TALES OF PLAGUE AND PESTILENCE

A History of Disease in Japan

Written by
SAKAI Shizu
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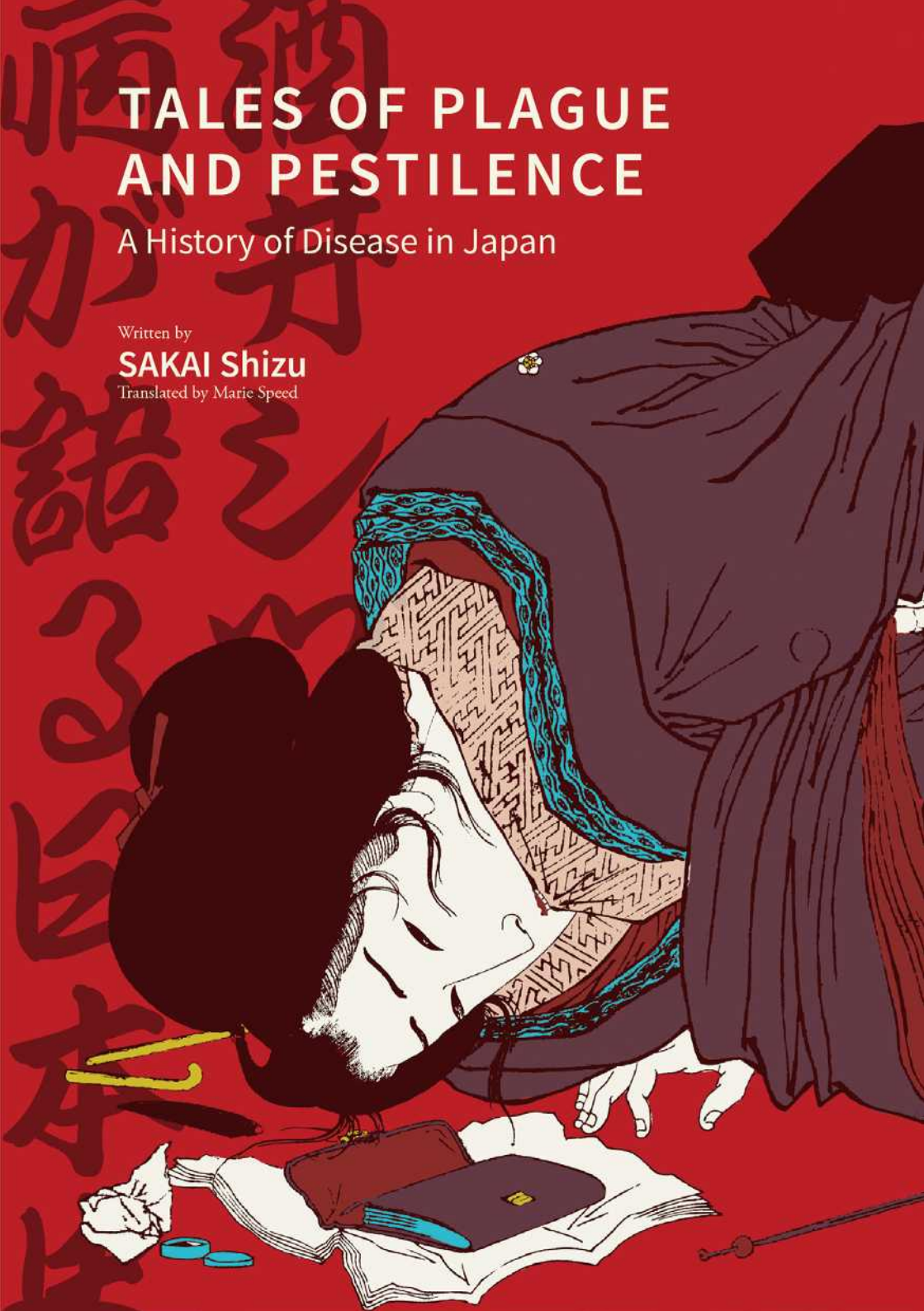

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Publisher's Note
This book follows the Hepburn system of romanization, with long vowels indicated by macrons. The tradition of placing the family name first has been followed for Japanese, Chinese, and Korean names.

Tales of Plague and Pestilence: A History of Disease in Japan
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Translation reviewed by Ellen Nakamura.
Editorial supervised by Terry Gallagher.

Published by
Japan Publishing Industry Foundation for Culture (JPIC)
2-2-30 Kanda-Jinbocho, Chiyoda-ku, Tokyo 101-0051, Japan

First English edition: March 2025

Originally published in Japanese under the title *Yamai ga kataru Nihonshi* by KODANSHA LTD. in 2008.
English publishing rights arranged with KODANSHA LTD.

Cover design: Cecilia Patricia Rodríguez Guzmán
Cover image: Tsukioka Yoshitoshi, *Mitate tai zukushi* (A Collection of Women's Desires), 19th century, woodblock print. National Diet Library Digital Collection.

hardcover ISBN 978-4-86658-256-6
ebook (PDF) ISBN 978-4-86658-257-3
https://www.jpicinternational.com/

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Translator's Note

At the dawn of the twenty-first century, contagious diseases like smallpox, polio, and tuberculosis seemed very much in our rearview mirror, with great pandemics such as the Black Plague of the Middle Ages and Spanish flu of the early twentieth century retreating into myth.

Then came the coronavirus pandemic, effectively shutting down the global socio-economy for a period of years as medicine raced to identify the parameters of the disease and develop a vaccine. Waiting in the darkness of fear and ignorance, we found ourselves suddenly very close to our ancestors, who grasped so desperately at prayers and spells and home remedies to protect their households from the terror creeping ever closer to their doors.

It must have all seemed very familiar to Sakai Shizu, whose lifelong exploration of Japanese medical history has uncovered many such episodes from the time of Japan's earliest contact with the outside world. In this book, she recounts all manner of plagues and pestilences that have afflicted Japanese society, from pandemics that left bodies piled high in sake barrels in overworked crematoriums to quiet killers like syphilis and cancer, and even modern occupational diseases and hospital-acquired infections.

Drawing on a variety of sources from ancient chronicles and works of literature to temple records and travel journals, Sakai manages to combine vast erudition with the lightest of touches, bringing humor and empathy to some of the grimmest episodes in Japanese history. She also makes the argument—particularly compelling given our own recent experience—that offering comfort is in fact the highest function of medicine in a world where suffering remains inescapable.

Translating a work of this scope has been simultaneously fascinating and terrifying. The fascination is obvious: even the author's most offhand comment can lead into an investigation of an obscure but illuminating corner of Japanese history. The terror lies in potentially missing the implications of just such offhand comments, obvious to a scholar of Sakai's erudition but not necessarily to a more casual audience, and particularly not to a non-Japanese

audience. For both these reasons, in-text additions and footnotes have added considerably to the length of the English translation compared with the original; but hopefully these will inspire readers to pursue further adventures for themselves.

The book's chronological span means that it traverses Japan's calendrical change in 1873, when it adopted the Gregorian calendar used in the West. For accuracy, dates prior to 1873 are given according to the traditional lunisolar calendar (with numbered months and days), although, for the convenience of readers, years are primarily given according to the Western calendar rather than Japanese eras. Current place-names have been added to help readers orient themselves on a modern map, and sections of quoted poetry have been paraphrased to emphasize significance in terms of the text. All Japanese names are given surname first, followed by personal name, according to the convention in Japan. In keeping with modern usage, the conjunction "no" in the names of historical figures has been omitted in the majority of cases.

My thanks go to the author, who has been tremendously generous in reviewing the manuscript and clarifying some of the more opaque literary passages. The translation has also benefited hugely from a first-class editorial team that tirelessly pursued obscure references, untangled both peculiar medical symptoms and convoluted historical episodes, and immersed themselves in the humor and pathos of Japanese medical history to bring this project to fruition within its deadlines. Thank you to everyone!

Marie Speed

Preface

This book examines the history of Japan through the lens of diseases suffered by the Japanese people. Amid that vast panoply, different diseases have taken center stage at different points in history.

Far back in the Jōmon period, the only traces of disease remained in bones, but from those faint traces we can imagine a great deal about the lives of people in that distant past. For example, we know that they suffered terrible injuries and deformities, which caused what we today would consider unbearable pain, yet they endured that pain over long periods of time. Moreover, they apparently hunted in the fields and hills even in their wounded state. Remains from ancient sites also reveal numerous parasite eggs. People must have suffered constant stomach pain. Parasitic diseases continued to plague humans into the twentieth century, when antiparasitic drugs finally became widely available.

Records of disease also emerge in histories like the *Nihon shoki* (Chronicles of Japan), which depict repeated episodes of famine and sickness. Back then, it was believed that epidemics were caused by gods who were angered by the emperor's mismanagement of political affairs—in the sense of activities associated with state governance. To appease the gods, prayers were conducted across the nation. Political affairs were, in a sense, shaped by disease.

Some elements of Japan's history have been shaped by its geography. As an island nation, Japan has seen many contagious diseases arrive from other countries. Tuberculosis emerged around the time that rice cultivation was introduced from abroad. As more outsiders began to arrive on Japanese shores, smallpox, dysentery, and measles also appeared. Influenza epidemics broke out roughly in parallel with pandemics. Syphilis reached the archipelago with the Age of Discovery, while the end of the self-imposed isolation of Tokugawa Japan ushered in cholera and plague. Today, Japan is experiencing a number of newly emerging infectious diseases like AIDS. One could say that the influx of culture and knowledge from abroad has been accompanied by very unpleasant diseases. In this book, I examine some of these episodes in history.

Modern times of course continue to spawn a host of new diseases. Medical science and its new ideas have conquered many diseases and alleviated suffering; but along with environmental problems, our desire for an easy life has led to lifestyle diseases and other new types of disease.

Previous histories have tended to focus on the power of medicine in conquering illness, but here I also consider iatrogenic diseases and other medical mistakes, as well as chronic diseases that have existed since ancient times. Modern medicine has pursued physical research based on a foundation of biology and chemistry, with enormous strides made in the twenty-first century. Creating an organ from a single cell is no longer a dream. The history of disease will doubtless be entirely redrawn in the years ahead. At the same time, many diseases cannot be cured simply by addressing physical symptoms. We need medical care that heals both the body and the heart.

Looking back on the history of disease, we see that before modern medicine became the mainstream, doctors examined patients, and patients' families nursed them to the best of their ability, but the important thing was to pray to the gods—because offering peace was the cornerstone of medicine. I believe that no matter how much modern medicine changes, that cornerstone will remain the same.

This translation owes much to the efforts of a dedicated editorial team. In particular, my thanks go to Ellen Nakamura for her careful academic review of the translation.

March 2024
Sakai Shizu

Part I

Records of Disease

I. The Stories Told by Bones and Human Remains

In Japan, the fascination with ancient times is fueled by the many sites unearthed every year—previously over 10,000, but dropping more recently to 7,000–8,000. The multitude of human bones discovered still bear the traces of diseases and wounds, revealing the sicknesses that afflicted people of the distant past.

We can reconstruct the shape of daily life during the Jōmon (ca. 10,500–ca. 300 BCE) and Yayoi (ca. 300 BCE–ca. 300 CE) periods by identifying from such bones and remains the kinds of diseases people suffered in that distant past.

Traces of disease remain not just in bones but also in coprolites in latrine pits at ancient dwelling sites. Coprolites are fossilized feces, from which, using the techniques of modern analytical chemistry, we can discern what people ate. The surrounding soil sometimes contains evidence of parasite eggs, revealing that the parasites we know today have plagued the human race since Jōmon times.

The study of bones and remains for evidence of disease is known as paleopathology, a discipline that began with the study of Egyptian mummies and other ancient remains. In Japan, paleopathological research based on human remains from the Jōmon and Yayoi periods up to early modern times (ca. 1570–1867) has been conducted mainly by anthropologists. The number of actual paleopathologists is not large, and there are simply not enough of these experts to conduct paleopathological studies on all the bones at all the sites that have been discovered in Japan in recent years.

According to Suzuki Takao, a leading authority in paleopathology, the few studies that have been undertaken vividly document the diseases that afflicted the Jōmon people. Unfortunately, paleopathology cannot study diseases that do not leave evidence in the bones, such as acute contagious diseases, food

poisoning, and diabetes. But such ailments sometimes leave clues in soft tissue, such as that found in Egyptian mummies and the corpse recovered from a Han tomb in Mawangdui near Changsha, China.

1. Wounds and Fractures

Some skeletal remains from the Jōmon period retain traces of external trauma, in some cases so extensive as to make one wonder how anyone survived the harsh lifestyle dependent on hunting, fishing, and gathering.

Anthropologist Suzuki Hisashi and his team excavated a set of male bones from the Sanganji shell mound, a Jōmon site in Fukushima Prefecture, in an area once known as Komagamine. The man's pelvis was pierced by a stone arrowhead, which had remained embedded in the bone. Amazingly, new bone tissue had grown around the arrowhead. From the position of the arrowhead, we can deduce that the man was shot from behind, sustaining what was clearly a grave injury, but the new bone tells us he survived the pain and heavy blood loss, and lived for many years after.

He was probably the exception rather than the rule, however. Most people would have died instantly. In another set of male skeletal remains from the early Jōmon period—recovered from the Kamikuroiwa Iwakage site in Ehime Prefecture—the pelvis was penetrated by a spearhead made of deer bone. This individual died instantly.

Jōmon people sustained many fractures as they roamed the countryside hunting, gathering, and fighting with one another. Femoral fractures were particularly common. Today, femoral fractures are often seen in the elderly, but these generally occur in the neck of the femur, the part that connects to the hip bone. In Jōmon people, it was the thick shaft of the femur, or thigh bone, that snapped right through. Paleopathologist Suzuki Takao surmises that these injuries were probably the result of tumbles taken in the course of an active outdoor life.

In some excavated bones, fractures are found that have healed with the bone still out of place. The healing process would have taken years, during which time the person would undoubtedly have continued to limp around gathering food from the land. Imagine the tenacity and willpower this required. In other cases, broken bones in the lower leg—the tibia and fibula—were splinted in place, evidence of the emergence of new treatment methods.

2. Stories Told by Bones

Chronic arthritis

Many elderly people today experience knee and back pain, and young people likewise suffer from chronic arthritic conditions like rheumatoid arthritis. But arthritis has also been found in bones from the Stone Age in the United States.

Evidence of arthritis dates back further than any other disease. The Jōmon people, too, suffered from chronic arthritis—to a terrible extent, judging from the traces left to us. The disease was even present in young people. In one case, arthritis caused the thigh and calf bones to fuse at the knee, creating a permanent kink in the leg. This disfigurement may have resulted from the difficulty of extending the injured leg in the cramped living quarters typical of the Jōmon period.

We can tell from skeletal remains, however, that people remained highly mobile despite such limb deformities. Their bones reveal that their calf muscles were far more developed than is typical today. Clearly, they did not allow their search for food to be impeded by imperfectly functioning limbs.

Polio

The bones of five female Jōmon-period skeletons—a child approximately four years old, three adult women, and a baby only a few months old, discovered at the Ōyaji cave site in Utsunomiya, Tochigi Prefecture—reveal skeletal underdevelopment suggestive of polio. According to Ogata Takahiko, who conducted a study of these skeletons, the women's skulls show signs of empyema (pockets of pus), and their elbows and knees were debilitated by arthritis. The lower legs of the four-year-old child show developmental differences between the left and right limbs, leading Ogata to believe the child had polio.

Polio, as it happens, has a long history. An ancient Egyptian wall painting from around 1400–1300 BCE shows a pharaoh with an extremely short and thin right leg, standing on tiptoe on that leg and supporting himself with a cane. His mummy also remains, and following examinations of both the painting and the mummy, the accepted view is that the pharaoh suffered from polio.

If the Jōmon child really did have polio, it would mean that polio extended through the eastern reaches of Asia as far as Japan, posing some very interesting

questions. The fact that bones with traces of polio were found with the remains of other members of the same family group suggests that in Jōmon society, children with physical disabilities were cared for by families. Jōmon people evidently had sufficient resources to tend to disabled family members.

But why were no male bones found in this family unit? The mystery deepens: human bones smashed with a blunt instrument were found scattered in the same area. Ogata surmises these are an indication of cannibalism. His theory is that a drastic change in the environment made life so difficult that people resorted to consuming human flesh. Virtually all of the smashed bones, however, also show signs of disease.

Ogata believes there is a strong possibility those who were eaten had died of disease or were weakened by severe illness. The dramatic change in the environment was most probably caused by either an epidemic or abnormal weather. Abnormal weather may have dried up food sources, causing the men to go in search of a new place to live, leaving the women and children behind. Presumably the men went off without eating their families!

Bones showing traces of polio have also been unearthed from a late Jōmon site in southwestern Hokkaido. One such skeleton, Irie No. 9, suffered from polio. According to Suzuki Takao, the bones belong to a youth in his late teens. The development of his head and trunk is within normal limits, but the arm and leg bones are so spindly that they could be mistaken for those of a child. He evidently suffered from a condition that caused abnormal bone development.

Suzuki surmises that the youth contracted polio as a child, which deformed his limbs. His physical limitations would likely have made it difficult for him to hunt. His survival to around the age of twenty suggests he was blessed with his family's love during his lifetime.

Tuberculosis

Death sometimes comes after a long illness, and sometimes attacks out of the blue. In ancient times, too, people undoubtedly died suddenly from food poisoning or infectious diseases. We have generally lacked the means of investigating these illnesses, however, until people began keeping records of disease.

This was certainly the case for most infectious diseases, with one exception:

tuberculosis. Because chronic tuberculosis attacks and deforms the spine, it leaves traces. As a disease that accompanies the arrival of culture from more developed countries, tuberculosis is generally thought to have been unknown in Japan during the Jōmon period, first appearing in the Yayoi period together with culture from the Asian continent. By that point in history, exchange had begun among villages—including the exchange of disease. In other words, as society spread, so too did a growing range of diseases.

Tuberculosis began to gain real traction in the Kofun period (from around the end of the third century to the end of the seventh century). Ogata has found signs of tuberculosis in the spinal column and other bones of an elderly individual from the late Kofun era excavated in northeastern Chiba Prefecture, in an area formerly called Omigawa. The person evidently suffered from terrible chronic tuberculosis.

Suzuki has identified traces of spinal decay characteristic of tuberculosis in the bones of a sixth-century woman unearthed in Ōta Ward, Tokyo. Her spine, from the seventh thoracic vertebra to the second lumbar vertebra, had fused into a single bone, so she would have been unable to bend her back.

Evidence of tuberculosis has also been found in the thoracic to lumbar vertebrae of a man excavated from the Asahidai underground tunnel tombs in Ebino, Miyazaki Prefecture.

The discovery of signs of tuberculosis severe enough to have spread to bones means there undoubtedly were many, many more cases that were less severe. The disease spread in and among villages and was passed down through the generations to the present day.

Deformity

According to the *Kojiki* (Records of Ancient Matters) and the *Nihon shoki* (Chronicles of Japan), the oldest extant histories of Japan recounting its quasi-mythological origins, when the deities Izanagi and Izanami began creating the Japanese archipelago, their first child, Hiruko ("Leech Child"), was deformed and boneless, so they put it into a reed boat and set it adrift. Taiwan and Okinawa have similar stories of disabled children being abandoned.

There were also cases, however, where a deformity led to deification. For example, Emperor Ōjin (r. 270–310) came to be worshipped as the god

of archery because he had an unusually large and muscular upper arm that resembled the grip of an archer's bow.

Deification also sometimes occurred when a child who was never expected to survive because of some physical abnormality defied the odds—for example, Sukuna from Hida Province. Sukuna is described in the *Nihon shoki* in a manner suggesting conjoined twins: "So formed that on one trunk he had two faces. The faces were turned away from each other. The crowns met, and there was no nape of the neck. Each had hands and feet. There were knees, but no popliteal spaces or heels."[1] Sukuna was unusual not just for his appearance but also his superhuman strength, with all these attributes leading to his worship as a demon.

Cyclopia (a birth defect characterized by having only one eye) was also the object of worship.

In all the above cases, when children born with an extreme deformity or deformities survived against all expectation, they were deified as possessing superpowers.

Sometimes malformations were artificially created. Suzuki Hisashi and his team excavated some skeletons whose teeth had all been filed to points, which would have been extremely painful. This feature is often found in the skeletal remains of village chiefs, and filing may well have been a necessary ritual for becoming a chief.

Pierced skulls have been discovered in South America and elsewhere, though the purpose of that feature is a mystery. Yet where an individual underwent a life-threatening operation and managed to survive, they were undoubtedly regarded as possessing superpowers and granted high social status, such as that of a shaman.

People in ancient times, therefore, did not always fear and shun deformity and in some cases actually worshipped it.

3. Stories in the Soil

Research into the diseases of ancient times is also being conducted using soil from ancient dwelling sites and graveyards. Looking at the remains of

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1. W. G. Aston, *Nihongi: Chronicles of Japan from the Earliest Times to 697* (Tokyo: Tuttle, 1972), vol. 1, 298.

a woman interred in a burial area alongside the Todoroki shell mound in Miyanosho, Uto, Kumamoto Prefecture, Ogata noticed yellow soil where the woman's hips would have been. It was just where the colon and anus would have been, with the yellow clump of earth matching the path that the colon would have traveled.

Ogata's hunch was that the yellow earth was food that had remained undigested in the intestine. When he examined it more closely, he found he was right. The soil contained the bones of several small fish, including pilchards, anchovies, and gobies.

The woman had undoubtedly died suddenly, a few hours after eating, possibly from food poisoning or a brain hemorrhage. While it might not provide evidence of the cause of death, the yellow earth formed by fish carcasses does offer valuable information about what people ate back in that period.

Soil investigations have progressed to include latrine areas at dwelling sites. In 1992, the Division of the Asuka/Fujiwara Palace Site Investigations at the Nara National Research Institute for Cultural Properties discovered the remains of a latrine pit during the excavation of the Fujiwara Palace. They conducted a chemical analysis, examining the soil with a modern scientific eye.

Again, it was found that people ate anchovies and other small fish. An even more important harvest was the discovery of roundworm, whipworm, liver fluke, and Yokogawa fluke eggs in the latrine pit soil. These parasites require an intermediate host, in this case, river fish. People were infected by parasites from the river fish they had consumed. They would have suffered terrible stomach pain. The history of parasites is as old as humankind. People knew from experience that worms caused stomach pain. This was the first instance of correct identification of the direct cause of a malady.

Since ancient times, various diseases have been blamed on worms. In Daoism, sickness was believed to be caused by nine types of worms. Incantations to rid the body of such worms were important rituals. In Taiwan, where Daoism remains very influential, such rituals continue today. They were also important in Japan before the advent of modern medicine. On Mikurajima, an island in the Pacific south of Tokyo, it was commonly believed that convulsions and colic (conditions thought to be caused by worms) could

be cured by eating food prepared in a household where three generations were present.

