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Across a Billion Years

Robert Silverberg



Contents

[one](#)

[two](#)

[three](#)

[four](#)

[five](#)

[six](#)

[seven](#)

[eight](#)

[nine](#)

[ten](#)

[eleven](#)

[twelve](#)

[thirteen](#)

[fourteen](#)

[fifteen](#)

[sixteen](#)

[A Biography of Robert Silverberg](#)

August 11, 2371
Somewhere in Ultraspace

LORIE, I CAN'T EVEN GUESS when you'll get to hear this letter. If ever. I mean, I might just decide to blank the message cube when I finish talking into it. Or maybe I'll forget about giving it to you when I come home from all this.

It isn't just that I'm an unstable sort of vidj, which of course I am. By the time I'm able to get any letters into your hands, though, a couple of years will have gone by, and what I have to tell you now may not seem very important or interesting. But I have these message cubes anyway. And right now it seems like a good idea to put it all down for you, to make a record of what I'm doing and what's happening to me out here.

I guess the proper thing to do tonight is to call you up on the galaxy-wide telepath hookup and wish us a happy birthday, we being twenty-two years of age this day. (Doesn't that sound ancient? We're turning into fossils!) A guy really ought to keep in touch with his twin sister on their birthday, even if she's home on Earth and he's bimpty-bump light-years away.

But it costs about a billion credits to make a live realtime skull-to-skull call. Well, maybe not that much; but whatever it costs, it's more stash than I've got in my thumb account. And I don't dare call collect, even though Our Lord And Master wouldn't suffer much from the charge. Considering the way things were between Dad and me when I took off on this jaunt, I just don't have the slice to try. He'd split a wavelength when he saw the bill.

Will this do, then?—Happy Birthday, Sister Mine, from your unique and irreplaceable brother Tom, far, far away. I send you, via message cube and a couple of years after the fact, a chaste and brotherly kiss.

Exactly where I am now is anybody's guess. We are supposed to land on Higby V in three Earth standard-time days, and Higby V is—what? sixty, eighty, ninety light-years from Earth?—but as you may know there isn't any one-to-one correlation between time spent in ultradrive travel and distance covered. On a journey of ten light-years, say, the ship can spend two months going a quarter of the distance, then cover the rest of the way in an hour and a half. It has something to do with the spacetime manifold, and when they explained it to us laymen we were urged to visualize a needle plunging through a bunched-up sheet and sometimes going through a lot of layers at once. Higher physics of this sort has never been my pocket, exactly, and I'm not going to try to load my mind with it now. The more useless stuff from other sciences that I attempt to learn, the more archaeology I'm going to forget, and the archaeology is more important.

It's like Professor Steuben, the Assyriologist, used to say. All semester long he called me Mr. Barley, which I thought was his idea of a joke, until I found out he really believed that that was my name. So I said my name was Rice, and the next day he called me Mr. Oats. I said my name was Rice again. He drew himself up to about three meters high and said, "Mr. Rice, do you realize that every time I memorize one student's name, I forget one irregular verb? One must establish priorities!" He went back to calling me Barley, but he gave me an A, so I won't crank about him too much.

Professor Steuben ought to see me now, about to dig in at the galaxy's top archaeological site. I feel like the curtain's going up for me at last. You remember how we used to talk about how growing up is a kind of overture, and then Act One starts when you're out on your own? So here I am standing in the wings, listening to the last chords of the overture, hoping I don't muff my lines when the b

moment comes.

~~Not that I mean to boost my own heat. I know and you know and we all know that I'm a very minor part of this expedition, that I'm going to get out of it more than I can possibly give to it, that I'm lucky to be here and no great asset to the enterprise. Does that fulfill my Modesty Quota for this epoch? But I mean it. I am humble on this jog, because I know I have a great deal to be humble about.~~

I'll feed you the data on the voyage so far first, and then I'll scan you the cast of characters as I read it up to here.

Voyage so far: zero. I wish I could paint you a thrilling vivid picture of an ultradrive voyage, Lorie, to add to your collection of vicarious experiences. Blot that, but completely. The fact that you will never travel by ultradrive is absolutely no cause for regret. The ship has no windows, no scanning plates, no viewscreens, no access to the outside environment whatever. There is no sensation of motion. The temperature never varies, the lights don't flicker, it rains not in here, neither does it snow. What this trip is like is like spending a couple of months inside one very long and low hotel that is locked up tight in every way. Outside us, they tell me, is a gray, featureless murk that doesn't change at all, ever. Ultraspace is a universe having a foggy day as long as infinity. Therefore the ship designers don't risk structural weakness by putting in windows. The only excitement of the voyage came on the third day, when we were just outside the orbit of Mars and making the shift from ordinary space into ultraspace. For about thirty seconds I felt as if someone had stuck a hand down my gullet and pulled me inside out in one swift yank. This is not exactly a delightful sensation. But it's a measure of how boring things have been since then that I'm looking forward eagerly to feeling it again when we phase out of ultradrive tomorrow or the next day. I guess it'll be the reverse: like getting undisemboweled.

That long dumb silent place on the message cube is where I stopped talking for a while, Lorie, while I debated whether to go back and erase what I just said. I mean, the part about the voyage being so dull because we can't see anything or do anything or escape from captivity.

It's a bit cloddish for me to crank about that to *you*. It holds me up all spoiled and petulant, with my miserable few months stuck in the same place, compared with what you've had to put up with for practically your whole life. All right, so I'm a clod. I don't know how you manage it, Lorie, except maybe being a telepath helps to get your mind off things. I'd have gone crazy in your place long before I was housebroken.

Still, you are you and I am I, and please make allowances for my faults, which are maximum. I don't have your saintly patience, and I'm quietly going crazy in this ship, and feel free to scorn me for having such a low tolerance for boredom.

I'll leave all of this on the cube. I want to give you the whole picture, everything I'm feeling, and the devil take trying to look like a noble soul. I couldn't fool you anyway.

Now for the cast of characters. And I do mean characters.

There are eleven archaeologists on this trip. Three of us are apprentices, newly outslipped from college, and archaeologists more by courtesy than by merit. On the other hand, our three bosses are utter tops in the line, each one of them deemed a major authority on the High Ones, and naturally they hate each other to a high-frequency zing. The remaining five are medium sorts, all pros but nothing special, the kind of hacks you find in any operation. They've been around, they know their stuff, they do what they're told. But they don't have much spark.

As you might expect we're a racially mixed outfit. The liberals *must* have their way. And so the quota system has been imposed on us: we include six Earthmen, counting one android, and five selected representatives of five of the other intelligent galactic races. Now, you know I'm no big

Lorie. I don't care how many eyes, tentacles, eating orifices, or antennae an organism happens to have so long as it knows its stuff. What I object to is having someone who is professionally inferior jacked into an expedition simply for the sake of racial balance.

Take our android, for example. Her name is Kelly Watchman, and her specialty is vacuum-core excavation.

