



SOUNDINGS

The Story of the
Remarkable Woman Who
Mapped the Ocean Floor

HALI FELT

CHAPTER 1

AT ITS MOST BASIC LEVEL, MY JOB AS A WRITER IS NOT very alluring. It has its moments, of course, as with most occupations. The exciting days when I spoke for hours on the phone with one or another of Marie's colleagues. Or when I ended up at her house the night before its new owner took possession of it, helping a few of her old friends box up the last of her things—that was exciting. Or once, when I went to the cemetery in Iowa where Bruce was buried, next to his father, in a grave that would probably have been his mother's if he hadn't beat her to it (she's buried in Pittsburgh, next to her last husband). Small scraps of gauzy fabric were scattered all around on the grass like giant snowflakes and when I squatted down to pick one up off Bruce's headstone I realized that they were weathered old pieces of silk flowers and flags, decomposing until one day they would disappear. I stood there on top of his grave for a while, which I knew was probably bad luck, but I couldn't resist; it was the closest I could get to either one of them.

It was creepy, and a little bit thrilling. What if I laid down, I thought, stretched out on the grass in the sun, and took a nap until the shadow of the Heezen family monument touched my face? These are the kinds of things a writer thinks. Or they're the kinds of things I think. I didn't do it, of course. I could hear a lawn mower close by and worried what the

high school kid who found me would think. After that, though, I went to the house Bruce grew up in—a huge mansion the color of butter on a bluff overlooking the Mississippi. It didn't look like anyone was home, but I knocked on all the doors anyway, one by one, hoping to be invited in, imagining what I'd say if I were. I'm writing a book, I would say, perkily, and the housewife who answered the door would take one look at my cardigan and sensible clogs and invite me in for a tour. I had no idea a famous scientist grew up here, she'd exclaim over the tea she served me after we'd figured out which bedroom had been Bruce's. But no one answered the door, so I walked around the side of the house and stared up at the third-floor gables, and took pictures of the view and the trees and the Beware of Dog sign, and doing this, too, was a little bit creepy and thrilling; I didn't stay very long.

While researching Marie, I often found myself forced to say the words "I'm not a scientist" whenever anyone asked me what I was writing about. They'd pause; I'd shake my head. "At *all*?" they'd ask, as if their rephrasing might reveal that I was actually about one-sixteenth scientist, the way some people are part Irish or Swiss. "No," I'd say, "but there are things that make up for that and anyway"—here I'd usually wiggle my eyebrows—"don't you believe the present holds the key to the past?" If they said yes, I'd tell them that I agreed and that that belief had its beginnings in geology. "It's called uni-formi-tari-anism. What do you think of *that*?"

On a bookshelf in my living room there's an old olive green book with the title *Geomorphology* stamped on its spine in gold. It belonged to Bruce and was given to me on the day I spent at Marie's house. The spine is fraying and broken and the book can't stand up on its own, so I made a protective portfolio for it, fashioned from thick cardboard covered in golden silk, to hold it up straight and keep out dust. Also in my living room: a whole filing cabinet filled with documents photocopied from the Heezen-Tharp Collection at the Library of Congress—interviews in which Marie talks about her childhood, photographs of her throughout her life, transcripts of tapes Bruce made near the end of his life. There's also a stack of hatboxes containing all sorts of random things—one of Marie's address books, a falling-apart cigar box holding letters between Marie's brother and her father, a falling-apart shoe box marked "Family Letters, 1920s," stacks of holiday greeting cards people sent to Marie when she

was in grad school, tiny flattened boxes that once held Bruce's heart medication.

On my fridge there's a copy of Marie's Atlantic Ocean Floor map that appeared in *National Geographic* magazine in the 1960s. On my bulletin board there's a photocopy of a black-and-white photo of Marie and Bruce posed awkwardly in topcoats. There are diagrams of the ocean floor rolled around old wrapping paper tubes in my linen closet, and in my bedroom is a huge dainty-legged table that looks about ready to buckle under the weight of what it's holding up. Stacks of books about the ocean two and a half feet tall. File folders stuffed with transcripts of interviews. Papers and books embellished with fluorescent orange sticky notes that poke from between the pages like the stubby limbs of an animal smashed inside. To the right of my computer I've built my own miniature natural history museum: a milky white geode that looks like a cauliflower floret on the outside, a smooth rock with perfect round craters bored into it, a small wooden model of a stegosaurus skeleton, some dried thistle heads that look like skewered sea urchins, a postcard of Marie's World Ocean Floor Panorama, a playing-card-size portrait of her, a Polaroid photo of the pond next to my grandfather's cabin, and a thick-stalked jade plant rising up over it all.

