

Dreams of the Rocket Men

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Most folks called him Mr. Coanda, but to us, growing up, he was just the Rocket Man. Saturdays, my brother Keith and I would ride our bikes through the woods to where the barbed wire marking his land had been absorbed by the bark of a towering oak. A hanging muscadine vine made a platform sturdy enough for many a bouncing adventure, and the boughs of a nearby cottonwood formed the rooms of our imagined space cruiser and later the foundation of a serviceable, if piecemeal, tree-house. From this vantage point, we would often spy as the Rocket Man unwittingly led our space fleet into battle, firing small rockets from a concrete pad that must once have been part of a farm building.

We'd watch him prepare, imagining the evil plans behind his latest assault or the glory to be had in its wake. Then we'd answer his volley with all our imagined wonder weapons, all the more real we thought, for the wafting smell of sulfur, gunpowder, and burnt rubber.

One autumn day, Halloween week when I was thirteen, Daddy turned off the highway a bit early and wound through the trees and up to a dark, cedar house like those where I imagined park rangers might live. The effect was completed by unkempt flowerbeds lined with rocks and animal skulls, and feeders ringed by moldering seed husks. Daddy had paid Mr. Coanda to make or repair some part for our garden tractor, and he walked us around the house, through a gate secured with a loop of steel wire, and out to the unpainted barn where Mr. Coanda was working.

While the two men talked, my brother and I stared into the barn's shadowed recesses, where strange and fancy machines of unimaginable purpose stood sentry over countless dusty and forgotten-looking rocket parts. There were nose cones and tail fins and funnel-shaped nozzles, and even the odd bit of electronic gear. When Mr. Coanda had explained to Daddy what ever needed explaining, he noticed our prying eyes and asked if we were interested in rockets. If it was all right with Daddy, he said, we were welcome to come back on Saturday, and he would show us how to make one.

I could hardly think of my schoolwork that week, but when Saturday finally came, all he

showed us was how to make pop bottles fly with compressed air and water and then with vinegar and soda. I was a little disappointed, but the ice had been broken. Keith and I became regular guests, soon building our own rockets from balsa and cardboard and sending them up under Mr. Coanda's guidance. He taught us how to measure a rocket's altitude and trajectory and how to improve its performance through careful tinkering and even more careful note-taking. He even let us launch one of his own big multi-stageers, a yellow-striped giant with home-made motors and an onboard camera.

When the Geminids passed, we helped him mulch his strawberry plants and live-trap marauding rabbits. By the Perseids, we had learned to make our own exploding skyrockets and roast popcorn right on the cob. The sun swept on through the zodiac. Keith's dreams turned from rockets to football and girls, mine from store-bought model kits to experimental designs of my own. The woods grew lush, then dry and brown, then dappled again with buds. Then, over Easter break, I was helping Mr. Coanda mend a barn door hinge when the phone rang inside his house. It was Daddy. Momma and Keith had been in a wreck and were being flown down to Houston. Daddy said they'd be fine, but he needed to go for a few days and would it be okay if I stayed with Mr. Coanda.

That night, Mr. Coanda made chili, then drove me home to pick up clothes and a toothbrush. He stood in the doorway of our cramped little bedroom and waited while I gathered my things. Keith's wall was decorated with hot cars and women, mine with robots and sci-fi movie stills. I'd made a shelf over my bed on which I'd placed every rocket I could get hold of, including Mr. Coanda's pop bottles and models. When he saw these, he stood still and quiet like grownups did when they were trying to decide whether to say something.

Finally, he stepped inside and pulled the space ship chain pull that worked the ceiling fan light.

"This looks like my room when I was little," he said. His blue eyes, in that moment, were a young boy's eyes, like lights on Christmas morning. The crags and valleys of his withered cheeks shone all the deeper beneath them.

"I'm not little," I said.

He laughed. "Nothing wrong with being little, son. Less mass to boost into orbit."

* * *

I was to stay the week. In the morning, he saw me onto the bus and was waiting when it came back, just like Momma used to do. Monday passed without word, and he let me stay up watching movies. Tuesday night, he was showing me how to slice a tomato without crushing the pulp when the phone rang once again. He answered, then stepped in the back room and shut the door. He talked for a while in hushed tones. A decision was being debated, and when he stepped out, he was dull-eyed and gray, and he told me my momma was dead.

He patted my shoulder and said, "Your pa says he'd have liked you to be there, but she never..."