Kelly is probably about ninety years old, judging by her vat number, which is someplace around fifteen thousand. (They're up over a million now, aren't they?) But, being an android, she doesn't age at all, and so she looks about nineteen. A very sexy nineteen, naturally; if you're going to make artificial human beings, you might as well make good-looking ones, the android companies say, and quite agree. Kelly is highly decorative, and goes around the ship wearing next to nothing at all, sometimes less. Since an android doesn't have any more sex life than the Venus de Milo, Kelly doesn't stop to consider the effect that all those jiggles and curves might have on normal human males who keep bumping into her in corridors. Not me, incidentally: the first day Kelly stripped down I noticed that she doesn't have a navel, and that turned me off thinking of her as a real woman. I mean there's no reason why an android *ought* to have a navel, but even so I can't help visualizing her as a kind of rubber doll that walks, and I don't have any romantic interest in walking rubber dolls no matter how lifelike and voluptuous they may be. Some of the others, though—

Well, I'm off the track, and maybe my prejudices are showing a little, since a lot of people do find androids desirable. The important thing is that Kelly Watchman is aboard this ship because she's a member of a downtrodden minority, not because she's an outstanding vacuum-corer operator.

She *can't* be an outstanding vacuum-corer operator. It's well known that the android nervous system, clever as it is, doesn't match up with that of a real human. The android just doesn't have that extra sense, that ability to know that if he digs another tenth of a millimeter he'll damage some valuable artifact. An android is always 100 percent efficient at any skill he learns; the trouble is that humans, unpredictable as we are, can come through with 105 percent efficiency when the situation demands it. Maybe we aren't as cool and mechanically perfect as androids, but when the protons are popping we can rise above ourselves for brief periods of superhuman performance, and androids simply aren't programmed to do that. By definition, there can't be any android geniuses. The vacuum-corer operator on an archaeological dig *needs* to be a genius. I admire Kelly for having won her emancipation and all that, and for picking up a difficult skill, and for devoting herself to something as abstract as archaeology. All the same, I wish we had a flesh-and-blood vacuum-corer man on this dig, and I don't think that's just my bigotry coming out.

Our other digger is also part of our racial quota, but I don't feel quite the same way about him. His name is Mirrik, which is a contraction of a label as long as my arm, and he's from Dinamon II. He's our bulldozer.

Mirrik's kind come big. Have you ever seen pictures of the extinct Earthly mammal called the rhinoceros? It was about the size of a big pickup truck—I'm sure you've seen trucks in your hookups with other telepaths—and twice as heavy. Mirrik is almost as big as a rhinoceros. He's higher at the shoulders than I am tall, and a lot longer than he is high, and he weighs and eats as much as the rest of us put together. He also smells rather ripe. His skin is blue and wrinkled, his eyes are small, and he has long flat tusks in his lower jaw. But he's intelligent, sophisticated, speaks Anglic with no accent at all, can name the American presidents or the Sumerian kings or anybody else out of Earthside history, and recites love poetry in a kind of throbbing, cooing voice. He's a pretty fantastic sort of vidj, and on top of all this he knows archaeological technique like a star, and he can lift loads that would rupture a tractor. He's going to do our heavy digging, before Kelly gets in there with her vacuum-corer, and I think it's terrific to be able to combine an archaeologist and a heavy-duty machine in the same body. He digs with his tusks, mostly, but he's got a pair of extra limbs to help out, aside from the four pillars

he stands on. I like him. You have to watch out around him, though. Most of the time he's awfully gentle, but he goes on flower-eating jags and gets drunk and wild. A dozen geraniums tank him up like a liter of rum. We have this hydroponic garden on top deck, and once a week or so Mirrik gets homesick and goes up there and nibbles blossoms, and then he starts carousing through the ship. Last Tuesday he almost smeared Dr. Horkkk into a puddle on the wall.

Dr. Horkkk is one of our three bosses. He comes from Thhh, which is a planet in the Rig system, and he's the galaxy's leading expert on the language of the High Ones. That isn't saying much, considering we can't understand a syllable of their language, but Dr. Horkkk knows more than anyone else.

I like to think of him as a German. He reminds me of the nutty therapist who used to commute from Düsseldorf every Wednesday to try to teach you to walk. Dr. Schatz, remember? Dr. Horkkk is just like him in an alien way. He's very small, very fussy, very precise, very solemn, and *very* sure of himself. Also he seems to spit when he talks. Underneath it all I think he's kind-hearted, but you can't really tell, because he works so hard at being ferocious on the outside. He comes up to just about his chest high on me, and when he stands sideways you can hardly see him, he's so skinny. He's got three big bulging eyes on top of his head, and two mouths under that, one for talking and one for eating, and his brain is where his belly ought to be, and where he keeps his digestive tract I wouldn't even like to guess. He has four arms and four legs, all of them about two fingers thick, so he looks sort of spider-like. When Mirrik came blundering along and almost squashed him the other day, Dr. Horkkk went straight up the wall, which was pretty scary to behold. Afterward he cranked Mirrik over in a dozen different languages, or maybe three dozen, calling him "drunken ox" in all three dozen. But Mirrik apologized and they're good friends again.

No matter what his race was, Dr. Horkkk would belong on this trip. But Steen Steen is here purely on the minority thing. I hardly need to tell you: Steen's a Calamorian, a real militant one, as if there were any other kind. He/she is one of the other apprentices, slipped last year from a Calamorian university, which must be even more of a diploma mill than rumor has it. This one doesn't know a thing. Casual discussion reveals that Steen's knowledge of the theory of archaeology is about as deep as my knowledge of the theory of neutrinos, and I don't know *anything* about neutrinos. But I don't pretermit I do; and Steen is supposed to be a graduate student in archaeology. You know how he/she got here, of course. Calamorians are forever yelling about status, and threatening to make war on everybody in sight if their intellectual attainments aren't universally recognized and admired. So we're stuck with Steen by way of keeping his/her people cool.

At least Steen's good-looking: sleek and graceful, with shiny emerald skin and long twin tentacles. Every movement is like something out of a ballet. Nobody admires Steen more than Steen, but I guess that's forgivable, considering that Calamorians have both sexes in the same body and would go crazy if they didn't love themselves. But Steen is dumb, and Steen is excess baggage here, and I resent his/her presence.

The third apprentice isn't up to much either. She's a blonde named Jan Mortenson, with a B.S. from Stockholm University, with a cute figure and lots of big white teeth. She seems friendly but not very bright. Her father's somebody big at Galaxy Central, which is probably how she got into the expedition—these diplomats are always pulling rank on deals like this. I haven't had a whole lot to do with her, though: she's got her eye on our chronology man, Saul Shahmoon.

Saul doesn't have his eye on *her*, but that's her problem. I don't think he's very interested in girls. He's about forty, comes from Beirut, has been working for the last five or six years at Fentnor Base on Venus. Small, dark, intense, single, reputation for good but uninspired work. His big passion in life is collecting stamps. He brought his collection along and it fills up his whole cabin, album after album, going right back to the nineteenth century. He's had us all in there to look at it. Remember

when we were saving stamps? Saul's got the things we just used to daydream about, the Marsport five credit with the ultraviolet overprint, the Luna City souvenir sheet perforate and imperforate, the Henry XII coronation set—everything. And all the galactic stamps, stuff from fifty or a hundred planets. Jan's with him half the time, listening to his lectures on the postal system of Betelgeuse V, or wherever, or helping him get Denebian stamps off their envelopes with acid, and Saul goes on and on and on and never catches a hint. Poor Jan!

Next we have Leroy Chang, who is Associate Professor of Paleoarchaeology at Harvard, and who is very much interested in Jan, or Kelly, or anything else female. I think Leroy would try to make time with Steen Steen if he got hard up enough. Or Mirrik. Leroy says he's Chinese, but of course his genes are as mixed up as anyone else's from Earth, and he doesn't look any more Chinese than I do; he's got red hair and sort of maroon skin and a deep voice, and would probably have much success with women if he didn't come on looking so frantically *eager*. You don't have to be right out of adolescence to be foolish about that sort of thing, as Leroy proves; he's in his forties and still goopy. Professionally he's so-so, I understand. Why this expedition is so full of duds, I can't imagine.

