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# The Reign of Cats and Dogs: My Life as a Veterinarian

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by

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## Chapter One

## Peter and The Horse

The sunlight split into coruscating beams that flicked and flitted over the windshield as we drove down the tree-shaded road. I sat in the passenger seat of a white Land Rover Discovery, my stocking feet resting on papers, my lunch, and detritus from our day's calls. My messily tied hair whipped in the summer air tumbling through the open window; I nervously brushed strands from my eyes and rubbed my hands on my jeans then tried to refocus my attention on Peter, the veterinarian driving. He was talking and gesturing intensely as he guided the SUV around the twists and turns of the narrow Herefordshire lane.

I was a veterinary student "seeing practice" with a local veterinary group I had worked for since high school. I had stood for hours in the small animal clinic watching vaccination after vaccination, cleaned hundreds of cages, walked dogs, and learned to laugh with the rest of the staff at the now too familiar jokes that George, the small animal veterinarian who shared the practice, loved to tell. George was a Scotsman with a booming brogue and stature barely contained by the thin walls and tight space of the examination rooms—"Good morning Mrs. Jones, how are you and Fluffy doing this fine morning?" "Now, what can we do for Fluffy today?" "Take them home and love them."

It wouldn't sink in until much later that what I learned from George about building trust with the owners of the animals he treated was just as important as the scientific knowledge I'd crammed into my brain in vet school.

Finally having reached the fourth, and clinical, year of my veterinary education I had graduated to riding on calls with Peter. He was the large animal veterinarian at the practice, his patients predominantly horses, cows, sheep, and any other beast too big or messy to fit into a consulting room. It was an honor I'd waited almost ten years to be granted. I was fourteen when I first noticed, from my unobtrusive corner of the examination room, the senior veterinary students hopping into the front seat of his Land Rover. Year after year I'd bided my time, hearing the back door of the kennel room slam each time Peter escorted whoever was seeing practice that week out of the building. I listened with rapt, jealous attention to the stories the students told of calving successes, hoof trimming, and cesarean sections when they made it back in time for lunch.

Now it was my turn to entertain the high schoolers taking my place in the kennel room with tales of my days on large animal call. Peter was well known in Herefordshire—with his muttonchops, cravat, and collared shirt, regardless of the day's duties. He was no match for George in physical stature, but he occupied an equally substantial place in the practice and in my mind. His energy seemed better suited to the outdoors, and to large patients, his wiry forearms and strong grip better for wrangling horse's hooves than soft kitten paws. I saw Peter as a country gentleman; an image reinforced by his choice of dress and rounded vowels.

Peter and I had developed a good, if slightly distant, rapport over the few weeks I'd been working with him during the summer break between the fourth and fifth year of veterinary school. Hours spent driving between calls were passed with

polite conversation and testing discussions of timely topics in veterinary medicine. I quickly learned that Peter was intelligent and sharp, with a strong voice and stronger opinions. Despite my familiarity with the practice, I felt naïve in his passenger seat, weighed by my need to prove myself.

The pony we were driving to visit was old, no longer eating, and losing weight. Peter suspected lymphosarcoma, a cancer of a type of white blood cell called a lymphocyte. Her owners had declined further diagnostics and treatment—and to be present for this final visit. I didn't know the pony's name. Peter had told me a few miles back, as we swung through the Herefordshire lanes, but it had instantly skidded from my mind. I wanted to know for the intimate moment we were to share, to gently whisper under my breath when I stood in front of her. But more than that, I wanted to appear professional and competent in front of my mentor. Calm and composed.

I didn't ask again.

###

I had always wanted to be a veterinarian. Growing up in eighties Britain, this was not an uncommon dream. The bucolic, very English portrayal of veterinary medicine in the BBC series *All Creatures Great and Small* based on the books of James Herriot, inspired millions every Sunday evening to consider the same path. The show was set in Darrowby, a fictional village in North Yorkshire during the 1940s and 50s. The countryside was rolling and unspoiled, the heroes—James and the younger Tristan Farnon—dashing and brave. The halcyon village was a place to

imagine ourselves—living in small neat stone cottages with meticulously planted gardens, just down the road from the local pub where the men could drink pints of local ale while the ladies drank tea.

The veterinary surgery was located on the ground floor of the rather grand house that Siegfried, the practice owner, Tristan, his brother, and James all shared. Herriot's portrait of the veterinarian as the center of a thriving farming community, driving from farm to farm delivering calves, treating lame horses and performing the occasional house call for the over-pampered Pekingese dog of the local rich landowner did not stray far from the truth. Veterinary medicine in the UK, until the late 1900s, was male-dominated and large-animal focused with the accompanying elitism expected of such a profession. Although the tide was changing by the time I began veterinary school in the mid 1990s, with two-thirds of my class being female, the veterinarians I encountered in my clinical training were predominantly male and most practices in rural locations treated both farm animals and those who lived a more sedate life as house pets.

The massive popularity of *All Creatures Great and Small* caused the number of veterinary school applications to soar, and the smallest mention of Herriot in an intake interview could land your application in the trash. When asked: "Why do you want to become a vet?" I was acutely aware that: "Because of James Herriot" was not the desirable answer. It was just as well then, that Herriot's lifesaving exploits were not actually my motivation for applying to veterinary school. Rather, the moment I knew I wanted to be a vet arrived, strangely, at our weekly family slide show.

Through the middle of my childhood, from about the age of eight until the early teenage years when my sister and I could no longer be persuaded to participate in anything with “family” in the title, we would close the curtains and sit around the projector; a warm, slightly chemical haze emanating from the little fan on the back. My dad was an eager amateur photographer, and for a time our attic contained not only the precisely to scale model railway he spent hours researching, painting and setting up, but also the red-lit mystery of a photographic dark room. Once I passed the age determined old enough to be trusted around the shallow trays of alchemical liquids I would hover close to my dad in the small, ruddy space, enthralled while pictures developed on previously stark sheets of photographic paper. The weekly showing of 35mm slides my dad carefully selected and loaded into carousels was a family event punctuated by bickering between my sister and me over who would push the forward button on the clunky remote to advance the image. In the style of the early eighties, and only separated by two years, we occupied most of the pictures, with matching glossy, dark bobs, and in our younger years embarrassingly coordinated outfits. My dad was always behind the camera, and my mum’s aversion to permanent capture of her image was reflected by her ubiquitous absence. While the images of family vacations, my sister and me romping through various wooded scenes and ruined castles, and an endless stream of steam engines flipped by, my ten-year-old imagination was captivated by one picture.

Or rather, one single dirty sink, from the veterinary laboratory where my dad worked as a microbiologist. A sink dirtied by the residue of dyes used to stain

microscopic specimens. The swirling hues curling around the drain illuminating my gateway into the world of science. I remember the first exhilarating instant I saw the image. The flat greyness of the once-white sink, the eerie, confusing whorls of blue and purple and pink. I was fascinated, hooked. I demanded the slide at every show for years.

For as long as I could remember I had wanted to be like my dad, right down to wishing that his exuberant beetle-black caterpillar eyebrows that met in the middle would also, one day, adorn my face. By the time I'd decided on my future career I'd almost outgrown my mum. She was petite, only a few inches over five feet, and while my sister followed her frame I was growing to be more like my six-foot dad. Despite our size discrepancy the familial resemblance between us three females was striking. We sounded so alike that our voices were indistinguishable on the phone, leading to potentially embarrassing revelations to the wrong Fincham on more than one occasion. The weekly family slide show reminded us of our undeniable connection, the pictures of my sister and I revealing how little our faces had changed, despite our growing bodies and changing outfits.

My mum was a constant—as a teacher her career held no mystery, I went to school every day, I knew what teachers did. But my dad, not occupied with keeping two girls fed, clothed and clean along with a full-time job, was the parent who taught me to ride a bike, how to tell a joke, look down a microscope and what the offside rule in football meant.

The image of this psychedelic sink somehow represented the mysteries of my dad's profession. A visual representation of the microscopic organisms he cultured on agar plates and in flasks of nutrient broth—of the scientific life I imagined him leading, and that I too wanted to be a part of. At fourteen, my interest crystallized into a determined wonder at the world of veterinary medicine, the mystery of abdominal cavities revealed by a scalpel, the secrets of bones discovered on X-ray. I was captivated by the science of physiology and disease, how bodies work, get broken, and are fixed again. There was no family pet saved from the brink of death by a plucky veterinarian, no baby bird I had nursed back to life from a certain doom, just a picture of a dirty sink and a wonder at what lay beyond the plug hole. I pondered for a moment the idea of becoming a human doctor, but I wanted to revel in the science of medicine without my patient's opinions or personalities getting in the way.

My childhood was littered with mostly imaginary animals, despite my best attempts to convince my parents that a dog was an essential family member. On a particular annual summer holiday in the mid eighties—when I was about eight—I discovered the most steadfast of my fantastical companions. We were staying in a remote corner of Wales, where we had rented a damp tumble down cottage that smelled mysteriously of sheep. Such vacations were typically filled with soggy hill hikes to view cloud-socked valleys, lunches of newspaper-wrapped fish and chips huddled in the car while the windows fogged up and the interminable rain poured

down, and mini-finger aerobics in the backseat to distract my sister and I from squabbling.

It started out as a typical outing, but as the morning wore-on it looked like the "Fincham rain cloud" would stay away for the day, and the rucksack my dad carried bulged with cast off coats and hats.

"Come on, hurry up slow coaches!" my sister shouted, scrambling ahead to earn her nickname "Mountain Goat." Her feet scrunched and slipped on the gravelly path etched into the grass winding up the hillside.

Barbed wire fences and dry stonewalls regularly interrupted the path, and we clambered over stiles and gates to continue up the slope. Small greasy gray tufts of wool scattered the barbed wire, and I reached out to investigate the oily softness of the fleece.

"Suzy, don't touch that, it's dirty!" my mum shouted from ten paces back. I wondered how she always knew when I was about to do something I shouldn't, but the warning didn't deter me. I snatched up a piece and stuffed it into my pocket before stepping over the stile. I felt the fine fibers of the wool between my fingertips and surreptitiously brought them to my nose to sniff the warm, sheepy oiliness.

The tang of the lanolin broke the daydream I'd been lost in—the imaginary small, brown and black, wire-haired dog wagging and trotting behind me, tugging on the lead dissipated into the grass.

Looking up I saw my sister had reached the next field, and I ran to catch up with her, stumbling and uncoordinated in my bright red wellies. Approaching the

next gate I spotted a rough, gray, slightly jagged rock about the size of my dad's foot. An idea settled in my mind. Tied to the gatepost was a long abandoned piece of weatherworn once-red twine. I picked at the frayed knot, and it came loose in my fingers. I tied the twine tightly around the middle of the rock and gently pulled on the long end- success! I now had a pet to accompany me for the rest of the walk and for days to come.

The twine was rough and spikey against my palm, but the leash was the perfect length. I doggedly walked my rock up the rest of the hill, carefully lifting her over stiles and gates. I stooped to pet her several times, speaking gentle words of encouragement on the steepest parts.

"What's that?" asked my dad.

"My pet rock, of course."

"I don't know if he can come in the car, he's a bit dirty," my mum said, eyeing my new pet suspiciously.

"She has to," I replied. "She's my new pet. I have to take her with me. We can't leave her behind."

"Well," my dad said, "I suppose she can go in the boot."

So began a fledgling relationship. For the duration of the holiday I took her everywhere with me, even trying to make her a regular at the dinner table, which did not go down well, but I was determined to be the best owner I could. I was heart-broken when at the end of vacation there was not enough room in the car for

my pet. Once we got home I had to make do with stuffed toys and wheeled suitcases, which took on the temperaments of playful puppies or loyal hounds.

Despite the lack of animate creatures in my childhood I undeniably felt a deeper connection to animals—whether real sheep on a Welsh hillside spied on a family walk or imagined companions—than the more difficult to decipher humans I encountered. I was a "swotty goody two shoes" that preferred studying to bunking off and books to parties; I thought animals were a safer focus of my scientific interest.

It was my narrow, naïve teenage certainty that drove me towards veterinary medicine; blind to the many, complex ways being a veterinarian was different than what I envisioned.

###

Slowing on the narrow Herefordshire lane Peter pulled into a gateway with a narrow dirt turnout, which led to a long paddock running next to the road. There was a single horse in the field, a small gray pony. We got out and walked to the back of the Land Rover where I removed khaki wellington boots and bottle green coveralls from the trunk. Peter was already suited up and pulling on his boots with practiced ease by the time I'd managed to unfold my outfit. I hurriedly stuffed the too-long pant legs into my socks before balancing to put on the boots. Next I pulled up the body and arms, with the sleeves already rolled up, and fastened the silver snaps. I was in, though the crotch was somewhere around my knees; this garment was clearly not designed with the female figure in mind.

Peter reached into the trunk and located a black case about the size of a laptop beneath the piles of syringes, rectal examination gloves, bottles of medication, and shiny stainless steel implements that made me want to cross my legs. He opened it to reveal what looked like an old fashioned pistol. Made from blackened metal, it was small and sturdy with a brown wooden handle. It was the sort of gun I imagined in the Wild West, thousands of miles from this field in Herefordshire, England. The grip had the patina of age and use, cured by the skin oils embedded in the crosshatch. Alongside the gun was a box of ammunition selected for one specific purpose. This was a single-shot pistol and I was about to shoot my first horse.

"So," said Peter. "You remember what you're going to do?"

"Yes," I answered, hoping he'd repeat the directions one last time.

"You are going to draw an imaginary line from one ear to the opposite eye, and then repeat for the other ear and eye. The two lines will make an X. The spot where the lines cross is where you will place the gun. It's going to be higher up than you think, remember that."

I told him I would.

"Tell me what happens next," he said, testing me.

"I'm going to position the gun's muzzle flat against the horse's head," I said, "at the same angle as the neck to the ground so that the bullet goes directly into the cerebrum and cerebellum rather than across the top of its forehead."

"Alright, good, now once you've got the positioning right remember that you want to squeeze the trigger gently, don't jab at it with your finger, and whatever you do don't step backwards at the last moment, and don't close your eyes. You're only going to get one shot at this. It needs to be done right. We don't want this horse to suffer."

My anxiety ratcheted up. I was being entrusted with a huge responsibility and whatever I did, I didn't want to mess it up. I pictured myself firmly gripping the lead rope attached to the head collar so as not to cause the horse any distress if I missed. I recited to myself, like a mantra: *I will not close my eyes. I will not close my eyes. I will not close my eyes.*

###

By that summer between the fourth and final year of my veterinary education I had not yet killed an animal. Although I had stood a respectful distance from the pet cats and dogs I had seen euthanized, passively witnessing their last breath, I had chosen not to look too closely at this aspect of my future career. I knew it was something I would do, would have to do; I'd heard veterinarians talk about how it was "the best decision" for a suffering pet. But I'd never pictured myself administering the fatal bullet to a sick horse. The world of student veterinary medicine hadn't yet taken on the dimension of difficult decisions or moral questions. I was so caught up in studying the factual, scientific nature of disease that I barely had time to consider my patients.

There were three years of veterinary school and another year completing an immunology degree between my high school self in the corner of the examination room and the fourth year veterinary student now standing in that field. As a teenager, I had spent every available school vacation at George and Peter's practice. At sixteen, I was spending every Monday evening after school trying to look unobtrusive as George conducted his consultations. By nineteen, and my departure for London and the Royal Veterinary College, I had logged enough time in that room to draw from memory every crack in the linoleum floor.

I spent my first year in London sleeping in Commonwealth Hall: a large intercollegiate residence off Russell Square in WC1. I had just turned nineteen and had spent little time away from home. My dad had driven the three hours east from Hereford to London. The view through the car window changing from the countryside of my childhood to the flat grey of the motorway, and my excitement shifting into a tugging fear that made me want to beg my dad to turn around. Instead, I argued about which cassette to put in the player and complained about my dad's taste in music.

After decanting the contents of the boot and back seat into my new cupboard-of-a-room, the thick clod in my throat made it difficult to say goodbye. A swift survey of my home for the next year had done little to raise my spirits—a single bed with institutional sheets and a thin, lumpy duvet; a radiator covered in multiple layers of peeling paint; a small wardrobe that smelled of other people's clothes; a faux wood desk with the edges chipped and cracked; and a tiny sink,

which I preferred to think had only been used for washing hands and faces, wedged in the corner. My dad stood awkwardly in the only square of floor not occupied by suitcases or boxes.

"Alright, you've got everything?"

"I think so," I said, unable to look him in the eye. I knew his black hairy caterpillar eyebrows were drawn into a continuous questioning line.

"Well I suppose I'll be off then before the traffic gets too bad."

"OK," I paused. "Shall I come to the car with you?"

"No, it's alright, you get settled here."

"OK," my relief at not having to walk back to my new room alone with a press of tears behind my eyelids was tempered by the realization that this was goodbye.

"Give us a call to let us know how you're doing," he said.

"Will do."

"Love you."

"Love you, too," I said.

And then he was gone and I was alone.

After attempting to arrange my belongings in a feeble caricature of a student excited to be away from home for the first time I carefully pinned the yellow paper outlining the first week's activities to the board above my desk, small crumbles of cork from the pitted, overused surface sprinkling onto the bed. Our schedule started on Wednesday, with time for social engagements before classes began on Monday

morning. Nights at the pub, introductory lectures, the commencement ceremony and university-hosted freshman events extended over the opening weeks of term.

Wednesday, my first night in London, was the welcome event for new students at The Swan, a local pub. I'd changed my mind about what to wear so many times that I was back to the original outfit—a pair of jeans and a new black long-sleeved T-shirt, trying hard to look like I hadn't made an effort. My favorite accessory lay on the desk, a small square bag of black cloth with a panel of brightly colored embroidery on the flap. I never carried much more than a wallet, but I thought my bag was the kind of thing a girl at university would take on an evening of drinking and mingling.

I took the elevator down to the lobby to meet the other veterinary students also staying in Commonwealth and I felt like a kindergartener when we formed an impromptu crocodile to walk to the pub a few streets away.

It was dark when we arrived at The Swan, and light seeped from its windows, dimly illuminating the crowd of students drinking outside. I sipped slowly from the pint I'd been handed, my homesickness and a regrettable evening with a bottle of peach wine mixer a few months prior curbing my taste for alcohol.

I tried to find somewhere unobtrusive to stand, but a smiling student approached me.

