



Shadows, Tokens, Spring

A
*Plague
Journey*

ESSAY BY
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1. **THE MONGOLIAN MARMOT**, or tarbagan, is hunted in the fall, when the animal has prepared for hibernation by fattening itself on the berries, roots, and lichens of the Altai Mountains. It has been hunted for as long as humans have hunted.

A Mongolian dish known as *boodog* calls for fire-heated stones to be placed into the abdomen of a deboned and disemboweled marmot. “Hang a marmot or a goat at the head and cut the skin around its neck,” one recipe instructs. “Now it is possible to pull the skin and most of the meat down over the inner skeleton.” The chef must break the legs at the knee to remove the femurs—it seems unwise to attempt this dish indoors—and, from the innards, keep the liver

and kidneys, which will be reinserted later on. Then comes the dish's signature trick:

Turn the removed skin and meat back, so that the hair is at the outside again. Fill the resulting "sack" with the following ingredients: Some salt, one or two peeled onions, and a number of stones, that have been heated up in a fire for about an hour. The stones must have a smooth and round surface. The smaller ones go into the upper legs, the larger ones into the abdominal cavity.

If the skin goes tight when cooking, cut a few small holes in the carcass to release pressure. The meat, heated from the inside out, is finished when the skin leaks with fat.

The invention of this method of cooking requires no great imaginative leap. A marmot in the wild already resembles a formless brown bag of flesh, just as in life it seems to contain little but its own coiled panic, a hard motor swaddled in softness that allows the animal, when threatened, to burrow into the soil with electric speed.

Marco Polo may have described the tarbagan in his chapter on the Tatars, who, he claimed, "subsist entirely on flesh and milk...and a certain small animal, not unlike a rabbit, called by our people Pharaoh's mice, which, during the summer season, are found in great abundance in the plains." Perhaps because the term otherwise describes a type of mongoose not found in Central Asia, Marco Polo's "Pharaoh's mouse" has sometimes been identified as the tarbagan, whose fecundity in summer is legendary. Although he did not mention either chopsticks or the Great Wall on his journey to the East, the Venetian merchant counted marmots as worthy of his *Book of the Marvels of the World*.

The restless doctor John Bell left a more detailed description in his only book, the two-volume *Travels from St. Petersburg in Russia, to Diverse Parts of Asia*: "On these hills are a great number of animals called marmots, of a brownish color, having feet like a badger; and nearly of the same size. They make deep burrows on the declivities of the hills; and, it is said, that,

in winter, they continue in these holes, for a certain time, even without food." The Jesuit priest Jean-Baptiste du Halde recounted the hunting of *un très-grand nombre* of tarbagans, which he described as a species of *rat de terre*.

To watch a marmot in flight is to behold the transubstantiation of unassuming plant matter—clover, stonecrop, moss—into a fur-lined reservoir of energy. As Bell observed, even during their hibernation period marmots "sit or lie near their burrows, keeping a strict watch; and, at the approach of danger, rear themselves upon their hind-feet, giving a loud whistle...and then drop into their holes in a moment." I have watched marmots move through forest undergrowth with an elegance and swiftness that rivals the antelope. Once, in the mountains of Kazakhstan, I saw a marmot cross a treeless field and thought at first it was the shadow of a bird.

Marmots are the largest of a diverse and widely distributed (or "cosmopolitan," as taxonomists say) collection of small plant-eating rodents belonging to the family *Sciuridae*. Their lighter cousins include squirrels and chipmunks. There are yellow-bellied marmots and forest-steppe marmots, marmots living high in the Alps, Apennines, and in the Rocky Mountains. There are marmots across the American prairie—not to be confused with the smaller and more social prairie dog, another *Sciuridae*—and across the Great Eurasian Steppe that extends from Hungary to the Great Wall that Marco Polo did not describe, where since 2008 the tarbagan has been listed as an endangered species.

In point of fact there are fourteen known species of the *Sciuridae* genus *Marmota*, nine of which are found in Eurasia. Their diversity is the result of transarctic migrations, the most recent of which took place more than a million years ago. In the Altai and Tian Shan ranges are found rose marmots and pink marmots, black-capped marmots and long-tailed marmots. Each embodies the same paradox of size and speed, and the differences between them may seem academic. But one trait, shared among some but not all species, has determined the course of history. The peoples living east of Lake Baikal have long described the "marmot poison" some

animals bore inside them. In recent years, the global scientific community has arrived at the same knowledge. They have identified four marmots—the gray, the red, the Himalayan, and the Mongolian (or Siberian) marmot, which is the tarbagan—as bearers of the plague that has wiped out large swaths of humankind.