From what I'd been told and what I hadn't, it wasn't really a surprise, but some things you can never prepare for. Though I didn't break down and cry exactly, I felt a torrent down my cheeks and a melon-sized lump in my throat.

Mr. Coanda said, "Are you...? Do you folks go to...?" Then he sighed and put me in a chair and set about finishing our dinner. I watched as he added the tomatoes to a sauce and put the knife and cutting board away. As he wiped up the spillage, he said, "You know Jimmy, I was in a plane crash once."

I raised a questioning brow, but I couldn't speak for the lump.

He nodded. "Brand new twin engine turbofan, cracked a blade climbing out of Spokane. Turns out the pilot misread the instruments and shut down the wrong engine."

Having finished his cleaning and towed off his hands, he pulled out a chair from the table and straddled it to sit. "Quietest thing you ever heard, being in the air with a hundred and forty-three people, no engines, just the wind whistling by. When I saw a steeple pass above the wingtip, I knew we weren't going to make it."

I didn't know why he was telling me this, but I had to ask, "What happened?"

“We crashed. Me and my wife and my baby boy. And you know what I was thinking, just at the end?”

I didn’t.

“Who’s going to mow the grass?”

I couldn’t help it. I laughed. “What?”

“We had this cranky old push mower that Millie could never start. I knew I was going to die, and all I could think was, who will cut the grass, now I’m gone? Only I didn’t die. The cabin split right at our feet. I was at the window, and the wall must have shielded me some but . . .”

“I’m so sorry.”

He waved a dismissive hand. “It was a long time ago. I won’t say you ever get over it, but you get used to it eventually. Anyhow, it was a similar thing, a stupid accident. But folks’ll come around and say it’s the Lord’s will, part of his great plan. . . . How that’s supposed to be better, I never did know. Maybe it just feels better to them because they don’t know what else to say. But I’ll tell you what might help, is to remember that everybody dies, but our lives are like flames passed from candle to candle. The light’s been burning now for millions of years. Your mamma carried it for her little while, and you’ll carry it for yours—you and your brother and all those kids she taught and helped point in new directions. And I expect that’s what she was thinking, when she knew they were going to crash, that you’d all be here to carry the flame.”

That helped.

* * *

The next morning, Mr. Coanda took me out to the barn and had me help him move an old refrigerator and pry open a large wooden crate. Inside, all packed in gray foam blocks, were parts for a rocket unlike any I’d ever seen. It had three stages, all gleaming aluminum, and when stacked five feet high on a plywood stand, it had a shape like a rifle bullet projecting from one end of an empty toilet paper roll.

“Wow!” I said, “That’s a real monster. What is it?”

He chuckled a bit. “Just a candle.”

I helped him carry the rocket parts down through the woods to the pasture and a cinderblock workshop near his launchpad. We mixed up a gray, putty-like fuel for the first two stages and pressed clay and black power into a cardboard tube for the third.

Mr. Coanda picked up the first stage with his fingers splayed wide over the fins as he pressed tape to an electric igniter. “So what would you say is special about this rocket?”

The first stage seemed like an ordinary booster, although unusually squat. The third, upper, stage was no different from rockets I had built myself except for the elongated motor and thin-walled metal construction. The second stage, though, was a tube within a tube, a fact more conspicuous now with the propellant core in place.

“The second stage, right?”

“Very good.” He tapped the outer lip of the stage. “This is a ram intake. It’s not a true ramjet, but a ducted rocket.”

He explained how the rocket exhaust would suck in air through the outer tube, compress it, and blow it out at high speed.

“Same idea as a propeller on an airplane,” he said. “When you’re traveling through the air, why not push against it along the way? Build a rocket that can do that like an airplane, and you’ve got something.”

He set the booster down to free his hands for punctuation. “When I was your age,” he said, “I thought I’d wind up on the Moon. I thought we’d fly there in sleek spaceliners and vacation on Mars. All our dreams seemed before us, and we never thought about the economics behind them. But the reality is, space travel is expensive, and that’s mostly due to the boosters—the cost of climbing the gravity well.”

He said that in space travel, the cost of a launch is determined by all kinds of things, not just the weight of machinery, fuel, and oxidizer, but also the aerodynamics and trajectory which control how much air resistance and gravity a rocket must fight before it reaches orbit.

“Everything’s a trade-off,” he said. “The Saturn V carried us to the Moon and did it in under

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a decade, but it consumed fifteen tons of propellant every second, and everything scaled up to match.”

“Wasn’t the space shuttle supposed to be cheaper?”