He had the louche, cocky confidence of someone familiar with London, this pub, and the yearly ritual of freshman events. He wasn't really looking at me, his gaze skimming off into the crowd of other students, but his eyes caught on the

embroidered panel of my bag, bright against the black of my shirt, that I was gripping, along with my pint.

"Nice bag," he said. "Very, um…useful."

I looked down at my favorite bag, the perfect accessory just a few hours ago.

"Uh…thanks," I said and flipped it around so the colorful stitching was hidden. It was too late. He'd already turned away.

###

Beneath the trepidation I felt leaving home for the first time was a shy hope that I would finally find my place at vet school. I'd never quite fit in at high school; my peculiar dedication to academic excellence, rule following and always raising my hand in class had branded me a swot. I didn't have time for parties, illicit cigarettes behind the bike shed or dating, which was just as well as I was never invited anyway. My extracurricular activities were more sedate—playing flute in the orchestra, singing in the school choir, and swim team. Setting my sights on my future career, and my singular determination to get into vet school, made it easier to ignore the whispered slights in the changing room after P.E.

But not long after my arrival in London it quickly became clear that my state school education, lack of equestrian experience and decidedly middle-class upbringing separated me from the majority of my classmates, who had spent childhoods cantering around country estates while on holiday from private boarding school. I found a small group of friends with backgrounds more similar to my own—four or five girls who also lived in Commonwealth Hall, and didn't have

pet ponies—to walk to and from school with, spend lunchtimes among, and to meet for dinner in the dining hall, but even with them my need to spend just one more hour revising biochemical pathways set me apart. Studying was as uncool at university as it had been at high school.

Even worse than my desire to study hard was my lack of horsemanship, which I could do nothing to cover up or excuse. As a ten year old I'd gone through the horse-obsessed pre-teen phase and had finally persuaded my non-horse loving parents that riding lessons were an essential part of my childhood. In jeans and wellies my sister and I would spend every other Saturday morning at the cheaper, and less swanky of the two stables in town, more suited to our family's humble means, and our lack of jodhpurs and fancy riding boots.

My hometown, Hereford, was nestled on the English side of the Welsh border, surrounded by farmland, crumbling castles and hills. The town, despite its proximity to open countryside, was relatively urban, with a cinema (albeit with only one screen), shopping center, a nightclub called Marilyn's, and a Pizza Hut. We lived on a modest housing estate, distinct from the sprawling rural estates of the horsey set. I had no affection for fox hunting, an important influence on horse riding in Herefordshire in the mid eighties, and it turned out that I was highly allergic to the beast that was supposed to be my best friend.

I loved to read stories about girls feeding their ponies sugar lumps and crying into their manes, imagining the intimate touch of the grassy coarse hair and dusty, greasy coat. Unfortunately, such close contact with a horse resulted in instant

sneezing and eye-swelling that progressed until I couldn't see. Still, this didn't deter me, and I continued taking riding lessons until the blinding eye irritation overrode my desire to be an equestrian.

Despite my persistence I never found my equilibrium in the saddle. When my steed progressed from a trot to a canter my grip on the reins would tighten and my biceps flex. My white-knuckled hands would rise until they were uselessly hovering in midair, while my feet curled desperately around the stirrups, and my frustrated instructor screeched, "Keep your hands down!" My awkwardness, combined with my soggy nose and drippy eyes, meant my equine career was cut short in my early teens. If I'm honest, I always preferred my Sindy (the UK's slightly chunkier and more realistic version of Barbie) horse to the real thing. I could plait and style its nylon mane and tail for hours, carefully brushing until the manmade fibers shone, with no nose twitching. There was no risk of being stood on, or bucked off, and I didn't have to worry about my lack of jodhpurs because Sindy had the perfect outfit, complete with velvet hardhat and riding crop. I didn't miss the real thing until I arrived at veterinary school and my lack of equestrianism seemed to symbolize my difference.

###

Peter loaded the gun, keeping the safety on, and we walked across the field. It wasn't difficult to catch the pony. She was used to people and we must have seemed like friendly visitors. We led her to the flattest, most level part of the field, not far from the road. A scrubby hedge only partially blocked the view of passing traffic. My

hands were shaking. I took the gun. I wanted to give it back, but I knew I would not. Peter stood several feet behind me so there would be no risk of him being accidentally shot.

I reached up and gently patted the pony on the forehead. Brushing aside her wiry forelock I silently calculated where to place the shot. I could feel the soft bristle and whorl of her grey hair under my sweaty palm. I could smell the sweet, grassy, horsiness of her. Up close I could see the sharp bones of her pelvis pushing against her skin, proof of her waning appetite.

I gripped the gun in my left hand and raised it to the spot on her forehead. It felt heavier and denser than I imagined; the only guns I'd seen had been in movies, being waved around with relaxed nonchalance. With my right hand I grasped the lead rope. Placing the pistol to her head helped steady my hand. Her gaze was level with mine, and for a moment I stared into the black-brown liquid of her eyes. I imagined forgiveness and acceptance in her gaze, but I was looking for something that wasn't there.

###

Death was something we were introduced to early in our veterinary studies. Anatomy dissection class started in our first term, and our class had to share one horse, a pony really, and one cow for the duration of our two-year pre-clinical course. They both hung disconcertingly from sturdy hooks through their backs, in a standing position. But, with the nose-numbing tang of formaldehyde and the rubbery grayness of their muscles there was no question of their deadness. The

dissection room was in the basement of the veterinary school; the only windows high along one wall, lending a permanent austerity to our classes, with fluorescent strip lighting doing little to brighten the mood. There was a pervasive cold dampness that our white coats did little to protect us against. Our sleeves slurped up the juices from the stainless steel dissection table if we didn't roll them high enough, quickly turning a shade of dingy orange-pink.

We were split alphabetically into groups of four and spent painstaking hours dissecting the nerves and blood vessels—filled with blue latex for veins, red for arteries. One tiny part of anatomy was assigned each week; for example, the lower, lower half of the foreleg, or a toe.

The headless body of a dog or goat lay on each dully-shining table, with a bucket hung under the drain to catch escaping fluids. The trim, muscular ex-racing Greyhounds lay stiffly on the cold metal surface, legs extended unbending, still dripping from their formaldehyde bath.

There weren't enough dogs to go around. Local animal shelters would not donate the bodies of the stray dogs they had euthanized for "experimentation." So goats were substituted. Not really the same anatomy, but of a similar size at least. I never got to the bottom of where the goats came from; I imagined a farm that made delicious, artisan goat cheese offering those unfortunates that stopped producing milk.

Our specimens were headless because we didn't get to head anatomy until the second year. To make the bodies go further—body for first years, heads for

second—and alleviate temptation, heads were removed before we could get our hands on them. We had to learn the blood supply, innervation, origin and insertion (the attachments to the bone) of every muscle in the body of dogs, cats, goats, cows and horses. I am sure pigs were included as well, but I can't remember when.

The dissection was interesting and the specimens were so detached from the living animals they'd once been that it never crossed my mind to be upset. The cold, cavernous anatomy hall seemed far removed from the tight consulting room in Hereford, the warm burr of George's voice. Over the two years we gradually whittled down our bodies, with each diminishing carcass carefully restored to its formaldehyde bath at the end of lab each week. While the bodies got smaller the smell inversely increased. Progressing into the deepest crevices of cavities we found pockets of fungus, or rotten bits that the fixative had not reached; a soft, ripe note of decay clashed with the tang of formalin—what had once smelled chemical and industrial turned meaty and off. Despite our familiarity by that time with our specimens, the surprise discovery of a chamber of putrefaction was enough to induce groans of disgust and a lack of appetite for dinner.

One Tuesday afternoon towards the end of our first year we were assigned a "fresh" horse's foot from the local knacker's yard—horse slaughter and rendering being legal in the UK. The word fresh should be interpreted liberally as the odor was foul. Severed above the fetlock, the rim of skin and hair still attached to the foot made me wonder what the horse might've looked like, leading to the uncomfortable realization that a short while ago our specimens had been part of a living body. The

flesh was petal pink, the cartilage glistening white, a stark contrast to the colors and textures we usually encountered in anatomy lab. We were used to blue and red latex vessels, stiff gray flesh, and stringy white nerves.

Foot dissection wasn't bad until we had to peel the hoof off the bone. Hooves aren't supposed to come off, that's the whole problem with laminitis—a crippling and sometimes fatal inflammation of the foot. To separate the protective outer hoof from the delicate structures inside we had to place the foot in a vice and use brute force to remove the wall of dense horn—like ripping fingernails out with pliers. The inside of a hoof is secretly beautiful, with tiny pleats that resemble the underside of a mushroom cap perfectly interlinking with matching pleats on the pedal bone, almost enough to make you forget the desperate prying you did to separate the two halves.

Such skills would be tested in a qualifying anatomy examination at the end of the academic year. It took place in the basement dissection room, a short reprieve from the cramped desks in the stuffy grand hall where our written examinations were administered.

On entering the basement we were handed a thin booklet of papers. An overwhelming array of anatomic specimens lay before us to be identified, and I barely noticed the now familiar, sour smell. Our anatomy professor stood at the front of the hollow space with a timer linked to a buzzer. He was a tall, slim man with a vertical face, who looked at us through his glasses as if we were specimens on a microscope slide. He always seemed bemused by our questions, either surprised

that we didn't already know the answer or that we were expecting him to provide it. That was until we lit upon some anatomical structure he was fascinated by, and then he would become animated and engaged.

"Everyone please choose a station and stand next to it," he instructed.

Each table had a different-sized morsel of preserved flesh on it, a foot on one table, a forelimb on another. Some had ropey nerves exposed with pieces of string tied around them; others were studded with incongruously colored pushpins inserted into a muscle, tendon or ligament. Each tagged by a small piece of soggy paper with a number written in black marker.

"Once you have selected a station please find the corresponding page in your booklet. You will see that there is a question on the table next to the specimen. Please write the answer next to the appropriate number." I glanced nervously down.

"You will have ninety seconds at each station and the buzzer will sound when it's time to move on to the next." The professor gazed disinterestedly around the room, already looking bored by the prospect of moderating this exam for the next two hours.

"Any questions?" It sounded like a dare and we stayed quiet.

My shirt laid uncomfortably against my back, the damp cloth hitting the cooler air. I quickly checked my lab coat pocket for the pen I knew was there and moved to the table to my right. The hind limb of a goat sat on the metal surface. The muscles had been removed and a piece of greyish string encircled a delicate white,

plastic-looking nerve. A shallow pool of clear liquid surrounded the limb, moving determinedly to the edge of the table, and the sleeves of my freshly washed lab coat.

I scanned the room, gathering information about the layout of the tables, the location of my friends. About five stations in front I saw one of the group of boys who usually occupied the rear of the lecture hall. Rumors had been floating around all week that, in a grand display of anarchy, they were planning on switching the identifying tags on the specimens so that the students behind them would name the incorrect structure. The veterinary student equivalent of sticking it to the man.

The structures and anatomic variations I'd memorized were blurred by the worry of my imminent failure at the hands of my classmates.

The buzzer sounded.

###

At times during those first two years of veterinary school, when the only living animals I encountered were the fearless sooty mice that lived between the tracks at tube stations, the relevance of the cellular pathways, molecular structures and biologic mechanisms I spent my days studying seemed impossible to realize. My intense focus on scientific detail obscured the fundamental importance this information held for the animate creatures I had dedicated myself to. And I began to think that maybe I preferred it that way. My lack of horsemanship didn't matter when the only horse I had to handle was fixed in formalin or on the pages of a textbook. The pain, suffering and distress that disease caused animals and those that loved them were a long way from the frigid dampness of the dissection hall.

After two years in the anatomy lab, and sitting countless qualifying examinations, it was time to move to the clinical campus in Hertfordshire, a thirty-minute train ride from London. The relevance of the hundreds of pages of information I had studied was about to be realized. Despite my apprehension about dealing with live patients, it was thrilling to be within sight of the goal I had so long ago set. Three years of clinical studies—the veterinary degree in the UK being a five year course—lay ahead, and I was determine to apply myself with the same commitment I'd given my books. Our stained lab coats were replaced with new, freshly starched ones. The lectures we attended graduated from slides of cells to pictures of the animals they composed. And finally, we were introduced to our clinical rotations—the small animal referral hospital, the first opinion small animal clinic, the large animal clinic, the pathology laboratories and the equine hospital.

###

By the fifth and final year of veterinary school equine medicine and surgery had become my most dreaded clinical rotation. The patients, and the people who owned them, still stirred a deep and uncomfortable confusion. My green country wellies, practical in the hospital setting, nevertheless set me apart from the "horsey set" of classmates and owners identified by their sleek, rubber boots with the discrete "Hunter" logo. My clinical duties included jumping out of bed at all hours, donning smelly overalls at the summons of an insistently bleeping pager to "assist" with surgeries, or administer medications. Eye drops were particularly troublesome

due to the need for frequent administration and the proximity of a horse's eye to their surprisingly sharp teeth. Often elaborate, surgically implanted catheters had to be placed to allow the administration of the drops on account of the strength of a reluctant horse's eyelids.

And then, there were the staff; who were petrifying. There was a certain equine medicine professor who enjoyed making students, interns, residents, and likely other faculty members cry, usually from fear and humiliation. She was the only woman on faculty in the equine department; a hangover of the male dominance of veterinary medicine that had begun to shift in the years prior to my arrival at vet school. Her voice had a gravelly, piercing quality, her confident stride could be heard from at least twenty paces, and her reputation was fierce, but justified. The surgeons were no better, and the combination of the risk of surgery and the risk of being screamed at during surgery made me shake.

Surgery on horses can be difficult. There is the touchy matter of anesthesia before you even get to the surgery itself. The sight of a sixteen hand tall horse crumpling to the ground in front of you after the anesthetic drugs are administered is amazing, with everyone nervously hoping that no legs—human or equine, are broken in the process. In the late nineties we used large padded boxes with lifting gear installed to anesthetize and then recover the huge animals. The smell of the boxes was a mixture of the grassy scent of the horses, manure, iodine scrub and the disinfectant used to clean the pads after each patient. The anesthetists would use endotracheal tubes thicker than my forearm to deliver oxygen and anesthetic gases

to their enormous patient. Once the horse was asleep we would shackle and attach it to the overhead gear that would then lift it into the operating theater. It could take upwards of a tense and frenetic hour just to get a horse anesthetized and delivered safely to the surgical table. Many of these patients were insured for tens of thousands of pounds, or even more dollars; the price not only of their success in showjumping, the dressage ring, or on the racetrack, but also of their owner's massive financial commitment to their animal.

Horses were not designed to lie in one place for long periods, a problem when general anesthesia is considered. Their muscles are so large, and skeleton so heavy that blood supply, and therefore oxygen delivery to vital areas quickly becomes compromised if they are recumbent for more than an hour or two. Additionally, their lungs can collapse from the weight of their organs, further impairing oxygen supply to tissues. Every surgery was a race against the clock, knowing that the longer it took the more likely it was that the horse wouldn't get up, or would get laminitis. My role during surgery seemed to be to stand there looking terrified, trying to guess if behind his mask the surgeon was shouting at me, or someone else. Occasionally I would be asked to hand over an instrument, or hold suction equipment, but generally these minor tasks were considered too onerous and so standing still, not touching or breathing on the sterile field, was the typical limit of my duties.

Once I graduated vet school I knew it was unlikely that I would touch a horse in a medical capacity again. Although my degree would provide me the qualification

to treat any species of animal, domesticated or otherwise—as long as they didn't have opposable thumbs—I knew that my future lay in small animal medicine. Even at that early stage in my career I recognized that my passion did not lie in the excavation of my subject's tissues. I also realized that the scientific advances in the diagnosis and treatment of cats and dogs were far in advance of those in large animal medicine and surgery, and this combined with my ambivalence towards my larger patients made it clear that my future interactions with any hooved beast would be limited. I squirreled the information I acquired about equine, bovine, ovine and porcine medicine away, tucking it into the sulci of my hippocampus where it would slowly fade along with many of the memories I formed during my years of veterinary school. There were some moments, though, that stayed with me long after my need for them had expired.

###

I had one shot to get it right.

The sound ricocheted and reverberated off the trees that lined the road. It bounced and spun inside my head. Obliterating, and unmistakably metallic, I could hear nothing else. I opened my eyes. Where, a second ago, there had been a smallish gray pony, now there was just a field. I looked down, and there she was, her liquid eyes open but flat. There was a perfectly round, dark hole in the middle of the imaginary cross on her forehead, with red-black blood oozing out. I took my stethoscope out of my pocket and attempted to find her heart. My ears still deadened, I wondered if I would be able to hear the slow thirty beats a minute even

if a pulse was there. All I could hear was the angry vibration of the hair cells in my cochlea. The noise of her death and the weight of responsibility and my perfect shot lingering long after her last breath.

I handed the gun to Peter, my hands still shaking, and we walked back to the car, to drive on to our next call. The knackers van would pull in shortly to pick up her body.

"Well done" said Peter.

"Thanks."

"Did you keep your eyes open?" he asked.

"Yes," I lied.

## Chapter Two

## Hercules

I arrived in the US with two suitcases, the promise of a small animal medicine and surgery rotating internship, and a J-1 visa in the middle of June 2000. A month before I would technically graduate from veterinary school, and four days before I discovered my results from the final examinations I had to pass to qualify as a veterinarian. Had I failed, my suitcases, visa and I would've been on the first plane home.

I would be sharing an apartment on the second floor of a battered, two-story house in a shoddy neighborhood five-minutes walk from the University of Pennsylvania's veterinary teaching hospital, in West Philadelphia. My roommates were two fellow interns—Dave and Chris, a Doberman Pinscher, a German Shepherd, and several cats, all squeezed into a narrow railroad-style three "bedroom" apartment.

As the only petless member of the group—initially at least—I was assigned the smallest bedroom, an afterthought of a room so tiny that it would've been impossible to swing a cat in the space once a bed was moved in. The unofficial residents of the house included mice, rats, squirrels, various mold spores and several years of dust. At first I didn't believe Dave when he told me the fingertip-sized dent in the glass of the neighbor's door was a bullet hole; after my first week in West Philadelphia I did.

In the first month of my internship I was assigned to emergency days, a grueling schedule of 7am to 7pm, otherwise known as “baptism by fire”. Everything was different. Drug names I crammed into my head during vet school were meaningless; I had to learn an alien language of US names for drugs I had encountered in the UK, along with an entirely new formulary of medications. New units and reference ranges clouded my understanding of the distinction between normal and abnormal—the metric system of my education replaced by the strangely archaic ounces, pounds, inches and feet.