2. IN RICHARD KEPHALE'S *Medela Pestilentiae* they are called "Gods Tokens": dark lesions on the skin, eruptions of subcutaneous hemorrhaging "the bigness of a flea-bitten spot, sometimes much bigger." They appeared clustered on the backs and breasts of corpses, it was theorized, because "the vital spirits strive to breath[e] out the venom the nearest way." The token's color revealed the victim's predominant humor. A body with red tokens was filled with cholera; black, melancholy; blue, phlegm.

Daniel Defoe, who owned a copy of *Medela Pestilentiae*, described the discovery of these casement windows to the soul in some of the horrifying scenes in *A Journal of the Plague Year*. The plague that struck London in 1665, he wrote, "defied all Medicine; the very Physicians were seized with it, with their Preservatives in their Mouths; and Men went about prescribing to others and telling them what to do, till the Tokens were upon them, and they dropt down dead, destroyed by that very Enemy, they directed others to oppose."

Elsewhere in the book, he tells the unforgettable story of a mother and daughter:

While the Bed was airing, the Mother undressed the young Woman, and just as she was laid down in the Bed, she looking upon her Body with a Candle, immediately discovered the fatal Tokens on the Inside of her Thighs. Her Mother not being able to contain herself, threw down her Candle, and shriekt out in such a frightful Manner, that it was enough to place Horror upon the stoutest Heart in the World; nor was it one Skream, or one Cry, but the Fright having seiz'd her Spirits, she fainted first, then recovered, then ran all over the House, up

the Stairs and down the Stairs, like one distracted, and indeed really was distracted, and continued screeching and crying out for several Hours, void of all Sense.... As to the young Maiden, she was a dead Corpse from that Moment; for the Gangren which occasions the Spots had spread [over] her whole Body, and she died in less than two Hours: But still the Mother continued crying out, not knowing any Thing more of her Child, several Hours after she was dead. It is so long ago, that I am not certain, but I think the Mother never recover'd, but died in two or three Weeks after.

The scene anticipates by centuries a contemporary movie trope: the zombie bite, wherein a victim—as yet untransformed—reveals the wound that marks her as already undead. That Defoe was only five years old when the plague struck does not mitigate the book's horrors. The pandemic he described feels immediate and contemporary, and probably owes something to the memories of Defoe's uncle, who, like the narrator of the *Journal*, was a saddler with the initials H.F.

All forms of plague are thought to have their evolutionary origins in Inner Mongolia, a "big bang" of multiple genetic lineages, although their epidemiological journey is ancient and obscure. It seems probable that the Altai Mountains are involved. The same coccobacillus, *Yersinia pestis*, which originated in these mountains in some prehistoric and initially harmless form, is responsible for all three known varieties of plague. They are differentiated by the locus of infection. Septicemic plague infects the blood, and thankfully is not itself easily contagious, instead usually accompanying one of the other two types. (It might otherwise constitute the most dangerous variety.) Bubonic plague attacks the lymph nodes. It is transmitted from rodents to fleas and from fleas to humans, but does not pass from one human to another. The Black Death that struck down fifty million people in the 1300s was almost certainly bubonic plague; it killed upward of 60 percent of those it infected in Europe, mostly the poor. The Great Plague of

If no one traveled, there would be few border-crossing epidemics. Zoonotic diseases would be local affairs. Global pandemics like COVID-19 would be impossible to imagine without the flow of human labor and leisure, which are the commercial airliners of communicable disease. Sex, in particular, is a kind of epidemiological cruise ship.

London was similarly bubonic in nature, part of the centuries-long “second pandemic” in Europe. By some estimates, nearly a quarter of the city’s population perished. But when that same bacterium *Y. pestis* causes a lung infection, it becomes far more contagious than septicemic and around twice as deadly as bubonic plague. Transmitted via droplets in the air, there is no cure unless the disease is caught at the onset of symptoms. Left untreated for twenty-four hours, the patient is guaranteed to die. This is pneumonic plague.

