

ELECTRIC DAWN

ALSO BY NEIL M. GOLDMAN

*Never Too Old To Teach: How Middle-Aged Wisdom Can
Transform Young Minds in the Classroom*

To Ed Weber and Mike Elfand, for thirty-five years of
brotherhood.

ELECTRIC DAWN

NEIL M. GOLDMAN

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Nearly all men can stand adversity, but if you want to test a man's character, give him power.

—Abraham Lincoln

ONE

A storm of electrifying scenes, terrible and fantastic, ripped through Jack Roseman's mind as he stood up and backed away from his kitchen table.

On the table, a little hobby motor whined and then shrilled, screaming and twisting, its pitch increasing impossibly, and then it shrieked, as in agony, shot out a jet of white smoke, and shuddered to a silent halt.

Jack held his breath and watched the smoke rise to the ceiling as his mind raced.

The motor lay before him, burned, ruined, connected by wires to the source of its destruction—a strangely-colored solar cell.

His heart pounded. *Something's not right*, he thought, *this is a mistake; this is not possible*. He threw his hand forward and disconnected the cell from the motor.

The cell was also connected to an electrical meter that displayed an impossibly high number. Jack blinked and stared, breathing shallowly, too afraid to think of the true meaning of the number which dared him and held fast his gaze.

That glittering solar cell—a thin, highly polished rectangle of purified sand—should have been ordinary, just like the others he had been buying for years as he worked to forge reason from the senseless loss of over fifteen years ago. Solar power was the way. He knew it. He would find a way to silence the sooty lethal roar of coal with the immaculate silent power of the sun. He worked in his kitchen (or his basement, depending on the time of day and the number of clouds in the sky), he worked with lenses and reflectors,

with spotlights and electrical meters, with little boxes of thin hard blue solar cells that came from all over the world. Different angles, different combinations, different methods of connection, photons and amps and watts and volts, vying for Terin's attention on too many nights.

Slowly, he learned, and slowly, he designed new ways to coax more electrons from the cells, a little bit more, a little bit more, steady progress, closer to the day of making The Announcement, he called it—the end of the coal-fired electrical generation industry.

The cell came in a box with five others, and Jack connected it, and it destroyed every other thought. It was unmistakable, now. Every other solar cell up until this one made a small amount of electricity when sunlight fell on its surface, but this cell, unknown to anyone but him, through a mistake or an accident that Jack knew he had to identify, unleashed a positively electrifying torrent of power.

He stood in his kitchen, his back against the wall. The sudden thought that the cell might be damaging the expensive meter made him move over to the table and unclip the cell from it. Its display dropped from 3.9 volts to zero. It should never have gone above 0.5. He picked up the little hobby motor, which was destroyed and still warm after having been connected to the cell. Inside the motor, the paper-thin copper brushes and delicate windings of fine wire were melted, partially from the heat of friction generated by spinning four times as fast as they were ever meant to, and partially from the heat of trillions of electrons, sent searing down the wire into the motor from the terrific force of the strangely-colored solar cell.

He lifted the warm motor to his nose and wrinkled his face at the burnt-sugar smell of too much power and too much voltage. *It's impossible*, he repeated to himself, but that smell from the motor said otherwise. And the meter couldn't be that wrong. It couldn't be that far off. He tried unsuccessfully to turn the seized shaft of the motor. *Not from one solar cell! It's impossible, it's impossible.*

He walked to the living room window, thinking, his eyes flicking left and right as his mind struggled to make sense of the facts. He had just spent fifteen minutes checking it over and over, comparing the new cell with the others. There was no mistake. This new cell was unlike any other that had ever been made or dreamed of.

His phone rang. He saw Terin's number.

Terin Covington is 34, a few years older than he, with a friendly oval face and welcoming, trusting brown eyes. Confident, intelligent, giving, she's drawn to Jack's turbulence and passion, and perplexed by the occasional tentativeness of his attention. His curly black hair, broad shoulders, and mischievous smile are irresistible to her, and his sense of humor sufficiently corny. He isn't perfect, but his imperfections relax her. "I don't want perfection, I want you," she said to him once when she felt the distance between them. She was calling him during her afternoon break at the store.

"Hello." Jack's voice was flat, but he was unaware of its flatness.

"Jack? Hello? Are you—"

"Hey, Cov. Sorry." He called her "Cov" sometimes. Silence.

"Jack? Are you all right?"

"Yeah, I'm OK. Sorry, I'm just thinking about—"

He stopped. Thinking about what? About what he just discovered? She'd ask, "Oh. What did you discover?" Should he tell her? Should he tell anyone? What would he say? "Oh, nothing really, just a weird-looking solar cell that produces seven times the amount of power of a normal cell, and all the coal companies will be going out of business soon. But enough of me. How was your day?" No, he couldn't mention that tantalizing silicon rectangle to anyone yet.