The emergency room was the largest single space dedicated to the care of small animals I’d seen, I guessed at least six times bigger than George’s consulting room back home in England. Three waist-high stainless steel tables for the triage, stabilization, and treatment of cats and dogs occupied the center of the room. One of the tables was actually a deep bath-like sink with a grate on top for “dirty” procedures like clipping and cleaning wounds. Two large, stacked oxygen cages with Perspex glass doors for animals with difficulty breathing—usually cats with asthma or dogs in heart failure, but memorably, once, an albino boa constrictor with pneumonia, occupied one wall. A small bank of cages just off the central area housed patients who needed to stay for a few hours, or longer. Big dogs deemed too sick to be mobile—maybe those hit by a car or with a severe infection, lay on blankets on the floor where they could be easily monitored. Along the wall opposite the oxygen cages was a bank of cheery blue-green cabinets, and a work surface for processing

lab samples, laying out supplies, and writing up treatment sheets. A long bench was crowded with baskets of intravenous catheters, syringes, needles, blood tubes and the other equipment needed to stabilize a crashing patient. I had never seen so much veterinary stuff shuffled into such a tight space—not even in the boot of Peter's car when we used to ride around on large animal calls.

There were no windows in the tightly packed room and the only way to determine the passage of time was the clock above the doctor's station, which was a small nook in the corner of the room for writing up records, grabbing a quick snack and every so often sitting down. A dense forest of rainbow-hued paper fanned out from file folders on the wall, each color was allocated a specific role—golden yellow for transfer sheets, pink for treatment sheets, baby blue for blood work requisition forms, and so on. A straightforward system, but overwhelming until memorized. The floor was industrial-strength linoleum that always seemed halfway between clean and dirty. Large puddles of blood, urine, diarrhea or vomit would be cleaned immediately, but smaller splashes were often overlooked in the hubbub of stabilizing a critical patient. Animal hair was everywhere—from cats shedding their coat out of nervousness, to fur clipped from legs for intravenous catheter placement, or from larger parts of the body for wound cleaning—and remained tucked into the corners of the room regardless of our efforts to clean it up. Longhaired dogs like German Shepherds were the worst offenders, leaving tumbleweeds of their fur behind to meander the floor of the treatment room long after they had departed.

I quickly recognized that the patients of the preceding few hours determined the smell of the emergency room. I learned the pungent, eye-watering distinction of intact versus neutered male cat urine—it was always surprising how one ten-pound cat could produce so much stench in one urination. I was initially oblivious to the distinct smells of different types of diarrhea—all feces smelled the same to my unrefined nose—but by the end of my first emergency rotation I too was able to identify the particular odor of bloody diarrhea caused by canine Parvovirus at fifty paces.

I also learned early in my internship a fundamental lesson I'd not been taught in any lecture: listen to the technicians. Those who had worked in the emergency room for years saved my ass on a daily basis. Their suggestions of a test to run or a medication to administer guided by the many cases they'd seen were invaluable to a clueless intern. The glaring inexperience of my first days as a veterinarian was nothing new to the team of senior doctors, residents and technicians who saw a fresh class of interns blinking in the bright light of the emergency room every June.

From the first day of orientation the hierarchy of the teaching hospital was clear. My position as an intern sat marginally above the veterinary students (who were, after all, paying to be there), but below almost every member of the veterinary staff. My hard won title, "veterinarian," meant little to the seasoned technicians, and less to some of the most senior veterinary specialists who headed up the clinical departments. If my name had not been embroidered on my white coat I am certain

some members of the clinical faculty would have been content to call me "you!" for the entire year.

Positioned between the interns and faculty were the residents. At VHUP residencies typically lasted three years, and every clinical department from dentistry to ophthalmology to surgery trained residents in their specialty—the number in each department based on the number of supervising clinicians and the caseload. Internal medicine had four residents in each year, while smaller services like dermatology would only take a resident every two to three years.

Success as an intern depended on getting along with the residents, second only to winning over the technicians. In many ways the residents were the ones who ran the hospital. Regardless of specialty they saw the most cases, spent the longest hours in the hospital, and were the people you called if you had a problem with a patient. They usually remembered what it was like to be an intern—a good number having completed an internship just the year before—which meant that most of the time they were willing to lend a sympathetic ear, or hand, when things became overwhelming. The residents were my heroes, more accessible than the god-like senior clinicians, and close enough I could imagine myself in their position without stretching my imagination too far. I wanted to emulate them, and align myself with them; maybe these were the cool kids I'd been searching for.

I was still a year away from a possible residency, though, but only a month or two separated me from the students I now found myself teaching and supervising. The different structure of veterinary training in the UK meant that as a qualified

veterinarian at 25 I was younger than most of the final year students. And in the bewildering adjustment to a new country I felt even more immature. The novelty of my English accent muted some of the conflict that potentially lay between me, a naïve, young intern—being paid, albeit a meager amount, to work at VHUP—and the students who were paying close to $50,000 a year for the privilege of a veterinary education at the University of Pennsylvania.

I understood the awkwardness of my position—when I was a student just a few months earlier I too had found interns to be variably helpful and annoying. Residents were clearly to be respected and learned from, their position in the hierarchy at the RVC as well established as it was at VHUP. But interns occupied a more tenuous position. Sometimes they were competition for selection by a senior clinician to perform a basic task usually entrusted to a veterinary student, a source of constant irritation for everyone desperate to try out their new clinical skills, and sometimes they were good company on long overnight ICU shifts where hours were occupied by debating how hungry you'd have to be before eating cat food.

###

In the everyday high-paced bustle of VHUP it was easy to forget that all of us as interns and residents had made a voluntary choice to be there. Unlike human medicine, veterinary internships and residencies have never been a mandatory requirement. Upon graduation I was free to practice medicine and perform surgery on any species, and in 2000 I was one of only two in my class of almost one hundred to pursue an internship straight out of veterinary school. Internships were coveted

positions and their availability was generally limited to academic institutions, like UPenn.

An internship was a gateway into advanced clinical training, like residencies, or a year of valuable experience for those wanting to enter general practice. In the US in 2000 and 2001 approximately 23 percent of graduating students pursued advanced study, i.e. internships, with a smaller proportion of those interns then going on to complete residencies. In contrast, in 2010, over 36 percent of US first year graduates chose to pursue an internship, with the number of available positions similarly increasing. The Veterinary Internship and Residency Matching Program, the main organization that facilitates matching interns with positions, reported that in 1988 175 internships were listed through their service. By 2009 the number had increased to 850, with 239 positions in academia and 610 in private practice. The major increase in the number of positions seen over this period was as a result of increasing numbers of private, specialty hospitals offering internships.

My motivation to pursue an internship was academic—I wanted to learn more, to continue down the path of further education—but some pursued advanced training in the understanding that a year of poor income and worse hours would be paid off by a more lucrative future in veterinary medicine. Unfortunately, a 2011 report by the Task Force on Veterinary Internships revealed that both the average and median income of graduates immediately entering practice upon graduation in comparison to those who pursued an internship was significantly higher.

The internship, rather than providing the education and experience expected from a training program had, in some cases, become a source of cheap labor for veterinary hospitals. The Task Force was setup to identify and suggest resolutions to the problems that crept in when the role of the internship in veterinary training massively expanded without any official oversight. The role of pets in our lives continues to evolve, and the medical advances available to treat them continues to expand, it would seem logical then, that the training new veterinarians receive both before and after graduation keeps apace.

###

I was lucky to have been offered an internship in a highly regarded academic institution, before the explosion of internship programs in the US, which paved the way for my future veterinary career. I didn't appreciate at the time how significant my decision to accept a position at the University of Pennsylvania would prove. I was solely focused on my overwhelming goal of survival—for my patients and myself.

Each VHUP intern was assigned to a particular service in the hospital and every month we would rotate to a different department. My schedule started in the emergency room and later in the year I would spend two further rotations in the ER working overnights for one month and weekend duty for another. It seemed that I was always a week away from finding my feet on shifting ground; by the time I felt comfortable in a particular department it was time to switch, and the responsibilities, caseload and expectations were different on every service.

Fortunately, the support network of technicians, residents, staff clinicians and senior staff was carefully constructed to ensure that no disastrous falls occurred.

During that first month in the ER I was left to my own devices for an hour each morning, between eight and nine, when the senior doctors on the service attended resident teaching rounds in the ICU conference room two floors above. This was the only time there was not a more seasoned veterinarian seeing cases with me, and it felt like an eternity.

I was the only qualified veterinarian in the ER for this excruciating hour and my responsibilities included triaging and admitting new cases and keeping an eye on the patients remaining in the emergency room for the day. I spent most of the time hovering in the middle of the treatment area, silently praying for no new patient arrivals. My goal for the hour was to avoid anything remotely resembling the practice of veterinary medicine, and to avoid killing anything. *First do no harm* illuminated in neon lights flashing in my head.

###

On a Tuesday morning in late June the senior clinicians had just left the emergency room. The bank of cages was gradually emptying as patients were transferred to their respective specialty services; orthopedics for broken legs, soft tissue surgery for abdominal masses and intestinal obstructions, internal medicine for just about everything else. Residents came and went, leaving students and interns to transport the patients out of the emergency room, along the corridor to

the elevator, and up two floors to the wards. The sea of still-unfamiliar faces did little to calm my rising nerves.

I peered into the oxygen cage trying to determine if the dyspneic cat's breathing had changed in the thirty seconds since I last looked. The cat's coat was dull and spikey, she had not been grooming herself, and I wanted to smooth her rumpled fur, calm her jagged breathing with my touch, but I knew I'd only make her worse. A technician, Elisa, entered the emergency room. She had been chatting with the receptionists. She was a few years older than me, and considered one of the more senior and experienced staff members, and I hadn't yet figured her out. I felt wary of her, with the sense that she was waiting for me to slip up.

"There's a GSW coming in, we just got a call from the police department, ETA ten minutes."

GSW? I didn't want to betray my ignorance at the acronym, having already been caught out by HBC—hit by car, which we'd called RTA—road traffic accident in England.

"Apparently it's a big dog, the police are bringing it in, got in the way of crossfire. It sounds pretty bad, shot in the chest."

Shit, I suddenly realized what GSW meant, gunshot wound. I looked at the clock and caught my breath—ten past eight—fifty minutes before anyone else would arrive. Then I looked at Elisa: she was petite, pretty, always wore makeup to work and somehow managed to keep a manicure looking fresh all week. Her pressed, brightly colored scrubs made me feel baggy and crumpled.

"You're joking, right? I mean dogs don't get shot." I smiled—just a test, a hazing of the new English intern. I'd almost fallen for it too.

Elisa looked at me. She wasn't smiling.

"No, I'm not. The dog will be here in ten minutes. What do you want set up?"

I'd just pissed off the one person I needed on my side, and I had absolutely no idea what to do with a dog that'd been shot. This was definitely not covered in my veterinary training. I understood the tenets of emergency medicine- assess, stabilize and go from there, but that didn't help. I longed for an RTA.

"Sorry," I said. "It's just, we don't really have guns in England, and I didn't think a dog could be shot. Sorry."

"Well we see them pretty often here so you better get used to it."

"Great, yes. It's good to see new things. What do you think we might need?"

I could only hope she'd come through. I relied on my plastered-on smile to hide the redness rising to my cheeks, and my white coat to hide the rapidly expanding rings of sweat under my arms.

"Well…" she said.

I smiled harder, looked at the clock, eight sixteen; the dog was going to arrive in less than five minutes.

"Maybe we could set up for an IV catheter and hang a liter of fluids?" I suggested.

"Right, do you want me to set up for a chest tap, too, if it's been shot in the chest?" She threw me a lifeline.

Chest tap? That meant I would be sticking a large needle between the dog's ribs to drain blood, or air if the bullet had pierced the chest wall and gone into the lung, out of the thoracic cavity. I'd seen it done, and I'd helped a few times, but to do one by myself, with no other doctors around… I quickly tried to remember the landmarks, what I would need to do, which rib space, how high up the chest wall I needed to go. Elisa stared at me expectantly.

"Oh yes, that's a good idea," I said. "Hopefully we won't need it."

Just as I was recalibrating my expectations for the following forty minutes the page came in.

"Triage to the front with a gurney.

"Stat."

###

My first taste of American veterinary medicine came during my fourth year of college, when I spent a six-week externship at Cornell University. The small animal hospital at the Royal Veterinary College was considered to be one of the top, if not the top in the UK, but it seemed small and quaint compared to the caseload and hospital I was introduced to at Cornell. The array of diagnostic tests available, and the lunch options at the snack cart, seemed limitless. I suddenly recognized the opportunities that existed beyond "being a vet" as I knew it. George, Peter, and the clinic I had grown up in seemed from a different century. I had a sense before my trip to Cornell that I wanted to pursue an academic veterinary career beyond graduation. The idea of stepping into the real world of practice straight out of school

was unappealing. Not only had I gained an intense dislike for surgery, an essential component of daily practice for general practitioners, but also I had not yet outgrown my passion for studying. My two weeks on the internal medicine rotation at Cornell opened my eyes to the possibility of a career in small animal internal medicine, and I realized this was the place I belonged.

I had steadfastly pursued getting into and then through veterinary school, and once I fixed my sights on small animal internal medicine I did everything in my power to become a board-certified specialist in the field. The rest of my life: family, friends, relationships fell away. Moving across the ocean to gain more advanced training hadn't felt like a decision at all, it was merely the next step on the path I needed to take to achieve my goal.

###

Two technician assistants headed for the door of the ER grabbing towels, and a gurney. I shakily walked to the crash table where my new patient would be placed. The edge of the stainless steel was fringed with lengths of white tape ready to secure an IV catheter. Scrub and alcohol sat in small paper party bowls ready for use.

Elisa finished setting up the chest tap, and then looked at me. "What size gloves are you?"

"Uuhhhh…. Small?"

"How about six and a half?" she asked.

I had the fleeting thought that no-one at home was going to believe that I was treating a dog with a GSW, then the door of the emergency room glided open and a large policeman, with, I couldn't help noticing—and then being unable to ignore—a gun strapped to his belt, bundled a large black dog through it.

"Over here," shouted Elisa. And the dog was dumped onto the table in front of me.

I looked at my patient. I noticed a smear of blood on the table, but I couldn't see where it was coming from. The blackness of the dog's coat hid where his skin and muscle had been breached. Given how the morning had gone for him so far, he looked calm. His head was up; he seemed curious about his new surroundings, his personality intact despite the hole in his chest wall.

"What's his name?" I asked.

"Hercules, I think," replied the police officer.

"Where's the owner?" Elisa cut in before I had a chance to say anything else.

"He's coming, he doesn't have transport so he's coming by bus, should be here in half an hour or so." The officer seemed unconcerned.

"In half an hour this dog could be dead," said Elisa.

"What should we do?" I asked. Hercules was now my patient, and I needed to save him. He had instantly become more to me than a dog with a gunshot wound. He was a young, handsome Doberman, the tan markings on his face sharp against his black fur. His coat was shiny, his ears still puppyishly floppy, the two tan spots above the corner of each eye made it seem that he was about to ask me a question.

"Not much without owner permission. But, if you think this is a life-threatening condition we can administer emergency care to stabilize the dog," she replied.

I looked again at Hercules. His breathing was ragged, his chest clearly moving more than it should for each breath. The motion of his ribcage was exaggerated and irregular, each arc of bone distinct beneath his taut black skin. I cautiously pulled up his lip to look at his gums, unsure of how sick or how friendly he was. The skin of his muzzle was downy and warm; I noted each of his black whiskers, the juvenile whiteness of his teeth, the weight of his head rested in my palm. His mucous membrane caught, meaning he was too dry, dehydrated. His gums were pale. Washed out rather than vibrant pink. He was bleeding more than the smear of blood on the table, or his stoicism, revealed.

"TPR?" I asked.

"Temp 100.8, heart rate 180, resps 54."

His heart rate was way too high, and his respirations too. Was he in pain from the wound, or was he bleeding into his chest?

"Okay. Let's get a front leg catheter in. What's his weight?"

"We didn't weigh him on the way in, but I would guess about 100 pounds."

I pulled my calculator from my pocket to work out his body weight in kilos, trying to remember the conversion formula to then calculate his shock fluid dose.

"How about we bolus a liter?" Elisa suggested.

I paused for a second, the calculator gripped in my right hand—should we give a large slug of fluids to counter the blood he was losing, or drip it in more gradually? I was acutely aware that I was losing time, and Hercules was losing blood. Equally, I really didn't want to mess this up.

"Sure," I said. "A liter."

"How do his lungs sound?" Elisa asked.

I grabbed my stethoscope from my pocket and hastily shoved the two small black mushrooms into my ears. I hoped the heart and lung sounds would drown out the voice of doubt. How had I not listened to his chest yet?

I auscultated his heart first—aware of the crinkling rustle of his fur against the diaphragm of my stethoscope every time he inhaled. There are subtleties in the way a heart sounds that can only be detected when you've listened to hundreds, if not thousands, of them. Hercules' heart rate was too high, but I needed to determine if it sounded dull, suggesting fluid building up in the pericardial sac surrounding his heart, or in his thoracic cavity, in the space that his lungs should have occupied. Was there an abnormal rhythm detectable in the rapid hammering of the agitated muscle? It was my call. I listened to both sides of his chest. I wanted to be thorough, but I was also buying myself time. I knew that as soon as I pulled the stethoscope from my ears I would have to direct the next steps of his treatment. I didn't want that responsibility; my next decisions could mean life or death for Hercules. I had an acute awareness of my patient's condition. He was too young for the bright wrap of the IV, it looked foreign and out of place on his long front leg.

I looked up from his black flank.

"OK, let's get an ECG and a blood pressure. Also let's pull for a CBC, chemistry panel, blood gas, PCV/total solids and coagulation test."

"Do you want a lactate with that too?"

"Yes."

"We've pulled the blood already," Elisa replied. I hadn't noticed, but when I looked down I saw the darkly filled blue, purple and red-topped tubes lined up on the tabletop. I felt relieved but caught off guard by her efficiency.

"Let's run the PCV and blood gas first and send the rest to the lab." I said.