Our Number One boss is no dud. He's Dr. Milton Schein of Marsport University, and as you probably are aware he's the man who excavated the first site of High Ones artifacts near Syrtis Major. That makes him the original paleoarchaeologist—the first man doing anything in billion-year-old sites—and since he practically invented the science, it's hard to find fault with him. He's superb, though a little frightening when he begins to talk shop. In person he's a sweet warm silver-haired type, very lovable except when his professional jealousies start to show. He loathes Dr. Horkkk, and vice versa, because they both have such high reputations in the field. They equally detest our third boss who is Pilazinool of Shilamak, the big expert on intuitive analysis. Which means the science of jumping to conclusions. He's good at it.

The Shilamakka, you know, have this thing about turning themselves into machines limb by limb and organ by organ. They start off looking surprisingly humanoid; that is, the right number of heads, legs, arms, and such things. I understand they have different arrangements of joints, more fingers, fewer toes, and a couple like such variabilities. But then they start tinkering with the basic model. Shilamakka regards himself as zero if he doesn't have at least one artificial limb by the time he gets into adolescence. A puberty rite, sort of. And on they go through life, lopping off limbs and putting in pretty metal things in their places. The less of the basic you that's left, the higher caste you are. Pilazinool is a top-rung Shilamakka, prestige maximum, and it's my guess that he's a 90 percent transplant, with not much more than his brain still organic. New heart, new lungs, new digestive system, new endocrines, new everything. A walking talking machine-man. He spends a lot of time polishing himself. He worries a lot about getting dust in his gears. I would too, I guess. When he's nervous or just thinking very hard, he's got this habit of unfastening a hand or an arm or something and playing with it. Last night in the lounge he was playing polyvalent chess with Dr. Horkkk and one of the exciting parts Pilazinool unhitched both his legs, his left-hand audio receptor, and his right shoulder. There was this big heap of cast-off Shilamakka parts next to him. Dr. Horkkk had him double check with a flying rook coming in strong from the side, but Pilazinool got out of it very nicely by levitating his rear right bishop, knighting two pawns, and bringing down his chief justice in one of the sweetest counterpoise moves I've ever seen. The game ended in a draw. Pilazinool is like that: chilly, more machine than man, but resourceful.

The last member of our gang is 408b of 1. I'm sorry: that's his name, or hers, or its. It comes from Bellatrix XIV, where the fashion is to call everything by numbers. "408b" is family and personal designation. "1" is the name of the planet; they've got the whole universe numbered, and naturally their own world is Number One. Old 408b is a yellowish-looking vidj with a basically octopod appearance, round baggy body, five walking tentacles, five grasping tentacles, a row of eyes going a

the way around, and a kind of parrot-beak mouth. Its specialty is paleotechnology, and it knows a good deal about the machinery of the High Ones, though so far it hasn't imparted much of that to us. Unlike the rest of us, it isn't happy in an oxygen-nitrogen atmosphere, though it breathes it most of the time; three hours each day it goes off into a breathing chamber for a snootful of straight carbon dioxide. Mirrik thinks that 408b must be in symbiosis with some sort of plant life. Maybe so.

On playing this cube back, I'm unhappy about the way I seem to be putting everybody down. After all, I haven't really seen these people in action yet. I'm going by secondhand report, first impressions, and general cattiness. Maybe this is a top-level archaeological team, or will be when it gets into the field. We'll see. I don't know why I'm so sour tonight, unless I'm just getting shirshynapses from being penned up in this ship so long.

Three days more and the curtain goes up. I can't wait.

Happy birthday again, Lorie. To you. To me. To us.

August 16, 2317
Higby

WE ARE HERE.

We did our flip-flop from ultradrive to ordinary drive right on schedule, but it wasn't as interesting as the squirmy business of going in the other direction; and then we went into orbit around Higby V and made a ho-hum landing. And got out fast, and went a little chimpo with joy at emerging from captivity.

It was a wild scene. Higby V doesn't have a real spaceport, just a big bleak empty stretch of land with some buildings at one end of it, and we came pouring out of the ship and went capering around without having to worry about port regulations. Mirrik ran up and down the field, bellowing and stamping his feet, and I did a crazy kind of dance with Jan Mortenson, and Steen Steen danced all by him/herself, and Dr. Horkkk forgot his dignity and climbed a tree, and so on. Even Kelly Watchman, who as an android doesn't suffer from a wound-up nervous system, looked relieved to be off that ship. Meanwhile the crewmen stood around tapping their skulls at us and otherwise indicating their scorn for the cargo of chimpo vidjes that they had just finished hauling across ultraspace. I can't blame them. We must have seemed pretty weird.

Then we got settled in.

Higby V is not a homey, cheering place. Maybe it was, a billion years ago when the High Ones had their outpost here. But, like Mars, which also has gone downhill a bit since the time of the High Ones, Higby V is something less than an ideal resort world today. It's about the size of Earth, but has the mass of a Mercury-sized planet, which means low density, low gravity. No heavy elements at all. The atmosphere bled off into space a long time ago, and the oceans evaporated and did the same. There are four continents, with huge basins that once were oceans separating them. During the long spell when the planet had no air, it got a busy bombardment of meteors and other space debris, and so there are craters everywhere, same as on Mars.

A terraforming crew was here seventy years back. They planted atmosphere-generators, and now there's a decent quantity of air, a little thin, but enough to support life. Unfortunately that caused a wind, which Higby V didn't have previously, and the wind comes sweeping across those barren plains like a knife, scooping up the sand and swirling it around. Plant life is gradually taking hold and will keep the sand down, but not for a while. The current project here is to create a self-sustaining water supply by setting up a standard evaporation-condensation-precipitation cycle, and all along the horizon you can see the hydrolysis pylons turning gas into water day and night. The immediate effect of this is to produce one miserable downpour every five or six hours.

I shouldn't crank too much however. If it weren't for the erosion that all this rain and wind has caused lately, the High Ones site would never have been uncovered.

I can imagine a more congenial place to do archaeological field work, though. The temperature here hovers just above freezing all the time; the sky is never anything but gray; the sun is an old and tired one, and doesn't break through the clouds very often; and there are no cities here, no settlements more elaborate than pioneer squatments, no recreation facilities, nothing. You have to be Dedicated to enjoy it out here.

"What use is this planet to anybody?" Jan Mortenson wanted to know. "Why did they bother with terraforming it?"

Steen Steen suggested it might have radioactives. Mirrik squashed that stupid idea, pointing out that there were no metals heavier than tin here, and not much even of the lighter ones. Pilazino believed the place had some strategic importance, maybe as a refueling stop or a monitoring station for the more valuable worlds in the next system over. But Leroy Chang, who has your true Harvard man's knack for being anti-Earth wherever possible, blurted his own explanation for why we had converted this planet to a place fit for Earthmen: politics and greed. We grabbed it, he said, to keep anybody else from having it. Pure and simple imperialism. Dumb imperialism, too, since we've spent a couple billion credits a year since the turn of the century to maintain and develop a place that has no natural resources, no tourist potential, and no other intrinsic value.

Dr. Schein challenged this interpretation, and off everybody went on a political discussion. Except me. That's one pocket I refuse to climb into.

