

The Robot Scientist's Daughter

Poems by Jeannine Hall Gailey

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Contents

Author's Note	5
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I: Foxfire

Cesium Burns Blue	11
The Foxfire Books: In Case of Emergency, Learn to Make Glass	12
The Robot Scientist's Daughter [one of us]	13
Hot Wasp Nest	14
Oak Ridge, Tennessee	15
The Robot Scientist's Daughter [morbid]	16
The Women of America's Secret City in 1945	17
The Taste of Rust in August	18
The Robot Scientist's Daughter [villainess]	19
The Girls Next Door	20
Lessons in Poison	21
The Robot Scientist's Daughter [medical wonder]	24
The Robot Scientist's Daughter [Before]	25

II: Aberrations

How Not to Be a Robot Scientist's Daughter	29
Iodine-131	30
Oak Ridge is a Mystery	31
America Dreams of Roswell	32
Chaos Theory	33
The Robot Scientist's Daughter [in films]	34
The Robot Scientist's Daughter [tinkering]	35
She Explains Her Fear of Bees	36
Knoxville, 1979	37
Multiple Chemical Sensitivity	38
The Robot Scientist's Daughter [triangulate]	39
The Robot Scientist's Daughter [circuits]	40
The Robot Scientist Considers Asimov's First Law	41
Elemental	42
The Scientist	43

“Fukushima Mutant Butterflies Spark Fear”	44
The Robot Scientist’s Daughter [director or dictator]	45
Death by Drowning	46
The Robot Scientist’s Daughter [the other]	47
Radon Daughters	48
The Robot Scientist’s Daughter [experiments in sleep deprivation]	49
The Robot Scientist’s Daughter [sign of hope]	50

III: You Can’t Go Home Again

A Morning of Sunflowers (for Fukushima)	53
The Robot Scientist’s Daughter [apocalyptic]	54
Oak Ridge National Laboratory: Unlock the Secrets of America’s Secret City!	55
Tickling the Dragon	56
Phosphorous Girl	57
The Robot Scientist’s Daughter [Polonium-210]	58
“Now I Am Become Death”	59
The Scientist Solves a Puzzle	60
The Robot Scientist’s Daughter [ghost in the machine]	61
On the Night of a Lunar Eclipse, a Missile Shoots Down a Spy Satellite	62
The Robot Scientist’s Daughter [nomad]	63
The Robot Scientist’s Daughter [escape]	64
She Introduces Her Husband to Knoxville	65
Advice from the Robot Scientist’s Daughter	66
The Robot Scientist’s Daughter Journeys West	67
The Robot Scientist’s Daughter [recumbent]	68
For the Robot Scientist: Questions of Fission and Fusion	69
Fukushima in Fall: A Field of Sunflowers	70
They Do Not Need Rescue	71
The Robot Scientist’s Daughter [brushes with death]	72
Interpreting Signs in Appalachia	73
Notes	74
Special Thanks	76
About the Author	77

I would like to dedicate this book to my father, yes, a robotics professor and researcher, and to the people of Oak Ridge, Tennessee.

Author's Note

I grew up on a farm in Tennessee less than five miles downwind of Oak Ridge National Laboratories, where my father, who taught at the University of Tennessee, consulted on nuclear waste cleanup, specifically, robotics-based ways to clean up nuclear waste. The class issues inherent in setting up a sophisticated nuclear base in the middle of Appalachia were painfully clear to me as a child, but I loved growing up in Tennessee. It is still “home” to me more than any other place I’ve ever lived. Playing among deer and fishing streams with the Smokey Mountain backdrop, in a valley filled with flowers and fossils, was magical to me. Sadly, the two-story brick house, the steep banks covered with daffodils, fossil boulders that studded a yard with old-growth oaks above and moss and violets below, have all been paved over with concrete and abandoned—my mother’s beloved lilacs and forsythia, my father’s acres of strawberries, tomatoes and peas, a yard that was home to chickens, dogs, rabbits and horses. On Google maps, all that you can see of my old house and surrounding property is a flat, ugly, gray expanse. This book allows me to reanimate the landscape of my childhood.