Taped to the wall next to my desk are some pages I photocopied from Marie's scrapbooks. On one page, Maries from almost every decade of her life crowd against each other: small square photos of her as an adolescent in the 1930s, with a smile too big for her face and untamed hair brushing her bomber jacket's shearling collar; a strip of four pictures from a photo-booth, whose flashbulb has illuminated her in various stages of laughter, picking up her radiant skin, her high cheekbones, the metallic thread of her intricately patterned shift and the gleam of her pinned hair; a color snapshot of late-period Marie in her living room, commanding from her leopard-print couch, one arm behind her head and the other hovering near a stack of papers. The Bruce page looks like one of those kindergarten classroom posters that has faces exhibiting a wide range of emotions—in small passport photos arranged into a perfect grid, a dapperly dressed thirty-something Bruce shows that he's not only capable of happy, sad, and angry, but that his round face can also do assertive, inquisitive, suspicious, and reprimanding.

The sheet I love most, though, is the one that includes both Marie and Bruce—black-and-white portraits of them in their fifties. There isn't a single shot that captures them both within one frame, but it's clear that they were in close proximity when the pictures were taken: it's evening, the quality of the lamplight hitting their faces identically is both bright and soft, their summer clothes are loose and rumpled, and both project something best described as a deep and comfortable intimacy. There is no composure here, just relaxed faces sometimes smiling, sometimes simply looking. Marie has (uncharacteristically) undone her hair so that it falls down past her shoulders, Bruce's head is tilted, eyes and chin (uncharacteristically) gentle. They're caught tender in these photos, faces angled toward each other; I can almost hear them exchanging soft murmurs across the scrapbook's page, even though they're dead and gone, even though the pictures are almost fifty years old.

My life has become what you might call saturated—with Marie, with her work, with things relating to the ocean floor and oceanography and geology—and so has my mind. The transformation of facts into a scene, then, has become effortless. It is what I imagine simple algebra must be like for a mathematician. I read some facts, Marie's reply to an interview question: "Well, anyhow, the first thing I remember—this is unbelievable—lying in a bed with wheels on it outdoors, and I was looking up at this house with a 'peaky' roof, and I couldn't understand why I was looking up and it was peaky, because when I was inside it was flat, you know, a flat ceiling." "Oh, how wonderful," the interviewer replied, and they keep talking for another few hundred pages, but my imagination goes off running. Shapes, or rather the outlines of shapes—a house, a bed, a baby—drawn with thick crude lines. The outlines are facts. Or the facts are outlines? I'm not sure, but either way, I'm the one who comes in decades later—an adult with a steady hand, coloring everything bright but staying inside those lines.

MARIE'S FIRST MEMORY is this: she's very small and the sky is very big and she's lying outside on a bed that has wheels on it. She ignores the things down at her level in order to cast her eyes up. No blanket, no teddy bear, no bottle or mother or father are mentioned in this memory; for her, it's all about a house.

She's looking up at her house, at a peaky tall roof, and something about it is bothering her. She lies there on her back in that way babies do, rocking gently from side to side like a turtle trying to right itself. Even though Marie is too preoccupied with the roof to notice, her mother is probably nearby, keeping an eye on her as she stews their laundry in a huge iron pot. Marie tilts her face. When she does this she can make the sun disappear and her eyes stop feeling so squinty. She moves her face again and the sun comes back, does this a few more times before she remembers what was originally bothering her. The roof thing doesn't make sense because she knows that when she's inside the house the part of the roof that she can see is flat. She doesn't know the word for roof yet, or the word for ceiling. But she knows that her house has a lid; until now she's noticed it only from the inside, where it's flat and smooth above her. Now, though, it's angled toward the sky, as if while her mother was rolling her crib through the yard some giant plucked an invisible string, jerking the lid skyward along a single central line, transforming a plain into a peak.

"Believe it or not," Marie said by way of introduction to this story, "it's amazing." One of those things whose significance she doesn't explain but we can take an easy guess at.

