The Hepatitis E Virus

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Pigs Might Fly

By

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This is a true story and is dedicated to Jackie and the memory of her late husband Peter. It's the story of the death of a man in his prime caused by a viral infection normally only seen in Asia, Africa, and Mexico, and the quest to determine why this might have happened.

The important thing is not to stop questioning.
—Albert Einstein

TABLE OF CONTENTS

LIST OF ILLUSTRATIONS

CHAPTER ONE

KATHMANDU VALLEY, 1973

Nepal is one of the poorest countries on earth. Until the early 1950s Nepal was "closed," and to gain entry one needed to first seek approval from the king. This meant that, with the exception of a few notables, foreigners were, to all intents and purposes, excluded. Along with Nepal's geographical isolation and lack of significant export activity, this resulted in a nation which suffered extreme hardship, which it continues to endure. In the 1950s the national infrastructure was virtually non-existent, and even today it is very basic, even by developing countries' standards.

One notable exception to the exclusion of foreigners from Nepal was the British army, who for nearly two hundred years has enlisted young Nepali men to the Gurkha regiments. Every year, the British come to the recruiting stations in the foothills of the Himalayas and, by applying a physically daunting two-week selection regime, sign up the cream of Nepali youth to serve Queen and country. Over the years, the Gurkhas have produced regiments of fighting men with a proud and fearsome reputation dating back to the Indian Mutiny of 1857–8. The Gurkhas have fought all over the globe and sustained forty-three thousand casualties in the two world wars. More recent conflicts that the Gurkhas have been involved in include Malaya, Borneo, the Falklands, Kosovo, Bosnia, East Timor, Sierra Leone, Ivory Coast, and Iraq. At the height of the Second World War there were ten Gurkha regiments and forty battalions. Following the decline of the British Empire there remain just two battalions of Royal Gurkha Rifles, one of which most recently served in the ongoing situation in Afghanistan.

Competition among young Nepali men to gain entry to the Gurkhas is ferocious. In 2011 over twenty-eight thousand applied, but only 230 were enlisted. Some Nepali families have produced recruits to the Gurkhas over three or more generations, and, for many, gaining entry to the Gurkhas is a badge of pride. It really means something. In fact, for most aspirants it means everything. For successful recruits, it is not only a way of seeing the world but provides a steady job and a very handsome income, much of which finds its way back to Nepal.

So, it was with overwhelming joy in his heart that Subash Gurung was enlisted to the Gurkhas in 1964. Subash was eighteen years old and brought up in a remote hill village. Kathmandu was 450 miles away, a two-week journey. It might as well have been Timbuktu—he had never been to either. Although Subash had no first-hand experience of places distant from his home, he had heard about them from his father, who had travelled the world with the Gurkhas and served with them with distinction during the Second World War. Before leaving Nepal, he married Sujata. She was also eighteen, lived in the same village, and the pair always knew they would get married for as long as they could both remember. He was not to see her again for a while. After basic training in England, Subash was posted to Borneo, and fought there in the confrontation between Malaysia and Indonesia. He fought with the pride of his Regiment, his family, and his adopted country. This was jungle warfare, of which Gurkhas are experts. Two days before the end of the conflict, Subash sustained serious battlefield injuries. Although they were not life threatening, he lost his left arm. His career as a Gurkha was over.

Subash returned to Nepal but could not settle into life in his village. He was restless. Privately he was a little ashamed as he felt his service to the Gurkhas fell short of his father's, both in length and distinction. Subash and Sujata moved to Kathmandu and with his pay off from the army Subash set up a business arranging supplies, porters, and travel arrangements for the increasing numbers of visiting mountaineers trying their hand at the Himalayas. His training in the Gurkhas was invaluable. He had been taught logistics the British Army way. His business, although strictly seasonal, flourished. Life in Kathmandu was good and Subash and Sujata were well off by Nepali standards. The main thing missing from their life was family. Home was many miles distant, and despite trying hard to have children, none appeared. Then, after six years, Sujata became pregnant. Both were overjoyed that God had blessed them in this way after so long. It was a precious baby.

Sujata was tired. She thought this was normal as she was eight months pregnant, and the monsoon flooding had caused much extra work both at home and in the business. Sujata thought nothing of it. She did not complain. Eight weeks before she was due to give birth, Sujata became unwell. She was feverish, her muscles ached, and she turned yellow. Like most Nepalis, Sujata did not even consider seeing a doctor. What will be, will be. It was God's will. Sujata got worse. Her skin took on a deep yellow/green colour. She became very confused and disorientated and could not get out of bed. Subash was beside himself with worry. He eventually took Sujata to hospital, but she died two hours after arrival.