The liter of fluids was dashing into his intravenous catheter, another technician compressing the bag to hasten its entry into his circulation. I checked his gums again. Still light pink. Felt a pulse. Maybe not as strong, it felt fainter. Hercules seemed a little quieter. His head rested on the table, his nose and front paws dangling off the edge, proving their length. His claws were shiny in the overhead light, as if he'd had a pedicure on the way to the hospital, completely black against the rich burnished tan of his feet and legs. I wanted to hold his paw, feel its weight and warmth, but I resisted, knowing it would be more for my comfort than his. I cautiously looked at the right side of Hercules' rib cage. The lower part of his thorax lay flat against the table, but I could see that the dark hair was stickily clumped and wet looking about half way up his chest, behind his front leg. I touched the area where the hair was congealed, and when I pulled my fingers back there was blood

on them. Hercules turned his head sharply, looking at me in accusation. I petted his snout. An apology for the pain I'd caused, and was still to come.

"Let's clip up this area here," I gestured to where I'd touched, "I think that might be the bullet wound."

"Is there an exit wound?"

"A what?"

"Usually, if there's an entry wound there's another place where the bullet comes out, if not that could be really bad for the dog; means he'll need surgery."

I looked again at his chest. The idea of a bullet was so outside my frame of reference that I hadn't even considered it might still be inside Hercules.

"I don't see one." I replied, but I didn't know what I was looking for, or its likely location. I had a vague sense that a bullet's trajectory depended on where it was shot from, but my only experience with guns had been confined to a small Herefordshire field, and a horse.

I looked at the clock. Half an hour until help would arrive. I was on my own. I calculated what I knew. Hercules had been shot; it looked like he was bleeding, probably into his chest. His breathing was irregular, and had not improved despite the liter of fluids he'd received; I worried that he was actively hemorrhaging. This didn't look good. An ongoing bleed into his chest likely meant the bullet had hit a major blood vessel, or lacerated his lung, in which case he was going to need surgery, and fast if we were going to save him. I already felt connected to this dog; I was linked to, and responsible for, his survival. I didn't know if the gravity of the

situation heightened my attachment to him, or if my panicked desperation found reassurance in his solid presence.

I was alerted by the buzz of the clippers when Elisa began trimming the fur from the area where we thought the bullet wound could be. An assistant cradled Hercules' head in the crook of her arm, holding him tight against her chest, as if shielding a child from the pain of a shot. The clipper blades were smeared with blood and small clumps of dark matted hair. The hair fell away to expose an innocuous pink hole about the size of a penny. It didn't fit, the consequences too brutal for this little mouth of tissue. There was no bone or muscle visible, and it looked like his body was already trying to seal shut, forget what had happened. The size of the hole made me want to believe that things weren't so bad. When I glanced at the ECG I changed my mind. The ragged green tracing scuttling across the screen showed a normal sinus rhythm for the most part, but every ten to fifteen beats there was a big ugly complex, which meant that Hercules' heart was irritated, either from the flying bullet grazing it, or from the consequences of blood loss, and lack of oxygen. The machine alarmed a warning when his heart rate exceeded the parameters set, and my own pulse raced to keep time.

"Let's get him to X-ray," I said. "Can someone run down and see if we can bring him right now? We need to get a better look at what's going on."

"Do you think he's stable enough to move?" Elisa asked.

"I think we need to be really quick, but I don't know how else we're going to figure out what we need to do." I was decisive. I was going to save Hercules. "We'll

gurney him down and make sure we take a DV not a VD so he doesn't have to go on his back. Let's set up oxygen to take too, I don't like how he's breathing."

"What about his fluids?" Another technician asked.

I resisted the urge to pull out my calculator; instead I grabbed it in my coat pocket and gripped it tightly, hoping for the right calculation by osmosis.

"What's his PCV and total solids?" I asked the assistant.

"PCV 25%, total solids 5."

He was definitely bleeding—the values were too low. He needed a blood transfusion. The ECG trace and blood values weren't the only things that told me Hercules was in trouble. His chest was moving more forcefully and he released a small shrug of a grunt on each exhale. He occasionally shifted his weight to a more comfortable position, but otherwise he had become worryingly still, indicating that his red blood cells were actively escaping from his damaged vessels and tissue.

"Let's give another liter and then recheck his PCV and total solids. Do we have enough blood for a blood type?"

"There should be enough, do you want me to add that on at the lab?" the assistant asked.

"Yes please. I think he's going to need some packed cells soon."

In a tangle of wires, IV lines and oxygen hoses we moved Hercules from the table to a gurney. It was difficult. His long legs were folded awkwardly and the ECG leads caught below his body, stretching and pulling at the machine. I was reluctant to lose the security of the tracing across the screen, but the ECG couldn't go with us,

and I could rely on my fingers to feel his pulse and my ears to listen to his heart. We disconnected the leads and tugged them from underneath him. I'd already learned that "nothing dies in radiology" and I didn't want Hercules to break that hospital maxim. I had to get him down the corridor, onto the X-ray table, get the X-rays taken, then back onto the gurney, along the corridor again and returned to the relative safety of the emergency room as quickly as possible. Hercules rested precariously on top of the gurney; the blue straps we Velcroed loosely over his body looked too flimsy to hold him.

###

Patience, and the crude anesthetic chloroform, were essential requirements for early veterinary radiologists, neither of which we could spare for Hercules—any kind of anesthetic would further compromise his failing circulation, and any patience I had for quietly waiting while an X-ray was taken had been expended by the severity of his condition. Even though Hercules' X-rays could be taken in a millisecond, positioning him appropriately, and without physical human restraint, to look at the affected area was a significant challenge. In order to examine his lungs, he needed to lie on his side on the radiology table with his front legs extended far enough forwards that they would not overlie his chest; while he also kept perfectly still.

Sand bags, bolsters and other props could be used to keep him in place, but putting ourselves in line of the beam, even protected with lead-lined attire, was strongly discouraged due to the risk to human health from repeated X-ray exposure.

The X-ray beam then had to be collimated to the right area, the plate positioned, and the exposures set based on his size to obtain the necessary image. For Hercules, struggling to breathe, and in pain, taking the shot that would determine the source of his problem, and therefore the solution, could be the critical step-too-far. It was not the flash of X-ray exposure that was the problem, rather the necessary preparation to obtain the image that would reveal the information we needed.

The low capacity of the first X-rays, discovered by Wilhelm Rontgen in 1895, meant that exposure times of several hours were needed for an image to be captured. While Rontgen may have been able to persuade his wife, possibly with promises of housecleaning and dishwashing for a month, to sit still while the first X-ray image of the (her) hand was documented, such techniques surely did not work with animal "volunteers."

Despite this, some of the first subjects to be X-rayed were animals, picked specifically for their diameters. The thinner the subject, the better the X-ray penetration, and therefore the image. Even today, exposure time is based on tissue depth, meaning the thicker the area to be X-rayed the more milliseconds of radiation necessary to get a diagnostic image. The first species "volunteered" to be X-rayed included rats, snakes, frogs, fish and newborn rabbits. My guess is that not all, if any, subjects made it through the process; I particularly worry about the fish.

There is little documentation of the side effects encountered by early veterinary radiologists or their patients; however, the negative consequences experienced by human patients and radiologists in the beginning of the twentieth

century are well known. During the First World War Marie Curie pioneered the use of radiographs for soldiers injured in battle. Her death, twenty years later, from aplastic anemia—an irreversible suppression of the bone marrow's ability to produce red blood cells—was likely due, at least in part, to her exposure to unshielded X-rays during that time.

Today, exposures are a fraction of a second and the X-ray beam can be highly collimated to the desired field to prevent unnecessary exposure to veterinary personnel. Despite this, the challenge of keeping an animal patient stationary, even for this short period of time, remains. Surprisingly this is not necessarily related to patient size—the wiggliness of smaller patients like cats equally as testing as the heft of Hercules. Radiographs are widely employed as a first-line diagnostic for animals with problems as diverse as limping, coughing and vomiting. They add an essential dimension to our ability to investigate illness in patients who cannot communicate. The information obtained can be instantly revelatory and even illuminate the things our pets get up to while we are out; a black and white universe of trashcans plundered, sock drawers ransacked, and the treasures long-forgotten under the couch.

Somewhere in the world, at this moment, in a veterinary emergency room you will find a cluster of staff crowded around a view box or computer monitor. They will be examining an abdominal x-ray, most likely of a dog, and a debate will be raging. Bets will be placed, and reputations staked. There, sitting in the intestinal tract will be a radio-opaque structure, the cause of the vomiting, poor appetite, and

discomfort the patient has been experiencing. The question: What is it? A piece of shoe? A child's toy? Or something embarrassingly revealing—the mistress' underwear, or the illicit contents of the teenage offspring's bathroom trashcan—crammed down the esophagus, passed out of the stomach, and lodged firmly in the intestine? The mysteries of what dogs swallow and how these inedible objects appear on X-ray remains a constant source of entertainment for veterinarians.

###

We maneuvered out of the emergency room to make the sharp left turn to radiology, with Hercules sprawled on the gurney, his back legs curled to the side, and his feet brushing the doorframe. I looked down the corridor and noted a tall male figure approaching. I smiled hopefully at the sight of another veterinarian—he looked experienced, I didn't recognize him as an intern, and he was wearing a long white coat, indicating that his rank was above that of student—whose blazer-length white jackets indicated the lack of DVM after their name. When we got closer I saw that he was smiling, and despite his quick stride he had a calm stillness about him.

"Hi, Matt!" Elisa exclaimed, suddenly alert and attentive.

"Hey, what's up?" Matt turned to include me.

"Hi," I wasn't sure if my blush was from relief or embarrassment.

"We're trying to get this dog to radiology; he's been shot. Cool case huh?" Elisa jumped in before I had the chance to say anything. I hoped she didn't feel the pulse of anger I aimed at her as she usurped me.

"D'you think he's going to need surgery?"

"Maybe?" I said. I still didn't know exactly who Matt was, but I was willing to believe he was someone who could help.

"He's been shot," I said. "I'm not really sure what's going on, but I think he's bleeding into his chest. He's not breathing that well, and he has an arrhythmia. I was going to get some chest rads and see what they show."

"Cool. I'm Matt Nicholson by the way. I don't think we've met. I'm a surgery resident."

"Great to meet you. I'm Suzy. I'm a new intern. I've never seen a gun shot before." I was tempted to add that I was terrified and had no idea what I was doing, but I wanted to seem confident and assured.

"Is there anything I can do to help?"

"Yes," I felt louder and more desperate than I wanted. "Yes, that would be great if you're not too busy."

"No worries. You're heading to radiology?"

"Yes, do you think that's a good idea?"

"Sure, get some more information and then figure out what to do. I'm going to page surgery and let them know this one might be coming up, he's not looking so good." I nodded vigorously, a little giddy from relief, although a part of me didn't want to send Hercules two floors up to the surgical suite where I would no longer be involved.

"Is the owner on board?"

Shit, the owner. I'd forgotten about him in the urgency of treating Hercules.

"He's not here yet." He was still a nameless, faceless person. All I knew was that he had a dog named Hercules.

"I'm sure he'd want us to do everything we can." I had no idea if this was true, but I needed to keep Matt around, I couldn't let Hercules die, and I felt dangerously out of my depth. The implications of owner consent, payment for services and the sometimes-testy relationship between veterinarians, their patients and their clients was far off and peripheral in this overwhelming sea of newness.

"We can figure that out later. Right now let's figure out what's going on with this dog," Matt replied.

We formed a shambling procession to radiology, Elisa edging closer to Matt in the crowd, subtly shifting her attention from our patient to the new surgery resident.

The X-rays revealed that Hercules had fluid—likely blood—in his chest and that a bullet was lodged in his lung. To stand a chance he needed surgery to remove the entire affected lung lobe and control the bleeding.

This would mean a long hospitalization—an ICU stay with chest tubes, oxygen supplementation, an arterial line to monitor his blood pressure, and jugular catheter for continuous venous access. The cost of his care would run into the thousands, and I hadn't spoken to the person responsible for the bill. We were still waiting for his bus to arrive.

Hercules' case was gaining momentum. Each new finding led to a further step. His blood pressure told us he needed more fluids and blood products. His ECG

told us he needed medication to stabilize his heart rhythm. And ultimately his chest X-rays told us he needed surgery to remove the bullet and the lung lobe it was hiding in. I struggled to identify the line between what needed to be done immediately and what could wait until I talked to the owner.

Despite the commotion around him, Hercules lay quietly on the table. He seemed smaller somehow; less animate than when he first arrived. I called his name, trying to convince myself that he was just bored or scared, but he didn't lift his head, or even an eyebrow. It seemed that he only had enough energy to breathe and even that was becoming exhausting.

While I wrangled with the needs of my patient and wondered about his elusive owner the rest of the surgical team arrived. I already knew that surgeons moved in packs. A many-limbed, multi-headed beast difficult to stop once it got moving. Even so, I was frustrated to be relegated to the back row of the gallery forming around Hercules. Elisa still stood resolutely at Hercules' side. She was the smallest person in the group, but her rank and experience positioned her centrally. She was an accepted member of the hospital staff, her presence expected, while my situation was unproven and tentative.

"Whose case is this?" asked one of the older-looking vets, glancing around. I didn't know who he was; there had been no introductions other than Matt's.

"Mine?" I said, realizing that I was about to be grilled on Hercules' blood gas values, PCV and total solids, and every other parameter that had instantly

evaporated from my memory. Luckily, at that moment, one of the receptionists appeared to tell me that Hercules' owner had arrived.

"Should I go and talk to him?" I asked the crowd, directing my question at Matt, the one face I knew. His posture had changed now that his superiors surrounded him. He was more intent and serious.

"Yes, you need to get permission for us to take this dog to surgery—now," replied the older surgeon.

I hesitated. I knew the owner didn't really have a choice; the options were surgery or euthanasia. Hercules wasn't going to make it on his own. I was reluctant to leave my patient, aware that I was about to lose my connection to this dog. But my job was to get him to surgery and then remain in the emergency room to treat whatever came through the door next. Hercules' life was no longer in my hands. Ignoring the senior surgeon's immediate directive I moved to Hercules' head, afraid he might not be there when I got back.

I was compelled to run my hand down the fantastic softness of his ear. I lingered at his side for a second before moving quickly away to find his owner. I glanced at the box where the charts of newly arrived patients waited. There were already three shiny metal files sitting expectantly in the bin. I had another ten hours of emergencies to go.

I stepped hesitantly into the small, suddenly too-warm examination room and positioned myself behind the flat expanse of the exam table. Hercules' owner sat uncomfortably in a plastic chair pushed against the opposite wall. He was wearing

the clothes and bewilderment of someone whose plans had suddenly and irrevocably been changed. His outfit of a what-had-once-been-white undershirt and loose, crumpled pants suggested a day of lazing around the house in the sluggish air of a box fan ill matched to the humid Philadelphia summer. He was an older man, grey-white stubble dirtying his face, and a wrinkled frown of confusion grazing his forehead. I stood straight and attempted a reassuring smile.

I placed my hands on the table in front of me, the cool steel surface a comfort until I saw the two distinct, sweaty handprints that betrayed me when I anxiously moved to grasp my calculator.

"Are you the doctor?" he asked.

I forced my smile further across my face and extended a hand, "Yes, I'm Dr. Suzy Fincham and I'm taking care of Hercules right now."

"Jeez, they make 'um young these days, shouldn't you be in school? Where is he anyway? He's not dead is he? He's all I've got."

"Mr. Brown," I tried to keep the rising tremor from my voice. "Mr. Brown, Hercules is a very sick dog. He has been shot in the chest and the bullet seems to be lodged in his lung."

"Goddamit, he was just outside for a minute, I can't understand it. I was in the kitchen, getting his breakfast when I heard all this goddam shouting and then gunshots and then banging on the front door. Has he had his breakfast? He must be starving poor boy."

"Hercules is too sick to eat at the moment. He's going to need surgery to remove the bullet, and we need to get him there as soon as possible."

"Too sick to eat? That dog's never missed a meal in his life. He loves his food. Don't always have enough for me, but I always make sure that dog gets fed. Best damned thing that ever happened to me he is."

I wasn't listening. I was impatient to get out of the exam room and back to the treatment area so I could see how Hercules was doing. I didn't have time for dog stories.

"Mr. Brown. We need to get Hercules to surgery. His condition is critical. I need your consent so we can treat him as quickly as possible."

"Surgery? I don't think Herc would like that. He's never slept a night outside his own bed. Do you think we could try something else?"

"Mr. Brown!" The old man's face gave way, a crumpling of the hope I'd seen just a moment before. He gave a swift; decisive blink I recognized was holding back tears. I swallowed, realizing the impact of my terseness, and immediately regretting that I'd caused this man pain.

"Mr. Brown, really our only option at this time is surgery. If we don't get him to surgery soon his prognosis is going to be very poor."

I realized that just an hour earlier, Mr. Brown would've been asking for directions from the bus stop to the Veterinary Hospital of the University of Pennsylvania, with no idea if Hercules was alive or dead. The thought flashed through my mind that we had already spent hundreds of dollars on Hercules' care,

and I was asking for permission to spend thousands more. But I wanted to save this dog, and I didn't want to let down the surgeons waiting expectantly, and probably impatiently, in the treatment room.

In my naïve certainty that I was doing the right thing for Hercules, it didn't register that taking a bus to the hospital probably meant that Mr. Brown couldn't afford a car. That getting shot tended to happen only in poorer neighborhoods. That this was probably Hercules' first visit to the vet. That the cost of saving his dog's life could be more than Mr. Brown would, or could, spend on his own medical care.

I didn't tell him how much surgery and aftercare would cost. Or that his dog might die and he would be left with a several thousand-dollar bill even if this happened.

"Do everything you can to save him," he said. He didn't pause to think about it. He didn't ask me the price of saving his dog's life. It was the answer I needed. I hurried from the examination room, eager to share my success with the surgeons awaiting my return.

###

Hercules' surgery was difficult. A third of his lung had to be removed to control the bleeding; the damage of the small bullet hole ultimately eclipsed by the radical median sternotomy needed to extract it. Hercules' chest was split down the middle, along his breastbone to gain access to the injured lung, a massive undertaking involving a bone saw, vicious metal retractors and strong surgical wire to close the chest when it was all over. I visited him at the end of my shift, my desire

to see how he was doing overriding my nervousness at entering the unfamiliar ICU. I tried to understand the pages of treatment sheets detailing his care for the day. I interpreted his blood gas results to see how his lungs were doing, but really all I wanted was to feel the comfort of his head in my lap.