“Sure, and it was a fine piece of engineering, but . . .” His eyes glazed over, and I could see he was revisiting the past. “The shuttle burned hydrogen, which is bulky as hell. That meant a large external tank to drag through the air and accelerate up to orbital speed. It had airplane parts that are just dead weight on a space ship. Hell, the tires weighed as much as the astronauts. It was meant to be a reusable spaceliner. Instead, it was a space station you had to launch over and over again. When the Russians got hold of the design, they thought it must be a smokescreen for an orbital bomber. It lost sight of the prize, see, dollars per pound to orbit.”

I looked at the monster rocket. “So is this the solution?”

“This? No. This is just a clue. It’s a working scale model of a clever missile the Russians built back in the 1950’s.”

He had asked me to fit a tiny camera into a window below the nose cone. Now he added a transmitter, battery, and chute.

As we carried the stages out to the pad, he continued. “To really open up space,” he said, “will take hybridization of ideas. Maybe high-flying planes to carry the rockets, maybe rail launchers for freight, maybe power beams shot from the ground, hell, I don’t know.”

“If you don’t know, nobody does. We might as well give it up.”

“But that’s the wrong way to look at it, Jimmy. We got into the air when the Wright brothers broke down the problem: propulsion, lift, control. They weren’t the smartest or the richest fellows, but they were the first to break it down and take the pieces in turn. Space is no different. We’ll get the cost down by reexamining all the pieces. Look at oxygen, the heaviest part of any conventional booster. There’s already oxygen in the air, so some people want to build spaceplanes that linger in the upper atmosphere gobbling it up until they’re close to orbital speed. But then there’s so much heating and drag see, and you have to fly for so long, the fuel weighs as much as the oxygen saved. Everything’s a trade-off. Look at this ducted rocket. Instead of just spitting out tons of propellant every second, it grabs some of the air and claws its way up like a cartoon coyote up a falling length of rope.”

I laughed, prompting him to add, “Well that could actually work, you know, if you could only pull the rope fast enough!”

I held the second stage while he fit the third into place. “The trouble is, the duct adds weight. Turn it into a ramjet and you get more thrust, so the weight doesn’t hurt quite as much. But then you need a pre-booster to reach supersonic speed before the ramjet can work.”

“Another trade-off,” I said.

“Now you’ve got it.” He looked from my hands to the rocket, indicating where I should hold on.

I moved accordingly. “So what’s the answer?”

He twisted the stages between his hands to check for snugness, then ran his eyes up the stack. “We just have to find the right trade-offs.”

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The launch was anticlimactic, the recovery, an adventure. The video, which we viewed in the house over bowls of popcorn and chili, was hypnotic. The rocket climbed and climbed. As it staged and staged again, the ground slowly warped into a fisheye ball. When the propellant finally ran out, the Earth was just an azure band beneath the inky black of space.

Mr. Coanda let a handful of popcorn fall back into the bowl. “Holy hell,” he said, “if that ain’t a beautiful sight.”

I was similarly entranced. “How high do you figure we went?”

“I don’t have to figure. I have data. Ah . . . sixty-three thousand feet.”

“Wow! That’s almost in space!”

“Not quite. Minimum orbit’s eight times higher, and then you have to accelerate to orbital velocity in order to stay there.”

I stared at the glowing earthscape. “Still . . .”

“Still,” he said, and popped the top off a Nehi. “You’ll get there one of these days.”
 “You think?”
 “Sure you will. You’ll see.”

* * *

Keith came home in a wheelchair and spent two years relearning how to walk. I spent that time with Mr. Coanda, learning how to fly. He taught me Tsiolkovsky’s equations and the principles of rocketry, from the V2 to the shuttle. He showed me how engines work, how their parts are cooled and lubricated, and how waste energy from one step is often reused to drive another, and he explained how different engines meet different needs. Ramjets are simpler than turbojets but only work in a narrow range of speeds. Scramjets are much faster, but produce little thrust for their weight. Aerospike, a sort of inside-out rocket motor, offer better low altitude performance, but have weight and cooling issues. The litany of trade-offs was endless, and it often brought us around to his favorite design, the engine for the infamous Blackbird, the SR-71 spyplane.

“Look at this,” he said in one early session. He’d chalked out what looked like a drainpipe with a jet engine inside one end and a cone projecting from the other. “The ram moves out of the way at low speed so the turbojet can operate, then at supersonic speeds, diverts most of the flow into the afterburner. Now *that’s* a hybrid—the world’s first turbo-ramjet!”