II. Disease in Ancient Times

When people get sick, we lament our bad luck and wonder what made us sick, but we often cannot isolate a cause. The more serious the illness, the more difficult it is to accept. Today, illness is seen as personal fate. In the past, though, people believed illness was a punishment meted out by the gods. Widespread epidemics in particular were regarded as the result of misgovernment by the emperor that disrupted the natural order.

1. Epidemics and Gods of Pestilence

Human society has been wracked by epidemics since time immemorial. Epidemics appear in the *Kojiki* and *Nihon shoki* as plagues (*eyami* or *e no yamai*). According to the *Wamyō ruijusho* (Categorized Notes on Japanese Terminology), compiled early in the Heian period (794–1185) as Japan's first Chinese-Japanese dictionary arranged by category, such plagues were diseases that afflicted everyone. In other words, when epidemics occurred, everyone was equally at risk, regardless of social status.

In a later commentary, scholar and linguist Motoori Norinaga suggested that the *Kojiki* wrote *eyami* using the Japanese characters for "role" and "disease" rather than "epidemic" and "disease" because epidemics were a universal burden in much the same way as taxation. Epidemics were also called *tokinoke*—"spirit or mood of the time"—meaning that epidemics ensued when there was a disruption to the pattern of the four seasons. People believed there was a close relationship between epidemics and extreme weather. They saw misgovernment as causing abnormal weather and abnormal weather as causing starvation, which in turn led to the spread of epidemics. When epidemics occurred, people prayed fervently to the gods as the rulers of heaven.

The first epidemic recorded in the *Nihon shoki* occurred in the fifth year of the reign of Emperor Sujin (c. 92 BCE), when there was "much pestilence throughout the country, and more than half the people died." Lamenting

the situation, the emperor bathed, purified the interior of the palace, and prayed. The deity Ōmononushi then appeared to the emperor in a dream, claiming responsibility for the ongoing epidemic. He informed Sujin that if the emperor could convince Ōmononushi's child, Ōtataneko, to worship the deity, then he would be appeased and leave the land in peace.

The emperor sent swift horses around the country in search of Ōtataneko, who was found in the village of Suemura in Izumi. When the emperor asked the man's identity, he said that he was the child of Ōmononushi. The emperor was overjoyed and made Ōtataneko his chief priest. After worship was made to the gods of heaven and earth at shrines around the land, the epidemic died out.

Much remains unclear about the Sujin era, including the exact years of the emperor's reign. Given that China frequently experienced epidemics from prehistoric times, however, disease in all likelihood spread to Japan via the Korean Peninsula as exchange between Japan and China began to flourish.

Moreover, the Shinto rituals above reveal that people believed that epidemics were controlled by the gods of heaven and earth. Even in subsequent generations, therefore, the outbreak of an epidemic occasioned much prayer.

Incidentally, in the Taihō Code instituted in 701, which elaborated the *ritsuryō* legal system, the Jingiryō, or the part of the code that dealt with Shinto matters, stipulated that the Hanashizume Festival be held in spring. This particular festival was intended to appease the gods of pestilence who, when pollen was flying around in spring, were believed to scatter disease everywhere, causing epidemics. According to the *Ryō no gige* (An Explication of the Civil Codes), a commentary on the various *ritsuryō* codes, the first Hanashizume Festivals were held at the Ōmiwa and Sai Shrines at Mt. Miwa in Sakurai, Nara Prefecture. Rites were subsequently conducted at Imamiya Shrine in Kyoto to offer prayers to the gods of pestilence, marking the start of the Hanashizume Festival tradition in the Kinki region in central Japan.

Ōmononushi, the god who appeared to Emperor Sujin, is another name for Ōkuninushi, who appears in the legend of the Hare of Inaba. There, he is a compassionate hero deity who rescues the poor hare from a prank played by his brothers. The deity himself also overcomes ordeals experienced at the hands of those brothers. The best known of Japan's multitudinous gods, he and

the dwarf deity Sukunahikona are worshipped together as gods of medicine in many shrines even today.

Like Ōkuninushi, Sukunahikona is a deity of government. One day, when Ōkuninushi was sitting at Cape Miho in Izumo, a small deity appeared among the waves. The god was riding in a small boat made from the seed pod of a rough potato (*Metaplexis japonica*) plant and was dressed in clothing fashioned from moth wings (that is, silk clothing). It was none other than Sukunahikona, who was so small that he had slipped out from between his mother's divine fingers. Because of his wide knowledge, he was ordered to join forces with Ōkuninushi and govern the country, which is how the two deities later came to be worshipped as the gods of medicine and healing and the guardians of good health.

2. The Legend of Somin Shōrai

In Ise, people hang *shimenawa* (straw ropes used for ritual purification in the Shinto religion) above their doorways with a plaque marking household members as the descendants of Somin Shōrai to invoke protection against plagues.

The Somin Shōrai folk belief can be found not just in Ise but around Japan. The story as told in the *Bingo no kuni fudoki* (Gazetteer of Bingo Province) is widely known.

In short, Mutō, a male deity from the northern sea, went to visit a female deity in the southern sea. Along the way, just as it was growing dark, he reached the Enokuma no Kunitsuyashiro Shrine, where the brothers Somin Shōrai and Kotan Shōrai lived. Mutō first asked the wealthy younger brother for a bed for the night, but Kotan Shōrai was suspicious of this shabby stranger and turned him away. The deity then called on the poor but kind older brother Somin Shōrai, who gladly took him in, apologizing that he could offer only a millet-straw cushion and steamed rice with millet.

Some years later, Mutō returned to the village with a horde of fellow deities. They called on the house of Somin Shōrai and gave the household members grass wreaths, instructing them to ensure that the wreaths were worn by all Somin Shōrai's descendants. When the area was subsequently struck by an epidemic, everyone died—except for Somin Shōrai's wreath-wearing descendants. The deity revealed himself as Susanoo, the god of sea and storms,

and said that subsequent generations, too, would be protected from plague as long as they wore the wreaths as proof of their ancestry.

The younger brother of sun goddess Amaterasu, Susanoo was a deity feared for his violence. He was renowned for defeating the eight-headed, eight-tailed serpent Yamata no Orochi, who spread epidemics but also protected specific individuals from becoming ill. Japanese deities have two aspects: *nigitama*, a gentle and tranquil aspect, and *aratama*, a bold and violent aspect. When angered, they took on the latter, bringing calamity. Rituals were held to ensure that the gods remained at peace.

The Somin Shōrai folk belief noted in the *Bingo no kuni fudoki* is probably a mixture of the grass wreath myth, the Somin Shōrai myth, and worship of the deity Susanoo. Even today, some shrines hold summer purification rites (*nagoshi no harae*) on June 30. As the day approaches, huge grass wreaths are set up in the shrine grounds for people to step through. Amulets for the descendants of Somin Shōrai are sold around the country.

A famous element of the Somin Shōrai story is the Somin Festival held at the Buddhist temples of Saidaiji in Okayama, Okayama Prefecture, and Kokusekiji in Ōshū, Iwate Prefecture. At Kokusekiji, the festival takes place at night in the depths of winter, when half-naked men engage in a ferocious competition to grab the "Somin bag," a sack filled with hexagonal wooden talismans. Amid all that shouting and excitement, sweat turns to steam, which mingles with the light from burning torches to create a truly otherworldly spectacle. Kokusekiji is dedicated to Yakushi Nyorai, the Medicine Buddha, to whose cult the Somin Shōrai folk belief has been grafted.

The Somin Festival is also held as a Shinto ritual at the Hie Shrine in Tokyo's Chiyoda Ward—one of the many versions of this festival that keep belief in Somin Shōrai alive and well even in the present day.

3. Plagues and the Introduction of Buddhism

The next epidemic recorded in the *Nihon shoki* is the plague in 546, the seventh year of the reign of Emperor Kinmei. Because accounts in the *Nihon shoki* concerning the period between the emperors Keitai and Kinmei (507–71) are considered contrived and unreliable, we do not know whether this particular plague actually occurred. It was only beginning with Kinmei's reign, however, that such accounts of plague suddenly began to appear.

The *Nihon shoki* claims that Buddhism came to Japan in 552, the thirteenth year of Emperor Kinmei's reign. On hearing the Buddhist doctrine, the emperor is said to have leaped for joy, saying: "Never, from former days until now, have we had the opportunity to listen to so wonderful a doctrine." He asked his ministers whether the Buddha should be worshipped. Soga no Iname, one of the rulers of the Soga clan, responded, "All the Western frontier lands without exception do it worship. Shall Toyo Akitsu Yamato [Japan] alone refuse to do so?" His political rival Mononobe no Okoshi, however, opposed the idea, saying: "Those who have ruled the empire in this our state have always made it their care to worship in spring, summer, autumn, and winter the gods of heaven and earth, and the gods of the land and of grain. If just at this time we were to worship in their stead foreign deities, it may be feared that we should incur the wrath of our national gods."[2]

The emperor gave permission for Soga no Iname to worship the Buddha privately. Iname enthroned the image of Buddha (a gift to the emperor from the king of Paekche,[3] whose retainer had brought the Buddhist doctrine to Japan) in his house at Oharida where he "diligently carried out the rites of retirement from the world, and on that score purified his house at Mukuhara and made it a temple."[4] Then, as it happened, Japan was visited by a major plague. Mononobe no Okoshi and others blamed the plague on Iname's worship of the Buddha and advised the emperor to destroy the Buddha image that he had passed on to Iname. The emperor took their advice, and the image was discarded in the Horie Canal in Naniwa (now Osaka), while the temple buildings were burned to the ground.

While that is the account in the *Nihon shoki*, it is now regarded as more likely that the actual date of introduction was 538, as suggested in the *Gangōji garan engi* (A History of the Gangōji Temple), a primary source for early Buddhist history in Japan. The same record notes that an epidemic swept Japan some years later, which would fit with the 552 date in the *Nihon shoki*.

Returning to the *Nihon shoki*, in the thirteenth year of the reign of Emperor

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2. W. G. Aston, *Nihongi: Chronicles of Japan from the Earliest Times to 697* (Tokyo: Tuttle, 1972), vol. 2, 65–67.

3. One of three kingdoms into which ancient Korea was divided before 660.

4. Aston, 67.

Bidatsu (584), two Buddhist images—one of Miroku, or Maitreya, the expected messiah of the Buddhists, and another unspecified Buddha image brought by Saeki no Muraji, (also known as Saeki no Ōme)—were brought to Japan from Paekche. They were given into the keeping of Soga no Umako (son of Soga no Iname), who sent his men in search of a Buddhist practitioner. The men finally found a former Buddhist monk called Eben. A temple was built to enshrine the Miroku statue, and religious services were held. In 585, Umako erected a pagoda north of the Hill of Ōno and held a large ceremony. Nine days later, he fell ill and was told by a fortune teller that he had been cursed by the Buddhist deity worshipped by his father, so Umako prayed to that deity to save his life.

At this same time, an epidemic raged throughout Japan. Mononobe no Moriya (son of Mononobe no Okoshi) claimed that the epidemic was the result of the emperor listening to Umako and giving him permission to worship the Buddha, which led the emperor to declare that Buddhism should be discontinued. Moriya himself burned the Buddhist images and threw the remnants into the Horie Canal. He then seized the nuns and imprisoned them at the road station of Tsubaichi (in present-day Nara Prefecture).

It was around that time that the emperor and Moriya were suddenly beset with sores. Many people around Japan were similarly attacked with sores and died of them. According to the *Nihon shoki*, the afflicted bemoaned their situation on their deathbeds: "Our bodies are as if they were burnt, as if they were beaten, as if they were broken."[5] People wondered if this was not retribution for burning the Buddha.

Until this point, the *Nihon shoki* referred only to epidemics, but here, the term *pox* makes its first appearance. The disease was smallpox, which would continue to afflict the population for many years.

The epidemic that began in the third month of 585 was still raging three months later. Umako told Emperor Bidatsu that he was still very sick, with no sign of recovery, and that no succor would be afforded to him unless by the power of the Buddha. The emperor allowed Umako to continue practicing Buddhism privately to cure his disease; but in the eighth month of the same year, the emperor passed away. According to the *Nihon shoki*, this was when

5. Aston, 104.

Soga no Umako and Mononobe no Moriya first "conceived a hatred of each other."[6]

Two years later, in the fourth month of 587, Emperor Yōmei became ill and decided to convert to Buddhism. Moriya was furious, asking why they should worship strange deities and turn their backs upon the gods of their own country. Umako argued that they must assist with Yōmei's conversion in compliance with the imperial command and brought the Buddhist priest Toyokuni to the palace. This was when the conflict between Umako and Moriya began. The emperor's sores did not heal, however, and he died.

The *Nihon shoki* therefore links the introduction of Buddhism to Japan with the outbreak of epidemics. In the *Toyuradera koengi* (Origins of the Toyuradera Monastery) and *Gangōji garan engi*, however, it is said that Buddhism was suppressed following the death of its protector, Soga no Iname.

Later, in 657, the third year of the reign of Empress Saimei, when Palace Minister Nakatomi no Kamatari became seriously ill, the empress had the Paekche Buddhist nun Hōmyō recite part of the *Vimalakīrti Sutra* for him. He was healed even before she finished her recitation. Kamatari was so impressed that he built a temple in Yamashina, outside of Kyoto, and began holding recitations of the *Vimalakīrti Sutra*. This marked the beginning of the Yuima-e, an annual lecture and debate ritual centered on this sutra.

Recitation of the *Benevolent Kings Sutra* (Ninnō-e) began during the reign of Empress Jitō; the *Great Perfection of Wisdom Sutra* (Daihannya-e), during the reign of Emperor Shōmu; and the *Sovereign Kings of the Golden Light Sutra* (Saishō-e), during the reign of Emperor Junna. Subsequently, these sutras were recited at the court in times of epidemic, famine, and disaster.

4. Famine and Epidemics

The next major recorded epidemic was in 698, the second year of the reign of Emperor Monmu. According to the *Shoku Nihongi* (Continued Chronicles of Japan), this epidemic broke out in Echigo Province in the third month and spread to Ōmi and Kii by the fourth. Another epidemic was recorded in the spring of the following year in the provinces of Shinano and Kōzuke and another in the fifth month in Sagami. Going into 700, epidemics

6. Aston, 105.

struck Shinano in the spring and Yamato in the twelfth month. Thereafter, they continued to occur almost every year until 713, with medications administered each time.

In 702 (Taihō 2), the year after the Taihō Code was formulated, epidemics erupted in Echigo in the second month and Kōzuke in the sixth, while in the third month of 703, there were again epidemics in Shinano (again) and Kōzuke, then in Sagami in the fifth month. In 704, the emperor ordered the name of the era changed to Keiun to move past the ill luck associated with the Taihō era. Despite this, Shinano experienced another epidemic in the third month, and Izu and Iga were struck in the summer. In 705, twenty provinces succumbed.

From the lunar New Year in 706, an epidemic spread across the territories around Kyoto, as well as Kii, Mikawa, and Suruga. Because of the broad reach, the court deemed it a nationwide epidemic and, for the first time, ordered prayers to be offered in line with the Jingiryō section of the Taihō Ritsuryō Code. The epidemic showed no sign of abating, however, and by the fourth month had spread across western Japan, including the provinces of Kawachi, Izumo, Bizen, Aki, Awaji, Sanuki, and Iyo.

Responding to the nationwide contagion that year, the emperor on New Year's Eve grieved the many peasants who had died throughout the country, and he performed the *taina* demon-exorcism rite using a clay ox. A ceremony of Chinese origin designed to expel epidemic demons, it subsequently joined the list of annual events. In modern times, it survives as the "bean-throwing" (*mamemaki*) ritual, which takes place on the last day of winter in the traditional Japanese calendar.

The spate of epidemics continued in 707. The court sent envoys to shrines all over the country to hold the great purification (*ōharae*) rite; and in the fourth month, alms were given to the poor and the stricken. Despite these measures, the situation became even more dire in Tanba, Izumo, and Iwami—all provinces near the Korean Peninsula. Ritual offerings from the court were presented to enshrined deities in these three provinces, and the emperor ordered that sutras be read in temples in the territories around Kyoto and three other provinces. These efforts, however, were not successful.

At New Year in 708, a gift of bronze was presented to the court by Musashi Province, and the era name was accordingly changed to Wadō ("Japanese

The provinces of Japan in the 1330s. (Reproduced by permission from Jeffrey Mass, ed., *The Origins of Japan's Medieval World: Courtiers, Clerics, Warriors, and Peasants in the Fourteenth Century* [Stanford, CA: Stanford University Press, 1997]. Courtesy of Stanford University Press.)

bronze")—to no effect. There was consistently an epidemic underway somewhere around the country, with the exception of the northeast, until 713. In other words, epidemics continued unabated for fifteen years from 698 to 713.

They were not all epidemics of the same disease, however. The 704–8 epidemic that spread nationwide in the Keiun era differed from those that had come before. In 701, Emperor Monmu sent a mission to Tang China for the first time in thirty-one years. The mission returned in 704, and an epidemic spread nationwide beginning in 705. When contact between countries picks up, disease starts to travel too. The timing of the Keiun epidemic may have been a coincidence, or it may indeed have had something to do with the mission.

When the capital was relocated from Fujiwara (present-day Kashihara in Nara Prefecture) to Heijō (the present-day city of Nara) in 710, during the reign of Empress Genmei, one reason was the famine and epidemics that had battered the country without respite in the latter half of Monmu's reign. The relocation did not solve the problem. Instead, it increased the burden on farmers and caused more famine.

III. Epidemics and Emperors

Records prior to 705 show that most epidemics occurred repeatedly in a handful of places—in other words, they were endemic rather than pandemic. The diseases were probably malaria, schistosomiasis (bilharzia), and scrub typhus.

The history of disease in China and Korea shows that outbreaks of such epidemics were associated with the spread of irrigation agriculture. It seems likely that Japan suffered from similar epidemics from very early on. According to the *Ruijū kokushi* (Encyclopedic History of Japan), a historical text that records the events listed in the Six National Histories, an epidemic affected several provinces in the sixth month of 726. Emperor Shōmu issued an edict noting that the peasants were contracting a protracted disease from which they were not recovering but rather remaining gravely ill and in constant pain. He sent physicians to the affected areas to provide medicine to the sick. What

could this chronic disease have been? The first thing that springs to mind is tuberculosis, which spread during the Yayoi period with the beginning of rice cultivation; but malaria, schistosomiasis, and scrub typhus were also common in farming areas. All of these continued to plague the populace until modern times.

1. Smallpox Carried from China

Malaria and schistosomiasis are spread by intermediate hosts such as mosquitoes and shellfish. Without these hosts, there is no contagion. Tuberculosis and smallpox, by contrast, are transmitted by humans, spreading as people move around.

What was the disease that spread nationwide in 706? According to Chinese disease history, epidemics were experienced around the continent in 706–7. World epidemic history suggests that the particular disease was in all likelihood smallpox.

Smallpox has a long history. Traces of the disease have been found in Egyptian mummies dating back more than three thousand years, but it is said to have originated in Central Asia, from where it spread east and west and across China to Japan.

The *Ruijū kokushi* notes that according to ancient records known as the *Kenkoki*, there were frequent epidemic outbreaks during the Yōrō era (717–24), with many people dying as a result. The *Shoku Nihongi*, however, contains no record at all of epidemics from 713 to 723. Of course, the absence of reference to epidemics in historical records does not necessarily mean no epidemics occurred.

There are, in fact, records of an epidemic in 714 in the Korean kingdom of Silla, which had some contact with Japan, causing many deaths. That was a smallpox epidemic. In Japan, rebellions against the Yamato dynasty in 720 by the Hayato people of southern Kyushu and by the Emishi in northeast Japan left soldiers exhausted. In such circumstances, it would not be at all strange for a contagious disease transmitted from China continent to spark an epidemic in Japan.

Wars, famines, and epidemics are closely linked. In recent history, food shortages arising in the chaotic aftermath of World War II were accompanied by typhus and other contagious diseases. The epidemic that broke out in 723

was the same. The Yōrō era saw not only the Hayato rebellion but also famine caused by cold and drought, with many people dying as a result.

Smallpox spread throughout Japan during the reign of the next emperor, Shōmu, from 724–49, but that will be dealt with later.

2. The Mysterious Death of Fujiwara no Fuhito

In the Nara period (710–94), Fujiwara no Fuhito (659–720), who was heavily involved in the formulation of the *ritsuryō* legal system, saw his star rise high at the court. When Minister of the Right[7] Fujiwara no Fuhito's second son, Fujiwara no Fusasaki, became an associate court counselor at the tender age of thirty-seven, this showed clearly the overt privileges that Fuhito enjoyed among the court nobles. Until that time, each of the largest regional clans customarily named one person to serve as an associate counselor. The promotion of Fusasaki was a departure from that tradition. It was the beginning of a glorious era for a family about whom Fujiwara no Michinaga (966–1027) later famously wrote, "This world, I think, / Is indeed my world, / Like the full moon I shine, / Uncovered by any cloud!"[8]

The year 720, however, was an unlucky one, with Fuhito falling ill at the end of the seventh month. The *Shoku Nihongi* notes on the first day of the eighth month that Fujiwara no Fuhito became ill and was confined to his bed. His rash eventually healed, but he had no appetite and was quite agitated. Two days later, he was dead. He was sixty-two years old.

What exactly was his medical condition? Given the rash and the agitation, he almost certainly had a fever and impaired consciousness. He may have had an acute infection—smallpox or measles—or perhaps some form of poisoning. If there was an epidemic at the time, smallpox is highly likely, but it remains a puzzle.

Whatever it was, even Fuhito, one of the most powerful figures of the time, failed to overcome it. He was consequently denied the pleasure of witnessing the enthronement of his daughter's son (that is, his grandson) as Emperor Shōmu in 724, four years after his death.

After Fuhito's death, his four sons won their political competition with

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7. One of the three primary ministers, alongside the minister of the left and the chancellor, constituting the central administrative body of Japan's premodern imperial government.

8. Ivan Morris, *The World of the Shining Prince* (New York: Kodansha International, 1994), 60–61.

Prince Nagaya, grandson of Emperor Tenmu and a leading politician of the time. In 729, Fuhito's daughter married Emperor Shōmu, becoming Empress Kōmyō and realizing the Fujiwara clan's cherished ambition of marrying into the imperial family.

By this time, when an epidemic broke out, the emperor was expected to give ritual offerings to Shinto shrines around the country and order prayers, instruct Buddhist temples nationwide to recite the *Benevolent Kings Sutra*, dispense medicine to treat the disease, and give alms. As a devout Buddhist, Empress Kōmyō set up the Seyakuin medical facility at the Empress Consort's Household Agency in the fourth month of 730 and fed the starving.

