Andy Duncan

THE CHIEF DESIGNER

I. Kolyma labor camp, sometime during World War II

"Korolev."

D327 did not look around. He was busy. His joints grated together, his ligaments groaned as he lifted the pickax over his head–a motion as fast as he could manage, yet so terribly slow, slower even than the last time, which had been slower in turn than the time before that; then he released his breath and with it the tension, and the will, so that his arms fell forward and allowed the tip of the pick to glance across the jagged face of the wall. A few greasy-black chips pattered his shoes. The fall of the pick almost balanced in joy the inevitable ordeal of lifting, but not quite, so D 327's misery accumulated in minute increments like the drift of slag in which he stood ankle-deep. He knew that none of the other workers, spaced five paces apart down the length of the tunnel, were faring any better. They had been ordered to dig for gold, but he knew this tunnel held no gold; this tunnel was the antithesis of gold; the gold had been pried from its workers' teeth and chased from their dreams; and his pick was as soft and blunt as a thumb. He raised it again, and tried to lose count of how many times he had done so.

"Korolev."

D327 tried to focus his attention not on the lift and fall, lift and fall of his triple burden, arm and pick and arm, but on the slight added weight in his right jacket pocket–an imagined weight, really, so coarse and mostly air was the bit of bread he had palmed from poor Vasily's plate at midday. Vasily had collapsed at just the right time. Later, and Vasily would have used that crust to swipe even the shine of food from the tin plate, would have thrust it into his mouth with his last dying breath. Sooner, and the guard would have noticed the remaining food and snatched it away. Guards starved less quickly in the Kolyma than the prisoners, but all starved. A dozen times D 327 had come deliriously close to eating his prize, but each time he had refrained. Many of his fellow prisoners had forgotten how to savor, but he had not. After supper would be best: Just before sleep, as he lay with his face to the barracks wall, the unchewed food in his mouth would add warmth and flavor to oblivion.

"Korolev."

The voice was cold and clear and patient, an electronic pulse against the rasps, clinks, drips, and scuttles of the tunnel. What word, in this hole, could bear such repetition? Only a name, like God, or Stalin.

"Korolev."

I heard that name often at the Institute, D 327 thought. Often in my presence others said that name. A response was expected, assumed; was only just. Down fell the pick, clatter and flake; he turned, half afraid of seeing nothing in the light of his carbide lamp.

Instead he faced an infinitude of stars.

"Come down from your orbit, Comrade Korolev. Come down to Earth, that a mere mortal may speak with you."

The stars were printed on a sheet of glossy paper: a page. A hand turned the page, to a cutaway diagram of a tapered cylinder like a plump bullet. Inside its shell flowed rivers of arrows. At that moment, more clearly even than he remembered his own name, Sergei Korolev remembered another's.

"Tsiolkovsky," he said.

"Your memory is excellent, Comrade Korolev." The man who had held the open book before Korolev's face reversed it and examined it himself. He wore a full-dress officer's uniform, and two soldiers flanked him. "*Exploration of Cosmic Space with Reactive Devices*, by Konstantin Tsiolkovsky. Published 1903. And did the czar recognize his genius? Fah! If not for the Workers' Revolution, he would have died of old age still wiping the snot of schoolboys in Kaluga." He sighed. "How often we visionaries labor without recognition, without thanks."

"It is a shame, Citizen General. I am sad for you."

The officer snapped the book shut one-handed. In the dim light of Korolev's helmet gleamed the brim of the officer's cap, the golden eagle's wings, and the rifle barrels of the soldiers on each side. "You flatter me, Korolev. I am only an engineer like yourself. And henceforth you may call me Comrade Shandarin, as you would have before your crimes were exposed and punished." He surveyed the meager rubble beneath Korolev's feet. "Your service here is done. From today you serve the Motherland in other ways. You will join me in my work."

Korolev was not attentive. Just as the mere sight of food could flood his mouth with saliva and his stomach with growling, raging juices, the glimpse of Tsiolkovsky's diagrams had released a torrent of images, facts, numerals, terms, all familiar and yet deliciously new. Apogee and perigee. Trajectory and throttle. Elevation and azimuth. Velocities and propellants and thrust. He was trying to savor all this, and this man Shandarin was distracting him. "And what work is that–Comrade?"

Shandarin laughed, a series of sharp detonations in the tunnel. "Why, what a question. The work your Motherland trained you to do, of course. Do you think your skills as a gold miner are in demand?" He reached into his brass-buttoned coat (and one part of Korolev, eternally cold in his thin and tattered parka, noted how the coat retained the smooth, unwrinkled drape of great comfort and thickness and weight) and pulled out a folded sheaf of papers that he handed to Korolev. "The chief problem," he said, as Korolev exulted in the glorious feel of paper, "is distance, of course. The German rockets have a range of hundreds of kilometers, but are thousands of kilometers possible? Not all the Motherland's enemies are her neighbors. The V-2 achieves altitudes greater than eighty kilometers, more than sixteen times the height of your GIRD-X; our new rockets must fly even higher than the Germans'." Korolev leafed through the papers. His blisters smeared the charts and graphs no matter how much care he took. Shandarin continued: "So our rockets must somehow better the Germans' twenty-five thousand kilograms of thrust, and by a wide margin at that. This requires drastic innovations in metallurgy or design, if not both–Comrade, are you listening?"

Korolev had turned one of the charts on its side, so that the rocket's arc swept not from right to left, but upward in a languid, powerful semicircle, as if bound for...

His thumb left a red star in its path.

"I *am* listening," Korolev said, "and so is everyone else." He was aware of fewer noises, fewer motions, from the other miners, and some of the Institute's concern for security had returned to him, along with an echo of his voice of command. "In my day," Korolev continued, "such talk was classified."

Shandarin shrugged, grinned. "I am speaking only to you, Comrade," he said. He inclined his head backward, toward the soldiers, and said, "We may speak freely before cretins," then flicked a gloved finger toward the miners, "and even more so before dead men." He slid a page from Korolev's hands and held it up for all to see, turned completely around, waved the sheet a little so that it fluttered. No miner met his gaze. He turned back to Korolev. "Shall we go?" He feigned a shiver. "I am not so used to the cold as you."

In 1933, after the GIRD-X triumph, after the vodka and the toasts and the ritual congratulations from Comrade Stalin (delivered in great haste by a nearsighted bureaucrat who looked as if he expected rockets to roar out of the doorways at any moment), Korolev and his mentor Tsander, who would die so soon thereafter, had left their joyous colleagues downstairs and taken their celebration aloft, clambered onto the steep, icy rooftop of the Moscow office building that housed the State Reaction Scientific Research Institute. To hell with the vodka; they toasted each other, and the rocket, and the city, and the planet, with a smuggled and hoarded bottle of French champagne.

"To the moon!"

"To the sun!"

"To Mars!"

They ate caviar and crabmeat and smoked herring, smacked like gourmands and sailed the empty cans into orbit over the frozen streets of the capital. Never, not even in the Kolyma, had Korolev so relished a meal.

He remembered all this, and much more, as he sat beside Shandarin in the sledge that hissed away from the snow-covered entrance of Mine Seventeen. He burned to examine the papers, but they could wait. He folded them and tucked them into his worn and patched jacket, through which he almost could have read them had he wanted to. As Shandarin regarded him in silence, he pulled the crust of bread from his pocket and began nibbling it with obvious relish, as if it were the finest delicacy plucked from the ovens of the Romanovs. He settled back, closed his eyes, and in eating the bread relived the bursting tang of the caviar, the transcendent release of the launch, the blanketing embrace of the night sky that no longer danced beyond reach. In this way he communed with his former self, who dropped gently down from the rooftop of the Institute and joined him, ready to resume their great work, and the sledge shot across the snow as if propelled by yearning and fire.

II. Baikonur Cosmodrome, September 1957

Awakened by the commingled howls of all the souls in Hell, a startled Evgeny Aksyonov lifted the curtain of his compartment window and looked out onto a circus. Loping alongside the train was a parallel train of camels, a dozen or more of the gangling beasts, their fencepost teeth bared as they yelped and brayed and groaned, lips curled in great ropy sneers. Bulging gray sacks jogged at their flanks, and swaying atop each mount was a swarthy, bearded rider in flowing robes, with a snarl to rival that of his camel.

So this is Kazakhstan, thought Aksyonov, who before this trip never had been farther east than the outskirts of Moscow, the home of a maiden aunt who baked fine tarts. He breathed the choking dust and coughed with enthusiasm; he was too young to be uncomfortable. One of the camel drivers noticed him gawking, grinned, and raised a shaggy fist in a gesture so rude that Aksyonov hastily dropped the curtain and sat back, fingering his own suddenly inadequate beard. He rummaged in his canvas bag for the worn copy of Perelman's *Interplanetary Travels,* which he opened at random and began to read, though he could have recited the passage with his eyes closed. He soon nodded off again, and in his dreams he was a magnificent bronze fighter of the desert, who brandished a scimitar to defy the rockets that split the sky.

No conductor, no fellow passenger disturbed his sleep, for Evgeny Aksyonov was bound for a place that did not officially exist, to meet a man who officially had no name. Access to such non-places and non-people was strictly regulated, and so Aksyonov was the only passenger aboard the train.

"Come," the soldier on the platform said, after he peered from Aksyonov's face to his photo and back again just enough to make Aksyonov nervous. "The Chief Designer expects you."

For fifteen minutes or more, he drove Aksyonov along a freshly paved highway so wide and straight it seemed inevitable, past a series of construction sites where the hollow outlines of immense buildings rose from pits and heaps of dirt. Gangs of workers swarmed about. Atop one pile of earth, three armed soldiers kept watch: the men swinging picks below must be *zeks,* political prisoners, the Motherland's most menial laborers. A gleaming rail spur crossed and recrossed the road, and Aksyonov began to brace himself for each intersection, because the driver did not slow down. Some completed buildings looked like administrative offices, others like army barracks. Behind one barracks were more inviting dwellings, a half-dozen yurts. A couple of Kazakh men were in the process of rolling a seventh into place, as if it were a great hide-covered hoop.

The driver abandoned Askyonov without speech or ceremony at the concrete lip of a kilometer-wide pit. Aksyonov looked down sixty meters along the steep causeway that would channel the rocket blasts. He shivered and retreated from the edge of the launch pad, a tremendous concrete shelf hundreds of meters square. No amount of rocket research would make him fond of heights. Above him soared three empty gantries, thirty-meter talons that would close on the rocket and hold it fast until liftoff.

Hundreds of workers dashed about the pad. Some drove small electric carts, some clambered along scaffolds that reached into the tips of the gantries and the depths of the pit. Among them were many Kazakh men, distinguishable even at a distance by their felt skullcaps. Amid all this activity, Aksyonov tried to look as knowledgeable and useful as possible while he guarded his luggage and felt homesick.

As he considered getting out his book, he was jolted nearly off his feet by a voice that boomed and echoed from everywhere: to left, to right, the pit, the sky.

"Testing. Testing. One two three. Tsiolkovsky Tsiolkovsky Tsiolkovsky."

Then came several prolonged and deafening blasts, like gusts into a microphone. Aksyonov clapped his hands over his ears. No one else in the whole anthill took any visible notice of the racket.

"Hello. Hello. Hello." The words rolled across the concrete in waves and rattled Aksyonov to the bone. "Can you hear me? Eh? Hello? I'm asking you–you there with the beard. Yes, you, the one doing no work. Can you hear me?"

Aksyonov released his ears and looked about the launch pad. Unsure where to direct his response, he waved both hands high above his head.

