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Spiral

Written by Paul McEuen

Published by Headline

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SPIRAL

PAUL McEVEN

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First published in 2011 by
HEADLINE PUBLISHING GROUP

First published in paperback in 2011 by
HEADLINE PUBLISHING GROUP

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Cataloguing in Publication Data is available from the British Library

ISBN 978 0 7553 7464 9

Typeset in Plantin by Palimpsest Book Production Limited,
Falkirk, Stirlingshire

Printed and bound in Great Britain by
Clays Ltd, St Ives plc

Headline's policy is to use papers that are natural, renewable and recyclable products and made from wood grown in sustainable forests. The logging and manufacturing processes are expected to conform to the environmental regulations of the country of origin.

HEADLINE PUBLISHING GROUP
An Hachette UK Company
338 Euston Road
London NW1 3BH

www.headline.co.uk
www.hachette.co.uk

■ PACIFIC OCEAN, MARCH 1946 ■

LIAM CONNOR WAS SICK TO SEE IT, STANDING ON THE DECK of the USS *North Dakota*, binoculars trained on the sea. The truth was clear, the truth he saw in the binoculars, the four American sailors in the bright red lifeboat, all young and alive, none older than Connor himself.

‘TURN BACK,’ the commanding officer ordered through the megaphone.

‘You can’t do this!’ screamed one of the Americans. ‘I have a son. I’ve never seen my son!’ He had his shirt off, waving it frantically back and forth, a fluttering white bird over the blue water. Two other men rowed.

‘TURN AROUND. NOW.’

Warning shots spat out of the Oerlikon twenty-millimeter deck cannons, the noise deafening, rapid-fire jackhammers, a strafe line between the lifeboat and the USS *North Dakota*. The men vanished behind a wall of sea spray.

The mist settled, the sea again quiet. The tall one jumped up and down, waving his damned white shirt, threatening to topple the small boat. 'Stop firing!' he shouted. 'We are *not* sick!'

'He's lying,' said the Army general Willoughby. Willoughby was a few feet away from Liam on the fore-deck, watching through his own field glasses, his lips drawn back, teeth clenched. 'See the way he moves? He's jumping out of his skin.'

On the bridge, the commanding officer of the *North Dakota* raised his megaphone. 'TURN AROUND. THIS IS YOUR LAST WARNING.'

Another spit of bullets from the guns, and the boat vanished again in a cloud of spray. This time the line was closer, near enough to soak the men. Connor saw fear clinging to their faces like the drops of water. If the gunner raised his sights by a few degrees, they'd be shredded.

The leader of the lifeboat sat down on the gunwale, the white shirt falling from his hands. The boat floated listlessly, slowly twisting while the four argued among themselves, their words carrying over the waves. The tall one pointed toward the *North Dakota*, shaking his head, mouthing the phrase *No other way*.

'The stupid bastards are coming,' Willoughby said.

The tall one stood, facing the *North Dakota*, held his

white shirt overhead. 'Go!' he called out, and the rowers began rowing, plowing the sea as hard and fast as they could.

The commander of the *North Dakota* stood straight. The megaphone hung at his side.

He gave a slight nod.

It was over in seconds. Two Oerlikons fired simultaneously, and the sea erupted. The lifeboat exploded red, fragmented into an array of splinters and planks of wood. In an instant, both the men and the lifeboat were gone, nothing left but the mist and a stain of flotsam and debris on the water.

Liam saw something moving, flopping on the surface. At first he thought it was a dying fish. But it wasn't a fish. It was an arm, severed at the shoulder.

He vomited over the side of the ship.

LIAM CONNOR HAD SPENT FOUR YEARS IN THE BRITISH ARMY, but he had never seen men die like that. Liam was a small man, five-six, but strong-willed, wiry and tough. He was also Irish, with blond-red wavy hair and a complexion like putty stained with red ocher. He was tenacious, with a precocious, sharp mind and fast feet. He had started university at Cork at the age of fourteen and quickly established himself as a biology prodigy, on his way to a PhD when the war intervened. He could also run a mile in just over four minutes fifteen seconds, making him the third fastest man in Ireland. He was a lieutenant, by the British Army's reckoning more valuable

as a scientist than a bullet catcher. Barely twenty-two years old, he'd spent the past four years at Porton Down, in the southwest English county of Wiltshire, the center of British chemical and germ weapons research. His specialty was saprobic fungi, the feeders on the dead.