Kōmyō's conversion to Buddhism and deep devotion are widely known from the legend of the empress bathing a leper (discussed in I.IV.2). She was influenced by her mother Agata no Inukai no Tachibana no Michiyo, who also held strong Buddhist beliefs.

In 730, Empress Kōmyō visited the temple Kōfukuji and ordered the construction of the foundations for a five-story pagoda. In 734, she completed the Saikondō hall at Kōfukuji to commemorate the first anniversary of her mother's death, and in 747 she built the Buddhist temple Shin Yakushiji as an offering for the recovery of Emperor Shōmu.

3. Smallpox Epidemics in the Tenpyō Era (729–49)

In 735, the seventh year of the reign of Emperor Shōmu, a massive smallpox epidemic broke out. In the first month of 735, an envoy from Silla came to the capital, and in the third month, a Japanese mission to the Tang court led by envoy Tajihi no Hironari returned to Japan together with individuals from Tang China and Persia. In the fourth month, Kibi no Makibi, a scholar and early envoy to China who played a significant role in introducing Chinese culture to Japan, returned from his studies in Tang China, bringing to the court the *Tangli* (Tang Rites) scrolls, Dayan lunar calendar, weapons, and other items. Later, the Buddhist monk Genbō, who was greatly trusted by the emperor, offered to the court Buddhist statues and sutras that he had brought back from Tang. During this period of active exchange between Japan and other countries, an epidemic erupted in Dazaifu in Kyushu. In the eighth month, thousands died.

According to the *Shoku Nihongi*, grieved by the deaths, Emperor Shōmu

wanted to treat the disease and save the lives of the people, so he made offerings to the gods and deities within Dazaifu, and ordered prayers to be made for the people. He also ordered that the *Diamond Sutra* be read at Kanzeonji, a major Dazaifu temple, and at other temples outside Chikuzen Province. Envoys were dispatched to take rice and other sustenance to the stricken and provide them with herbal infusions. The emperor ordered the governors and assistant governors in provinces along the San'yō highway from Nagato Province to conduct purification rites and hold "feasting of the roads" (*michiae*) festivals. These festivals, which celebrated the deities Yachimata-hiko, Yachimata-hime, and Kunado, were intended to prevent evil spirits, demons, and gods of pestilence from entering the capital.

Dazaifu authorities submitted the following petition to the court: "A pestilence characterized by sores has spread widely in the provinces under our jurisdiction. The whole populace is bedridden. We request exemption from the local-products tax this year."

The final *Shoku Nihongi* entry for 735, on the twenty-first day of the intercalary eleventh month, notes that the whole realm suffered from "pea pox" (*wanzugasa*)—that is, smallpox—colloquially called "gown pox" (*mogasa*), with many people dying prematurely.

In fact, this represents the first appearance of the term "pea pox" (*wanzugasa*). *Mogasa*, or "gown pox," was the common name, referring to the way the rash spread from the head and down the body as if spreading out to the hem of a kimono. The name "pea pox" came from the pea-like lumps occurring in the wake of the rash. The other term for smallpox, "pox pustules" (*tōsō*), stems from the way the rash suppurates, collapses, and scabs, leaving deep pockmarks. It is now rare to see such pockmarks, but until vaccination was developed, if someone survived smallpox, they would be left with a heavily pocked face. For many years, therefore, smallpox was regarded as a disease that would disfigure your appearance, whereas measles would take your life.

The reason people began referring around that time to smallpox as "pea pox" rather than the more generic label "epidemic" was the new influx of medical knowledge from Tang China and Korea. Moreover, given the stipulation of a medical education system in the Taihō Code, doctors from the Bureau of Medicine were clearly practicing at the court.

Monks skilled in medicine were also coming to Japan from the mainland.

For example, in 721, the fifth year of the reign of Empress Genshō, a monk named Hōren, who was particularly knowledgeable about medicine, was praised by the empress as a great man who relieved people's suffering. The empress consequently honored Hōren's relatives within three degrees with the family name of Usanokimi.

4. The Deaths of the Four Fujiwara Brothers

As previously mentioned, the smallpox epidemic that began to run rife in Dazaifu beginning in the summer of 735 appeared to have been brought by an envoy from the nearby Kingdom of Silla. Unaware that smallpox was raging in Silla, the Japanese court sent a mission there in 736. The entire party, comprising over one hundred people including the attendants, boarded a ship in Naniwa, traveled west through the Inland Sea, and spent the Tanabata Festival in the seventh month in a Dazaifu guest house for foreign ambassadors. They then went to Silla via the islands of Iki and Tsushima. Yet smallpox first appeared in the party when they were staying in Iki, attested to by a record of party members dying of a strange disease. When the party returned to Japan on the New Year in 737, only forty people were left, and they were so sick that they were unable to go to the court until late in the third month to report on their mission.

By this point, smallpox was spreading through the provinces around Kyoto. Among those infected were court officials, including the four Fujiwara brothers, who may have contracted the disease from members of the Silla mission when they appeared at the court.

The seventeenth day of the fourth month marked the death of Fujiwara no Fusasaki, second son of Fujiwara no Fuhito, minister of civil affairs, and an associate counselor of senior third rank. He was also the first of the brothers to become an associate counselor. Founder of the Hokke branch of the Fujiwara clan, he was fifty-seven when he died.

On the first day of the fifth month, six hundred monks were invited to the court to chant the *Great Perfection of Wisdom Sutra*, but the epidemic continued unabated. On the nineteenth day of the same month, Emperor Shōmu noted that an epidemic and a famine had been occurring simultaneously since the month before, with rice seedlings withering in their paddies. Prayers had been made to river and mountain gods and offerings

to local deities; festivals had also been held. But these had all been to no effect, and the people continued to suffer. The emperor attributed the trials entirely to his own lack of virtue. Announcing that he wanted to extend to the world a generous and compassionate heart and save the people from disease, he granted a general amnesty.[9] Sickness felled his senior statesmen in quick succession, however. In the sixth month, four officials of the fourth rank or higher died, followed by another four in the seventh month.

Fujiwara no Maro, fourth son of Fuhito, associate counselor of junior third rank and minister of the military, died on the thirteenth day of the seventh month, age forty-three. Maro was the founder of the Kyōke branch of the Fujiwara clan. On the twenty-fifth day of the same month, Fuhito's eldest son and minister of the right, Fujiwara no Muchimaro, died aged fifty-eight. Muchimaro had never enjoyed good health. Nonetheless, on the day he fell seriously ill, Emperor Shōmu granted a general amnesty and also sent an envoy to the Nanke branch of the Fujiwara clan founded by Muchimaro, elevating him to senior first rank and appointing him minister of the left. But this effort was in vain.

In the eighth month, there was another death. On the second day, the emperor ordered monks and nuns in four of the provinces around Kyoto to purify themselves and chant the *Sovereign Kings of the Golden Light Sutra* two or three times in the space of a month. Despite this, three days later, on the fifth day of the eighth month, Fujiwara no Umakai died at age forty-four. The third brother and the final victim, Umakai had been an associate counselor of senior third rank and lord great chamberlain, founding the Shikike branch of the Fujiwara clan. When he was young, he was constantly on the move, appointed assistant to the Japanese envoy to Tang China and, on his return, general of a punitive expeditionary army to Ezo (present-day Hokkaido). When he fell ill, he had just returned from the expedition. In just three months, four heads of Fujiwara households had all perished, a major blow to the Fujiwara clan. Many other officials also died, throwing the court into chaos and causing the cancelation of several annual events.

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9. During times of calamity, emperors often granted amnesty and pardoned crimes as meritorious acts that, it was hoped, would help counter the disastrous events.

5. The Repeated Repentances of Emperor Shōmu

Emperor Shōmu observed that although he had ruled the land for some years, he had fallen short in leading the people through virtue and thus they were still not living in ease. He worried all night, forgetting to sleep. Moreover, since spring, there had been a sense of calamity, with many people dying and more than a few officials missing because of death. He acknowledged it was his own lack of virtue that had caused the disaster. He implored the heavens in fear and shame and found no relief. And so he granted the people relief from taxes as a way of making their lives easier.

The emperor ordered that offerings be made at all shrines to deities that could bring wind and rain and aid the nation. To achieve national peace and tranquility, he invited seven hundred Buddhist monks to chant the *Great Perfection of Wisdom Sutra* and the *Sovereign Kings of the Golden Light Sutra* at fifteen locations within the imperial palace, and four hundred people became priests. Many other measures were also taken, but the epidemic continued to rage. On the twentieth day of the eighth month of 737, Princess Minushi, daughter of Emperor Tenji, died.

The epidemic subsided in the ninth month, and on the twenty-eighth day of the month, a new administration was launched, drawn from the few nobles who had survived. Suzuka no Ōkimi (younger brother of the late Prince Nagaya) was appointed deputy prime minister, Tachibana no Moroe was made senior counselor, and Tajihi no Hironari, a former Japanese envoy to the Tang dynasty and an associate counselor, became a middle counselor. In the twelfth month, Fujiwara no Muchimaro's oldest son, Toyonari, was added as an associate counselor.

The final summary in the *Shoku Nihongi* from the end of 737 notes, "In the spring of this year, an epidemic disease characterized by swellings raged widely. It came first from Kyushu. Through the summer and fall, people in the realm, from aristocrats on down, died one after another in countless numbers. In recent times, there has been nothing like this."[10] Subsequently, however, the peasants continued to suffer under Emperor Shōmu's turbulent reign. If

10. William W. Farris, *Population, Disease, and Land in Early Japan, 645–900*, 1st ed. (Cambridge, MA: Council on East Asian Studies, Harvard University, 1985), 59, https://doi.org/10.2307/j.ctt1dnn933.

smallpox had not spread and the four Fujiwara brothers had continued to dominate politics, history may have been quite different.

IV. Empress Kōmyō and Medical Treatment

Medical treatment was an important ritual within Buddhism, as Buddhist scriptures taught that meritorious deeds would save all beings and bring an end to suffering from epidemics. According to legend, Prince Shōtoku, considered the founder of Buddhism in Japan, built the Four Institutions—a medical dispensary (Seyakuin), hospital (Ryōbyōin), welfare institution (Hiden'in), and institution of religion and education (Kyōden'in)—within the grounds of the temple Shitennōji in Naniwa (modern Osaka). At the dispensary, medicinal herbs were cultivated and medicine dispensed to the sick, while the hospital provided beds and medical care for invalids with no relatives. The welfare institution housed and tended for sick people with nowhere to turn, restoring them to health, whereupon they were put to work on chores for the Four Institutions. As an institution of religion and education, the Kyōden'in was a place for the practice of religious precepts, opening the path to and developing Buddhist teachings.

Prince Shōtoku's construction of the Four Institutions is related in the *Shōtoku taishi denryaku* (Biography of Prince Shōtoku) and the *Shitennōji goshuin engi* (A History of the Shitennōji Temple), both of which were written much later, so it is unclear whether the four institutions really were his work. Nonetheless, this legend has added to the worship of Shōtoku, exerting a great influence on later generations.

1. The Medical Dispensary and Welfare Institution at the Kōfukuji Temple

When and where were the first medical dispensary and welfare institution built? According to the *Fusō ryakki* (A Brief History of Japan), these two institutions were constructed at the Kōfukuji temple (then called Yamashinadera) in 723. Fifty vassal households, one hundred hectares of rice fields in Iyo Province, and 130,000 rice sheaves from Echizen Province were provided to cover the cost.

The construction of a medical dispensary at Kōfukuji was spearheaded by Empress Kōmyō, daughter of Fujiwara no Fuhito. Kōfukuji was originally the Fujiwara clan temple Yamashinadera, founded at the Yamashina residence of Fujiwara (formerly Nakatomi) no Kamatari to pray for the patriarch's recovery from illness. Fuhito moved Yamashinadera to Umayasaka in the capital Fujiwara (now Nara). After the national capital was transferred to Heijō, he relocated the temple to its current location as Kōfukuji in Kasuga, in the city of Nara.

The Yōrō Code, compiled in 718 (Yōrō 2) to replace the Taihō Code, again included a detailed section on medical care (the Ishitsuryō), covering everything from medical education to national medical administration. For example, it called for the establishment of an Inner Office of Medications, which provided medicines for the emperor, his consort, and his close relatives, as well as a Bureau of Medications for other court officials, and stipulated medical professions and medical education methods. A doctor was assigned to each local province.

It is doubtful, however, that the Ishitsuryō was carried out to the letter. And even if it were, it would not have been possible to give relief to all those in need through the Ishitsuryō provisions alone.

Consequently, a medical dispensary and welfare institution were established at Kōfukuji to serve the poor. One hundred hectares of new rice fields in Echizen Province were donated to Kōfukuji by Empress Kōken on the eighth day of the twelfth month of 757. According to the *Shoku Nihongi*, the empress donated the land in perpetuity to the temple's medical dispensary so that "all the people who suffer from disease and poverty shall without exception be saved." She fervently prayed that, as a result of this good work, she, "together with the multitudes of people, will transfer the good born of this almsgiving to the future, that the healing qualities of the ten Buddha natures will be spread over this world of many impurities, that to distant eternity the grief of suffering will be extinguished, and that we all together will enjoy long life, finally attain marvelous truth, and realize the consummate body of perfection."[11]

In other words, the empress made the donation in the hope of bringing

11. Ross Bender, *Nara Japan, 749–757: A Translation from Shoku Nihongi* (self-pub., CreateSpace, 2015), 254.

succor to the poor, so as to spread the healing qualities of the ten buddha natures over the world and achieve spiritual perfection.

2. Empress Kōmyō and Her Medical Dispensary

The beautiful Empress Kōmyō stood at the pinnacle of the resplendent culture of the Tenpyō period (710–94),[12] with her wisdom and compassion making her a towering presence among the empresses of Japanese history. She was also instrumental in establishing a fully equipped medical dispensary.

The year that she was enthroned (729), the empress's Household Agency, charged with looking after her affairs, was installed in the former residence of Fujiwara no Fuhito on the eastern side of the imperial palace. On the seventeenth day of the fourth month of the following year, a medical dispensary (the second after Kōfukuji's) was set up within the Household Agency. Shortly thereafter, welfare institutions were built to the east and west of the capital. Directors, inspectors, secretaries, and other officials were appointed to the dispensaries, which launched a full range of activities. Costs were covered by the Household Agency, whose tax income comprised four thousand vassal households. Under the Yōrō Code, two thousand of these households were allocated for the empress's "bathhouse philanthropy" (see below), and the remaining two thousand inherited from her father, Fuhito. This was equivalent to the income of two or three small provinces.

The Ishitsuryō section of the code required that qualified doctors and acupuncturists from the Bureau of Medications visit patients' houses and provide treatment. Every year, the dispensary would purchase herbs from around Japan, and dispensary doctors would go around the capital with their medicine bags, dispensing medicine to poor patients and placing those who could not be cured in welfare institutions.

Empress Kōmyō was involved in other forms of charity care in addition to the medical dispensaries. One widely known example was her so-called bathhouse philanthropy. An anecdote about the compassionate empress

12. Taking its name from the Tenpyō era (729–49) of Emperor Shōmu's reign, the flourishing aristocratic culture of the Tenpyō period, which overlaps with the Nara period, was centered around the ancient capital of Heijō and was heavily influenced by Buddhism, leading to some of Japan's most iconic architectural achievements.

appeared in elementary school textbooks before World War II, in which the empress vowed to bathe one thousand people. The thousandth person was a sick man covered with leprous sores (see image at right). At his request, the empress sucked the pus from his sores, and when she finished, the man revealed himself as the reincarnation of the Buddha. At that moment, he vanished in the most radiant glory, filling the air with fragrance.

At the time, it was said that bathing dispelled seven illnesses and enabled the bather to obtain seven blessings. Bathhouses were therefore set up in many temples.

Empress Kōmyō and charity care. Colored woodblock print depicting the story of the empress bathing one thousand patients in a bathhouse. (Utagawa Kuniyoshi, "Akasaka: Empress Kōmyō," from the series *Kisokaidō rokujūkyū tsugi* [Sixty-Nine Stations of the Kisokaidō Road], 1852, woodblock print, British Museum, London. © The Trustees of the British Museum.)

The story about Kōmyō and the leprosy sufferer derives from the *Genkō shakusho* (Genkō-Era Biographies of Eminent Priests), written in the Kamakura period (1185–1333). The work presents the anecdote as an illustration of the empress's compassionate and merciful heart.

Apparently, however, the anecdote had already spread widely by the latter half of the Heian period. In the Kamakura period, the monk Ninshō followed the empress's example and built housing for leprosy sufferers. Its legacy continued through later generations, and its historic site corresponds to that of the Kitayama-Jūhakkendo sanatorium, which was constructed on the same spot.

3. The Arrival of Ganjin in Japan

During the Tenpyō period, when medical dispensaries were built through Kōmyō's deep compassion and Buddhist devotion, a string of incidents

occurred that had a major impact on later generations, giving them a critical place in medical history. One such incident was the arrival in Japan of the Chinese Buddhist monk Ganjin (Ch. Jianzhen), who is enshrined at the Tōshōdaiji temple in Nara. The hardships suffered by Ganjin in his attempts to reach Japan are well-known from Inoue Yasushi's 1957 novel *Tenpyō no iraka* (The Roof Tile of Tenpyō). In 742, Ganjin decided to accept the request delivered by two Japanese monks, Yōei and Fushō, to come to Japan, but he battled various setbacks before finally arriving in 753. From the time of his decision, it took twelve years before he succeeded in landing on Japan's shores.

Ganjin had a deep knowledge of not only Buddhism but also medicine. He brought to Japan many rare drugs and taught medicine there. His learning remains in works such as his formulary *Ganjin hihō* (Ganjin's Secret Medicines). Many of the medicines stored in the Shōsōin repository (discussed in I.IV.5) were produced overseas, some from as far away as Arabia. Among them are medicines thought to have been brought by Ganjin, such as the cure-all *agada*, which is noted on the register of Shōsōin medicines. This remedy was made in India, but one of Ganjin's formulas uses *agada*.

Ganjin was undeniably an expert at determining the efficacy of drugs. While he had lost his eyesight during his attempts to reach Japan, he was able to recognize the quality of a medication just by smelling it. This knowledge was very welcome for Japanese doctors at the time, who had learned medicine entirely from books.

The monk was also a skilled physician. When Shōmu's mother, Empress Dowager Fujiwara no Miyako, grew increasingly ill, Ganjin was brought in, and she was successfully cured. The title of major archbishop (*daisōjō*) was bestowed on Ganjin in recognition of the effective medicines he dispensed to the empress dowager during her sickness.

When it became apparent that Shōmu was in critical condition, Ganjin and other monks did their best to tend him. Although their efforts were fruitless and the emperor died, the title of major bishop (*daisōzu*) was bestowed on Ganjin and the monk Rōben, minor bishop (*shōsōzu*) on Jikun, and preceptor (*risshi*) on Hōshin and Keishun. The monk Hōshin, who had come to Japan with Ganjin, later rose to the position of major bishop.

The parents of the three monk physicians Rōben, Jikun, and Ankan were

also exempted from payment of all tax and corvée burdens. As is apparent from the above, all those who are named as providing medical care during that period were both monks and physicians. By contrast, not a single doctor at the Bureau of Medications mentioned in the Ishitsuryō is named, suggesting that Ganjin and other monk physicians were far more trusted than the Bureau of Medications doctors.

4. The Medical Treatment and Death of Emperor Shōmu

In the tenth month of 755, Shōmu's medical condition went rapidly downhill. His daughter, Empress Kōken, noted that his health was unsatisfactory and that he was eating and sleeping poorly. Thinking privately about this decline, she felt great pity for his condition and was saddened. The only way to save him, she felt, was to spread compassion through the land and try to reduce the suffering of the people. To that end, she proclaimed a great amnesty.

As recorded in the *Shoku Nihongi*, she also declared that "to widows, widowers, orphans, solitaries, the poor, the aged, and the sick, food and medicine is granted according to their situation" and that "from today [the twenty-first day of the tenth month] until the last day of the twelfth month, killing of living things is prohibited."[13]

By the next year, however, Shōmu's condition showed no improvement, and on the fourteenth day of the fourth month of 756, Kōken again issued an edict saying there was "nothing like benevolence to avert evil and invite good fortune. Curing illness and extending life truly depend on virtuous government." Again she granted a "great amnesty in the land" and aid to the poor, the aged, and others unable to support themselves. Despite her efforts, however, Shōmu died on the second day of the fifth month that year.[14]

Before Shōmu's death, the Zen master Hōei was summoned to treat him. The priest's skill led to a temporary improvement in Shōmu's condition, which earned him much gratitude from the emperor, but even Hōei was unable to stem the tide of the illness.

Hōei immediately vowed to forsake human society and to seclude himself in the mountains, chanting Mahayana sutras to help Shōmu travel the realms

13. Bender, *Nara Japan, 749–757*, 166.

14. Bender, 169.

of the dead. Hearing this, Kōken said she wanted to reward Hōei's virtue. She exempted the district of his birth from tax payments and exempted everyone in the district from corvée labor.[15]

When Shōmu fell critically ill, 126 healing monks were called to the imperial court to chant sutras. After his death, they, too, were exempted from tax and corvée burdens.

5. Medicines at the Shōsōin Repository

On the forty-ninth day after the death of her husband Shōmu, Kōmyō issued an edict dedicating over six hundred items, including favorite personal items of the late emperor, to the Tōdaiji temple. These imperial treasures are still housed in the Shōsōin repository. Among them were the sixty types of drugs noted in the inventory *Shuju yakuchō* (List of Various Medicines).

The list begins: "Offering to Vairocana Buddha:[16] Various medicines (sixty types in total) in twenty-one lacquered containers." It then lists all sixty types, including musk, rhinoceros horn, and mirabilite, with the quantity written below each. The document concludes:

> I install these medicines in the repository as an offering to Vairocana Buddha. They may subsequently be used should they be required to relieve suffering and should the Office of Monastic Affairs be first informed. My humble hope is that persons taking these medicines may be freed of all illness, saved from all bitterness, accomplish all good things, reject all evil, and generate no bad karma, so they may grow old and not die young, and, when they finally leave this life, that they may pass into the world of the lotus flower [paradise] and offer their face to Vairocana Buddha and realize the Dharma.

The drugs offered and dedicated to the Great Buddha were thus to be used for treatment, and it was the empress's prayer that those who used the drugs would be freed from all illness and saved from suffering to live out their lifespan.

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15. Bender, 176–78.

16. This is a reference to Tōdaiji's Great Buddha, a massive sculpture of Vairocana Buddha.

The Shōsōin's remaining usage records indicate that the first withdrawal from the repository was in the winter of the year in which they were dedicated: 30 kilograms[17] of ginseng, taken out for medical dispensary use. Other items were subsequently removed for the same purpose, the last case occurring in 761, a year after the empress's death.