Tulbahadur Kunwar came from a family of doctors. His father practised in Kathmandu, as did his father before him. He trained in Delhi and had undergone postgraduate training at the London Hospital in Whitechapel in the 1960s. While in London he was nicknamed—somewhat inevitably, and with scant regard to political correctness—as "the Gurkha." On return to practise in Kathmandu, Tulbahadur became reacquainted with the rainy season and flooding which occurred with monotonous regularity between June and September each year. The rains brought with them many cases of infectious diarrhoea and hepatitis. This was not usually such a big deal, as Nepalis are hardy people, and most recovered with no problem. However, he noticed that when pregnant women developed hepatitis, many of them died very rapidly, along with their unborn child.

The monsoon season in 1973 was longer than usual. It started early, and the rains were much heavier than the norm. In places, the flood water in Kathmandu was over four feet deep, and still the rain came. By early July, Kathmandu was in the middle of an epidemic of hepatitis. There were tens of thousands of cases. Scores of pregnant women died,[1] Sujata among them. In Nepal, it is culturally unacceptable to bury a dead pregnant woman with the unborn baby still inside the corpse. As attending physician, it was Tulbahadur's responsibility to remove the dead babies prior to burial. He had done this many times during the monsoon of 1973. He performed this procedure for Sujata, shortly after death, using a Caesarean section incision. Miraculously, the baby was alive. Tulbahadur was a religious man and thought the baby's survival was God's will. However, as a man of medicine, he did not share the widely held belief that the outbreak of hepatitis was also God's will. He did not know what the cause was.

[1] C. G. Teo, "Fatal Outbreaks of Jaundice in Pregnancy," *Epidemiology and Infection* 140 (5) (2012): 767–87.

CHAPTER TWO

AFGHANISTAN, 1979

Leonid Brezhnev was First Secretary of the Central Committee of the Communist Party and leader of the Union of Soviet Socialist Republics. He was the second most powerful man in the world. Brezhnev was no fool—he was a highly intelligent, ambitious, and uncompromising leader. But he was no student of history. He demonstrated this quite clearly by ordering the Soviet invasion of Afghanistan in December 1979. Up to this point, no invading army had ever managed to tame Afghanistan for any length of time. In the nineteenth century the British tried twice and failed. In 1842, the end of the first Afghan war was marked by the British Army with 16,500 souls being completely destroyed by the Afghans as they retreated across the Gandamak Pass. There was only one survivor, an army doctor. It is said he was spared to tell others what happens when you try it on with the Afghans. Brezhnev should have taken heed.

The Soviet army had plenty of kit, with guns, tanks, artillery, attack helicopters, and planes, along with the Spetnaz, their Special Forces, and they used it all with impunity. However, the Russians did not reckon with the tribal militias, and were ill-equipped both physically and mentally to fight a guerrilla war with the Mujahideen. The Soviets fell into a "bear trap." They left nine years later, the final convoy of heavily loaded planes struggling to make it home over the mountains to the north, spewing out streams of metal chaff in a desperate attempt to avoid the handheld surface-to-air missiles deployed by the enemy, their tails between their legs.

In addition to underestimating the tribal militias, the Soviet army underestimated the Afghani environment, and what effect it might have on its troops. Infectious diarrhoea was rife. Outbreaks of hepatitis could, and often did, incapacitate a battle group for weeks on end. No one knew what caused the outbreaks of hepatitis among Soviet troops fighting in Afghanistan, and tests for all known hepatitis viruses were negative.

CHAPTER THREE

MOSCOW, 1982

The Ilyushin II-76 transport touched down at the military airport facility just outside Moscow. The flight was late. The first snowfalls in Moscow had come early, and the runway had to be cleared before the heavily laden jet could land. On board were numerous pieces of military hardware and returning military personnel, taking a break from the war in Afghanistan. Among them was Gennady Demidov. Gennady was fed up. He had been in Afghanistan for six months as an army medic and hated it. While he was happy to be coming home for a break, it was late, and it would be even later when he got home. Under his seat on the aeroplane was a package he had to deliver to some crazy scientist in downtown Moscow. He would not get home for another four hours, minimum. At six pm Gennady arrived at the Institute of Poliomyelitis and Viral Encephalitis. He was met by Mikhail Balayan, head of the Department of Viral Hepatitis. Gennady handed over the package without ceremony. Conversation was minimal—he wanted out of the door and home as quickly as possible. He did not know what was in the package and cared even less.

Mikhail put the package on the bench in his lab. He did not open it straight away but sat and looked at it for a while. The package looked innocuous enough—it was a small cardboard box taped up in a number of rather haphazard directions to keep the lid secure. There were no labels on it, no named addressee, no attached inventory of contents. This was a special package. Very few people knew the contents, but Mikhail did, and he knew what he was about to do with them. Mikhail was a virus hunter.