3. **IN THE DEPTHS** of the Great Manchurian Plague, which claimed sixty thousand lives between 1910 and 1911, it became impossible to dispose of the proliferating dead. Because homes of the infected were required to undergo police investigation and disinfection at the owners’ expense, corpses were tossed into the street surreptitiously at night. Authorities would discover the freshly sprouted bodies in the morning, when there was nothing left to do but place them in coffins and transport them to burial grounds outside town.

But the winter earth, frozen seven feet down in Manchuria, could not be shoveled out, so the coffins were laid out in rows by the side of the road. Sometimes the police didn’t find a body right away and it froze in a complicated position, in which cases the thin, unplanned government coffins were left unfastened or even open with frozen arms and legs protruding at odd angles. Sometimes the body had frozen while curled in a fetal position or else seated upright, and remained that way, as though piloting the coffin like a canoe. Eventually, there were no more coffins. The line of corpses stretched on for more than a mile of snow-covered ground.

The doctor who observed this line of unburied dead was a Penang-born British subject

named Wu Lien-Teh. Wu and his Cantonese assistant arrived at the train station in Harbin on the bitterly cold afternoon of Christmas Eve in 1910. A droshky led by two Mongolian ponies was waiting for them. The porters who went for his luggage were all Russians, dressed in sheepskin jackets and padded trousers, and they wore stiff, felted knee-high boots. The air was dry and ice crystals formed on Wu’s eyebrows. The droshky took them to a hotel run by a “Russian jewess” in the business district, Wu recalled. Her burly assistant, a migrant worker from Shandong, ran the doctor a hot bath.

Wu was then vice director of the army medical college at Tianjin. He’d left Peking on emergency orders from the Ministry of Foreign Affairs and had traveled by train for three days across northern China, past the eastern end of the Great Wall and past Mukden, capital of the Three Eastern Provinces, before arriving at Harbin, a soybean boomtown contested by the great powers. Adjoining Russia-controlled Harbin was Fuchiatien, a town of twenty-four thousand people under Chinese administration, where officials had reported several cases of an unidentified fatal illness. Its symptoms followed the same order each time: fever, coughing, blood-spitting, a purpling of the body’s skin, and finally, death.

Most of the early victims were trappers from Manzhouli, a trading post just across the border in Russian territory. It was another frontier town surrounded by wilderness. The trappers, most of them migrant workers from Shandong, traded in the large Mongolian marmot, whose fur was dyed and treated to make imitation sable for undiscerning women in Europe and America. They worked out on the open steppe in conditions of oaken fortitude, carrying their water with them and eating frozen dumplings in the disorientingly dry and frozen grasslands.

After collecting two dozen or so tarbagan furs over a period of several days they came back to Manzhouli and slept in the basement rooms of crowded inns where the air became humid with breath and sweat. Here one man lay down next to another; conditions for the spread of disease were nearly perfect. As soon as they sold their skins, they went out again onto the steppe, like old men at a sauna, alternating between rooms that heat and pools that freeze.

The mysterious coughing and blood-spitting disease had spread slowly in the months before Wu’s arrival. The first cases among the trappers frightened people in Manzhouli enough that those with the means to do so fled east and south to Harbin on the Chinese Eastern, a new single-track railway built by Russia after the first Sino-Japanese War. The railway was under Russian jurisdiction but it crossed plains and forests for more than five hundred sparsely populated miles of Russian-, Chinese-, and Japanese-controlled territory. All along the route, the infected disembarked and spread the plague into towns where sanitary conditions were generally loathsome. Although it stood adjacent to the high stone buildings of the Russian quarter, Fuchiatien was a shantytown of wooden shacks and corrugated roofs. Streets were impassable mud-ways flanked by wooden planks for pedestrians, a Venice of the underworld.

When traders and workmen came to Harbin, they passed through a train station and storeyard with hundreds of wagons of soybeans. The wagons were uncovered since it only snowed and never rained in winter. Along with furs, meat, millet, and timber, the soybeans were shipped south to Changchun, to Mukden (now called Shenyang), to the Japanese port at Dalian, and to Russia by way of Vladivostok. The city was an early outpost of globalized trade. Harbin was also segregated by nationality and class,

with Chinese laborers, called “coolies,” in the lowest position. After passing the storeyards, lower-class workers proceeded to the crowded Chinese town or, if they were in the Russian quarter, chose a cramped Chinese inn where they slept on a large common bed called a *kang*. Made from bricks covered in blankets, the *kang* was heated from below the house by an outdoor fire. Guests slept, sat, dressed, and ate there, pressed together with the windows shut all winter long against the cold. Such conditions prevailed in towns and villages throughout the Three Eastern Provinces.