In that year, one chest each of licorice, Chinese rhubarb (a perennial from the Polygonaceae family), ginseng, and cassia (cinnamon) bark was withdrawn. This is the only record of such large quantities being removed at one time. While ginseng, licorice, cassia, and rhubarb are still often used today, they were clearly in widespread use even in those days.

On the day the large withdrawal of medicines was made, nineteen rare drugs were also released to the imperial palace. Various medicines were also granted to Donjō, Hōshin, and other Tang monk physicians. Later, many different medicinal plants were subsequently released to the imperial palace, with six releases for sick monks and seven for eminent monks and nobles.

As a result, the medicines listed in the *Shuju yakuchō* were gradually depleted. Details were documented in the *Bakuryōchō*, a record of airings of repository items held at the Shōsōin.

According to this record, in 787, about 4.1 kilograms[18] of rhinoceros horn packed in envelopes had gone, as well as sucrose. By the 811 airing, one rhinoceros horn, the medicinal herb *Corydalis bungeana*, betel nuts, and a saltpeter-based medicine called *zixue* had been used. At the third airing in 856, musk, two rhinoceros horns, *harītakī* (a tall tree from the Combretaceae family, the berries of which are medicinal), and litharge (also known as lead monoxide) had gone. All of these were rare medicines.

In modern times, two surveys have been made of items in the Shōsōin, one from 1948 to 1949 and the other from 1994 to 1995. As a result, the *harītakī* that was said to have been lost was in fact found. According to Professor Emeritus Shibata Shōji of the University of Tokyo, who conducted the 1994–95 survey, the preference for using *harītakī* and betel nuts was probably due to Ganjin's having communicated those formulations.

Twelve hundred years after Kōmyō's offerings, scientific surveys of the

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17. 50 *kin*. 1 *kin* is equivalent to approximately 600 grams.

18. 6 *kin* and 13 *ryō*. 1 *ryō* is equivalent to 1/16 of a *kin*, approximately 37.5 grams.

Shōsōin medicines show that most came from abroad. It is remarkable how widespread Japan's interaction with other countries was in ancient times.

V. Diabetes and the Fujiwara Clan

Diabetes is a major lifestyle disease in the modern world, with the number of diabetics growing every year. While the incidence was not so great as to present a social problem until a few decades ago, the disease has existed around the world for centuries.

Initially, it was found only among royalty, the nobility, and the wealthy, and Japan was no exception. The junior first rank official and former chancellor Fujiwara no Michinaga is said to have been the model for the "shining prince" Genji, the central character of the *Genji monogatari* (The Tale of Genji). He penned the poem, "This world, I think / Is indeed my world / Like the full moon I shine / Uncovered by any cloud."[19] Michinaga married three of his daughters to Japanese emperors; and as the father to three mothers of imperial heirs, he achieved a status second only to the emperor. On the sixteenth day of the tenth month of 1018, his third daughter, Fujiwara no Ishi, was enthroned as the empress consort of Emperor Goichijō, and it was at the joyous evening banquet that he wrote this ode to the full moon. It was his fifty-third winter. But with diabetes consuming his body, that full moon was already beginning to wane.

Michinaga was a member of the northern house of the Fujiwara clan and the clan leader. His life is detailed in the *Eiga monogatari* (A Tale of Flowering Fortunes) and *Ōkagami* (The Great Mirror), which describe him as a supremely lucky man. He was born in 966 as the fourth son of Fujiwara no Kaneie. Because he was not the eldest son, his rise to chancellor was not foreordained. Rather, he gained the position as the next in line after his two older brothers both died in 995.

If Michinaga himself had not been competent and talented, however, he would not have been able to take advantage of his good fortune and establish his position in society.

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19. Ivan Morris, *The World of the Shining Prince* (New York: Alfred A. Knopf, 1964), 60–61.

1. The Family of Fujiwara no Michinaga and Diabetes

Diabetes was once known as the "water-drinking sickness" because diabetes sufferers drank large quantities of water. People drink because their throats feel parched, so the illness was also called "dry mouth disease" and "wasting thirst."

Diabetes is characterized by high intake of food and drink, along with frequent and copious urination. It was not until the late 1800s, though, when Western medicine became widely practiced in Japan, that another symptom of diabetes was discovered: sugar in the urine. As diabetes progresses, symptoms appear all over the body: the lower extremities may swell, eyesight may fail (through diabetic retinopathy and cataracts), and ultimately the person may fall into a coma and die.

While diabetes is closely connected to diet, genetic predisposition also plays a part. Examining the genealogy of the Fujiwara clan, we see several diabetes sufferers, suggesting that the family may have been prone to the disease. Let us look at those with a connection to Michinaga.

Fujiwara no Koretada

Michinaga's father, Kaneie, had two older brothers, Koretada and Kanemichi. In the fifth month of 970, Koretada became regent (*sesshō*)[20] for the young Emperor En'yū. Two years later, in the ninth month of 972, he came down with terrible water-drinking sickness and stepped down as regent on the tenth day of the tenth month. Koretada was known for his love of luxury. Outstanding in all respects, including his appearance and his scholastic ability, he had been expected to go far. Sadly, however, he died on the first day of the eleventh month of that year at the age of just forty-nine. People lamented that the cost of his excess of blessings was a short life.

Fujiwara no Kaneie

Kaneie was Koretada's youngest brother and father of Michinaga. He rose through the ranks unusually quickly when he was young, consequently falling out with his second-oldest brother, Kanemichi, who was jealous of his success. When Koretada died, the two brothers competed fiercely for the position of

20. A regent acting on behalf of a child emperor before his coming of age.

chief advisor to the emperor (*kanpaku*).[21] Kanemichi's scheming led to his becoming chief advisor ahead of Kaneie, despite Kaneie outranking him. Thereafter, Kaneie was unfairly held back by his brother, and his misfortunes continued even after Kanemichi's death in 977. Shortly before Kanemichi died, he made his cousin Yoritada chief advisor and demoted Kaneie from minister of the right to minister of civil administration, plotting to promote an heir of his own.

Immediately after Emperor Kazan relinquished the throne and became a monk in 986, Kaneie's star rose again. It was said that Kaneie masterminded the abdication, manipulating the emperor into entering the monastery and passing power on to Yasuhito (commonly known as Kanehito)—who became Emperor Ichijō. Yasuhito was Kaneie's grandson and still only a child, so this succession enabled Kaneie to achieve his dream of becoming regent. He subsequently promoted his children at an astonishing speed: Michinaga went from junior fifth rank to junior third rank in just eighteen months. Kaneie was regent for only four years, however. In 990, the year he was made chief advisor, he became extremely ill. He passed his title to his eldest son, Michitaka, to take up monastic robes. He died shortly after in terrible pain at the age of sixty-two. It was rumored that his suffering was caused by a vengeful spirit who hated the cruel and wanton Kaneie.

Fujiwara no Michitaka

Michitaka took over from his father, Kaneie, as regent and chief advisor, but he died during a massive epidemic in his sixth year as chief advisor, in 995. The *Ōkagami* says he died not from the epidemic, but from a sickness caused by drinking too much alcohol. Michitaka wasted away, and on the thirteenth day of the eleventh month of 994, he apparently became unable to attend the court. He died in the fourth month of the following year at the age of forty-three. He wanted his heir, Korechika, to take over as chief advisor after his death, but Michitaka's younger brother Michikane was named to the post instead.

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21. Although a chief advisor in name, beginning in the late century under the Fujiwara family, the *kanpaku* was in practice a regent to an adult emperor and thus in a position of considerable power, comparable to the *sesshō*, a regent to a child emperor.

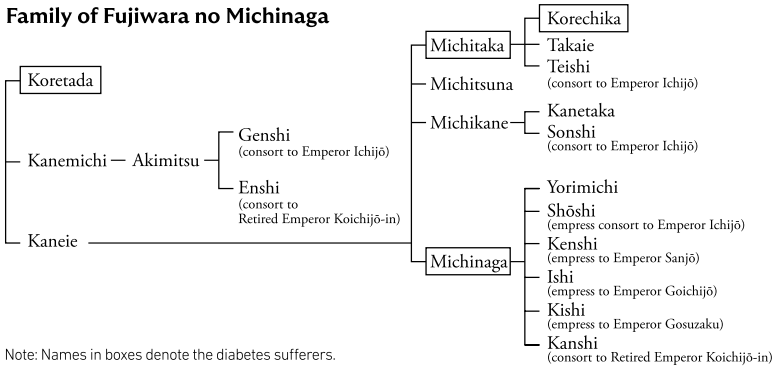
Fujiwara no Michikane

Michikane became chief advisor in 995, when the imperial capital, Heian (present-day Kyoto), was beset with an epidemic that had begun the previous year, claiming many lives. Even court officials contracted the disease. Of the fourteen nobles with the rank of middle counselor or higher, seven succumbed, including Michikane, who grew ill on the day he was appointed chief advisor and died seven days later. He had two other brothers besides Michitaka—Michinaga and Michitsuna (who had a different mother). Michinaga, Michitaka, and Michitaka's heir, Korechika, all had diabetes. While Michikane may not have shown symptoms of the disease when he died at the age of thirty-four, he likely had a predisposition to diabetes.

Fujiwara no Korechika

When his uncle Michikane died, Korechika believed he would finally become chief advisor, but his uncle and bitter rival Michinaga was instead appointed the emperor's inspector of documents (*nairan*; effectively the acting chief advisor). Michinaga became minister of the right the following year, and minister of the left the next. For the next thirty years or so, he served as the emperor's most senior retainer. Korechika, meanwhile, suffered from the same water-drinking sickness as his father. According to the *Eiga monogatari*, he remained very thin and unhealthy despite his substantial consumption of food and water.

Family of Fujiwara no Michinaga



Note: Names in boxes denote the diabetes sufferers.

2. The "Supremely Lucky" Michinaga

In 998, when Michinaga was thirty-two, he began complaining of health problems. Records say he suffered from back pain and other "curses of evil spirits." His suffering was so great he told the emperor repeatedly he wanted to step down as inspector of documents and fulfill his dream of becoming a monk. Emperor Ichijō dissuaded him from resigning, saying that because the illness appeared to be the work of a *mononoke*, or malicious spirit, Michinaga should wait until it had settled down. *Mononoke* illnesses result from grudges that become curses and haunt the target.

According to the *Nihon kiryak*u (Abbreviated Chronicles of Japan), the year when Michinaga took to his bed, smallpox—popularly called "rice pox" (*inamegasa*) or "red pox" (*akamogasa*)—was raging, and no one could escape it. It was called "rice pox" because of its resemblance to a major epidemic that had occurred around the mid-sixth century during Soga no Iname's lifetime (see I.II.3). While it was described in Michinaga's day as a smallpox epidemic, during the Edo period (1603–1867) people claimed it was in fact the first major outbreak of measles. Many court nobles died, but Michinaga was spared because had been unable to leave the house. He was indeed a lucky man.

Evil spirits struck Michinaga again in the year 1000. Prayers and sutras were read, and he moved house repeatedly, as recommended by specialists in magic and divination known as yin-yang diviners (*onmyōji*).[22] He gradually recovered.

Records show Michinaga back in his sickbed in 1005 and 1012, but no details are known.

3. Michinaga's Chest Pain

According to Michinaga's journal, *Midō kanpakuki* (The Record of the Midō Chief Advisor), he suffered severe chest pain late in the evening on the ninth day of the fourth month of 1018. The courtier Fujiwara no Sanesuke, in his journal *Shōyūki*, noted in the entry for the sixteenth day of the fourth month—one week later—that he was very worried about Michinaga's condition. The

22. *Onmyōji*, or yin-yang diviners, were specialists in magic and divination who were consulted on matters such as the construction of temples and palaces and the selection of auspicious days for important events. They were also thought to be able to use their knowledge, based on yin-yang theory, to protect against evil spirits and curses.

previous night Michinaga's pain had been so bad that, Sanesuke wrote, his voice was shrill to the point of screaming, like an evil spirit.

Over the following two months, Michinaga experienced more than thirty such attacks. The cause may have been cardiac neurosis or angina pectoris. That year was an extremely busy one for Michinaga, marking both the 350th year since the passing of clan founder Fujiwara no Kamatari, and the enthronement of his third daughter, Ishi, as empress.

Incidentally, Michinaga had already married two daughters to imperial husbands by this point. In the eleventh month of 999, Michinaga had pledged his eldest daughter, Shōshi, who had just entered adulthood, to Emperor Ichijō and had her enter court service. This apparently occasioned a spectacular ceremony worthy of a picture scroll.

In 1011, Michinaga's second daughter, Kenshi, became consort to Emperor Sanjō and was installed the following year as empress. In the first month of 1018, Shōshi was elevated from empress dowager to grand empress dowager. On the sixteenth day of the tenth month, Kenshi was elevated from empress to empress dowager, becoming known as Empress Dowager Biwa. On the same day, Michinaga's third daughter, Ishi, went from consort to empress. Fujiwara no Sanesuke noted in his journal that day that it was unprecedented for one family to produce three empresses.

4. Michinaga's Diabetes

In the first month of 1016, Michinaga used Emperor Sanjō's eye disease as a pretext to pressure the emperor into ceding his position to Goichijō. Michinaga then became regent to the nine-year-old emperor, his grandson.

According to Fujiwara no Sanesuke's *Shōyūki*, as far as then minister of the left Michinaga was concerned, his position and authority had been solidified to the extent that there was no difference in influence and power among the inspector of documents, the regent, and the chief advisor. Not everything was going smoothly, however. Michinaga's diabetes was beginning to take its toll.

Clear signs of the disease emerged when Michinaga was fifty-one. According to the *Shōyūki*, on the second day of the fifth month, while out in an ox-drawn cart, he began to feel sick and returned home, where he called constantly for water. On the eleventh day of the fifth month, Fujiwara no Sanesuke noted Michinaga had been constantly drinking water as of the third month, and that

recently he had wanted to drink all day and night. His throat was dry, and he felt weak. His appetite, however, remained unchanged. The diabetes seems to have begun when Michinaga was in his forties and progressed in his fifties.

The records note that on the seventeenth day of the tenth month—the day after he celebrated his ascent and achievements in his famous moon poem—Michinaga lost his sight. He was unable to see people's faces even close-up. His diabetic cataracts must have been quite advanced. On the sixth day of the second month of 1019, he lamented the loss of his eyesight in the *Midō kanpakuki*: "I have been feeling normal, but I cannot see well. I cannot even make out faces of people passing two or three feet from me. I cannot really see anything except those objects I can hold in my hand, much less anything in the garden!"

Hearing of Michinaga's condition, people whispered that it was the curse of Fujiwara no Enshi. In 1017, Michinaga's daughter Kanshi became princess to Retired Emperor Koichijō-in (Imperial Prince Atsuakira), becoming the focus of all his favor. Enshi, as Atsuakira's former princess, lamented the loss of her husband's affection and died of heartbreak. It was said that Michinaga's illness was the curse of Enshi's ghost.

With Goichijō's backing, Michinaga achieved his dream of becoming regent and chief advisor, but just over a year later he had ceded both these positions to his son Yorimichi and become chancellor. He gave up this role, too, after just two months to become a monk. In the year after he reached the pinnacle of his success, an increasing number of blanks appear in Michinaga's journal. His interest moved from affairs of state to the construction of the Hōjōji temple and the state of his health was no longer made public.

In 1026, the next time that his health was reported, the news was bad. On the twentieth day of the third month of 1027, the *Shōyūki* says Michinaga was having trouble sitting, and on the fourth day of the sixth month he was so weak that he could neither eat nor drink.

By the twenty-first day of the eleventh month that year, he had severe and persistent diarrhea, and the boils on his back worsened. Diabetes sufferers are prone to such sores, and when they fester they fail to heal. When the physician Wake no Sukeshige was brought in, he said that the boils had spread from Michinaga's back to his chest, with the poison from the boils entering his stomach (which, to modern ears, sounds like blood poisoning). He said recovery was unlikely.

On the second day of the twelfth month, noble-turned-monk Tanba no Tadaaki tried lancing the boils with a needle, which caused Michinaga to cry out in anguish. He fell into a coma, and two days later, on the fourth day of the twelfth month at ten in the morning, the glittering life of the "supremely lucky" Michinaga ended. He was sixty-two.

Michinaga not only had a genetic predisposition to diabetes, he also ate and drank to excess, did not exercise enough, and suffered from stress and obesity—all factors that contribute to the onset of the disease.

VI. Vengeful Ghosts and *Mononoke*

The Tale of Genji would top most lists of world-class Japanese literature. Prominent authors such as Tanizaki Jun'ichirō and Enchi Fumiko have produced modern translations of the classic. More recently, a deluxe edition was translated by the nun Setouchi Jakuchō, and stage and screen versions have been hot topics. Artist Ishiodori Tatsuya's cover design for the deluxe edition is wonderful. One can enjoy the glorious prose while imagining elegant court life, but the descriptions of *mononoke* (malicious spirits) are perplexing. Heian nobles believed their otherwise exquisite lives were haunted by *mononoke*, sometimes just making trouble but other times causing death. These beliefs about *mononoke* were closely related to the contemporary understanding of illness.

1. *Mononoke* and Misfortune

The idea of *mononoke* originated in China. According to the *Shiji* (Records of the Grand Historian), the first biographical general history of China, these malicious spirits were ghost-like beings that caused extraordinary natural phenomena. Like demons, they were silent and without form, which was why they could lurk nearby without being noticed. These spirits could apparently cause both good fortune and misfortune, while some simply hung around without doing anything.

Japan's *mononoke* were a little different from those in China. *Mononoke* of the Heian period in particular were very closely involved with people. They caused illness. People believed firmly that vengeful ghosts (*onryō*)

became *mononoke* and brought illness to individuals against whom they bore grudges.

When illness or misfortune occurred, people immediately assumed it was the fault of a *mononoke*. They would have a yin-yang diviner determine the former identity of the vengeful spirit. In other words, when someone was ill, they turned first to divination rather than medicine.

The idea of such spirits emerged in the Nara period. One famous incident of a yin-yang diviner identifying a vengeful ghost occurred following the assassination of Fujiwara no Tanetsugu in 785, during the reign of Emperor Kanmu. Prince Sawara was suspected of involvement in the assassination. He was arrested and exiled to the island of Awaji. After refusing to eat for the whole voyage, he died aboard the ship, grieving and lamenting his misfortune.

After Sawara's demise, the court suffered a series of unfortunate events. A yin-yang diviner was brought in, who claimed these events were caused by the angry spirit of the prince. To appease his ghost, Sawara was immediately given the posthumous name of Emperor Sudō, and the misfortunes ceased.

Subsequently, whenever the state suffered an unfortunate event or scandal, it was rumored to be the fault of a vengeful ghost. Early in the ninth century, Emperor Saga, pained by the harm this caused, used his final admonitions to warn his nobles that *mononoke* should not be blamed for scandals.

People were not so ready, however, to abandon the notion of *mononoke*. On the contrary, it became ever more common. After Saga's death, accounts of *mononoke* appeared in 830 in the *Nihon kōki* (Later Chronicles of Japan). Tales of vengeful ghosts and malicious spirits increased, with yin-yang diviners brought in to deal with them.

Yin-yang diviners were believed to possess the power to see things invisible to the ordinary eye. They were asked to read good and bad omens. When auspicious signs appeared, thanks were given to immortal beings with superpowers. An inauspicious sign would see the yin-yang diviner brought in to find the cause, and if it was determined to be the curse of a vengeful ghost, to offer prayers in appeasement.

One major influence on this way of thinking was the scholar and court noble Haruzumi no Yoshitada, who worked with Fujiwara no Yoshifusa to complete the *Shoku Nihon kōki* (Later Chronicles of Japan, Continued). Yoshitada strongly believed in divination and disseminated the practice

widely. Divining *mononoke* curses was important to prevent misfortunes, he maintained, even if it meant going against the instructions Emperor Saga left to his descendants.

As belief in divination continued to grow, commoners held ceremonies to pacify the spirits of those who had died unnatural deaths and to escape the curses of vengeful ghosts. With the relentless spread of belief in *mononoke*, in 863 a ceremony was even held at the imperial court.

2. The Ghost of Sugawara no Michizane

By the middle of the Heian period, ordinary people were becoming very interested in the lives of royals and nobles—including the swift fall of the powerful politician Sugawara no Michizane (845–903). In 903, Michizane died in exile in Dazaifu. A succession of misfortunes subsequently befell his political enemy, Minister of the Left Fujiwara no Tokihira. People whispered that these were caused by Michizane's vengeful ghost.

Sugawara no Michizane was unusual in rising to the rank of minister of the right from a family of Confucian scholars. Not since Kibi no Makibi in the Nara period had someone from a scholarly rather than noble background reached that position.

Michizane's appointment as minister reflected Emperor Uda's great trust in him. His rise from head chamberlain to minister of the right in only ten years led many court nobles to harbor feelings of jealousy and bitterness. Michizane knew this better than anyone. He submitted his resignation three times, saying his exceptional promotion was standing in the way of winning the hearts of the people. But Uda placed great value on Michizane's dispassionate and logical thinking and rejected his bids to step down.

In 897, after Uda ceded the throne to his thirteen-year-old son Emperor Daigo and retired, Michizane found his back to the wall, and disaster occurred.

On the twenty-fifth day of the first month of 901, Daigo proclaimed Michizane had falsely convinced Uda to remove Daigo from the throne and replace him with Daigo's younger brother, Imperial Prince Tokiyo, thereby destroying the affection between Daigo and his father, and between him and his younger brother. Daigo said the world would now know that although Michizane might speak with moderation, his words were the opposite of what was in his heart. Consequently, he was not the sort of person who should be

in the position of minister. He had to be severely punished under the law. But because the emperor felt conflicted, he said he would instead demote Michizane to vice governor-general of Dazaifu.

Michizane was demoted accordingly, but the claim was baseless, and word spread he had been slandered by Fujiwara no Tokihira. In *Sugawara denju tenarai kagami* (Sugawara and the Secrets of Calligraphy), a kabuki play based on Michizane's life performed to this day, Tokihira is the villain.

On the first day of the second month of 901, Michizane departed the capital, leaving his wife and children behind. This well-known poem of farewell to a plum tree in his garden is said to be a reflection of his emotions at being forced to leave his home:

> When the east wind blows,
> let it send your fragrance,
> Oh plum blossoms.
> Although your master is gone,
> Do not forget the spring.[23]

Tragically, Michizane died two years later in 903 at the age of fifty-nine.

After Michizane's fall from grace, Minister of the Left Fujiwara no Tokihira, a relative of Emperor Daigo, manipulated the imperial court as he wished. But he died young at only thirty-nine in 909, just six years after Michizane's demise. In 923, Tokihira's nephew Crown Prince Yasuakira died at age twenty-one. These deaths were widely attributed to Michizane's vengeful ghost. With belief in angry spirits so widespread, Daigo posthumously restored Michizane to the position of minister of the right and additionally awarded him senior second rank in court in a bid to appease his ghost. The era name was also changed from Engi to Enchō.