Mikhail locked the lab door. Although it was dark outside, he pulled down the blinds. He then returned to the package on the bench, removed the tape, and opened it. Inside were nine capped plastic beakers. He opened them one by one, setting them side by side. The smell was not pleasant as they contained samples of human faeces fresh from Afghanistan, from soldiers laid low with unexplained hepatitis. He ignored the smell, took a deep breath, and kicked into scientist mode. To each plastic beaker he added 50 millilitres of saline. He stirred them one by one.

The contents were then passed through the rudimentary filtration system he had set up earlier that afternoon. The pore size on the filter was quite large—he just wanted to remove the big bits. The filtered fluid was murky, smelly, evil-looking stuff, and was collected in a glass receiver. When all the samples had been processed he was left with just under half a litre of filtered human shit. Mikhail looked at it then turned on his heel and opened the lab fridge. He took out a large carton of yoghurt and opened it before adding it to the filtrated stool suspension, stirring as he went. He took another brief look at the creamy suspension, took another deep breath, and drank the lot in one go, followed immediately by a large glass of vodka.

Two weeks later Mikhail developed hepatitis. He went yellow and felt as though he was going to die, but the scientist in him knew that the chance of fatality was small. Well, smallish. Despite being very off-colour, he was well enough to collect samples of his stool. These were picked up by one of his several assistants and delivered to the lab, where the team were geared up for action. Four weeks later, Mikhail had recovered enough to go to work. The guys had been busy. They all piled into the tiny room housing the electron microscope—a very powerful tool that has a magnification of fifty million times and a resolution down to one ten-millionth of a millimetre. Mikhail pushed his specs onto his forehead, looked down the scope eyepiece, and adjusted the settings slightly. As he did so he saw hundreds of tiny disc-like structures. Mikhail had found himself a new virus, and in so doing joined an increasingly lengthy list of scientists and doctors who have successfully experimented on themselves in the name of medicine.[1]

The virus that Mikhail had found was later named hepatitis E. Not only was it the cause of the hepatitis in the Soviet forces in Afghanistan, but was later shown to be the cause of the outbreaks in many other developing countries. Hepatitis E has subsequently been shown to be a very common infection in some developing countries in the world. It is spread by contaminated drinking water (the so-called oral-faecal route) and is therefore particularly common in areas with poor sanitary arrangements. There have been a number of very large outbreaks, with thousands of young adults affected in the Indian subcontinent, war-torn areas in Africa, and Mexico.[2]

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[1] M. S. Balayan, A. G. Andjaparidze, S. S. Savinskaya, E. S. Ketiladze, D. M. Braginsky, A. P. Savinov, V. F. Poleschuk, et al., "Evidence for a Virus in Non-A, Non-B Hepatitis Transmitted Via the Fecal-oral Route," *Intervirology* 20 (1) (1983): 23–31.

[2] M. S. Khuroo, "Study of an Epidemic of Non-A, Non-B Hepatitis: Possibility of Another Human Hepatitis Virus Distinct from Post-transfusion Non-A, Non-B Type," *The American Journal of Medicine* 68 (6) (1980): 818–24.

CHAPTER FOUR

CORNWALL, 2006

Peter felt ill. Peter never felt ill, and if he did feel a bit off colour he rarely saw his doctor. He was of the generation who did not like to bother doctors—he didn't want to waste their time. He did not like doctors. They patronised him and, secretly, he was frightened of them. Still, he did not feel well at all. He'd tossed and turned all night with fevers and sweats. When he awoke he felt liverish and looking in the mirror he saw that the whites of his eyes had a faint yellow tinge. The muscles of his not inconsiderable torso ached, as though he'd been on the receiving end of a good kicking. He'd not been in a brawl for some years, having given up his part-time job as a bouncer at one of the many local nightclubs when he'd turned forty, at Jackie's insistence.

Peter was fifty-nine years old. He was born in Liverpool, England, and like most scousers had a dry, cutting wit, and said things exactly as he saw them. After school, he'd done various manual jobs, including being a bouncer. Such work was relatively easy to find for a man with Peter's build and acerbic interpersonal skills, as the city of Liverpool at that time was reputed to have the highest concentration of nightclubs in the world. After his first marriage broke up he met the love of life, Jackie, who waited at the tables of a club. They were still young and decided to make a break from their past and moved four hundred miles south to Newquay in Cornwall to settle down. They were happy together. They fought, they kissed and made up. They loved each other.