In the first few days post surgery the doors of his cage stood open. This meant two things: first, he was too sick to move; and second there were so many fluid lines and monitoring devices attached to him that the tangle of wires and tubes made closing the doors impractical. An arterial line to monitor blood pressure snaked from his back paw. A falsely cheerful wrap in bright, Day-Glo green around his neck hid the central line that had been eased into his jugular vein with two different fluids hooked up to the ports. ECG pads attached to a monitor via red, black and white wires were taped to his paws, where small rectangles of fur had been clipped to improve contact, insignificant patches when compared to the huge swathes of bare skin underneath the dressings from his surgery.

This bewildering array of wires and tubes ensured that I kept my distance. The fierce, seemingly random alarm of the ECG machine, or blood pressure monitor made me blush with guilt, I felt that my presence, alone, had caused the noise. I was too shy to pet him, afraid that I would disconnect or dislodge something essential and cause his immediate demise.

During my emergency shift I would ask tentative, nonchalant questions of Elisa, her insider knowledge and friends in the ICU meant she always had the most up-to-date information on Hercules' condition. I didn't want to seem too interested.

It was clear we weren't friends and I tried to maintain what I thought was a professional distance.

When I visited Hercules after my last shift of the week, the door of his ICU run was closed. His ECG leads and arterial line for blood pressure monitoring had been removed, and only one fluid line remained connected to the venous catheter in his neck. These were all good signs—Hercules would be going home. It was likely that if he made it out of the hospital he would continue to do well and have no lasting repercussions. I'd read that if a lung lobe was removed the others would gradually expand to fill the space, and there would be no long-term effects. It seemed improbable that the body could be so forgiving of a bullet, but watching Hercules resting comfortably in his ICU run, I could believe what the textbook said.

By my Monday shift, Hercules had been discharged. It was one of the first things Elisa told me when I arrived that morning. Despite my joy that he'd made it home a tang of sadness lingered. I wanted to know more, to have been more involved—had his owner taken him home on the bus? Had he found a friend to give him a ride? Had Hercules licked the ICU technicians goodbye? Had Matt been the one to discharge him? I felt insignificant and excluded even though I knew that I'd fulfilled my role as an emergency room intern.

###

I finished my ER rotation and continued on to other departments, and when I occasionally bumped into Matt around the hospital, I would ask about Hercules. He told me Hercules and his owner had eventually returned to have his sutures

removed, a week late, but that he didn't come back for his further follow-up visits. And he didn't pay the bill.

Seeing the bullet hole in my neighbor's front door every day reminded me of Hercules, and watching Tye romp and skid down the narrow corridor of our apartment I wondered if Hercules liked to do the same. I hadn't known him when he was well. I didn't know the details of his life, the foods he liked best, his favorite toy. I had interacted with him for an hour at most, and yet I felt intimately connected to him. I hadn't anticipated the emotional attachment to my patients I was experiencing. I didn't know how to manage this aspect of being a veterinarian, and there weren't any textbook chapters I could reference to explain it to me. It was something I was going to have to figure out on my own, along with the myriad of other unexpected situations vet school hadn't prepared me for.

I'd never considered how much saving a life cost. Or how much saving a life was worth. As a student and observer I'd been sheltered from the financial transactions that accompanied medical care. In England, I was used to a National Health Service for human patients and owner-purchased insurance for pets to cover veterinary costs. I hadn't been aware of the financial implications of pursuing the best course of treatment. I hadn't had to think of what would happen if treatment couldn't be afforded. Now these were questions I faced daily.

I had landed in the US with little more than fierce determination. In the front pocket of my carry-on sat a small notebook containing what I considered to be essential veterinary information—drug dosages, differential diagnosis lists, normal

blood values—which I quickly realized, once at VHUP, was useless. I was confronted by the reality that my chosen life was more influenced by humanity than by medicine—that my insight into the uniquely human love for the animals I'd only ever seen as patients would be the most difficult, but vital, understanding I had to gain.

## Chapter Three
## Monty

The handle of the cat carrier dug into my palm and we hurried along Baltimore Avenue with a lurching momentum. Monty let out an unsettling, throaty meow and I stopped, struggling to raise the carrier to eye level to peer through the wire door at my new pet.

Monty's black, skinny body was pressed to the floor of the cage. He raised his head and stared at me with panicked ochre eyes.

"It's OK, we're almost there," I murmured and quickened my step, hustling the last few blocks. I felt unnerved to be causing him so much distress. There was no differential list to run through, no diagnostic or treatment plan to implement. It was just my new pet and me, making our first trip home.

Back at the apartment I placed the carrier on the scuffed floor of my bedroom. The feel of solid ground beneath his feet silenced Monty long enough for me to realize that I too had been anxiously panting the whole walk home. Taking a deep breath I checked that the windows were closed and the bedroom door was latched; I was not ready for Monty to meet Max and Tye, the canine occupants of the apartment. Safety checks complete, I unlocked the wire door of the carrier. Monty was standing at the front of the cage.

"Come on, then," I said, resisting the urge to bundle him out of the carrier and into my arms.

A paw tentatively dabbed the floor as if testing its temperature and retracted quickly. I waited. The same precise half-moon of toes padded silently onto the worn wood, followed by a leg, shoulder, head. I held my breath and waited for the rest of his sleek body to emerge. His tail flicked upward and he stood crouched, considering his next move. The sound of German Shepherd feet rushing down the corridor sent him scampering under the bed, leaving a trail of small moist paw prints on the grubby floorboards.

Only a week earlier, around Halloween of my intern year, I'd received a group email sent by two veterinary students searching for a home for an older black cat they'd found wandering the streets of West Philadelphia. I offered to take him for the weekend as a foster, just to see how things went, but in reality the name I'd chosen for him and the litter box, food bowl and cat bed I'd bought before bringing him home revealed my intentions for a more permanent relationship.

I didn't examine the implications of my decision too closely. I was several thousand miles from the place I called home, and I knew that returning to England with Monty would mean a five-hour trip for him in the cargo hold of a plane, plus a mandatory six-month quarantine once we landed. I wasn't intending to subject him to either. At the same time I had no set plans to stay in the US beyond the year of my internship. My visa would expire in June 2001 and only four months into my time in Philadelphia the lingering tang of homesickness made it difficult to imagine a future anywhere other than back across the Atlantic Ocean.

Even before I carried Monty home, I'd made space for him in my tiny bedroom and in my confused heart. It wasn't just his need for a home that made me respond to that email; it was my desperate need for companionship. I needed someone, or something, that would anchor me in the US and make this foreign country feel like home, a reason to stick it out despite my loneliness. It was my yearning for home against my furious commitment to the goals I'd set for myself and I was relying on nine pounds of black cat to tip the balance. If I decided to stay the course the next step on the path would be to complete an internal medicine residency in the US. My determination to succeed only had to outstrip my antipathy towards the off-putting taste of wintergreen toothpaste and waxy Hershey's chocolate. The unthinkably small, essential parts of life that constantly reminded me how far I was from home.

###

At the start of my internship, I'd sat on the same bed in my new apartment, surrounded by an unfamiliar city, wondering what I was doing there. Every morning I'd grip the portable phone, black plastic slick against my palm, and attempt to enter the long numeric sequence—country code, area code and then my home phone number. Given the five-hour time difference, I hardly expected an answer, even if I could get it all right—everyone was out at work. The familiar double ring as the line connected was soothing—before it gave way to the hollow persistence of an unanswered phone.

I'd hang up and search my address book for the number of one of my vet school friends. But my certainty about their busy happiness in their new practices stayed my hand. I pictured them seeing patients, driving to large animal calls, chatting with colleagues about cases over a cup of mid-morning tea. The familiarity I imagined them feeling, in spite of the novel surroundings of their new practices, widened the distance between us, expanding the Atlantic Ocean from my phone to theirs.

The excitement of a new country, new housemates, and new patients with new problems had curdled into homesickness as the months of my internship wore on. Even though I'd mastered which way to look when I crossed the street, I still hadn't found bread that tasted remotely like the sandwiches I used to eat for lunch or the toast I would slather in Marmite for breakfast. I had no idea that one day I'd yearn for the dense, savory slices of the cheap brown bread I'd bought on my vet student budget. I had prepared for my move to the United States by cramming my head with veterinary knowledge. It was the myriad tiny ways that America was different than home—the supermarket shelves filled with unfamiliar products, or familiar products with unfamiliar names, the huge, dominating TV in every bar, at odds with the small, chatter-filled beer-smelling pubs I was used to—that would become the most significant when after a fourteen-hour ER shift, all I wanted were the familiar tastes and sounds of home.

###

From the beginning, the Veterinary Hospital of the University of Pennsylvania dominated my life in America. It was like a temperamental volcano, the molten lava of work implacably oozing into the crevices of my time outside the hospital. This wasn't always an unwelcome encroachment. Before I found Monty I would often linger in the treatment area after my duties were done for the day, torn between reluctance to be home alone and uncertain hope that I'd return to find my roommates relaxed and drinking beer on the couch.

One evening in early September, when the initial politeness of living with strangers had already worn down, our caseloads and rotations aligned so we were all in the apartment together for an evening.

The lights were on when I opened the front door and Tye, Chris' young red Doberman, bounded down the corridor to welcome me. He jumped up, and thumped his paws squarely on my chest, his exuberance not in the least curtailed by Chris' shouted admonishments from the end of the hall. Once he'd completed his greeting he skittered away from me on paws he'd never grown into and I followed him to the main room of the apartment.

Tye was a puppy when Chris had rescued him from his vet school on Prince Edward Island, Canada a year or two earlier. After nursing Tye through a life-threatening infection he had named him and taken him home.

They were a long way from that home now. Chris had shown me pictures of his vet school lodgings—a solitary, dark wooden house, surrounded by bucolic greenness with no buildings or roads in sight. It seemed a more appropriate setting

for a rambunctious young dog and his owner than West Philadelphia, with bullet holes in the neighbor's door and a local park best known for drug deals and prostitution. Tye was barely contained by the crate he was confined to for twelve or more hours a day while Chris was at the hospital, equally desperate to get out of the white coat he was required to wear. Chris' red hair and beard, (which he'd grow to a wild length during our internship) seemed to complement Tye's liver and tan coat, and the untamed energy they shared.

Approaching the end of the corridor I could hear a game on TV, although I couldn't discern the sport. I stood in the doorway, taking note of the Coors Light cans arrayed on the floor around Chris and Dave's chairs. An open, empty pizza box lay angled on the kitchen counter, making me realize how hungry I was. Before I could decide on joining my roommates or heading to my room Max lifted his head off the worn wooden floor to look at me, and Dave turned to follow his gaze.

In contrast to Tye with his boundless energy, Dave's dog Max was a more distinguished specimen, a middle-aged German Shepherd whose graying muzzle matched Dave's advancing widow's peak. Dave was at least ten years older than Chris and me, having decided on veterinary medicine as a second career. His patriarchal status was clearly established before we all moved in by his requisitioned of the largest and best-appointed room. His bay window looked out over a street of parked cars, occasional drug deals and trash, so it couldn't be described as having a good view, but compared to my tiny room and the brick wall of the adjacent house that I could touch from my window it seemed luxurious. Max

and Dave had a deep, tangible bond reflected in the intensity of Max's stare whenever his owner was in the room. Max spent his days either tightly curled under Dave's desk in the closet-like intern office we shared at the hospital, or lounging in Dave's room at the apartment. Max was a one-man dog and we were on a strict need to know basis; the most I got from him was a cursory acknowledgment when I came home, a half-raised eyebrow if I addressed him directly, and a decided reluctance when I suggested a walk if Dave was stuck at the hospital. His ambivalence, I suspected, a reflection of his owner's feelings toward me.

"Hey Suzy, how was your day?" Dave asked.

"Okay. I had a client show up really late for pick up so I ended up leaving way after I thought I would. So annoying, I was just sitting around for hours waiting for them to show up."

"Yeah I've had that happen before." Dave's voice trailed off and he turned his attention back to the TV when the commentator escalated an octave in excitement.

"You're on soft tissue surgery at the moment aren't you Dave?"

"Yep, we were cutting today. Got to scrub in on an abdominal mass this morning and then an intestinal foreign body this afternoon."

I knew Dave was gunning to be a board-certified surgeon, so his time on the soft tissue rotation was his chance to prove himself before specialty-specific residency applications were due in mid December.

"Who was cutting today?"

"I'm on with Holt at the moment, he's awesome."

"Really? I heard he was scary." Holt was an attending surgeon with a reputation for being ruthless. I was hoping to escape working with him on my dreaded surgery rotation. It was a few months away yet, but the thought of spending time in the operating room, especially under Holt's scrutiny, instantly raised my heart rate.

"Nah, only if you don't know your shit. He let me close today, Matt told me he doesn't usually let interns do that."

"Cool." I felt a pinch of jealousy knowing my surgery rotation wouldn't be that successful.

Dave's attention again drifted back to the TV set perched on a chair in the corner of the room.

"What did I miss?" Dave asked Chris. Our conversation was over. I tried to think of something to say about the ice hockey game they were watching, to find some common ground beyond veterinary medicine, but I was stumped. Although I was acquiring a taste for insipid American beer, I didn't know who the Philadelphia Flyers were, or what NHL stood for. I'd played hockey in high school, but the kind I knew involved squelching around a rain-sodden field trying to avoid having my shins taken out by an aggressive opponent.

My housemates' initial amusement over my questions about what a puck was, or why fighting was part of the game, had quickly faded. I felt uncomfortable and stranded on the common ground of gender, sports and beer that made Chris and Dave easy friends.

I moved to the kitchen, and opened my designated cupboard. Three boxes of Rice-A-Roni sat on the otherwise empty shelf. I missed Pot Noodle, which regardless of being the staple diet of hungry students throughout the UK  hadn't made it to the US. I grabbed a box of the Rice-A-Roni labeled "Chicken" and read the instructions, which somehow seemed overwhelming after a long day. I returned the box to the cupboard unopened. Tomorrow night I'll get take-out, I promised myself and I walked to my room, deciding to skip dinner.

###

In this sea of newness my patients were small, furry islands of familiarity. American cats had the same heart rates as British ones, even though a ginger moggy was now an orange domestic shorthair. Their kidneys beneath their coats had the same firm smoothness under my nervous fingers on abdominal palpation, their pulses the same rapid regularity. It was equally difficult to perform a full neurologic examination on a reluctant American cat as a British one.

Sometimes, however, it seemed the similarities ended in the soft nap of their coats, and the warm solidity of their bodies. Diseases were different, especially those of the infectious variety, carried by invertebrate and wildlife species alien to Britain, or caused by fungal agents lurking in the new ground I walked on. Having learned about veterinary medicine in the relative homogeneity of the British Isles, the idea that disease could be different based on geographic location was difficult to comprehend. I came from an island where rabies and heartworm disease didn't exist. Fungal organisms such as *Blastomyces dermatitidis* and *Histoplasma*

*capsulatum* didn't favor British soil, and I had never seen a case of the tick-borne Rocky Mountain spotted fever owing to the absence of the vector in the UK. These diseases were now part of my dialogue and it felt like learning textbook French and then getting lost in Paris and not being able to understand a word of offered direction. I didn't know the weight or texture of these diseases and I struggled to find a place for them in the ranking of possible causes of my patient's illness.

I added the administration of heartworm preventative and my patient's rabies vaccination status to the list of intake questions I asked clients. I considered any dog or cat that was presented to me with an acute onset of neurologic signs such as changes in behavior, seizures, weakness or paralysis as a rabies suspect until proven otherwise.

I vaccinated Monty against rabies before bringing him home for the first time. It was a legal requirement in Pennsylvania, and I always followed the rules. It was one of the first decisions I made as a pet owner, and I agonized over each one that followed, knowing that the choices I made could affect Monty's health. From whether the rabies vaccine would cause a vaccine-induced sarcoma—a serious tumor at the site of the injection, to the odds that a scented cat litter might increase his risk of developing urinary tract problems. The language of animals I spoke was the one of disease. I knew *normal* only in the ways it could be disrupted and altered by illness. It was difficult to ignore my education when it came to my own new pet. I saw every choice only from the perspective of a veterinarian when all I wanted to be was Monty's owner. How could I expect to treat my patients if I couldn't make the

right decisions for my pet? I knew too much and I saw Monty's health as a test of my veterinary skills. One I was terrified I would fail.

###

On some level vaccinating Monty against rabies felt superstitious, like crossing the street to avoid a black cat in my path. Rabies had always seemed like a mythical disease, existing in faraway lands less fortunate than the British Isles, where it had been eradicated in 1902. It was a hard-won battle, with tens of thousands of stray dogs being slaughtered in the fight to control the disease. It was not for the health and well being of the canine population that such measures were introduced. Rather, it was a result of the risk to human health—the grotesque, inevitable death suffered by those bitten by a rabid animal, often preceded by the bizarre symptom of hydrophobia. This type of disease—known as a zoonosis—is a side effect of sharing our lives with animals. Whether from sharing living spaces, eating animal products that carry infection, or from encountering infected animals in the wild, diseases such as anthrax, rabies, tuberculosis and in more recent times West Nile Virus and Ebola can all be traced to animal reservoirs.

The history of rabies and its complex role in the relationship between humans and their canine companions extends back millennia. In ancient Egypt, around 2000 BC, the Laws of Eshnunna detailed the penalty that the owner of a rabid dog must pay if it bit a man (forty pieces of silver) and in ancient Rome, the physician Galen described the symptoms of rabies-afflicted patients. From the traditional Indian medicine of Ayurveda to Aristotle and the ancient Greeks—

although Hippocrates remained silent on the subject— the terrifying specter of rabies gripped the major medical minds of progressive civilizations. To follow the human fight against rabies through the centuries is to see an evolution of scientific thinking, medical practice and our relationship with dogs. Cats, on the other hand, remained relatively immune to the rabid hysteria. While they were (falsely) blamed for the spread of other diseases, such as the Black Death in the mid 1300s in Europe, their role in the natural history of rabies was never considered significant. Although cats can contract, infect others, and die from rabies, they are not a reservoir host, as dogs are, and the incidence of the passage of rabies from cats to humans has historically been low enough to be largely ignored.