After Yasuakira died, the emperor's grandson Yoshiyori became crown prince, but he too died in 925 at the tender age of five. In 930, the emperor's residence, the Seiryōden, was struck by lightning; Chancellor Fujiwara no

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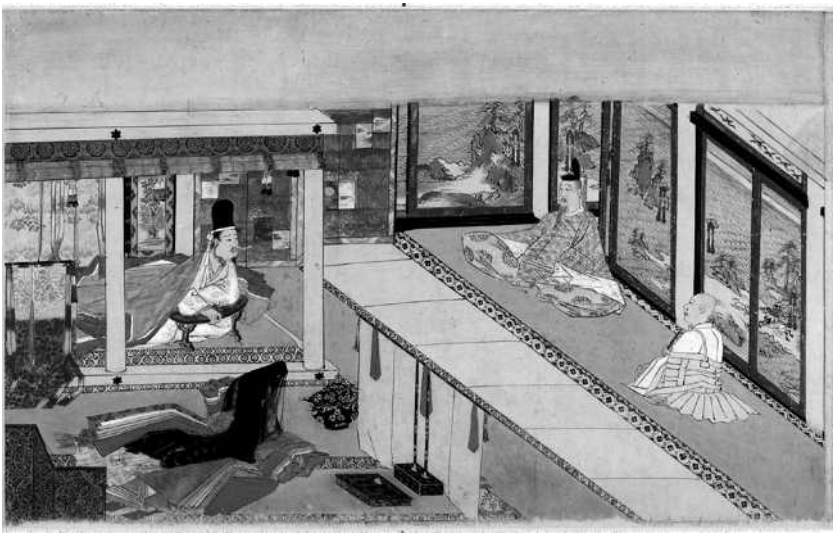
23. Robert Borgen, *Sugawara no Michizane and the Early Heian Court* (Honolulu: University of Hawai'i Press, 1994), 290. Incidentally, it was because of this poem that the deification of Michizane, Tenjin, came to be associated with the plum.



Fujiwara no Tokihira on his sickbed haunted by the ghost of Michizane. ("Origins of the Matsuzaki Tenjin Shrine" [*Matsuzaki tenjin engi*], 1331, handscroll [set of six], Yamaguchi Prefecture, Japan. Reproduced by permission from Hōfu Tenmangū shrine.)

Kiyotsura was killed on the spot. The shocked Daigo was convinced this entire string of misfortunes was due to Michizane's vengeful ghost. He abdicated, but died shortly thereafter.

A period of unrest ensued, beginning with a rebellion led by the samurai and provincial magnate Taira no Masakado. Tokihira's children continued to suffer. With the public increasingly convinced that vengeful ghosts and malicious spirits were to blame, a shrine was built in Kyoto in 947, during the reign of Emperor Murakami, to appease Michizane's ghost: the Kitano Tenmangū shrine.

3. Michinaga and *Mononoke*

After Tokihira's death, his younger brother Fujiwara no Tadahira became minister of the left and head of the Fujiwara clan. Tadahira was the great-grandfather of Fujiwara no Michinaga. In Michinaga's day, belief in vengeful ghosts and malicious spirits became more widespread following the Michizane incident. People of the time feared these entities in a way that surpasses

the modern imagination. *Mononoke* were believed to be the cause of most illnesses. Michinaga himself performed incantations and prayers to appease *mononoke*.

When a *mononoke* was believed to be present, people called on exorcists. The exorcist would choose a young woman from the household as the spirit host (*yorimashi*), to whom the spirit removed from the sick person would be transferred. When the incantations reached a crescendo, the spirit host would lose consciousness. The *mononoke* would enter the host and use her voice to speak its complaints, enabling identification of the person who had become that spirit.

The spirit host was critical to the success of the incantations, so all residences made sure to designate a woman who could serve that role. People believed that once the spirit was identified, prayers would appease them, and the sickness would be cured.

On one occasion, Michinaga suffered severe chest pain during conversation and cried out. Monks gathered hurriedly to pray for him, whereupon the spirit moved to another person. Michinaga's chest pain subsided and he was cured. For attacks of this sort, the first move was always to call in an exorcist. Physicians were not summoned.

The chest pain Michinaga experienced may have been angina pectoris or cardiac neurosis. In those days, even if a physician had been called, there were no known drugs that could have had immediate effect, so the incantations were arguably the better treatment. Many people had undoubtedly developed grudges against Michinaga as he climbed to the top rank in court, so he was probably terrified of vengeful ghosts and malicious spirits.

4. Emperor Sanjō's Eye Disease

Before Fujiwara no Michinaga lost his eyesight because of diabetes, Emperor Sanjō feuded with Michinaga over the issue of imperial succession. From an early age, Emperor Sanjō suffered from an eye condition that ultimately caused his abdication. After Sanjō died, Michinaga achieved his cherished dream of becoming regent and wielded power as he pleased.

In 1011, when Sanjō took over from Ichijō as emperor at the age of thirty-six, Michinaga was forty-six. Sanjō's successor should properly have been his eldest son, Prince Atsuakira, whose mother, Seishi, was the daughter of

Michinaga's cousin. Michinaga instead chose Prince Atsuhira (Emperor Goichijō), the second son of Ichijō and the empress consort Shōshi, Michinaga's daughter. His aim was to use his position as a relative of the emperor to become regent and seize power.

On the ninth day of the second month of 1014, Sanjō's fourth year as emperor, the imperial palace burned to the ground in suspicious circumstances. A series of heartbreaking incidents ensued.

In the third month, the emperor lost sight in one eye and hearing in one ear. The cause was rumored to be his use of *tan'yaku*, a cinnabar paste used in Chinese medicine that contained mercury, as a young man. Valuable medicines such as *kōsetsu* ("red snow") and *kariroku* (*harītakī*) pills were used, but to no effect.

In 1015, the emperor's eye condition worsened. He was treated with both medicine and prayer. From that time until he abdicated, he was terrified that he had been cursed, and several journals and tales speak of his reliance on incantations and prayers. Physicians played no role in his treatment.

According to the *Midō kanpakuki,* the emperor lost his sight in the second month of 1015. He drank *kōsetsu*. Not only did it not help, it gave him diarrhea, so he switched to esoteric incantations and prayers. His condition improved immediately on that occasion, but subsequently continued to fluctuate.

As people of the time believed in vengeful ghosts, they gossiped that the emperor's eye condition was due to poisoning from *kin'ekitan* (pills possibly made of gold and cinnabar, also known as immortality pills). Another theory held that it was due to the vengeful ghost of a monk named Kanzan hanging around his neck, alternately restoring or removing the emperor's eyesight every time it flapped its wings.

On the second day of the fifth month of 1015, Sanjō's loss of sight was diagnosed as the result of a curse by the malicious spirit of Emperor Reizei. Incantations and prayers were performed. The spirit moved to an attendant, who began to tremble, and the emperor was again able to see. Today we would regard this as a clear case of psychogenic blindness.

Five days later, on the seventh day of the fifth month, the emperor's condition worsened again. Preceptor Shin'yo divined that this decline was due to the vengeful ghost of the late associate preceptor (*gon-risshi*) Gajō.

The account in the *Shōyūki* for the twenty-second day of the fifth month says that Gajō's spirit had recently appeared to curse Sanjō out of resentment that the emperor had denied his request to be appointed as Tendai head abbot (*zasu*), the highest position in the Tendai school. Now, however, Gajō said that he wished to abandon all his resentment and devote himself to the Buddhist way. The emperor sought to appoint him posthumously as Tendai abbot, but the then head abbot Keien opposed this, and the emperor was cursed again. To appease the ghost, the emperor later granted Gajō a posthumous promotion to archbishop (*sōjō*).

When the emperor's sight deteriorated again on the twenty-sixth day of the fifth month, an extraordinary amnesty was declared. This led to a temporary recovery, but the emperor's condition immediately declined again, this time worse than before. That day, Shin'yo was ordered to conduct prayers and incantations. The guardian deity Shōden appeared, revealing that the emperor's eye disease was caused by his neglect of dedicatory rituals.

On the second day of the sixth month, Sanjō's eyes recovered. Michinaga recorded in his journal how strange it was that the emperor's condition should fluctuate in this manner.

The emperor's eyes worsened again on the sixteenth day of the sixth month, and he ordered that Michinaga have the *Great Perfection of Wisdom Sutra* recited day and night.

Around the twenty-fourth day of the sixth month, cold water was poured over the emperor's head, and his eyes improved.

On the second day of the intercalary sixth month, the emperor had the Buddhist master Ningai conduct a bamboo-stick divination (*ekizei*). Ningai found that the emperor's disease was not due to vengeful ghosts and that the emperor would recover if he took medicine.

On the tenth day of the sixth month, the emperor sent a messenger to the Ise Jingū shrine, appealing to divine wisdom for his illness to be cured. The high priestess answered that there was nothing unusual afoot, and that the emperor should set his mind at ease.

The emperor continued to have no appetite, and on the twenty-sixth day of the sixth month, he grew extremely gaunt. Shin'yo's prayers brought a temporary recovery. The emperor was delighted, calling it a Buddhist miracle.

A month later, however, on the twentieth day of the seventh month, the

Tendai head abbot Keien conducted the esoteric *mizuhō* rite, but the emperor did not recover. Keien lamented the ineffectiveness of the rite in improving the emperor's eyes.

Four days later, on the twenty-fourth day of the seventh month, the chamberlain reported dreaming about a woman from Ise who could perform spells on diseased eyes and who healed the emperor's eyes through that magic. On the twenty-seventh day of that month, the emperor's eyes improved.

On the second day of the eighth month, his eyes had recovered enough that he could see the pictures painted on the paper sliding doors. Around the twenty-fifth of that month, the emperor's eyes improved enough that he was able to attend lunch.

Around the second day of the tenth month, however, his condition deteriorated, and he began to lose his eyesight on the sixteenth, going completely blind on the twenty-second. He could not move his legs, nor could he read. This was when Michinaga was appointed deputy regent.

On the sixth day of the eleventh month, the emperor's condition worsened further still, and he decided to abdicate.

On the eighth day of the twelfth month, Michinaga wrote in his journal that it had been a particularly hard day for the emperor, who was growing increasingly disturbed and felt poorly.

In the first month of 1016, talks finally began on the emperor's abdication. On the twenty-ninth of that month, Imperial Prince Atsuakira was formally installed as crown prince, as negotiated by Sanjō as a condition of his abdication.

On the first day of the fifth month that year, the retired Sanjō prayed at Mt. Hiei for his eye disease to be cured, but to no effect.

On the twenty-first day of the fourth month of 1017, Sanjō contracted an infectious disease and died on the ninth day of the fifth month at the age of forty-two.

Barely three months later, on the ninth day of the eighth month, Atsuakira resigned as crown prince and Michinaga's grandson Atsunaga replaced him. Michinaga was appointed regent at the same time, launching the Michinaga administration in both name and substance.

So what was Emperor Sanjō's eye disease?

Some people surmise that the emperor may have had glaucoma, based

on accounts in the *Ōkagami* of the emperor's bright and attractive eyes, plus the fact that his eyesight began to worsen in his early forties, but improving intermittently when he was made more at ease through prayers and austerities. While glaucoma does cause increased pressure in the eye that affects eyesight, the deterioration becomes inexorable beyond a certain point. In the emperor's case, however, his eyesight repeatedly worsened and improved. His condition came on as a result of psychological blows, such as his feud with Michinaga, and the fiery destruction of his residence, so it was likely a psychogenic disorder.

5. *Mononoke* and *The Tale of Genji*

The Tale of Genji, which is said to be modeled on Michinaga, features *mononoke* at several points. In the "Yūgao" ("Evening Faces") chapter, Genji's lover Yūgao is possessed by a *mononoke* and dies. In the story, this occurs when Genji invites the young woman to an old mansion and they spend the night together. In his dreams, Genji sees an extraordinarily beautiful woman near their pillow. Awakening as if from a nightmare, he finds all the lamps in the room extinguished. The terrified Yūgao trembles violently and is unable to move. Genji orders a guard to pluck his bowstrings so the *mononoke* will not approach. He also orders that a torch be brought, and by that light he sees beside the pillow the beautiful woman from his dream—a vision no sooner glimpsed than gone. Yūgao has already perished because of the *mononoke*.

In the "Aoi" ("Heartvine") chapter, Aoi no Ue, who is the equivalent of Genji's legal wife, suffers greatly when she is possessed by the spirit of his lover Rokujō no Miyasudokoro. Because the pregnant Aoi is prone to sickness, an exorcist is called in and begins to pray. This is so effective that multiple *mononoke* and living spirits immediately appear and transfer to the spirit host. One spirit, however, refuses to give its name. Even a skilled mountain ascetic's prayers fail to exorcise it. The household of Aoi's father, where Aoi is staying, guesses that it might be the spirit of a living woman associated with Genji—either Rokujō or Murasaki no Ue—but the spirit's real identity remains unknown.

With Aoi in delicate health, Genji visits her father's household frequently, neglecting Rokujō. One day, he goes to see Rokujō and apologizes for his

absence, but his comforting of her fans the flames of Rokujō's jealousy. Around this time, the stubborn *mononoke* causes Aoi ever more suffering.

Thinking that there is still time before the birth, the family relaxes its guard. But Aoi suddenly goes into labor, and they call a more powerful exorcist, who employs more vigorous prayers. As the prayers reach their peak, the obstinate spirit finally gives up. Using Aoi's voice, the spirit says, "Stop for a moment, please. I want to speak to General Genji."[24] Genji is brought to the room, and the curtain is dropped to give the couple privacy. The dying Aoi says gently and affectionately, "I had not dreamed that I would come to you like this. It is true: a troubled soul will sometimes go wandering off."[25] She then recites a short poem. The voice is not Aoi's but Rokujō's.

When the startled Genji again asks the spirit's name, she says she may be the spirit of Rokujō. The spirit is immediately transferred to the spirit host, and a vigorous exorcism is conducted. Aoi gives birth safely to a baby boy. The spirit transferred to the spirit host rages violently, but the placenta and fetal membranes are also successfully expelled. The Tendai head abbot from Mt. Hiei and other distinguished priests who performed the exorcism hurry from the birthing room mopping perspiration from their satisfied faces.

Aoi, however, does not do well in the postpartum period. Genji worries about a *mononoke*, and when he leaves home to attend the court, Aoi is again attacked by a malicious spirit. She struggles and dies.

Mononoke disappeared from the history books with the emergence of samurai rule, when society ceased to revolve around the Machiavellian exploits of the royalty and nobility and matters were instead decided by force. *Mononoke* and apparitions continued to exist among the common people and are depicted in *nishiki-e* (colored woodblock prints) and elsewhere, but these apparitions have a humor that sets them apart from ghosts.

Exorcists' role in treating illnesses gradually diminished, but the practice continued until the end of the Edo period.

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24. Murasaki Shikibu, *The Tale of Genji,* trans. Edward G. Seidensticker (New York: Alfred A. Knopf, 1976), 168.

25. Murasaki Shikibu, 154.

VII. The Spread of Malaria

Malaria has had a number of names in the course of Japanese history, including *gyakushitsu*, *warawayami*, *eyami*, and *okori*. By the Edo period, however, *okori* had become the standard term. The disease itself was so common that satirical senryū poems and kabuki plays made mention of its symptoms.

Malaria causes sudden, severe shaking and a high temperature of around forty degrees Celsius, which continues for four to five hours, after which the patient's temperature returns quickly to normal, only for the attack to recur two to three days later.

Several species of the malaria-causing *Plasmodium* parasite infect humans, with febrile attacks manifesting differently for each. With one of these species, the length of time between the first and second attacks varies, while with the others, the period is always one and a half to two days, two days, or three days, respectively. The variable attacks are associated with tropical malaria, caused by *Plasmodium falciparum*. Other forms include tertian malaria (caused by *Plasmodium vivax*) or quartan malaria (caused by *Plasmodium malariae*). The tropical form often becomes malignant.

The forms of malaria in Edo-period Japan were primarily tertian and quartan, and the disease did not cause the sudden deterioration seen with tropical malaria. In former times, however, patients often experienced shaking chills and fever for days on end, becoming physically weakened and ultimately dying.

Even in the Shōwa period (1926–89), malaria sometimes occurred in the countryside, and immediately after World War II, the General Headquarters Supreme Commander for the Allied Powers spearheaded several large-scale malaria elimination campaigns.

Many soldiers died of malaria in Southeast Asia during the war. The United States, fully supplied with malaria drugs, won an overwhelming victory over Japanese forces, whose anti-malarial supply channels had been cut and whose soldiers were consequently crushed by malaria and other endemic diseases before they even picked up their weapons.

After the war, many soldiers returned to Japan from the south carrying malaria and amoebic dysentery. Their malaria became chronic, and they

suffered repeated attacks that made it difficult to recover from their war wounds.

It was not until the nineteenth century that medicine made significant inroads in the treatment of malaria. In 1880, when the French military doctor Alphonse Laveran was stationed in Algeria, he discovered that a blood-borne parasite was the cause of the disease, when he found the *Plasmodium* parasite in malaria patients. For his work in this area, he was awarded a Nobel Prize in 1907.

For young Japanese today, malaria is a thing of the past, but the same cannot be said for half the world's population, who still live in areas where malaria is present. Throughout the world, over 100 million people are struggling with this frightening disease,[26] which is in fact the number one cause of infant mortality in Africa. And even in Japan, malaria has recently been attracting attention once again as an infectious disease brought in by Japanese living or traveling in areas where malaria is endemic.

1. Malarial Wonder Drugs

Effective drugs were developed once the pathogen was identified. Atebrin—developed by German chemists—was widely used during World War II. Later, the wonder drug chloroquine emerged, and it was thought that malaria would soon be eliminated. Nature was not so easily beaten, however. After all, malaria has a history as old as the human race. In the 1950s, strains of malaria appeared that were resistant to existing drugs. Malaria has flared up again in areas where it was thought to have been eliminated, and there is no preventive drug that is entirely effective.

In the eighteenth and nineteenth centuries, the trade in enslaved people was centered in a stretch of coastal West Africa that was called the "white man's grave" because of the many Europeans who died of malaria there because they lacked resistance to the disease. Malaria was so problematic that Napoleon reportedly declared that the man who conquered malaria would conquer Africa.

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26. This was the figure at the time of writing. As of 2022, there were an estimated 249 million cases of malaria globally. World Health Organization, https://www.who.int/news-room/fact-sheets/detail/malaria.

Through their long history of battling malaria, Africans have developed their own treatments. In Ghana, malarial attacks are treated with vapor from boiling neem tree leaves, inhaled under a cloth tented over the head, and by infusing the leaves to drink as an extremely bitter tea.

One anti-malarial that is widely used today is a drug containing the herb *Artemisia annua*, a type of mugwort that has been used in China since ancient times to treat malaria and malarial fevers. Another anti-malarial that is being revisited is a simple traditional formula using cinchona bark, an antipyretic agent discovered centuries ago in the Andes.

2. When Did Malaria Appear in Japan?

The character for *gyaku*, or malarial fever, appears in the Ishitsuryō, the section of the Taihō Code detailing medical care decrees. It states that the Bureau of Medications will measure and mix medicines for treatment of *shōkan* (typhoid), *tokinoke* (plague), *gyaku* (malarial fever), *ri* (diarrhea), *chūshō* (stroke), and *kinsō* (wounds).

Gyaku was one of these common and serious conditions. *Shōkan* and *tokinoke* are epidemic diseases, *ri* is a digestive disease, and *chūshō* refers to conditions like apoplexy and poisoning.

Gyaku is read *nüe* in Chinese and is a specialist term in Chinese medicine. The *Shuowen jiezi*, the oldest Chinese etymological dictionary, defines *nüe* as an intermittent fever/malaria that occurs every two days. The character combines the "illness" radical with the character for "oppression" or "tyranny," which itself combines the characters for "tiger" and "claw" to convey the meaning of a tiger killing someone with its claws. To the ancient Chinese, the severe symptoms and high fever of *nüe* made it comparable to being attacked and killed by a ferocious tiger.

Malaria has also existed in the West since ancient times. People knew that the disease had a close connection to marshlands. *Malaria* means "bad air" in Latin, deriving from a belief the disease was caused by noxious air emitted from swamps. In fact, the *Anopheles* mosquito, the main vector for malaria, breeds in lakes, wetlands, rice fields, and similar habitats. In other words, the name "malaria" reflects the keen powers of observation of the people of the distant past.

3. Malaria and the Heian Aristocracy

The Heian-period dictionary *Wamyō ruijushō* notes that *nüe* was called *eyami* and *warawayami* in Japanese. These terms appear often in Heian journals and literature.

The "Wakamurasaki" ("Lavender") chapter of *The Tale of Genji* begins with the passage, "Genji was suffering from repeated attacks of malaria. All manner of religious services were commissioned, but they did no good."[27] The rites failed to cure his malaria, and he often had further attacks.

References to malaria appear not just in *The Tale of Genji* but in many journals from Heian literature. For example, Fujiwara no Michinaga's *Midō kanpakuki* notes in an entry for the eighth month of 1018 that Crown Prince Atsunaga suffered from *gyakubyō* (malaria). Atsunaga fell ill on the thirteenth day of the eighth month and was attacked by fever every other day until the twenty-ninth of that month.

The *Nihon kiryaku* entry for the nineteenth day of the eighth month in 1018 also recounts that Atsunaga suffered from *gyakubyō*, but notes that he had no attacks while the monk Hokkyō Eikō prayed for him. Atsunaga rewarded the monk with a magnificent horse and alms and issued an official notice appointing him associate preceptor.

On the twenty-ninth day of the eighth month, the Tendai head abbot Keien performed prayers, and when he conducted an empowerment ritual, the attacks fortunately stopped. Keien received considerable alms as a result. It was probably coincidence that the intermittent fever happened to abate when he conducted the ritual.

4. Taira no Kiyomori's Illness

While many famous people caught malaria, the most prominent was the military leader Taira no Kiyomori (1118–81). The heir of Taira no Tadamori, Kiyomori was the illegitimate son of Retired Emperor Shirakawa, which led to his unusually rapid promotion. In the second month of 1167, when he was fifty, he leapfrogged the positions of minister of the right and minister of the left to become chancellor, junior first rank. Three months later, however, he resigned, and in the second month of the following year, he suffered from

27. Murasaki Shikibu, *The Tale of Genji*, 84.

a parasitic infection. His condition rapidly declined and was reported to be critical. The retired emperor and a string of other nobles visited him at his Rokuhara residence in the capital, but he failed to improve. In the third month, he decided to become a monk and took the Buddhist name of Jōkai. He recovered from his sickness, perhaps due to this move.