Peter and Jackie rarely took holidays away from home. They were a bit short of cash when the kids were growing up and, as Cornwall is a major UK tourist destination in the summer, they spent their holidays at home. Newquay becomes stuffed to the gunnels with tourists for eight weeks during school summer holidays. It is popular with working-class families from the midlands, who are catered for by endless caravan parks, cheap hotels, fast-food joints, and nightclubs. It also attracts the surfing brigade due to the large (by UK standards) waves caused by the Atlantic swell. Malibu it is not, but as far as Peter and Jackie were concerned home in Newquay was perfect for a holiday. The beach was just down the road to

keep the kids happy, and their favourite pub was just around the corner. Why spend all that money going abroad? In any case, they didn't much care for foreign food.

Peter smoked, drank, supported Everton football club, and liked practical jokes. He was a man's man. Ten weeks later he was dead. He was killed by the same virus that had caused Sujata's death in Kathmandu, the same virus that had crippled the Soviet army in Afghanistan.

CHAPTER FIVE

THE WORK ETHIC

In the late nineteenth century my great-grandfather was run out of his village in rural Lincolnshire, England, where he worked as a farm labourer. He'd committed the cardinal social sin of failing to doff his cap to the Lord of the Manor—not once, but twice. He'd been warned. He dug his heels in, and as a result he and his family were unceremoniously ejected from their tithed cottage. They began the long trek, with all their worldly possessions, northwest across the Lincolnshire countryside and into the county of the West Riding of Yorkshire. After a hundred-mile journey, it was here they settled. Presumably, my rather pig-headed great-grandfather felt more at home among Yorkshire men who, in general, are straight talking and not infrequently as stubborn as he was.

Max Weber, the nineteenth and twentieth-century German sociologist/philosopher, thought and wrote a lot about religion.[1] To him, religion was a "social construct." What he meant by this was that, by and large, religions flourish and develop to support the existing social order. In India, for example, the caste system has been entrenched for thousands of years. This has allowed the Hindu religion to flourish to support the social order. I have often wondered whether Max Weber visited West Yorkshire when he was developing the theory. West Yorkshire and its heavy woollen industry were at the heart of the Industrial Revolution in Britain in the late eighteenth century. At around the same time, the non-conformist Protestant religion took a major hold in the area, largely through the efforts of the Wesley brothers. The woollen mills and Protestant church (largely, but not exclusively, the Wesleyan branch of the Methodist Church) prospered together in a symbiotic relationship. There was a large body of working men, women, and children who serviced the woollen mills with their labour. They were downtrodden and largely without hope in their lives. Enter the Methodist Church. Hellfire and brimstone if you do not work hard. No drink, no gambling. No idolatry, fornication, or fun. Love your neighbour as yourself, including your beneficent employer.

[1] M. Weber, *The Protestant Ethic and the Spirit of Capitalism* (1905).

Repent all your sins. Do all the above, all the time, always, and you might just avoid the drop into the fiery pit.

I was brought up in the 1960s in the West Yorkshire town that my great-grandfather chose. The Industrial Revolution had waned considerably since its heyday in the Victorian era. Nevertheless, when I was growing up, there were still eighteen Methodist Chapels and forty-five working woollen mills. I recall the latter because of the noise, which was more pronounced on a summer's day when all the windows were open: chuckachucka, chuckachucka, chuckachucka, chuckachucka, chuckachucka. The noise was deafening when walking past the outside of the mill. It must have been almost unbearable inside and, of course, in those days nobody had heard of ear-protectors, let alone wore them. The other thing about the mills was the smell, a slightly heady, perfumed mixture of grease, wool dye, and human sweat.

I was the youngest of five. Dad was a carpenter. Mother was a mill girl but gave it up to raise the family. When we were a bit older she did all sorts of part-time jobs to make ends meet, and there was always "the property," a few one-bedroomed workers' cottages that my dad had scraped enough money together to put a deposit on. He let them out to pay the mortgage. They needed considerable maintenance, and all his spare time seemed to be taken up doing this. When we were old enough (ten years of age or so), we were expected to lend a hand. Hard work it was, too. I still swing a mean paintbrush, but unfortunately none of the carpentry skills rubbed off. I wished I'd paid more attention.

We had one bath every week on a Saturday night to spruce us up for chapel the following morning. The places of worship are known as chapels rather than churches. They were plain and simple, with no stained-glass windows, almost (but not quite) Quaker-like and rejoiced in names such as The Bethel and The Primitive, known locally as The Prim. Two hours of fire and brimstone later, it was home for Sunday lunch. When we got older, us kids prepared the meal and Granny would come over to join us. We always cooked roast meat and two vegetables. The meat was slightly over cooked by today's celebrity chef's standards, particularly so with roast pork as we had it drummed into us by Granny that pork should, under no circumstances, ever be undercooked. How correct she would prove to be. We cremated it.

