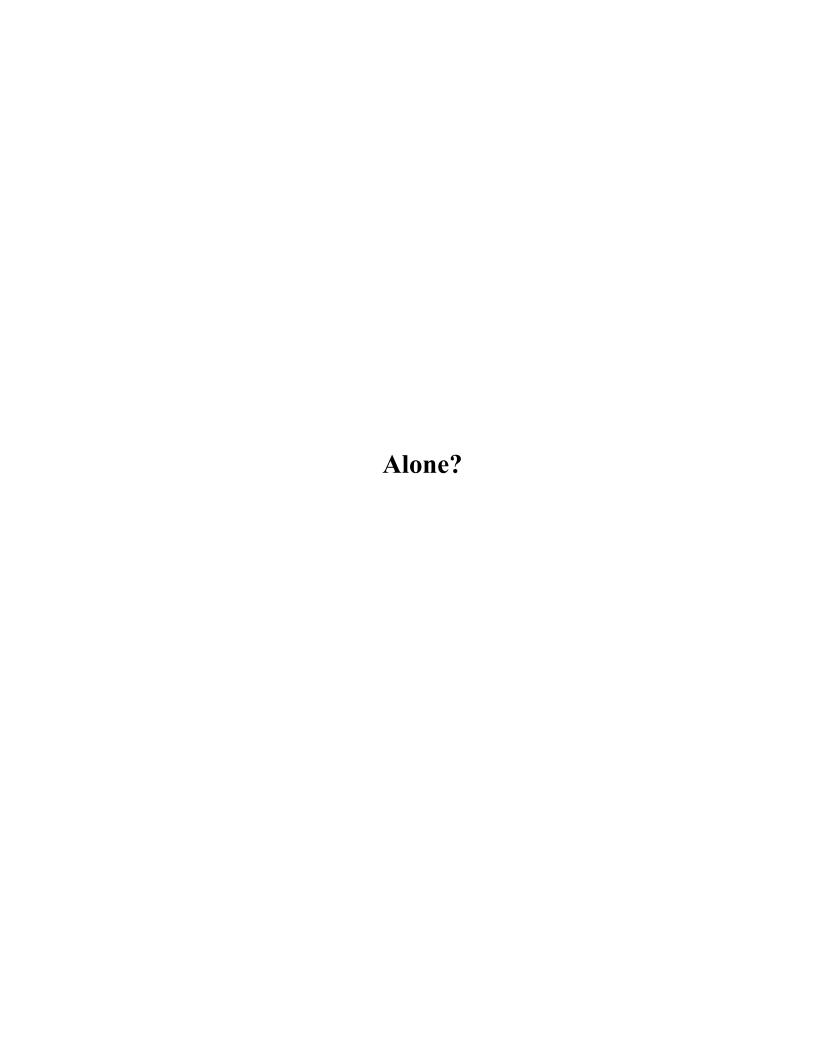
What if there are no extraterrestrials? Hull's sweeping tome covers 20,000 years of human growth from Cro-Magnon to interstellar traveler. Follow the Repaul family through this epic journey, not a fantasy, but hard science fiction, of historical perils and accomplishments.

Alone

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ISBN 978-1-60910-074-2

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Booklocker.com, Inc. Ronald W. Hull Houston, Texas USA Ron's Place: http://ronhullauthor.com 2010

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Chapter 1

Nila's Story

Ötzi Valley: 3372 BC

ila was alone. She struggled to walk the trail along the river until it was dark, and then curled up, hungry and exhausted, in a bed of leaves and grass under a tree. She was crying, but it was a warm night, so she soon fell asleep.

Nila's dreams were of torment—of a day that began normally, but turned to unimaginable terror. She was lucky to be alive.

"Nila, fetch some water!" When Nona called her daughter to a chore, Nila responded quickly. As the youngest, Nila's job was to bring water from the river whenever her mother needed it. She would take a goatskin to the water's edge where it was fast flowing and pure, and then soften the skin in the water until she could fill it. It took many trips with the goatskin to fill the pots Nona instructed her to. The water was mostly used for cooking. Some was for drinking. Nila loved it when she saw her father, Albere, come home from a hunt and drink the water she had brought for him.

Nila was learning cooking. She wanted to make wonderful soups and porridges like her mother. They were made from meat her father brought and mushrooms, leeks, roots, chestnuts, seeds, berries and other ingredients Nila gathered in the nearby forest with her mother. It was easy to find them this time of year. They were always gathering more and storing them away in stone and clay pots for the time when it would turn cold again. Nila dreaded that time of cold and hunger. She only thought of it when storing away food.

Albere was off hunting. Nila's father was a very good hunter and always brought back meat for them to eat. She loved the smell of fresh meat

cooking over the fire, but hated cutting it into pieces to dry. Nila also hated scraping the smelly skins with flint blades. It was necessary, though, because when winter came, they needed the skins to keep warm.

Jan, Nila's brother, was making arrows with grandfather and the other old men, and practicing his shooting skill with the finish of each one. They used wood from the wayfaring tree because it was strong and naturally straight. They used flint for heads, the shape depending on whether the arrow would have to stun a rabbit, knock a bird from its tree nest, or pierce the tough skin of a bear. Young ravens were snared in their nests to provide a tail for the arrows so that the heavy head would fly true.

At ten notches, Jan was strong and handsome, with piercing blue eyes and long white hair flowing over his sun-darkened shoulders. He would go on the hunts soon. For now, Jan learned how to make long bows of yew with the old men and practiced on small animals and birds, careful not to lose any arrows he was testing. When their father returned from the hunt, Jan knew he would have to help replenish his father's arrows.

By mid morning, Nila and Ola, her little friend, had made several trips to the river when it *happened*. They heard the loud, blood-curdling yells of Thals charging into the encampment, their intention to kill whatever stood in their path.

"Stay! Don't go...!" Nila found herself yelling at Ola. But it was too late. Ola had climbed the riverbank and was already running headlong toward her mother and her fate.

Nila fled in the opposite direction. Entering the cool, waist deep water, she followed the bank until she came to an overhanging root system of a huge tree on the bank's edge. Up under the roots, she found her hiding place. It was one of several hiding places Nona had sought out for her.

Nona had been stern. "If the bad men come, I want you to run. Not to me, but to one of these secret places we found for you. You must stay there, no matter what happens, until your father or I come to get you. Do you understand?"

As Nila cowered up against the muddy bank, shaking in fear, she understood now why her mother was so stern. She could hear the shrieks and screams of those being killed amid the yells of the attackers. She strained to hear her grandfather, Jan, or her mother, but Nila only heard the sounds of battle and cries of pain. It was over in a few minutes, but it seemed like hours. When it finally became quiet again, she knew they were all dead.

And then, Nila heard *them* coming, grunting and breathing heavily from their exertion. Their stench was overwhelming. She had to keep from gagging, as one by one, the bad men came to the river. She saw their hulking bodies, their long, scraggly hair, and the bright red blood that covered them. She watched them wash the blood off. Some were wounded. She hoped that they would die as they washed their wounds. The red blood flowed by in streaks in the water before her. She held her breath so that they would not hear her. They were so close; but they were also spent, and not interested in looking for little girls hiding within reach. They finished washing, drinking great gulps from the river like wild animals, and returned to the camp.

As Nila waited for them to leave and her father to come, it became clear that the bad men weren't leaving. She smelled fires burning and her mother's food being cooked. They were talking loudly and laughing. She could hear them going through the family's possessions as pots broke and shelters were torn down while they looked for hidden personal items.

Occasionally, one of them would come to the river to relieve. He'd stand there, belching, as Nila smelled the pungent odor of his piss spewing out loudly. Hatred rose up in her. She wanted to jump out and kill him. Instead, she suppressed her anger, shivering, and kept silent.

By mid afternoon, all she heard was snoring, as the bad men succumbed to their exertion, food, and drink. Nila was cold to the bone and needed to get out of the water. She wanted to sneak up and kill one of them in his sleep, but fearing he would wake, chose to go the other way instead. She headed down river.

Nila woke at dawn, covered by a cold, wet dew. She could see smoke rising from where she'd come. Nila new they were burning her home. In her child's mind, she thought they'd killed her father too. She felt so alone. Still, she needed to get away; so she continued on her way, following the trails, always keeping the river to her right.

As Nila's hunger grew, she gathered berries, seeds, and mushrooms to eat as she walked. Her mother had taught her well. Even at seven notches, Nila knew which ones were poisonous. Still, she was hungry. Crying and dreaming of a piece of meat or one of her mother's hot soups, she stumbled along as the sun came up and went down again. It rained. Nila spent two nights shivering in the cold and wet. Nila saw wild pigs by the river. She was afraid, but more afraid to go back, so she snuck by them and continued on.

By now Nila was so hungry she thought she'd die. Her feet were bleeding and her legs were scratched raw. Nila came to a place where the familiar river joined a larger one. With no other choice, Nila followed it to the left in another direction. More suns passed. She struggled on. Sleeping exhausted, often wet and cold, under trees at night.

One morning, Nila awoke to the sound of splashing and laughter. "Am I dreaming?" she thought, from her hunger-induced stupor. As Nila sat up in the sun warmed morning grass, she saw three children, like herself, swimming in the river. She rose up and staggered toward them.