"Good," the voice said. "Wait there. I'll be right up–" The next words were swallowed in a spasm of rattling coughs that echoed off the sides of the pit and seemed to well up from the earth itself. Aksyonov covered his ears again. In mid-cough, the amplification stopped, and all that fearsome reverberation contracted to a single small voice that hacked and cleared its throat far across the concrete pad.

Aksyonov turned to see a man step out of an elevator set into one of the support pillars. The man walked toward Aksyonov, swabbed his mouth with a handkerchief: heavy-set, fiftyish, with low, thick eyebrows and a brilliant gaze. He wore an overcoat, though the day was warm for autumn.

"You are Aksyonov," he said, hand extended. He said it as if he had reviewed a list of names in the elevator, and had selected just the right one for the job; if he had said Dyomin or Pilyugin or Molotov, Aksyonov would have answered to it just as readily, then and forever. "My name is Sergei Korolev," the older man continued, "but you are unlikely to hear that name again. Here I am only the Chief Designer, or the Chief. Welcome to Baikonur Cosmodrome."

Aksyonov made a little bow, just more than a nod. He had rehearsed his opening and was quite proud of it. "I am honored to meet the man who designed the first Soviet rocket."

"And I am honored to meet the designer of our future ones," Korolev replied. "In collaboration, of course. Space is a collaborative effort, like a nation, or a cathedral. Come with me, please," he added over his shoulder, for he already was well on his way across the pad. Aksyonov grabbed his bags and scrambled to catch up.

"I regret that I have no time to give you a tour of the facility, nor a proper interview. Can you recognize a lie when you hear one? What I just told you was a lie. Truthfully, I do not regret it at all, for I am glad finally to be busy with this launch of the *Fellow Traveler*–you read the brief I sent you, yes? Yes. Instead of the usual formalities, you will accompany me on all my rounds in the coming week, from this moment. Will this be satisfactory?"

"Very much so, Comrade Korolev. Er, Comrade Chief."

"Simply Chief will do. Hello, Abish, you mad Kazakh, please keep it out of the pit, will you?" he cried to a waving, grinning man who whizzed past in an electric cart. "You come from the Academy with the highest recommendations, Comrade Aksyonov. So high that you actually had a choice of postings, and choice is a rare thing in this new century. Tell me, why did you choose Baikonur? Do you nurse some abiding love for sand?"

"Primarily, Comrade–er, Chief–I came here to work with you." He awaited some response, got none, and went on. "Also, Comrade Shandarin's design group involves–well, let us say much more conventional applications of rocketry? Your work at Baikonur, what little I could learn of it, seemed much more interesting."

"I understand," the Chief said. He led the way down a metal spiral staircase that clamored at every step. "Comrade Shandarin is like the old Chinaman, who lobs arrows of flying fire at the Mongols. The firepower is greater and greater, but still the Mongols keep coming." At the foot of the reverberating stairs, he turned back and stared at Aksyonov's luggage. "What in the hell are all these things you carry around with you?"

Aksyonov stopped. "Ah, just some... just my luggage, Chief." The older man's gaze was unreadable. "My clothes, and books... and some personal items..." He faltered.

After some thought, the Chief grunted in mingled assent and surprise and said, "Books are useful." Turning to the parking lot, he swept one arm back toward the launch pad. "Consider this a personal item, too."

As the two men approached, a large soldier bounded from a car, threw open the back door, and stood at attention. In one hand he held a book, his place marked with an index finger.

"Thank you, Oleg," the Chief said, and followed Aksyonov in. "Oleg here is reading his way through all the major published works on rocketry and interplanetary travel. What do you think of the Goddard, Oleg?"

"Very interesting, Chief," the soldier said, as he cranked the ignition. Aksyonov studied the man's thick, shaven neck.

"It is a directed reading," the Chief continued. He pulled a slide rule and a slim notebook from his coat. The shadows of the gantries swept across his face as the car circled the parking lot. "If I must live with an armed escort, I will at least be able to converse civilly with him."

"Would you like to converse now, Chief ?" the driver asked.

"No, thank you," said the Chief. His fingers danced across the numbers as Aksyonov looked out the back window at the receding claws of the pad.

III. Baikonur Cosmodrome, 4 October 1957

"Ten."

Ten seconds to go, and no work left to be done. Wonderful, wonderful. Korolev stretched out his legs beneath the scarred wooden desk, pulled the microphone forward, and relaxed as he counted down to zero.

"Nine."

A hundred meters away from this steel-encased concrete bunker, Korolev's voice must be booming across the launch pad. Only the topmost fifteen meters of *Old Number Seven* would be visible above the icy white fog vented from its liquid-oxygen tanks. Korolev had watched it through every periscope, from every angle, until his cheeks ached from squinting. Now he attempted to watch nothing. His subordinates glanced up from their consoles and radar screens sweaty and white-lipped, like men ridden by nightmares. Let *them* worry. It was part of the learning experience. Korolev was done with worries–for eight more seconds, anyway. Then the next trial would begin, but in the meantime he would savor his triumph like a crust of bread.

"Eight."

Just weeks before, Comrade Khrushchev had given the go-ahead for an orbital satellite launch–a launch that would impress the world (so he said) with the fearsome might of the Soviet intercontinental ballistic missile. Ha! As if Washington were as easy to reach as orbit. The Party Chairman had played right into the Chief Designer's hands.

"Seven."

Granted, *Old Number Seven* was a remarkable design achievement. Twelve small steering rockets and four strap-on boosters surrounded a central core with twenty separate thrust chambers. The metallurgists, wringing their hands, had told Korolev that his project was doomed, that any single rocket of Soviet make would shatter well before it reached four hundred and fifty thousand kilograms of thrust. Very well, Korolev said: How about two dozen, three dozen smaller rockets clustered together? The union is greater than the individual; was this not the essence of Communism?

"Six."

For hours, Khrushchev and the members of the Politburo, who knew as much about rocketry as any equivalent number of camels, had scampered about the launch pad like Siberian peasants on the loose in Red Square. They wanted to touch everything, like children; Korolev had to be stern with them. And they asked childish questions: How much does it weigh? How fast does it go? How high will it fly? The answers made them even more excited, and Khrushchev was the most excited of all. "This is a great work you do, Comrade Korolev!" he kept saying. The man's cigar ashes were everywhere, and Korolev had not seen his favorite tea glass since.

"Five."

Comrade Shandarin's objections, though they went unheeded at the Kremlin, were sound. What good was an ICBM that took hours to fuel and launch? One

so large that it could be moved only by railway? One that could not maneuver itself to its target, but had to be guided by human controllers on the ground? Worst of all, from Shandarin's standpoint, only the northeastern corner of the United States had anything to fear from *Old Number Seven*. "Comrade," he intoned, "there are precious few military targets in Maine." The restless old Chinaman could hear the Mongols laughing.

"Four."

Just a week before, young Aksyonov, at the close of a routine meeting, had loitered about with the constipated expression that signified an important question welling up inside. "Chief, I am confused," the young man said. "The field marshal keeps referring to *Old Number Seven* as a ballistic missile. Perhaps I am wrong, Chief, but–is *Old Number Seven* not a rather inefficient design for a ballistic missile?"

"Three."

Korolev had beamed at the young man, leaned forward and said, "I do not think that a fair assessment, Comrade Aksyonov. I think it would be more accurate to call *Old Number Seven* a *shitty* design for a ballistic missile."

"Two."

"But," Korolev continued, "it will make a marvelous booster rocket to send men into space."

"One.

"Ignition!"

And so a new star blossomed in the Central Asian desert and rose into the heavens, and even over the thunderous roar of the rockets the others in the command bunker heard the Chief as he threw his head back and laughed.

IV. Steppes north of Baikonur, February 1961

Aksyonov stood beside the Chief, their elbows touching, twin binoculars raised. An eagle wheeled across Aksyonov's portion of sky, and he instinctively turned his head to keep it in view, then caught himself and swung back to focus on the orange parachute as it grew larger and larger–though not quite so large as expected.

Aksyonov lowered his binoculars and checked his map, but the Chief needed no confirmation. "Our peacock has flown off course," he muttered, and rapped twice on the roof of the cab.

The truck roared forward, jolted along the frozen ruts of the dirt lane, and the swaying engineers in the back held on as best they could. Across the vast fields to right and left, toy-sized trucks and ambulances raced alongside. A flock of far-distant sheep surged away from an oncoming truck; the wind carried the honks and bleats for kilometers. Streams of vehicles converged on the drifting orange blossom that was Pyotr Dolgov.

The Chief was on good terms with each of the prospective cosmonauts at Star City, knew their names and families and hobbies and histories, knew in fact everything in their dossiers (and KGB dossiers omitted nothing). The Chief had selected these men from thousands of candidates, in consultation with Khrushchev and, seemingly, half the Politburo; and despite all this, Aksyonov was convinced that the Chief never liked Pyotr Dolgov.

The cosmonaut would sit in the commons for hours waxing his absurd mustache and bragging to everyone about his sexual exploits and his skydiving expertise. "More than five hundred jumps, my friends, and not so much as a sprained ankle. You see this little pocket volume of Lenin? I collect them, just to have something to read on the way down. After the chute is open, there is nothing else to do, you see? Eventually I will have read all the great man's works between earth and sky! How many scholars can say as much?"

And so on and so on, as the other cosmonauts hooted and jeered throughout. The Chief, shambling through the commons with a fresh sheaf of problems under his arm, would glare at him, and say nothing.

Yet Dolgov was the obvious man to test the East's ejection system, and such a test must be done without delay, if what the Chief read in the KGB reports, and in *Life* magazine, were to be believed. Woe indeed, that long, dry, cold spring, if the Chief caught someone taking a break to smoke a cigarette or place an idle telephone call or, worst of all, take a nap. "Do the Americans and the Germans shirk their jobs, down there in the tropics?" he would yell, waving the latest publicity photographs of the seven toothy spacemen. (The Americans surely would send the first dentist into space.) The Chief found this strange, perpetually sunny launch site, this Cape Canaveral Florida, a locale as exotic as Mars or the moon; to him it was always "down there in the tropics." So Dolgov was hustled through his training, and the final test was scheduled for late February.

The experiment was simple. Dolgov, suited up, was strapped into a prototype ejection seat inside a full-size mock-up of the East craft. Then the mock-up was carried aloft in the cargo bay of one of the big Antonov transports. Thousands of meters above the steppes, the capsule was shoved without ceremony out the back of the plane. Once clear, Dolgov pressed the "eject" button. Very simple. Also lunatic, but the schedule at Baikonur Cosmodrome made generous allowances for lunacy.

Dolgov had summed up the procedure: "You feed me to the plane, and the plane shits me back out!"

The Chief had winced, and then nodded his head.

The Chief's truck was not the first to arrive that afternoon. A gaggle of engineers all tried to climb over the tailgate together, and the Chief, impatient, gestured for Aksyonov to help him over the side. The rippling parachute danced sideways, but was anchored by the prone figure on the ground.

A pale soldier with a rifle jogged up to the Chief and said: "It's bad, Comrade Designer. Perhaps you should wait for the–" The Chief, of course, was already past, and Aksyonov checked his stride a bit so as not to outpace the Chief.

Dolgov lay on his back, arms and legs sprawled as no living man would willingly lie. His helmet, its faceplate shattered, rested at a crazy angle on his shoulders yet still was bolted to the suit.

The Chief stared down at the body and said, "We are fools before men and before God."

Doctors arrived, circling somewhat to maintain a respectful distance from the Chief, and confirmed the obvious: Dolgov's neck was broken. He had done no reading on the way down.

"His helmet must have struck the hatch upon ejection," Aksyonov said, for he felt he should say something. "He knew the risks," he added.