By the 1800s, rabies had reached epidemic proportions in Europe. It was the height of the industrial revolution and people moving to cities such as Paris and London, bringing their pet dogs with them, caused rabies cases to soar. Stray dogs roamed the streets, maintaining a constant reservoir of the virus, which could be transmitted by bite to people or their pets, with fatal consequences. The Frenchman Louis Pasteur, in 1885, offered the first possibility of survival for those bitten by rabid dogs. By using the canine model of the disease he bravely and meticulously developed a rabies vaccine—used in both humans and animals for a long time until species-specific vaccines were developed. The vaccine was first used successfully to save the life of an infected nine-year-old boy. Countless others would follow.

More than a hundred years after the development of Pasteur's vaccine, and the eradication of rabies from the UK, it remained a sinister but remote threat in my

home country. When I was in veterinary school, rabies was discussed as a disease seen only in less fortunate countries—a threat the rest of the world was dying to expose us to.

In 1994, a few months before my first day at veterinary school, the channel tunnel connecting the UK to mainland Europe opened. We were warned of the impending explosion of rabies cases we would likely see as a result of the hoards of rabid rats that would pour through the tunnel from France, eager to infect our naïve British flesh. Wire mesh fences, electrified cattle grids, and security zones were erected to prevent the entry of adventurous, infected animals onto British soil, but this did little to allay public fears. A *New York Times* article from 1993 addressed this with a quote from Mac Johnson, a senior lecturer in virology at the veterinary school I would soon be attending. He said, "A dog with rabies could go down the High Street and infect people and suddenly we would have a major health problem with rabies in Britain." The predicted epidemic did not occur. Britain remained rabies free, and the disease remained absent from my differential diagnoses lists until I saw my first patient with neurologic signs in the emergency room at VHUP.

The reality of rabies in inner city Philadelphia was, in actuality, much the same as my veterinary school experience. Despite the necessary testing of any deceased animal with suspicious clinical signs, especially those who had bitten someone, rabies remained absent from my clinical experience. It turned out that although rabies was always on my differential diagnosis list it never made it to the top.

The probability of rabies in domestic animals in modern day America is rare, accounting for only eight percent of the total number of documented cases in 2010; although a significant reservoir exists in wild animal populations such as raccoons, skunks and bats. The mandatory vaccination of domestic dogs, and in some states cats, has resulted in the significant decrease of rabies not only in the canine population, but also in humans. In 2010 only two people in the US were infected with rabies.

In developing countries where feral dog populations are larger and the cost of vaccination too great rabies remains a massively deadly disease. It is estimated that over seventy thousand people worldwide continue to die each year from rabies, with over ninety five percent of cases resulting from dog bites.

###

Monty was vaccinated, examined, and had his blood drawn for routine disease screening before I brought him home. Still, I knew I couldn't insulate him from all disease, regardless of the vaccines he received, and the choices I made about his environment, food and care I couldn't prevent the inevitable. One day, most likely, he was going to get sick, regardless of my veterinary degree. My understanding of disease and its treatment offered no protection for my own pet. The feline diseases I had spent years studying developed a new, living, dimension when I brought Monty into my life.

Until Monty, my dedication to veterinary medicine had been annealed by the endlessly fascinating perfection of metabolism, the seamless symmetry of anatomy.

My patients were the bodies that housed these feats of biochemistry and cellular biology; I saw them on a microscopic level, as a deft harmony of intricate systems borne inside the skeletons of creatures I was just beginning to understand.

By the time I met Monty, my first patient with a gunshot wound had been superseded by my second and third. And I quickly learned that bullets weren't the only things I had to worry about. On a later rotation through the emergency room, I admitted a small, tortoiseshell cat, Missy, who had been impaled by an arrow. Her owner had found her between two parked cars, missile firmly lodged from one shoulder blade to the other, as if she was a character in a comedy sketch show. The grubby plume of neon yellow feathers at one end added to the ugly absurdity. The angle of the arrow implied, with little uncertainty, penetration of the thoracic cavity, with Missy's apparently normal respiration only as a result of the hole still being plugged. This posed a challenging predicament, in which removal of the arrow could result in instant decompensation and death. While a small crowd gathered to examine my reluctant patient, a financial estimate was hastily made for emergency thoracotomy, chest tube placement, and critical care.

As quickly as the charges were drawn up, they were declined. Missy would not be following Hercules to the ICU. The costly plan of dedicated surgery and anesthetic teams, repeated blood gas monitoring, and days of post-operative care was hastily amended. We would attempt to remove the arrow in the emergency room; all the while praying to Bastet, St. Gertrude, or whoever would listen, that the arrow had missed the privileged pleural space and passed instead through the

muscle and soft tissue surrounding the spine above. If the gods were listening, then Missy would survive; if not, her critical condition and respiratory distress would necessitate immediate euthanasia.

A brief anesthesia, a pair of bolt cutters to remove the tip of the arrow, and a pair of strong surgery resident hands later Missy and the arrow were separated. We breathlessly waited, and incredibly her pulse oximetry held, and her breathing remained unchanged. She recovered from anesthesia missing only the arrow and two small neat squares of fur at the entry and exit sites. She was discharged later that day with a prescription for pain medication and antibiotics and a recommendation to be kept indoors.

Unlike Missy, whose youth shone in her healthy coat, and teeth, I estimated that Monty was ten years old when I adopted him. His coat was the faded brown-black of newsprint left too long in the sun, and his teeth showed signs of his age. His left upper canine had been fractured before we met, and sometimes he would catch his upper lip on the broken tip. His chin was large and bulbous, and with age had become less furry and more whiskered, the hair receding as if he were balding.

It was clear he'd been someone's pet before he became mine. His ability to jump from the floor into my arms, if I got the command right, was not a trick he'd learned on the streets. He'd lived half, maybe more, of his life with someone else. Someone I would never know. Had his previous owner been an old woman who had died alone, with no family to take him in? Did she get tired of him and force him out? Or did he sneak out and get lost in the unfamiliar smells of the city? I wondered if he

liked living with me as much as his previous owner? Did I love him more? Did he recognize the difference? Did it matter?

It was easier to hide my desire to stay in America in order to further my road into veterinary medicine behind my dedication to my new pet, than to reveal my need to excel to my family. Monty proved the perfect accomplice. He settled into my tiny bedroom, finding the comfiest place on the mattress to nap, ignoring my rambunctious canine roommates and even proving himself competent in rodent removal—as evidenced by the back half of a mouse I once found next to my shoes.

###

By Christmas, and despite Monty's arrival, I had managed to figure out how to snatch a meager handful of time for a British reprieve from the stale monotony of homesickness. I had succeeded in switching shifts, getting others covered with promises of future payback, and taken advantage of a holiday weekend to cobble together enough days to make a trip home. I was set to travel home in mid April, just in time for Easter, with all the promises of spring.

Spring had always been my favorite season—in my first year of veterinary school I'd spent a month of spring vacation tucked in the Welsh hills on a sheep farm assisting with lambing. Despite the rain—which was ubiquitous—and the cold—which was the same—the birth of a tiny, slick, shivering creature, with hooves still soft from the womb and steam rising from its sodden coat never lost its delight.

Growing up in Hereford, a rural community where farming was still a major economic force, the seasons were marked by the changes in the surrounding

countryside—fields full of gamboling lambs and woods filled with bluebells heralded the arrival of spring, cattle grazing along with pick-your-own strawberries and raspberries at local farms meant summer had arrived. The delicious, yeasty fresh smell of apples fermenting at H. P. Bulmers the cider maker on the walk home from school, and scrunching through dried leaves in our welly boots meant autumn, and very occasionally snow, but generally just colder, more sideways rain meant winter, along with stiff brown fields and the occasional brilliantly white snowdrop on a woodland walk.

Riding through the Herefordshire countryside with Peter on large animal calls, visiting farms for TB testing, calving and herd health care, I'd realized how integral farming was to the place I called home. Farms and livestock began appearing around every bend once I was familiar with the local landscape.

Peter and the other large animal veterinarians I'd worked with seemed to take on the shape of everything I 'd left behind as the months in Philadelphia passed in a flat ubiquity of air-conditioned days inside a veterinary hospital with few windows. My hometown became cast as a scene from a Herriot book, bucolic, pastoral and jolly, my blinding teenage boredom at living in a small town with not much to do, and my dislike of horses, although I did have a soft spot for other large animal species, forgotten in the halcyon memories I created to stave off my homesickness.

###

By February 2001 I had passed the midpoint of my internship, and had submitted my applications for an internal medicine residency, and another two to three years in the US. Although my resolve to stay in the country still wavered, I appeased myself with the knowledge that my application hadn't yet been accepted and I might still be returning home in June. In the meantime, the routines, bureaucracy and hierarchies of VHUP had settled into my consciousness. I knew the right forms to fill out for bloodwork, X-rays and ultrasound on my patients, and I knew which members of the senior staff to avoid.

One February morning I was on my second month-long rotation through the internal medicine service. I sat at the nurse's station waiting for the residents to arrive to assign the case transfers from the emergency room. This was a daily formality. Cases that had arrived in the emergency room over the preceding twenty-four hours, and were determined to need ongoing care, were sent to the appropriate service in the hospital the following morning. The residents took the bulk of the transfers, not only to protect the less-experienced intern who was spending the month on their service, but also to ensure they gained as much experience as possible.

The internal medicine department was invariably the busiest for transfers and was, along with surgery and critical care, one of only three that received cases from the emergency room daily. Internal medicine was considered a catchall. Patients presenting with kidney failure, liver disease, intestinal problems and endocrine and hematologic disease were considered "regular" internal medicine

transfers, however, the caseload was by no means limited to animals with these conditions. If it wasn't clear what was wrong, or the plan was undetermined, internal medicine would also receive the patient.

To add to the caseload there were also the unfortunate sick dogs and cats "dumped" in the emergency room. Sometimes an owner would bring their pet in for care only to disappear before a consent form or an estimate of fees could be signed. Other times, an owner might sign paperwork and give instructions to "do whatever is necessary to save my pet," but subsequent phone calls with updates on their sick animal's condition would reach a disconnected number. After seventy two hours of trying to reach the owner the abandoned pet would be transferred to the internal medicine service for ongoing care until they were healthy enough to be sent to the city's animal shelter, or to be adopted by a veterinary student, intern or other staff member who had grown attached while nursing them back to health.

There was a discouraging predictability that accompanied most Pit Bull terrier puppies with parvovirus infection brought to the emergency room at VHUP. Parvovirus is, similar to rabies, a disease that's preventable with vaccination. Unlike rabies, the infection cannot be transferred to humans, which may be the reason so many dogs remain unvaccinated and die from the infection every year. The virus, transmitted in feces, causes vomiting, severe bloody diarrhea, and dehydration, an often-fatal combination in a young animal. We'd hold the little bundle of dehydrated and nauseous puppy—sometimes too weak to lift its head—with gloved hands, on a disposable diaper, until the results of the parvovirus test came back. Invariably, in

the five minutes it took for the snap test to turn positive the owner would be gone. We fought for these dogs, struggling to control their bloody diarrhea, vomiting, and dangerously low white blood cell counts. We couldn't save them all, but the ones we did made us determined to try, no matter how sick they looked in the beginning, and how much the cost of the care the hospital had to foot the bill for.

The patient transfer sheets were instantly recognizable, printed on bright Goldenrod paper. That morning I was disappointed that the Internal Medicine inbox was empty, until I realized that the rest of the boxes were similarly bare. The pages typically arrived by 6:30am, but the emergency technician hadn't brought them up to the ward yet—perhaps a crashing patient or a sleepy intern still writing up the transfers had delayed their arrival. I considered calling down to the ER, but I didn't want to risk incurring the wrath of the techs.

Veterinary students wearing short white coats began to cluster at the nurse's station, while others headed to the wards to check on their patients. Technicians were starting their shifts and the noise rose with dogs barking at their new audience and students chatting about what they'd done the night before. The automatic door to the ward swung open and Elisa, the emergency room technician, strode through. She was holding a small sheaf of golden pages—the transfer sheets I'd been waiting for.

"Many transfers today?" I asked.

She looked at the papers in her hand and shrugged slightly, "Not too bad for a Monday. Which rotation are you on now?"

"Medicine," I replied.

"Huh, do you like it?" I could feel the challenge in her voice, the unsaid "more than the emergency room?" vibrating between us.

The question was loaded. My answer would be remembered for my next rotation through the emergency room—her domain. The truth was that I'd found the place I felt most comfortable in the hospital, but I wasn't about to tell her that.

"It's good, the cases are interesting. I miss the emergency room, though."

"It's pretty different up here. I'd go crazy if I was stuck doing treatments all day."

I was hoping the conversation would swing back to the still undisclosed transfers in her hand, but as she leaned on the dividing half wall there was no suggestion that she was going to release her grip.

"What did you get up to this weekend? Any hot dates?" Elisa asked.

"I was on pick-ups, didn't have time for anything else."

Elisa's gaze drifted down the hall, with the casual intent of a predator gauging her attack. She surveyed the steady percolation of animals and people through the wards and treatment rooms. Looking for someone. I wasn't sure whom, but I knew he was likely male.

###

The steady shift in veterinary medicine from a male to female dominated profession was reflected in the hospital's human population. Among the students, women outnumbered men by approximately two to one, consistent with general UK

and US vet school statistics. In the US equality of sex distribution in vet school enrollment was achieved in 1987, compared to an 89 percent male population in 1969/70. The trend has continued to shift towards female dominance, and statistics released by the AVMA in 2010 indicated that women filled 78 percent of vet school seats, with this number continuing to increase. The dearth of male vet school applicants caused my alma mater—the Royal Veterinary College—in a 2012 London Telegraph article to describe white males as a minority group, with strategies being employed to actively seek out these students due to their under-representation. An interesting reversal from the days of James Herriot and the exclusively male senior veterinarians I'd trained under.

At UPenn in 2000 male students were not considered a minority, but the long hours spent in the hospital, and the limited possibility for non-veterinary social interactions made these students exotic, sought-after companions. Their attraction was heightened by their scarcity. I soon recognized the near-celebrity status of my roommates when I began to overhear their names in conversations between female vet students and technicians. I momentarily contemplated my romantic chances with Chris, but finding his beard hair in the sink took the edge off any imagined desire I had.

###

After a minute Elisa turned back, and I quickly dropped my gaze.

"I guess you want these?"

She flicked through the pages and handed me three sheets before distributing the rest, a single leaf each, into the orthopedic and soft tissue surgery boxes.

I smiled quickly before turning my attention to the sheets. Each sparsely typed summary contained an animal, an owner, a disease to be diagnosed, and a treatment plan to be initiated. At the top, the signalment—Age, Sex, Breed. At the bottom the comments, maybe a note about financial considerations, or the last communication with the client. In between was a brief explanation of the case, the essence of the history obtained at two a.m. by a half-asleep intern, a summary of the tests run and significant results, and the range of the financial estimate already approved. As I flipped through the pages I saw that there was an anemic dog, a cat with a urinary tract obstruction, and another dog with a fever of unknown origin.

I knew which case would be mine. Hierarchy dictated that I would get the last pick, behind the more senior residents. I hadn't yet achieved the status to choose the case in which I was most interested. In my view of small animal internal medicine the length of the problem list, and the obscurity of the possible differentials determined case desirability. The diagnosis of a rare disease was my holy grail—the rarer and more difficult to diagnose the better. Factors such as treatability and survivability didn't register on my naïve assessment of appeal.

The medicine residents were generous, knowing I wanted to join them the following year in an internal medicine residency, and they had already given me several interesting cases to work up. I had experienced the addicting rush of

excitement when a lab test confirmed a tentative diagnosis, the thrill of figuring out the relationship between lab abnormalities, clinical signs and disease. It was the cognitive challenge, the gratification of solving the puzzle that was most electrifying, and that illuminated my chosen path towards the specialty of internal medicine. But I hadn't yet done my time in the isolation ward with parvo positive puppies, or in the main medicine ward with blocked (urinary tract obstructed) cats, and I had to prove myself with these cases before I would be selected for a residency the following summer.

I handed over the transfers when the medicine residents Mark and Tracey arrived at the nurse's station a few minutes later. I secretly hoped for the dog with the fever of unknown origin, an extensive diagnostic work up lay ahead for that patient. No such luck—I was handed the sheet for the cat, a stable patient requiring minimal diagnostics, who would probably be home in a day or two. The perfect case for a green intern. I glanced at the name at the top of the paper—Tiger. I wondered if his coat and temperament matched.

The students, who spent their final year of vet school on clinical rotations, had arrived in an already-established order. This hierarchy could be approximately determined by their species of interest, enthusiasm for internal medicine and their desire to work up a case on a Monday. Generally the large animal and equine track students, and those who would've preferred to stay in bed, took up the rear. Cases were assigned to students based on a combination of resident preference, individual caseload and a mix of aptitude and interest on the student's part.

###

Despite my proximity to life as a final year veterinary student I found the differences between my clinical years, and those of my American counterparts, striking. The most significant was tracking—where students could declare a species interest: small animal, equine, farm animal or mixed—which determined the amount of time spent on clinics in each discipline. For example, equine and farm animal track students had only to spend a total of eight weeks of their senior year in small animal clinics. While small animal track students were required to spend a similarly small amount of time with horses, cows, sheep, and pigs.

At the RVC our clinical education was equally split between small and large animal studies—the major species were given equal weight. I spent time on pig farms and dairy farms, seeing practice with equine veterinarians, and even a week in an abattoir learning meat hygiene inspection as a requirement of my veterinary education. I was, after all, to be awarded a degree that allowed me to treat any species, regardless of what I'd studied at school.

The students graduating from UPenn were to be awarded the same qualification, and I felt they were cheating. I could immediately bring to mind the shivering, visceral reality of a week examining still-warm cow livers, and various other body parts, for signs of possible zoonotic or reportable disease. It was an experience I was not planning on repeating. However, I saw it as a part of the education I'd agreed to when I enrolled in vet school.

Tracking provides more focused training in the area that an individual shows most interest in early in their schooling, however, in reality, along with the gender shift in veterinary medicine over the past twenty to thirty years a change in the major interest of most veterinary students has also occurred.

Colleges of veterinary medicine were first established in the 1700s to fulfill a central role in animal agriculture—providing health care, disease prevention, and ultimately human protection by controlling animal disease. Veterinarians were exclusively male, and their role in rural industry was central—with many US veterinary colleges being founded, and funded, under the Morrill Act of 1862.