The boy, the tallest of the three, saw Nila first. At first startled at the sight of this strange, dirty girl, he recovered quickly and yelled to the others, "Look, a girl!" and scrambled up the bank. As they approached each other, Nila stumbled and fell on her face before him.

Hot soup was being poured into her mouth. It woke Nila up again, choking, to see three strange women looking down at her. The soup wasn't her mother's, but it was the best thing she'd tasted in many suns. Nila saw the boy that found her standing off to the side, smiling shyly. She was glad to see him

Nila was now in the land of the Po. She didn't speak their language, but it was similar, so she learned quickly. The Po lived in wood and stone shelters and didn't move with the seasons like her family had. Instead, they put seeds into the ground and waited for them to grow. Nila's family ate a lot of seeds they saved, but they never put them in the ground to grow. These people grew a vining fruit she already knew called grapes and seeds from grass they called wheat. The seeds from this wheat were crushed and made into a paste they cooked until it grew hard. Nila had never tasted bread before. She liked it and the way it filled her stomach.

Aldo, the boy who found her, became her big brother, and she joined his large family. Nila helped the women the same way Aldo's sisters did. She ate their bread and fish from the river. She learned to swim, naked, with the others. She learned to catch fish with a basket they wove from reeds. Po covered their bodies with a soft woven fabric of animal fur or plants. They called it cloth. Nila's family had only used animal skins and furs for covering. Nila liked cloth. It was softer than animal skins and not as heavy and hot to wear.

Nila felt safe and secure with the Po, and learned many things. Still, she longed for her family. Sometimes she dreamed they weren't dead. These were happy dreams until she woke suddenly to find them still gone.

Five Years Later

Nila dreamed that she was being held down. She wasn't *dreaming!* A strong hand was clamped over her mouth. She struggled and tried to bite it, but rough fingers held her jaw so tight she couldn't open her mouth. The smell was unmistakable. "*Thals!*" She was lifted up from her bed, taken from the shelter she shared with two of Aldo's sisters, and was being carried off into the night.

There were seven of them. They slipped into the village at night, like foxes, when everyone was sleeping and stole Nila and Aldo's sisters, Gina and Lena. Just beyond the village, the men stopped, and a leather strap was tied to force wadded leather into her open mouth. Nila could not yell, only breathe through her nose. Her hands and arms were tied tightly behind her back. Then, one of the bigger men threw her over his shoulder and carried her upriver along the same trails she had come five years before. Nila slept no more. She just endured his hard grip on her as the undulation of his walking carried them far into the night, branches of passing trees alternately scratching, and then caressing her. It was a moonlit night, so they walked until dawn. Far away, in the morning, the Po people were waking to find them gone.

Tied tightly to a tree while the men slept, Nila was hungry and thirsty. She tried to communicate with Gina and Lena, tied to trees beside her, but they were both gagged, so they could only talk with their eyes. Gina was clearly frightened; looking like she was going to die. Nila was angry. Her eyes said she wanted to kill.

Their captors woke and immediately started arguing. She couldn't understand what they were saying, but the way they looked at her, she knew it was about her. In the daylight, the one who had carried her so easily was quite tall and handsome for a Thal. He had blue eyes, a wispy blond beard, and a wavy brown head of hair flowing over his shoulders. His broad shoulders were bare, revealing muscular upper arms. He had no hair on his chest and back. The others were quite hairy. He was younger than the others, but seemed to be in charge. When he started to untie a stone ax he carried at his side, the older man confronting him grew silent, as did the others.

He came directly to Nila. His eyes were bright and he smiled slightly as he untied her gag. The wadded leather fell out of her mouth. Nila's jaw ached. She wanted to spit in his face, but something stopped her. The others moved to the other two girls, and untied their gags too.

She could feel his hand on her leg as he stared intently into her eyes. She glanced down and saw it move up under her short leather skirt. She felt his finger exploring, and, it was soon inside. "Virgo!" he cried out.

She had felt that before. Not long before, when the water finally got warm enough that spring, she and Aldo had gone swimming in the evening after chores almost every day. With Aldo's guidance, she had become a superb swimmer. While they were still afraid to cross to the other side of the big river, like the bigger boys, both swam under water like fish. Nila loved swimming under the clear water to grab his kicking legs and pull him under.

As a young girl with only bumps for breasts, Nila wore only a short leather skirt in summer. Her bumps were very sensitive, and hurt sometimes, but she told no one. Not having a mother, she did what Aldo's sisters did. Leather was very heavy when wet, so she always left her skirt on the bank, next to Aldo's loincloth when she swam.

That evening, after playing with his legs like that, they emerged from the shallow water near the bank facing each other. Aldo's peeing tool was standing up like a stick. Seeing an opportunity, she grabbed it like she had his legs.

"Hey!" Aldo yelled, and began to reach for her bumps, but she was too fast for him. Nila climbed the bank and ran.

He caught up to her in the tall grass and brought her down like a running goat. Nila was on her back. Aldo pinned her arms down with his knees and began playing with her nipples. It felt good. She relaxed a bit, observing his rigid peeing tool at close range. In all the times she'd seen him pee, he always turned away. She had never seen its head before, all red and swollen. And then he turned his attention to her peeing place. It felt strange, but good, like her nipples were. And then, Aldo was hurting her. She tried to push him off, but he was persistent until he started jerking wildly and she felt him peeing inside her. After that, Aldo appeared embarrassed, and ran off.

Nila was bleeding, so she went to the river and washed off. She stopped bleeding quickly, and was relieved. She didn't swim with Aldo in the evening after that. He hung around like a sick dog, but she waved him away. Nila was feeling the good part of that now.

"Virgo!" The Thal that had been arguing yelled out as he probed Gina next to Nila. Gina squirmed and moaned but the leather in her mouth prevented her from crying out. Nila felt the fingers of the young man's free hand press to her lips, his eyes burning into hers and the smile gone from his face. She wanted to scream, but didn't.

"Naahhh!" She heard the Thal with Lena cry out. Four of them untied Lena from the tree and threw her to the ground. Pulling their huge peeing tools from their loincloths, they took turns with her. The one with Gina, his long, matted hair streaked with white, and another, older one with pure white hair, did nothing but stand by and watch.

Lena kicked and scratched and tried to bite her attackers, but they were too strong. Her screams turned to whimpers, and finally, she was silent. Nila whimpered against the fingers against her mouth. She could have bitten them, but she didn't. Tears streamed down her face and wet her captor's fingers. Gina was crying and whimpering too.

Lena lay there battered and bleeding. She could have run, but it was no use. They would have caught up with her quickly. Instead, she sat up, a sullen look on her face, and rearranged her bloody skirt.

Gina's gag was untied. She wanted to spit at her tormentor, but she didn't. She feared what had happened to Lena. The men brought dried meat and water. It was all the girls would get all day. Even Lena was ravenous, fearing they would leave her to starve.

Nila and Gina were untied from their trees, and then their hands were bound in front at the wrist. The men bathed first in the river, and then led the girls in. Nila thought of swimming downstream, but a long leather tether prevented that. Her captor had it tied to his wrist. After she had washed herself as best she could with her hands tied, he tied the tether to his waist and pulled her out.

The men headed upriver again—fast—pulling the girls behind them. Nila's feet were tough from going barefoot, but the rocks and sticks took their toll. She wondered about Lena behind her. It was all Lena could do to keep up, to keep from being pulled forward, tripping and stumbling to the ground.

At dusk, they stopped, ate a little dried meat, and tied the girls, sitting, to trees. After a hard night of dozing off to strange dreams, Nila's feet felt better, but her arms and wrists were sore from her tight binds.

The four Thals started after Lena again, but the young man, stone ax raised, stopped them. He shook his head in disgust. He had a purpose the others didn't understand. Nila sensed that he wanted Lena alive. And that Lena had to walk—fast.

The days fell into tortuous routine. After four or five suns walking, Nila could no longer keep track, she saw that big, familiar tree in the distance and started weeping. The forest had reclaimed her family's encampment, young trees poked up from the ashes of the burned shelters.

Broken pots and stone tools were scattered about, signaling former habitation. Although it was only mid afternoon, Nila's captors stopped and surveyed the scene.

Two of the men went hunting. Nila, still tethered to her captor, whose name she had learned was Tsun, searched the camp together, but they found little. When they found a large stone pot of her mother's, Nila motioned with her hands that she wanted to make a soup. Tsun and the others were amused. But the young leader, once again, came to her aid. Tsun untied her aching wrists and numb hands, and retied the tether around her neck. And then, he let her lead him into the forest. The other girls were then tethered the same way, and put to helping Nila find leeks, nuts and mushrooms. The two hunters returned with a baby deer. While they cut it up, drinking the blood and eating the heart and liver raw, Nila took the leg bones, broke them to reveal the marrow, and then sucked some out before throwing them in the soup.

The men roasted the deer meat on a fire Tsun made with flint and stone. Nila moved some of the burning branches around the heavy stone pot. The girls cut up what they had found and added it to water they had brought from the river. Soon, her soup was boiling. They found three unbroken carved wooden ladles and tried to sip the soup without burning themselves. It was the best food they had tasted in many suns. Lena got sick and threw up.