"Not as well as you, my friend, and certainly not as well as I." The Chief's voice was deceptively quiet. By now dozens of others had gathered. They looked sick, ashen, aghast, but the Chief's face was taut with fury. Slow and gentle in his rage, he knelt on the frozen ground, reached past the doctors, grasped Dolgov's outflung hands, and folded the arms across the orange chest so that Dolgov seemed to grasp the chest straps of his parachute.

"Better that way," the Chief grunted.

He turned and walked back toward the truck, into the cold wind, Aksyonov close behind. As he walked, the Chief pulled from his bulky jacket his notebook and a ball-point pen, shook the pen to get it going (it was of East German make), and began to write, pen plowing across the page, line after line. As he wrote, the Chief stepped over gullies and around rocks without stumbling or looking up. A marmot scampered across his path, practically underfoot. The Chief kept writing.

At the end of the lane, where the earth was permanently churned by the wide turns of tractors, the pale soldier had found a use for his rifle: He held it up horizontally, like a cattle gate, to keep three shriveled peasant women at bay. As the Chief approached, the eldest called: "What is wrong, Comrade? What's all the fuss?"

The Chief replied as he passed, without looking up or ceasing to write: "I just broke a young man's neck, Madam, with a slide rule and the stroke of a pen."

The old woman instantly crossed herself, then realized her error and clapped her hands to her face; but Aksyonov and his Chief could not care less, and the soldier was intent on the romping parachute, as rapt and wide-eyed as a child.

V. Baikonur Cosmodrome, 12 April 1961

Frustrated with merely adjusting and rearranging his stubborn pillow, Aksyonov began, shortly past one a.m., to give it a sound thrashing. He pummeled it with his fists, butted it with his head, and slung it into the corner. Aksyonov sat up, sighed, and amused himself for a few minutes by twisting locks of his hair into intricate braids with his left thumb and forefinger, then yanking them free with his right hand. "I am insane," he said aloud. He threw back the bedcovers and swung his bare feet onto the never-warm wooden floor of the cottage.

The snores droning through the hallway suggested Aksyonov was alone in his sleeplessness. Trousers, shoes, jacket, cap; he imagined they were the bright orange flight suit, the asphalt spreader's boots, the leaden bubble of the helmet. He made final adjustments to this fancy (to be sure of the oxygen-nitrogen mix) before he stepped boldly onto the back porch, arms raised in triumph, to claim the concrete walkway and the dusty shrubbery in the name of World Socialism.

Shaking his head at his foolishness–an option young Gagarin, suited up, alas would not have–Aksyonov strolled into the yard. He briefly mistook, for the thousandth time, the horizonal glow of the launch pad for the dawn of a new day. Aksyonov felt his internal compass corkscrew wildly. He closed his eyes and gulped the chill air, hoped to flood himself with calm, but instead thought of a rocket sucking subzero broth from a hose.

Across the garden, a light burned in the kitchen window of the Chief's equally nondescript cottage. Aksyonov walked toward it, since he had nowhere else to walk, and as he neared he became absurdly furtive, stepping with great care, raising his knees high like a prancing colt in zero gravity. He crept into the bushes alongside the house and peered over the sill. As a child, Aksyonov had longed to be a spy; he enjoyed, for example, covertly watching his secretly Orthodox grandfather in prayer. One day he gave himself away with a loud borscht-fed belch, infuriated his grandfather, and launched a family crisis... but the Chief, he saw, was just reading.

The harsh fluorescent light accented the frostbite scars on the Chief's face–a sign, too, of his weariness. As usual, his right hand supported his chin; his left index finger guided his eyes across and down the page of his notebook. At his elbow were a plate of cheese curds and a full glass of tea from which no steam rose. The Chief turned the page, read, turned another. Nothing worth watching; why, then, was Aksyonov so fascinated? Why did he feel such comfort, knowing the Chief Designer sat up late in a lighted kitchen, reading? The Chief's finger moved as methodically as his pen, line after line after–he looked up, not toward the window but toward the back door, and Aksyonov ducked beneath the sill. He heard the scrape of a chair, and heavy footsteps. A wedge of light sliced across the grass.

The Chief whispered: "Gagarin? *Hsst!* Hello?"

After a pause, as Aksyonov held his breath, the Chief peered around the corner of the house at his assistant crouched in the shrubbery.

"Ah, it's you," the Chief said. "Good. Now perhaps I can get some work done, in this winter resort for narcoleptics."

Aksyonov was brushing leaves and twigs from his sleeves, trying to formulate an explanation to himself that also would pass muster with the Chief, when his superior reappeared. He strode from the house with the notebook under his right arm as his left arm fought for position inside his bulky jacket, which he wore outdoors in all weathers; Aksyonov figured it weighed at least as much as a flight suit. "Now then," the Chief said, and shepherded Aksyonov across the yard by the elbow. "Let us suppose, for the sake of argument and for our sanity, that all goes well in the morning. Gagarin goes up, he orbits, he comes down, he talks to Khrushchev, he talks to his mama, he is the good Russian boy, yes? Yes. Fine. All well and good. Still he is just Spam in a can."

"Spam, Chief ?"

The Chief waved his hand. "An American delicacy packed in cans, like caviar. I have read too much *Life,* perhaps. Stop interrupting. I mean that if good Russian boys like Gagarin are ever to orbit anything other than the Earth, they will need a craft better than that hollowed-out *Fellow Traveler* over there. They will need to be able to maneuver, to rendezvous with each other, to dock, and so on. *Now* interrupt me. What modular structure for this new craft, this *Union* craft, best would combine the strengths of our current craft with the terrible necessities of..."

For more than an hour the two men tromped across the yard, sometimes talked simultaneously and sometimes not at all, sometimes walked shoulder to shoulder and sometimes stalked each other like duelists, and they snatched diagrams from the air, and chopped them in the grass, and bickered and fought and hated one another and reconciled and embraced and bickered again, all beneath a brilliant starry sky at which they did not even glance; and when they tired, having solved nothing and having discovered about a dozen fresh impossibilities to be somehow faced and broken, they collapsed onto the back porch steps in giddy triumph and elation, and then Aksyonov said, "This is not my cottage."

The Chief looked around. "Nor mine," he said.

Heaped about the porch were bouquets, mostly frugal carnations, brought the previous day, in wave after wave, by dimpled envoys of the Young Communists League.

"This is Gagarin's cottage," Aksyonov whispered. The windows were dark. In the absolute silence: a faint snore.

"At seven last evening I marched over here and ordered him to go to bed and get a good night's sleep," the Chief murmured, eyes wide, "and he has the nerve to do exactly that." He heaved himself off the steps, rubbed the small of his back, stooped and raked the dirt with his hands. "Help me," he whispered, and began to load his pockets with pebbles.

Aksyonov dropped to hands and knees. "You're right, Chief. Why should we stay up all night, and do all his worrying for him?" He added, under his breath: "The bastard."

Incredibly, there was Gagarin, out cold, his outline visible in the darkened room thanks to the radium dial of the bedside clock. The two engineers danced back a few paces from the cosmonaut's window and began peppering the pane with handfuls of shot. Was the man deaf, or made of stone–a peasant boy already gone to monument? Ah, there's the light. Crouched behind Gagarin's complementary black government sedan, which he could drive from the middle of nowhere to the edge of nowhere and back again, his tormentors watched the young hero of the Motherland raise the sash, poke out his head, look around.

Gagarin whispered: "Chief ?"

No reply, and so the sash came down, and the light went off. The two ruffians stood up, turned solemnly to each other, and began to sputter and fizz with suppressed laughter. Aksyonov drew in a deep breath, and the Chief said, with quiet gravity: "As I prepared to leave the cottage, Gagarin said he had two last

questions for me. One, was it not true that he could take a couple of personal items aboard, up to about two hundred grams? Yes, I told him, of course, perhaps a photograph or the like. Then, he made a request. Do you know what that boy wanted to carry into orbit tomorrow? Can you imagine? One of my writing pens."

"Did you give him one?"

The Chief's face spasmed. "Go to bed, Aksyonov," he said.

Aksyonov did, and behind him the Chief Designer leaned on the government-issue sedan and gazed at Yuri Gagarin's darkened bedroom window.

VI. *Sunrise One,* 12 October 1964

A planet rolled aside to reveal a star, and was itself revealed, lighted as if from within: storm systems roiled; mountain snowfields sparkled; a checkerboard of collective farms wheeled past the window, proof from space that Communism had changed the Earth. Orbital sunrise was the spectacle of a lifetime, yet Cosmonaut Aksyonov was distracted throughout. Cosmonaut Aksyonov was upside down.

Should he say something? He knew that at four hundred kilometers above the earth's surface the term "upside down" was meaningless, but the sensation persisted. Even with his eyes closed he felt inverted, as if all the blood was rushing to his head. Surely Yegorov's countless sensors, which studded every crevice and cranny of Aksyonov's body, would detect such a thing? For a moment, Aksyonov fancied that the doctor was aware of his upside-downness and just hadn't said anything, to spare Aksyonov's feelings. After all, reorienting himself, swapping ends, would be impossible for any of the three crewmen in this cramped space. Here there was even less room to maneuver than in the back seat of that ridiculous Italian car in which Aksyonov had ridden three abreast with these very men a month before, on a futile midnight jaunt to Tyuratam for vodka. Even with the ability to unstrap himself and float, could the middle person suddenly cry, "Switch!" and reverse himself at will? No, if Aksyonov was upside down, he would have to stay that way until re-entry. And if he was not upside down, but merely insane, then he might stay that way a lot longer, but he tried not to think about that.

"Looks like a slight anomaly in the saline balance," Yegorov said, as he peered at his hand-sized lab kit. The doctor sounded very proud of his salty blood. He had poked and prodded himself with sensors and needles and probes ever since reaching orbit, but found himself lamentably normal–until this final pinprick of blood, which Yegorov had flipped from his finger like a tiny red berry, finally yielded something unearthly, if tedious. Well, fine, Comrade Doctor, Aksyonov wanted to say, why do all your little tests not tell you that we've been upside down for the past two hours? Because if Aksyonov was upside down, then Yegorov and Novikov must be upside down as well. The thought did not console him.

"How do you feel, Comrade Aksyonov?" Novikov asked.

"I am fine," Aksyonov replied.

The pilot smiled in reply and returned his attention to the sealed tube of black currant juice that drifted between his outstretched hands. In space as on Earth, Novikov thrilled at small things. Back at the cosmodrome, he had been aghast at Aksyonov's ignorance of Kazakh food. He had prepared for the reluctant engineer lamb strips and noodles, which he called *besh barmak*, and poured him a foamy mug of fermented *kumiss*. "You will enjoy space more," the pilot had said, "if you experience more of Earth beforehand. Drink up. It's mare's milk, but what do you care? We are young yet. Drink." Now Novikov was engrossed with the plastic tube, which he batted first with his right hand, then his left, as if he were playing tennis with himself, and the tube tumbled first one way, then another. Aksyonov was fairly certain of the tube's movements to left and right, but what of "up" and "down"? Was the tube, end over end over end, ever truly upside down? Or was it right side up the whole time, as the rest of the capsule revolved around it? Aksyonov wanted to throw up.

"If you aren't going to drink that, how about passing it over?" asked the jolly doctor, who probably wanted to test the effects of black currant juice on his saline levels. "Here you go," replied the equally jolly pilot. He lifted his right hand to let the tube pass beneath it on its way across Aksyonov's chest. The doctor caught it and said, "Thanks." He popped the lid with his thumb and squeezed it to release a shivering blob of juice. The doctor let go of the tube (which began a slow drift back across the cabin in response to the slight push of his hand upon release), and brought both hands together to clasp the juice at its middle, mashing the blob until it divided, cell-like, into two separate jellies. The doctor raised his head from his couch and allowed one of them to float into his mouth. He licked his lips and said, "Mmm," and nudged the other blob toward Novikov. It drifted across Aksyonov's chest like a dark cloud above a picnic, and was gobbled in its turn; the pilot flicked out his tongue like a frog to catch it.