Early attempts to control the plague were rustic. In his autobiography—a boosterish account of one man’s rise to international prominence and of the triumph of modern medicine over primitive superstition—Wu catalogues these efforts with irritation. A plague house was set up in a former public bathhouse where men with fever, spitting blood, were taken to die. But there was no attempt to isolate people who found themselves in close contact with the dead. The European doctors working in Harbin were convinced that rats were the main vectors of the disease and so a futile rat-killing operation was mounted. Two doctors named Yao and Sun rented a mule-cart depot and filled carts with sulfur and carbolic acid, traditionally used to rid houses of demons. Neither substance managed to slow the spread of disease, but *shih t’an suan*, one of the names for carbolic acid, filled the houses of the bereaved with the consoling stench of sanitation.

Wu was there to impose a modern approach. He had studied at Cambridge and spoke with officials in broken Mandarin Chinese and fluent English, finding the latter especially useful for medical terms. He did not make much use of his German or French, which he’d picked up in those countries in the course of his bacteriological

research. He found all racial distinctions absurd and offensive, claimed never to have experienced any discrimination while in England, and relished his role as a man of science who believed in the free transmission of knowledge across borders and among men of all races.

On December 25, the day after his arrival, Wu learned that ten deaths had been reported to officials in the morning. (Before long, as many as fifty were dying each day.) On December 27, he performed an autopsy—he called it the first-ever postmortem of a victim of the Black Death in Fuchiatien, and perhaps in all of Manchuria—on a Japanese innkeeper who had died overnight. She was laid out on a soiled tatami atop some raised wooden planks, wearing a cheap cotton-padded kimono. Wu sent for water and made his incisions in the woman's dirty home. There was no laboratory for this kind of work.

Wu's description of the event is clinical. "After the cartilaginous portion of the chest had been removed, a thick-bored syringe needle was plunged into the right auricle and sufficient blood was removed for culture in two agar tubes and for thin films on slides...and a platinum needle was inserted into the substance of each organ and the necessary cultures and films made. Pieces of the affected lungs, spleen, and liver, each two inches by two inches, were removed and placed in glass jars." The skin was then sewn up—the autopsy was kept secret from the innkeeper's family—and the body taken to the burial ground. Back at his hotel, Wu managed to confirm, with a simple staining of Loeffler's methylene blue under his travel microscope, that the woman's body was teeming with *Y. pestis*.

After the autopsy, a laboratory room was set up in the disinfecting station where Wu kept his slides and cultures, and where he often consulted a Japanese doctor who had been sent by the South Manchuria Railway. Wu tried to convince the doctor that the disease "was spread principally by direct coughing of dangerous bacilli in the sputum expelled from diseased lungs" and that household rats were not the culprit. The Japanese doctor could not be swayed. Others thought Wu ridiculous; the European

consuls treated him superciliously or, at best, as a curiosity. The French vice-consul was briefly impressed when Wu mentioned his studies at the Institut Pasteur in Paris, but his credentials did not change the prevailing wisdom among doctors in Manchuria: that the plague could not be transmitted directly between humans. Another Frenchman, a doctor named Mesny, considered the theory of rat-borne transmission his personal property. He raged at Wu for his suggestion that it was wrong. In Wu's telling, at one meeting he raised his arms "and with bulging eyes cried out, 'You, you Chinaman, how dare you laugh at me and contradict your superior?'" Nine days after their meeting, his skin purple and covered in buboes, Mesny died.

If Wu's heroic account is to be believed, Mesny's death was an inflection point in the crisis. Chinese authorities began to treat the plague as the epidemic Wu believed it was, and to respect his authority in the fight to contain it. His theories of aerosolized transmission gained traction. Medical workers, disinfectors, and gravediggers were advised to wear masks, either a wire-meshed frame covered in black muslin or a soft piece of surgical gauze covered in cotton. In both cases, Wu often saw the masks hanging loosely from the necks of their wearers. He made a note to design a comfortable anti-contagion mask for workers once the emergency was over.