But I also grew up in a house with a Geiger counter in the basement, various robots (including robot arms and chess-playing robots) and rows of books by Isaac Asimov and Ray Bradbury. I learned to program BASIC on a TRS-80 when I was seven. By high school and throughout college, I was helping my dad edit his papers on robotics and his consulting material on radioactive cleanup. There was never a time when I wasn’t familiar with computers, robots and radioactivity. My first degree was a Bachelor of Science in Biology; I took a special interest in classes like ecotoxicology, medical botany, and even a class in “environmental law for engineers.”

Oak Ridge National Laboratory was built in the middle of a heavily wooded area of the Tennessee Valley in the 1940’s as part of the Manhattan Project. ORNL helped enrich uranium, and was the site of the creation of the first nuclear bomb dropped in Japan. After World War II was over, much additional research

was done at ORNL, some of it safe, some of it, perhaps, not *as* safe. This picturesque wooded area west of Knoxville was also known as “The Atomic City,” “America’s Secret City,” and a host of other ominous nicknames. (For additional fascinating vintage Americana pop culture expressing love of atomic science, there is nothing better than “Dagwood Splits the Atom,” a comic made in the late 1940s, still available at the time of this writing: <http://comicskingdom.com/blog/2012/10/10/ask-the-archivist-dagwood-splits-the-atom/>)

There were billboards and posters around the site warning those who worked there not to talk about their work, as well as threateningly-worded contracts for all who passed through their gates. Understandably, many former ORNL employees and contractors still don’t say much about their work there, including my father. This means the stories, warnings and rumors about Oak Ridge tend to be hard to verify. Though the Tennessee citizens living around the facility tend towards the stoic rather than the fanciful, I grew up hearing the most amazing “ghost stories” about what really went on inside Buildings X, Y and K behind the ORNL gates, about glowing deer and radioactive catfish.

One reason I wrote this book was to raise awareness that nuclear research is never harmless; that the half-life of the pollution from nuclear sites is longer than most human lifespans; that there is, from reading my father’s research as well as my college classes, no truly safe way to store nuclear waste. The devastation around Chernobyl and Fukushima is a reminder of the environmental, ethical and social costs of nuclear power. I’ve had lifelong health troubles, including autoimmune thyroid issues, which may or may not be linked to growing up in an area known for nuclear contamination.

I also wanted to tackle the pop culture representation of the atomic age, the depiction of scientists and their daughters in older sci-fi movies, and our attitudes towards science, particularly nuclear science. The fictional Robot Scientist’s Daughter has many fantastic capabilities and experiences, but also shares many characteristics with me, and my fictional scientist is a conglomerate of historical figures like Oppenheimer, authors

of books I read and yes, my father. This book is meant to be a gateway to a world of beautiful mutations and frightening flora, through the lens of our own culture's pop visions of the nuclear age.

I: Foxfire

Cesium Burns Blue

Copper burns green. Sodium yellow,
strontium red. Watch the flaming lights
that blaze across your skies, America—
there are burning satellites
even now being swallowed by your horizon,
the detritus of space programs long defunct,
the hollowed masterpieces of dead scientists.
Someone is lying on a grassy hill,
counting shooting stars,
wondering what happens
when they hit the ground.

In my back yard in Oak Ridge,
they lit cesium
to measure the glow.
Hold it in your hand:
foxfire, wormwood, glow worm.
Cesium lights the rain,
is absorbed in the skin,
unstable, unstable,
dancing away, ticking away
in bones, fingernails, brain.
Sick burns through, burns blue.

The Foxfire Books: In Case of Emergency, Learn to Make Glass

I remember burying acorns in the ground.
Sinister black hives housing nuclear bombs
built next door hovered over us. It seemed natural
that every day might be my last.

Nevertheless, there were violets to pick
from the moss by the oaks, there were dogs
and horses to stretch out next to, strawberries
to be gathered and smothered with sugar.

Each long sunbeam had its own message from God,
I was sure, hiding amidst the dust motes. I learned
the names of crawling creatures trapped, petrified,
in limestone rocks. I crawled inside abandoned bear caves
for shelter and tried to quiet my feet on the forest floor.