Thirteen years later, in 1181, he came down with a headache and died just a few days later. The *Gyokuyō* (Jeweled Leaves; the journal of court noble Kujō Kanezane) and the *Meigetsuki* (Bright Moon Diary; the journal of court noble and poet Fujiwara no Teika) both report that Kiyomori suffered a high fever and lost consciousness, slipping into a coma and dying in agony.

Kiyomori's fame was such that even his illness became the stuff of legend—for example, that his body burned like fire (see image below), so unbearably hot no one could come within meters of him; that when he sought to cool himself with holy water from Mt. Hiei, northeast of Kyoto, the water immediately began to boil; and that water sprayed on his body from a bamboo pipe turned to steam that filled the room.

Certain wells at Kyoto's Mizu Yakushiji temple and in Rokuhara were said to have cured Kiyomori's high fever, while it was also rumored that Kiyomori

The fevered Kiyomori was apparently crying out, "I'm burning up, I'm burning up." (Tsukioka Yoshitoshi, "Picture of the Fever of Taira no Kiyomori" [*Taira no Kiyomori hi no yamai no zu*], 1883, woodblock print triptych, Ōta Memorial Museum of Art, Tokyo. Courtesy of the Ōta Memorial Museum of Art.)

had been punished with a fire sickness because he had tried to call back the setting sun with his fan.

Legends such as these prompted a satirical senryū that quipped, "With Kiyomori at first it's malaria but in the end it's malarkey." While the facts are not known, Kiyomori's terrible fever attacks and headaches suggest his condition could indeed have been malaria.

5. Famous People Who Suffered from *Warawayami*

Malaria was extremely common in premodern Japan. Kujō Kanezane and Fujiwara no Teika, authors of the *Gyokuyō* and *Meigetsuki*, respectively, suffered from it.

In Teika's case, he was joined in his suffering by his father, Shunzei, and son Tameie. Tameie's concubine, the poet and nun Abutsu-ni, wrote in her journal *Izayoi nikki* (Diary of the Waning Moon) of her own experience of the disease.

Around this time, the term *warawayami* yielded to the word *okori*. The reason for this was that the intense symptoms came on suddenly, as captured in the term *okori kokochi* ("*okori* feeling") which appears in the *Gyokuyō*. Apparently, the eminent monk Musō Soseki (1275–1351) died as a result of repeated bouts of malaria.

The *Konjaku monogatarishū* (Collection of Tales of Times Past) and *Uji shūi monogatari* (A Collection of Tales from Uji) use the disease as a form of education. In those tales, mountain ascetics healed the royalty and nobility of *warawayami*, and such miracles were linked to the auspicious origins of Mt. Shigi in Nara Prefecture.

The *Tokitsugu kyōki* (Record of Lord Tokitsugu), the journal kept by the court noble Yamashina Tokitsugu in the Muromachi period (1336–1573), contains a detailed account of the *warawayami* suffered by Tokitsugu's wife Minamimuki in 1566, from the twenty-fifth day of the seventh month to the twenty-eighth day of the eighth month.

The severity of Minamimuki's symptoms made Tokitsugu think she had cholera. But as her fever continued, he suspected malaria. He called in Yamato no Miyataifu on the fourth day to make a diagnosis, and he was told it was indeed malaria. He was given medicine for the patient. In the eighth month the fever abated, but on the twentieth day of her illness, he sent a messenger to the Shinto priest Yoshida Kanekazu (known as Kanemi

from 1586) and was given *okori otoshi yaku*, an anti-malarial drug made from charred cuckoo.

Tokitsugu's wife continued to receive anti-malarial medicine from Kanekazu and gradually recovered. On the twenty-eighth day of the eighth month, Kanekazu pronounced her fully recovered, and the account of her malaria comes to an end.

The *Tokitsugu kyōki* is a valuable record of the period from 1527, when Tokitsugu was twenty-one, through 1576, when he was seventy, with a ten-year hiatus. Tokitsugu was chancellor and director of the Bureau of Palace Storehouses, but at that time, ongoing civil wars compelled even the nobility to live in straitened circumstances. Tokitsugu made a living selling medicines prepared from family recipes, which he had learned from his father, so his journal discusses medicine in great detail.

6. Malaria in the Edo Period

By the Edo period, malaria was no longer such a serious illness, to the extent that a satirical senryū poem from the time poked fun at someone whose shivering and trembling prevented them from touring the capital.

The world history of malaria reveals that increasing urbanization and higher standards of living for commoners reduced the severity of the disease. That was certainly the case in the major metropolis of Edo (which by then had become the de facto capital of Japan). The way that malaria progresses—bouts of intense shaking, with the fever breaking suddenly to return the sufferer to apparently perfect health—made it into an allegory as well as a source of jokes. For example, the Buddhist priest Anrakuan Sakuden's collection of humorous anecdotes, *Seisuishō* (Laughs to Banish Sleep), contains the following story about malaria.

When the wife of a certain samurai contracted malaria, he sent a servant to get medicine from the doctor. The samurai could have said simply *okori*, but instead he told the servant to get medicine for *gyakubyō*. When the illiterate servant reached the doctor's house, he could not remember the word *gyakubyō*, so he asked for medicine for *gyatei*, a word that appears in the Japanese version of the *Heart Sutra* (which was then very familiar to most Japanese from temple visits). Punning on the line in which *gyatei* appears, the doctor playfully asks whether the servant means *ha ra gya tei* or *ha ra so gya tei*. In the end, he guesses what was meant and produces medicine for malaria.

Outside the metropolis, however, severe malaria remained rampant in this period, often reaching the level of an epidemic. The 1867 *Naika hiroku* (A Treatise on Internal Medicine), by Mito domain physician Honma Sōken, contains a detailed and accurate account of the disease. Western medical knowledge had entered Japan by this stage, and the Western term *malaria* had also come into use.

VIII. Our Long Relationship with Parasites

How long ago did roundworms cease to be part of daily life in Japan? Some older people even today doubtless remember the taste of the red seaweed *Digenea simplex*, which children were made to drink until the 1950s as a treatment for internal parasites. These days, the only place you see a roundworm is in Tokyo's Meguro Parasitological Museum, which has become a surprisingly popular date spot among the young.

Parasitic diseases have become rare in Japan, but they are difficult to eliminate entirely and still abound elsewhere in Asia. The human race's relationship with parasites probably stretches back to the dawn of history. There is certainly evidence of the Jōmon people suffering from parasites.

It is easy to pinpoint the cause of parasitic diseases, because they involve vomiting up parasites or eliminating them in feces. Since ancient times, all sorts of diseases have therefore been ascribed to *mushi*, or "worms," both in the East and West. Echoes can be found in such Japanese terms as *kan no mushi* ("nerve worms"), referring to neurological symptoms; *mushi fūji*, an incantation to rid a child of worms; and *mushiba* ("worm tooth"), referring to a tooth cavity.

1. Ancient Parasitic Diseases

Evidence shows that people in ancient times suffered from parasitic diseases. The Mawangdui tomb that was excavated in 1972–74 near the city of Changsha in China dates back to the Western Han dynasty, around 2,100 years ago. Miraculously, the mummified body of a woman, wrapped in layers of silk, was found in the tomb. Her skin, subcutaneous tissue, and internal organs remained, with the skin still moist and elastic.

The excavated body was promptly treated with embalming fluid and closely

studied. Food remained in the stomach. Investigation of her organs and blood vessels revealed signs that she had suffered frequent gallbladder attacks. In addition, while not the direct cause of death, severe tuberculosis was evident in her left lung, and she had a healed fracture in her right arm.

The investigation showed that the woman was in her fifties, and it was deduced she had died suddenly from a gallbladder or heart attack on a summer day.[28] Numerous parasite eggs were found in her colon and liver. She suffered from schistosomiasis (infestation with parasitic flatworms) and was certainly extremely anemic.

In recent years, a great deal of so-called latrine archeology has been conducted in Japan, with parasite eggs discovered in archaeological sites near areas believed to have been latrine pits. Parasitic diseases such as those discovered in the Mawangdui mummy were also clearly rampant in ancient Japan. Some of these diseases doubtless arrived in Japan together with civilization.

In the *Wamyō ruijushō*, the terms used for parasitic diseases are *kaichū* (roundworms) and *subaku* (tapeworms). The generic name was *akuta*, and people believed that parasitic diseases could be contracted by drinking white sake or eating raw chestnuts.

China's oldest extant medical encyclopedia, the *Zhubing yuanhou lun* (General Treatise on Causes and Manifestations of All Diseases), explains that *cunbai* (read *subaku* in Japanese) are among the Nine Worms, namely the nine species supposed to cause disease.

2. *Subaku* in the Heian Period

In Chinese medicine, the term *cunbai* referred to roundworms, but the description of these as white and growing to twelve to fifteen meters suggests that they were actually tapeworms.

In the Heian period, *subaku* was the word used to refer to physical swelling. It was also the generic term used for women's diseases—in particular, vaginal discharge.

The *Konjaku monogatarishū* describes a woman with *subaku*. Her face is

28. The many melon seeds in her stomach and intestines indicate the season of her death, as melons are ripe in summer.

stark white, her whole body is swollen, and she cannot walk properly. She hears a rumor that the head of the Bureau of Medications will examine mysterious ailments, so she goes to the capital of Kyoto. The head of the Bureau of Medications immediately diagnoses *subaku* and orders one of his physicians to treat her. The physician pulls something with the appearance of a thin wheat noodle of interminable length from the woman's body. Wound around a post, the "noodle" measures more than thirteen meters. The woman's swelling subsides, the color returns to her face, and her body returns to normal.

While the story is exaggerated, the description of a thin wheat noodle suggests tapeworms. As noted later, however, filariasis, an infectious disease that spreads through mosquito bites, also causes swelling. When people developed unexplained swelling and lumps, this was also called *subaku*. In the *Shōyūki*, for example, Fujiwara no Sanesuke describes the swelling of his cheek as *subaku*, but it was probably parotitis or mumps. The swelling healed before too long.

3. Emperor Goichijō's *Subaku*

On the fifth day of the fifth month of 1026, Emperor Goichijō came down with a disease that caused his legs and arms to swell, with the pain so great that he could not walk. Minamoto no Tsuneyori's journal, *Sakeiki*, a record covering the years 1016–36, notes that the physician diagnosed *subaku* and treated the emperor accordingly, but he did not heal. A monk chamberlain with considerable medical knowledge was called in to make a diagnosis. He found it was not *subaku*, but rather emphysema. He dispensed *harītakī* and *gokōtō*, an extract prepared from ephedra, apricot kernel, glycyrrhiza, gypsum, mulberry bark, and other substances.

When the emperor's pain only worsened, the monk called in the Tendai abbot Ningai from Mt. Hiei, along with other monks, to perform prayers and incantations. Three days later, the swelling went down, and on the tenth day of the fifth month, the emperor was completely healed.

Whereas the physician had diagnosed the swelling as *subaku*, the monk physicians diagnosed emphysema and cured it using prayers and incantations. The worst symptoms had probably already subsided naturally before they conducted their rituals. The doctor who diagnosed the emperor's condition while it was still in the acute phase was very unfortunate.

4. The Three Worms and the Kōshin Faith

In ancient China, Daoists believed that Three Worms lived in each person's stomach and ascended to heaven on Kōshin, the fifty-seventh day of a sixty-day cycle, to report that person's misdeeds to the Director of Destinies[29] and reduce the person's lifespan accordingly. Medicines were used to expel the Three Worms, including *tansha* (cinnabar, or mercury sulfide) and *shintan*, a cinnabar-based elixir, but usually on Kōshin days, people would stay awake all night, abstaining from sex and watching out for the Three Worms. It was also said that if one kept the body pure day and night and thought about the gods on Kōshin days, the Three Worms would be unable to ascend to heaven and report on misdeeds.

The Kōshin faith arrived in Japan in the eighth century. In the *Nittō guhō junrei kōki* (Record of a Pilgrimage to China in Search of the Law), the journal of Buddhist priest Ennin, he wonders at Chinese people keeping vigil on Kōshin nights. By the Heian period, the emperor and members of the imperial court had adopted the same tradition, called *Kōshin-machi* in Japan. They spent the night entertaining themselves with shell-matching games and poetry contests. By the Muromachi period, the Kōshin faith had been assimilated into Buddhism, institutionalizing the Kōshin service.

In the Edo period, the Kōshin faith became popular among ordinary people, and Kōshin stelae were erected all around the country. This was the golden era for Kōshin as a Buddhist folk belief specific to Japan.

5. Parasites as the Cause of All Sickness

While the Three Worms are imaginary, in the Muromachi period all stomach and back problems were blamed on parasites. Journals from the period refer to being tired because of parasites and to *mushibarashō* ("parasite stomach disease"). In fact, parasites were believed to be the cause of many diseases, including diarrhea, cholera, jaundice, dysentery, and urinary calculi (kidney and bladder stones), although they have nothing to do with these diseases. As a result, various "de-worming" medicines emerged.

Not all parasites were so speculative, however. There were also tales of actual

29. A deified functionary who has the bureaucratic task of assigning human lifespans.

"Man with Tapeworm" (*Jōchūshō no otoko*), in *Newly Compiled Book of Diseases and Deformities* (*Shinsen yamai no sōshi*), 1850, handscroll, Tohoku University Medical Library, Sendai. © 2002 Tohoku University Medical Library.

roundworms, tapeworms, and threadworms coming out of the body. The *Shinsen yamai no sōshi* (Newly Compiled Book of Diseases and Deformities), from the Edo period, has a picture of a worm emerging from the anus of a man with a stomachache (see image above). The caption says that when the man was suffering terrible colic, he ate a lot of raw salmon instead of the recommended salted salmon. Later, a two- or three-meter-long worm[30] emerged from his anus. After more worms emerged three or four times over the next several days, his colic was cured.

6. Filariasis and Scrotal Edema

In the *Konjaku monogarishū* anecdote referred to earlier, the physician made an immediate diagnosis of *subaku* because the patient's entire body was swollen. Another disease associated with parasites that cause swelling is lymphatic filariasis, also known as elephantiasis because it can cause arms and legs to swell to elephant-like proportions.

In the "Toribeno" chapter of *A Tale of Flowering Fortunes*, the retired empress Higashi Sanjō-in suffers from *subaku*, which was in fact probably elephantiasis. She refuses to see a physician because she believes the cause was a *mononoke*. Instead, she does her best to perform prayers and austerities. The Kamakura-period *Kishitsu emaki* (Illustrated Handscroll of Strange Diseases)

30. Given as 8–9 shaku. 1 shaku is equivalent to approximately 30 centimeters. Not to be confused with the disease *shaku* discussed in III.V.1, written with different characters in Japanese.

depicts a noblewoman looking mournfully at her feet, both of which are affected with elephantiasis.

The *Kishitsu emaki* also contains two images of men with massive scrota. Such cases of lymphatic filariasis often drew public attention.

Enlarged scrota may be caused by hernias and scrotal edema, but filariasis caused by an infection of the filarial worm *Wuchereria bancrofti* causes particularly dramatic swelling. This attracted attention in the Edo period and was often turned into a spectacle.

Edo-period ukiyo-e artist Katsushika Hokusai depicted a man with scrotal edema (testicular filariasis). Arriving in Mishima (in present-day Shizuoka Prefecture) on his way down the Tōkaidō road, which linked Edo, the seat of the Tokugawa shogunate, with Kyoto, the imperial capital, Hokusai sees two men surrounded by a mocking crowd. Peering to see what is happening, he finds a man making a show of his huge scrotal edema. When the show is over, the man wraps the whole thing up in a cloth and ties it to a pole which he and his companion carry as they walk off into the distance.

The *Shinsen yamai no sōshi* also depicts a scrotal show.

Another sufferer from scrotal edema caused by filariasis was Saigō Takamori, a leader in the overthrow of the Tokugawa shogunate in 1867–68. As was well known in Kagoshima, the ailment meant that he could not ride a horse. When he met his end in the 1877 Seinan War (the Satsuma Rebellion), his corpse had no head. A body was found lying next to a splendid palanquin, but this may have been his double. The scrotal edema is what proved that the corpse in fact belonged to Saigō.

According to parasitologist Fujita Kōichirō, Saigō may have contracted filariasis when he was exiled to Amami Ōshima, near Okinawa.

Elephantiasis is still rife in Africa, Southeast Asia, and Latin America. It is known to be filariasis from *Wuchereria bancrofti*, transmitted through the bite of the southern house mosquito (*Culex quinquefasciatus*). The disease was common throughout Japan until World War II. After the war, the geographical scope was reduced to the southern tip of Kyushu and Okinawa. By 1978, it had disappeared entirely thanks to rising standards of living, mosquito extermination, and proper treatment of filariasis patients.

A woman with elephantiasis. (Kanō Tan'yū, *Illustrated Handscroll of Strange Diseases* [*Kishitsu emaki*], early Edo period, handscroll, Kyoto National Museum, Kyoto. Courtesy of the Kyoto National Museum.)

7. Schistosoma japonicum and Cirrhosis

As noted earlier, a large number of parasite eggs were found in the liver of the body excavated from the Mawangdui tomb, and it is thought that *Schistosoma japonicum* was present across Asia from ancient times. Schistosomiasis first manifests as intestinal symptoms such as abdominal pain. However, because schistosomes infest the portal vein (the large vein that goes from the intestines to the liver), when the disease passes into a chronic state, parasite eggs form clumps in the liver, intestines, and other abdominal organs, causing enlarged spleen and cirrhosis of the liver.

The terminal stage of the disease is characterized by a buildup of ascitic fluid, and the stomach becomes swollen even as the rest of the body wastes away. An old woman suffering from this condition is depicted in the *Kishitsu emaki*.

In Japan, schistosomes were once common in the Kōfu basin in Yamanashi Prefecture, Numazu District in Shizuoka Prefecture, the Tone River basin in the Kantō region, Katayama District in Hiroshima Prefecture, and the Chikugo River basin in northern Kyushu. Schistosomiasis was first diagnosed in Japan in 1880 by Erwin von Bälz, who was employed at the University of Tokyo during its early years when Japan was absorbing modern medicine. Von Bälz himself was extremely interested in schistosomiasis, and he encouraged his students to study schistosomes. Japan led the way in outstanding research

not only on *Schistosoma japonicum* but also diseases such as scrub typhus (known in Japan as *tsutsugamushi* disease).

The *Schistosoma japonicum* parasite was first discovered in 1904. Okayama Medical School director Katsurada Fujirō was studying schistosomes in Katayama District when he found this new type of parasite. Research continued subsequently on the infection route.

Parasitic diseases seldom spread directly from human to human. Instead, they are transmitted from animals to humans (zoonotic diseases). These animals are called intermediate hosts. The intermediate host for *Schistosoma japonicum* is *Oncomelania hupensis nosophora*, a small freshwater snail discovered by Miyairi Keinosuke and consequently also known as the Miyairi snail.

The snail lives on the edges of shallow bodies of water such as rice paddy ditches and streams. In spring, when it enters the water, schistosome larvae released from the snail swim up to the water surface. When people and animals step in the water, the larvae adhere to their skin and pierce through into the bloodstream to spawn more schistosomes.

An understanding of the schistosome life cycle opened the way for elimination campaigns. Steady progress was made in Japan, and in the end the disease held out only in Yamanashi Prefecture. No new cases have emerged since 1977. In other parts of Asia, however, tens of millions of people still suffer from the disease.

8. Scrub Typhus and Chiggers

In Japan, people often start letters to distant friends by inquiring whether they are getting by *tsutsuganaku*, or without incident. The literal reference is to *tsutsugamushi*, or chiggers, as *Trombiculid* mites are known in North America.

In Japan, when people go down to riverbanks, they may be bitten by chiggers, which can cause a disease called scrub typhus. This disease has occurred in summer since ancient times in the lower and middle reaches of the Omono, Mogami, and Shinano Rivers, which empty into the Sea of Japan from Niigata, Akita, and Yamagata Prefectures, respectively. Scrub typhus causes sudden high fever and a rash followed by delirium. Almost half of patients die within fourteen to twenty days.

Chiggers carry *Orientia tsutsugamushi*, the pathogen for scrub typhus.

Chigger larvae are hosted by field mice and wild birds that live on riverbanks. When humans in that environment are bitten by chiggers, *O. tsutsugamushi* can enter the bloodstream.

Scrub typhus emerged in Yonezawa, Yamagata Prefecture, when the region was under the control of the Uesugi clan (1601–1871), specifically in the area where the Mogami River meanders northward. A group of villages along the coast—Ayukai, Kurofuji, Tajiri, Ishinada, and Hirono—suffered heavy flooding, which left them covered by sand and choked with weeds, turning them into a vast grassland. The grassland in turn became home to hordes of chiggers. While residents were afraid of the riverbank, they nonetheless braved the danger to cut the abundant riverbank grass to feed to their cattle. Many subsequently ran high fevers and died because of chigger bites. In 1860, a small shrine was built on the riverbank to honor Kedani Daimyōjin, the deity of chiggers.

Erwin von Bälz heard that scrub typhus occurred on riverbanks subject to frequent flooding. Based on work by a Japanese doctor doing research in this area, he wrote a paper entitled "Die Japanische Fluss- oder Überschwemmungsfieber" (The Japanese River or Flood Fever). The paper was the first to introduce the disease of scrub typhus to an international audience.

Japanese researchers led the way in the subsequent rise in *Trombiculid* mite research conducted in Japan. In 1899, Tanaka Keisuke, a general practitioner of medicine operating in Yuzawa, Akita Prefecture, provided the first scientific description of the relationship between *Trombiculid* mites and *O. tsutsugamushi.*

Part II

Diseases That Reflect an Era

I. Cancer and National Unification

While cancer has haunted humanity for centuries, it is only in recent history that this disease has come to loom so large. When the average lifespan was shorter, people generally died of infectious diseases before cancer had a chance to develop.

Conversely, the cancer mortality rate has soared since the late twentieth century. Even as the advance of modern medicine has slashed the number of infectious diseases that traditionally felled us, environmental changes such as industrialization and dietary habits have caused the incidence of cancer to rise such that—at least in Japan—it is now one of the three leading causes of death.

In addition, because cancer continues to strike without warning and with no specific cause, it seems to us in the modern world to be an insuperable and monstrously unjust disease. A healthy person experiencing no symptoms can go to the doctor for a regular checkup and suddenly find themselves with a cancer diagnosis. Cancer has destroyed the notion that illness is preceded by symptoms. Moreover, if discovered too late, it becomes incurable, making it the most terrifying of diseases.

While, as noted above, cancer is a typical modern disease, it also has a fascinating history.

1. Etymology of Cancer

The renowned Greek physician Hippocrates (460–375 BCE) used the term *carcinos* ("crab" in Greek) to describe tumors on the skin that are bumpy—like the carapace of a crab—and do not heal. This led to the disease being called "cancer" in English.