By the time Marie neared the end of her life people started wanting to hear her story and so she started telling it. Interviewers came to call, a few articles were written, she pops up scattered in a few chapters. Marie was good at keeping secrets and telling stories and she had lived a long and cluttered life. But she was also getting old, and things were probably getting murky: the things that she had tried to forget, or at least make less painful, had been filed away in the backs of cabinets or had disappeared entirely. There are lots of holes in her story because by the time she died in 2006 she had no family and her only friends were the Tharpophiles: devotees who had worked for (or with) her on her maps in her South Nyack, New York, home, most of whom were significantly younger. There was no one left, in other words, to correct and fill in memories.

Certain details are fact, though.

Marie was born in 1920 in Ypsilanti, Michigan, to William Edgar Tharp and Bertha Louise Newton. William, who Marie referred to as "Papa" until she died, began working for the U.S. Department of Agriculture's Bureau of Soils in 1904. He was thirty-four years old, had never been to college, and had been to only one year of high school in Stuart,

Iowa, before the school declared him learned enough to graduate and then immediately reclaimed him as a teacher. He hated it; he quit the job after one year but had nightmares about it for years.

William worked in a plant nursery after that, saving up enough money to buy his parents a house before he took the civil service test that got him into the Bureau of Soils. He came late to everything he did, or maybe just waited until he was good and ready: he didn't marry his first wife, Ethel Griffin, who came from a family of butchers and patent medicine hawkers in Stuart, until after he started working for the government. They had one child, named Orlo but called Jim, before Ethel died of an asthma attack in Piney Woods, Mississippi. Because of all the traveling William had to do, he left Jim to be raised by Ethel's parents in Stuart. Even after William got married again, to Marie's mother, Bertha, Jim stayed with his grandparents; Grandma Griffin had no respect for second wives and Bertha had no respect for uppity old ladies. Bertha refused to set foot in Stuart, which is why Marie didn't meet Jim until he showed up when she was in high school. Until then he was mostly a story, someone she heard about from time to time, someone who grew up with creeks and lots of boy cousins who eventually blotted out his mother's death, someone who as a teenager was disfigured and blinded in one eye by a ricocheting projectile from a toy cannon his father sent him for Christmas. He and her father corresponded weekly, and "somewhere along the way," Marie said, "the decision was made to send him to the School of Forestry at Ames, Iowa. Jim's only complaint was the ROTC had parades on Saturday afternoons when he would have rather been hunting."

Bertha had been a high school German teacher before, as Marie says her father always used to remark, she "traded one job for another." Bertha died when Marie was fifteen and, in most of Marie's recollections, is ghostly and off to the side—watching her, waiting for her. She was forty and William was fifty when Marie was born, and according to Marie they were married in 1912 or 1917. Either way, they met in a boardinghouse in Frankfurt, Indiana, seven years after William's first wife died. I picture William sneaking a glance at Bertha over the top of a book in a parlor.

As parents, William and Bertha seem to have been past an age when coddling their only child was an option. They were devoted, but they trusted her to find her own way, let her explore the unknown so she'd gain confidence from her own forward motion. Like one of the years

when they lived in Washington, D.C. (they went every four years, so William could go to the Soil Bureau's main office to oversee the printing of the maps he had worked on since his last visit), Marie and her mother were at the U.S. Capitol and Marie ran away from her and up the steps to the top of the dome. She stayed there awhile and her mother didn't even worry, just sat down on a bench and let her daughter survey the city from above. Eventually Marie trotted back, followed by a guard who'd caught her where he thought she wasn't supposed to be.

Because they spent so much time moving around, the Tharp family (William, Bertha, and Marie) knew the value of packing light. They knew, whether by choice or circumstance, that there was an economics to nearly everything, and they tended to be prudent. Trade-offs were a part of life. Consistency was swapped for financial security. Friendships did not exist, not really, but the three Tharps were so "tightly-knit," such a "happy bubbly family," that they once induced envious tears in a neighboring widower who stopped to pay his regards one Christmas Eve. The moving they had to do for William's job made them "perennial gypsies"; they had one another, but that's about it.