When all were sated, Tsun went off and came back with a goatskin filled with potion. He must have cached it on the trail on the trip down. It was obvious they had used this camp before. The men sat around the campfire and loudly laughed and boasted until the sun went down. They forced Lena to gulp the strong drink. By dark, once again tied to a tree, Nila heard their grunts and cries. Lena remained sullen and silent in her drunken state, letting the men do what they wished.

The small amount of deer meat that was left was wrapped in leaves and put in the leather bags the men carried. The remaining soup filled two goatskins. Nila and Gina gathered mushrooms, nuts, and berries for the journey ahead.

Lena had a hard time waking the next morning. Seeing that she would rather be dragged than follow walking any more, Lena's tormentors took turns carrying her. It was good. As the trail left the river and wound uphill, Nila caught glimpses of Lena sleeping while being carried. She never would have made that rough, uphill, walk.

After two suns, they came to a place where the trail steepened even more, and the ground became rocky. Nila's tough feet began to hurt again. She knew of this place. Nila's father, Albere, had talked of the Alps many times with the old men around the campfire. Nila had helped her mother sew the special clothes he needed to go there and hunt. Now, she was about to see these mighty mountains herself. Far ahead, Nila could see the white tops rising to the sky itself. Were they going there?

The group left the trail and soon came to a spot that could have been a place a bear would hibernate under an overhanging rock, except that logs had long ago fallen in front of the opening. The men removed the logs carefully and revealed a cache of food, furs, and leather clothing. Nila was amazed at their ingenuity. When the cache had been removed, the logs were placed back exactly as they had been, making it look like the place had never been disturbed. It was obvious that the Thals used this place often.

The boots were wonderful. When stuffed with grass, they were also warm and comfortable. The leather coverings were large, heavy and uncomfortable, but they would be needed soon. Nila hadn't slept the last two nights because she was so cold. The furs would be a burden, but they, too, would keep them warm. Her father, Albere, had worn such clothes in the Alps. Nila, at twelve notches, was about to join him.

They climbed all morning on a time worn trail that showed no signs of recent use, except the prints of deer and goats. Tethers were tied waist to waist, allowing the girls to carry their heavy trappings and keep their balance. The deep forest gave way to rocky meadows and white-topped peaks that loomed all around them. Nila had heard her father's stories, but it was still strange to look down on the tallest trees, so far below.

By midday, they were surrounded by snow. Nila's strong young legs were aching, her body hot, her skin cold and her breathing labored. The sun was strong and bright, but the air was sharp and cold against any exposed skin. Nila had always enjoyed the sight of the first snow of winter, but grew to hate the cold that killed and took their food until the spring came. That's why her family had marked a life tree, to celebrate surviving the snow and cold one more winter.

No one could live in this barren place. It was winter in summer up here in the sky. It was all rock and snow. Nila saw nothing growing and was glad they had food and water with them. Suddenly, the sky that had been so bright and blue became white with fast moving clouds that closed in around them. But the men pushed on, heads down, as sleet pummeled them, barely finding their way.

The group was headed down now, and the sleet turned to heavy, cold rain. Lightning flashed about them, and the thunder shook their bodies and hurt their ears. Their leather and fur coverings were soaked and heavy, making it hard to keep their footing as they staggered down the steep, rainslicked rocky trail. Just when Nila thought they would all die on the mountain, the clouds opened a bit, so that she could see the tops of trees ahead.

Finally, they found a level place amid tall trees by a roaring stream. Crawling up under small trees on soft beds of wet moss and tree needles, they huddled through the night in the cold and wet. Nila crawled in close to Tsun for warmth. He put his arms around her and pulled her in.

Nila awoke, still wet, but warm. At first light a mist hung in the trees, but the stream no longer roared, and birds were singing. They ate what little food they had left and started climbing again. The girls were untethered. The exertion heated their wet coverings, drying them. By mid day, they were, once again, high in the mountains. This time it did not storm. The sun was blinding bright off the snow and burned their skin in the cold air. They walked all day in the high mountains. As they descended into the waning sun, a great lake came into view. Tsun, in the lead, the first to see it, announced, "Murices!"

They spent two suns at the lake, resting and gathering food. Nila and the girls fashioned reed nets and caught some fish in the icy waters. The Thals caught fish with their hands in the small streams that came down to the lake. There was no soup or bread, but they ate their fill and filled their bags. And Lena suffered in silence again. No one was tethered or tied. Even Lena would not run now. The women were too dependent on these strange, brutal men.

More mountains lay ahead, until one day early, they crested a rise to see rolling hills and a plain beyond. Nila could see forever. The world was larger than Nila thought. Below, smoke from campfires rose in the warm, still air. "Gals!" Tsun once again announced. They tethered the girls again and headed straight for the smoke rising far off in the valley below.

Spotters had long announced their coming. By the time the weary group arrived, the sun was late in the sky, and the whole camp, about fifty people of all ages, came to greet them.

Tsun, his axe held high, led the group into the camp. A great cry rose from the Gals when they appeared at the gate made from antlers of red stag. The Gals gathered in a circle in the center of the camp. The women brought food and drink for all to eat. There was meat and summer fruits.

Nila even drank the strong potion from the wooden cup they placed in her wrist-tied hands. It burned her mouth and throat. And then, Nila got very warm and her mind went numb. After that, she relaxed and the food tasted very good. Nila had to pee, but held it.

Tsun and Gore, Gina's protector, were in heated negotiations with the leaders of the Gals. Gina was brought before them, touched and turned by all. Nila had been given the potion, too, so she did not complain, just stumbled sleepily about. The Gals brought copper, gold, and silver items, fine leather coverings, spears and axes, and many tools to the trade. A great yell rose up upon conclusion of the trade, but it was dark and Nila was falling in and out of sleep and didn't know what it meant. She had to pee—badlv.

The women took Nila and Gina to the edge of the camp. As her bindings were being untied, Nila was jumping up and down in her urge to pee. The women quickly took the girls, in the dark, to a stinky peeing place, and they both relieved themselves. Nila was glad that she couldn't see at that place. She almost vomited from the smell of it.

Back in a shelter with young women, Nila and Gina quickly fell asleep. They didn't hear the men celebrating until they, too, fell asleep-drunk. Neither of them heard Lena's screams.

The girls were awakened before dawn, given soup, taken for another pee, and then tended to in great detail. First, they were scrubbed with warm water-soaked skins, and then their hair was combed and braided. Nila was given a leather dress of soft skin like Nila had never worn.

Gina's dress was of white doeskin, decorated with fur from several small animals. Nila had never seen such a beautiful dress. The women then brought out copper and silver plates woven with sinew to white bone, forming a breastplate of great beauty. Their faces were rubbed with fragrant oils. The breastplate was placed on Gina. Nila was given lesser, but still beautiful, ornaments.

When the sun was high, they were led from the shelter into the light. The whole camp had gathered in the circle, men on one side, and women and children on the other. Gina was led to a boy who appeared to be about Aldo's age, on the side of the men. The boy was oiled and his long brown hair braided. His chest and arms were bare, except for the leather armbands of a hunter. He had a copper necklace and a stone ax tied to his waist.

Nila was placed next to Gina. Nila saw Tsun towering over the boy on the other side. An old man with white hair and a fur coat covered with many amulets came into the circle. He spoke many incantations Nila did not understand what he said as the old man brought foul-tasting potions for them to drink. The women began a chant that reached a pitch that put shivers down Nila's back. Just when she couldn't stand it, they stopped.

The girls were then taken to where furs had been placed for them to sit on. The women and girls began bringing them many foods to eat—some good and some strange. Grape potion made it easier for Nila to eat the things before her. She didn't want to get sick, but so much food, so quick, after nearly starving took its toll. Gina started throwing up beside her. The women took the girls to the stinky place again where they both threw up the remains of what they'd eaten. Feeling better, Nila and Gina were brought back to the furs for more food and drink. Nila saw Lena with a group of camp girls. Lena didn't acknowledge Nila's glance.

Nila was aware of Tsun's watchful eye on her. She returned his glances with smiles. Nila was beginning to like Tsun a lot. She understood little of the babble of voices around her. Nila did not understand his language, but she understood Tsun. They were beginning to communicate.

Late in the day, the men came and got Gina. She and the boy were taken to a small wood shelter at the edge of the circle and pushed in. Two men stood guard at the small opening. Before long, there was the sound of struggle coming from the shelter, then screams—Gina's screams. Everyone just continued to eat and drink and said nothing. The guards at the opening did nothing. Nila stopped eating, frustrated, and thoughts of killing rose in her head again. Just when she couldn't stand it anymore, the boy appeared in the opening and raised a bloody hand. The camp cheered, and the boy slipped back inside. Nila never heard Gina again. She never saw Gina again, either.

The next morning, very groggy from the grape potion, Tsun pulled Nila up from her sleep and they were soon walking fast again, away from the camp of the Gals. Lena was with them, tied up and carried by Gor. Nila was untied, following Tsun on her own.