The written character for cancer used in Japan appears in a Chinese medical text from the Southern Song dynasty (1127–1279). The Ming-dynasty (1368–1644) medical text *Yixue rumen* (A Comprehensive Introduction to

Medicine; known in Japan as the *Gōrui igaku nyūmon*) describes cancer as lumpy, incurable tumors, hard as stone, that form on the skin.

Hippocrates named cancer after crabs because breast cancer presents as hard lumps like a crab shell, with the surrounding veins swelling up like crab legs. In both the East and West, the first cancer to be identified was breast cancer. When the Edo-period (1603–1867) surgeon Hanaoka Seishū performed the world's first successful surgical treatment of cancer under general anesthesia in 1804, it was a breast cancer procedure.

2. Undiagnosable Organ Cancers

These days, when we think about cancer, it is organ cancers—stomach cancer and lung cancer, for example—that spring to mind, but even in Europe, it was not until the eighteenth century that such cancers began to attract attention. In Japan, these cancers first became known when a Western text on internal medicine was translated into Japanese in the Edo period.

Organ cancers did of course occur before then, but doctors were unable to diagnose them. Abnormalities identified in organs and elsewhere during autopsies were not recognized as cancer until the late eighteenth century.

Japanese doctors learned to diagnose cancer in the Meiji period (1868–1912), by which time a considerable body of Western medical knowledge had arrived. Until then, diseases that we now know were most likely stomach cancer were diagnosed simply as gastric disorders. In other words, the same disease could be given a different name according to the symptoms presented.

While the term *cancer* was not used prior to the Meiji period, it was clearly the cause of death of several historical figures. Let us look at a few of them.

3. Takeda Shingen

Takeda Shingen (1521–73) was a military commander during the civil wars of the Sengoku ("Warring States") period (1467–1573) who died of cancer. There are also theories that tuberculosis killed him, but the *Kōyō gunkan* (Military Mirror of Kai Province)—the military records of the Takeda family, which include a biography of Shingen—say he suffered from a *kaku* disease, usually referring to a disease around the diaphragm. Stomach cancer seems highly likely.

The official physician Mishuku Kenmotsu noted in a letter written at the

time of Shingen's death that Shingen had pain in his *haikan*, with signs of the illness immediately spreading to his stomach, and that it was impossible to provide him with relief. The characters for *haikan* mean lungs and liver, but here Kenmotsu meant Shingen had pain in his chest and stomach, with his condition rapidly deteriorating.

If he had been suffering from the lung disease *rōgai*—as pulmonary tuberculosis was known until the Meiji period—the symptoms would have appeared in the records of the battles in which he engaged around the countryside. There is no mention, however, of him experiencing pulmonary tuberculosis symptoms.

Shingen's last battle—the Battle of Mikatagahara—was in the fall of 1572, when he decided to make a drive for the capital (present-day Kyoto). Shingen crushed all the strongholds of Tokugawa Ieyasu that stood in his way, and when Ieyasu sought to attack from his base at Hamamatsu Castle (in present-day Shizuoka Prefecture), Shingen chose not to assail Ieyasu's forces relentlessly. Rather, he pressed on to Mikatagahara, just past the castle, where he defeated the combined rival forces of Ieyasu and Oda Nobunaga. Sweeping all before them, his band of samurai from Kai Province (present-day Yamanashi Prefecture) set out for Kyoto, spending the New Year in Osakabe to the northeast of nearby Lake Hamana, and then unexpectedly abandoning their westward advance to instead head north.

By that point, Shingen could no longer ride a horse, so his men carried him in a palanquin. His stomach disease had undoubtedly become dire, advancing with unexpected swiftness. Hurrying to return to his residence in the castle town of Kōfu, he took a shortcut through the mountains in Mikawa Shitara District and then Ina District in Shinano Province (present-day Nagano Prefecture).

While still in the Shitara mountains, however, he fell into a coma and died on the twelfth day of the fourth month in 1573 in Komaba, Ina, at the relatively young age of fifty-three. From the rapid advance of the disease and the record of pain around his diaphragm, the diagnosis was likely stomach cancer. This brilliant general who had overcome numerous crises amid the mayhem of the Sengoku period was unable to defeat his illness.

4. Gamō Ujisato

In the Sengoku period, many daimyo (regional lords) were defeated and died in battle, but Gamō Ujisato (1556–95), lord of the Aizu domain, died at the age of forty, apparently of bowel cancer.

When Ujisato was thirteen, he was sent to serve the powerful daimyo Oda Nobunaga, whose conquests brought an end to the Sengoku period's civil wars. The following year, he distinguished himself in his first battle, going on to make a name for himself in numerous later battles as a famous military commander. After Nobunaga's death, Ujisato served Toyotomi Hideyoshi, Nobunaga's successor. By the age of thirty-five, he had risen to become a daimyo with a substantial annual income of 920,000 koku.[31] It is said that had he lived a full lifespan, he would have changed history.

Ujisato's illness is recorded in detail in the *Igaku tenshōki* (Medical Record of the Tenshō Era [1573–92]), by the distinguished physician Manase Gensaku. According to Gensaku, Ujisato accompanied Toyotomi Hideyoshi's forces during the invasion of Korea. On returning to Japan in 1593, he apparently had rectal bleeding when he landed in Nagoya in Hizen Province. This is the first mention of his illness. He was healed by Sōshuku, a doctor from the city of Sakai, who remained his attending physician thereafter.

The next year, when Manase Gensaku went to Ujisato's residence to dispense his medicines, the daimyo did not look well. His skin was yellow-black, and the base of his neck was extremely thin; he also had swelling under his eyes. Gensaku advised Sōshuku that if Ujisato's stomach and limbs began to swell, it would not bode well, so it was important that he take care in administering Ujisato's medicines.

In the eleventh month of 1594, Gensaku accompanied Hideyoshi to Osaka, but when he met Ujisato, he saw that the swelling had become much worse. In the twelfth month, Hideyoshi had Tokugawa Ieyasu and Maeda Toshiie call all the doctors of the imperial palace to examine Ujisato. Nine prominent physicians gathered at Ujisato's bedside, made their diagnoses, and left.

Toshiie and Ieyasu then called the doctors in one by one to ask about

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31. The koku was a measure of potential income, reported in terms of brown rice or the equivalent thereof. 1 koku was considered sufficient grain to feed one adult man for a year.

Ujisato's condition. Gensaku said that the danger was eight or nine on a scale of ten. In Ujisato's favor were only his youth and the fact that he still had an appetite. If he lost his appetite and weakened, then the danger level would rise to ten.

Other doctors put the danger level at five, seven, or eight, but unexpectedly, Sōshuku put it right down at one. Ujisato's condition, however, continued to deteriorate.

Toshiie asked Gensaku to start treatment, saying they would stop using Sōshuku's medicines as of that day. Gensaku refused, however, on the grounds that, because Sōshuku still put the odds at nine in ten that Ujisato would heal, he could not attend to the patient until Sōshuku withdrew from treatment.

Gensaku's prediction turned out to be correct. Three months later, on the seventh day of the second month of 1595, Ujisato died at the age of only forty years.

The brilliant general's premature death stirred many rumors. One was that he had been poisoned by Hideyoshi out of envy that Ujisato's talent matched that of even Ieyasu and Toshiie. Gensaku's medical records, however, refute that rumor. A disease that began with rectal bleeding reached a tragic end only two years later. Ujisato's disease was highly likely to have been bowel cancer.

5. Tokugawa Ieyasu

There are various theories concerning what killed Tokugawa Ieyasu, including food poisoning and stomach cancer. Stomach cancer is the most likely. Born in 1542, Ieyasu died in 1616 at the age of seventy-five.

On the twenty-first day of the first month that year, Ieyasu went out hawking in Tanaka, near Sunpu in Suruga Province (in present-day Shizuoka Prefecture), but on his return that evening, he became ill. His consumption of either fried or boiled sea bream with an accompaniment of Chinese chives was said to have been the cause.

That night, he suffered stomach pains and signs of food poisoning. He subsequently suffered a lost appetite, tightness in his chest, nausea, and a cough. His condition showed no sign of improving.

After a month, the shogunal physician Nakarai Roan recommended an infusion, but Ieyasu refused. His own diagnosis was that he had a lump in his stomach caused by *subaku* (see I.VIII). He prepared and took *manbyōen* pills, a

cure-all popular in the Edo period, and ignored the medicine provided by the physician.

Ieyasu believed the Chinese maxim that he who rules the country must also rule disease, and from his youth, he had developed a deep knowledge of medicine. He had his own medicines and a magnificent set of equipment for their preparation, which he used to concoct his own drugs.

Ieyasu's knowledge was, however, only book learning. He ignored the fact that doctors who had treated numerous patients had far greater experience and extensive knowledge about medicines.

The shogunal physician Katayama Sōtetsu told Ieyasu that the *manbyōen* cure-all was highly poisonous and would not get rid of the lump in his stomach. What is more, the side effects would cause physical wasting, so he recommended that Ieyasu stop taking the pills. His efforts were in vain, however: Katayama was disgraced as a result and exiled to Takashima in Shinano Province.

From around this time, Ieyasu knew that he was going to die. He argued that even the Buddha's highly skilled physician Jīvaka's treatment had failed to heal the Buddha and that modern physicians could not hope to measure up to Jīvaka. Ieyasu consequently completely ignored the medicines prescribed to him by doctors.

By the end of the third month, a letter that Konchi'in Sūden (an advisor to Ieyasu and a Rinzai Zen monk) sent to Ieyasu's vassal Honda Masanobu reported the shogun had no appetite whatsoever and was eating only tiny amounts of *chazuke* (hot water or tea poured over cooked rice), rice gruel, and arrowroot dumplings in soup.

According to a letter addressed to shogunal administrator Itakura Katsushige, Ieyasu was taking only *kanchūsan*, a traditional Japanese herbal medicine designed to ease stomach problems. This self-prescribed medicine was prepared for him by Nakarai Roan and other physicians, who examined him daily.

On the twenty-seventh day of the third month, Ieyasu was visited by Manase Gensaku, a renowned physician of the time, but his pulse was weak and barely perceptible. He was nauseous, devoid of appetite, and already beyond help.

In the fourth month, his condition deteriorated markedly. He had

unending hiccups and was producing a lot of phlegm. After much suffering, he drew his last breath on the seventeenth day of the fourth month of 1616. He was seventy-five.

II. Eye Diseases Common in the Edo Period

Western doctors who came to Japan during the Edo period were surprised to find eye diseases very common.

In the mid-eighteenth century, for example, Carl Peter Thunberg, who had come to Nagasaki as head surgeon at the Dutch trading post on the island of Dejima,[32] wrote in his account of his travels in Japan[33] that peasants often had bloodshot eyes or eyelid inflammations due to charcoal smoke and dampness in toilets. This was around the time the *Kaitai shinsho*, the historic Japanese translation of the Dutch anatomical text *Ontleedkundige Tafelen* (New Text on Anatomy) was published.

In 1857, during the final years of the Tokugawa shogunate, Dutch naval surgeon J. L. C. Pompe van Meerdervoort came to Japan and taught Western medicine in Nagasaki to Matsumoto Ryōjun and other *ranpōi* doctors.[34] In his memoir of his time in Japan, he observed that there was no country in the world with as many blind people as Japan. This prevalence, he felt, was due primarily to a complete ignorance of treatments for eye diseases. As a result, there were many cases of patients with eye conditions that, if properly treated, would have been completely cured, but instead the patient ended up going blind. He found conjunctivitis, like cataracts, to be prevalent; and while he had seen two or three cases of granule-like bumps on conjunctiva

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32. A small island in the port of Nagasaki, which served as a Dutch trading post between 1641 and 1855. It was the only official place of trade between Japan and the outside world during the country's two-hundred-year self-imposed isolation.

33. Thunberg's account of Japan was presented in his *Resa uti Europa, Africa, Asia, förrättad åren 1770–1779* (Travels in Europe, Africa, and Asia, Made between the Years 1770 and 1779) in volume 3 and part of volume 4, which were published in his native Sweden in 1791 and 1793, respectively.

34. *Ranpōi* were doctors who followed Western medical principles and techniques gained from Dutch-language texts, as opposed to their counterparts who were trained in Chinese medicine, the standard at the time. Throughout Japan's period of isolation, the only gateway to Western knowledge was via trade with the Dutch at the Dejima trading post, off present-day Nagasaki. Knowledge from the West was known as *rangaku*, or "Dutch studies."

(often associated with trachoma), he concluded that the condition was not epidemic.

Pompe van Meerdervoort also performed eye surgeries as live demonstrations for his students. With 8 percent of Nagasaki residents suffering from eye conditions, there was no shortage of patients. He recorded that many residents gathered in hope of treatment, particularly when they heard that a European doctor would be examining them. Pompe van Meerdervoort noted that Japanese doctors generally offered poor treatment because they lacked knowledge of the eye's internal structures and their positional relationships. Blindness was thus often caused by errors in medical treatment. He also observed that great opportunities for investigation in Japan awaited anyone wanting to pursue special research in eye surgery. He himself had seen several cases of extremely rare conditions that he knew only from medical texts. And, finally, there was the fact that most Japanese were happy to put themselves forward for treatment when told that an operation would cure their condition. It was therefore his hope that Dutch ophthalmologists would come to Japan.

Pompe van Meerdervoort's successor was the skilled ophthalmologist Anthonius Bauduin, a graduate of the Military Medical Training College in Utrecht. He brought with him the newly invented ophthalmoscope for examining the back of the eye. The Nagasaki Medical School became extremely well known because of Bauduin's eye surgeries.

In just 150 years, Japan has gone from a country with rampant eye disease to a leader in blindness prevention. Japan is working with the World Health Organization to send ophthalmologists to the developing world, where even today, eye diseases are still prevalent and blindness is common.

1. Cataracts and Surgery

The most prominent eye disease is perhaps cataracts. The *Yamai no sōshi* (Diseases and Deformities), an illustrated handscroll said to date from the twelfth century during the late Heian period (794–1185), depicts a cataract operation. The pictures are attributed to Tosa Mitsunaga, with the text written by either Jakuren or Kenkō, both monks.

The image shows a doctor and a patient sitting facing each other. The doctor holds in his right hand an acupuncture needle for the surgery, while blood streams from the patient's eye. The operation has just finished. The text reads:

There was a man whose eyesight had weakened. As he complained about this, a man came in through the gate. Asked who he was, the stranger said that he was a doctor who treated eyes. The sightless man rejoiced that the Buddha had clearly come to his aid and invited this doctor in. The doctor examined him thoroughly and said that acupuncture would do the job. He put a needle in the man's eye and then left, saying that he would be cured immediately. The man soon lost his eyesight, and one eye was destroyed.

"Treatment of a man with eye disease" (*Kanbyō no chiryō*), in *Yamai no sōshi* (Diseases and Deformities), late Heian period (twelfth century), handscroll, Kyoto National Museum, Kyoto. Courtesy of the Kyoto National Museum.

Whether the doctor was a fraud or whether the man was just unlucky, the scroll's author tacitly criticizes the fact that the man was left sightless. The practice of itinerant eye doctors seen in that era continued for many years thereafter. Eye doctors and dentists, too, traveled around the country in search of patients to treat.

2. Ganjin's Eye Disease

The Buddhist monk Ganjin (see I.IV.3) left Tang China in the twelfth month of 753 and arrived in the Japanese capital of Heijō the following year. When he arrived, he was blind. Ganjin had first resolved to travel to Japan in 742, but it took him six attempts before he finally succeeded. The exhaustion and salt water to which he was exposed on his difficult journeys are said to have taken a great toll on his eyesight.

Fukushima Giichi, an expert in the history of ophthalmology, offers a different theory based on the *Tōdaiwajō tōseiden* (The Great Master of the Tang Travels East), which gives an account of the circumstances under which

Ganjin became blind. Ganjin's eyesight gradually deteriorated in the extreme heat, and despite meeting and being treated by a person of non-Han descent skilled in dealing with eye conditions, he ultimately lost his sight entirely. The account notes that Ganjin was around sixty-three years old but does not describe any specific symptoms such as eye pain. Ganjin's gradual loss of vision apparently affected both eyes. Considering all of this evidence, Fukushima suggests that the monk suffered from age-related cataracts.

The "person of non-Han descent" may have been from Persia or India. Cataract surgery was developed in ancient India. It then traveled west through Arabia and Persia to Europe. On its eastward journey, this knowledge traveled via Tibet and China to Japan. The treatment described in the *Yamai no sōshi* undoubtedly came to Japan from China, and the person who treated Ganjin may well have performed the same operation. Unfortunately, both patients lost their eyesight.

In 752, a year before Ganjin reached Japan, a ceremony was held to consecrate the Great Buddha at Tōdaiji in Nara, but Ganjin was never able to see it. Neither was he able to see the Tōshōdaiji temple that was built for him a few years later.

The sculpture of a seated Ganjin preserved at Tōshōdaiji is said to be an exact likeness of the monk in his later years. The closed eyes bear witness to his sightlessness.

3. The Majima Eye Clinic

The Dutch doctor J. L. C. Pompe van Meerdervoort who came to Japan in the last days of the Tokugawa shogunate claimed that Japanese ophthalmology was terrible, but in fact the country had outstanding ophthalmologists. Unlike their Western counterparts, however, they had no knowledge of anatomy but rather provided their own treatments, developed through experience. These remedies were closely guarded, passed down only from father to son (and only to one son), or within the same school, so even particularly successful treatments did not become widespread.

One famous eye clinic was the Majima Eye Clinic, built within the Majima Myōgen'in temple, the remains of which are now a historic site on the outskirts of Nagoya. The clinic developed its own school of ophthalmology, founded by Majima Seigan. Seigan was a Buddhist monk who in the mid-fourteenth century rebuilt the Iōzan Yakushiji temple, located in the village

of Majima in the Kaitō District of Owari Province (now a western suburb of the city of Nagoya). He lived in the subtemple Zōnanbō and later received the title of major bishop.

The Majima School has a legend about how Seigan came to engage in ophthalmology. One day, he had a dream in which he received from the Medicine Buddha (Jp. Yakushi Nyorai) a method to cure all eye diseases. The next morning, he went to the temple's main hall and found in front of the statue of the Medicine Buddha a book of methods for healing eye diseases. He began using those methods to treat eye conditions, achieving results so remarkable as to have been wrought by a divine hand. Word spread, and the Majima Eye Clinic flourished as more and more people came for treatment.

Later generations of chief priests further developed Seigan's eye clinic. The thirteenth-generation priest Enkei (d. 1651) healed the eye disease suffered by the daughter of Emperor Gomizunoo in 1632. Because Enkei cured a disease that had defeated all other ophthalmologists, the emperor bestowed on the temple the name Myōgen'in (literally, "Temple of the Clear Eye"). The name refers to a line in the *Heart Sutra* about using the sword of prajna (wisdom) to open the "clear eye." The sword of prajna in this case is a short golden sword, shaped like an arrowhead, that removes all barriers separating us from the vivid experience of sunyata (emptiness).

In 1766, the twenty-first generation priest Enkai (d. 1798) healed the eye disease of Emperor Momozono's second son, after which Myōgen'in was made an official imperial temple. Myōgen'in continued to develop, adding accommodation for patients. We can see what it looked like from the panorama view in the *Owari meisho zue*, an illustrated guide to famous places in Owari Province.

4. Ophthalmologists and the Siebold Incident

One distinguished Edo-period ophthalmologist was Habu Genseki (1762–1848), who developed a new surgical method of iridectomy (pupillary piercing), which took the country by storm. His reputation was such that the shogunate appointed him shogunal physician. Later, however, he was caught up in an investigation known as the Siebold incident and thrown into prison. After his release, he eked out a precarious livelihood in Fukagawa until the end of his troubled life.

Philipp Franz von Siebold came to Japan in 1823 and had undoubtedly read Thunberg's account of his travels in Japan. He brought with him ophthalmological instruments and medicines.

Siebold opened Narutakijuku, a clinic and private school, in the suburbs of Nagasaki, providing medical treatment and teaching Western medicine to students who gathered from all over the country. The German physician did not just teach, he had his students report on various aspects of Japan, thereby gathering information on the country.

In 1826, Siebold accompanied the head of the Dutch trading post on a journey to the shogun's court in Edo. Along the way, he received questions from students of Narutakijuku as well as doctors interested in Dutch (Western) learning. When requested, he also treated the sick.

Arriving in Edo, the Dutch delegation settled in at Nagasakiya, its regular lodgings in what is now Tokyo's Higashi Ginza. Doctors and scholars came to visit, examining and purchasing goods that Siebold had brought from abroad.

One day, Habu Genseki and other ophthalmologists called on Siebold and asked him about ophthalmology. Siebold showed them his instruments and texts. He also performed a cataract operation on an animal, widening the pupil using drops of the mydriatic (dilating) agent belladonna.

This was the first time that Genseki had seen the effects of a dilating drug. He was amazed and wanted to learn more about Siebold's operating methods and the belladonna drug. He asked Siebold to give him the instruments he had used for the operation, but Siebold was obstinate in his refusal.

Genseki persisted, however, and Siebold finally gave him the information he was seeking. In return, Genseki gave Siebold a ceremonial kimono decorated with the Tokugawa family crest, which Genseki had personally received from the shogun. Siebold also secretly acquired various other items that the shogunate had forbidden to be passed on to foreigners.

Around the time Siebold was scheduled to return home in 1828, however, these items were discovered. While anchored in Nagasaki Bay, the boat carrying his luggage foundered in a storm. Siebold's possessions washed up on the shore, and his contraband was discovered. This was the so-called Siebold incident, leading to the arrest and imprisonment of Genseki for giving Siebold an item of clothing decorated with the Tokugawa family crest.

As an aside, because Genseki wanted to learn more than Siebold could

teach during his limited time in Edo, he introduced his student Itō Shōteki and arranged for him to study with Siebold in Nagasaki.

Shōteki was a doctor serving the Yonezawa domain, and he and his father were renowned ophthalmologists. He had gone to Edo at his father's request to study ophthalmology with Genseki.

When Shōteki arrived in Nagasaki, he studied at Narutakijuku and on Dejima. His papers from that time survive, including the *Saiyū zakki* (Miscellaneous Notes on Travels to the West), which records his days in Nagasaki and particularly his daily life at the school and the Dutch outpost.

Shōteki enjoyed an intimate student-teacher relationship with Siebold and received special treatment, including permission to come and go freely between Dejima and the mainland.

On the twenty-ninth day of the eleventh month of 1827, when Siebold was planning his departure, he called Shōteki and expressed how sad he was that they would soon be parted. No doubt because Shōteki was Genseki's student, he said, he felt that Shōteki was an outstanding ophthalmologist. As Siebold's student, Shōteki had helped a great deal and benefited him on many occasions. Siebold would have no time to perform operations when he arrived in Holland, so he wanted to give Shōteki his cataract surgery equipment. His dearest wish, he concluded, was that Shōteki would use the instruments to help the blind and make a name for himself in the world. So saying, he gave his entire chest of ophthalmology equipment to Shōteki.