He was a scientist. He'd never seen men die like that, killed by their own brothers-in-arms.

TWO DAYS AGO HE'D BEEN IN GERMANY, AT A CHEMICAL factory outside Munich. He was in the final weeks of his military service, a member of an Allied team conducting a postmortem of the Nazi chemical and germ warfare program. He expected to leave Germany within days, return to England and on to Ireland and his wife, Edith. They'd been married for almost three years, but in that time had spent less than ten days together. He missed her like he missed Ireland.

Thirty-six hours before, his plans had drastically changed. Liam was shoved on a troop transport plane in Munich with no explanation. Four flights later, he found himself halfway around the world, over the Pacific, circling a flotilla of U.S. Navy vessels. They'd strapped him in a parachute and ordered him out, the first parachute jump of his life. He'd been fished out of the sea and brought aboard the *USS North Dakota* just in time to see the slaughter of the four sailors.

The whole journey over, he'd been wondering why they'd grabbed a lieutenant and shipped him across the globe. Now he was starting to understand. At Porton,

they'd spent months preparing for what they believed inevitable, the use of germ weapons by the Nazis. The Germans had been the first to use poison gas on a large scale in World War I – few at Porton doubted that this time around, the Nazis would use germs. They'd been wrong. It was the Japanese.

LIAM'S POINT OF CONTACT ON THE USS *NORTH DAKOTA* WAS a gangly major named Andy Scilla. He was a microbiologist from Mississippi who'd trained at Harvard but kept his accent. Scilla was from Camp Detrick in Maryland, the American center of chemical and germ warfare, their equivalent of Porton Down. 'I'll be your date while you're here,' he said, his drawl at first difficult for Liam to follow. But he got used to it, got to like it. It reminded him of some of the bidders back home.

Liam spent his first hour with Scilla in a small cabin three doors down from the communications room. Here, Scilla said, they had copies of the medical records of the men on the infected ship, the USS *Vanguard*, along with a series of files they'd brought from Tokyo, giving background on what was happening. They were stored in a series of metal lockers to keep out the ever-present salt-water. Scilla gave Liam the chain of events: 'Five days ago, the ship those men came from, the USS *Vanguard*, picked up a distress call from the Japanese sub out there, the I-17. No one could figure it out. Hell, it's been six months since the end of the war. Where's a Jap sub been hiding all that time?

‘Once the *Vanguard* arrived, they found the I-17 dead in the water. They tried to establish radio contact, but they got zip. Absolutely nothing. But they could see a single Japanese soldier on the bow of the sub. Just sitting there. They hollered at him, but he didn’t move a muscle. So they sent a team to board.

‘What they found was a nightmare. The entire crew, maybe a hundred men, sliced open like gutted fish. From the looks of it, they had committed hara-kiri en masse. All except that one Japanese soldier, alone on the bow of the sub. He looked catatonic, cross-legged, back straight, staring forward like a statue. The leader of the boarding crew, a chief petty officer named Maddox, thought he was in traumatic shock. But that wasn’t it. Not at all. He waited until they were practically next to him. Then he sliced himself open, shoved a grenade in his belly, and blew himself to bits.’

‘Suicide?’ Liam asked. The Japanese were cultish about their honor and death – surrender was a mortal sin.

‘Not exactly. That took a while to figure out. Why blow yourself to bits right when the soldiers get there? If he was a kamikaze, he would’ve attacked, thrown the grenade at the boarding crew. Plus, they had plenty of weapons below, plenty of guns, lots of ammo. He could have killed quite a few of our men.

‘No one really got it worked out for about twelve hours. The key was the boarding crew, the sailors that had been there when the bastard blew himself to bits. The leader, Maddox, took a pretty good whack to the head. He woke up two hours later in the *Vanguard*’s sick

bay, asking about his men. Everyone was more or less fine. But eight hours later, in the bed next to Maddox, Smithson begins to display unusual symptoms. A depressed temperature, an unpleasant smell about him. An hour later, Smithson is scratching wildly at his skin and has to be physically restrained. He is incoherent, raving. Twenty hours later, Maddox is no better. He is certain that iron-skinned snakes are living in his belly, feeding on his intestines. From these two, it spread throughout the ship.'