Chinese migrant workers still considered the plague a shameful disease; they asked doctors not to reveal their cause of death to relatives. Shandong, a great exporter of migrant labor, was filled with households whose members never learned why a son or brother had vanished in Manchuria.

Workers also resented the cruelty of the Russian police, who rounded up "coolies" indiscriminately as plague suspects and locked them together in long rows of railway cars. There were rumors that Russians forced Chinese to undress in the open field outside the quarantine wagons and that some died from exposure. Sick family members fled their homes to avoid endangering relatives. The Russian "flying squad" hunted down the dying to bring them to the plague hospital or wagons from which no one ever

emerged. One newspaper wrote that Russians were using the plague as a pretext to banish the Chinese from town centers altogether. Among Russians, it was thought that the Chinese government's laxity was the reason the plague had reached Harbin in the first place. The railway stopped selling third- and fourth-class tickets in order to block the mass movement of laborers. (Upper-class citizens were exempt from all movement restrictions.) The ticketless moved south by cart or by foot; the fallen soon lined the roads leading out from Harbin. Others died of cold and hunger after being refused entry into villages along the way.

After visiting the frozen burial grounds in January, Wu began to advocate for a campaign of mass cremation. He invited local officials to drive out to see the coffins and corpses; there were two thousand unburied plague victims sitting in the snowbanks, their bodies wrapped in cloth soaked in carbolic acid. (The coffin shortage was partly due to rampant corruption among Chinese officials; plague relief funds were easy to plunder.) Wu feared that, although they were not the primary vector, rats would gnaw the corpses and spread the disease even further.

Cremation was a sacrilege. It took a formal sanction from the Qing emperor for the mass burning of corpses in "plague pits" to begin. Poor Chinese workers had no choice but to comply with the cremation and burning orders. Two hundred laborers gathered the palls and corpses in piles a hundred high. Twenty-two pyres were raised. At 2 P.M. on January 31, 1911, Wu writes, senior medical officials were invited to watch "the first mass cremation of infected bodies in history." When kerosene pumps proved too slow, workers were sent onto the piles with paraffin cans. Soon the site was ablaze; the pyres began to collapse into ground softened by the heat. The next day, bones and ashes were collected and thrown into new pits. Cremation was an evil end, and its value as a preventative measure was far from certain. The Chinese magistrate's office in Hulan was burned during a protest that month by several thousand workers, but the plague fighters did not relent. In February, another 1,400 bodies were burned.

Not only bodies but houses and the plague hospital were "consigned to the flames," Wu writes. The only Chinese-speaking Russian doctor in Harbin thought this step unnecessary and cruel, amounting to "destroying other people's property." Steaming, he wrote, was just as effective as burning. (Defoe, too, questioned the use of fire against plague in his *Journal*.) But Wu's methods won out. Much of Fuchiatien and poor areas of Harbin were burned. No funds were provided for rebuilding; they were still poor slums under the People's Republic a half century later.

By springtime the plague had run its course—one in every twenty people in the city was dead—even as hastily disposed corpses continued to be revealed by the melting snow. "Coolies" and beggars ranked first among the epidemic's victims; wealthy foreigners, for all the usual reasons, ranked last. In medieval Europe, plague was called "the poor man's death."

The end of the Harbin epidemic remains something of a mystery. Wu's preventative efforts and the burning of corpses may have limited its spread, but modern historians suspect that some meteorological effect—warming days, changes in humidity—helped to destroy the remnants of the worst outbreak of pneumonic plague ever recorded. It was an outbreak that might conceivably have crossed the globe. Seven years later, the exponentially more contagious (albeit less fatal) "Spanish" flu did just that.

The most definitive of Wu's innovations was probably the design of the mask that became the N95, a pair of which I purchased for the first time in a pharmacy in Kota Kinabalu in February 2020 for about four dollars. For his accomplishments, he received honors from the czar of Russia and the president of France, and in the same year the epidemic ended, 1911, Wu chaired the First International Plague Conference. The conference took place in Mukden and was informally known as the "assembly of ten thousand nations." Its members debated conflicting theories of the disease and its treatment. They were, in the words of one scholar, "effectively deciding which empire was modern enough to rule Manchuria." A few months later, the Qing Dynasty collapsed.