They traveled through deep forest, keeping the great mountains to their right until they disappeared. They skirted campfires and avoided contact. They crossed many rivers and small streams. Nila began to communicate more and more with Tsun and the other captors. Word by word, Nila was learning the Thal language. She didn't have to speak when she crawled into Tsun's arms at night. Nila rarely talked to Lena, except sometimes when they were foraging for food. Lena had come to accept her fate, telling Nila that it didn't hurt so much if she didn't struggle. Lena was surviving. That's all she could do.

After a moon of suns, they came to a place where the forest opened to marshy grasses, and the weary travelers reached a great river. "Rine!" Tsun called it. The Thals were euphoric; their joy grew with each step. And then, near nightfall, they smelled the smoke of campfires, and tired as they were, everyone broke into a run. Yelling and waving their weapons high, they rushed into the camp. They were greeted with equal enthusiasm.

Tsun rushed to a white-haired man that looked like him, hugged him, and lifted him high. The old man's stature, headdress, and clothing suggested that he was the leader. Tsun then dragged the old one to Nila, speaking loudly and gesturing wildly. The old man looked Nila up and down and smiled broadly. "Yellowhair!" was what Nila translated she thought he said of her.

The celebration began.

In the morning, Nila found herself, once again, being dressed in fine doeskin with fur trim. Once again, copper ornaments adorned her body. Lena was similarly dressed. They were led out to the center of camp. Like before, with the Gals, an old man pronounced incantations. The camp sang, and then celebrated with food and drink. At dusk, Tsun took her hand, and waving goodbye, took her up river until it was dark. They lay down in a bed of soft leaves. Before long the food and drink overtook them. Nila slept safe and warm in his strong arms. Near dawn, she felt him doing what Aldo had. Only this time it felt good. Before long, they both slept again. At dawn, with a quick flip of his axe, Tsun killed a small squirrel that had curiously peeked in on them. He let the squirrel bleed on his right hand, then, he smeared some of the blood on Nila's clothes and peeing place. His hand felt so good, Nila wanted to play some more, but he put the squirrel in a bag and they walked back to the camp. The whole camp cheered when he raised his blood—dried hand to them coming in.

Winter came quickly. Nila, Lena, and the other women barely had time to gather nuts and berries before cold winds and snow set in. Lena was already carrying a baby in her belly, and it slowed her work and made her sick. There were many skins to scrape, chew, and sew. These people dressed with much more fur than Nila remembered. She soon found out why. At least she had Tsun to help keep her warm at night.

When the snow was deep and they had to stay near their shelters and fires, Nila began to get sick. The old women told her she was having a baby, and the camp celebrated. The fever came, and some of the old and small children got it and died. Their bodies were left, frozen, near the river. If they ran out of food, it was the custom of the Thals to eat the dead. Tsun and the

young men were good hunters, so they had fresh meat even in the coldest times. They never had to eat the dead. When the winter got too bad for the old ones, they wandered off alone and never came back. The younger people often fought for the missing one's possessions.

Before the snow melted, Lena's baby came. Lena was not strong. Her spirit had been broken and she could not tolerate the cold weather. Her feet were already swollen and turning black when she was overcome with the pain of birth. She died. The old women had to cut the baby from her.

The baby, a girl, was small and sickly. Nila tried to nurse it with her growing, painful breasts, but it too, died within a few short suns. Nila had named it, Gina, but mother and child joined the growing pile of bodies by the water's edge. The bodies were covered with snow to keep the wolves from them. Hungry wolves often came into the camp at night and had to be driven off. In the spring, the ice went out on the river one night with a great cracking and groaning. In the morning, the dead were gone with the ice. There were fish in the river again.

Nila had learned many things, and the hard winter had made her strong. She found a young tree and carved thirteen notches on it. There were other young trees for her children nearby. Tsun killed a mother bear and her two cubs in their den. Nila drank the mother's milk and ate her fat meat, in preparation for her own baby, growing inside her. The cubs' fur coats became a bed for the expected one.

He came when the sun was warm and the grass was tall. Everything was in bloom and the bees led them to honey. With great pain and joy he came, Tor, their first son. He was big, and healthy, and Nila had enough milk for him. He would grow quickly and strong. And his father would soon leave.

With Tor to her breast and tears in her eyes, Nila waved her husband off. These annual raids were a part of Thal tradition that stretched back beyond memory. As soon as the young men were strong enough, they joined the raiding parties. There were usually two raiding parties formed. Tsun was now the clear leader of the one that brought virgins to the Gals. The Thal alliance with the Gals was necessary because the Gals were the guardians to the passage into the mountains, and the Gals were the source of the grape potion, copper, and many other fine trade goods.

Tsun's father Rork, too old to participate in raids, was the leader of the Thals. Rork and a few men stayed to protect the camp and hunt to provide meat for the women and children. The annual raids brought young women for wives and concubines for the young warriors. Their customs favored the young men. Women like Lena, were considered stupid and expendable. Nila would change that.

Tsun had given Nila a flint knife. A few days after Tsun left, two of the bad young men came to her sleeping place at night. Thinking Nila was sleeping and easy, they grabbed her. Nila rose from her bed and stabbed them both like a wild animal. One almost died from his wound. Nila helped care for him. No one bothered her after that. Nila showed the women how to find herbs and foods they hadn't gathered before. Her soups and porridges became legend. The fish Nila snared in her reed baskets became a staple of the camp. The young men and women watched her swimming in the cold, Rine water, naked, and envied her. They soon learned to swim and followed her in.

When the leaves were turning Tsun returned, with two young girls from a tribe Nila did not know. He carried with him a bag of the wheat seed he'd promised her. Tsun was astounded and overjoyed to see his strong baby boy, Tor, with his curly head of yellow hair and bright blue eyes, crawling about the camp annoying everyone with his bellowing yells and incessant appetite, his face continually dirty from sticking everything he could find in his mouth. Still, when Nila washed Tor's face, his white cheeks were topped with the pink heartiness of good health. Tor picked up words from both languages of his parents with ease, but sometimes got them mixed up when he spoke.

With Tsun's help, Nila burned some dry marsh grass on a high, sunny riverbank. And then, with Tsun's stone ax, they broke the strong root system up and freed the soil for planting. By the time the snow came, Nila could see the young wheat growing up through the bare dirt they'd prepared.

Nila's second winter with the Thals was much better than the first. Perhaps it was the dried fish or the abundance of meat. The fever did not come and it wasn't so cold. No one died and no one walked off to die. By midwinter, Nila found that she was having a baby again.

But, before the spring, Nila awoke one night having the now familiar pain of childbirth. The baby came too early. Ill formed, it died at birth. Nila was glad, because the strange nature of the creature inside her scared her. She would have feared it had it been born.

In the spring, when she carved her fourteenth notch on her life tree, Nila carried Tor with her, to carve one on his.

Fifteen Years Later

The years had been good for the Thals. Each year they grew more wheat. They now grew enough to have bread nearly through the winter. The raids had been successful, bringing riches from trade and plunder, and new blood. Tor had grown tall and strong. When Rork had seen that his grandson would become a great leader, he gave in to his pain and walked peacefully off into the winter to die. Nila had several babies, but they all were born too soon and died. Each one weighed heavy on her heart. Tsun took to the concubines. Some of their babies were his. None knew for sure, although some of those women claimed their right to leadership for their children.

Nila, with no daughters to help her, faced increasing opposition from the other women during the long summer raids. The flint knife, once used to ward off errant Thal men, now served her when jealous women and their daughters tried to steal her possessions or take her life in the night.

Tor wanted to lead a raiding party. He was bigger and stronger than Tsun when Nila first saw him. Tsun would not hear of it. With only three raids under his belt, Tsun felt Tor too inexperienced to lead a raid. Once again, Tor left with his father. Obedience was required for survival. Few survived without family. To be banished from the family would be death. Tor was an obedient son. He would do it as his father commanded. During the raid he would distinguish himself by his courage, daring, and intelligence. His father would give him command next summer.

Nila spent the summer tending the wheat, fishing, and teaching the young to swim. She was still strong, but her breasts, pulled from nursing so many others' babies hung down, her teeth were bad and falling out, her skin was brown and cracked from the wind and sun, and her blond hair was streaked with gray. Most of all, Nila ached in her joints. Nila had had the tattoos placed on her knees and ankles by the elders. Painful as they were, the tattoos did nothing to ease the aches that kept her from sleeping in the night and rising to meet the day.

The first raiding party arrived early to exaltation. Weddings were held and the camp celebrated for days. Nila waited through the waning summer into the fall. Tsun and Tor did not arrive. The wives of the other Thals missing their husbands and sons began to blame her, as if Nila was the cause of their missing loved ones.

The wheat was harvested and stores were put in for the winter. Without the hunting skills of Tsun and Tor, there was less dried meat. The snow arrived early, and with it came hope that they would soon arrive. Nila

remained silent and stoic. While she imagined what tragedy might have befallen them, Nila never knew.

As the winter wore on, there wasn't enough meat to eat. The fever came again and took the old and small children. Bodies piled up by the river. The blame was directed toward Nila. She saw that the wheat would not last. The wolves came nightly to feed on the dead. There was no one to drive them off. Nila was so alone and tired. She could no longer cope.