It sat on his kitchen table, possessing the power to change the course of human history. Only three inches by six inches, it was bigger than all the world's coal mines, all the mile-long belching black diesel trains thundering through sleepy communities, all the

gravestones of coal miners adorned with flowers placed by wet-eyed children.

A truck rumbled down the avenue in front of Jack's house. *Eddy's Son Electric. We Fix Your Shorts.*

"You just what? Jack?"

"Nnn-nothing. I. Ummm."

"Honey, listen. You're being a little weird right now." She tried to sound casual. "Are you...what's going on? Are you OK?"

He needed time to think about what he would do next. "Yeah, I'm fine. I was just thinking about something. It's nothing. Forget about it. Sorry. How's your day going?"

Terin spoke a little about her day, and she and Jack talked about what they would do Saturday night, which was tomorrow. Jack truly enjoyed talking with her, and doing things with her, and being together with her through the night. He liked the attention she paid to him. She made him feel interesting. She laughed at his jokes. But none of that mattered right now. The object sitting on his kitchen table wouldn't release its grip from his mind.

The plans for the next evening were set: dinner and drinks at Belmonte's. Terin was working late tonight, and worked late last night, and that meant that Jack would probably sleep alone tonight. She said, "Sweetie, I probably won't get home until about 11 and I just want to go right to bed. This place is a madhouse tonight, all right?" She spoke those last words tenderly, quietly, with rising pitch, to sound apologetic, to be tentative, to be overridden by Jack's desire. But, right now, with what Jack knew, with what he knew must happen, his mind wasn't troubling itself with uncovering the hidden meanings of Terin's words. He answered plainly: "OK, honey, I'll call you tomorrow," and then he heard silence from his girlfriend. He spoke a few tender words, and she said some quiet things, and the conversation was over.

Jack's phone went back in his jeans pocket and his mind turned its full attention back to the rectangle in the other room. He walked back toward the kitchen and stopped in the doorway. The sun had moved in the sky and, for a while, its light did not strike the cell. Jack knew the shade was temporary. The cell wanted to be illuminated. It desired a connection. It would not tolerate darkness.

This can't be right. I must have made a mistake, he thought. He walked toward the table, but stopped. No. Not again. It would accomplish nothing to check it again. He had already checked it and checked it, the result of which was a blown out light bulb, a burned, warped, useless motor, and an electrical meter that consistently showed numbers that dared anyone to believe them—numbers that he knew would pull the children of Sully Energy executives out of private school, that would put "For Sale" signs on the faux mansions they lived in, that would still the coal trains, that would topple the smokestacks.

Jack stood in his kitchen. He was unsure of what to do, but he knew he had to do something.

Suddenly, he picked up the cell. He must hide it. He must put it away. He must protect it. He must keep it from the eyes and minds of others. He must have time to think and to decide what he would do. He replaced it in the box it came in. Foam protection. Kept out of the light. Safe, hidden. Down to the basement. On a shelf next to some books. He picked it up and put it within the books. It looked like a book. Safe from questioning eyes, from meth-fueled burglars that jump through shattered windows and escape through back alleys. Nobody steals books. He checked the box again to make sure it didn't call attention to itself. He went back upstairs and put all the other things away that were on the table. The burned-out motor, the wires, the meter, everything. He put them away, returned to the kitchen, and sat down. He stared at the floor. He'd tell Terin tonight.

No, wait, she's not coming over. He needed to...what? He needed to...

His slapped the table.

Of course! Payton!

TWO

Three weeks prior to Jack's discovery, the sun rose onto Proxistar Solar, a massive manufacturing facility, the centerpiece of a new industrial complex off of I-95 in Philadelphia. Its triangular glass and stainless steel surfaces present to passersby an ever-changing reflective kaleidoscope of the traffic and the people that surround them. Twice as tall as the buildings it neighbors and impossibly long, people called it "The Jewel" as soon as they witnessed its pale sapphire glass sheets rising from the ground—hypnotizing sheets suspended by cables and beams and surrounded by the river and the sky.

It is a city block wide at its narrowest point and becomes three times as wide as it gleams eastward for almost a quarter mile to the Delaware River.

It smiles, this proud new building. It belongs here, under the sun.

Within, armies of workers position their bodies and minds and hands in vast rooms filled with specialized equipment and on production floors checkerboarded with complex machinery.

Some of the rooms require them to wear hearing protectors to keep their ears safe from the thunderous whine of carbide steel teeth against granite. Some of the rooms require them to wear clean suits to protect what they produce from the contamination of a tiny flake of skin or an eyelash that might foul a critical electrical connection. Some of the rooms melt sand into glass and form the glass into sheets and clean the sheets so that even a microscope sees nothing on its surface. Some of the rooms slice purified silicon cylinders, polish

these slices to a mirror finish, place the slices into vacuum chambers, and shoot them with trillions of phosphorous atoms at supersonic speed.