Tourism as epidemic, tourists as gigantic bacteria, coating every surface with the obscuring jelly of Cook & Son, or, in more modern terms, the excretions of easyJet, Airbnb, Opodo, Travelocity, JetBlue, and other corponyms—the comparison is difficult to avoid. Travel and disease are siblings. They contain each other.

4. “**OCCIDENTAL TOURISM,**” the German critic Gerhard Nebel wrote in 1950, “is one of the great nihilistic movements, one of the great western epidemics whose malignant effects barely lag behind the epidemics of the Middle and the Far East, surpassing them instead in silent insidiousness. The swarms of these gigantic bacteria, called tourists, have coated the most distinct substances with a uniformly glistening Thomas-Cook-slime, making it impossible to distinguish Cairo from Honolulu, Taormina from Colombo.”

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I was traveling when the COVID-19 pandemic began and by the time its gravity was clear, travel had already carried it to every corner of the world. Yet as with the more deadly forms of plague, the affliction Nebel described is not exactly what it seems.

The critique of tourism is as old as tourism, the bacterial metaphor for the tourist almost as old, one could argue, as Antonie van Leeuwenhoek’s discovery of the animalcules that wriggled and multiplied beneath the lenses of his Delft workshop. Travelers are like plagues mainly in the obvious sense that both are alive and therefore display the two features common to all living things, movement and metamorphosis. Plagues travel because all of life, in its useless vaporuousness and gesticulatory ennui, must seek out novelty. Living things must grow and mutate or else die.

Travel itself has mutated many times over. The invention of European tourism was a mutation of the holy pilgrimage. The word “tourism”

first appears, not coincidentally, in English, alongside the rise of the Grand Tour whose aims were educational as well as diversional. But new kinds of travel do not wipe out former morphological types. Not only does the purposeful nature of travel persist—for migrants, refugees, nomads, sailors, the lovelorn and fugitive, and, indeed, religious pilgrims—it is not at all clear that travel ever was merely the product of biological or economic necessity, that there was no pleasure to be had in the novelties of nomadic motion. The human reserve of restlessness was not invented by Thomas Cook.

Even Wu’s autobiography is at its core a travelogue. *Plague Fighter* is filled with incident and observation; the reader is treated to a Grand Tour of Manchuria in addition to harrowing scenes of death and lengthy descriptions of medical conferences.

Better to swap Nebel’s “travel-as-plague” for its inverse, plague-as-travel: travel from the perspective of virus and disease. What are must-see sights to cilia? What is a tourist attraction but a reservoir—an oasis—of gathered hosts? We might imagine how organic flows of zoonosis are retarded by fresh air and cotton masks just as they are accelerated by coughing and by the pressurized carton of damp bipedal life that is the 747, the 777, or the double-decker Airbus A380.

If no one traveled, there would be few border-crossing epidemics. Zoonotic diseases would be local affairs. Global pandemics like COVID-19 would be impossible to imagine without the flow of human labor and leisure, which are the commercial airliners of communicable disease.

Sex, in particular, is a kind of epidemiological cruise ship. Iberian sailors brought syphilis to Europe. Captain James Cook’s crewmen carried measles to the Pacific Islands. Key vectors in the spread of HIV in Africa and India are

long-distance truck drivers. As a rule, travelers fuck. A study of 599 Norwegian travelers found that more than 40 percent had enjoyed a sexual encounter while abroad, a majority without condoms. Such are the wages of pleasure-seeking, both for animal life and for whatever equivalent of pleasure drives a bacterium from one moist pit of ingress to another. In 2020, at the height of global quarantines and travel restrictions, a fast-moving quinolone-resistant strain of *Neisseria gonorrhoeae* demonstrated that all national borders are permeable in the dark.

Nations have demonstrated their inability to control the spread of a highly contagious aerosolized disease, but the nation is not the only unit of community on offer. Small bands of men and women living together never lost the cultural memory of plague. They have always known what to do: close the roads, cut off trade, warn away outsiders. Before a global system of capital flow and resource extraction demanded constant access to the most remote hinterlands, a plague was not always the widespread disaster it is today. Villages and tribes could shut themselves away from the local interchange of supplies, forest goods, and spouses. Nomadic communities on the Eurasian steppe could—and did—pick up stakes and flee whenever plague struck. In early 2020, when I visited indigenous communities in the northern Philippines and the Malaysian rain forests, I found villages open, but soon after I left, as the threat of COVID-19 became apparent, they shut down roads with wooden barricades and warning flags. The Augustinian historian Antonio Mozo observed a near-identical reaction on his travels to Northern Luzon in the eighteenth century. He discovered most people in the mountains unconvertible to Christianity but satisfied to have a handful of siblings or cousins willing to join the faith and act as agents of commerce