Today, veterinary education is very different. Along with the shift, beginning in the 1970s, towards a female dominant profession the orientation of most vet school graduates has transitioned to a small animal focus. In 2014 statistics released by the AVMA revealed that 75 percent of veterinarians in clinical practice were working in a companion animal exclusive, or predominant practice. Statistics from the UK indicate a similar shift. The dearth of large animal veterinarians graduating over the past decade is beginning to reach crisis levels.

The fundamentals of food animal practice—focusing on the herd rather than the individual, emphasizing productivity and health management rather than individual animal medicine—appear increasingly unpopular among those enrolling in colleges of veterinary medicine. The shift in gender predominance, the portrayal of the veterinary profession in the media, and the massive role companion animals play in our lives have all been cited as contributing factors. There is no doubt that

the pool of students applying to veterinary schools from farming, rural backgrounds, who are more likely to track into large animal practice, is dwindling. It is estimated that today over 50 percent of large animal veterinarians are over 50 years old, with only around four percent of those practicing in this field aged thirty or less. Of the 2010 graduating class at Washington State University only two percent were planning on entering the field of large animal practice.

As I saw first hand as a veterinary student large animal practice is physically demanding, anti-social and often inconvenient. In the US, where rural communities are isolated, and farms spread over hundreds of miles, these factors are only compounded. The risk of serious physical injury is significant, and often the path of large animal vets no longer able to practice due to physical disability is to turn to small animal practice instead. Spending time driving from call to call, unpredictable working hours, and often being on call for nights on end due to the paucity of other vets in the area available to cover emergency shifts are causes of the shift away from this type of practice. It is likely that the gender shift in vet school applicants is also a significant factor. The skepticism and out-right sexism I encountered on farm calls while seeing practice were commonly experienced by my female vet school friends as well, regardless of their interest in large animal practice. Hanging off the end of a rope looped around a stubborn cow's fetlock trying, in vain, to lift the grubby foot off the floor to be examined was just one of the examples that suggested a large animal life was not for me. The thought of being under that constant, baleful

pressure while embarking on a first job post graduation may also influence the likelihood of female vets entering this side of veterinary medicine.

At times a student's tracking choice was evident in their lack of knowledge, skill or interest in small animal studies. Bizarre differential diagnoses for clinical conditions only seen in horses, a decided reluctance to examine a feline patient, or a blank, distant gaze during small animal teaching rounds were often the giveaways. At other times though, a student's interest in medicine, regardless of the species, would shine through and these were the students I hoped would be on my cases, regardless of their declared species interest.

###

Once the final case transfers were completed it was time to move the patients from the first floor emergency room to the third floor wards. A slow process, made more inefficient by two elevators as temperamental as a male cat with a urinary catheter.

Along with a better understanding of hospital hierarchy, paperwork, and charming the technicians my internship had also taught me a few things about male cats with urinary tract obstructions. I was introduced to techniques and skills I hadn't learned at veterinary school—how to slide the rigid catheter into the stubborn, swollen and delicate urethra, the best drugs to use for sedation and patient comfort, and the volume of intravenous fluids to give. What I didn't know, but would come to realize, was that each hospital, each veterinarian, had a unique way of managing these patients. A specific and sworn-by combination of hard

science and harder to define personal clinical experience that, woven together, formed the bed of medicine on which our patients laid. After the rigidity of veterinary school it was difficult to accept that personal experience sometimes equaled, if not surpassed, the recommended treatment regimen described in the most recent edition of the *Textbook of Small Animal Internal Medicine*.

As an intern I was not intimately acquainted with the diseases I diagnosed. I viewed them through the pages of a textbook, a table of clinical signs, typical lab abnormalities, differential diagnoses. I made meticulous notes in rounds while the senior clinician discussed their preferred treatment methods, using phrases like "in my experience" and "evidence-based medicine." I tried to memorize survival statistics from the latest *Journal of Veterinary Internal Medicine* or *Journal of the American Veterinary Medical Association.* Medicine to me was as definitive as the black text on the white pages of the journals I read. I understood that there was nuance and grey, but it remained beyond my reach, buried under the hundreds of patients I was still to see, separated by the thousands of hours I would spend in the hospital.

To get to the emergency room quickly I took the stairs, thoughts shifting to my new patient. I knew he was a young cat, about three years old, who'd arrived in the emergency room late the night before. His bloodwork on admission indicated he'd been in critical condition—probably struggling to urinate for hours, a gritty plug of cells, protein and crystals blocking his urethra. By the time his owner made it home from work that night Tiger's heart rate had dropped precariously low, his

heart muscle cells made languid and stuporous by the massive amounts of potassium circulating in his blood. Toxins that should've been excreted hours before were accumulating in an unpleasant uremic stew of metabolic byproducts swirling through his bloodstream. Luckily, his owner had instantly grasped the severity of the situation and brought him directly to VHUP.

On arrival at the emergency room, his condition had prompted a stat triage. A technician answering the page would immediately have placed her hands on his abdomen to palpate for his urinary bladder. Running her hands from behind his ribcage towards his tail she encountered the turgid tennis-ball size of his dangerously enlarged bladder, instantly signaling the problem. The urgent cry of "he's blocked" would have triggered a well-established routine. Crash cart, IV catheter, blood gas measurement with electrolytes, sterile gloves, lube, tiny Tom Cat urinary catheter, sterile saline solution for flushing all set up within a few minutes. I pictured Tiger lying in the emergency room, ECG hooked up, IV fluids running, technician shouting the blood results that flashed up on the screen. I wondered who'd placed the urinary catheter and felt a glug of oily relief that it hadn't been my shaky, sweaty hands quickly trying to regain urethral patency in such a critical patient, before the immiscible regret of not being the one to save his life flushed in, sitting sickeningly on top.

Over the following few days, depending on the owner's finances, my job would be to keep watch over Tiger, diurese the toxins out of his body, and at the critical moment pull the catheter and ensure he could urinate on his own. Timing

was crucial. Pull the catheter too soon, and re-blockage could occur, necessitating more time in the hospital. Wait too long and an owner not anticipating a three thousand dollar bill for their young, seemingly healthy cat may make an irreversible, deadly decision based on the financial burden of their beloved, but unaffordable pet.

###

Imagining Tiger's arrival in the emergency room my thoughts turned to Monty, safely sequestered in my small bedroom. When I carried Monty home in his plastic carrier that first time I understood that I was taking on his sickness as well as health. My veterinary training made it impossible to think of my new pet without thinking of the diseases that lay in his future. I wondered if a pediatrician feels the same way, meeting their new child for the first time.

I knew that disease was inescapable, the ultimate accompaniment to the life I was to share with Monty. I knew there were many illnesses I couldn't predict and couldn't influence; but there were also those that my decisions about his diet, or lifestyle could affect.

Monty likely spent most of his day asleep; waking for the occasional snack of dry food I left out for him, or to use the litter box I tried to position as far from my bed as possible. Was this how Tiger had been spending his days? The answer was probably yes. For Tiger, a sedentary, indoor lifestyle and diet of dry food had caused him to get a little plump around the middle, I thought of Monty's growing belly. This, along with his gender and other, likely genetic, factors had contributed to, if not caused, the blockage that endangered his life. These were well-documented risk

factors; neutered male, indoor, overweight cats eating dry food and peeing in a box were the typical patients to develop feline lower urinary tract disease (FLUTD), which could then culminate in the life-threatening urethral obstruction that had brought Tiger to the emergency room.

I thought of Monty, and the decisions I was making that could threaten his life. Should I have chosen differently? Should I let him be an outdoor cat if that meant he was less likely to get a urethral obstruction? Should I feed him inconvenient, smelly canned food instead of the dry kibble I shook into his bowl every day? I'd seen outdoor cats who'd been shot, hit by cars, or infected with the often fatal feline immunodeficiency virus in fights with other cats—I never considered that Monty would go outside. I knew that on average being an indoor cat was a safer alternative than spending time outside, even if that meant limiting Monty's environment to a small bedroom. I couldn't imagine the anxiety I would feel every evening waiting for him to come home. I chose his indoor life to protect him, but also to protect myself, and I accepted the risks this sheltered life brought.

The dry food I rattled into his bowl every morning spiked a more intense ambivalence. I knew that for some cats wet food was better, but the inconvenience of can openers and half-finished cans of cat food in the refrigerator was unappealing, as was the expense of feeding this type of food on an intern salary. I was a veterinarian and I had chosen food that might put my cat at an increased risk of developing urinary tract problems because it was cheaper and more convenient.

Practicing perfect cat husbandry had seemed easy sitting in a lecture hall, but Monty was teaching me it wasn't so simple.

###

I identified Tiger in the emergency room by the empty bag outside his cage slowly filling with fluid. Were it not for the attachment to the urinary catheter, I wouldn't have recognized it as urine. It was strawberry-hued, and small islands of blood clots and cellular debris turned the bag into a macabre snow-globe. The transparent tube connecting the bag to the catheter had similar inflammatory material attached to its walls. "That's one pissed off bladder," I thought, crouching in front of him. My patient's horizontal ears and immediate growl told me that it wasn't just his bladder that was pissed off.

Tiger was flattened against the back of his cage. He didn't take his eyes off me. I reached for his treatment sheet, and his rumbling growl peaked to an indignant hiss. His pupils were so dilated I couldn't discern the color of his eyes. He was a grey-brown tabby, with tigerish stripes foretold by his name. The white Elizabethan collar preventing him from removing either his intravenous or urinary catheter lent a vaguely comedic cast to his anger. His face, framed by the moon of plastic, took on the appearance of a sulking child in a pantomime. His black plume of a tail was deflated and bedraggled, but the tip flicked a warning echoed in the growl he gave me.

Treatment sheet in hand I stepped back from the cage. I could no longer hear his dull rumbling grumble, though I doubted he'd stopped. I reviewed his urine

output over the previous twelve hours, tallied his fluid input, and calculated the difference, acutely aware that I was delaying the moment of opening the cage door.

My thoughts drifted to the soft weight of Monty on the foot of my bed that morning, making me reluctant to move when the alarm went off. I replayed his eager interest when his food rattled into his bowl, his reassuring ritual in the litter box, minutes of scratching and positioning followed by more scratching until he neatly stepped out, shaking litter off his paws. I compared Monty's normality that morning to my new patient, an amulet to ward off the urinary tract obstruction from which Tiger was suffering.

Tiger and Monty seemed separated by more than the few blocks it took to walk to the hospital each morning. Tiger's trip to the emergency room had changed him from a domestic pet to a feral, angry animal. I didn't know how Monty would have responded if he'd been the one with a urinary catheter in place and an E-collar obscuring his peripheral vision. I hoped I'd never find out.

###

I was discovering that my patient's temperament was a bewildering addition to my problem list, a confounding factor that rarely worked in favor of achieving a diagnosis. Frightened cats could be aggressive or stupefied, influencing the physical examination findings and preventing the discovery of potentially vital clues. Dogs in the hospital setting could be equally challenging.

A young, energetic chocolate Labrador had taught me earlier that year that temperament wasn't always a good assessment of disease severity. He greeted me

with a vigorous lick and tail wag, and then dragged me, on the end of his leash, down the corridor to radiology where an abdominal ultrasound confirmed an overwhelming, life-threatening infection in his abdominal cavity. He had skipped breakfast that morning, a never before witnessed event, then vomited and seemed quiet, but the excitement of a car ride to the hospital had resulted in apparent resolution of his clinical signs.

I felt a shaky relief that his owners had insisted on further testing when I reviewed the ultrasonographic images with the radiologist. There can't be anything wrong with a dog that looks this healthy, I reasoned, about to apologize to the radiologist for the unnecessary ultrasound until she described the noxious, bacteria-laden fluid accumulating in his abdomen due to a wooden barbecue skewer passing through the wall of his intestine, making a hole that allowed intestinal contents to leak out. He'd demonstrated neither abdominal pain on palpation, nor signs of sepsis, both textbook expectations for a dog with a life-threatening peritonitis. He needed emergency surgery despite his stable appearance. His quick and uneventful recovery was no doubt a relief for the technicians who had to keep him quiet and out of trouble for the two days he spent in the hospital.

How could I perform a physical examination on a patient growling so loudly I couldn't hear his heart or lung sounds through my stethoscope?

How could I interpret a patient's behavior when she was too frightened to do anything other than huddle in a corner of her carrier?

My previous role as student and assistant had protected me from the most serious consequences of an aggressive patient. There'd always been a more senior veterinarian or technician to intervene if the situation became too difficult. Now, I was the cat-tamer, responsible for the safety and well being not only of Tiger, but also of the staff and students who interacted with him.

###

"Monty would never act like this," I muttered, looking warily at Tiger.

Sweat tingled from my palms and I considered my options for getting us both safely to the third floor ward. Large towel? Cat gloves? Muzzle? This wasn't the first time I'd felt inadequate in front of a twelve-pound patient. I didn't want to ask for help, but I also didn't want to get bitten. I felt an irrational but potent flame of rage. A more experienced vet would've known better than to equate Tiger's reluctance with human emotion, but I instantly felt incompetent and slighted by his low growl, and scared by the possible damage he could do if I didn't handle the situation appropriately. I vaguely wondered if he was up to date with his rabies vaccination.

I tried rationalizing Tiger's reactions. His response to the pulsating pain of an over-distended, impossible to relieve bladder followed by the throbbing annoyance of a catheter chafing against the already-irritated mucosa of his penile urethra was normal and proper, I told myself. But again, I was anthropomorphizing. I didn't know what my patient was thinking or feeling, and my rational explanation may've been as wrong as my emotional assertion that he didn't like me.

I was running out of time. I'd been in the emergency room for fifteen minutes, and Tiger was no closer to transfer. Other patients with their coterie of students, interns, and residents, had already left. My assigned student hadn't made it to the emergency room, either busy with ward duties or loitering in a hallway having caught wind of our patient's temperament. Regardless, this was my responsibility. I was no longer a student, the buck—or tomcat—stopped with me. I approached the cage front and his low rumble escalated, holding on a hysterical growl.

I tried summoning the relaxed calm I'd felt in bed that morning with Monty at my feet, hoping to dispel the tension with wishful thinking. I imagined what George would do—the lilt of his Scottish bur quietly reassuring his frightened patient. The capable breadth of his hands dwarfing even the largest of angry cats. The swift surety of his touch when he sensed his patient was afraid. Staring down Tiger, too nervous to open the cage door, and too proud to ask for help, I was alone. The unsophisticated eccentricity of George and Peter glowed with the dusty rose of memory, and I wished myself back to the place I still considered home.

###

The bucolic idyll I remembered was, that February, in 2001, on the verge of a crisis. While I fretted about the angry cat seething at me behind his cage door a far more deadly situation was unraveling in the UK; one that would forever change the fabric of the community I'd grown up in and the British veterinary profession as I saw it.

I hadn't heard the news immediately. Long hours and the inaccessibility of computers, with still rudimentary Internet services, meant I didn't hear until a week later about the diagnosis, on February 19th, at an abattoir in the north of England, of the first British case of Foot and Mouth Disease (FMD) since 1967. By then the disease was rampaging through the countryside. In actuality, it wasn't so much the virus itself causing the wave of destruction, more the Ministry of Agriculture's vicious attempts to control the highly contagious organism.

FMD, like rabies, was a scary vet school disease. We learned about it, with somber and dire warnings, but never expected to see or diagnose a case. The consequences of FMD, though, were more complex than the gruesome, but inevitable, death awaiting those infected with rabies. A large animal disease—exclusively affecting cloven-hooved livestock, i.e. cattle, sheep and pigs—the virus' easy and rapid transmission, its detrimental effect on productivity: with weight loss and decreased milk production, and the EU regulations prohibiting the export of exposed animals were the most significant concerns. The disease was rarely fatal, and although infected animals would develop painful, debilitating ulcers in their oral cavity and on their feet, they would recover. It was the economic consequences of infection that caused the virus to be so dangerous.

Prior to the outbreak the UK was FMD free without vaccination. A privileged position allowing livestock to be exported with this assurance, and associated economic advantage. Historically, the disease was one of the first recorded in literature, centuries earlier, and the vaccine the first to be manufactured on an

industrial scale in the 1950s. The vaccine was effective at controlling and preventing outbreaks; however, in 1992 the EU banned its use, because there was no test able to distinguish vaccinated from infected animals. It was this position, and the perceived economic consequences of introducing vaccination to control the 2001 outbreak that would result in the slaughter of over six million animals, a cost of eight billion pounds sterling, and the loss of over 7800 jobs in the farming sector.

By the time I heard about what was to become the biggest disaster in UK farming history, the disease had already spread from northern England to Herefordshire, my home county, over 200 miles away. My thoughts flew to the many farms I had visited with Peter, and my high school friend whose family owned a dairy and sheep farm on the Welsh border—the place I'd learned to dehorn calves, milk cows, and skid around a paddock at night searching for lambing ewes in the headlights of a pick-up. Would they be spared?

I wondered what I would've been doing if I'd stayed in the UK. Would I have volunteered to inspect animals for signs of disease? Would I be signing the slaughter notices of infected animals? Or enforcing the three-kilometer contiguous zone around any affected farm, which resulted in the culling of all livestock in that area? When efforts to control the outbreak intensified I heard stories of final year vet students being recruited in an effort to gather the manpower needed—I wondered if anyone I knew had signed up.

At times when my homesickness was the most acute I dreamt of flying back to England to help with the crisis. The thought of fighting the disease on the

frontline, being part of a community, despite the cold, dirt, and death, was more appealing than the sheltered, lonely, relative luxury of VHUP. The reality though, was that I wouldn't be going home until April, and then only for a week. I had to consider Monty, and my commitment to the internship program—I wouldn't be leaving anyone in the lurch, and I knew that much as I wanted to be heroic in my efforts to help fight FMD, it was more likely that my lack of skills in the area of large animal medicine would be more of a hindrance.

I needed to limit my battles to those involving an angry cat with a urinary catheter, a pair of leather "cat gloves" and a large towel.

###

I finally accepted that summoning old mentors and wishful thinking weren't going to alter the tractability of my patient, or magic him out of his cage and to the medicine ward. Instead I had to rely on the help at hand, which was looking like I'd need to call on Elisa. I scanned the ER for any other available technicians, but my attempt was half-hearted. Elisa was experienced, and when it came to handling an aggressive cat I knew I could trust her to get Tiger out of his cage without any significant damage to him or us. I wrestled my pride down far enough to allow a genuine deference to Elisa to rise before I walked across the ER. Her immediate response suggested that she'd known all along that I was going to be needing her help, but I hung on to my smile and listened to her expound on the best ways to handle a cross cat.