And these were grown men!

"Would you like some currant juice, Comrade Aksyonov?"

"No, thank you." His mouth tasted like *kumiss*.

"Water?"

"Coffee?"

"Orange juice?"

"Apple, perhaps?"

"Thank you, I'm not thirsty. Thanks all the same." He envisioned a head-sized glob of vomit bouncing about the cabin as its three captives flinched and moaned beneath, like schoolchildren trapped in a room with a bat. Aksyonov took deep breaths of the canned air and tried to focus on the fireflies outside the window.

"Comrade Aksyonov has the spacesickness," Yegorov murmured, as if he and Novikov were exchanging confidences.

"I do not!" Aksyonov cried.

"You have lain there like a fish for an hour," the doctor continued. "Pulse rate normal, respiration normal, eye movements slightly accelerated but otherwise normal, you check out normal on all my readouts, and frankly you look like hell."

"Everybody gets it," Novikov said. "Titov, Nikolayev, Popovich, Bykovsky, Tereshkova–all had it, in some degree or other."

"Gagarin, too?" Aksyonov asked.

"No, Gagarin didn't get it."

"Do *you* have it?"

"Ah, no, actually I don't. But I've been a pilot for years, you know. Fighter training and so on."

"I have it a little, I think," Yegorov said. "Just some giddiness. The Americans have reported it, too. We think it may have something to do with the effect of weightlessness on the inner ear." The doctor had published a number of important papers on the inner ear, and Aksyonov was surprised he had waited so long to bring up that remarkable organ. "Do you feel disoriented, spatially confused in any way?"

"Yes," Aksyonov sighed. "I feel as if I'm upside down. I have trouble focusing my eyes. The instruments swim around a little when I try to read them. And I'm a bit queasy as well."

"Are you going to throw up?" Novikov asked.

"No!" Aksyonov retorted, and began to feel better.

"This is very interesting," Yegorov said, making notes. "You must report all your symptoms as they occur."

"I am not reporting, I am complaining," Aksyonov said. "And yet I am a crew member aboard the world's first three-man spacecraft, on the highest manned orbit in history. Forgive me, comrades."

Even as he said it, he winced to call the *Sunrise* a "three-man spacecraft." It was the same old East capsule minus reserve parachute and ejection system, a risky modification that left just enough room to wedge in a third narrow couch. No room for pressure suits, either, so they all wore grey coveralls, paper-thin jackets, and sneakers. "A shirtsleeve flight," Khrushchev had called it, when he presented his demands to the Chief at the Chairman's Black Sea villa the summer before.

The Chief's rage had percolated all the way back to Baikonur; by the time he relayed his orders to Aksyonov, he was in a near-frenzy, stomping about the design lab and slamming his fist on the work tables to punctuate his denunciations. "So now we must suspend work on the *Union*, delay all our progress toward the moon, so that Khrushchev can taunt the Americans, 'Ha ha! Your *Gemini* sends up two men, but our *Sunrise* sends up three! We win again!' " Pencils and rulers rattled as the great fist came down.

Aksyonov shook his head over the sketches. "It will be three brave cosmonauts who will board this craft," he said.

"Not three cosmonauts at all," the Chief replied. "I have not yet told you the worst part. The *Sunrise* will carry aloft one trained cosmonaut and two untrained 'civilians'–one a doctor, one a scientist or engineer. This way Khrushchev can brag of the first scientific laboratory in space. He said, 'If you cannot build this for me, if you cannot continue to advance our glorious space program, then I assure you that Comrade Shandarin can.' " The Chief paced back down the table to brood over the diagrams. "But what engineer, I ask you, would be noble and courageous and foolish and short enough to climb into such a bucket without a rifle at his back?"

At that moment, Aksyonov knew his answer. He had seen the Chief shudder at the mention of Shandarin's name. But Aksyonov spent a week working up the nerve to pass his answer on to the Chief, and then another couple of weeks persuading him.

The same evening the Chief finally relented, Aksyonov helped him write a long and detailed letter to be sent by special courier to the Politburo member most familiar with the Baikonur program–the former Kazakhstan party secretary, Comrade Brezhnev. The report detailed Comrade Khrushchev's increasing interference with the Soviet space program, and implied (without quite saying so) that ignominious disaster loomed if more rational and far-sighted leaders did not intervene. While the Chief laboriously pecked away at the final draft, for even his two-fingered typing was superior to Aksyonov's, the Motherland's newest cosmonaut sketched a cartoon called "How To Send A Bureaucrat Into Orbit." It showed Khrushchev being shoehorned into a cannon with a crowbar.

"Look out there," Novikov said.

The *Sunrise*'s porthole twinkled with hundreds of tiny lights, each lasting less than a second. A shimmering envelope of ice crystals surrounded the hurtling spacecraft.

"I heard and read descriptions of the fireflies," Aksyonov said, "but I never dreamed how beautiful they are."

"Are you still upside down, Comrade?" the doctor asked him.

Aksyonov laughed. "Yes, but if you can stand it so can I. If I were not as upside down as you two, I would not be here, would I?"

"Well, the Chief will turn us all upside down," Novikov said, "if we don't get some more chores done before we fly back into radio range. We have transitional spectra to photograph, ion fluxes and background radiation to measure, and of course spontaneous greetings to prepare for our Olympic team in Tokyo. Yegorov, perhaps you and our topsy-turvy friend could rehearse the script while I see to these instruments."

"Right away, Comrade. Let me just finish these medical notes...."

Aksyonov squinted at Yegorov's writing hand. "Comrade Doctor," he said. "Is that the pen you typically use for note-taking? In zero gravity, it seems prone to skip."

Yegorov stopped writing, opened his mouth, closed it again, and cast Aksyonov a sheepish glance. "This is not my usual pen, Comrade. I borrowed it for the flight. It is one of the Chief's pens."

His crewmates regarded the doctor for a few seconds. Then Novikov chuckled and reached into a pocket. "Don't be ashamed, Comrade Doctor. Look. I myself asked for one of the great man's handkerchiefs."

After a pause, pilot and doctor both looked at the engineer who lay between them.

"For my part," Aksyonov said, "I have a note he gave me just before launch." He pulled the small square of paper from his jacket and began to unfold it. "I see no harm in sharing it with you–"

Novikov tapped his hand.

"No, Comrade," he said. "That note is for you, and not for us. Maybe at some point we will need to hear it, and then you may read it to us, but not now. Not now. Now we have our orders, Comrades. Shall we get to work?"

VII. *Sunrise Two,* 18 March 1965

"I can't do it. Come in, Baikonur. I can't do it."

"Leonov, this is the Chief. What did you say? Please repeat."

"I can't get back into the airlock, Chief."

"Explain."

"My pressure suit, sir. It has swollen, as we expected, because of the unequal stresses on the materials... but it has swollen much more than we anticipated, in only a ten-minute spacewalk. I didn't realize how much, until just now, when I tried to bend to enter the hatch. It's becoming rigid, Chief, like a suit of armor, or a statue. Please advise."

"I understand, Leonov. This is an inconvenience, nothing more. Have you tried to maneuver with the handholds? Grasp them and haul yourself forward headfirst. Stretch out and pull yourself along like a log. I know it's awkward, but clipping the television camera to the hull was awkward, too, remember?"

"All right. I will try, Chief."

"You're doing fine, Leonov. You have executed a flawless extra-vehicular activity. Your suit may be stiff, but you are more free at this moment than any other man who has ever lived, and we all envy you, Leonov. Report when you are ready. Baikonur out."

"Uh, Baikonur, this is Leonov. Come in, Baikonur. Come in, Chief."

"Yes, Leonov, this is the Chief. What news?"

"No news yet, Chief, I'm still trying. It's hard, because my arms are getting stiff, too, but I'm trying. Chief, could you perhaps keep talking? It helps me focus. Believe it or not, there are a lot of distractions up here. I keep wanting to look at the Earth, at the clouds over the Volga. Or the other way, at the blackness–although it's really a dark blue, and it's beautiful too, in its own way. If you keep talking, Chief, it will help keep me on task."

"Why, Leonov. Am I such an evil boss that you fear my wrath even five hundred kilometers above? Everyone in the control room is smiling and nodding his head, Leonov, so everyone here agrees with you. I am quite the dictator, I see. Well, I will try to mend my ways. When you return I will be a new man, yes? Yes. I will be only the proud uncle to my young friend Leonov. How are you doing, Leonov?"

"I'm still trying, Chief. Keep talking."

"Leonov, do you remember when I came to your cottage last night to tell you to go to bed? I also told you that we cannot foresee every problem on the ground, that your job and pilot Belyayev's job is to step in to deal with the problems that we haven't foreseen down here, and that we have complete faith in your abilities to do this. Well, here is just such a problem as I was talking about, Leonov. This is the unforeseen that was foreseen. And there you are to solve it for us. How are you doing, Leonov? Please report."

"Chief... I'm still out here, and I don't think the handholds will be much use. It's not just that I can't bend in the middle; my arms and legs are sticking out, too, and the hatch is only a meter wide. And the suit is stiffening even as we speak. Maneuvering is like trying to swim without moving my arms and legs. Please advise."

"Thank you, Leonov, we better understand your situation now. We will advise you in a moment. Just now I am going to speak with your pilot, all right? I will switch over very briefly, then confer with my comrades in the control room, then come back to you. If you like, you may admire the Volga. You will be able to describe it all the more vividly when you return."

"All right, Chief."

"Baikonur out.... *Sunrise Two,* this is the Chief. Come in, *Sunrise Two*."

"Chief, this is *Sunrise Two*. Do you want me to go out and get him?"

"Negative, Belyayev, negative. You are to stay inside until you receive contrary orders from me. I cannot have both my cosmonauts waltzing together outside the craft until we are sure we can get both of you back inside. Do you understand, Belyayev?"

"I understand, Chief. What shall I do?"

"Do as you are doing, and carry out your orders, and prepare yourself to exit if I say the word. Baikonur out."

"Leonov, this is the Chief. Any progress?"

"No, Chief... but the sunlight on the Black Sea is remarkable."

"And so are you, friend Leonov, and so are you. Listen, Leonov, we have found a way to make your pressure suit a bit more manageable. Your current air pressure reading is six. If you begin to lessen the air pressure, you should gain some flexibility. Do you understand, Leonov?"

"...Uh, Chief, I do understand, but my pressure's already pretty low relative to the inside of the capsule. How much lower can I go without some real trouble when I get back in? I won't be much good to the mission if I get the bends, Chief."

"That is true, Leonov, but we have work for you to do inside. We don't pay you to loiter out there and watch the clouds all day. And Comrade Belyayev is lonely for your company."

"I don't like this, Chief."

"Nor do we, friend Leonov, nor do we. But you have counted the minutes as attentively as we have, have you not?"

"Yes, Chief."

"And you have noted your oxygen supply as well, correct?"

"Yes, Chief."

"And do you have any alternate courses of action to propose at this time?"

"No, Chief."

"Very well, Leonov, begin to adjust your–"

"Chief."

"I am here, Leonov."

"Is this a group recommendation, Chief ? A consensus? Or is it your personal recommendation?"

"...It is my personal recommendation, Leonov. This is the course of action I would take were I in your place. It is the recommendation of the Chief Designer."

"Thank you, Chief, I will do it. Adjust pressure to what level?"

"No target level. Adjust as slowly, as gradually as possible, all the while trying to flex your arms and legs and bend your waist. We want you through the lock with the highest suit pressure possible. Understood?"