While this was going on, Mirrik got bored and wandered away, and began digging up the turf just to have something to do. He tusked up a couple of tons of dirt in a restless way, stopped, peered into the hole he had made, and let out a booming yell. You'd have thought he accidentally had uncovered a cache of High Ones artifacts.

Well, he hadn't. But he *had* found a burial ground of Higby V natives. Maybe eighty centimeters down, the extinct inhabitants of this planet had parked about a dozen specimens, complete with weapon points, bone necklaces, and long strings of what looked like teeth. The skeletons were short and squat, with huge hind legs and little grasping paws on top.

"Cover it up," Dr. Schein ordered.

Mirrik protested. Since we were waiting around anyway for the military escort that was supposed to convoy us to our real work site, he wanted to amuse himself by digging this stuff. Saul Shahmoon was curious about it too. But Dr. Schein rightly pointed out that we had come here to excavate High Ones artifacts, not to fission around with the remains of minor local civilizations. We had no business disturbing this site; it would be a kind of vandalism if we did, since it rightfully belongs to the archaeologists who are specialists in the Higby V native race. If there aren't any such specialists now there will be someday. Mirrik saw the logic of that and carefully backfilled what he had unearthed.

Score one for Dr. Schein. I admire professionalism.

At last our military escort arrived and transported us from the landing area to the collection bubbles that passes for Higby V's greatest metropolis. There we had a vastness of trivialities to take care of. Dr. Schein handled the job of making sure our funds had been transferred into a local account, so we'd be able to get food and supplies at the base PX. Such financial details are supposed to be handled automatically by Galaxy Central, but nobody with a proper reverence for stash ever assumes that Galaxy Central gets anything straight, which is why Dr. Schein checked. Checking involved plugging into the telepath hookup. The TP on duty was a surly vidj named Marge Hotchkiss, and if you ever hook horns with her in the course of your daily work, Lorie, give her a nasty overload for me, will you? This Hotchkiss person was plump and plain, with piggy little gray eyes and a very visible mustache. About thirty-five, I guess. Except for her TP powers she is probably an extraordinarily ordinary person, the kind normally destined for a life of quiet spinsterhood in some decayed rooming house; but out here she's one of about fifty women on a planet populated by several thousand men, and that has made her arrogant beyond her station. When Dr. Schein asked her to make the hookup, she gave him a slicy smirk and insisted on his thumbprint first. He explained that he wasn't drawing on his thumb account to make the call, that he was merely requisitioning credit information from Galaxy Central and didn't have to pay. She wanted his thumb on record anyway. So he gave her the print, and then she took her sweet time about making the linkup. "Lots of interference on the line," she told us.

Completely phony, that's sure. The thing about telepathy that makes it the only practical means

of interstellar communication, of course, is that there *isn't* any interference, no static, no relativistic time-lag, none of the headaches and slowdowns you get in a normal communications channel. (But that "normal"! What I mean, of course, is "mechanical.") All that Marge Hotchkiss had to do was reach out, grab the next TP in the relay chain, and send our message heading at instantaneous propagation toward Galaxy Central. It was her pleasure to stall, though. Finally she put the message through, and confirmed that the credit balance transfer had been made.

Dr. Schein, Dr. Horkkk, and Pilazinoool went off to register their thumbprints, or equivalent identifications, so they could draw against the account here. Saul Shahmoon was given the job of picking up our excavation permit from the base headquarters. The rest of us had nothing much to do for a while, and I started to make talk with the Hotchkiss creature.

"My sister's in the TP network," I said.

"Oh."

"Her name's Lorie Rice. She works out of Earth."

"Oh."

"I thought maybe you knew her. You TP people generally make contact with each other all over the place. Sooner or later you must come in touch with everyone else in the whole communication net."

"I don't know her."

"Lorie Rice," I said. "She's very interesting; I have to say so. I mean, she has this wonderful curiosity about the whole universe, she wants to know everything about everything. That's because she's bedridden, she can't get around anywhere much, and so the TP net sort of serves as eyes and ears for her. She gets to see the whole universe through other people's eyes, via telepathy. And if you've ever had any contact with her, you'd remember it, because—"

"Look, I'm busy. Go get sposhed."

"Is *that* friendly? I'm just trying to make a little talk. You know, I miss my sister a whole lot, and it doesn't cost you anything if I ask you if you've ever talked to her. I—"

She brushed me off by rolling her eyeballs up into her head so that only the whites showed. It was her cute way of announcing that she was going into another TP linkup.

"Cut yourself on your own slice," I muttered, and turned away.

Jan Mortenson had been standing beside me. Now she said, "I didn't realize your sister was a TP communicator. How exciting that must be!"

"Especially for someone like her," I said. I told Jan about you being paralyzed and forced to spend your whole life in a hospital bed. Jan was very sympathetic. She wanted to know why they couldn't work some kind of Shilamakka-style transplant to put you in a synthetic body that would let you get around. This is the obvious question that everybody asks, and I explained how we investigated that a long time ago and found it was too dangerous to try in your case.

"How long has she been like this?" Jan asked.

"Since she was born. At first they thought they could correct it surgically, but—"

Then she wanted to know how old you were, and I said you were my twin, and Jan turned a very radioactive shade of scarlet and said, "If she's a TP, and you're her twin, then you must be a TP too, and you must be reading my mind *right this minute!*"

So I had to spell it all out: that we're fraternal twins and not identical twins, obviously, since you're a girl and I'm not, and that telepathy isn't necessarily shared by fraternal twin pairs, and that as a matter of fact you're the only TP in the family. I added that it's a common error to believe that a TP can read the mind of a non-TP. "They can make contact only with other TP-positive minds," I said. "Lorie can't read me. And I can't read you, or anybody else, but Fat Marge over there can read Lorie if she wants to."

“How sad for your sister,” Jan said. “To have a twin brother and not to be able to reach him with TP. Especially when she’s shut in and has such a need to know what’s happening outside her room.”

“She’s a brave girl,” I said, which is true. “She copes. Besides, she doesn’t need me. She’s got thousands of TP pals all over the universe. She spends eight hours a day hooked into the commercial telepathic communications link, relaying messages, and then I think she spends the other sixteen hours hooked in just for fun, getting TP gossip from all over. If she ever sleeps I never saw her at it. Life gave her a raw deal, sure, but she has some compensations.”

Jan was very deeply interested in hearing all about you, and I told her a lot more. Which I don’t need to repeat here, since you know all of it anyway. I think I may have underestimated Jan slightly. In the past few days I’ve started to see that her beautiful-but-dim act is only a superficial habit; she’s actually a lot more sensitive and interesting than she seems. I don’t know where I got this idiot notion that pretty girls are always shallow. Not that she’s any blazing genius, but there’s more to her than curves and a ten-kilowatt smile.

At this point most of our miscellaneous registration and checking-in had been accomplished. But we stood around for half an hour more waiting for Saul Shahmoon to get back with our excavation permit: Dr. Schein couldn’t understand what was taking so long. He was afraid that Saul had run into some kind of bureaucratic roadblock that might prevent us from working on this planet altogether. That got Pilazinool so upset that he unscrewed his left arm up to the second elbow.

At last Saul came back. With the excavation permit. Seems he hadn’t had any trouble about that. He had spent forty-five minutes at the PX post office, though, getting a set of Higby V stamps for his collection.

We loaded our gear into a landcrawler and off we went.