Life as a kid was not all drudgery. We had fun, and plenty of it. We'd play outside in the street—hide and seek, cricket, soccer. My personal favourite was "kick the can and run." This is essentially a version of hide and seek, but instead of counting to ten or twenty before the seeker could begin his task, one of the "hidees" kicks a can (usually a used tin of

vegetables or soup) as far as he (these were almost invariably boys' only events) could. The seeker then had to go and fetch the can and replace it at the spot from where it was kicked before he could start the search for the other players, who had by now hidden themselves well away. I enjoyed this game most because I perfected the technique of the "lofted can kick." I invariably aimed it into next doors' garden, over a six-foot wall. This meant the seeker had to scramble over the wall to get the can back, and we would be hidden a hundred yards away before it was retrieved. I practised the lofted can kick to perfection, and I could always be relied upon to get any can of any shape, size, or variety over the wall.

As I entered adolescence, play became less frequent. At the age of ten I did a paper round every day. At twelve I had a Saturday job in a butcher's shop. My job was to deliver meat to the homes of the customers. This was done on an old-fashioned butcher's bike with a huge wicker basket on the front. Other jobs included assistant in a tailor's shop, market-stall helper, hospital cleaner, and building-site labourer. Best of all was my last job before going to medical school, which was full assistant at the local pork butchers. One of my tasks was to complete the pork pies by adding the warm jelly through a hole in the top of the pastry. Staff were allowed to each eat one pork pie per day. They were extraordinarily delicious, and people came from miles around to buy them. After extensive deliberation, consideration, and a personal sampling policy that was not completely congruent with house rules, I decided that slightly warm pork pies were best, ninety minutes after coming out of the oven and forty-five minutes after jelly insertion. Yummy. I still love pork pies, but never seem to be able to find ones of the same quality. I did not know it at the time, but by consuming large quantities of these delicious pork pies I was exposing myself to an as yet unidentified hepatotropic virus. The same one that killed Peter.

As I got older, I rebelled. At fifteen I refused to go to chapel and have never been since. However, I'd shown signs of my great-grandfather's independent spirit at a much younger age. One of the golden rules in our household was: "never spend any money on a Sunday." Now, I had a number of issues with this concept, even at the age of eight. I was particularly keen on soccer, and a follower of the local club, Leeds United, who were then in their heyday. A big thing in those days was soccer cards. These were cards featuring the photo and career history of the top UK players of the day, which were sold with chewing gum. I had a good selection but wanted to get the cards of the entire Leeds United team. I had a few important team members missing, including Billy Bremner and

Johnny Giles. Money was tight. What to do? The answer was the collection money.

During every service at chapel there was an offertory—a collection of money from the congregation of worshippers to pay the minister and general chapel overheads. As kids, Mum and Dad gave us each threepence, or occasionally sixpence, to put in the offertory bag. This bag was passed round the congregation and everyone put their hand in the bag with their contribution (a bag was used so that nobody could see what anybody else was coughing up). I mastered the art of the "threepenny-bag-flick." My closed hand would go in the bag. I would then flick the side of the bag with my index finger, making the coins in the bag move as though they had just been joined by another coin. Of course, the threepence was in my pocket and was spent on the way home (rushing ahead of Mum and Dad to cook lunch) on soccer cards and chewing gum. I never did get Johnny Giles.

I'd wanted to be a doctor since about the age of eleven. I'm not entirely sure why, but my dad was very ill around this time and maybe this influenced me. Dad had rheumatoid arthritis. He got this in his early forties and the disease was relentless, progressive, and crippling. He never complained much, and I think his mates at work helped him a lot with the heavy lifting. In his late fifties he became increasingly ill. His main symptom was profound exhaustion. He could not walk to the end of our street without stopping, a distance of barely two hundred yards. Twelve months later, after seeing numerous specialists and having countless tests, he was admitted to hospital for four weeks for further evaluation. He was found to have an unusual condition called constrictive pericarditis. This is very rare indeed, and his case was subsequently written up in the British Journal of Rheumatology. The condition is caused by dense scar tissue forming around the outside of the heart, preventing it from working properly. He was treated by cardiac surgery to remove the scar tissue and was back to his old self in no time. Many years later, when I was in my final year at medical school, he told me how the diagnosis had eventually been arrived at after all those tests and opinions. A bright young doctor, not long qualified, had spotted that the veins in his neck were much more prominent than they should have been. This was due to the fact that the blood in his veins could not properly flow back into his non-compliant heart, which was being crushed by the external scar tissue. I never forgot this.

Unsurprisingly, I worked hard at school, and I did quite well in exams. At the age of eighteen I left home for good and travelled two hundred miles south to study medicine at the Charing Cross Hospital Medical School in London.