"Understood, Chief. Beginning to reduce suit pressure...

"Five and a half, no good, continuing....

"Five, I do see some improvement in mobility, Chief, repeat, some improvement, but I am still a slow old man up here, continuing....

"Four and a half, I'm doing my best, trying to wedge myself in there, but I can't... can't quite... shall I continue this, Chief?"

"Continue."

"Continuing to reduce pressure.... Four point twenty-five, I really am not liking this, Chief, I really–Chief ! My head and shoulders are inside, I'm pulling myself along, I'm turning around in the airlock–I'm in, Chief ? I'm in, in! Hurrah!"

"Excellent, Leonov! Excellent! Can you hear our applause? Well done!"

"Shit, that was close. I beg your pardon, Chief. Closing airlock. Preparing to equalize pressure...."

"Any problems to report, Leonov? How are you feeling?"

"No problems, Chief. But Belyayev said I smelled pretty ripe when I came in."

"Chief, Lyosha here has not sweated so much since his last physics exams."

"He just completed his most difficult physics exam, friend Belyayev, and he passed it with honors. Congratulations, Leonov."

"Only because you helped me through, Chief."

"Well, I know all about such things, you see. I move like an old man every day. And now, I think, I will let one of these younger fellows talk to you a while, about how we are to get you fellows home again. Chief out."

VIII. Baikonur Cosmodrome, 12 January 1966

Vasily!

Alive! Here! How–?

"Oleg, stop the car! Stop the car, I said!"

After a moment's hesitation, Oleg braked and steered to the shoulder, just beside the ditch that separated the highway from the railroad track and the featureless warehouses beyond. Korolev was out the door before the car quite stopped; he lurched, off balance, until the world quit moving, nearly toppling into the ditch. Some engineer he was, to forget his physics like that.

"Chief, what is it?" Aksyonov called. "What's wrong?"

Ignoring him, Korolev trotted to catch up with the shuffling column of zeks being herded, single file, back toward the launch pad from which he had come. He felt slow, clumsy, like a runner in a nightmare. His legs moved as if knee-deep in roadside slush, though the ground was grey and bare. In this barren land, snow was as rare as rain.

"Chief ! Hey!" Car doors slammed. "What's going on?"

Vasily was dead, surely. Had to be. No man could survive, what–twenty years in the Kolyma? Even if he were such a wonder man, he would be no good to work an outdoor construction detail in a Kazakhstan winter. And Vasily had been at least ten years Korolev's senior to begin with. Thus Korolev reasoned as he quickened his pace, his heart racing. "Vasily!" he cried. "Wait!"

He started to identify himself, then wondered: Had he ever told Vasily his name? Would Vasily remember his number? Oh luckless day! No matter, no matter, surely Vasily would recognize him–unless eating utterly could transform a man. "Vasily!"

One of the guards at the rear of the line turned and raised a hand in warning. "No closer!" he cried. None of the fifty-odd prisoners looked around; all curiosity had been scoured from them, Korolev knew, long long ago. The other guard unstrapped his rifle.

"Halt the line!" boomed Oleg, as he sprinted past Korolev. "It is the will of the Chief Designer! Halt the line!"

The first guard blew a whistle, and the prisoners immediately looked like men who had not walked or moved in years, who had aged in all weathers beside the road, and who would not deign to fall even when they died.

Puffing, Korolev leaned on Aksyonov's shoulder.

"Chief, please. How many more heart attacks do you want? Calm down."

Hands on hips, glaring downward at them, Oleg was trying to intimidate the guards. "Do you have a man named Vasily in this detail?"

The guards, impervious, shrugged. "How should we know, Comrade?"

Oleg began to pace the line, calling the name at intervals. Korolev shook his head. The fortunate man obviously had no experience with political prisoners–himself excepted, of course. "Let's follow Oleg," Korolev told Aksyonov. "Slowly, mind you–slowly."

"That was my plan," Aksyonov said.

Korolev couldn't remember now whether the face he had seen from the car window had been in the back of the line, the front, or the middle (or in a cloud? a clump of weeds?), so he peered at all the faces as he overtook them. So far no glimmer, no trace, no Vasily; but as he walked on, another, more terrible recognition dawned. These men all looked alike. The vacant stares, the beards, the scars and creases of misery–they could all be brothers. How would anyone be able to distinguish among them?

Korolev stopped at the head of the line, smiled weakly at the guard he faced there, then looked back along the column. "I am sorry," Korolev said. "Do you all understand? I am genuinely sorry. My friends, I think I will rest a moment." With the help of Aksyonov and Oleg, he lowered himself onto the weedy rim of the ditch, as weary as the engines of the stars.

"Carry on," Oleg barked, and at the whistle the sad processional shuddered into motion again. The guards eyed Korolev as they passed. He heard them begin to mutter about how nutty the scientists get, with their heads in outer space all the time. Korolev started to laugh, then was seized with his worst coughing fit of the day.

"I will bring the car," Oleg said.

When the coughs had passed, Korolev glanced sideways at Aksyonov. "Your Chief is a wreck," he said. "Do you want a transfer?"

"Sure, Chief, send me to the moon. Who's this Vasily?"

Korolev shook his head, drew his coat a bit closer around him. "Someone I knew many years ago. In the camps."

"The Kolyma."

"Yes. He collapsed at mealtime, was dragged away. I got a piece of his bread, and enjoyed it. Maybe I'm guilty for that, I don't know. I assumed he was dead. I suppose he *is* dead. Yes, I'm sure he is."

"He died, you lived. That's nothing to feel guilty about, Chief. Have you brooded about Vasily all this time?"

Korolev smiled. "Comrade, I had not thought about Vasily once, not in twenty years, until a few moments ago in the car. And then it all came back. Like a comet that has been away for so long that no one remembers it, eh? Yet all the while it is on track out there, makes its great loop, comes round again. As dependable as Oleg, here. Yes, thank you, Oleg. No, stay put, we'll be right over. Aksyonov."

"Yes, Chief ?"

"Listen to me. Tonight I go to Moscow, back into the hospital. I hope to be back in a week, maybe two. The Health Minister has scheduled an operation for me, a hemorrhoid operation. I've had problems down there."

"Is it serious?"

"Serious. It's my ass, isn't it? Yes, my ass is serious. Stop interrupting. Do you still have your copy of Tsiolkovsky's book, of *Exploration of Cosmic Space* –"

"–*with Reactive Devices*, yes, Chief, you know I do."

"While I am gone, I want you to read it over again. Every word of it. Study every diagram. Read it as if it were the first time, as if there were no satellites, no Gagarin, no spacewalk, no cosmonauts, and see where your ideas take you. And I, I will do the same. For I have been too old lately, Aksyonov, and turning you old along with me, I'm afraid; but when I return, we will talk about all these new wonders we have envisioned, and we will savor the sky and be astonished again."

IX. Moscow, 14 January 1966

The Health Minister enjoyed one last cigarette as he leaned against the wall opposite the scrub room. Down the darkened corridor toward the elevators huddled the doctors and nurses who would assist him. They murmured among themselves. One or two looked his way, then avoided his glance.

No doubt they dreaded performing under the scrutiny of the Motherland's most honored physician, and so sought to encourage each other. They did not know their patient's name, but they knew they had not been whisked here after hours to work on any mundane Party apparatchik. They knew that Chairman Brezhnev himself awaited the outcome of the operation; the Health Minister had told them this at the briefing, to impress upon them the importance of this hemorrhoidal procedure, and the honor of their participation in it.

As he watched them now, the Health Minister smiled and shook his head with fond indulgence, smoke pluming. These hard-working men and women did not realize it, but he already had made up his mind to be lenient with them. They would be unusually nervous, with good reason, and he would make allowances when writing his report. He was a servant of the State, yes, but he was also a human being; he could understand, even forgive, the frailties of others; he prided himself on this trait, one of his most admirable and practical. He took a final pull, crushed the butt into his coffee cup, and sighed with satisfaction. Too bad these Winstons were so hard to find....

The doctors and nurses now approached him as a shuffling unit, little Dr. Remek in the lead. Stepping away from the wall, the Health Minister, who had been the third tallest dignitary on the reviewing stand at the 1965 May Day parade, drew himself to his full height and smiled down at them. "Are we all ready to wash up, Comrades? Our patient should be prepared by now."

Dr. Remek cleared his tiny throat. He sounded like a noisemaker blown by an asthmatic child. "Comrade Minister, my colleagues and I... with all due respect, sir... we would like to recommend that... that, the gravity of the situation being what it is, that you, or, that is, we, take the added precaution of, of..."

"I am waiting, Dr. Remek," the Minister murmured. His eyes had narrowed during this preamble.

Remek turned to the others with a look of despair. One of the nurses stepped forward and said:

"Comrade Minister, we request that Dr. Vishnevskiy be included on this surgical team."

"Vishnevskiy," the Minister repeated. He should have guessed. The others fidgeted. The nurse (whose name escaped him; he would look it up later) maintained her defiant gaze. "And what could *young* Dr. Vishnevskiy contribute to these proceedings?"

Now they all found voices.

"He has performed dozens of these operations."

"His technique is flawless, Comrade Minister, you should see him at work."

"He has not been so... burdened with administrative duties in recent years as you, Comrade Minister." That was Remek, the toad.

"And surely the welfare of this patient, so vital to the interests of the Revolution, warrants the collaboration of *all* the finest doctors on the staff."

The Health Minister smiled and raised a hand. "I thank you all for your counsel. It has been duly noted, and will not be forgotten. I cannot detail my reasons for not calling upon Dr. Vishnevskiy–for much of the material that crosses my desk, as you know, is classified–but suffice to say that security issues were among my considerations. Besides. *My* understanding is that *young* Dr. Vishnevskiy's surgical technique, however flashy and attention-getting, may be somewhat impaired after the dinner hour. Thank you all again for your concern. After you... comrades."

The team trudged into the scrub room like a detail of zeks. All avoided the Health Minister's gaze except for that one nurse, whose glance was not only contemptuous but dismissive. Fighting his anger, the Minister took a deep breath and consoled himself with the thought that the upstart Vishnevskiy would share none of the credit for this service to the Revolution. No, this personal friend of Brezhnev, this most laudable Communist, would receive a most singular honor: His operation would be personally performed by a full, sitting member of the Politburo. The Health Minister pushed forward, and behind him the swinging doors repeatedly clapped.

The sirens grew louder as Vishnevskiy and his friend the music critic, the last to leave as usual, bantered outside the opera.

"No, no, you will go before I do, my friend," the music critic said. "The moon will need surgeons long before symphonies, and a critic? If we know what's good for us, we critics will all stay down here, where there's so much more to criticize."

Vishnevskiy guffawed and clapped his friend on the back. "Well said, well said, but surely musicians, writers, artists of every stripe should be among the first to walk the lunar landscape. Who better to relay its wonders to the rest of us? The job must not be left to the television cameras, of that I'm sure. The mind reels at the thought."

"We have visitors," said the music critic, suddenly grave.

Roaring up the circular drive were four police motorcycles, sirens wailing. They wheeled to a halt in the gray slush at the foot of the grand staircase.

"Dr. Vishnevskiy?" one of the officers called.

"Yes," he stated. His shoulder ached beneath the clamp of his friend's hand, but he was nonetheless grateful for it.

"You are urgently needed in the operating room, Comrade Doctor. We are here to escort you."

The music critic slumped in relief, and Vishnevskiy exhaled a roiling cloud of breath.

"I thank you, Comrades," he said. "I am ready to go."

Poor Remek, talking so fast he practically stuttered, briefed him through the intercom as he lathered his arms. Vishnevskiy wasted no time asking questions, enough time had been wasted already, but he wondered: How the hell had intestinal cancer been mistaken for hemorrhoids? And why hadn't they halted the procedure, called for help and more equipment, instead of hacking around in him for hours? Then Remek started babbling about the importance to the State of the poor soul on the table, and Vishnevskiy had his answer.