As the raw materials are forged and changed, they move westward through the facility to the areas where other operations take place.

A worker watches a robotic arm swing down to within one inch of a stack of tempered sheets of glass. Black tubes filled with hydraulic fluid snake along the machine's arm like veins, and the tubes pulse and quiver with power as the machine moves.

The robotic arm continues to move down, and four black suction cups on the end of the arm press onto the glass sheet. There is a click and a hiss as the air is pulled from the suction cups, and a vacuum flattens the cups and firmly holds the sheet. The machine lifts the sheet up off of the stack and over to an adjacent long table with a movable surface, part of an assembly line. It lowers the sheet gently onto the table, and another hiss breaks the vacuum and releases the glass. The arm moves out of the way. The table accelerates the glass to the next assembly position under bright, shadowless light where quiet workers in blue suits and hair nets are waiting to precisely assemble components on the sheet. In moments, the lead worker pushes an orange button and the partially finished solar panel moves further down the line, ready for the next operation.

There are seven more of these assembly lines making this type of panel, and there are eight more making a different type which is becoming more popular, and there are fourteen more making the most common size, all being fed by other areas and feeding other areas.

The workers are all where they should be, their eyes trained on the object being produced at that moment. They are hundreds of carefully selected people with passion for their work beyond a mere desire for a paycheck. They deeply care about what they do because

they know the importance of what they do. They do it well, each day, for they are constructing the change in power of the world.

These are the rooms, and the departments, and there are more of them, and they all work to create the most important product of the new century: engineered crystalline rectangles, solar cells, protected by glass, that make free energy.

The phone in the maintenance office was dull with fingerprints from hands that kept machinery running for a living. Sitting on a cluttered desk stacked with papers and parts catalogs and new bearings and last year's calendar, it took seven rings for it to be answered.

"Maintenance, Dorf. Yeah, Steve, how ya—? Whoa, whoa, slow down, Steve. Steve! I can't understand ya. Okay. Now, what're you talkin' about? Where? Above...above the assembly...whoa, which assembly line? You say it's smokin'? Is it...is it still on? Yeah, is it on? Is the light still lit up? What? Well, is there a pipe leak you can see up there? Whaddaya mean it ain't water? Well then what the hell else could it be? Alright, get people away from it. Get 'em away from under it. Yeah, now—no, in an hour, Steve. Yeah, yeah, now! Get 'em away from under it and stand by. I'm comin' over."

The phone was hung up and dialed again.

"Yo, Paulie! It's Dorf. Do me a—yeah, I know. No, I got it, but I got the...they sent me the wrong goddamn diameter race. Yeah, look. Look, forget that a second, Paulie, we got a small problem. A highbay overheated and is leakin' somethin' on the North floor. Yeah, well, don't ask me. I was told it was leakin' something. Steve, I told ya I don't know. Listen, do me a favor. Bring a cart with everything and a bucket and mop and meet me over by the head of Green 8 right away. Alright, yeah."

Mingus Dorf left the maintenance office to investigate what Steve was talking about. How could an overhead light leak? Lights

ain't faucets. There's wires going into lights, not pipes. There must be a roof leak; it's those damned glass joints. Hmm. It hasn't rained a drop the last four days.

Mingus Dorf walked across the production floor, his weighty keyring hooked to his belt, swinging back and forth against his hips, a brass percussion instrument, flat grooved zigzagged carillons on a ring, playing gait music. Zing. Tsang. Zing. Tsang. Left. Right. Left. Right. The music of universal access.

Mingus Dorf, a compact, ovoid, gravel-voiced, tight-belted maintenance supervisor. Brown hair, white shirt, blue pants, black shoes. No "hello" to those he passed.

Seventeen people watched him approach. They were standing in a wide circle around the solder prep equipment and under the dripping, buzzing, smoking, too-bright lighting fixture. Steve was standing there, the affected line supervisor, ready for Mingus to decide what to do. He and the other stalled workers watched Mingus Dorf as he shielded his eyes and looked up, and they all looked up, too.

The lighting fixture hung thirty feet over their heads, secured to the steel ceiling trusses by a heavy bracket and a safety chain. Inside the fixture, an oval bulb shone a brilliant, blinding blue-white light that made Mingus, Steve, and the others squint and shield their eyes. The light was too bright and too blue and the fixture buzzed too loud. An ominous hiss mixed in with the buzzing, and the buzzing got louder, and more and more smoke began rising from the top of the fixture.

The workers backed away from the liquid that slowly dripped from the bottom of the fixture and that had already landed onto one of the machines where a batch of solar panels was being processed. The sweet, metallic odor of the liquid mixed with the pungent smoke.

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