Night was falling, fast and hard. Higby V doesn’t have any moons, and it’s the sort of planet where, if you’re close to the equator, as we are, night comes on like a switch was thrown. Zit! and it’s dark. Our driver managed to keep us from going into any craters, though, and in an hour we were at the site.

Dr. Schein, who had been here last year when the discovery was made, had arranged for three bubbleshacks to be blown, one as a laboratory and two for dormitories. In addition a big curving shield of plastic covered the hillside outcropping where the High Ones artifacts had been spotted.

A complex moral thing developed when it came time to assign us to dorm space. I think you’d enjoy mulling it over.

The problem started from the fact that there are no partitions, and hence no privacy, inside the bubbleshacks. We have two unmarried Earthborn females among us, and according to the old silurian tribal taboos it would be immoral and improper to let Jan and Kelly bunk with the boys. (The fact that Kelly couldn’t care less about privacy is irrelevant, since androids claim total equality with flesh-and-blood human beings, including the right to share our neuroses. Kelly has full human-female status and to treat her otherwise would be to commit racial discrimination. Right?)

What Dr. Schein proposed to do was put all the human males—himself, Leroy Chang, Saul Shahmoon, and myself—into one bubble, and Jan and Kelly into the other. Okay, that got around the elemental decency situation. *But—*

Jan and Kelly would thereby have to bunk with the aliens, several of whom were males of the same species. (Steen Steen and 408b could be excluded from that category, Steen because he/she is of both sexes and 408b because it doesn’t seem to be of either.) I guess some stuffy souls on Earth might get upset that Jan and Kelly would be dressing and undressing in front of males of any sort, even alien males. (They might get upset about Jan, anyway; stuffy types don’t seem to worry much about the living conditions of androids.) However, that wasn’t what troubled Dr. Schein. He knew that Kelly would be without inhibitions; and that Jan, while she’s been observing the usual taboos around the four human

males, doesn't really think that Pilazinool or Dr. Horkkk or Mirrik pose any threat to her virtue. I was worried about offending the aliens, though. If Jan observed clothing taboos with us and not with them, couldn't that be construed as meaning that she regarded them as second-class life-forms? Shouldn't a girl be modest in front of *all* intelligent creatures, or else none? Where is the equality of galactic races, of which we hear so much, in such a case?

I can hear you snorting with amused impatience and giving one of your typical common-sense answers. You might have pointed out that none of the aliens wear clothes themselves, or have any kind of privacy taboos, or even remotely understand why it is that Earthfolk feel they must cover certain parts of their bodies. You might also have noted that galactic equality doesn't have anything to do with sex—which is at the bottom of our thing about clothes—and that it is perfectly proper for a girl to be modest with males of her own species without at the same time seeming to put down males of some other species. But common sense, Lorie, doesn't always rule the universe. Dr. Schein had a long huddle with Jan, and then conferred with Saul Shahmoon and Leroy Chang, and finally—very nervously—took the matter to Dr. Horkkk. Who thought it was so wildly funny that he tied all his arms into knots, which is how the people of Thhh register uncontrollable laughter. He expressed the belief that none of the non-humans would take offense if the girls failed to be properly demure with them.

And so it was settled. What a bunch of chimpos we Earthers can be about these primitive idiocies!

The four of us got Mirrik the bulldozer for a bunkmate, since there wasn't room for him with the others. Jan and Kelly bunked with Dr. Horkkk, Pilazinool, 408b, and Steen Steen. For all I know they had wild orgies over there all night.

I slept poorly. It wasn't just Mirrik's fragrance, which I'll adapt to in time, but the excitement that got to me. Sleeping a hundred meters away from a treasure trove a billion years old, piled high with the artifacts left behind by the mightiest and most advanced race the universe has ever known. What wonders will we find in that hillside?

I'll know soon. It's morning, now. Pale, straggly light is coming over the horizon. I was the first one up in our dorm; but when I came outside I found Dr. Horkkk doing some kind of weird calisthenics, and Pilazinool sitting on the ground stripped down to a torso and one arm, polishing his other limbs, while 408b was meditating. Those aliens don't sleep much.

An hour from now we'll tackle the site. More news later.

August 23, I think, 237
Higby

WE'VE BEEN AT IT a week. No luck. I almost think we've been hoaxed.

The site is a hillside outcropping exposed by recent erosion, as I think I may have said already. The top forty meters of countryside here did not exist when the High Ones had their camp on Higby; all of this gritty, sandy yellowish soil piled up hundreds of millions of years after their time, deposited by wind and flood in the long-ago days when this planet still had weather. Then after we got here and reintroduced weather, the topsoil started to erode, permitting the discovery last year of characteristic High Ones artifacts. Fine.

Then Dr. Schein and a couple of grad students from Marsport came here last year to do the preliminary survey. They went into action with neutrino magnetometers and sonar probes and density rods, and calculated that the zone of High Ones occupation constituted a large lenticular cone running deep into the hillside. Fine. They covered the whole site with a plastic weather shield and went away to raise funds for a full-scale excavation operation, in which I have been allowed to take part. Fine. We are here. Fine. We have begun the customary resurvey procedures. Fine. Fine. Fine. We haven't found a thing. Not so fine.

I don't understand what's wrong.

What we have to do, basically, is very gently lift off the top of the hillside so we'll have access to what was the surface of the ground a billion years ago. Then we gently work our way down, layer by layer, to the High Ones strata. Then we gently take everything out, one scrap at a time, recording relative positions in a dozen different ways. If we're gentle enough we may learn something about the High Ones here. If we aren't gentle, our names will go down in the black book of archaeology alongside the spinless sposhers who took that Martian temple apart to see what was underneath it, and couldn't get it back together again. Or the zoobies who found the key to Plorvian hieroglyphics and dropped it overboard in a methane ocean. Or the feeby quonker who stepped on the Dsmaalian Urn. The first rule in archaeology is: Be careful with the evidence. It isn't replaceable.

No, that's the second rule. The first one is: Find your evidence.

We commenced by scanning the top of the hill. We found some intrusive Higby V burials up there, maybe 150,000 years old, dating from the last epoch before this planet lost its atmosphere. The natives of this planet were of no special cultural interest, never having got much past the level of Stone Age man; and as Dr. Schein had already made clear, we are here exclusively to study High One remains. Still, once we stumbled onto this Higby V stuff, we had to treat it with some respect, since it might be somebody else's specialty. So Mirrik reverently cleared the site, Kelly Watchman got the work vacuum-coring, and we transferred the whole business to an open space back of the hill, where Steen Steen and I sealed it up and marked it for future reference.

There weren't any other irrelevant deposits in the upper part of the hill. Luckily. The next stage was to lift most of the remaining overburden. ("Overburden" is one of those zooby archaeological terms of which you're always cranking, Lorie. It means the burden of soil or gravel or rock or whatever that's on top of what you want to excavate. I know it sounds dumb, but what the zog, it's part of the professional jargon.)

To clear overburden quickest, you use a hydraulic lift. This is nothing more than a high-pressure directional sort of hose-and-pump deal, which you snake into your hillside at just the right angle. Turn

the water on and zit! The overburden is sliced off and sloshed away. Dr. Schein and Leroy Chang spent half a day computing velocities and lift angles; then we ran the pipes into the hill, hitched up the compressors, and in five minutes succeeded in cutting off the top twenty meters of so of the hill. In theory we now had a clear shot at our site.

In theory.

In practice, not the case. Our modern gadgets deceive us into thinking archaeology is easy sometimes. But gadgets may err, and in many ways we are not too far removed from the innocent pioneers of four hundred years ago, who bashed around with picks and shovels until they found what they were after.