"The Minister," he snarled.

The damned fool didn't even have the nerve to look up as Vishnevskiy ran into the operating room, though all other heads turned. His run to the table became a trot, then a walk, as he looked at the Health Minister, who moaned softly as he worked, and at the others, bloody hands at their sides. Vishnevskiy looked at the patient, closed his eyes, and controlled himself before he opened them again. He reached up and ripped off the mask.

"I do not operate on dead men," he said.

Outside, alone and glad of the cold, Vishnevskiy looked up and thought, ah moon, what do you know of slaughter, and pride, and folly? Better we should stay where we are.

X. Baikonur Cosmodrome, February 1966

At first, Aksyonov pretended he didn't hear the knocking. He figured it was only Shandarin again, with a freshly typed sheet of demands. Shandarin liked to deliver his memos in person so that he could watch his team leaders read them, gauge their reactions, and satisfy himself that his wishes were clear. They were clear to

Aksyonov even before the first memo, clear at least from the afternoon of the Chief's funeral, when Shandarin had left the Kremlin wall in Brezhnev's limousine.

The Chief's plan for tanker craft carried into orbit by *Old Number Seven* had been scrapped. Not spectacular enough, not decisive enough, for Shandarin (and not, presumably, for Brezhnev either). Instead, Shandarin's own giant *Proton*, designed to carry hundred-megaton warheads, would blast cosmonauts into a loop around the moon in October 1967; the *Proton*'s as-yet theoretical descendant, Shandarin's cherished G-1, would launch the redesigned *Union* spacecraft toward a moon landing the following year. As for the Chief's meticulous series of incremental test flights to check out the new *Union*'s capabilities one at a time, Shandarin had crossed out most of them, so that a totally revamped craft could be shot into orbit in a year–or less.

When Aksyonov first realized the enormity of what the Chief's successor intended to do, he was too dumbfounded even to be angry. Instead he laughed. Chuckling, Aksyonov spun the dossier down the conference table, so that pages whirled out of the folder like petals, and said, "Impossible."

The folder stopped in front of Shandarin, who sat at the far end of the long table, in what he had wrongly assumed was the Chief's chair. (The Chief had paced during meetings, never sat anywhere, and where the others sat, or whether they sat at all, had never been among his concerns.) "Impossible?" Shandarin snorted. "What nonsense. Have you forgotten, Comrade? Artificial satellites are impossible. A manned spacecraft in orbit is impossible. We have done the impossible for years, Comrade Aksyonov. Now we will do it faster and more efficiently, that's all."

Aksyonov drew from his wallet a clipping from the January 16 edition of *Truth.* Already two such clippings had fallen to pieces in his hands from repeated unfolding and reading and folding again; fortunately, old *Truths* were not hard to find, even at Baikonur. "You read this tribute to the Chief upon his death, did you not, Comrade Shandarin?"

"Of course I read it. You wave it at me every three days; how could I fail to have read it?"

"To my knowledge," Aksyonov continued, "this was the first time the Chief's name ever appeared in print. Think of that. For twenty, no, thirty years he was the guiding genius of the Soviet space program–even before the government knew it *had* a space program. Yet how many Soviets knew his name? How many of the disciples who worked beside him every day knew his name? How many of the cosmonauts who entrusted their lives to him knew his name? And did the Chief care? Did he mind that he was a man without a name?"

"What is your point, Aksyonov? I have work to do today, if you do not."

"I am making no point, Comrade Shandarin. You are the man who makes points–very clear and unequivocal points. No, I just wonder whether your goal is to put a man on the face of the moon, or to put your name on the front page of *Truth,* and how many of us nameless men you will sacrifice to get it there."

Shandarin stood, smiled, gathered his papers, and slowly walked the length of the table. He patted Aksyonov on the shoulder, leaned forward until their noses practically touched, and said in a warm and fatherly voice, "Not so very many years ago, I commanded a far more efficient operation, where I occasionally had my workers shot for insolence."

"How strange, then, that you didn't shoot the Chief when you had the chance," Aksyonov replied, "since he always knew you to be a tyrant and a fool. I am surprised you were not strong enough to bury his body in the snow of the gulag, and lead us all into space on your own."

And so Aksyonov felt no real reason to answer the door. He just sat on the swaybacked couch, read the clipping again, and let the man knock. Knock, knock! Yet this didn't sound like Shandarin's impatient rap, nor the idiot pounding of the KGB. This was the gentle, incessant knock of someone who would stand there on the porch of the cottage until doomsday, secure in the faith that his knocking was not in vain. Growling, Aksyonov kicked through the litter of dirty clothes (what was the point of laundry now?) and flung open the door.

A woman.

A wide, heavy-set, attractive woman of about fifty, graying hair tied behind in a youthful braid. Large nose and deep brown eyes. She cradled in her arms a bulky cardboard box bound with masking tape. Behind her, at the foot of the drive, Oleg stood at attention beside the car.

Aksyonov blinked at both of them in wonderment.

"Comrade Aksyonov? I apologize for disturbing you so late, but I must return to Moscow tonight. I am Nina Ivanovna Korolev. Sergei Pavlovich's wife. The Chief's wife."

"His wife!" Aksyonov exclaimed.

She stooped and set the box onto the porch at his feet. Straightening, she smiled a thin, sad smile. "You need not struggle to conceal your astonishment, Comrade. I know that my husband never spoke of me here. Far safer, he said, to keep his family as secret as possible."

"His family!" Next the sun and the moon would wrestle for dominion of the sky.

"I am sure I know much more about you than you about me, Comrade Aksyonov. My husband spoke of you whenever he came to Moscow. He said he had more faith in you than in any rocket he had ever designed." She nodded at the box and said, "These are a few of his personal effects. I am sure he would have wanted you to have them."

"Personal effects," Aksyonov said, slumped against the doorway. He felt increasingly redundant in this conversation. "Please, forgive my manners, Nina Ivanovna. Won't you come inside, out of the cold? Oleg, you come, too. Please, I will brew some tea–"

She shook her head. "I am sorry, but I must go. The helicopter waits. Goodbye, Comrade Aksyonov. Thank you for your help to my husband." She moved with remarkable grace for a large woman, and was halfway down the steps before he could react.

"Wait!" he cried.

She did, though she did not look around. She faced the frozen yard, and trembled.

"Please, I don't understand. There's so much I want to ask you, about your family, and about the Chief–I mean, about Sergei Pavlovich. He was such a tremendous influence on me, you see, on so many of us, and I know so little about him. So little. Next to nothing, really. And I could tell you things. I could tell you what he was like here, what he used to do and say, how the cosmonauts all venerated him, you have no idea. You should know all this. Come inside, please. We have so much to talk about–"

"We have *nothing* to talk about," she said as she faced him. "Don't you see? Can't you imagine how difficult it was for me to come here? To see this place that destroyed my husband–that destroyed me? Year after year after year, Comrade Aksyonov, about once a month, with no warning whatsoever, my telephone would ring, and I would answer it immediately, for our apartment is small and I sleep but lightly, and then I would go downstairs and watch my husband climb out of a car full of soldiers–so slowly, oh, so slowly he moved, like an old, old man–I never saw him when he wasn't exhausted. He and I would sit at the foot of the stairs and talk for an hour or more, until he had gathered the strength to climb to the bedroom and go to sleep. And the next morning the car full of soldiers would still be out there, and it would take him away again. Back to this place. Back to all of you. Do you understand, Comrade Aksyonov, why I do not rush to embrace you now?" She walked a few paces into the yard, then added: "When my husband was sent to Siberia, so many years ago, I was like a madwoman. I thought he was lost to me, that he would be in prison for the rest of his life. And I was right, Comrade, I was right."

"Your husband was a free man," Aksyonov said.

"I have no control over what you believe," Nina Ivanovna said. She nodded toward the package on the porch. "I have given you all that I can give you. And now I must go home."

She walked to the car, where Oleg held open the passenger door. Just before she stepped inside, she called out, "Try to get some sleep, Comrade Aksyonov. My husband always worried because you worked so late."

Aksyonov knelt beside the package, rubbed his hands across the smooth surfaces of tape, looking for a seam, as the car sputtered to life and Oleg and Nina Ivanovna drove away. He never saw either of them again.

XI. Baikonur Cosmodrome, 24 April 1967

Aksyonov would not have thought it possible: Somehow the two soldiers who flanked the control-room door, already as erect and expressionless as twin gantries, managed to snap to attention as the prime minister walked in. Every controller, engineer, and technician in the room stood as well, though they had not been trained in it and were far less impressive than the soldiers.

The prime minister wore a well-tailored black suit that looked nondescript beside the uniform of his escort, General Zeldovich, who was splendid in medals and buttons and epaulets. The prime minister nodded at everyone and patted the air. With a collective exhalation, everyone sat and returned to their tasks, except for Aksyonov and Shandarin, who joined the dignitaries in the back of the room.

Aksyonov was aware of the sweaty moons beneath his own arms, of the hair he had neither washed nor combed in more than a day, and he cursed himself for such thoughts. What must poor Novikov look like at this moment? Novikov, who had cooked him *besh barmak*; Novikov, who had told him it was no dishonor to be sick in space; Novikov now was in an orbital hell, somersaulting in vomit and terror.

"This is a great honor, Comrade Prime Minister," Shandarin said, and shook his hand a bit too vigorously. "Your historic contribution to this mission will do wonders for Comrade Novikov's performance."

"Whatever I can do to help, Comrade," the prime minister said, and gently freed his hand. He surveyed the descending tiers of desks and instrument panels, the vast display screens on the far wall, the litter of sandwich wrappers and tea glasses underfoot, the samovar in the corner. His nose wrinkled slightly: The sweat of unwashed men, Aksyonov wondered, or the far worse stink of desperation? "Please show me to my microphone, and tell me the current situation," the prime minister said. "In layman's terms, mind you."

Shandarin rolled his own plush chair back over Aksyonov's toes and gestured for the prime minister to sit. He had cleared his work station of everything but a microphone and a small gold-plated bust of Lenin, which the prime minister pushed aside to open his leather briefcase. Shandarin glanced at Aksyonov, who recited on cue:

"Comrade Novikov is in his eighteenth orbit of the Earth. Because of a failed solar panel, his craft is critically low on electrical power, so that most of its automatic systems are inoperable. He has attempted for some time to manually orient the craft for re-entry, thus far without success. Even now we are talking him through the process."

The prime minister had opened a manila file folder containing many closely typed pages. Aksyonov edged closer, tried to read over the prime minister's shoulder. "About an hour ago," Aksyonov continued, "Novikov spoke to his wife on the radio. Understandably, she was quite upset."

The prime minister glanced around at the general, his papers poised. "The woman we passed in the corridor?"

The general nodded.

"I assumed she was one of the female cosmonauts," the prime minister said.

The general looked uncomfortable and said, "No, Comrade." All the other women cosmonauts-in-training had, of course, been sent home after Valentina Tereshkova landed safely four years earlier. Tereshkova herself had been sent on a worldwide lecture tour, her three-day space career at an end.

"Good," the prime minister said. "I had wondered at such a womanly outburst from a trained pilot." The general tugged at his white mustache as if to say yes, yes, just so. "Proceed, Comrade."

"One more thing, Comrade Prime Minister," Aksyonov continued. "The craft's shortwave radio failed very early in the flight. We have been using the craft's ultra-shortwave backup radio, but because electrical power is in such short supply, even that is beginning to fade. Much of your message to the cosmonaut, in short, may be lost in static and garble."