The engine was complex, with all kinds of flaps and doors and ducts to adjust its operation in flight, and it was no orbital booster. But with 1950’s technology, it could fly from a dead stop on the runway clear to the edge of space. It thrilled Mr. Coanda to no end, and learning it all kept me busy while I adapted to the loss of my mother. My lessons weren’t all theoretical, though. We went on launching rockets in the pattern of his Russian design. He called them sounding rockets and fitted them with nacelles and windows to test his ideas, and electronics to record the results. In an effort to attain higher speeds, he once had me lash a rocket to a set of weather balloons so it could fire toward the ground from seventy thousand feet. He got the data he needed but made a four-foot crater in the woods behind the garden. We never did that again.

Through a former colleague, Mr. Coanda had access to a laser sintering machine that could print computer-designed components direct into high-performance alloys. It was the highlight of my summer when he took me into town to see it work. Through a quartz observation window, we watched as metallic traces appeared in a bed of power, and then were buried one after the other by a mechanical sweeping wand.

Each trace added a sliver of substance to an emerging whole, but not until the process finished and the dust was dug away, could I see the arrayed components of what was clearly a new, more complex, second stage for his rocket. This one was a hybrid of old and new. Instead of a solid rocket motor core, it would be liquid fueled, and instead of a conventional rocket, there was a pointed cone threaded to screw into the duct where the nozzle should be.

From his lectures, I knew what that meant. “It’s an aerospike engine!”

Mr. Coanda tapped the side of his nose. “It’s a clue. It still needs a first stage booster, but with thrust from the spike and the ramjet together, I reckon it can pass Mach 5. That’s fast enough, I need Ralph here to coat the leading edges with ceramic to keep them from melting.” He gave a nod to the lab-coated technician who’d been operating the machine.

Ralph was a tidy, redheaded man with a neatly trimmed goatee. “It’s your money,” he said. “Come on son, help me wrap up these parts.”

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Before we could put Coanda’s investment to the test, we first had to resuscitate a tiny liquid oxygen plant moldering behind his workshop. He’d built it before he retired—“tinkered it together,” he said—from a helicopter engine and an assortment of modified turbocompressor parts. Liquid air, he explained, is made by successively compressing, cooling, and expanding air until it fractions into liquid components. It requires heavy industrial machinery to produce in bulk, but he thought it should be possible to use jet engine technology to compress the process into something light enough to carry along on a booster.

"And it works terrific," he said. "It'll never produce enough LOX to do the whole job alone, but that's another trade-off. If it can do much better than pay its own way, then—"

"You don't need as big a rocket."

He winked. "Exactly, and it works out that to get the LOX, you also produce a large volume of super-cold nitrogen that can help with cooling. If you then find a use for the super-heated waste air, say to insulate your combustion surfaces, it might make a serious contribution to a more efficient booster."

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We got the plant working and collected enough liquid oxygen to test fire the engine. Ralph—Mr. Phillips at the fabrication shop—had given the spike a standard baked-on ceramic coating to protect it from hot rocket exhaust, but it immediately became clear that when the engine was throttled to full power, this essential protection just crumbled away. This was serious, but Mr. Coanda took it in stride. Testing proceeded. The print run had included spare parts, so he just swapped out the spike cones as they eroded. That was enough for some low power tests and gave him the data he needed to return to his computerized drawing board.

While he refined his design ideas, I pursued one of my own. If we could get a machine to lay down metal alloy a few atoms at a time, I thought, maybe we could coax it to blend in some silica and print the heat shield right into the components. I paid Ralph Phillips a visit and bent his arm by telling him the experiments I needed were for the science fair.

First, we tried printing a simple flat washer and used a service probe to drop a pinch of silica into its upper surface. It worked okay until the machine cooled down. Then Mr. Phillips fished out the washer with tongs and set it under an articulated magnifier lamp. "I was afraid of that," he said, "Your idea worked, but the materials have different coefficients of expansion." He slid to the side to let me look through the magnifier. The coating was crazed like an old master's painting.

He ran his fingers through his shabby goatee. "I have a book here . . . somewhere . . ." He rummaged through his desk, then the adjoining office, until he found what he was looking for. "You want a science fair project? This book contains everything they learned making tiles for the space shuttle and then some. Some of it's too complex for us to do here, but if you can think up a way to do it in this machine, I'll order the materials and let you burn it, within reason. You make it work, and you can write your own ticket. What do you say?"