Our trouble seems to be that Dr. Schein's survey of last year was off by a bit, and that the degree of error is variable, which is to say he was wronger in some places than in others. This is forgivable; an underground survey is a tricky thing even when you have neutrino magnetometers and sonar probes and density rods. Still, it's a pain. We know that a terrific cache of High Ones things is right in front of us. (At least, we *think* we know it.) But we haven't found it yet.

Mirrik labors heroically to clear the remaining overburden. This has to be done manually because we're too close to the supposed upper strata of High Ones occupation to dare use anything as violent as the hydraulic lift. Kelly hovers just back of Mirrik's huge left shoulder, taking core samplings now and then. The rest of us haul dirt, fidget, speculate, play chess, and crank a good deal.

The weather doesn't help. At least our work is conducted under the weather shield, but that protects only the site and those actually examining it. In order to get from shack to site we have to cross a hundred meters of open ground, with one chance out of four that it will be raining, three chances out of four that a strong wind will be blowing, and five chances out of four that the air will be bone-chillingly cold. When it rains, it doesn't drizzle. The wind unfailingly carries tons of sand and grit. And the cold is the sort of cold that doesn't just bother you, it persecutes you. Some of us don't mind it, like Pilazinool, although he's having tremendous trouble with sand in his joints. Dr. Horkk comes from a cold planet—you can even have cold planets around a blazing star like Rigel, if you're far enough out—and he rather enjoys a brisk breeze. Mirrik doesn't mind because his hide is so thick. The rest of us are a little unhappy.

The landscape is no source of cheer. Some trees and shrubs, chosen for their ability to hold down topsoil, not for their beauty. Low hills. Craters. Puddles.

Dad would be sniggering up his sleeve if he knew the dark thoughts I've thought all week. "Serve the slicy idiot right!" he'd say. "Let him marinate in his archaeology! Let him ossify in it!"

You were lucky, Lorie. You missed the really nasty family conferences dealing with my choice of a profession. Dad hates to stir a fuss when we're visiting you. Even so, you got a good dose of the quarreling, but it wasn't a snip of what went on at home.

I have to say I was awfully disappointed in Dad when he started all that cranking about my being an archaeologist.

"Get a real job!" he kept yelling. "Be an ultradrive pilot, if you want to see the galaxy! You know what kind of stash they make? The pension rights? They get sore thumbs from all the spending they do. Or interplanetary law, now, *there's* a profession! Alien torts and malfeasances! Hypothecation of assets on nonverbal worlds! Infinite possibilities, Tom, infinite! Why, I knew a lawyer on Capella XI who did nothing but color-change suits and metamorphoses, and he had a ten-year backlog with his clerks!"

If you ever play this back, Lorie, I hope you appreciate the skill with which I imitate Our Lord and Master's voice. I get just the right tone of hearty manliness mixed with stuffy hypocrisy, don't you? No, blot that. Dad's not really a hypocrite. He's consistent to his own rules.

We all knew he wasn't the intellectual type, though I at least always felt that despite his extreme

concern with piling up stash and keeping a busy thumb, he had some interest in the finer values. He did get a degree from Fentnor, after all, and even though it was in Business Administration they don't let you escape from Fentnor illiterate. I also felt that Dad was far from being the kind of reactionary vidj that tries to dictate his son's professional choice. He always struck me as a live and let live type.

So it hurt when he came down so hard against my going into archaeology.

No secret what he really wants, which is for me to follow him into the real-estate business and eventually to take over from him. But real estate sings no songs to me, and I made that clear to him. Didn't I, by the time I was sixteen? Dad gets his zingers, not to mention much stash, from building his instant slums out of parapithlite sheeting on faraway worlds, and I suppose for him this is a creative thing. I admit some of his projects have been ingenious, such as the chain of floating houses on the gas-giant world in the Capella system, or the high-grav shopping center with interlocking centrifuges that he whipped up for the Muliwomps. Nevertheless I have always lacked a craving for this entire pocket.

Anyway, why should I go into a "useful" or "profitable" line of work, to quote two of Dad's favorite adjectives? What better justification for his bulging bank accounts than that they allowed his son to dedicate himself to the pursuit of pure knowledge?

Such as the digging up of old odds and ends on miserable cold stormy planets.

Enough. I need not yammer to you about Dad's obtuseness, since I think you share my feelings, and—as usual—are 100 percent on my side. Dad went his way, I went mine, and perhaps he'll soften up and forgive me after a while for turning my back on color-change litigation and housing projects, and if not, I will somehow avoid starvation anyway, doing what I most enjoy doing, which is archaeologizing.

Though I will not pretend that I've enjoyed this current job so far.

I will take a positive attitude. I will tell myself that we'll hit the right level any day.

Three-hour intermission there, during which I helped to perform some hard, dull, valuable work.

What we did was get fiber telescopes into the hillside to see what's in there. These are long strands of glass which transmit an optically undistorted image from end to end, given the right illumination. Getting them into the hillside involved drilling holes, which Kelly took care of with his vacuum equipment; this had to be done with unusual care, since the drill might blunder right into the site we're looking for and chop it up some.

I may have underestimated Kelly. She handles those corers beautifully.

Kelly perforated the hill for us; then we mounted the fiber telescopes on sprocket wheels and fed them ticklishly into the ground. We put four in altogether, spaced twenty meters apart; Jan and I worked together on one wheel.

Now the telescopes are in place. The big shots are peering into the heart of the mound. Night is falling, and it's raining again. I'm in the dorm, dictating this. If my voice is a little low, it's because I don't want to disturb Saul and Mirrik, who are playing chess. It's astonishing to watch somebody so huge as Mirrik moving chess pieces around with the tip of a tusk.

Jan is running toward our shack from the dig site. She looks excited. She's calling something to us, but I can't hear her through the bubble wall.

One hour later. Night, now. What Jan was trying to say was that they hit paydirt. The telescopes show the location of the High Ones cache. We weren't more than a dozen meters off course. For some reason we had misinterpreted the survey figures and were coming in on a tilt, but we can correct for that now.

It's too late to do any digging tonight. First thing in the morning we'll plot a whole new survey.

graph so that we have the position down perfectly. Then we'll finally be ready to start real work, with all of the preliminaries out of the way.

The whole team is over in our dorm right now. Outside it's pouring again. Everyone's tense and jumpy. Dr. Horkkk keeps pacing around in that weird precise way of his—a dozen steps, turn, a dozen steps back, turn, mathematically calculated so that he covers the same distance down to the millimeter. Steen Steen and Leroy Chang are following along behind him, having some kind of argument about High Ones linguistics. Pilazinool and Kelly Watchman are playing chess, which as you've guessed is our big recreation here. Kelly got very wet coming back from the site and has stripped down to her pretty pink synthetic skin, which has Leroy Chang disturbed; he keeps peering over his shoulder at her. So much for all that elaborate stuff about modesty. Kelly is a handsome wench, of course, but it quonks me how Leroy can get so excited about something that came out of a vat of chemicals. Maybe she's naked, but she isn't real, and that takes some of the thrill out of the nakedness. Pilazinool has done *his* kind of strip routine too: he's down to head and torso, and one arm to make the moves, while the rest of his body is lying in a mixed-up heap next to his bench. Now and then he screws one of his legs back on, or takes off an antenna, or otherwise fissions around with himself in his nervous way. He's losing the chess game, incidentally.