One cold morning, Nila wrapped herself in furs, took a small piece of bread, and walked out on the ice of the Rine. By mid morning, she felt warm, even though her joints ached and it was bitter cold. The sun was so bright Nila could see the evergreen-forested slope on one side and the neverending yellowed marsh on the other. Hers were the only tracks as Nila struggled with the deep snow in some places and bare ice in others. But Nila saw little of it. Her mind was filled with desperate days running with her love, Tsun, and the glorious times when Nila watched Tor grow from a beautiful boy to a strong, smart young man. How could this have happened? Nila remembered all the homecomings and the stories Tsun told. Nila cried while she thought of them. The tears burned her dry eyes and ran cold down her cheeks.

The sun went down. Nila was tired now. She sat down. Nila could not feel her feet. They were warm. She was warm. The cold, still sky became a canopy of stars. They were warm and bright. Nila thought of flying up to them like the birds. The sky filled with waves of colored, moving light. She had seen them before, but Nila had never seen them like this. Is that where she was going? Towards those lights? Her body was floating. Maybe she would fly.

Her memories grew more vivid. Nila thought of her mother combing and braiding her hair, with Ola playing nearby. She thought of her great childhood journey, where Nila learned to love the mighty Tsun. She thought of Tor, her only son, and what a young man he had become. These thoughts ran together and became one. By morning Nila was gone. *She died alone*.

Chapter 4

A New Start

The Iron Range, Upper Michigan: 2012

lbert, are you there?" It was almost 7am. Albert was just returning to the cabin for breakfast after making his morning rounds to his experiments. It was Jeremy's mother on the loudspeaker—a small concession he'd made to continue communication with the outside world while out in his. Sometimes Albert turned it off. The loudspeaker had a way of interrupting the peace in his life. Without his ear phone, Albert couldn't talk to her until he got back into the cabin. He didn't wear an ear phone all the time—same reason he sometimes turned off the speaker.

"Hi, how are you!" Gladys heard the screen door slam as Albert called out his greeting. Gladys's smiling face was filing the expanse of his big screen. Albert didn't have his camera turned on but the microphone picked up his voice well.

"I was about to leave a message and sign off, but then I knew you'd be out and about and waited for you to get back."

Albert began pouring a cup of coffee. "How's that son of yours doing? Don't suppose I'll hear much from him now that he's finally earning money and up to his ears in frogs."

"Oh, Jeremy's just fine. They've got him training in Chicago for three months, and then he's off to Indonesia to start his pilot project. He's really excited. Did I tell you he finally married Cherry?"

"How come I wasn't invited?"

"You know he had no money for a big wedding. They had it here

right after graduation. That way she can go with him. Believe me, Cherry's not too excited about Indonesia. But that isn't why I called. I'm calling to invite you to the Wolf Summit in Yellowstone"

"Wolf Summit?" What Summit?" Albert hadn't heard of any meetings on wolves.

"Senator Muir is calling a meeting of all wolf experts to discuss alternatives for reintroducing wolves to Western rangelands. As you know, we've got a lot of opposition from ranchers and settlers. He'd like to get everyone's input before going ahead with legislation. It'll be July 10th through 13th at Mammoth Springs in Yellowstone. Can we count on you?"

"Okay, Gladys, I'll be there—email me the particulars." You know I can't refuse the Senator from Idaho. Along with the President, he's one of those that's going to get us through this."

"Well, I have to run. Goodbye, until I see you there."

"Bye." Albert began deciding what he'd eat for breakfast.

President Obama was in his first term. The Bush years had ended badly. Just when the economy was recovering from the excesses of the rush to Internet commerce, electricity deregulation set off a series of fossil fuel price escalations not seen since the Middle East Oil crises of the 1970s. The rush of new, inexperienced companies into electricity production and distribution increased demand as many new power plants were built to lower electrical cost. Even with reserves from the Alaskan refuge, strategic stockpiles, and deep drilling in the Gulf of Mexico, shortages in the United States sent ripples through the worldwide economy and supply chains. China and India began emerging as Internet powers and major manufacturers of goods and services. The resulting middle class demanded automobiles and a standard of living similar to the West, putting more pressure on limited resources.

To compound the resource problem, overheated lending and stock markets led to bank failures and a sharper decline in world stock markets since 1987, rivaling even the crash of 1929 and the depression of the 1930, worldwide. It was only through more spending on government projects and shoring up United States industries like the automobile industry and housing market that led to a gradual release from recession. But the population of the world was still too great for sustainability and further hardships threatened.

The limits of gas and oil production, long predicted in the annual *The State of the World* and other publications, were running headlong into burgeoning demand and driving prices sky high. Escalating gasoline prices changed driving habits overnight. SUVs, the sign of 1990s prosperity, were

hurriedly traded in on gasoline-electric hybrid station wagons getting 40 miles per gallon. For commuting, people jumped to bicycles, mopeds, and small electric cars. For the first time, Americans took seriously insulation, solar passivity, and a host of energy-saving technologies largely ignored before. The price of everything requiring fuel to produce was affected, including food. Lifestyles changed rapidly—forced by economic necessity—just like the loss of the World Trade Center in 2001 had changed America's sense of freedom. Everything had its cost. You paid now or you paid later.

Air pollution in the cities had become a critical issue. Pollution of the world's water supplies was close behind. There were fewer and fewer living coral reefs in the ocean. Species around the world were going extinct and unprecedented rate. The excesses of the 19th and 20th Centuries had come to roost on the children of the 21st.

President Barrack Obama declared environmental war. Global warming, shortages, and dangerous pollution were finally reaching the consciousness of the American people. Congress, no longer obligated to big money lobbying by the McCain Election Reform Act, were pulling together to back the President's bold and radical plan. The United States could not afford to go the way of the rest of the other resource rich countries—a two-tier society with a very rich elite living whatever life they chose and the rest struggling to live in an ever more degraded lifestyle and physical environment. The United States had to lead the way out of the morass the world was slipping into. Without radical action, at the tipping point, global warming could render the *coup de grace*.

While most Americans were stockholders by nature of their retirement accounts and the reformed Social Security, they did little to exercise their voting rights. Elite insiders still ran most corporations and mutual funds. The Corporate Reform Act removed stockholder interest as the overriding driving force for corporations. Taxes and other limitations were imposed to reduce excessive individual wealth. Tax loopholes were closed. Incentives were restructured to benefit society and the environment. Corporations could no longer lie to the public and get away with it. Some cried "Socialism" and protested in the streets. The President and Congress saw no other direction to go.

Approaching 8 billion and growing fast, the realization that there were too many people on the Earth was hitting home on many fronts. A cure for AIDS had been found, but more and more people were dying from it each year. Most of the diseases conquered in the 20th Century were running

rampant in regions where pollution and overuse had rendered the land unproductive and dangerous. These blighted areas, now visible from space, were growing like a skin disease upon the planet's surface. To those, like Albert, in the know, the efforts underway looked feeble and hopeless. As long as humanity valued human life over all other, humans appeared to be doomed to a way of life not seen since Dark Ages.

To counter the growing sense of helplessness, Obama also reinforced Bush's declaration that we were going to Mars. If we could make something of that cold, barren, desert landscape, then, perhaps, we could save the Earth. Following the lead of Kennedy, Obama declared that we would be on the planet in ten years. Obama's plan was ambitious and unrealistic, but just what was needed to focus a beleaguered people. Unlike the race to the Moon, President Obama invited every country to participate in any way they could.

The flight to Jackson. Wyoming was smooth. There were no crowds at O'Hare or Denver. The cost of jet fuel had virtually eliminated air travel for the masses. Only businesses and the rich could afford to fly. Albert took the 20-passenger shuttle bus to Mammoth Springs. The other riders were mostly tourists and Park employees. He didn't see anyone going to the Wolf Summit. Albert used the time to look out the window and commune alone with one of the wonders of the natural world.

They drove past many areas burned in the fires over 20 years before. Weather bleached sticks that used to be tree trunks covered the hills and valleys. The tall, white sticks jutted above the new, green growth, still barely reaching fifteen feet. Trees grew slow at this altitude. It would take a hundred years for the forests to return to what they had been. Albert knew the value of buffalo, elk, deer, rodents, and wild fires in thinning the forests. It was a hard lesson to learn.

Still, it was beauty that only nature can create—from wild flowers to multicolored geysers—Yellowstone was unique. Unlike most tourists, Albert knew it would all someday be gone—blasted away. Sitting on top of a super volcano, geology would one day reclaim the Park and all its inhabitants in a single, violent, eruption. Aside from Krakatoa in the Indian Ocean in 1883, recent history had not recorded such a cataclysm. But it was coming. Not this trip. No serious seismic activity had occurred since the 1959 Lake Hebgren earthquake. Seismic activity would likely precede any eruption.

Mammoth Springs was as he remembered it. The Old Fort Yellowstone buildings, built for the Army during their protection of the Park

until 1917, looked Spartan. The utilitarian nature of the Mammoth Springs Hotel was contemporary, but a far cry from the elite, country club conference centers dotting the land from Virginia to Vegas. But it was an appropriate venue—reachable by the constituents involved—however quaint.