CHAPTER SIX

LONDON, 1977

On the first day of medical school we met Professor Tony Glenister. He was in his late fifties, short, bald, and, like many of his generation in the medical profession, had the tendency to peer over his half-moon spectacles when making a particularly salient point. In addition to being the dean of the medical school, he was the Queen's Anatomist. I'm not entirely sure what roles and responsibilities this particular sinecure entails. However, we students knew we would be studying human anatomy, and plenty of it. So it proved to be. We spent nearly fifty percent of the week in the anatomy dissection room during the first two years. By both national and international standards this was excessive. I guess he wanted to ensure that, if Her Majesty enquired, he could confidently reassure her that, should she require the services of the next generation of young doctors, they would certainly be able to find their way around the Royal Frame.

Studying anatomy in those days was a rite of passage. It moved students from the innocence of laity to fledgling, death-corrupted, members of the medical profession. The key to this whole process was the dissection room. This was an enormous room on the fourteenth floor of the medical school. It was light, airy, and had large windows on three of its four sides, with stunning views over the River Thames and to the centre of London, some four miles to the east. It contained twenty human cadavers, laid out neatly on two rows of dissecting tables, ten to a row. There was considerable space around each table to accommodate the six students allocated to each body.

The tradition was that the first-year students were introduced to the dissecting room in general, and their human cadaver in particular, on day one. Most of us, myself included, had never seen a dead body, let alone twenty in one go. The first thing that hit me was the smell, which was very unpleasant, noxious, acrid, and incisive, going straight up to the back of the nose and smacking the back of the palate. This was followed, after a time, by a sickly-sweet lingering afternote with hints of honey and plenty of malt vinegar. This was the smell of death and formalin, used to embalm and preserve the bodies. The smell was overpowering as soon as the lift

doors opened on the fourteenth floor. When we got into the dissecting room itself, the smell grabbed all the olfactory nerve endings. This was compounded by the gut-wrenching assault on one's visual sensory apparatus of twenty dead bodies laid out in two coldly straight rows. Not surprisingly, a number of my peers fainted or rushed out to be violently sick. I managed to stay on my feet and keep hold of my breakfast. But only just.

We were to spend hours and hours carefully disassembling our cadavers over the next two years. We were not encouraged to use gloves and after a morning's work one's fingers became soft and wrinkled, like when you have spent too long in a hot bath. We all kept our fingernails cut very short. If not, death quite literally got under the skin. As time went by, the smell of formalin and our physical intimacy with death somehow became less obtrusive. The macabre nature of our task in our somewhat surreal surroundings was inevitably offset by lavatorial humour. However, despite apocryphal stories of the "give us a hand, mate" variety, we treated our cadavers with respect. I was particularly conscious that both my parents had left their bodies to medical science and would one day end up on the dissecting table. Indeed, my dad was dissected by students at the medical school in Leeds twenty-five years ago, following his death at the age of seventy. I guess they got a bit of a surprise when they came to his heart.

Today, most medical schools throughout the world teach human anatomy using models and computer simulation. This is so-called "dry" anatomy. In my view, this results in a lack of depth of understanding—not only of structural relationships in the human body, but also the unique physical and metaphysical introduction to death that can only be gained in the dissection room. I acknowledge that this is an old-fashioned view, and that I'm also starting to sound rather like Tony Glenister. He died a few years ago, God rest his soul. Part of the reason for the move to dry anatomy over recent years is the paucity of cadavers, as fewer people now leave their bodies to medical science. However, there are still a few medical schools that continue to teach "wet" anatomy, as my peers and I were taught. Three of my sons went on to study medicine; I tried my best to put them off. They were all taught in the dissecting room and once in a while they would email me some anatomy questions to keep me on my toes. I would send my answers without looking them up. I performed creditably in this exercise, and got a good percentage of the answers correct, but cannot remember anything about the detailed anatomy of the foot. Bearing in mind I have not studied it for nearly forty years, I'm

amazed how much anatomy I can still remember. I offer my, slightly begrudging, thanks to the Queen's Anatomist.

The dean told us we would have to do six hours of bookwork every day, as well as our dissection and lectures. As the work ethic was firmly on my hard drive, this posed no problems to me. In the first year I took his advice literally, and got straight As. I realised I'd overdone it and slackened off a bit afterwards, but always took my studies seriously. Having said that, medical school was not all work by any means. I was free from the constraints of my strict Methodist upbringing and I guess I went a bit wild. We went on cricket tour each year to the sleepy Devon village of Cheriton Fitzpaine, whom the hospital's cricket team has played every year since 1958. We would camp in a field belonging to one of the Cheriton team members and played the match on their tiny pitch. It is so small that scoring two or three runs is quite impossible. Between innings, a traditional Devon high tea would be laid on at the side of the pitch on trestle tables, which sagged and groaned with the weight of the delicious homecooked food.