I could hardly say no. That summer, we ran over sixty tests, enough that I thought I'd surely overstayed my welcome. The solution finally came in the fall, with blending the margin between the metal and silica, then doping the layers with scandium and zirconium dioxide to improve their bonding and strength. To do all this, Mr. Phillips had to consult with a physicist for advice and bolt a handmade silica hopper inside the cabinet of the very expensive sintering machine. When we finally got it all to work, all we really had to show for our effort was a shiny black disk of metal. But we had built the hopper just big enough and just tricked out enough to make Mr. Coanda's aerospike.

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After Momma died, I'd taken on a couple of her tutoring students and that had grown into a regular job. Between that and my time in the fabrication shop, I hadn't been to Mr. Coanda's much since spring. I knew he had test-fired a ducted aerospike engine meant for first stage liftoff and two disappointing scramjet hybrids he hoped would serve at higher speeds and altitudes. I knew what he was doing. He hoped to achieve a single stage to orbit by building a tunable air and LOX breathing super-hybrid engine. He didn't have the resources to build and test it as a single functioning unit, so he was breaking it down and testing the various flight modes it would have to support, just like the Wright brothers had done.

I didn't go immediately to show him the new spike cone. Saturday was his birthday and Daddy had invited him over for cake and a movie on our new giant screen. I bought a nice gift box, wrapped up the spike like a Fabergé egg, and tied it up in a bow. Saturday came, then the appointed time. The kitchen filled with sounds of cooking and then with tidying and cleaning. But instead of the rumble of Mr. Coanda's pickup, I heard the bleat of my phone

from the bedroom. At the other end was Ralph Phillips, from the shop.

“Jim?”

“Yes sir?”

“Jim, have you seen George lately?”

“George? Oh, no sir, I—”

“He was in here today with a file I’ve already printed for him twice, that first one you two tested last year. Big burns like these are expensive, and when I asked about it, he blew up at me—acted like he didn’t know what I was talking about. We go back a long way, me and George. I’d do anything for him, but I’m worried.”

My heart sank. I’d already seen the signs: the duplicate subscriptions and purchases, the forgotten experiments, the tendency to put me in charge of things beyond my age and experience. I’d thought he was just pushing me. I’d hoped that was all, but I’d known better. Now I knew I had to say something and I worried, after the call, just how he’d react.

Daddy said he’d go with me. I told him to finish the cake, then drove my little Volkswagen over to Mr. Coanda’s with the gift-wrapped aerospike and a sack of pecans Daddy had collected from our trees out back. When I climbed Mr. Coanda’s steps, it was as if for the last time. I noticed how the porch had grown crowded with neglected pots, how the algae-green boards had crumbled from its edge, how the screen door screeched when the spring slammed it shut behind me.

Mr. Coanda was in his study, a tiny room off the kitchen that in most houses built in the thirties and added on to over the years, might have been a bedroom or larder.

“Come in here, James. Put that down.”

In all the years I’d known him, he’d never called me James. He sat in the plain leather office chair Daddy’d bought him when the wicker came out of the old one. The computer glowed by the open window, on the little wooden desk he always said had been made for a typewriter. The bigger table, a big drafting board he mostly left locked flat to serve as a workbench, was strewn with plans and papers. He tossed a few more into this mix and rested his elbows on the table edge.

I stepped up to the table, resisting the urge to straighten. Some of the papers were receipts from the fabrication shop going back over a year.

His eyes glistened. His voice was low and flat. “I yelled at Ralph today.”

“You’re just slowing down, that’s all.”

“Don’t patronize me, boy! You think I’m so far gone I can’t see where I’m standing?” He smacked the table hard enough to nudge it out of level. His outburst struck like a physical blow. In all the time I’d known him, he’d never once raised his voice.

He frowned and stared at the table, then turned in his chair. Behind the keyboard, he had two bottles of Nehi. He popped one open and handed it to me. Grape scent mixed with the woody breeze through the window. “I’m not talking about a little tremor, Jimmy, or forgetting where I keep the wasp spray.”

Several times lately, I’d had to remind him that, in the time I had known him, it had always been in the kitchen, and not the washroom as he often remembered.

He stretched to drop the opener in a drawer, and the floor made a loud creak. He looked down but instead of commenting on the noise said, “I used to stay on top of things. I used to . . .”

His long fingers worked around the neck of his bottle like they didn’t quite know what to do with it.

“Have you ridden along the fence line lately, like you and your brother used to do?”

“No sir.”

“The other day, I found a meth lab hid out in the woods there . . .”