Albert saw her when he was checking in, and then later, after dinner, when he went out on the porch to view the elk grazing the hillside just across the valley. Her blonde hair—actually more gray than blonde—framed a face that, while still beautiful, bore the creases and concerns of a lifetime. Her small frame, smartly dressed in white pants and bright yellow shirt, gave the appearance of someone energetic and fit. She stared at the elk for a few moments, and then turned, and went back inside. Just then, Gladys appeared with a drink in each hand and sat down beside him.

"Who is that?" Albert's interest in the strange woman had made him forget his manners.

Gladys didn't seem to mind. She handed Albert his drink and pulled a napkin from her pocket for him to put under it. "Oh, that's Anne Compton—you know—of California Comptons? She works for Senator Sturgeous of Montana. She doesn't have to work, but she's thrown herself into this campaign. Do you want me to introduce you?"

Albert had heard of Ms. Compton. Anne Compton had come a long way to this place. Born to privilege, she grew up in Atherton, and attended private schools. Her father, John Compton, was the long-standing conservative Senator from California, fully behind Goldwater on the Vietnam issue. By the time Anne was fourteen, she was skipping school, hitching a ride to the City, and hanging out with hippies in Panhandle Park. There was always a concert at the Fillmore Auditorium, Winterland, or the Avalon Ballroom. She'd stay out all night, sneak in past the servants near morning, and then have breakfast with her mother, none the wiser.

While she tried acid once, Anne didn't like the marijuana scene, seeing how it made people cocky and talkative, but unable to be industrious and creative. Instead, she fell in with a group of new colonists, bent on setting out and starting over. They were bright, rich kids like her who didn't smoke or drink. At sixteen, Anne left for school one morning and ended up in a commune near Mendocino. Anne's first summer there was idyllic, but the snow and rains of winter nearly drove the small group of squatters from their mountain retreat. After Christmas, the original group of thirty had dwindled to nine. The locals—sheep farmers, fishermen, and timber cutters—were amused by the new arrivals, but didn't like them squatting on

their land. The commune tried to grow vegetables, but the forest yielded little for all their efforts. They soon abandoned the idea of being pure vegetarians to eat squirrel, quail, and deer when they could hunt, snare or trap them. One commune member spent 60 days in jail for shooting a deer out of season. At least he had good food in jail and the rest had venison to eat. Anne learned a valuable lesson—how hard it is to survive in the wilderness. After a second summer of poor crops, the new colonists drifted back to the City. Their commune was abandoned to the forest. With her Daddy's pull, Anne entered Vassar that fall.

Anne Compton emerged from Vassar four years later with a degree in economics and a new sense of purpose. Returning home, Anne spent two more years at Stanford getting her MBA. With her sisters from Vassar, she formed a series of businesses in the 1970s. While they gained some attention in the press, none of these businesses, geared to women's needs, ever took off. Seasoned from her entrepreneurial experience and with the urging of her uncle, Anne was made senior vice president for marketing at Compton Enterprises in 1981. Positioned to take advantage of Reagan's largesse and trickle down economics, Anne became the consummate yuppie. With newfound personal wealth, she built a beach house in Malibu; bought high-rise apartments in San Francisco and New York City, a ranch in Montana; gathered a stable of Mercedes convertibles; and took the company Lear wherever she wanted.

But Anne Compton wasn't satisfied. From her days in the commune, there were men around, but Anne never married. Maybe it was her wit, her money, or her beauty—whatever it was; Anne was just too intimidating to men. Compton's lifestyle precluded adopting children. She'd even thought of being a single mother, but abandoned that for the same reason. By the 1990s, the drive to earn money no longer pleased her. Anne resigned her post to head the newly formed Compton Foundation. She started to champion causes—birth defects, AIDS, world hunger, and the rain forests. After a decade of this work with small rewards, but little progress, Anne retreated to her ranch in Montana. Anne spend a couple of years trying to nurture a small herd of wild horses and buffalo, before she joined the Senator's staff, gratis, just to get back into the action. That's why Anne Compton was there.

But that attractive man Anne Compton had seen on the porch. "Was he here for the Summit?" She made a note to herself to ask Gladys. She didn't have to.

Albert wasn't into horses, but a pre-breakfast ride to the springs had

been scheduled for 6am, so he got up early and went along with the program. To his pleasant surprise, the woman he'd seen, Anne Compton, was walking over to the stable, too. Breaking into a jog, Albert caught up with her.

"Hi, I'm Albert Repaul!" Albert was slightly out of breath as he slowed beside her. "Gladys told me that you are here with Senator Sturgeous. Mind if I join you?" He fell into walking beside her.

Anne smiled slightly at his bravado. "Good to meet you, Mr. Repaul, you must be at the Summit, too." She didn't offer her hand, but her smile grew.

"Yes, I reintroduced wolves to Upper Michigan." It wasn't a proud statement, just a fact.

Anne understood his pride. Albert started telling her about his wolves, but they reached the stable and had to saddle up.

Albert liked both feet on the ground. As much as he loved animals, horses were among the dumbest. He was never sure if his ride would try to throw him as he swayed along. This ride was different. Albert kept admiring the skill and grace of Anne as they plied the terraces and climbed to a commanding view of the sun rising over the valley. They talked easily about mutual concerns. They were already close friends when Gladys joined them at the breakfast table. Albert couldn't remember being this giddy since he met Esther. In some ways, Anne reminded him of Esther. Gladys just smiled and let them chat.

The Summit was the classic confrontation: Environmentalists on one side, and ranchers and settlers on the other. The timber and mining interests were not there. This was one fight they weren't interested in. As much as farms and ranches were part of the problem, Albert hated seeing ranching decline. The settlers were another matter. They had been coming to the West since Hemmingway left Cuba for Montana in the 1950s. Now, everyone who made it in America wanted to buy a little piece of peace, quiet, and mountain air. The trouble was, some areas were fast becoming just like suburbia, and small towns like Jackson and Billings were becoming the boomtowns of the century.

Ranchers were a beleaguered lot and strange bedfellows with the settlers. Between questions about ranching practices, economic pressure, and the onrush of settlers, the ranchers' hundred and fifty year way of life seemed to be coming to a close. The Great Plains Indians, who the ranchers had pushed out, had three hundred years to flourish with Spanish horses. How long would the settlers last? No one wanted to compromise his or her

way of life, no matter how little time was left. Hence the quagmire.

The Office of Land Management's pitch made sense. Reintroducing wolves had been studied for twenty years, beginning with natural sites like Isle Royale, and then with experiments like those in Northern Minnesota and Yellowstone. Wolves limited coyote populations. Wolves guaranteed the genetic strength of elk, wild horses, buffalo, moose, prairie dog, and other wild animal populations. Wolves did affect unguarded ranch animals and pets. Humans seemed to have few encounters with the furtive animals.

Range dogs had proved to be good at protecting livestock from wolf attack. Settlers feared for their children. Old legends died hard. The Yellowstone experience was very positive, showing only two or three attacks since the experiment began.

The best thing that came out of the Summit was the wireless fence. Livestock could be fitted with a receiver collar, ear clip, or implant that would sense an adjustable proximately to a high frequency transmitter. The closer the animal approached the transmitter, the more painful the amplified signal in the receiver would become to the inner ear.

Transmitters were small, reliable and cheap. They were either battery or solar powered and could be fastened to fence posts, rods, trees, or rocks. Their placement depended on the range they were set for, usually ten to fifteen feet apart, along an existing boundary. Once an animal came within range of the transmitter, the pain in its ears would cause it to pull away from the pain and the boundary. Young animals quickly learned where the boundaries were. Once learned, conditioned animals never crossed the boundaries again—even if the receiver was removed. A threshold could be set so that no permanent damage would come to an animal forced into the range of transmitters against its will.

Maintenance costs of the brightly colored transmitters had proved to be less than maintenance of traditional fences. Ranchers and settlers could dismantle a section of fence at a time, gradually returning their property to open range. Boundaries would still be clearly marked by the transmitters and survey markers.

Humans and wild animals would be free to cross boundaries at will. Strict new rules for trespass and off road vehicles were already in place. Camera technologies had already reduced illegal trespass to new lows. Rules for the harvest of open range animals like buffalo and wild horses were being developed following wildlife hunting rules practiced and improved for over a century. Picking off the alpha male for a trophy would no longer be tolerated. Harvesting of the weak and sick would be required. Hunting and

the reintroduction of predators like the wolves would guarantee that the weak and sick would be removed from the herds, preventing starvation and fostering healthy populations because less inbreeding would occur with wild animals free to roam.

The best benefit of the wireless fence wasn't obvious. Since ranch animals would not graze within twenty to thirty feet of fencerows, they became fallow. These ungrazed strips provided food for wild grazers, cover and nesting places for wild animals and birds, and reseed sites for wild grasses and plants from the wild prairie. Ranchers could periodically cut or burn these fencerows, but their value in restoring wild habitat could not be underestimated.

The dissenters, after much debate, agreed to reintroduction of wolves in mountain areas—the Rockies, Bitterroots, Big Horn, Sierras, Black Hills, and Cascades—but not to farm and ranchlands until the new fencing system and introduction areas proved successful. The results of the Summit were broadcast around the world to the acclaim of both environmentalists and governments. It was just one way to begin to fend off global warming, a threat with unspeakable consequences.

