anywhere on the planet and near space through the rednet.

"Pleased to meet you, Rhino. I'm curious, is Gurooman, a traditional name?"

"Mostly. It's an Anglicized version of the word for 'Old Man Kangaroo' that my Australian First Nations Yugembeh-Turrbal-Yagera ancestors used," he proclaims proudly. "How about you, is Bax an American name?"

I shake my head, forgetting that the movement doesn't translate through my helmet. "Not originally. The name can be traced back to my ancestors who lived in Kent, England."

"Fair enough. Well now, let's get you and the other newbies to the transfer rover," he says, cocking a thumb towards the landing field.

He takes off down the incline I've wandered up. I follow him back to the level ground of the landing field, making sure to take small shuffling steps so I don't overbalance in the light gravity.

As I troop down the slope, there's a squeaking sound through my boots with each step. The sound takes me back to my childhood; running down a dune at the beach with the summer sun overhead and squeaky sand underfoot. It's a strange feeling to have the two experiences superimpose over each other across so much time and distance. Not *deja vu*, instead, a blending of recollection and immediate reality.

The activity around the shuttle continues as habitat supplies and equipment are unloaded by humans and mecha.

Martian mecha are unlike Earth robots. Some wag once commented that they look like versions of the old cartoon robot, Bender Rodriguez, only without the hedonistic attitude and foul mouth. At about 171 cm they have roughly cylindrical bodies, two legs, two flexing arms with three grippers each, a sensor strip wrapping across their face, and a light strip that goes up over the centreline of their head so they can show their emotions by displaying different colors, like a Mohawk mood ring. Two subtly grilled speakers at the chin enable voice communication.

Gazing off across the field, I notice a cluster of shuttle support buildings for repair and maintenance, catering, ground support, baggage handling, and so on. A solitary gauzy wind sock flutters limply in the light extraterrestrial breeze; its support pole topped by a futuristic looking anemometer and wind vane.

Rhino leads our group to an initially sturdy-looking vehicle parked near a large rock outcrop on the opposite side of the landing field. The transfer rover looks like a super-wide cross between an airfield Rapid Intervention Vehicle and a CASSPIR, one of those old South African landmine-resistant vehicles that they used for transporting troops. It's riding on big, bulbous metal-mesh tires with a front cab seating four, so my suit persona informs me, and a rear cabin that will hold over twenty passengers and associated equipment.

Rhino warns us it isn't pressurized, so we stay in our suits.

The vehicle is reflective greenish-yellow like our e-suits, apparently to make it easier to see in low lighting conditions and during dust storms.

Under the side windows on both sides of the front cabin is emblazoned the name *Wadenbeisser*.

What strikes me most about the vehicle however, is how beaten up it is. It looks as if it's been in one, no, several major accidents that have variously twisted the chassis, causing a misalignment of the rear wheels, dented in the cabin roof so it's out of square and leans to the right slightly, and scraped nearly every visible panel on the vehicle.

I understand now why the machine isn't pressurized. There's no way anything this misaligned could seal properly. Not that it matters, it's probably just an old workhorse they'll be scrapping eventually. Since none of us are dignitaries, they've probably kept the proper vehicles sensibly garaged.

As the rest of the passengers are climbing into the back of the rover, Rhino draws me aside. "Would you like to ride with me up front?"

I give him an enthusiastic, two thumbs up.

Once we've clambered into the cab I notice there's a fine smattering of red dust on his helmet, shoulders, and arms. It swirls up in the lazy 0.38 G and thin air as he moves, before spreading delicately across the dash that, along with the rest of the cabin, already has a thick coating of the stuff.

I'm about to make a smart comment regarding the messy work conditions, when I see I have a similar fine layer on my suit, and my movements are also adding to the cabin's shabby appearance.

Instead, I ask, "*Calf-biter?*"

"Yeah," he chuckles, "we think of all our rovers as dogs. Get it? Rover ... dog."

"I had a dog once. It was called Buster."

"Yeah, well, there are lots of dogs out there called Rover, okay? I mean it's a typical dog's name isn't it? ... Rover," he huffs a bit.

Realizing his little joke has fallen flat, he slaps the controls forward.

I'm trying hard to keep a smirk from reaching my lips. "I thought these things were autonomous."

"Oh, they are. They'll go, they'll fetch, and they're even smart enough to bring me my pipe and slippers at night! I just like to keep my hand in that's all," he says. "You never know when you might have to exert executive control."

I shake my head and roll my eyes; it's clearly a boy thing.

Presumably, to add some theatre to our departure from the field, he activates the vehicle's rumbler siren. High-pitched sounds are almost inaudible on Mars, so they use the bass tones of the rumbler to get attention.

The same thinking has gone into our e-suits. Instead of a light and a whistle to attract attention in an emergency, our suits are fitted with bullroarers. An ancient piece of tech from Palaeolithic times, upgraded to incorporate lightweight and reflective materials that flicker and flash as you spin it, in addition to giving off a characteristic loud and eerie low-pitched sound that carries in the thin Martian atmosphere.

Once underway, we exchange pleasantries and stories of hardship getting from Earth to Mars.

"I suppose you do this run all the time," I comment.

"No, not at all, I'm just, er ... standing in for someone. I'm usually tied up doing other things."

When I enquire what these other things are, he gives a vague and deflecting answer, and our conversation gradually loses momentum as I gaze spellbound out the window at the arid scenery drifting past.

The landscape isn't all dunes like the Sahara, and it isn't all rocky terrain either. It's a fascinating mixture of both, with a touch of other-worldliness thrown in as a result of the impacts of meteorites that have pounded the surface over the eons.

It's the other-worldliness aspect that sets a tingling shiver up my spine. It's as though I've stepped through some invisible portal into a different reality that is almost, yet not quite, the same as being on Earth; a reality where the sights and the sounds of my home planet have been shifted out of phase into a new balance that is uniquely Martian and undeniably alien.