Dr. Schein is running scanner tapes of previous High Ones excavations, and is discussing tomorrow's digging techniques with Mirrik, who has plenty to say. Saul Shahmoon has one of his stamp albums out and is showing his prize specimens to 408b and Jan, who don't look very interested. And I'm sitting off in one corner talking into a message cube.

The evening seems endless.

Is it ever like this for you, Lorie? Even after all these years I don't really know how you work inside. I mean, lying there, hardly able to move, getting your food through tubes, no way even to go to the window and see what the weather's like. Yet I've never seen you bored or impatient or even depressed. If you were some kind of mental vegetable, I could understand it. But your mind is active and alert and probably in most ways a better mind than mine. Here I am—here we all are—counting minutes until morning and sick of waiting. And there you are, with nothing to look forward to except another day of the same, keeping cheerful.

Is it the TP that does it? I guess it is. Being able to rove all through the universe in your mind. Talking with friends on a thousand different planets, seeing strange scenes through their eyes, finding out everything about everything without leaving your bed at all. You can't ever be bored or lonely for long. You just have to tune in on some other TP and you've got company and entertainment.

I've always felt sorry for you, Lorie. Me being so healthy and active, going everywhere, doing so much, and you tied down to your hospital room, and yet we're twins, who are supposed to share so much. That's the ironic part. But tonight I wonder whether I ought to pity you or envy you. I can walk; you can soar from star to star via your TP powers, no limits. Which of us is the real cripple?

Idle thoughts on a long night, nothing else.

Jan is tired of looking at Saul's stamps. I heard her ask him to go for a walk with her, but he said no, he's got some cataloging to do. So Jan came over and asked me instead. Second choice, as usual.

We'll go out and stroll a while, unless it's still raining. She's a nice kid. This fixation she has on Saul makes no sense to me—he's twice her age, obviously a confirmed bachelor, and must have been frightened by a woman at an early age, judging by the way he hides behind those stamp albums—but maybe Jan's got a need for pursuing shy older men. We're each of us chimpo in our special way, I guess. Anyhow, if she wants to walk a while, why should I say no? It's a way of passing time.

So I'll wrap up this cube here. Perhaps next time I'll tell you how we uncovered the tomb of the Emperor of the High Ones and found him still alive, in suspended animation. Or how we found the

Secret Treasure of the High Ones, fifty billion credits worth of uranium. Fantasy comes cheap on a dull night. Tomorrow arrives the moment of truth at last. Out into the cold and dark, now. Off.

August 28, 23:
Higby

SO WE STARTED DIGGING, and right away we came to this sleek solid plutonium sarcophagus with a platinum button on its side, and Dr. Horkkk pushed the button and the coffin popped open, and inside it we saw the Emperor of the High Ones, who came out of suspended animation and sat up and said, “Greetings, O beings of a distant future age!”

So we began to follow this narrow winding tunnel through the hill, and Kelly cored into a side passage where there was this vault of blue fusion-glass, and upon command of “Open, Sesame,” the vault door swung back and we saw, neatly stacked, the cubes of uranium that we realized had to be the imperial treasure of the High Ones, worth at least fifty billion credits.

So we—

Well, as a matter of fact nothing like that has happened yet. Or is really likely to happen. But I thought I’d start this letter off with some zing. It is true, though, that we’ve been excavating for several days and that the site looks promising. More than promising—downright exciting.

This is the twenty-third High Ones site that’s been discovered. Possibly you know that the first site came to light a dozen years ago in the Syrtis Major region of Mars and was mistaken at first for the remains of some extremely ancient Martian culture. But nothing else like it turned up on Mars, whereas a couple dozen sites very similar to it have been found on widely spaced planets occupying the galaxy with a radius of about a hundred light-years. So we know that the people who left the deposits must have been members of some galactic race that covered a lot of territory in its travels. Very early in the story, the newspaper reporters christened them the High Ones, and the name has stuck. Even we archaeologists use it. It isn’t very scientific, but somehow it seems appropriate.

All the High Ones sites found so far follow the same general pattern. That is, they represent outposts rather than permanent settlements, as if the High Ones had sent roving bands of explorers across the galaxy and these explorers had stopped off at a given planet for twenty or thirty or fifty years and then moved along. At each site archaeologists have uncovered typical High Ones artifacts—intricately designed, incomprehensible objects, usually well preserved, downright baffling in their function. The workmanship is superb. They used gold and metallic plastics as their materials, usually, and some of the artifacts seem almost new.

They aren’t new. They come to us across a billion years.

We have fairly exact methods for dating ancient sites, and we know that the High Ones lived on Mars approximately a billion years back, with a possible range of error of ten million years, or one percent. The other sites have been dated at various points from 1,100,000,000 years ago to 850,000,000 years ago. Which tells us two significant things:

—That the High Ones had developed a galactic civilization at a time when nothing more complex than crabs and snails had evolved on Earth.

—That the High Ones’ culture underwent no significant changes over a span of *a quarter of a billion years*—which indicates a rigid, conservative, fully mature civilization that endured for a period of time that makes me dizzy to think about. We look upon the ancient Egyptians as a stable bunch because their civilization remained basically the same for about three thousand years. Zit! What about three thousand years against 250,000,000?

The High Ones have handed us a huge batch of puzzles. Such as the question of their origin. W

haven't yet found any High Ones outposts beyond that hundred-light-year radius. Of course, we haven't done much real exploring beyond that radius ourselves, although we've had ships out as far as eight hundred light-years from Earth. But the total absence of High Ones traces on all the outer worlds examined so far is odd.

One school of thought argues that the High Ones are native to our galaxy and originated on one of the planets inside the hundred-light-year zone. The fact that we haven't yet found anything like a major city of the High Ones is irrelevant; sooner or later we'll come upon the planet from which all the scouting parties set out. Dr. Horkkk is the leading exponent of this theory. In our group Lero Chang supports him.

The other notion is that the High Ones came from someplace far out—100,000 light-years away, maybe, at the other end of our galaxy—and hopped over most of the intervening stars to make a long and leisurely exploration of our little corner of the universe. Maybe they even were extra-galactic, sailing from the Magellanic Clouds, 200,000 light-years away, and devoted a couple hundred million years to an examination of our galaxy. Dr. Schein buys the extra-galactic theory. So does Saul Shahmoon.

Naturally, Dr. Schein and Dr. Horkkk don't ever cross swords openly over their differences of opinion. It just isn't done. When two top scientists disagree, they do so in the pages of learned journals, with festoons of footnotes and a lot of carefully antiseptic prose that says, in not so many words, "My respected opponent in this discussion is a chimpo quonker." If they happen to meet face to face, or especially if they find themselves on the same field expedition, they remain icily polite, never even mentioning the issue in dispute, although under their skulls they can't help thinking, "My admired colleague here is a chimpo quonker."

The rest of us aren't bound by the code duello that governs men at the summit of a field. Since we've taken sides and we yammer a lot about our ideas—more for the sport of it than anything else—since we have no real knowledge to go by.

"Obviously extra-galactic," says 408b crisply. "The total absence of evidence except in one insignificant corner of the galaxy means that they must have come from—"

"Cut it," Mirrik bellows. "One of these days we'll find their home world, right close at hand, and _____"

"Nonsense!"

"Feeby foolery!"

"Unscientific blenking!"

"A lot of silly fission!"

"Ignorance!"

"Idiotic slice!"

"Intellectual nillness!"