Except for when Albert presented the results of his twenty-year experiment with wolves in the UP, Anne sat with him throughout the Summit. They ate together, walked together, took morning trail rides together, and talked. Their practical idealism, honed by years of experience, clicked. They both hated to see the Summit end.

Albert hurriedly changed his return plans, called his nephew to check on his experiments, and left Yellowstone northward into Montana with Anne and the Senator's entourage.

Albert was a real dude on Anne's ranch. He rode more than he cared to and grew saddle sorer as they followed the fence lines and determined where Anne would put in the new wireless technology. Her foreman, George, the half Mandan that ran things for her on the ranch, welcomed the change. "The wilder, the better," George said.

When they returned that first day, tired and sore from a hard day's ride, Anne invited him to join her in the hot tub on her deck as they walked up to the house. When Albert confessed that he hadn't packed a swimsuit, Anne just smiled and said, "Oh, that's okay." Anne went to the kitchen for some wine while Albert admired the view from the deck of the ranch house and checked the temperature of the water in the tub.

When Anne arrived on the deck with a Chardonnay and two glasses, Albert pulled the cork and poured. They raised their glasses, tapped them,

and Albert said, "To the open range."

Anne responded, "To the open range." She smiled broadly and began unbuttoning her shirt. Soon, with her shirt off, Anne was unbuttoning Albert's shirt. Albert was focused on the freckles on her white skin below the tan line on her breasts. Finally, he looked up to see her eyes, staring lovingly into his. She was unbuckling his belt.

Albert was in good shape. But Anne had obviously taken care of her body. They crawled into the soothing waters of the hot tub and sipped their wine. As the sun set they talked like old friends. Albert hadn't felt this excited since Esther.

Hungry, they left the hot tub and toweled dry. Handing their clothes to Albert, Anne winked and said, "Could you please take these to my bedroom. I'll get us some food."

Albert lingered a bit in Anne's bedroom, looking at her framed pictures of her other lives. The room was feminine, but clearly western ranch, with large, natural wood furniture. It did not look like the bedroom of a millionaire. With his towel tied to his waist Albert returned to the kitchen. He smelled steaks on the grill on the deck. Anne, still totally nude, was making a salad at the counter. Albert couldn't help but admire her bare butt and back. She had either been tanning nude or wore a thong swimsuit while sunning.

"Do you want the horses ready again in the morning?" George startled Albert as he barged into the kitchen.

Anne turned toward him, pensive for a moment. "Yes, but not until 10, we're tired and will be sleeping in a bit." She smiled slyly. George smiled and nodded in recognition as he backed out of the kitchen.

Anne caught Albert's thought. "In case you're wondering, 'Yes', I've had him. It was mutual. He's one hell of a man. It gets lonely out here. Since my days in the commune, I've been comfortable with sex. Having no kids helps. George has an ex-wife and three kids to think about. We're in different worlds. He's native to this country. I'm just passing through—a settler. And, a couple of young ranch hands, too. They're all so full of hormones. Those prostitutes in Billings just take their money and run. Do I shock you?" She waved the knife about as she talked.

Albert was growing a bit redder than his sunburn. "No, the older I get, the less concerned I am about things like that." Albert didn't tell her how jealous he'd been of Esther's attraction to men.

Albert moved to her side and picked up his wine glass. Anne smelled great as she cut up mushrooms, her breasts jiggling to her rhythm.

Alone?

Albert could feel her heat. He could feel himself stirring beneath his towel.

After a flurry of e-calls, Anne joined him at New Wilderness in September, just as the fall colors were bursting forth. She stayed the winter. They were married in Ironwood in the spring. Albert's family was happy. The Comptons were happy. Albert was no longer alone. When travel costs permitted, they returned to the ranch to oversee George's fence renovation. It took three years, but Anne's ranch became a model for other ranches in the area. As the fencerows grew, more grouse, pheasants, and foxes were seen. Songbirds especially liked the cover and food. Buffalo brought both sound and sight not seen for over two centuries on the high prairie but did not trample the bird songs, and the trees that began to grow.

Chapter 8

Hope from on High

Central Valles Marineris, Mars: July 4, 2023, 9:07 EDT

ne small step for a man, one great hope for humankind." Scott Murphy paraphrased Neil Armstrong as he made the first human step onto the rim of Valles Marineris. The four others in the landing party followed him quickly down the ramp to the surface. Thirty others watched as they rotated above in orbit. A collective cheer rose from the four billion watching on Earth. The cheer from above was heard immediately. The cheer from Earth was not heard for twelve minutes. Rust red dust began collecting on their snow-white boots as they set up a collage of 134 flags, signifying the countries that had made significant contributions to the Destination Mars effort. The planet had been conquered a year earlier than President Bush had commanded. The accomplishment was not without travail.

The Lyndon B. Johnson Manned Spacecraft Center had to be moved to Waxahachie in 2017. Rising water levels had inundated part of Galveston Island and threatened the complex at Clear Lake. It was traumatic at the time, but the 10,000-acre complex at the abandoned Super Conducting Supercollider (SSC) site was ideal to accommodate the equipment and personnel from Clear Lake. Tired of fighting floods and hurricanes, the employees were also glad to move away from the coast. It took two years to build the necessary buildings, but only six months to complete the move to south of Dallas.

The SSC was revived. President James declared high-energy particle physics as, "... [T] he ace in Mankind's deck of cards." Congress immediately released natural gas overcharge funds to completing the remaining forty miles of tunnel system and the latest Hydron magnets and colliders for the site. By combining SSC and the MSC, billions were expected to be saved. Real estate values from Waco to Corsicana shot sky high, rivaling Silicon-Gallium Valley.

The International Space Laboratory proved what MIR had already demonstrated—zero gravity is highly detrimental to human bodies. The craft constructed for the trip to Mars was cylindrical. The outer wall was constructed as a floor. When rotated at a calculated speed, centrifugal force simulated Earth's gravity. This design insured that the crew would arrive at the Red Planet from the ten-to twenty-month trip strong and healthy. No one knew what long-term stays on the reduced gravity of the planet would do. The Moonscape Center occupants had to spend hours in centrifuges each day to maintain calcium in their bones and muscle tone. Workers at Moonscape were paid handsomely for their hazardous duty and rotated often. With only ten years' experience, it was not known what long-term effects would accompany long stays there and on Mars.

Beginning in 2003, an onslaught of orbiters and rovers had arrived at the Red Planet. It was said that more was known of the surface of Mars than our own Earth. A communication network, rivaling that orbiting Earth, was put into service in 2013, to coordinate the myriad surface projects and relay the massive information flow to Earth. After much study, design reviews, and simulations, Valles Marineris was chosen as the primary first settlement site.

Ingenious robot boring rovers had penetrated the crust to twenty thousand feet. The results were very promising. Aquifers with vast amounts of water and gas were found. Minerals, in as much variety and abundant as on Earth, were found. And *heat* was found. The red planet's core was not only molten, as long theorized by astrophysicists; the heat was easily tapped through hot water sources underground.

The first arrivals would set up a domed enclosure like Moonscape, code-named Marscape, near the rim of the Great Rift Valley, Valles Marineris. The valley, or Grand Canyon of Mars, stretches 2500 miles and is four miles deep in places. The winning design was ingenious, submitted by Ti Seng, a fifteen-year-old high school student from Canton. Initially, mining at Marscape would provide raw material to build an elevator system down the canyon wall. From there, openings, similar to the ancient cliff

dwellings in the American Southwest, would be cut into the sides of the canyon and sealed with glass. The openings would require little heating and cooling. They would become entrances to mines and provide housing for small groups of people. Huge hanging glass gardens would be built adjacent to the dwellings, providing food and oxygen for the dwellings. During the long Martian winter, the gardens would either be augmented with heat and lighting, or shut down. After bridges are built across the chasm, the gardens could be moved to the opposite canyon wall to follow the sun, prolonging the growing season.

The site, near the equator and midway along the rift, was also chosen for a branch rift, projecting perpendicular from the main rift for twenty miles. While the branch blocked movement along the rim, it was relatively narrow—about two miles across—and easily bridged. Surveys showed that a road could be built from the end of the branch leading down to the valley floor. Seng's second phase would be to entirely roof this valley, providing growing space for 100,000 inhabitants. Code-named Red Valley, the site would only be developed if it could be built without serious damage to the Martian ecosystem. Terraforming, the dream of many scientists, seemed out of the question after serious examination of what it would do to the planet. Future colonization would have to make use of Mars the way it was—cold, dead, and dry.

For those just arrived, the euphoria couldn't mask the reality setting in. As they took turns relaying their first impressions, three things immediately became evident. First, the reduced gravity added a lightness to their steps. It also made a palpable impression on their inner ears, organs, and balance, an uneasiness that took some getting used to. The thought of eight hours of gravity enhancement during sleep periods every day also worked on their psyches.

Second, was the strange and unfamiliar Sun. From Hope, the mother ship constructed in space that had brought them here, they gradually saw the Sun retreating during their months in transit. Now, they saw their Sun in diminutive form, distant and weak, casting an eternal twilight on the bleak, red landscape. The sight brought home how far from home they really were.