Liam understood. 'The Jap was a vector. A germ bomb.'

'Got it.'

'And the rest of the boarding crew?'

'Maddox is dead. He got loose, grabbed a knife, and stabbed himself to death. Just kept shoving it in his gut again and again until he bled out. The doc on the *Vanguard* counted twenty-two separate entrance wounds. Smithson's still alive, but he bit off his own tongue. Spit it out on the floor in front of him, laughing madly the whole time. Reports say it's a complete nightmare over there. A day or two after infection, you begin to completely lose it. Go violently crazy. One guy seemed perfectly normal until he locked himself in the galley with four sailors, shot them in the guts, then stomped on their skulls until a few others broke in and put a bullet in him. Everyone is paranoid. As soon as you show any symptoms, they tie you down. They ran out of beds and are roping men to their bunks, to piping on the walls, everything.'

‘Holy Christ. How many are infected?’

‘One hundred eighty-eight,’ Scilla said. ‘Of those, thirty-two have died. And they’re losing a few more each hour.’

‘Clinical symptoms?’

‘Their temperatures run a couple of degrees low.’

‘And their smell? You said there was an odor?’

‘Yes. Sour.’

‘Ammonia? Like urine?’

‘That’s it.’

‘I’ll tell you what it sounds like. It sounds like mycotoxin poisoning,’ Connor said. ‘Maybe *Claviceps purpurea*. Ergot. Or one of the species of *Fusarium*.’

Scilla nodded. ‘That’s why we brought you here. We’re all germ people. Bacterial. But we got nobody with a background in fungi, so we called Porton. And they sent you.’

‘Anything else? Other physical signs?’

‘A few of the men have spiral growths in their mouths.’

‘A pale white? Like candyfloss? Cotton candy?’

‘That’s just the way they described it.’

‘How many are still symptom-free?’

‘Less than forty now.’

Liam tried to take it all in. He had never heard of virulence like this. The entire ship in four days?

Scilla grabbed a thick manila folder and dropped it on the table. The cover said TOP SECRET. ‘Read this. I’ll be in the comm room when you’re done.’

★ ★ ★

LIAM READ.

Inside the folder was a twelve-page report issued by the U.S. Army Chemical Corps and under the signature of a Major General William N. Porter. The title was simple: *Summary of the Testimony of Hitoshi Kitano, Unit 731*. It was dated March 2, 1946. Liam had never heard of Hitoshi Kitano, but he'd heard rumors of Unit 731.

The report began with a short bio on Kitano. He was an officer in the Kwantung Army, the Japanese occupying force in north China. He was twenty-one years old. His uncle was a well-known lieutenant colonel, killed in the Philippines in 1944. His mother and father were killed in the atomic bomb explosion at Nagasaki. For the last two years of the war, Kitano was assigned to a biological weapons unit called Unit 731, in Harbin, China, a few hundred miles north of Peking, returning to Japan in the final days of the war. He'd been picked up by the British in Hirado, not far from Nagasaki.

From there, the report turned to Kitano's accounts of Unit 731. The official title of Unit 731 was the Epidemic Prevention and Water Purification Department of the Kwantung Army, but its true mission was germ warfare. According to Kitano's account, Unit 731 was formed in the mid-1930s, the brainchild of a Japanese general named Shiro Ishii. He was unusually brash and aggressive by Japanese standards but undeniably brilliant, convincing key military officials that Japanese victory could be assured only by the development of new biological weapons.

Unit 731 grew into an enormous operation, Japan's

version of the Manhattan Project, researching and testing every aspect of biological weaponry. Thousands of scientists, one hundred and fifty buildings, contained within a perimeter of six kilometers, all devoted to the perfection and refinement of biological weapons. They had collected pathogens from all over the world, tested them, refined them, coaxed out the deadliest strains. It dwarfed the efforts by the British at Porton Down and by the Americans at Camp Detrick.