And so the quonking goes, far into the night. Mirrik and Steen Steen back Dr. Horkkk on the local-origin theory, and so does Jan Mortenson, although not very firmly. 408b and I line up with Dr. Schein and the extra-galactic-origin theory. Kelly Watchman is neutral, because it's not in the nature of androids to get excited about theories when they lack enough facts to make a logical judgment. Pilazinool, our specialist in intuitive analysis, is also silent on the subject. I'm sure he has his private opinions, but it isn't his habit to air them until he feels ready to issue a complete statement. When he does issue a complete statement, it isn't intended as a topic for debate; it's meant as The Word. Pilazinool therefore is careful not to try to give The Word until he knows what it is.

Why am I on Dr. Schein's side, you ask? How can I be on anybody's side when we don't really know a thing?

Simple. You know I have a romantic streak, Lorie. Otherwise I wouldn't be out here doing what I'm doing, in defiance of my father's notions of what I should be making out of my life. And so

automatically incline toward the theory that lights the most lights in my imagination.

~~If the High Ones did originate someplace within a hundred light-years of Earth, they have to be extinct now. If they still existed we'd certainly have bumped into them by this time.~~

If they came from some other galaxy, though, they may still be thriving out there somewhere. I like to think that they are. A race that can last a few hundred million years without blowing itself up—and we know that they lasted at least that long—can probably be considered just about immortal, as races go. And so, if Dr. Schein's ideas are correct, it's at least possible that the High Ones inhabit some other galaxy, living in all their ancient splendor, and that we may some day stumble upon them. Who knows where? The Magellanic Clouds, M31 in Andromeda, the spiral galaxy M104 in Virgo—anywhere.

Let me quickly add that neither Dr. Schein nor any other reputable archaeologist has suggested that the High Ones still survive. A billion years is a long time even for a civilization of superbeings to endure. It is strictly my own wild notion that they linger on. The night I took my walk with Jan, I let a little of this emerge, and she was appalled.

"Nothing lasts a billion years, Tom!"

"You're judging by Earth standards. Just because we're newcomers to the universe, that doesn't mean—"

"But there isn't any intelligent race anywhere that's remotely that old!" she protested. "The Shilamakka are about the oldest race in the galaxy, aren't they? And they evolved only about fifty million years ago. Whereas our own species doesn't even go back half a million years. And the Calamorians are even newer, and—"

"We have proof that the High Ones were able to survive across a span of 250 million years, Jan. So we know they had staying power. They could very well still—"

"What about evolutionary changes? In a billion years they'd have evolved out of all recognition!"

"Don't you think they could control their own genetic flow?" I asked. "A conservative race like that wouldn't allow random mutations. They'd keep themselves intact and unchanging."

"And what about the natural resources of their home planet? Wouldn't those have been exhausted long ago?"

"Who says they're still living on their original planet?"

Jan wasn't convinced. I have to confess that I wasn't, either. The thought that one species could keep a civilization running for as much as a million years is more than an Earthborn type like me can comprehend. To talk about survival over a *billion* years—it sposhes the mind just to imagine it.

And yet—Lorie, I *want* them still to be out there somewhere. I can't bear to believe that such greatness could ever have come to an end and vanished from the universe. The last of the High Ones, the death of a civilization millions of years old, no momentum left, cultural exhaustion, maybe—reject it. Perhaps because to accept the passing of the High Ones means to accept the passing of Earthman culture some day. None of us ever believes in the possibility of his own death. Certainly not in the death of his species, his civilization. And if I believe in the immortality of the human race, as I can't help doing, how can I believe that this much greater race of High Ones could have been mortal? No. I tell myself that they cling to existence far from here, in another galaxy, even though they may have forgotten how at one time they visited a neighboring galaxy where intelligent life hadn't yet evolved. Ours.

There. That's your chimpo brother talking, handing out the same sort of zooby romanticism that he always peddled. You used to tell me that I didn't have the true scientific attitude of objectivity. Maybe you were right.

I see that I haven't managed to say much about what we've accomplished here so far.

The basic thing about working at High Ones sites is that they're so fantastically old that the usual techniques of archaeology can't be applied. We're paleoarchaeologists rather than archaeologists. We can't just clear sand or dirt out of a site, the way the boys do on a dig in Egypt or New Mexico, and start hauling up artifacts. Over a billion years sand or dirt turn to *stone*. We have to carve all our finds out of solid rock.

For this we can use standard methods, up to a point. We clear away overburdens of soil with power shovels, with hand tools, and with bulldozers, including Dinamonians like Mirrik. When the heart of the site is exposed, though, we have to use vacuum-corers. These peel the rock away literally a molecule at a time, laying bare the artifacts we're after. If your vacuum-corer operator is a little on the spinless side, he's likely to chew up a few molecules of the artifact too, before he can stop.

So far Kelly has been just about perfect. She did cut into one very minor deposit, but that's forgivable; otherwise she's stripped the site with real skill. I take back all the stuff I was saying in the first cube about the inadequacies of an android vacuum-corer operator.

It took the better part of a week to get rid of the overburden, and another few days passed before we began to hit artifacts. This site is the biggest High Ones camp ever discovered, running for more than a hundred meters into the hillside. At this point we have collected a lot of standard stuff, debris discarded around the periphery of the camp, such things as—

- Inscription nodes*. These are plastic tubes, about the size and shape of a cigar, usually deep green in color but sometimes blue. Along one side they bear an inscription in High Ones hieroglyphic, customarily consisting of seventy-five to a hundred symbols. At unpredictable intervals the inscriptions fade and new ones appear. This may happen when we hand a tube to someone else, when we tilt it, when the person holding it undergoes a sudden change of mood, or when it starts or stops raining. On the other hand, sometimes it is impossible to induce any change in the inscription even when all of these things occur simultaneously. Hundreds of inscription nodes have been uncovered at each High Ones site. Some have been opened; they have no moving parts and appear to be solid plastic all the way through. We understand what makes the inscriptions come and go about as thoroughly as Neanderthal would understand where a television image comes from. We also are unable to decipher the inscriptions.

- Commemorative plaques*. These are medals of some sort, about the size of large coins and stamped from some rustproof white metal. Heaps of them litter all High Ones sites. On one side they bear the image of what we assume is a High One: a humanoid creature with four arms, two legs, and a dome-shaped head. On the reverse side is an inscription in the same symbols found on the nodes. The melting point of the metal used in these plaques is upward of 3500 degrees; the metal is so extraordinarily hard that we don't see how it could have been stamped. Chemical analysis has not yet revealed the nature of the alloy used.

- Puzzle-boxes*. Just as the name implies: these are interlocking sheets of metal arranged in a variety of disturbing patterns. The simplest ones are moebius strips, which are just flat lengths of metal with a twist in the middle and the ends joined, so that you can run your finger along one side, keep going past the twist, and end up on the other side without ever having lifted your finger. That is, the moebius strip is truly two-dimensional, since it only has one side. Okay? Then there are Klein bottles, which are three-dimensional containers that loop back on themselves so that they also have just one surface. Also there are tesseracts, which are structures with four spatial dimensions—tesseract is to a cube as a cube is to a square, yes? If you look at a tesseract the right way, you can understand, but I don't recommend trying. And then there are puzzle-boxes that don't fit any mathematical theory, that fit together in odd ways so that you can trace a path down one side, and up another, and then you come to a place where the surface disappears and you're somewhere else. About a dozen different kinds of puzzle-boxes are known. Maybe the High Ones used them for intellectual

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