Finally, they tried to communicate with Earth. Everyone on Earth was conditioned and tuned to instant communication, worldwide. The landing party was so accustomed to being bombarded with information from multiple sources at once, responding verbally or visually to each, that waiting twelve minutes for a reply from Earth was a sobering experience. It was as if the world had been transported back to a time when letter or

telegraph was communication. In a crisis, the explorers on Mars would be on their own.

Young people, glued to their Mars holos at first, drifted off into games or other pursuits after a few minutes of not having instant response to their inquiries. Earthly responses, set up by Mars Mission Control for just such an eventuality, were easily detected by the astute, and tuned out. Only older citizens—some like Albert who had seen Armstrong step on the Moon—were willing to stay on and communicate through the delays. After a few days even stalwarts couldn't stand the waiting anymore, preferring instead to listen to or read daily composite dispatches prepared by Mission Control. Unlike earlier space forays, the crew of Hope was alone, unable to maintain constant communication with Mission Control.

The others arrived in two shuttles in two-hour intervals. Soon, thirty explorers were on the planet. They had brought their housing with them. They set it up before an errant meteor, gamma ray, or some other catastrophe beset them. Outside, they had to wear their suits to ward off the lethal, too thin atmosphere, stray x and gamma rays from the sun or deep space, and the bitter cold. It wouldn't be until Phase Two that anyone would be able to walk on the Martian surface without life support. That's why, after six months, they were rotating out. It would be years before anyone came to stay. Faith and Charity, Phase Two ships, were already on their way, accompanied by unmanned cargo ships of colossal size.

Cosmopolitan, November 21, 2024. A Letter from Mars: Sex on Long Space Voyages by Dr. Shaunda B. Davis, medical officer. Copyright © 2024. Cosmopolitan.Com.

"I have received many inquiries about how the United Space Command views sex on long space voyages. You are all aware of the pleasure palaces that have sprung up in the tourist orbit trade; the USC in no way condemns or condones such private enterprises. We have, however been deeply concerned about the well being of our astronauts since we opened Moonscape and embarked on Destination Mars.

Fifteen years ago, a panel of distinguished anthropologists, sociologists, psychologists, clergy, and medical professionals was commissioned to establish a policy for deep space exploration that would make sense and enhance mission capability. I was a member of that panel.

To place thirty-five young, virile astronauts together on a space ship for months at a time and expect them to remain celibate is unrealistic and impractical. Therefore, every effort is made to occupy the crews in structured and meaningful work during long periods of travel. However, alertness and spontaneity must be maintained, or the crew would be unable to react appropriately to emergencies that could be expected.

To maintain optimal health, a healthy sex life is required. Under the stress of long periods of limited stimulation, the very keen characteristics prized in our astronauts could become jeopardized. Hormone adjustments or other drug approaches aren't the answer either; nor are rigid social rules set by the Command.

Studies have shown that humans are not monogamous. While many animals and birds mate for life, humans and primates don't. Monogamy is a moral concept for providing continuity for children and families valued by society. The current deep space effort is no place for children or childrearing. Crews are made up of individuals with highly specialized contributions to a team objective, not members of a genome tree, or family. In order to maintain health and order on long voyages, the Command recommends that sex with multiple partners be the rule. Astronaut training illustrates the danger in maintaining rigid sexual hierarchies along with command hierarchies. Most simulations involving forms of abstinence and monogamy quickly lead to a dysfunctional crew. Jealousies, alliances, violence, and even mutiny tend to break out when these simulations are run. With sexual activity controlling male testosterone, the simulations show that the group becomes a well-made family with everyone working to their fullest. With conflict minimized, everyone is at his or her peak performance during the mission. The well being of all must supersede the well being of the few in long missions. Sexual manipulation or harassment in any form cannot be tolerated. Sex must be viewed as a positive force to

strengthen bonding and mutual trust between crewmembers.

Astronauts are given several methods of contraception, most reversible, to use at their own discretion. All crewmembers are screened for sexually transmitted diseases and cured, if necessary. The Hope crew has two members with cured diseases. All pregnancies are terminated after the first detection in the first trimester.

In time, children will have their place in extended families involving entire crews. For now, sex is encouraged, but children are not.

In answer to your burning questions—Yes, we have had sex in all the ways you imagine. No, most of us do not engage in sex that abuses our bodies. Yes, sex in zero gravity can be very stimulating. No, sometimes we want to have the feel and help of full Earth gravity.

For now, all sex in monitored rooms is filtered out. For those voyeurs out there, the policy has worked so well that we are recommending that some of those feeds be unfiltered and available to the public. We feel we are on the verge of a shameless, blameless society as a side benefit of this long mission. I for one feel no shame in telling you that having you see me in ecstasy is most welcome.

If you have any questions you can contact Dr. Davis at Shaunda.B.Davis@Hope.ISC.Gov.

The letter, picked up and re-released through The New York Times, television, and eCom, created a sensation. The Pope allied with the powers at Mecca and the Christian Right to condemn it as blasphemy. World leaders, beset with problems with population, declined to comment. Religious zealots once again declared that Armageddon was at hand.

Anne put the article on her calendar to remind herself to discuss it with Ping and Alice when they arrived. She and Albert had had many discussions about this very subject—sometimes during intimate moments.

December 24, 2024, 2:17 EST

"Commander Murphy, we have undocked. We have Carton 24 and are on Rotation 11. We expect touchdown in ten minutes." Pilot Tim Huong announced a routine departure from Hope to Marscape with a full load and crew.

"Okay Tim, try to hit the landing pad [chuckle]. We don't want to kick up too much dust. The wind's picked up to about 20 knots. Looks like we are in for another dust storm. want to get you in and out before it totally reds out. I tell you, these storms are really wearing on me. If we weren't in the dome or underground most of the time, this place would be hell. Everything okay?"

"She checks out 100%. We were having a problem with #3 thruster freezing up, but Gordon says that he fixed it on his EVA the other day. Gordon is still awed every time he evas. The Red Planet ain't Earth; it's a whole different experience, floating out here in space, so far from the Sun, over an alien world."

"Don't I know it. It must be the gravity, but I just can't get used to being here. I trained for this, and it's exciting. We have plants growing and goats and pigs running around, but I can't get used to it."

"It's just the strain, Scott. When we get home, you'll long to be back here again. There's no place like where the action is."

"Speaking of action, I see you, and you are coming in... fast."

"Two thousand, thrusters on full, closing 50 mps. Computers compensating for the wind. Crew locked in place for touchdown. Fifteen hundred, pad in sight, 30 mps. One thousand, thrusters 80%, on target, 20 mps. Five hundred, thrusters 50%, closing at ten. *Alarm!* Thruster 3 frozen. We are starting to turn over. Have gone to manual... I can't compensate... *I can't*..." (Silence on Tim's communicator)

Scott Murphy and the ground crew watched in horror as Shuttle 2 slowly turned over, its three remaining thrusters pushing it off course and speeding it, upside down into the surface a hundred yards from the pad. All on board were lost in the crumpled mass. A fire flared, but was immediately extinguished by the Martian atmosphere. The only compensation was that Mars Shuttle 2 didn't hit Marscape and Mars Shuttle 1 remained berthed on Hope above.

Seven minutes later, Mars Mission Control received the conversation in its entirety, along with Scott's anguished remarks to the landing crew, standing by in disbelief. Memorial services were held and the

Earth mourned for days. The bodies were recovered and transported to Hope when the dust storm subsided a month later. A five-month old fetus was found when Dr. Davis' body was scanned.

On July 4, 2027, Scott Murphy and twenty-six members of his crew stepped off Clydesdale Republic at Dulles International Airport at noon to a review by the leaders of over 100 countries. The fireworks lasted all night. Murphy, appearing ten years older than when he left, praised the heroics of his crew and their great accomplishments on the Martian surface.

There was a moment of silence for eight fallen comrades. A meteorite the size of a marble ran through Barry Eagle claw, an ironworker, working on an elevator to Cliff Dwelling #3. Dr. Ulna Singh and her technician, Marcel Fontangue suffocated when their oxygen supply failed in their materials laboratory. Captain Timothy Y. Huong; Dr. Shaunda B. Davis, medical officer (with child); Nicholas Kosinski, miner; Dr. Miller Anyanwu, agronomist; and Hans Olsen, metallurgist, all died in the Shuttle 2 crash.

In the hour of speeches for the eight fallen heroes, over 10,000 people died from starvation, disease, and natural disasters. The loss of the shuttle and lives caused the first mission to meet only half of its intended objectives before rotating out.

When asked if he was going back, Murphy replied, "Maybe... in a hundred years!" The crew echoed his sentiments. Millions in the suffering world eagerly signed up for the lottery that would take them, provided they were physically fit and could survive the rigorous physical and mental training involved, on one of the continuing line of crews shipping out monthly for the Red Planet. The "Red Gold Rush", as it came to be called, was on.

What if there are no extraterrestrials? Hull's sweeping tome covers 20,000 years of human growth from Cro-Magnon to interstellar traveler. Follow the Repaul family through this epic journey, not a fantasy, but hard science fiction, of historical perils and accomplishments.

Alone

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