They also ran field tests on the most promising weapons, according to Kitano. In Baoshan, in southern China, they tested 'maggot bombs'. These were ceramic containers dropped from planes that shattered on impact, spreading a gelatin emulsion filled with cholera bacteria and living flies. The flies survived the fall because of the gelatin, and then carried the cholera, landing on humans, animals, latrines, and cooking instruments, spreading the pestilence. Before the attack, Kitano said, cholera was unknown in Yunnan province. Within a month, cases were reported in sixty-six separate counties. Within two months, two hundred thousand were dead. All from a few bombs of jelly and flies, easily carried by a single airplane.

Liam was stunned. The British had run tests of anthrax at Gruinard Island off the coast of Scotland, tethering sheep and setting off anthrax bombs nearby. That seemed at the edge of what was too grisly to do. But field tests on humans? Entire cities? Hundreds of thousands of innocents killed? It was a terrible sin, far and away the most horrific germ weapons testing program in human history.

A medic knocked on the door, a tray of white tablets with him.

‘What’s this?’ Liam asked.

‘Penicillin,’ the medic said. ‘In case the sickness spreads here.’

‘It won’t help,’ Liam replied. ‘It’s fungal, not bacterial.’

The medic shrugged. ‘I have my orders. We’ve got everyone on a regimen, a pill every eight hours. You want it or not?’

Liam passed. Nothing would help. The Scotsman Fleming’s wonder drug was useless here. It would do absolutely nothing to stop a mycological infection.

The medic left, and Liam went back to his reading. The last ten pages were devoted to the crowning triumph of Unit 731, a fungal pathogen called the Uzumaki. Translation: spiral. According to Kitano, it was a doomsday weapon, to be used if the Americans threatened to overrun the home islands. Kitano was in charge of testing the Uzumaki on live subjects. It was highly virulent, spreading by the breath, spit, stomach juices, and fecal matter.

Kitano said that the latest version of the Uzumaki was kept in a sealed hinoki box, in seven small brass cylinders. A cylinder each for the seven chosen Tokkō. When the order came, each member of this elite suicide squad would board a submarine headed for their target. They would ingest the Uzumaki. Once it had taken hold, they would infect everyone they came in contact with.

The last section of the report was an evaluation of the likely authenticity of Kitano's testimony. There had been reports as far back as 1943 of a Japanese germ weapons program in Manchuria. Kitano's statements accurately matched descriptions of Unit 731 beginning to emerge from China. Shiro Ishii's testimony also dovetailed with Kitano's. The Japanese general was still alive and free, in negotiations with the Americans. He had offered to trade immunity for any war crimes in exchange for the records from Unit 731. Ishii did not know that the Americans also had Kitano, yet so far their stories matched quite closely. Overall, the likelihood that Kitano was telling the truth was judged to be very high.

Liam was dumbfounded, barely able to speak, when Scilla returned.

'Have any of the six other submarines been found? Any of the cylinders?'

Scilla shook his head no. 'No one really believed any of it until the *Vanguard*. Until they found Seigo Mori on the deck of that sub.'

'How do you know his name?'

'From Kitano. I interviewed him myself yesterday.'

'Wait. He's on board?'

Scilla nodded. 'Willoughby likes to keep him close. Kitano said Mori was plucked from the University of Tokyo, trained to be a torpedo kamikaze. But they changed plans on him. Sent him to Harbin, to Unit 731, to that psychopath Ishii. Said he was nineteen years old.'

'Why attack now? Six months after the end of the war?'

‘Maybe they didn’t know it was over. Our best guess is that the sub had mechanical troubles, ran out of fuel. Kitano says it was headed to the Pacific coast, up near the Washington–Oregon border. Mori was going to blow himself up at a major water supply. Think about it, Connor. Instead of a boatload of people with the Uzumaki, there’d be a city full. Maybe the entire damn United States.’

SCILLA LED LIAM TO THE COMMANDING OFFICER’S QUARTERS. Four men were inside: the commander of the *North Dakota*, Admiral Seymour Arvo; Major General Charles Willoughby; and two others that Liam had not met before. Willoughby, looking like a cadaver, ran the show. Liam had heard that MacArthur called him ‘my pet Fascist’.