in the lowlands. These sentinel relatives also helped tribespeople limit their own firsthand contact with the colonizers. “One reason,” Mozo wrote, “is the great fear they have of smallpox, which pestilence has never entered their settlements in the mountains.” As soon as news of an outbreak reached them, villagers closed all roads and passes with felled trees and underbrush, “and sent out word that if anybody should be so bold as to enter, they will kill him immediately.”

The roadblocks had not yet descended that winter when, in Singapore, we had our temperatures taken outside a history museum. Attempts to evade testing were punishable by imprisonment. A cab driver we met was not taken in by the precautions that governments were putting into place, with new restrictions coming down every few days. “When it’s your time, nothing will save you,” he shouted. “Not masks, not soap—nothing!” We traveled on to Penang before the first major breakout was discovered in Malaysia, after which a national movement control order grounded us. It was there, in his birthplace, unable to travel and with nothing but time, that I discovered Wu’s autobiography.

5. **THERE ARE STILL OUTBREAKS** of pneumonic plague, particularly around Inner Mongolia where Wu encountered the disease. Sometimes an old man will catch and eat a wild marmot and succumb to fever. If not treated with antibiotics right away, he will die. Some truths are eternal: There will be plague as long as marmots have fleas. When viewed from sufficient geological depths, every landscape is a cemetery.

Sixteen years before the great plague in Manchuria, in 1894, a senior doctor at a hospital in Aksha named Mikhail Eduardovich Believsky was examining a more limited outbreak of

bubonic plague. He came to believe that the disease, which killed dozens of people each year, was being spread by the skinning and butchering of infected marmots. No scientist had ever published a research-based theory of animal transmission of plague. It was four years before Paul-Louis Simond's famous paper on rats. Diagnosis of plague was by no means straightforward in the days before laboratory staining. Plague resembles many other infections. The notorious buboes are erratic, particularly in pneumonic cases. Belavsky was mocked.

Among Mongolian hunters on the steppe, however, it was common knowledge for centuries that marmots are a natural reservoir of plague. Hunters could identify subtle signs of illness in their quarry and had even developed a test for plague that involved pricking a killed marmot's paw to see whether the blood had coagulated. If they killed an animal that seemed diseased, they fed it to the dogs, who were thought not to suffer from plague's effects. They knew most deaths took place in winter and that the illness could pass from tarbagan to human through some esoteric medium.

We now know the medium is fleas. In 1910, during the outbreak in Harbin, Wu and his assistants collected two types of blood-sucking arthropods from the tarbagan: a tick of the genus *Rhipicephalus* and a flea, known as *Ceratophyllus silantievi*. This particular tick does not bite human flesh. The flea does. A recently captured tarbagan is usually teeming with both. The arid climate and cold winters of the Mongolian plateau are cosmologically arranged to bring together the marmot, who hibernates in a burrow plugged up with soil, straw, and its own feces, and the flea whose larvae are born there. Fleas break the skin around every marmot orifice to feed on its blood. When a flea ingests *Y. pestis*, the bacteria multiply until the insect's foregut is overflowing. It then disgorges the bacteria into its bitten host. Inside the marmot's burrow, plague can lie dormant for more than a year.

The plague-carrying marmots of Eurasia do not travel far under their own steam. Fleas, however, are born explorers. Plague-carrying fleas

include not only *Ceratophyllus silantievi* but also *Oropsylla hirsuta*. Members of the latter species, infected with plague, were found on the dead bodies of black-tailed prairie dogs for the first time in Denver and West Texas in 1945, and have since been found wherever prairie dogs roam, from New Mexico to Wyoming, usually killing between 80 and 100 percent of an individual colony when they appear. Plague may even be one of the main natural checks on population growth among the social prairie dog, whose colonies, as they grow in size and complexity—the largest ever recorded, in Texas, covered nearly forty times as much land as the city of Houston, and supported a *Sciuridae* population of four hundred million—become increasingly likely to suffer an exotic, vector-borne, epizootic die-off.