As if reading my mind, he waves a hand towards the windscreen. "It's all a bit of an illusion y'know. The dust in the air gives the impression of a thick Earth-like atmosphere; like a hazy day in the Namib Desert maybe. But just wait until about Sol three hundred when the atmospheric dust load is at its minimum. Then you'll see how alien this place really is. All there'll be on the horizon is a thin haze with an almost black sky overhead and a hard, bright sun shining down. It's more like standing on an asteroid than a planet."

Rhino goes on to tell me it's five kilometers from the landing pad to the habitat. "We should get to the base in no time flat." He explains that the separation is to keep the hab safe from potential launchpad explosions and off-course or out-of-control descent vehicles.

I become aware that we're gradually climbing and the vehicle tilts slightly to the right as we follow the contour of the slope below a small rocky escarpment.

I don't see any paved roads around. Rhino seems to be just tracking along the shallow wheel marks made on the sandy surface by previous vehicles.

As I'm observing the escarpment in more detail, I notice the sharp shadows becoming suddenly indistinct and the colors washing out. The light all around is dimming, as if an enormous unseen cloud has passed overhead and is stripping the land of its detail and vibrancy, casting a grayness over everything.

Rhino looks my way. "Aren't you the lucky one?" He points an index finger skywards. "It's an annular eclipse of the sun by Phobos. The moon's not big enough to fully eclipse the sun, so we get this washed-out shadow from time to time. All to do with our distance from the equator, the time of year, the plane of the ecliptic, blah, blah, blah," he comments, making a dismissive waving motion with his hand.

After about forty seconds the light has come back up and the grayness is gone as if it never happened.

"A bit freaky the first time you see it, ain't it?"

I nod my head to agree with him, only he can't see the movement inside my helmet, so I give another 'thumbs-up' with my gloved hand instead.

Eventually we nose out in front of the leading edge of the scarp we've been paralleling, and Lineer Base appears before us, as if giant aircraft hangers have crash landed on the plain ahead.

The structures have pronounced barrel vaulted roofs and every window is tilted out at the top, the way they are on airport control towers. The buildings bring to mind high-top bread loaves baking in the desert sun, and I can't help mentioning the bakery imagery to Rhino.

He gives a small snort. "Yeah well, that's more flattering than some of the comments newcomers make. Actually, the building shapes are dictated by the passive dust-shedding design philosophy we've developed; using gravity to either channel the dust so it can be carried away by the Martian wind, or better still, stopping it from building up in the first place."

My suit persona cheerily provides relevant details about Lineer base which incorporates the Mars Emergency Medical Center, or M-ERG as it's known locally, the planet's main emergency medical and trauma center.

Lineer sits at the southern end of Eumenides Dorsum and has a population of 1,750 humans and 2,250 mecha. It's a series of interconnected above-ground prefabricated structures located close to the water ice and hydrated mineral deposits of the Medusae Fossae formation.

Modeled on the extreme cold-weather structures used in Antarctica, it was established by the Europeans in partnership with Britain, and continues to be maintained with partial funding from those governments.

Another interesting fact is that in addition to the permanent personnel, the base is a temporary home for 400 contractors, and 600 secondees from other bases. Apparently to foster cross-pollination of ideas and expertise while breaking down operational and professional silos and social cliques.

My suit goes on to catalog the history, communication, transportation, points of interest, as well as other relevant facts.

For reasons the suit persona doesn't mention, the base is a grayed-out brick-red color. Perhaps the planners thought it would blend into the landscape better. It doesn't.

Behind the base, is a chemical factory with massive reaction vessels, and the storage spheres and cylinders of its associated tank farm. All of its shiny aluminum and bright stainless steel surfaces are coated with fine red ochre dust, making the high-tech structure seem like it's been abandoned for a lifetime and fallen into ruin.

Next to that is an industrial and fabrication precinct with a scrap yard that seems to be degenerating rapidly into a general trash dump. The sharp angles, straight lines, and human-made geometric shapes contrast jarringly with the dignified weathered and ancient landscape that the habitat sits in. This place is a true credit to man's ability to ruin the scenery.

Lineer looks nothing like the sleek images from my briefing notes and I hurriedly consult the rednet to make sure I'm at the right habitat. Inside, I have that same sick, sinking feeling you get when you arrive at a supposedly up-market resort you've paid a fortune for, only to find it's a collection of old, tumbled down villas with worn-out furniture, fans that don't work, bad plumbing and kilometers away from the beach that should be at your back porch.

As these thoughts chase through my head, Rhino steers towards an enormous set of air-lock doors in the side of one of the habitat buildings, then gingerly noses the rover inside.

After cycling, he brings the machine to a full stop inside a bustling large-vehicle garage. Looking around, there's no sign of the new, high-tech rovers that should be here, just a stable-full of old, battered vehicles that appear to be in only marginally better shape than *Wadenbeisser*.

We disembark the rover, shamble across the garage and eventually, after decontamination and de-suiting, make it inside Lineer Base proper.

The transition from the vast outside, back into an enclosed space is like stepping from one universe into a completely different one. It's hard to come to grips with the fact that they're part of the same continuum, that the cozy human-scale interior of the base exists in the same reality as the vast unforgiving expanse outside.

My life for the last few days has become a series of jarring episodes, like a sped-up theatre production where I seem to be transported from stage set to stage set, without any intervening transitions that allow me to acclimatize to each new change.

Like right now. My previous captivation with the stark beauty of the bare Martian surface has been replaced suddenly, now that I am inside a protective habitat, with wariness, a cognizance of the hostility of the world outside, from which I am separated by only half a meter of pressurized and shielded external wall.