With the swift dexterity of an experienced cat wrangler, Elisa pinned Tiger to the back of his cage with a large, dense blanket. The thick fabric preventing any damage from exposed claws or teeth, and muffling his escalating wail. In one, quick movement she swept the blanket between him and the cage wall so he was effectively wrapped in the material—an unpleasant burrito. She placed my, by now, very displeased patient on the waiting gurney and I hastily grabbed his fluid pump and urinary catheter bag trying to avoid yanking too hard on a line and causing a crisis. Once we started on our unceremonious procession to the third floor ward Tiger's anger abated, likely overcome by his bewilderment at this new adventure. My relief at not having yet touched my patient spilled out as a verbose proclamation of Elisa's skills, which I was doubly relieved to realize no one else had witnessed, as we were the only ones in the elevator on the way up.

Throughout his stay Tiger remained a challenging patient. He tested my confidence when I had to admit I was unable to evaluate him with a physical examination every morning due to his fierce demeanor. He tested my nerve when he chewed out and swallowed his urinary catheter the morning it was due to be removed. I had never imagined being so happy to see a patient vomit when I sat outside his cage waiting and hoping for the emetic I administered to take effect and I fist-pumped in celebration at the sight, finally, of a slimy thin orange catheter on the soggy pool of his bedding.

Even getting him into his carrier for discharge to his owner was difficult and I felt a deep relief when he left the hospital for good. A relief that I had succeeded in

getting him home without surgery to remove a chewed catheter from his stomach, a relief that I'd treated his disease without repeated catheterization of his urinary tract, and a relief that I wouldn't have to face my limitations every morning in my inability to examine a patient who had no intention of allowing me to do so.

I'd always viewed my patients as somewhat abstract in the diagnosis and treatment of disease: they were the sum of vessels, and organs, and metabolic pathways whose malfunction I was tasked with analyzing and fixing. But the weight of Monty on my bed every morning, the vital warmth of his fur in my arms and the discovery that I essentially needed him demanded that I see the animals I cared for in a different way.

## Chapter Four
## Fritz

On "Match Day" in mid March 2001, I learned I would be staying at the University of Pennsylvania for two more years. I had ranked Penn as my first choice, and I would be starting my internal medicine residency in June.

Philadelphia was incrementally becoming my new home, and I wasn't ready to trade it for another city. I'd found a tiny bakery in Rittenhouse Square that baked the most delicious bread, I'd settled on my favorite breakfast place tucked into a beautiful Victorian home surprisingly in West Philadelphia, and I'd found the trails in Fairmount Park that, on a good day, made me forget I wasn't in England. My belongings had expanded beyond the confines of the two suitcases I checked on my flight from London, and my loneliness had shrunk, dwarfed by nine pounds of black cat.

Most of my intern class had also applied for residencies—surgery, cardiology, internal medicine, oncology, critical care. The choice of specialty varied, but the significance of the residency Match Day was the same. It was a day of absolutes—absolute elation or absolute despondency—acceptance or rejection. Those chosen had the subsequent two to three years accounted for, the next step on the path hewn out. But for those passed over plans had to be remade, goals flattened, and disappointments swallowed.

After clinics on Match Day, our intern class met at a Mexican restaurant a few blocks from the hospital for a dangerous mix of margaritas, commiseration and

celebration. Between the second and third round of drinks the muted delight of those who'd matched and the fake cheer of those who hadn't began to dissolve like the salt rim on the glasses we were drinking from. The separation between the excitement and sadness seemed to elongate, dividing the group, with the one or two interns who hadn't applied attempting to bridge the gap. But by the third and fourth round it became difficult to tell who had matched from who hadn't, a mood of diffuse melancholy settling on our group, as we considered the nine months we had spent together and the years that lay ahead. It was about the same time that we began to regret that it was a Tuesday night and that clinics began at seven the next morning.

I felt a part of something that night. I stood on shared ground: I understood the disappointment and joined the celebration. We had all come from different places, and although we shared a year of saving and ending lives, of pushing the boundaries of our knowledge and skill, and of testing our emotional limits, we were headed to different futures.

###

My trip home in April acquired a different significance when I learned I would be staying in the US for a residency. This would be how I would see England, and my family, for the next two years—sporadic gulps of time snatched and cobbled together into short trips across the Atlantic.

Although I'd been away for less than a year, the country I returned to had changed more than seemed possible. The Foot and Mouth Disease outbreak had

continued to decimate the rural economy of the UK since the first case was diagnosed in February. I was up to date on the news from home, but despite regular email contact and my scouring any available news source for information, I wasn't prepared for the countryside that awaited me.

After meeting my dad at the airport and navigating the M25, arriving in England felt like a deep breath after puffing through a straw for nine months. I recognized the DJ on Radio One, we were driving on the right side of the road, and when we stopped at motorway services I stocked up on bottles of Ribena, bags of Walkers salt and vinegar crisps and any kind of chocolate that wasn't Hershey's. We chatted about what I'd missed—my grandma's eightieth birthday party, my sister's new teaching job in Bournemouth—and what my life in Philadelphia was like, with parent-appropriate edits. We drove away from the urban sprawl of London and west to Hereford, and I began to notice an insidious stillness hovering over the passing countryside.

The animals—dairy and beef cattle, month-old lambs and ewes—that were as much part of the landscape as the fields, hedgerows and fences were gone. Their absence more striking than their presence. Since traveling the countryside with Peter, I had sewn the livestock deeply into the fabric of the land as I saw it. My experience had reshaped the anonymous herds into a reality of farmers, herdsman, milking parlors and lambing sheds. The emptiness of the fields symbolized more than the basic lack of their usual inhabitants. Each represented a fragment of a shattered community, a livelihood decimated.

The number of animals slaughtered at the height of the Foot and Mouth Disease crisis was estimated between 80,000 and 93,000 a week, mostly sheep—as they were considered the biggest vectors of the disease. These were not animals infected by the FMD virus, most were healthy, but lived within the three-kilometer contiguous slaughter zone around a confirmed case. The goal of the mass slaughter was to control the spread of the virus without the need for vaccination, which would have had serious consequences for livestock export to Europe—a decision that would later be widely criticized, and that did little to control the disease.

Initially infected carcasses were driven through uninfected areas causing unintentional disease spread, and it was ultimately found that aerosolization of the virus during burning of the bodies also resulted in unwitting dissemination of the virus. The infrastructure to dispose of such a vast number of dead animals did not exist, and makeshift pyres smoldered across the landscape, bodies burned on the land where they had once lived.

The black smoke at the skyline visible from the car window seemed viscous, as if it didn't want to let go of the earth. It was unusual to see smoke on the horizon. I clung to the possibilities of farmers burning stubble on arable land, or incinerating waste, but the acrid, terrible smell of burning hair, fleece and hoof, of charred flesh, seeping through the air vents of the car revealed the smoke's true origin. It was hard to picture the devastation that I could only smell in the car. These were small farms, one hundred to one hundred and fifty cows, and a couple of hundred sheep—often family run, passed down through generations. I'd met these farmers and witnessed

how intimately they knew their animals, how their dairy cows had names, and how they knew the personalities and idiosyncrasies of each, the order they would walk into the milking shed, where they most liked to be scratched.

I realized, driving home that day, and later during my week in Hereford—the weekly cattle market canceled, and all countryside-walking trails closed—that farming would forever be changed by the FMD crisis. The impact stretched far beyond the farm gates: Country pubs, and village shops were shuttered—the fear of viral transmission on clothing and footwear paralyzing the rural economy.

The view out of the car window that day told only part of the story. The human cost, counted by the sixty suicides related to the outbreak, the epidemic of depression that hit the farming community, and the loss of over 7800 jobs in the farming sector was far higher than the financial decimation associated with losing a livelihood. The cost to the British economy was ultimately priced at eight billion pounds sterling, split between the private and public sectors—including loss of tourism due to closure of the countryside. Six million animals were slaughtered in an attempt to control the disease, but it was six months before the last case was diagnosed on September 30, 2001.

I wondered how Peter, and the other large animal vets I knew were affected, how the farmers I'd met and worked with had fared—they couldn't have all been spared. How must it have felt when your herd was condemned to die? Slaughtered, right there on your farm, where you lived and would go on living even after the animals were gone.

I was too distanced by the nine months I had spent in the US to reach out. My clinical life in Philadelphia was intensely focused on individual organ systems within individual pets. I monitored tenths of a point change in lab parameters, while livestock were being slaughtered by the thousand. The connection I had reinforced with my homesick imaginings was fractured by the terrible truth of a crisis I was not a part of, an experience from which I was isolated.

A year ago it would've been unimaginable that herds of healthy animals would be slaughtered for disease control, that life as a large animal veterinarian could contain such devastation. It seemed equally improbable that I would treat dogs with gunshot wounds and spend thousands and thousands of dollars on intensive care of critically ill cats and dogs. But both of these things had come to pass.

I had been changed by my move to the US, and my leaving had also changed what I considered as home. The FMD crisis would brand the countryside in an indelible way. Three thousand two hundred farmers did not replace their livestock once the disease was controlled—too much had been lost and there was too little to be gained. Others decreased their herd and flock sizes and diversified into other areas, such as arable and other crop farming. The BSE outbreak of the early 1990s, and the scourge of bovine tuberculosis—an endemic and zoonotic disease—that continued to plague the cattle industry, had already changed large animal veterinary medicine.

I couldn't hold on to the idyllic memories of England, the country they represented no longer existed. I had to swallow the hesitation I felt about accepting the US as my home, and move into the future I'd convinced myself I wanted when I heard of my acceptance into an internal medicine residency at UPenn.

###

The first day of my internal medicine residency, in June 2001, began with a lecture about responsibility and commitment, privilege and expectation by Dean Smith, the director of VHUP. The familiarity of my surroundings helped settle the nausea of trepidation that fizzed between my stomach and mouth. I paid cursory attention to his rousing words and instead tried to identify my new internal medicine resident mates in the diffuse homogeneity of white coats. I felt edgy, on the starting line, still racing against myself to be the best. My contemporaries were unwitting opponents in my internal battle to succeed. The satisfaction of obtaining an internal medicine residency—exactly what I wanted, at my first choice of institution—was overwhelmed by the certainty I felt of the failure that awaited me.

My new apartment was a few blocks, rather than an ocean, away from the hospital. Monty and I were living in a one-bedroom with a bathroom and kitchen all to ourselves, my incrementally increased resident salary having financed the move. It was a relief to be out of the old apartment. My sports-watching roommates and I had never bonded, and even in the hospital the distance between us grew. Chris escaped the confines of academia and Philadelphia, to work in a private emergency practice in the Pacific Northwest, and even though Dave was staying in the city,

having matched for a surgery residency at UPenn, there was never a suggestion we would continue sharing our living space.

The apartment was on the seventh floor of what, from a distance, looked like a stately older building. The mellow brick, the uniform rows of windows with pale stone accents, and the large gated courtyard that led to the impressive main entrance lent grandeur to the place. Up close, however, the window frames were chipped and faintly yellow with the need to be repainted. The pieces of cardboard, old towels and various items of clothing stuffed around the air conditioners occupying every other window told a more revealing story than the façade conveyed.

Mainly graduate students, interns, and residents occupied the building and I had lucked into a corner unit through a friend of a friend. Monty had windows to sit in, birds to watch and swaths of sunlight in which to recline. His litter box was now more than a foot from my bed, and we could enjoy breakfast together in a small dining area off the walk-through kitchen. It was the first time I'd lived in my own apartment, and although the cupboards didn't close completely due to the decades of paint encasing their doors, and a generation of dust occupied the space under the stove, I felt lucky to be living there. I chose the shower curtain and bath mat, and arranged my toiletries as I wanted behind the sink. The fridge contained only my food, and I could use any kitchen cupboard. My new apartment was furnished through the kindness of final year residents moving on, and I was lucky to get a

couch, coffee table and dining table and chairs to fill what would otherwise have been an empty space.

Monty still slept on the foot of my bed, occupying a warm, hairy divot in the blanket. I still worried about his age and health, taking him in for bloodwork and an abdominal ultrasound when he lost weight, only to realize that his new look was a result of feeding him diet food. I also worried that the long hours I spent at the hospital left him bored and lonely. I was lonely, so it was easy to imagine that Monty was too.

The loneliness and desperation I still felt didn't seem unusual or unexpected. I decided it was the price for getting what I wanted. I had my own apartment and a competitive small animal internal medicine residency at my top choice of university. I had formed friendships with a group of people I admired and respected, some of my fellow medicine colleagues and residents from other specialties. I had a ready-formed cadre of friends, and I found within that group the people I felt the most comfortable with. These were people with whom I'd share dinners and drinks, spend Thanksgiving and Christmas celebrations, and go to for advice on cases. But despite this, at times I felt terrifyingly alone.

The carapace I'd meticulously crafted was too brittle to shield me from the intense scrutiny and pressure I put on myself. Under my shell of bright, eager energy I felt at war. I found myself snapping at the inexperienced vet students and testily disagreeing with my fellow residents during rounds in an effort to prove myself. Like interference on an electrocardiogram causing a spikey and irregular baseline,

my inner turmoil would break through unexpectedly, making me jagged and irritable. Leaving me to spend evenings worrying over the times I'd cracked.

Now that I'd achieved the status of resident, I saw each patient as a final year exam waiting to be failed. They were problems that needed to be investigated in exhaustive differential diagnosis lists. They were diagnoses to be nailed, treatment plans to be initiated, and discharges to be written. They were the approval of senior clinicians and fellow residents at case rounds I relentlessly sought. Transitioning from vet school, to internship, to residency was like learning to ride a bike only to discover that what was required was to unicycle backwards, wearing a blindfold and juggling. In every facet, becoming a resident demanded more than I'd thought possible as an intern. And it wasn't only the challenges of increased case responsibility, higher diagnostic independence, and higher expectations for clinical excellence that separated my first and second years at UPenn.

The rotating structure of my internship had precluded long-term case management and the development of deeper relationships with clients—the foundation my internal medicine career was now built on. As a resident there would be no moving on after a month, no ducking out of a difficult case citing inexperience. And the emotional stakes were higher than I'd foreseen: My patients were loved family pets, sole companions, and child substitutes I was desperate to save for their people. They were singular creatures beyond the diseases they carried, making my role as their doctor vital on a deeper level.

The internal medicine resident's office was at least twice the size of the broom closet the interns shared, and each of the eight residents had a cubicle with desk, computer and phone. I decorated my cube with animal-themed newspaper cartoons diligently clipped from *The Guardian* by my parents, and pictures and cards sent to me by the owners of my current and former patients—small paper trophies affirming my worth. Despite the solace I found in my decorations they carried their own sadness. The deepest thanks came from the owners of pets I was unable to save—animals too sick to be helped, who I'd euthanized, or who'd died despite my intervention. Sometimes I would open a card to find a glossy photograph of my patient, as their owner knew them. A calico cat sitting happily in her favorite sunspot, a black Cocker Spaniel dressed as a little devil for a Halloween parade. These cards didn't represent failure; they weren't a material display of the holes left by the cats and dogs I hadn't sent home. Rather, I was beginning to see that success did not always equate with life, and a good death for my patients was as essential as getting the right diagnosis, or implementing the perfect treatment plan.

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A few months into my residency I'd established a new routine, which was often interrupted by the beep of my pager due to the constant demands of hospitalized, sick animals under my care. My schedule was dictated by goldenrod transfer sheets—which foretold the number and type of cases that would occupy my day. I still felt an undeniable excitement each transfer morning; a frisson of delight with each sheet and the internal medicine problems hidden between the lines.

One morning I picked up a dog with presumed pancreatitis. On presentation to the emergency room—a little less than twenty-four hours before his transfer to the internal medicine service and my care—Fritz was just another dog who'd eaten something he shouldn't have. One of numerous canines gobbling socks and wallets, cassette tapes, balls and other toys, unopened ten-pound bags of dog, cat, or even bird food, and disgusting rotten trash can contents best left unidentified. This cohort didn't include those dogs who came in because of something their owners had fed them; often only confessed on the third round of questioning: "Are you sure he couldn't have got into anything?" "Well, there was that Wendy's hamburger, fries and shake I shared with him on Friday, but that wouldn't make him sick would it?" The answer: "yes."

The morning Fritz had arrived he'd not been interested in his breakfast, a peculiarity rare enough to raise an alarm for his owner, even without his subsequent vomiting. He was a black and tan miniature Dachshund, the sharpness of his pointed nose softened by his overlarge, floppy, ears and the fluid darkness of his eyes. He had the tight glossy coat of a well cared for pet.

Factoring in "dog years," Fritz, at three, and his owner, who was a young graduate student, were about the same age, and they were constant companions. The intern who'd examined Fritz had noted that he was a little quiet and dehydrated, with discomfort and nausea on abdominal palpation. It emerged, on closer history taking; that Fritz and his owner, who shared most things, had shared a hotdog a day or so before the trouble began.

There wasn't an algorithm that could predict the outcome for dogs with "dietary indiscretion." Breed, body weight, matter ingested, or frequency of ingestion didn't appear to influence the probability of life threatening complications. Sometimes a poor pulse, high heart rate and fever were enough to indicate that further steps were needed—X-rays to look for intestinal obstruction, bloodwork for signs of infection, or abdominal ultrasound to interrogate the abdominal organs more completely. More often than not, though, the signs were vague. Maybe an elevated heart rate was due to the patient's car ride to the hospital and the smell of hundreds of other pets who'd passed through the ER. A faint pulse could be the result of timid intern fingers—or was it dehydration or shock causing low blood pressure? Or was this the patient's presentation because this was just another dog with garbage gut who'd be getting into the trash again in a week, with no more serious repercussions than vomit on the carpet?

Fritz's discomfort and nausea recommended his admission to the hospital. His owner had readily agreed, with the confidence of a student used to her parents picking up the tab. A strip of fur on his leg was clipped for intravenous (IV) catheter placement, and his treatment orders included IV fluids, antibiotics, and medications to control his pain and nausea. The results of his bloodwork showed dehydration and an elevated white cell count—worrying for inflammation or infection somewhere in his body—but there was no evidence on his X-ray of an intestinal obstruction. These results more brightly illuminated what he couldn't tell us: Fritz was sick and his owner's decision to admit him to the hospital was the right one.