Marie attended more than a dozen schools before she graduated from high school. The recorded number changes—sometimes it's as high as eighteen and other times as low as fifteen—but the number I reach when I count them all up is seventeen, clearly nothing to scoff at. There was kindergarten in Tippecanoe, Indiana, where her father called her "tippe two" because he didn't like the name Marie; half of first grade in Peru, Indiana, and the other half in Marion, Alabama; back to Ypsilanti for second grade; then to Hartford City, Indiana; then to Washington, D.C., for a whole year. After that they took a train to Albia, Iowa; went to Selma, Alabama; Rockwell City, Iowa; Orrville, Alabama; spent a whole year in Florence, Alabama; then went to Adams County, Ohio; back to D.C.; to Cooperstown, New York; to Oneonta; and then to Bellefontaine, Ohio, where her father bought a farm to fix up and where her mother died less than a year later. Marie barely ever talked about losing her mother, just a few vague things here and there about how she'd been reaching an age when her mother could have taught her a lot (about what, she doesn't say); about watching her as she lay dying as summer passed into fall, next to a window overlooking a maple losing its leaves; about how she took over the "fun" parts of keeping house when her mother was gone.

In her memories, Marie was often alone. “Usually I was the new kid on the block, the stranger that no one had anything to do with. By the time I’d develop friends, we’d move on,” she said. One season they lived in a four-room furnished flat in Washington, D.C., where Marie claimed as her kingdom the space behind a couch placed diagonally across a corner. Another season they lived in a colossal old mansion in Albia. Her father had rented it for twenty-five dollars a month and she had two whole rooms to lord over—one to sleep in, another for her toys—and lots of other empty rooms to wander through in the afternoons when the air hung like wet clothes on a line. She loved this emptiness, the way her little wooden animals skittered on the bare floors; she separated the cows from the sheep and put them out on the parquet floor to graze; she took all the furniture out of her dollhouse to make it into an airplane hangar.

Her sparsely populated childhood often took on a surreal and sometimes whimsical quality, filled as it was with extremes—in temperature, in size, in out-of-placeness. When she was six, in Peru, her father drove her out to the Ringling Brothers headquarters on Sunday afternoons to see the animals on vacation from touring. There were lions and tigers and elephants lolling in the Indiana oat fields like tourists at the beach. Her father, an amateur poet, wrote a poem titled “When the Circus Comes Back to Peru,” which got published in the local paper. The next year, when he was down in South Carolina by himself and Marie and her mother were in Ypsilanti taking care of Marie’s dying grandmother, he wrote poems about the 1928 presidential candidate Alfred Smith and also to the calendar on his hotel wall, which had a picture of a girl on it. The Alfred Smith poem got published; the calendar girl poem did not. (“We never could get over that,” Marie said, “them thinking it was too, I don’t know, suggestive. It was just a nice calendar.”) In Washington, D.C., in 1929 they watched Herbert Hoover get inaugurated: “we sat out in the rain in the bleachers and got to see the whole parade,” Marie said. “It was gorgeous for a kid.” The pouring rain, the top hats and horses, and the men slowly waving from open-roofed cars were still lodged in her memory decades later.

Winters down south and summers up north meant that Marie didn’t experience much in the way of winter until she was a teenager in Cooperstown, New York. That was the year her father surveyed Suwannee County in Florida and wasn’t allowed to take his family along because there weren’t any schools. The meteorological conditions of her childhood

were generally warm, to say the least. In Marion it was so hot in the afternoons that they didn't have to go back to school after lunch, so she sat by herself on the stone wall by the Methodist church and watched people's faces as they walked by. In the Albia mansion it was so hot that you couldn't touch the carved wooden banister. One summer, in Washington, D.C., it was so hot that Marie and her mother hid out all afternoon at the Unitarian church trying to cool off by watching a movie about Admiral Byrd's adventures at the South Pole.

Even as a child, Marie was what my own grandfather would have referred to as a "real pistol," a "firecracker," or a "piece of work," depending on the situation. (When I got so excited three days before we were supposed to go to the beach that I couldn't sit still or sleep or eat and kind of just jangled around making everyone nervous, I was a firecracker.) Marie, in fifth grade, standing off to the side and watching her schoolmates leap around on the playground during mandatory recess, thinking, "Why do we have to put up with this nonsense," was a piece of work. And when Marie's parents tried to send her to Sunday school and she "flatly refused"—citing in her defense the fact that because they moved so much, she basically had to put up with strangers all week long and she wasn't about to start doing the same on weekends—she would have been a real pistol. When I read this story, I pictured a miniature version of Marie's older self standing before two amused adults and gesturing wildly, with shoes untied and some wooden jungle creatures at her feet.