The prime minister smiled for the first time. "You may know quite a lot about spaceflight, Comrade," he said, "but I know a good bit about speeches. And I assure you, the individual sentences are never as important as the cumulative whole--as Comrade Castro has demonstrated, eh, Comrade General?" He and the general chuckled, and Shandarin, after a pause, joined them. Aksyonov did not. He was scanning the text of the prime minister's welcome-home address to honor Jakov Novikov, in which each reference to the cosmonaut as "he" and "his" had been amended, in a neat and precise hand, to "you" and "your." Then the prime minister laid his hand across the sheet.

"Do you have any questions, Comrade Prime Minister?" Shandarin asked.

"Just one," the prime minister said, looking at Aksyonov. "Does Novikov's wife have reason to weep?"

Shandarin opened his mouth to reply, but Aksyonov was quicker. He said: "The *Union One* is out of control."

The prime minister, the general, Shandarin, all regarded him. The whole room was hushed by this heresy, though none but the nearest tier of controllers could have overheard.

Several tiers below, one man read aloud a list of numbers for another man to double-check. The numbers were long, with many decimal places, and their progress was slow. "Let's just start over," one of the men said.

"I see," the prime minister said, as he rubbed his eyes. He swiveled to face forward, squared the edges of his speech, and said, "I am ready, Comrade."

Glaring at Aksyonov, Shandarin flipped a switch at the base of the prime minister's antiquated desk microphone and adjusted his own compact headset, which had been deemed too complicated for the visitor. "Speakers, please," Shandarin said.

Amplified static filled the room. Aksyonov sat at his reassuringly cluttered station and focused on the blinking dot that marked Novikov's position on a world map--as if the cosmonaut's border crossings, one every few minutes, mattered to him now.

"*Union One*, this is Baikonur. *Union One*, this is Baikonur, can you hear me, *Union One*?" More static. "*Union One*, this is Baikonur. Please respond if you can hear me, *Union One*."

More static, then: "I'm doing it, I'm doing it, but it doesn't work. Do you hear me, Baikonur? It doesn't work!" More static.

Shandarin raised his eyebrows at the flight director, who said, "We asked him to try the automatic stabilizers again."

Aksyonov shook his head. How many different ways could a man push the same button?

"*Union One*, this is Baikonur. We hear you, and we continue to work on the problem. But now we have another visitor for you, *Union One*, a very important visitor who wants to speak with you. Here beside me is the prime minister of the Soviet Union. Do you understand, *Union One*?"

More static. Then: "The prime minister?"

"Yes, *Union One*. I ask for your attention. The next voice you hear will be that of the prime minister, with a personal message of tribute." He nodded at the prime minister, who nodded in return, leaned close enough to the microphone to kiss it, and shouted:

"Greetings, Jakov Novikov, loyal son of our Motherland, wonderful Communist, courageous explorer of space, comrade in arms, and friend...."

Responding to Shandarin's signals, Aksyonov and the team leaders joined him and the general in the back of the room.

"Obviously Novikov will be unable to maneuver the craft into the best trajectory for re-entry," Shandarin said. "The best he can do is turn the craft so that the heat shield faces the Earth, and then fire the retro-rockets. Discussion?"

Everyone spoke at once, and after one loud instant muted themselves so as not to disturb the prime minister.

"That's suicide–"

"It's such a narrow window, he'll never–"

"He'll be so far off course, God knows where he'll end up–"

"He'll have no way to control the spin as he comes down–"

"You all have considered this outcome already, I see," Shandarin said. "Have you also thought of other options? Perhaps Novikov should press every button in the craft another hundred times, until the radio dies, and we all go home?"

No one replied. A couple of the men shook their heads. All looked pale and sick.

"Aksyonov, you are uncharacteristically silent. What do you say?"

"I just broke a young man's neck, Madam, with a slide rule and the stroke of a pen."

"What?"

Aksyonov pressed the heels of his hands to his forehead. "I am talking to myself, Comrade. I apologize. But much as I hate to admit it, I must agree with you. I see no other option."

"We're trusting to blind luck!" one man said.

"Perhaps so," Shandarin retorted, "but all the luck in orbit has run out. If any luck remains for this flight, Novikov must find it on re-entry."

The flight director lighted a cigarette and ticked off items on his fingers. "Solar panel down. Shortwave radio down. Stabilizers down. Thrusters down. Suppose the retro-rockets are down, too? And the parachute, for that matter?"

"And the ejection seat?" the general added.

The others looked at the floor. "Comrade General," Aksyonov said, as gently as he could, "on *Union One* there is no ejection seat. You approved the design yourself, Comrade General."

The general began to curse, and the others returned to their stations. Shandarin gripped Aksyonov's upper arm so tightly that the younger man winced.

"I will not forget your support," Shandarin said.

Aksyonov wrenched himself free.

The prime minister glanced up from his text, then faltered before he found his place again. "In all future generations, your name will summon the glory of our great Socialist country to new feats–"

Then Novikov's voice, the voice of a man roused from a long trance, ripped from the speakers:

"What is this bullshit? God damn! God damn! Baikonur! Baikonur! This is *Union One*. Help me, Baikonur!"

The prime minister sat frozen, mouth agape. Shoving past Aksyonov, Shandarin switched on his headset. "This is Baikonur, *Union One*. Explain yourself, *Union One*!"

"Explain myself? Explain myself ! Shit shit shit!" More static. "Don't you understand? You've got to do something. I don't want to die. Do you hear me, Baikonur? I don't want to die!"

A fresh burst of static obliterated his next words, but Aksyonov, like everyone else in the room, recognized their rhythms; he himself had sobbed just as uncontrollably at the Chief's funeral.

The cosmonaut's despair seemed to yank something vital from Shandarin. He swayed forward like a falling tree, slammed his hands onto the desktop, and leaned there, looking at nothing.

With a trembling hand, the general switched off the prime minister's microphone. "Perhaps under the circumstances," he began.

"Yes, of course," the prime minister said, as he swept up his papers and his briefcase. He stood so clumsily that the swivel chair toppled over. The guards, staring at the loudspeakers, paid the prime minister no heed as the general hustled him out the door.

Shandarin slumped against the console. Still Novikov continued to sob. Three dozen faces looked up at Shandarin. Several were streaked with tears.

Aksyonov couldn't stand it. "Say something!" he hissed. "Reassure him. Tell him we have a plan."

He shook Shandarin once, twice. Then he slapped him, a blistering crack that affected Shandarin not at all.

"I... I can't... I don't...." Shandarin's voice was a ghastly, slurred imitation of itself.

The flight director cried, "For God's sake, talk to him!"

Aksyonov strode to the prime minister's microphone, switched it on, and said:

"Novikov. Novikov. Think of the Chief."

Amid the static, a small voice. "... What... ?"

Absolute silence in the control room.

"The Chief, Novikov. What would the Chief do?"

"...The Chief..."

"This is Aksyonov. You remember me, eh? Your upside-down engineer friend? You piloted me into orbit, Novikov, and brought me safely down again, and I complained the whole way–you did it, Novikov. We did it. You and me and the doctor, and the Chief. Do you remember?"

"Yes... yes, Comrade... I remember."

"Listen to me, Novikov. We have a plan, a plan I believe the Chief would approve of. But first, I want to read you something. You remember the note I carried into space? The note the Chief gave me just before launch? You told me then that I shouldn't read you the note until the proper time had come. Well, I have the note with me now, Novikov. I have carried it in my pocket ever since. Let me unfold it now.... Here is what it says, Novikov. It says, 'My friend, I am good at spacecraft

design because I know just what cosmonauts feel like. I too have been alone and frightened and very far from home, and surrounded by the cold. Soon you will know how this feels, as well. But I survived, my friend, and so will you, and we will continue to design great things together. Signed, the Chief.' Do you understand, Novikov? The Chief knows exactly how you feel."

Along silence. Aksyonov watched the blinking dot approach Africa. One of the team leaders thrust a printout under his nose and whispered, "The nineteenth orbit is coming up. It's his last chance to–" Aksyonov waved him away.

The cosmonaut spoke. "The Chief... is dead."

"Do you really believe that, Novikov? Do you really for a moment believe that?"

More static, then Novikov slowly and soberly replied: "No, Comrade. No, I don't."

Aksyonov dragged the microphone with him as he sat on the floor. He no longer could see the map, just the Chief's face, laughing in the darkness outside Gagarin's cottage. "I don't either, Novikov," Aksyonov said, and raked the tears from his eyes. He smiled at the men to left and right who passed him calculations and tissues. "Now listen to me carefully. Here's what we are going to do...."

The *Union One* plunged through the atmosphere, tumbled end over end like a boy who has lost his sled halfway down the hill, its useless parachute a braided rope behind.

The final intelligible radio transmission from its pilot was not the despairing

you are guiding me wrongly, you are guiding me wrongly, can't you understand

reported by a U.S. intelligence officer years after the fact, but in fact a later message, a three-word scrap:

Chief is here

Some who have heard the tape do not believe, and say these are not the words.

But the cosmonauts–they believe.

XII. Baikonur Cosmodrome, 22 August 1997

"Excellent!"

"Wonderful!"

"Good job, Peace!"

Cheers, applause, shouts reverberated through the control room. People hugged, kissed, pounded one another on the back.

One of the small, short-haired women–Lyudmilla? No, Lyudmilla had vacationed in Prague, and now sported a half-dozen earrings in her right ear, all the way up, like the spiral in a notebook–one of them, anyway, was swept into the air by that oaf Atkov, who did not even know how to use a slide rule. They kissed with a *smack* audible over the din, and then Atkov handed her to the next man, Serebrov? Shatalov? One of the newcomers. She kissed him, too, and squealed like a child.

Aksyonov watched, and said nothing. The engineers were due some good news, some release, and he supposed he could suffer their enthusiasm. For a while.

Aksyonov stood alone on the topmost row at the back of the room, hands clasped behind. He stood rigid, head tilted. At his left elbow was the big standing model of the Peace, its core module likewise tilted, a few degrees off true.

The official mission control room for the Peace was outside Moscow, of course, in the complex named for the Chief. But the entire Russian space program had been on red alert since the June 25 collision–especially Baikonur, where Earth's lone space station had been designed and built.

Onscreen, the three crewmen–Solovyev, Vinogradov, and Mike the American–crouched over their instruments. The image was blurred, but they obviously were grinning like NASA chimps. Mike the American held up both his thumbs as he grimaced, as if being tortured. This was for television's benefit. Yet the crew had reason to be happy, of course. Askyonov looked at his watch. For another few seconds.

"Confirmed, Moscow," Solovyev said, his voice fractured by static. "All electrical circuits working fine. The new hatch is a success. Repeat, a success. Full power is restored."

A new round of cheers and shrieks in the control room. Aksyonov's lips moved as he counted. Eight. Five. Three. Tolubko strode up the stairs toward him, smiling behind her headset microphone, her heavy eyebrows a single dark swath across her pretty face. He nodded at her, then clapped his hands once, twice, solid reports. He would have clapped a third time, but the room was already silent.

"Gentlemen and ladies," he called out. "To your tasks, please." He disdained the public-address system. His reedy quaver was embarrassing enough these days without amplification. Yet he was heard. Look how they bustled into position. The workaday murmur resumed. The party was over.

Sometimes they forgot that Askyonov's role here was purely sentimental, purely ceremonial. Sometimes Aksyonov forgot it himself. Why did his colleagues always jump when he so much as lifted an eyebrow? He would never understand it, no, not if he lived to be two hundred, and had helped build twenty-five space stations, flying all the flags of the world.

"Moscow wants you to say a word," Tolubko said.