After the match we repaired to the Half Moon public house for refreshments. In those days, this village hostelry only had two extensions to licensing hours (this allowed drinking after the normal closing time of eleven pm) each year. One was New Year's Eve, the other in July when the "young doc'ers" came down from London to play the village at cricket. They serve a particularly fine scrumpy (a type of homemade cider) at the Half Moon, which has hallucinatory properties in the over-indulgent. Looking back, some of the antics we got up to, particularly on cricket tour, were childish, immature, and puerile. Do I have any regrets? Not really. UK medical students were at that time renown for the amount of alcohol they consumed. I have to say that, although this assertion was accurate at the time I went to medical school, this is not so nowadays. Modern-day students today are more likely to be older, have a previous degree or other life/work experience before starting, and have far more academic work and exams than we ever did, my first year notwithstanding. As a result, they are far more serious, play much less sport, and drink less.

The quality of teaching we received can only be described as indifferent. I was surprised by this, as I had expected better. We had quite a few teachers who were truly awful while most were average, but a handful were quite exceptional. Max Lab, professor of physiology, fell firmly into the latter category. He was in his late thirties and always wore a pinstriped suit with fashionably wide jacket lapels and flared trousers. Even we boys recognised that he was good looking; the girls simpered. However, what was really outstanding about him was that he could make

his at times rather dry subject come completely alive. He did this by illustrating key points with reference to patients, although he was a scientist (physiologist) and not a clinician (physician). I still recall his lecture about the physiology of the heart. He told us the "bread and butter" of how the heart worked, and what happened when it went wrong. This took him thirty minutes or so. He then stopped and told us the following story:

> I was flying across the Atlantic to the United States last year, and the elderly American passenger in the seat behind me had a heart attack. He became very breathless, as his left ventricular function was impaired, and fluid started to dam back into his lungs. He went blue in the face and started frothing at the mouth. There were no drugs on the plane that I could use. What did I do, and what is the physiological reasoning behind the action I took?

Now that's a thought-provoking question. We considered the issues and discussed it between ourselves for five minutes or more. We came up with a number of possibilities, including: "slitting a vein on the patient's arm and taking a pint of blood out." This suggestion was deemed overly dramatic, highly dangerous (as the patient was already likely to have very low blood pressure), and a bit messy for British Airways first class. In fact, what he said he did (I've always assumed it was a true story) was to place tourniquets on both arms and both legs. The tourniquets needed to be given the correct amount of tightness—slack enough to allow arterial blood to enter each limb, but tight enough to prevent blood flow back to heart in the veins in each limb. The net result was that blood was effectively pooled in the patient's arms and legs, which became engorged, swollen, and blue. This reduced the volume of blood in the patient's circulation, so reducing the amount of work the already stressed heart had to do. Neat. We asked him if the patient survived. He declined to answer.

The consultant staff at the hospital who taught us clinical medicine in the last three years were also a mixed bag. There was a strong masonic influence, and a good number of the consultant staff also held part-time appointments at the Royal Masonic Hospital, which was a mile or so down the Road in Hammersmith. We students, and our patients, encountered kindness, brilliance, indifference, incompetence, navel gazing, anal retentiveness, arrogance, and contempt in equal measure. On one occasion, I was so incensed by one consultant surgeon I told him what I thought. Although he treated patients well he didn't care about them. I felt he treated them with no humanity. I told him so in great-grandfather's "eat your heart out" no-uncertain terms. Needless to say, my assessment marks

were adversely affected, and my attitudinal difficulties noted. Thankfully, my academic marks were good, and I avoided having to retake the placement. Perish the thought.

Our first clinical attachment was to the neurology service. We saw patients with all manner of weird neurological problems. The unit was a national centre for motor neurone disease, and at any one time half the ward was full of patients with this dreadful disease. Motor neurone disease causes a wasting of the motor nervous system, causing the muscles of the body to waste away, so in the end the patient is unable to move at all. The worst thing about it is that the sensory nervous system is completely intact, so the patient can hear, smell, taste, and feel pain just like the next person. Thus, at the end of the disease the patient becomes "locked in," with a completely intact sensory nervous system but unable to respond to the environment. There is no cure. It was very depressing to see patients with this inexorably progressive disease with no hope but a horrible death. Also, one of the first symptoms is muscle twitching. We all thought we were coming down with the disease, until we realised an odd twitch in a muscle is quite normal. This was one of several diseases I thought I was developing during the course of my studies, an experience shared with many of my peers.