He had started to point through the window and say, “just out past the pecan tree.” I’d heard this story before, and it wasn’t “the other day.”

He took a quick sip and set the bottle back down, cradling it between his hands. “I’ve outlived it all, Jimmy. My dreams, this place, and finally the old noggin. Not much left after that.”

I looked up, but he spoke before I could say anything. “And don’t say nothing about heaven. You know I don’t believe that hooey. And anyway, after a man’s lost his marbles, even St. Peter can’t cram ’em back inside, and nobody can tell me different.”

He took another sip.

“It’s going,” he said, tapping his fingers against his forehead, “and when it’s gone, it’s gone, that’s all. The flame has to pass to you.” He turned and looked out the window. “I’d have loved to have made it to the Moon, though,” he said. “Returned the dust inside these bones to the stars from which it came.”

He swiveled back around. His eyes found tear marks on my cheek. “Don’t misunderstand me, boy.”

“Sir?”

“You don’t owe me anything. I didn’t teach you all this so you could finish my life’s work.”

“It’s good work.”

He smiled and sipped his Nehi. “Damn straight it’s good work. And good work always gets done by somebody or other—when the time is right. No, I taught you because that’s all I had to pass on. You’re welcome to carry on where I left off if that’s your passion. If it ain’t, though, don’t do it because it was mine. Every man has to follow his own dreams, Jimmy. Wherever yours lead you, I’m proud of you, and your pa’s proud.”

He set down the empty with a clunk. “What’s that?” He was looking at the present, still cradled in my hand.

“It’s . . . for your birthday.”

“My . . . but that was . . . Open it for me, will you?”

I opened it. I pulled off the ribbon and the lid and set it on the desk before him with the wrappings drawn aside. He stared down and reached his hand to turn the box.

He pinched the cone by its edges and held it up to the light. “Remarkable.” He tapped his nail against the impervious surface. “Tell me all about it.”

I told him.

“Well that’s as fine a science fair project as I believe I’m likely to see,” he said. “You *do* have a project, don’t you?”

“Um . . . yessir.” I had all the data, anyway.

Rain started pattering against the windowsill. He rose to lower the sash. “We were going to have cake.”

“Yessir.”

He smiled. “Drive me over. Come back early, and we’ll put your spike on the ducted first stage and see how it flies. If I remember my own name in the morning.”

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The science fair project carried me to state, then to international, then through a whirlwind of dinners and photo ops. I had a job if I wanted one, before I’d even applied to college. I needed a broader grounding, though, so I headed for Stanford and four years of internship at Lockheed and Rocketdyne. In April of my senior year, my intern manager at Rocketdyne, Rob Curtis, approached me about a start-up that wanted to build a single stage to orbit engine using venture capital instead of waiting for government contracts. He said they knew about my science fair win, and if I was interested, he’d come along and help me assemble a team. I said I’d think about it and flew home for the break, eager to get some advice.

Keith’s recovery had drawn him to medicine and to Austin. He had married my junior year, and Daddy was already there, fawning over his new grandson, but before I joined them, I wanted to see Mr. Coanda. We’d spent less and less time together as his world contracted and my own life narrowed toward college. After the birthday blowup, he’d hired a caregiver service, and Daddy had started keeping tabs on him. I still worried, though. I’d kept up a correspondence, even after his replies tailed off, and whenever I came home, I’d mow his grass or fix whatever was broken or help him to shell some pecans. The last year, he seldom spoke or gave any indication he knew me, but he seemed happy enough for the company.

I flew home and hailed a cab, but as soon as it pulled up at the end of that winding driveway,

I knew he was gone. I knew the same way you know when the power's out in the middle of the night—by the relative amplification of trifles. Sorghum was sprouting in the feeders. A dog's bark echoed from beyond the darkened house without so much as a squeaking floorboard or singing water pipe to mute it. The door was open, the rooms empty, except for a few chipped dishes and mounds of rubbish and clothing. Barest of all was the office. Everything was gone, a lifetime's worth of dreams condensed onto paper and computer files and finally all swept away.

The wind chuffed up around the eaves and loosed a hail of acorns across the roof. A clank echoed in through the window glass and I saw that the barn had collapsed. It was as if the place had been holding its breath, and now that he was gone, had given in to decades of overdue collapse.

I ran outside, tears on my face, and looked for Mr. Coanda's rockets, his motors, his tools—but everything was gone. Nothing remained but a few ruined bags of cement and the odd bit of wire or tail fin.