Surprised, Aksyonov picked up and put on his headset, which he had wrenched off in a brief moment of jubilation. He cast an inquiring glance at Tolubko. She nodded and mouthed, "You're on."

"Comrades on Peace, this is Aksyonov," he said. He saw Tolubko frown at "comrades," but he couldn't devote the short remainder of his life to preventing Tolubko's frowns, could he? "You have done well. You have made history, *comrades*, with your indoor space walk." Why did they look so blurred? It was his eyes, Tolubko had assured him. Yet another body part failing. "But now we down here must make some history of our own, if this station is to become fully functional again. Stand by, please. Aksyonov out."

Why bother? He lacked the Chief's eloquence; he always had. Suddenly weary, he peeled off the headset. Tolubko nodded at her second, Merkys, who nodded in turn and began rattling off suggestions to Moscow, reading from a clipboard that others kept sliding papers onto. Aksyonov set down the headset, too close, it happened, to the edge of the desk. His hand shot out to catch it, but missed. The little plastic hoop tumbled to the floor. A dart in his shoulder; he had strained himself again. Tolubko crouched to retrieve the headset, her skirt riding up, and stood beside him again, reminding him anew that she was taller than he was. She touched his arm.

"Evgeny?" she murmured. "Are you all right?"

"I am fine," he said. He knew he didn't sound convincing. He leaned on the back of a chair. "I am a man of iron, my dear." He nodded toward the model. "It is the Peace that is falling apart. Worry about her."

"The Peace has power again. Your turn now. Go to bed, Evgeny. Get some rest. Come back fresh tomorrow, when we're ass-deep in crises again." Her smile was an older woman's smile, knowing and known. "We won't repair everything while you're gone. I promise."

As she spoke, she nudged him toward the exit, her arm around his shoulders, and Aksyonov let her. He did not appreciate being lectured, however gently, but he granted Tolubko many liberties. He knew she realized this, took advantage. What of it? The young had the advantage already.

"I think the Georgians are coming by tomorrow," Tolubko continued, as they neared the door. "You should look nice for them. Put on your other shirt."

"The hell with the Georgians," Aksyonov said. He halted, and Tolubko walked just a little past before compensating. "Don't tell me about the Georgians. If the Georgians hadn't charged us the moon for that automated guidance system, Moscow wouldn't have made us steer the cargo ship in by hand in the first place. No wonder we knocked the station half out of orbit." He waved at the men on the screen. "It ought to be Georgians up there, treading water. Putting out fires." He faltered, snorted. "Georgians!"

Tolubko was smiling. He flushed.

"You have heard all this before," he muttered. "Why don't you interrupt?"

She squeezed his arm. "You told me once, 'No one learns anything by interrupting.' "

"I tell you many things," he said. "You don't have to listen."

The guard held the door open, waiting. He looked terrified–whether of the old man, or of the young woman, Aksyonov couldn't tell. Maybe he feared being blamed for everything that had happened to the Peace this summer, from the collision onward. The guard in the back of the room, yes! He did it! That was no unreasonable fear in the Soviet Union, or in Yeltsin's Russia, either.

"Tolubko," Merkys called. "Come look at these figures, will you?"

"Be right there," she called. "Good night, Evgeny." He hesitated, and she pushed, so slightly it was almost a telepathic pulse. "Good *night*." She squeezed his arm again before striding away. He did not allow himself to watch the back of her head, the sway of her skirt. Ah, Evgeny, he thought. Once you laughed at such follies. Now you, too, are a foolish old man.

As he passed, the guard asked, "May I radio for an escort, sir?"

"No," he replied, more harshly than he meant.

"As you wish, sir. Good night, sir."

He wanted to say something friendly, to make the guard feel better, but could think of nothing. Was this the guard with the young son, the boy with the scar? Fathers love to be asked about their children. Or was that one of the other guards? Oh, the hell with it. The door had closed anyway, and Aksyonov was alone in the corridor.

As he walked the winding incline he had walked for so many years, Aksyonov passed through three sets of guards and five sets of scanners and ignored them all. The guards saluted, and the scanners beeped, so he must have measured up to the Platonic Aksyonov of their memories. Or close enough.

Between checkpoints, his footsteps echoed in the dim, deserted halls. The darkness was a budget-cutting measure. Lights were more critical in orbit, and so four-fifths of the overheads in the old sector, mostly used for storage, had been switched off. Aksyonov's colleagues didn't mind. Hadn't Gorbachev, as a farewell gesture, built them a grand new entrance, with a new elevator bank? No longer any need to pass through this back way, this tilted maze, to reach the surface. Why not leave it to the rats?

But Aksyonov was never in a hurry to reach the surface. He didn't like elevators, either, not since *Sunrise One*. And he was secretly pleased to walk through space that others shunned. For people claimed strange experiences down here, in the old sector. To have seen people who, in the next instant, weren't there. To have heard voices. The guards had petitioned for fewer checkpoints, consolidated shifts. (And, needless to add these days, more money.) Everyone was uneasy–except the scanners, which never saw anything odd, and Aksyonov, who had roamed these corridors for decades, and who wasn't about to stop now. He hated agreeing with the scanners on anything.

He *was* walking a little faster these days, though. For the exercise.

He passed the last checkpoint and emerged into a full-face breeze on the north side of the windswept plaza, in front of Brezhnev's hideous cafeteria. Aksyonov stood in the round mouth of the tunnel, breathed deeply, and stretched his arms, his habit whenever reaching the surface. A foolish habit; there was just as much room for stretching underground. He swung his arms back and forth, hugged himself three times, clap clap clap. Too cloudy for stargazing, but the night was warm, and the breeze was pleasant with the distant scents of wild onions and new-mown hay–a reminder, Aksyonov realized with a scowl, that there had been no launches in, how long? In the old days there was a fine, constant stench. He ripped a tuft of grass from a crack in the pavement, let the blades sift through his fingers. The weeds beneath the plaza survived every attempt at eradication. One night Aksyonov would camp out here, and watch them grow.

He walked across the deserted plaza, his footsteps still echoing. An acoustical trick. His path took him past that rare thing in the former Soviet Union, a new statue. Hands on hips, a rolled blueprint under one arm, Sergei Korolev stood stiff-legged and looked at the sky. As Aksyonov approached, he thought once again: a poor likeness. It favored Lenin. As how could it not? The sculptor had done only Lenins for thirty years.

As he approached the marble Chief, he began to smell the flowers. More than usual, judging from the smell and from the dark heaps at the base of the statue. At dawn the Kazakhs would clear away the oldest bouquets, but enough would remain to give the plaza its only color, its only mystery.

The Kazakhs picked up just the flowers, and left the rest. Space photos clipped from magazines and crudely framed. Children's plastic toy rockets. Boxes of the shoddy East German pens the Chief had used–as if he had had much choice. About once a month, Aksyonov fetched a crate from the cafeteria and collected them all, carried them to the lost and found. A silly chore, beneath his dignity; he could easily ask the Kazakhs to do it, or anyone else at the complex, for that matter. But Aksyonov had never spoken to anyone at Baikonur about this–this whatever-it-was–this *shrine*. And he never intended to. Not even to ask who in the devil kept piling up the stuff in the first place. One toy space station, he knew, he had carted away at least three times.

No one ever offered to help him, either.

As Aksyonov passed the statue, he saw a new shape on the ground. What–? He stopped and gaped, sucked in his breath.

The shape reared up, and Aksyonov cried out. A man was scrambling to his feet.

"Apologies, good sir," the man said, in Kazakh. "I did not mean to frighten. My apologies."

The man already was trotting away, dusting himself. He might have looked back once, but then he was lost in the darkness of the plaza.

Exhaling, willing his heart to slow, Aksyonov peered at the base of the statue. Had the man left some token of esteem? Aksyonov was quite sure he had interrupted something.

Had the man really been on his knees, prone on the pavement, facing the statue? Had he really been in the Muslim attitude of prayer?

Aksyonov hurried across the pavement to the blank-faced Khrushchev block that housed his rooms. On the stoop, he fumbled for his keys.

Aksyonov had read that in Paris, grieving tourists piled sentimental litter atop the graves of movie actors and pop stars. One expected such things of Paris.

But this was Baikonur, sobersided Baikonur. There were no tourists, no adolescents here. The cosmonauts, yes, they were a superstitious, childish lot, always had been–the stories they brought back from the Peace, well! Really. But the engineers, computer programmers, astrophysicists, bureaucrats?

Absurdity–the Chief a pop star!

Unlocked, the door proved to be stuck, as usual; he shouldered it open. Another dart of pain.

Who prays to a pop star?

He closed the door behind him and groped for the switch. With typical foresight, Khrushchev's electricians had placed the switch more than a yard away from the door, and at a peculiar height. It was always a bit of a search.

The cafeteria light was easier to find. Once, Aksyonov, restless in the middle of the night, had walked into the darkened cafeteria, flipped on the light, and startled a group of fifteen or so engineers, all young, huddled around a single candle at a corner table. They looked stricken. A dope orgy, was Aksyonov's first thought. Thrilled and mortified, he fumbled an apology, turned the light back off, and left, never to raise the subject with anyone. It was none of his business. He never asked Tolubko what it was that she whisked off the table, and hid in her lap. It had looked, fleetingly, like a photograph.

Aksyonov did not encourage his colleagues to share the details of their personal lives. Only the details of the projects they were working on. And they did that, he was sure.

Pretty sure.

Where was that damn light? His fingernails raked the plaster.

A space program as *jihad.* Imagine.

When they pray to the Chief, does he answer?

He answered Novikov.

"Novikov," Aksyonov muttered. Old men were allowed to talk to themselves, weren't they? "I put the Chief in Novikov's head! Just to calm him down, make his last moments less horrible. If anyone helped him, it was not the Chief. It was I. I, Aksyonov."

His hands slid all over the wall. This was embarrassing. Would he have to call someone, to cry out, Tolubko, please come over here, turn on my light for me? She'd think it a ruse, a ploy to entice her into bed. He laughed, then began to cry. He would never find the light. He was an old, old man, and there was no light. He leaned against the wall and slid down. He sat on the floor, sobbing in the darkness.

Stop it, Aksyonov. Stop it.

He closed his eyes, wrapped his arms around himself, clutched himself. He felt the trembling worsen. He bit his lip, fought a scream.

He was not alone in the room.

This was helpful, a fact to hold. The trembling in his arms gradually eased, and he relaxed his grip. His upper arms and his fingers were sore. Stiff tomorrow. He breathed in through his nose, out through his mouth, as his mother had taught him long ago. He did not open his eyes, but he knew that if he did...

He knew.

"Ah, Chief," Aksyonov said. "Lurk around here all you wish. I will never worship you. I know you too well, and I love you too much."

He woke up, sitting against the wall. He ached everywhere. The lights were on, and it was night outside. Beside him was the telephone table. Good; it was sturdy enough. He hauled himself up, holding on, groaning only a little. He stood, rubbed his arms and legs, wondered why on earth he had fallen asleep in such a position. He answered himself, I am an old man, and then sought other problems. With some trouble and trembling he unbuttoned his shirt, absently switched on the drafting-table lamp. He looked down at his designs and was immediately engrossed, lost in his work even as he sank into the creaking chair.

And if while working he sometimes vocalized his thoughts, as if comparing notes, airing ideas–yes, even arguing–with an old friend, well, what of it? He was no cultist, no kneeling Kazakh. He was an engineer.

"Here's the problem, Chief," Aksyonov murmured. "Here, *this* is the best design for the solar arrays, in terms of fuel efficiency. Mounted like so, on the service module. So far, so good. But there are other considerations. For example..."

Aksyonov's papers slid one over the other. His chair creaked. Tight-lipped, with ruler and pen, he drew a true line. He laid his plans all through the night, until dawn.

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