The other two men seemed familiar, but Liam couldn’t place them at first. Then he realized the one with a narrow face and regal features was J. Robert Oppenheimer. The other, with a round nose and probing eyes, was Hans Bethe. Two of the greatest physicists the Americans had. Both key players in the Manhattan Project.

The men were crammed around a small map table, the surface covered with papers haphazardly arranged. Liam noticed what looked to be equations on many of the sheets. He knew enough physics to recognize Bernoulli’s equation on one. Another had a sketch that looked like a shock wave.

Oppenheimer looked up. ‘This our fungal expert?’

‘Liam Connor,’ Scilla said. ‘From Porton.’

‘Tell me,’ the regal man said, ‘what is the maximum temperature a fungal spore can take and still be viable?’

‘Depends on how long it’s hot,’ Liam answered.

‘Say a fraction of a second.’

‘I’d say a hundred degrees.’

‘A hundred degrees. You sure?’

‘No, I’m not sure. It could be more. Why?’

‘What about a shock wave?’ asked Bethe. His accent was German. ‘Acceleration of, say, thirty gs?’

‘Probably wouldn’t matter. It wouldn’t affect the spore at all.’

‘What about radiation? Gamma rays?’

Liam realized what they had planned. ‘You’re going to blow up the *Vanguard* with an atomic bomb.’

‘Unless you have a better idea,’ Oppenheimer said.

HITOSHI KITANO WAS HELD IN A SMALL CABIN THAT NORMALLY served as officers’ quarters. Two sailors stood guard outside. Liam was accompanied by one of Willoughby’s aides, a major named Anderson. He said few words but paid close attention, taking notes in a little red notebook.

Liam’s nerves were on edge. Bethe and Oppenheimer had grilled him for an hour about fungi and spores, trying to decide if a nuclear blast would destroy the Uzumaki or merely launch its spores into the upper atmosphere, where the jet stream would spread them around the world. The odds favored destruction, but the verdict was still out. Liam, in turn, had warned them of the dangers of

not acting. If, as he suspected, the culprit was a *Fusarium* fungus, there was a good chance it could spread around the world without the help of a nuclear blast. Many species of *Fusarium* could thrive inside the guts of migratory fowl. A bird could be infected and then be a thousand miles away in days. The feathers of birds were a huge risk. They were ideal for carrying spores.

Kitano stood the moment Liam entered. He was very thin, his clothes hanging on him, his skin stretched over the angular bones of his face. His hands were cuffed together. His right cheek was noticeably swollen. Scilla told him he'd had an infected tooth. He'd refused any treatment, any medications, finally acquiescing to letting them pull it, minus any painkillers. They said he'd barely flinched.

They introduced themselves politely, Hitoshi Kitano's English crisp and clear, accented but clearly understandable. Kitano sat with his back perfectly straight in his chair. Though no older than Liam himself, he looked ancient in a way that Liam couldn't at first quite sort out. It was the eyes, Liam realized. His eyes seemed dead.

Liam had a number of questions for Kitano. Most prominent was how the Japanese would defend themselves against blowback from the Tokkō missions. Biological weapons were notoriously difficult to control. It was inconceivable to Liam that the Japanese would use a weapon as virulent as the Uzumaki if they didn't have a way of protecting their own people. If it was a fungus native to Japan, they might be naturally resistant, or have an old folk remedy. Alternatively, scientists at Unit 731 might

have developed a preventative, or even a cure. There were no good antifungals, Liam knew. But if you are willing to kill people, you might be able to develop one. You infect a prisoner, you try out a cure. You fail, you try again. If such a program existed at Unit 731, Liam was willing to bet that Hitoshi Kitano knew about it.

‘I am a scientist – a mycologist,’ Liam said. ‘I study fungi. Mushrooms. Molds.’

Kitano nodded. ‘My father was also a scientist, an ornithologist. He studied magpies mostly, but he also kept pigeons. My mother said he loved the birds more than her.’

‘My wife has said the same sort of thing. About me and mushrooms.’

Kitano smiled slightly.

‘I was told that your parents died at Nagasaki. I’m sorry.’