Down the hill, the workshop sat padlocked and empty. The only thing left of Mr. Coanda's was the cryo-plant out back. The power was out, or I might have cranked it like I had two years ago when I'd found him gripping the tarp, refusing to be led back inside.

"Start," he'd said when I pulled at his elbow.

He turned and looked with a little vigor in his eye. "Start," he said again, his grip still firm on the tarpaulin.

I didn't think it was a good idea, mechanically speaking, but it seemed best to play along. "It's been sitting a long time. The injectors might be fouled."

He made a dismissive noise. "Natural gas, ain't it? Start her up. I wanna hear her."

I grabbed the filthy canvas, careful of the mildew, and pulled it out of the way. With the fuel and compressor valves properly set, I turned the key. The little turbojet engine spun up, tinkitty-tink like cards on the spokes of a bicycle wheel until the centripetal force built enough to splay the compressor blades into their hangers. Then the pip, pip, pip of the igniter sparks till the flame caught and the compressors roared to life. With the escalating roar, there returned a little of the rocket man I'd so long admired. He smiled and gripped my shoulder and started shouting over the machine, telling me about its operation like a kid just back from his first circus. Then he fiddled with the controls as if performing some procedure unknown to me and finally throttled down and closed the fuel valve.

As the plant whirred down to a stop, he looked at me and back at it and back at me again.

"Jimmy." It was a question, but his eyes shown with recognition.

"Yessir."

He poked my sternum with his finger. "You won the Science Fair."

"Yessir."

He wrapped me in a bear hug and patted my back a few times. "I'm so proud of you boy. So proud . . ."

And that was that. He stood back, his eyes gray and distant, and ambled up the path toward the nurse, who'd run down from the house at our racket.

And now the same house sat empty, as if in appointment with doom.

* * *

There was a note on Daddy's door. I called and got a Mr. Callahan, an estate lawyer who was eager to meet me—immediately if at all possible. It was a quarter till midnight when the yard filled with headlights turning off from the highway and then the squeaking clatter of Mr. Coanda's pickup. My heart jumped at the familiar sound, but of course it was only the lawyer. It seemed Mr. Coanda had arranged a reverse mortgage with a developer eager to have the property. The lawyer asked for my ID, then had me stand in the light for comparison. Then he exchanged my signature for a sealed manila envelope. Inside was a note in Mr. Coanda's arrhythmic hand:

"My dear boy, Jimmy.

I'm having a few things packed up for you to have after I'm gone. It's surprising, when it

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comes to it, how easy a lifetime can fit in a box, but remember what I told you. The flame isn't in the box, it's in you. Wherever it leads, there's sure to be light."

It was dated the year I started college.

* * *

The lawyer waited till I looked up, then said, "You're meant to have the truck as well." He walked around to the tailgate and pulled back a shiny blue tarp to reveal the crate from out in the barn. "Mr. Coanda left explicit instructions," he said. "And I carried them out to the letter, but Jesus . . ."

He lifted the lid from the crate enough to expose the odd Russian missile, complete with Soviet insignia and olive green livery. The foam blocks had been disturbed, and the resulting spaces packed with paper files and blueprint tubes and a plastic bag full of thumb drives.

The lawyer was as pale as the moonlight. "I don't know what you two were cooking up, and I'm pretty sure I don't want to. But I was afraid what might happen if someone found this, so I've had it in my garage for safe keeping."

I looked again at the note. Below his signature, Mr. Coanda had added a postscript: "There will be a manifest with this note. If he breaks anything important, don't tell him the missiles are fake."

I laughed, a good parting joke between friends. Then I fed Mr. Callahan pizza and drove him home to his family.

* * *

The Texas gulf sky is broadly chalked with crisscrosses of coral and cobalt. I wait by the hatch, mentally ticking off the others as they shuffle up the companionway and step aboard the nameless craft that will carry us up into orbit. Mists issue below, hissing from between eight tall nacelles ringing the gourd-like vessel, with engines still silent beneath their tall, black ram-cones. A service truck backs away and turns along the low earthen berm erected to protect neighboring pads from any debris thrown up by our departure. Beyond the berms and the terminal and the palm-lined fence, headlights speed south along the highway from Refugio.

In the old days, I used to drive Anna that way, south and then west into the nature preserve to watch the sunset. We'd have the chaise lounges in the truck bed, and we'd lay out eating strawberries and counting satellites and dreaming of days to come. We were fresh out of school, new to the world. We didn't know what dreams could be till we tangled our lives together.