This kind of scene is easy to imagine—but it's necessary, too. Because while Marie's later life was well documented in both picture and word, I have only a handful of photographs of Marie as a child—one I'm certain is of her and another I'm pretty sure is of her. The huge cache of photos she left behind is almost entirely of the years after she got to New York. Any that aren't are of Bruce and his affluent family, who vacationed frequently—Bruce next to a man in a primitive diving suit; Bruce struggling to hold a giant just-caught fish high in the air; Bruce looking uncomfortable in a white linen suit with some palms in the background—are of him in later life, as a scientist (sitting at a table of other scientists, Marie at his side and looking at him instead of the camera; squeezing his bulk down through the hatch of a bobbing submersible).

One of the pictures of child Marie is black and white and fading. The contrast needs to be amped up and the border thinned, but the

composition is nice and the subject fitting. In it, Marie stands near the edge of a dirt road next to her father's surveying tripod. The road cuts through a dried-out old field, something that had been plowed some time ago and has only a few papery stalks sticking up. The trees are knobby-kneed preadolescents grouped at her back and the tripod is an arrow pointing only to her. The mechanic's jumpsuit she's wearing ends about six inches above her ankles and her bangs are cut straight across her brow. She's got a thigh resting on one of the posts of the tripod; if she were any older her hip would probably be cocked, but as it is she's just straight up and down. My favorite part about this picture (and the next one, the one I'm not sure is of her) is that she's totally ignoring the camera. There's no indication that she has any idea the picture is being taken. She's completely engrossed with whatever it is she's drawing or writing with that pencil clutched in her hand.

The second photograph complements the first one nicely. It is charming where the other is gritty, dainty where the other is tomboyish. Marie has the same severe haircut, but her face looks a little pudgier, which makes me think she might be slightly younger in it. This picture is sepia-toned, and behind Marie the shadows of leaves spread out batik-like on a barn door. She wears a dress, and oxfords, and sits at a child-size farm table. I might even be able to see a bracelet pushed halfway up her forearm. Again, she's totally engrossed in what she's drawing or writing.

When I first discovered these pictures I could feel the possibilities in them stretching out, as if Marie were still alive, still young and with her whole life about to happen: drawing and drawing, alone and immersed in her work. As if there'd been a shift in the air, the way the sky turns green and still before a summer thunderstorm and all the people and animals hurry home. These moments never shock, they are not the actual storm but the time before it, when you remember all the storms you've been through before and are able to say, of course, I know what is coming: we will meet, we will each say or do something that seems right, a sentence or a gesture that softly falls into place but in retrospect is heavy as a brick.

THE FIRST TIME Marie ever saw the ocean was in Pascagoula in 1925 or 1926—she could never be sure which year of her childhood was spent

where. But her family lived there one winter while her father finished up a survey of Mobile County.

In Pascagoula the land is the same height as the sea. But the trees stop and the grasses stop and the sand lies there and lets the water cover and uncover it each day. Marie and her mother go down the steps of the boardinghouse, take the steps one at a time, a little hand inside a big one like seashells tucked together. There's the crossing of streets with names such as Beach and Canal and Lakeview, and Marie's mother reading the street signs out loud to her. There's the feeling of stepping onto the sand for the first time, and it distracts her for a while, the way her feet sink into it after they step off the road that sets off the beach and the way her behind sinks into it, too, as she sits down to take off her shoes and socks.

But the water! Oh, she says at first, just a little noise beneath the sound of the waves, and then she looks back at her mother's face. Her mother takes her hand again and they start to cross the wide, empty beach. It's low tide and Marie is a little apprehensive, so the approach is slow; the water advances and retreats like a shy animal. But then Marie steps onto wet sand, and the water comes back to lick her feet. It's like nothing she's ever seen before, like the ice of a pond after the snow's been swept off for skating, like static on a television, or wind moving through wheat fields. The closest thing she can think of is a blue woolen blanket, the waves like her toes squirming underneath. A little while later, when she sees her first movie, *Ben Hur*, she can't understand why the ocean on the screen doesn't get her wet, too.

On the beach there's a giant wreck of a boat, just a skeleton, and then the next day when they go back it's almost all covered up with water. So her mother tells her about something called a tide, about the moon pulling the water up close to its face and then pushing it back again. Every day, her mother says, the way Papa goes to work and comes home, or the way we move north and then come south again.

That's the story of Marie seeing the ocean for the first time, and how she thought it was the most amazing thing she ever saw, and how she didn't see it again until she moved to New York more than twenty years later. But somehow the memory stayed intact, the ocean a drop beaded up on a blouse, water that didn't soak in until she needed it.