One of the consultants who ran the service was quite brilliant. Patients came from all over the United Kingdom to see him, and he had an international reputation for research. He was an excellent clinician. He always got the diagnosis correct, although quite how he did this baffled me at the time. He used to run a morning teaching clinic every week, which is where I first met him. He'd see four or five patients in an hour and ask them two or three questions, but rarely more. He examined their eye movements and gait. Then he tested a couple of the patients' reflexes with a tendon hammer, and when in a rush I saw him do the arm reflexes by bashing their arm with the hammer with the patient still wearing a coat! He'd then ask us what we thought the diagnosis was. He'd tease us a bit, tell us what it was, and then move on to the next case. At just past ten am he'd put on his coat and hat and go out the door, climb into his Rolls Royce, and drive off to Harley Street. The senior registrar would finish the clinic. Although he was a first-rate diagnostician, I had about as much respect for him as he showed his (NHS) patients.

Quite a different kettle of fish was Keith Reynolds. He was an East-End boy made good, and a consultant surgeon. Although he was extraordinarily fearsome, wore formal morning wear on his ward rounds (tail coat, striped trousers—the whole nine yards), and was completely demanding of his staff, there was another side to him. He was a quite

brilliant bedside teacher. Coming up to our final exams he would come in on a Saturday morning in his own time and do some clinical teaching, with patients in attendance. The lecture theatre would be packed, a full house every time. Yes, he was arrogant. Yes, he shouted, and very loudly too. However, underneath the crusty exterior he was kind and cared deeply about the patients in his charge. I'll never forget the way he set a terrified patient at her ease. She was going to the operating theatre for emergency surgery, to identify and hopefully stop the source of severe internal bleeding. The way he spoke to her turned a terrified old lady into a serene, contented, and completely trusting patient. Keith died a few years ago. I was sorry to hear of his passing.

CHAPTER SEVEN

KASHMIR, 1979

One of the highlights of my medical-school years was a trip to northern India. I went there with a couple of student friends for two months in the long summer break before starting our clinical training. We'd spent the six weeks before working all hours God sent on a building site in order to finance the trip. India—what a remarkable place. An assault on the senses—heat, humidity; the colours, the food. Teeming with people, with monsoon rain, with filth. We did India on the cheap—no five-star hotels; no air-conditioned buses; no guided tours. Yes, we went to the usual places: Delhi, Jaipur, Agra, and the Taj Mahal. But we did it on a student budget. Queuing to get a train ticket at Delhi train station ticket office was not a question of getting in line. It was world-class rugby scrummaging that went on for hours. Naturally, you can hire local agents to do this for you, but we did it ourselves. In general, we travelled third class by train, often with a hundred people on the roof of our carriage.

At medical school I was introduced to curry. I grew a taste for it. Just as well, as on our budget we had curry for breakfast, lunch, and supper, although I never did quite get used to having curry first thing in the morning. Being relatively impecunious students, we ate at some fairly dodgy eateries, including some roadside fast curry joints. We all got "Delhi-belly," myself quite badly—eighteen bowel movements in one day was my record. The problem was, there was only a twenty-second warning as there was absolutely no way of deferring the defecatory reflex. I lost two stone in weight during the trip, and my bowel has never quite been the same since.

The highlight of the trip was Kashmir, a wondrous valley surrounded by white-capped Himalayan peaks. It was much loved by the British who, in the times of the Raj, would decamp to its cool climate to escape the oppressive summer heat. They were partial to staying on "houseboats" on Lake Srinagar, the provincial capital. We thought that was a good idea and stayed on a downmarket version of the same. Lake Srinagar is stunningly beautiful, and home to several hundred houseboats. These are like large canal barges permanently moored on the lake and are effectively small

floating hotels. We used to sit out on the roof in the evening and watch the sun go down behind the Himalayan peaks, the closest thing to heaven on earth. Now, sadly, because of the troubles, it's too dangerous to visit.

One of my friends, in addition to the trots, developed another illness while in Kashmir. He reckons it all started after a dodgy masala dosa, a kind of spicy Indian pancake. He became rather listless and tired. We thought it was the heat. This proved inaccurate, as a few days later he became jaundiced. The whites of his eyes went bright yellow. He had hepatitis. He remained unwell for a further three weeks, the jaundice fading after ten days. In the end, he made a complete recovery. I wasn't to know it at the time, but he may well have been my first experience of a case of hepatitis E. At this time, although the infectious agent was yet to be discovered, Kashmir was in the middle of an epidemic of waterborne hepatitis. During 1978–9 there were over twenty thousand cases in the Kashmir valley. In all, 436 pregnant women died, along with their unborn children. This epidemic was subsequently shown to be caused by hepatitis E,[1] the same virus that killed Sujata in Kathmandu and crippled the Soviet army in Afghanistan. The same virus that killed Peter in Cornwall twenty-six years later.

[1] M. S. Khuroo, "Study of an Epidemic of Non-A, Non-B Hepatitis: Possibility of Another Human Hepatitis Virus Distinct from Post-transfusion Non-A, Non-B Type," *The American Journal of Medicine* 68 (6) (1980): 818–24.