In case of poisoning, eat this. In case of war,
hide underground. I learned to purify water,
named edible leaves, in case, in case, in case.
It seemed as if the trees themselves were letting
in the light for me, as if I might lead people to safety.
I remember folding white sheets next to a Geiger counter.
Oil reserves burning up. It was the seventies.

My grandparents sent books of Appalachian rituals:
sassafras tea, planting peas by the moon, sewing up
the land. It seemed natural, then, that our woods
would grow glowing mushrooms, that it was the fire
of foxes, and we believed it could be appeased.

The Robot Scientist's Daughter [one of us]

There was something wrong with her; that much was clear. She ran around in circles, meowing or mooing, the yellowjackets a cloud in the sun. Men in black suits hovered in doorways, dodging shadows; a safe was kept locked at all times in her house.

The basement glowed and ticked, and the children there emerged damaged. The furniture was cracked and pasted back together—even the flowers in their blooms knew soon they would be plowed under, left as rubble. What chance did she have, even then? Did she know how her future was already written, her roots stunted and sick like those dogwoods with their grafted limbs?

Someone kept stealing their dogs, cars arrived in the night and disappeared again before morning. Even though their strawberries were so sweet, even though their daffodils nodded cheerfully to us, we could see: she would never be one of us.

Hot Wasp Nest

“Of the two kinds of wasps that built nests among the instruments, Shinn noticed that only the yellow-and-black daubers used radioactive mud.”

—Time, August 1964, “Hot Wasps Nests”

Slick with mud, the wasps’ buzz punctuated afternoons spent building nests that poisoned their young, filling abandoned houses with the tick of radioactive dirt.

Poor wings, poor feet, unequipped but ambitious—you didn’t know the dosimeter, containment procedures, only the whir of transfer, of architecture.

Swallows too, daubing the mud on nests surely too fragile to protect the chicks inside their eggs—

the scientists were following you as well, to watch the spread of radionuclides, project the radius of your flight.

O frog, O catfish, O white-tailed deer,
O invertebrate, O poisoned dears,
burn off, carry away, burrow underground.

Oak Ridge, Tennessee

We lived five miles downwind
of Oak Ridge National Labs.
Its towers contained multitudes.
My father's Geiger counter click-clicked
its swaying tongue at me.
Thirty years later, in the thyroids of local children—
cancers, syndromes, tumors.

(Dairy cows, asparagus and strawberry plants,
fruit in my mouth, snow in my hands.)

My mother was sprayed with pesticides as she played
in the fields as a child. My father grew up with pop guns
while men wrestled atoms. He learned to cap
contaminated soil with clay and concrete, their brittle grasp.

The reactor clasps graphite in a blank black building.
Here they built bombs, or the beginnings of bombs,
electricity crackling through the oak woods.
Once in the twenties, a madman, jailed
for prophesying the site, saying "here would be built..."
I don't know if he died in jail.
In my backyard, the skeletons of snails are trapped in lime.

(Red clay, lilacs, daffodils, black bears and mockingbirds.
Vines of honeysuckle and morning glory, children chewing
red clover.)

Always things hovering over us—mountains, thunderstorms...
a poisoned valley. Lightning bouncing across our yard.
Bees swarming a horse. My father strode off to work
with government-issue TLD cards and a black suit.
How much radiation today?
The card would tell him, but he knew it lied.

The Robot Scientist's Daughter [morbid]

is not as innocent as you think. Sure, she grieves for the dead, for the destruction of even one baby rabbit by a lawn mower, the kitten in the grass mauled by dogs. She even saw her grandmother in a coffin, still and beautiful with pink cheeks. But her mother has started calling her morbid.

As a child she studied the Latin names for diseases, the art of dissection, insisted upon the organization of genus and species among her stuffed animals. She had no problem pinning insects. This cannot end well, her mother thought; she had encouraged playing with other children, the joys of tag.

But instead the girl hides underground, pretending to be a troll or a witch. She puts leaves in her hair and collects fossils, lining them up to spell words, the swirling trilobite, the imprints of the mysterious dead.