‘Many died. On both sides.’ Kitano tilted his head like a bird. ‘I learned an interesting fact from Professor Oppenheimer. He said that Nagasaki was not the original target. It was Kokura. But it was cloudy in Kokura, so they went on to Nagasaki.’

Liam tried to imagine what it must feel like to know that your family was dead because of the weather. War was a series of random catastrophes.

Liam got down to it. ‘At Unit 731 you worked on the Uzumaki. How did they create the different strains?’

‘I am not a biologist. I was an engineer. I oversaw the tests. My understanding is they had some way to mix the traits. They could change the fungi. Make them adopt

the properties of other fungi. They mixed the spores together with special chemicals. I do not know what kind.'

'Was it acidic? Basic?'

'I don't know.'

'Did you wear gloves?'

'Yes. Rubber gloves. And masks. After we made it airborne.'

'How did you do that?'

'We would inject the Uzumaki variants into the *maruta*, wait for the madness to take hold.'

'*Maruta*?'

'The prisoners were *maruta*. Logs.'

'Logs? I don't understand.'

'The official story is that Unit 731 was a lumber mill. We were cutting logs. We could have as many logs as we wished. We simply filled out a requisition form.'

Liam tried to contain his loathing for the man in front of him. The bureaucracy of genocide. It was not unlike the German death camps, the experiments of Mengele. People became chunks of flesh to be manipulated, tortured, disposed of like rats.

Kitano continued. 'After we infected them, we had them breathe on a glass slide. Then the doctors cultivated the spores on the slides. It took many tries, but finally it worked. A variant that was both highly infectious and could be spread by the breath. We called this *maruta* the Mother. The Mother of the Uzumaki.'

'How many tries did it take?'

'Perhaps three, four hundred.'

‘You killed hundreds of people in the tests?’

‘For the Uzumaki, we killed eight hundred and seventeen before we had the breather. But there were many programs like this. We downed approximately ten thousand *maruta* overall.’

‘Ten thousand? How could you stand it? It’s inhuman. Monstrous.’

‘Perhaps. But the subjects at Unit 731 were well treated, well fed. Not like the other POW camps. Typically we injected them with the pathogen, systematically varying the dose. Then we watched as the disease progressed through them. It was very effective. Different strains could be crossed endlessly, the most deadly variants carefully selected by injecting them into prisoners and culturing the blood of those who died the fastest. After they began to show symptoms, we would take constant readings. Temperature, blood pressure, reaction times. Some we would dissect.’

‘After they were dead.’

‘No. While they were alive.’

Liam was aghast. ‘Why in God’s name would you do that?’

‘To yield the most accurate picture. Anesthetic causes biochemical changes, affects the blood, the organs. As does death.’

‘It’s murder. Sadistic, inhuman murder.’

‘Research, Mr Connor. Very important research.’

Kitano spoke as if he was describing the dissection of a frog. Liam took a deep breath, tried to keep his focus. ‘Who were the subjects?’

‘Some were spies. Others criminals. The rest were Chinese civilians we took from the streets of the surrounding cities. The soldiers would unload the *maruta* and go back out again.’

‘And then you would kill them.’

Kitano smiled condescendingly. ‘This was our task, Lieutenant Connor. Developing new weapons. Testing them. The scientists at Unit 731 were no different from your physicists developing the atomic bomb. Seigo Mori was no different from the American pilot who flew the mission that destroyed Nagasaki.’ Kitano leaned forward, cuffed hands on the table before him. ‘He was a gentle man, Mr Connor. Everyone liked him. His father was a factory worker who died when he was only three. He often told me stories about his mother and older sister, how they both doted over him, the only man in the house. He wished to be a poet. But he was willing to die.’

Liam asked the question he’d been waiting to ask. ‘You must have a way to stop the Uzumaki. To protect Japan.’

‘No.’

‘But if it found its way back to Japan, it would kill millions of your own people. How could you risk that?’

‘We had no choice. The Uzumaki was the last resort. To be used when everything else was lost. When Japan had nothing left to lose. The Uzumaki is – how do you say it? – a doomsday weapon. Once released, it cannot be stopped.’

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