As plague travels, so does ritual. Traditional hunters are attuned to sentinel marmots, those lookouts who stand erect at the portal of the burrow and warn the colony inside of a predator's approach. Their behavior is diagnostic. Sluggish or unsteady marmots suggest that the whole colony might be diseased and should be avoided. According to oral tradition, the sentinel marmot of a sickened colony will set out on a journey to find medicinal plants. Such marmots, observed on their own, far from any burrow, are likewise not to be hunted.

The day we first entered Malaysia, February 2, is celebrated in the United States as Groundhog Day. The holiday came to the New World with the Pennsylvania Dutch, who imported it from Germany, where it is Christianized as Candlemas and has long blended with the ancient Celtic holiday Imbolc. There are passage tombs in Ireland more than four thousand years old whose mouths point to sunrise around Imbolc Day.

Although I have never come across a direct connection, it has struck me that Groundhog Day might bear some obscure or even shamanistic connection to plague. Could the divination of spring be related to the hoped-for dissipation of the classic season of disease? Is the groundhog of American tradition related to the sentinels of the steppe? In ancient Imbolc, later St. Brigid's Day in Ireland, the divining creature

was often a badger or a serpent, whose burrow or hole would be watched for signs of life, as in the Scottish Gaelic proverb:

*Thig an nathair as an toll
Là donn Bride,
Ged robh trì troighean dhen t-sneachd
Air leac an làir.*

The serpent will come from the hole
On the brown Day of Bride,
Though there should be three feet of snow
On the flat surface of the ground.

Candlemas, St. Brigid's Day, Imbolc: all holidays grouped together at the midpoint between winter solstice and spring equinox, an unstable seasonal fulcrum. Another couplet makes clear the eternal return whose awesome possibility lies within the day's powers of divination: "If Candlemas Day is bright and clear / There'll be two winters in the year."

There is even a weather-divining, disease-preventing Christian saint named Quirinus, a Roman tribune from Neuss whose name has been invoked against smallpox, gout, and, indeed, bubonic plague. In addition to his protective powers against disease and pandemics, Quirinus is a patron saint of animals. His feast day, March 30, is likewise a day of divination for German farmers, some of whom still recite the adage *Wie der Quirin, so der Sommer*: As goes St. Quirinus's Day, so goes the summer.

These scraps of folk belief combined with others in the dim past to form the contemporary American holiday. Today we raise the groundhog—the species *Marmota monax*—and hope that this sentinel will not condemn us to more winter; in other words, that the meteorological conditions which long sheltered *Y. pestis* in Asia will dissolve into the wet life of spring.

Weather-divining animals have been found in traditions across Europe since long before the

outbreak of plague witnessed by a five-year-old Defoe. For Candlemas, in Germany, the role has been filled by badgers, foxes, and even bears. ("If the bear can see over the mountain," one description reads, "he must spend another eight weeks in the hole.") As described in the poetry of the Tang Dynasty, the behavior of pigs was once thought to predict rain. And in tribal communities all over the world are found feast days and rituals intended to ward off the random and cataclysmic illnesses that would occasionally decimate a population. It is thought the Mongol Empire brought plague to Europe, as Chinggis Khan's son Ögedei rode his conquering armies across the regions now called Ukraine, Bulgaria, and Hungary. The nomadic empire is theorized to have spread *Y. pestis* through trade caravans carrying marmot pelts, leathers, and bags of millet (with possible rodent stowaways). Mongols also carried shamanistic traditions across the steppe and mountains to the arctic edge of Europe. In several Mongol legends, the marmot originated as a man who, failing to shoot down the sun, cut off his thumbs and became animal. He remains a liminal figure between house and wilderness, between animal and man. The marmot and its shadow. The conjunction is nicely captured in *quarry* itself, a word that by accident of etymology means both prey and excavatory source.

Under the orderly signs of scientific enlightenment, which indulge only playful superstitions, we allow the groundhog to "predict" the continuation of winter when he is lofted like the Sabbath cup before the men and women of Punxsutawney. But it takes only a small movement of faith to imagine him as a fleshy vessel for the spirit-god who was spring's conjurer and death's defeat. There are tokens hidden in his shadow. It may be pure speculation—a tourism of the mind—but my thoughts go to plague, illness, and miracles each February, as the raising of the marmot flattens the crowd to silence. ■