That first full scale engine took six years and fourteen engineers, materials scientists, and propulsion specialists. It was complex and heavy, but it made up for it with all the right trade-offs. It was basically Coanda's super-hybrid, but with an air-breathing gas turbine added to power the propellant pumps and an on-board cryo plant based on the one behind his workshop. The shroud used to direct combustion gases down along the aerospike also formed part of the duct. At liftoff, it gulped huge quantities of air to be shot out as reaction mass. At higher speeds, a ram moved up and fuel was injected to form a ramjet, the geometry of which continuously varied to produce thrust up to fifteen times the speed of sound. The onboard cryo-plant supplied LOX to the aerospike and super-cold nitrogen to cool the engine and intake air during hypersonic flight. As in the SR-71, a complex arrangement of vents, rams, and bypass tubes tuned the engine to changes in altitude and speed. Even the trajectory was a trade-off, an S-shaped compromise between the ballistic flight of a conventional missile and the long flat climb of a spaceplane.

Overall, the atmosphere supplied 20 percent of the reaction mass and half the oxygen at liftoff. The first test vehicle was a third lighter than a comparable conventional booster, and with the impregnated thermal protection I had helped pioneer, it could fly again and again. The stats only improved from there.

Now here I am, at the door to the fruits of our labors. I duck inside the cabin and climb to the loft, where I slide onto a fabric web couch. Launch attendants squeeze around us, cinching harnesses and telling jokes and patting my shoulder like a charm.

The hatch closes. I clap three times to attract everyone's attention before the gab can get

started.

“Listen.”

The turbines are spinning up, eight whirring voices that sing in beating cascades till the roar finally chokes their harmonics.

The bulkhead display screens flash a recorded prelaunch briefing, but I don't pay much attention. My thoughts wander back to Coanda, back to our shared dreams of space-born adventure, of ray-guns and Moon walks and daredevil launches on towers of billowing flame. Funny how time can shift the weights of all the things we treasure.

Single stage to orbit, reusable spacecraft made space travel less Neil Armstrong than George Jetson. It opened the door to a new space economy, and here we were in South Texas, further south than Cape Kennedy, with a clear shot over the gulf and easy highway access to the whole of the continent, from Matamoros to Port Huron. By the time Lockheed Propulsion made the buyout offer, Refugio was set to be the LAX of a new age, and we its founding elite. The future came rushing headlong, but we were happily settled with a house outside Corpus and daughters in school and a love for kayaking the wilds of the marshes and bays along the coast.

We bankrolled the money. I went to work on the Refugio spaceport, Anna for the start-ups that sprang up around it like dandelions. Now they're planning spaceports on the Yucatan Peninsula and Brazil's Atlantic coast, and our eldest is building a third in northern Queensland. I have grandkids in California and Germany, and camping buddies with aerospace jobs south of the border. Space is the new frontier, but it's still warm and green on the good Earth, and the Moon's not the siren she once was.

Which is not to say I won't enjoy the ride. I'm as eager as anyone to play in microgravity and drag my booted toes in the lunar regolith. I'll ride over to the Sea of Tranquility and take all the souvenir photos, and I might even dream a floating monolith before I fly back home to Anna. But it's not wanderlust that drives me up through the azure Texas night. Nor is it pride or national prestige, nor even George Coanda's triple-fired, vacuum-packed, anti-static treated cinerary remains that have waited forty years to be laid to rest in the only fitting spot I can imagine.

No, I'm here for the kids, eight of my fellow travelers who are my guests at Camp Kitty-Hawk, where for twenty years we've brought students from around the world to use science and engineering to break down and realize their dreams. Each year we invite proposals for a different field of study. There's always an extended field trip, but only now is the infrastructure in place to allow for a trip to the Moon.

George would be thrilled. He'd listen to the snickering and the false bravado and the rude jokes and noises, and he'd smile the way he always did when it wasn't yet time to speak. They're excited to be going. They think it's cool, but they don't yet have an inkling of the trade-offs and sacrifices that have gotten mankind this far. That's exactly what they're here to learn.

The murmuring resumes. One of the girls says to another, “Shhh! The Rocket Man will hear you.”

I've run the camp now for longer than I worked in engineering, but to these kids and the world, I'll always be the Rocket Man, a mythological hero from a golden age. And that's fine by me. I'll proudly wear that title while I fan the flames, till the next bearer comes along to change up the world behind me. It's not the adventure I imagined for my life, but you never quite know where dreams will lead.