Becoming the first person in Japan to acquire these instruments, Shōteki would no doubt have been amazed and delighted at his good fortune, and his heart would have filled with the happy expectation that he would help many blind people.

In 1828, Shōteki was due to head home. On the twenty-third of the first month, just before he left Nagasaki, he went to Dejima to say goodbye to Siebold. Reluctant to part, Siebold gave him many types of medicines, a farewell letter, and a letter certifying Shōteki's qualifications as an ophthalmologist.

Back in Edo, Shōteki met Genseki and his son and told them about Nagasaki and Siebold, news that greatly pleased his old teacher. This doubtless renewed Shōteki's determination to use the cataract instruments to return sight to as many people as possible.

But dark clouds were already gathering overhead. The Siebold incident had begun. Shōteki had left Edo and gone back to Yonezawa, so he was not arrested. He continued to operate as a doctor for the domain—but the equipment he received from Siebold remained hidden deep in a storehouse.

5. The Trachoma Epidemic

Pompe van Meerdervoort's time in Japan led him to conclude that, in the last days of the Tokugawa shogunate, the country had a lot of conjunctivitis but no epidemic eye diseases. In fact, there was an epidemic disease: trachoma, known in Japanese as *borome*. It was simply not particularly widespread.

Trachoma became a social problem with the start of compulsory education in the Meiji period. Even today, we recognize that schools are a vector for many infections, not just trachoma but other infectious diseases as well.

In 1891, the first ophthalmological examinations at Japanese elementary schools were conducted in Matsuyama, Ehime Prefecture. Statistics for trachoma were compiled for the first time, finding that around 10 percent of boys and around 14 percent of girls had the disease.

In 1892, when Julius Hirschberg, a distinguished professor of ophthalmology from the University of Berlin, came to Japan as part of a worldwide research trip, he examined Japanese trachoma patients and found the rate of trachoma prevalence to be around 14 percent.

Hirschberg then went on to China and conducted the same survey. The rate of trachoma prevalence was 40 percent—about three times the level in Japan. Most of the Japanese soldiers sent to China in the First Sino-Japanese War of 1894–95 in fact contracted trachoma there and brought it home, which is when the trachoma epidemic became a social problem in Japan. The affected soldiers infected their families, and the disease spread rapidly around the country, leading to an explosion in the number of infected school children by around 1897.

In the city of Yamagata, 75 percent of local children contracted trachoma, forcing schools to take countermeasures. At one elementary school, seriously infected children had to wear red badges, while students with a lower level of infection wore yellow badges, and they all had to sit in designated seats. When Kubota Yuzuru, a former minister of education, visited the city in 1906, he was horrified at the disease's prevalence and ordered a fact-finding survey. This resulted in three preventive measures:

1. Monthly examinations by medical specialists
2. Appointment of nurses at schools with high infection rates to treat and clean children's eyes
3. Public funds for instruments and medicines

These measures against the trachoma epidemic were the starting point for the placement of school nurses in elementary schools.

Trachoma is a highly infectious disease, which, left untreated, results in blindness. Japan passed the Law for the Prevention of Trachoma in 1919, requiring doctors to report the disease to authorities.

Trachoma remained chronic for many years after World War II. Statistics show that the number of reported patients was around 320,000 in 1947, but at last fell below 60,000 in the decade beginning in 1955. Numbers began to decline precipitously as of a decade later as Japan entered a period of strong economic growth, with fewer than 3,000 reported patients remaining in the decade beginning in 1975. This was partly because of advances in trachoma treatments. Improved sanitation standards in people's living environments—bathing, handwashing, laundry, and housecleaning—probably also helped.

III. The Cold as the "Cause of Myriad Diseases"

In Japan, the medical name for the common cold is *kaze shōkōgun*, or "common cold syndrome." Until recently, the maxim was that the cold is the cause of myriad diseases. People feared that if a cold was not taken seriously, it could develop into a critical condition.

Worldwide, however, the cause of the cold remained a mystery for a long time. When adenoviruses were discovered in 1953, it was concluded that they were the cause. Previously, though, the culprit was believed to be cold air.

In the United Kingdom, where the illness takes its name from the once-purported cause, large-scale human testing was undertaken to examine the relationship between the common cold and low air temperatures, concluding that people do not catch colds from the cold. But people certainly catch colds when it is cold. In fact, it has been statistically confirmed that more people catch colds during dry winters because cold viruses are highly resistant to low

temperatures and low humidity. In environments with high temperatures and high humidity, they become very weak.

Kaze, the Japanese word for the common cold, does not have the same associations with cold temperatures. Comprising the Japanese characters for "wind" and "evil," it literally means "bad wind." In Chinese medicine, it was believed that many diseases were caused by wind, which entered the body through the pores to cause sickness.

In the Heian period, as discussed below, diaries and literature refer to several illnesses as "wind maladies." One example is partial paralysis, which is called *chūbū*, a shortened form of *kaze ni ataru*, which means "to be struck by (bad) wind."

The word *kaze* came to be used for viral respiratory illnesses during the Kamakura period (1185–1333).

1. "Wind Maladies" and Colds

Wind maladies appear frequently in Heian court literature and diaries, occurring when wind entered the body and caused sickness. In the *Ochikubo monogatari* (The Tale of Lady Ochikubo), for example, after a character catches a cold, her stomach starts to rumble and her bowels, to loosen.

According to one medical text from the time, colds made people ill: Eating would lead to diarrhea; people would lose their appetites; their bodies would feel heavy; they would be in anguish; their stomachs would rumble; and their bellies and limbs would swell.

Another text suggests that wind maladies were related to seasonal winds. The winds blow from eight directions, it states, and when the wind blows from the right direction for a particular season, there are no problems. But when it blows from the wrong direction for the season, the text continues, it becomes an ill wind and causes harm to everything, making people ill and causing many deaths. One must evade ill winds as if dodging arrows, but people do not know how to do so, which is why there is currently so much illness, it concludes. In other words, people suffer from wind disease if they are exposed to an unseasonable wind.

Yet another text describes the cold as an illness in which wind causes injury to people. It explains that blood and qi (energy) circulate throughout the human body, but when wind enters the body from the outside, it becomes

an evil wind, stealing the place of blood and qi and creating illness, namely a cold.

In addition to *chūbū*, the word *chūki* ("to be struck by bad energy") will be familiar to older Japanese people as a term used to describe partial paralysis. Chinese medicine regards this condition as arising when the body has been struck by wind (or energy). In other words, while it is a perfectly respectable name for the condition, people used the term *chūbū* without understanding its meaning.

2. Neurological Disorders as Wind Maladies

In the Heian period, neurological disorders such as palsy were also considered wind maladies. In 781, Emperor Kōnin gave up his throne to Imperial Prince Yamabe (Emperor Kanmu) because of illness. The edict marking that occasion noted that the former emperor had long suffered from a wind malady, which left him in great discomfort and without much time to live. Kōnin died in the twelfth month of that year. His malady was likely palsy or something similar.

The journals of Fujiwara no Michinaga and other nobles make frequent

Diseases in which the eyes rolled from side to side were called wind maladies. ("Man with a Cold" [*Fūbyō no otoko*], in *Yamai no sōshi* [Diseases and Deformities], late Heian period [twelfth century], handscroll, Kyoto National Museum, Kyoto. Courtesy of the Kyoto National Museum.)

reference to wind maladies. Judging from the context, we can conclude these maladies were probably headaches and fevers.

The aforementioned *Yamai no sōshi* depicts a man with a wind malady. According to the explanatory text, the man's eyes jerked around like a naked body shivering with intense cold. Because of this movement, his condition was described as a wind malady. In modern parlance, it would be called nystagmus (involuntary eye movement), a neurological disorder.

The *Ōkagami* describes a child with a wind malady that was clearly epilepsy. Childhood epilepsy was called a wind malady even in the Edo period.

"Wind malady" was therefore the label given to a range of conditions that were either difficult to treat or to diagnose, most of which were neurological disorders.

3. The Origin of the Saying "The Cold Is the Cause of Myriad Diseases"

The notion that the cold is the cause of myriad diseases appears in the ancient Chinese medical text *Huangdi neijing* (The Yellow Emperor's Inner Classic).

In that text, the term is used in a manner completely different from modern thinking. The *Huangdi neijing* notes:

> When wind harms a person, it may cause cold and heat, or it may cause a heated center, or it may cause a cold center, or it may cause *li* wind (leprosy), or it may cause unilateral withering (palsy), or it may cause wind. The diseases are all different and their names are not the same. . . . When an evil wind enters the body, it changes into the normal wind in the body and causes various types of diseases. Hence wind is the leading (cause) of the one hundred [i.e., myriad] diseases.[35]

In other words, colds have various qualities, according to which they cause different diseases. Colds in ancient times were primarily the cause of neurological conditions. The disease equating to today's common cold was called *kanbō*.

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35. Paul U. Unschuld and Hermann Tessenow, *Huang Di Nei Jing Su Wen: An Annotated Translation of Huang Di's Inner Classic – Basic Questions*, vol. 1 (Berkeley: University of California Press, 2011), 625, 631.

In the eighteenth century (mid-Edo period), people began using the term *cold* to mean "influenza," with influenza coming to be called the cause of myriad diseases.

4. Colds and Influenza

In the Edo period, in addition to wind maladies (*fūbyō*), people began to talk about *fūeki* and *shōfū*—old terms for influenza (*ryūkōsei kanbō*). Influenza was already known in Japan in 862. The *Nihon sandai jitsuroku* (The True History of Three Reigns of Japan) records for that year that many people came down with "coughing sickness" (*gaigyaku*), and many died. This illness was also called *shiwabuki yami*, meaning a violent cough. The coughing sickness epidemic continued the next year and the year after.[36]

In 872, the *Nihon sandai jitsuroku* notes that coughing sickness broke out in the capital and many people died. A rumor went around that guests from the kingdom of Bohai (the modern province of Heilongjiang in Manchuria) had brought with them a miasma that was now spreading. In other words, it was known that influenza came from abroad.

When people suffered from influenza, they prayed to the gods. In 923, monks chanted sutras in the Shishinden (Hall for State Ceremonies) in the Kyoto Imperial Palace, and in 1015, offerings were made at Kasuga Shrine to allay coughing sickness.

In 1150, near the end of the Heian period, the Song merchant Liu Wenchong came to Japan, bringing many scriptures and histories to present to the emperor. Unfortunately, he and his associates also brought influenza. A huge epidemic broke out, affecting all levels of society and old and young alike, killing many people.

Moving into the Kamakura period, in 1233, there was another major *gaigyaku* epidemic. According to Fujiwara no Teika's journal, *Meigetsuki*, there was an outbreak of coughing sickness, which people were calling "barbarian disease" (*ebisu yamai*), because many people had seen foreigners come to Kyoto the previous year.

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36. Translation adapted from Gerald Groemer, *A Year in Seventeenth-Century Kyoto: Edo-Period Writings on Annual Ceremonies, Festivals, and Customs* (Honolulu: University of Hawai'i Press, 2023), 279.

5. Influenza Epidemics in the Edo Period

In the Edo period, an influenza epidemic was recorded as continuing until the tenth month (winter) of 1614. Subsequently, however, Japan entered a period of self-imposed isolation, and there was no further record of an epidemic for the next century.

It was in 1730 that influenza next reared its head. Records noted that it was brought to Nagasaki from abroad and then spread throughout the country, but suggested that it could be avoided by drinking sake with grated wild yam. Influenza had obviously spread from Nagasaki as Japan's only trading port. A worldwide influenza pandemic in fact began in 1729, sweeping through Russia, Germany, Switzerland, and Italy. It probably arrived in Japan from Russia.

Three years later, in 1733, Japan experienced another flu epidemic that raged through the country in the sixth and seventh months. In the city of Edo, more than 80,000 people died of the disease over one summer month, causing chaos. There was not even enough time to order coffins, so corpses were placed in empty sake barrels and carried to temples. The temples said that they had no space to bury the dead, however, and insisted on cremation. The cremation took days, and the town was filled with the stench of death. The bodies of the poor were simply dumped with no one to tend to them. As a token service from the authorities, prayers were given for the repose of their souls, and then they were all wrapped in woven straw mats, placed in skiffs, and cast out to sea from Shinagawa.

The *Bukō nenpyō* (Bukō Chronicle; a record of major historical events, mainly in Edo, compiled in 1848) notes for that year that people made epidemic spirits (*ekijin*) from straw and hit gongs and drums as they rushed down to the sea. Because the disease had come from overseas, they were loudly escorting it back. This kind of routing of the gods was subsequently conducted every time an influenza epidemic broke out.

Influenza outbreaks often occurred in Japan in the wake of worldwide outbreaks. For example, the 1733 epidemic coincided with the 1732–33 outbreak in America and Europe.

6. Nicknames for Influenza

By the mid-eighteenth century, every influenza outbreak was given a nickname. The 1769 outbreak was dubbed *Inaba-kaze*.

The physician Sugita Genpaku touched on this outbreak in his collection of essays *Nochimi gusa* (Notes for Later Consideration), completed in 1787. The outbreak began in the ninth month, he notes. At first, he thought that it did not seem like much, but it gradually spread until the streets were empty, with so much illness there was hardly anyone left living even in the houses of the shogun and both major and minor daimyo. In the kitchens of each regional lord, large amounts of medicine were infused and placed in buckets and pails to take to the bedsides of the sick for them to drink. The disease gradually spread as far as the provinces of Sado and Echigo, and many of the very elderly died. The same outbreak had been experienced elsewhere in the world two years earlier, in 1767.

In 1776, the Kansai region (surrounding Kyoto) experienced an outbreak, which was nicknamed *Okoma-kaze* after the heroine in a very popular *jōruri* puppet drama—the seductress Shirokiya Okoma.

The name of one outbreak—the *Tani-kaze* outbreak of 1784—played on the name of a sumo wrestler. The peerless Tanikaze Kajinosuke, who had reached the highest rank of *yokozuna*, boasted that he would never be taken down in the ring and that the only time he was felled was when he caught a cold. Immediately thereafter, he caught influenza and ended up sick in bed, leading to his name being used for the outbreak at the time. Not only that, a comic poem was composed about the turn of events.

The 1784 influenza outbreak coincided with the Tenmei famine (1782–87), and the death toll was particularly heavy. This wave was preceded by the 1781–83 influenza pandemic that raged across Europe as far as Russia and India.

The 1802 influenza outbreak began toward the end of the previous year in Nagasaki, rumored to have been introduced by a Dutchman. Nicknames for this outbreak included *Anpon-kaze*, *Oshichi-kaze*, and *Satsuma-kaze*. A castaway called Anpon had been found the previous year, and the outbreak was said to have begun with him.

Ban Kōkei, a waka poet and writer in the late Edo period who was in Nagasaki at the time, wrote in his collection of essays *Kanden kōhitsu* (Kanden Works His Writing Brush) that in earlier times, colds had spread around Japan when people visited Japan from Anpon (Siam). The current cold had spread northward from Nagasaki through Kyushu and right up to Kyoto and Osaka, infecting everyone. The Kyoto outbreak lasted from the twentieth day

of the second month to the twentieth day of the third month, affecting all households. Ōmi Province, too, experienced an outbreak, but this seemed to be a different illness, he said.

People knew that influenza was spreading from Kyushu, and this is why another nickname was *Satsuma-kaze*, after the Satsuma domain in southern Kyushu.

The *Oshichi-kaze* nickname derived from a popular ballad about Yaoya Oshichi, which, like the epidemic, was widespread at the time.

The preceding international outbreak began in North America in 1798, and spread to Europe, Russia, and Asia by 1801.

The 1808 outbreak was named *Nenkoro-kaze* after a popular nursery song of the time called *Nennen korokoro*. Overseas, the outbreak had begun around 1805 and lasted until 1808, spreading through Asia, Europe, and North America.

The 1821 outbreak was called *Danhō-kaze*. It took its name from "Danhō," a popular song of the day that cheered the newly permitted fashion of long hair for samurai.

Tsugaru-kaze was the name given to the 1827 outbreak. The daimyo of the Tsugaru District was reprimanded for riding on a palanquin at a state ceremony, leading people to refer to making a blunder as "riding on a palanquin." The outbreak in Japan was so named because the stretchers used to carry the bodies of commoners at their funerals were also called palanquins. The pandemic began in the western hemisphere in 1826 and was rife throughout Russia and Siberia by 1827. The Siebold incident occurred the following year.

The *Ryūkyū-kaze* outbreak occurred in 1832. According to the *Bukō nenpyō*, the name came from citizens of the Ryūkyū kingdom (now Okinawa) coming to Japan. The pandemic began in 1830 in China and South Asia and spread to Russia and Europe in 1831 and 1832.

The year 1854 was when Commodore Perry returned to Japan. The outbreak that year was named *Amerika-kaze* after the American warship anchored off Kanagawa. The influenza pandemic ran from 1852 to 1855 in various countries around the world.

Given the way in which influenza pandemics entered Japan from Nagasaki, Satsuma, and Tsushima (in the Korean Strait) and raged through the country

from those points of entry, Japan's self-imposed isolation was clearly not sufficient to sever its connection with the world.

In 1918, a flu epidemic called *Supein-kaze* (Spanish flu) wreaked so much damage that from 1918 to 1920, the leading cause of death in Japan was pneumonia caused by Spanish flu.

Spanish flu spread worldwide in 1918 and 1919 with horrific results. Six hundred million people contracted the disease, of whom 23 million died. Despite the name, this pandemic did not originate in Spain, but rather from the US Army. The fact that flu spread through the US Army immediately after the United States joined World War I was kept secret. Influenza spread throughout Europe as far as Spain. At that point, it was realized that the disease raging around the world was malignant influenza, and people called it "Spanish flu."

It was only after World War II that the term *influenza* began to be used in Japan.

IV. Unfair Discrimination against Leprosy

Leprosy—also called lepra and Hansen's disease—was known as *rai* in Japan. It is an illness that has been accompanied by terrible discrimination from ancient times in both the East and West. In Japan, leprosy was originally understood as a wind malady or something karmic, but later it came to be known as *tenkeibyō*, a disease of punishment by the heavens. It was believed that if a household member had leprosy, it would be passed down to their descendants. Such households were discriminated against for supposedly having leprosy in the family line.

In 1873, however, the Norwegian physician Gerhard Armauer Hansen revealed that leprosy was an infectious disease caused by the bacterium *Mycobacterium leprae*.

Norway responded by instituting a quarantine policy for leprosy sufferers, rapidly reducing patient numbers in a short span of time. Leprosy associations around the world recognized quarantine policies as an effective means of eliminating the disease. In Japan, the Meiji government likewise launched leprosy measures.

Japan's first leprosy prevention act was formulated in 1907, and the quarantining of leprosy patients in sanatoriums began. At the time, it was

believed that once leprosy passed through a chronic phase, it was incurable, so once patients entered a sanatorium, they were never again able to return home. Families of leprosy patients felt such shame that they cut contact with the quarantined family member.

The wonder drug Promin was discovered in 1941, during World War II, enabling leprosy patients to be cured to the extent that they could return to normal life.

From around that time, Japan abandoned the term *rai* as symbolizing the unhappy history of the disease and instead began to call it "Hansen's disease."

Leprosy prevention laws were finally scrapped in 1996, bringing an end to the use of the term *rai* even in official contexts. In this volume, however, I have used *rai* because *Mycobacterium leprae* is still called *raikin* in Japanese and because historically, not only leprosy but all serious and incurable skin diseases were known as *rai*.

1. Leprosy Symptoms and Discrimination

Mycobacterium leprae is highly acid-resistant and multiplies within leprosy cells, but it is extremely difficult to cultivate in artificial media. *Mycobacterium tuberculosis* shares this property, although it is far more infectious. Leprosy epidemics are rare; at no point in history have people died in large numbers due to one.

Tuberculosis has caused far more harm to humanity, remaining the leading cause of death until 1975. Nonetheless, tuberculosis has sometimes been described in very poetic terms, and unlike leprosy sufferers, tuberculosis patients were never forced into quarantine.

Japan was not the only country to deal so harshly with leprosy. In the West, too, from the time of the Old Testament, leprosy was regarded as a punishment meted out by God, and people diagnosed with the disease were shunned by their fellows.

Leprosy was feared because of the way that it attacks the skin and peripheral nerves, causing terrible disfigurement when left untreated.

The incubation period can be three to five years, or even longer. One day, someone might look in the mirror to find their eyebrows suddenly falling out, and red patches on their skin. In some cases, lumps may develop all over the body, and the skin may become numb to the extent that the person can suffer terrible burns and injuries without realizing.

Under Japanese law, leprosy patients received the same benefits as people with other physical disabilities: they were given tax exemptions and subsidies, and if the patient had no close family members, a someone from another household would be assigned to provide care. In *Rekishi no naka no "raisha"* (Leprosy Sufferers in History), however, Fujino Yutaka documents that although this was the official line, the reality was quite different. Because people believed that leprosy was contagious, no one wanted to care for the sufferers. The exemption of leprosy sufferers from military and labor service in the Koryō (Code of Households) was presumably primarily to avoid contact with leprosy sufferers. Moreover, the Senjoryō (Code on Recruitment and Promotion) prevented leprosy sufferers from entering government service and stipulated their removal from public positions.

2. Empress Kōmyō and Bathhouse Philanthropy

In both the East and West, attitudes toward leprosy were closely tied to religion. It was mainly the pious who pitied leprosy sufferers and extended a helping hand.

In Japan in the early Heian period, when Buddhism had become fully integrated in the social fabric, the devout embraced the idea of "karmic diseases," including deformity, dwarfism, ugliness, atrophied limbs, blindness, and deafness.

Over time, however, leprosy gained special status. Chapter 59 of the *Commentary on the Great Perfection of Wisdom Sutra* describes it as the most severe of all diseases, caused by karmic transgressions and difficult to cure.

Chapter 34 of the *Ton'ishō* (Book of the Simple Physician), written in the early fourteenth century by monk physician Kajiwara Shōzen, says the following of the secrets of leprosy: "That, as a result of sinful karma in previous lives, there is just punishment from the gods and the Buddhas; that it is from foods; or that [it is caused by] disharmony of the four elements [earth, water, fire, wind]." To treat it, "one cultivates roots of goodness, performs repentance, and must cultivate the good."[37]

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37. Andrew Edmund Goble, *Confluences of Medicine in Medieval Japan: Buddhist Healing, Chinese Knowledge, Islamic Formulas, and Wounds of War* (Honolulu: University of Hawai'i Press, 2011), 68–69. Interpolations in original.

Before this, chapter 20 in the second volume of the early Heian *Nihon ryōiki* (Miraculous Stories from the Japanese Buddhist Tradition) says that "white leprosy" (vitiligo) was punishment for speaking ill of a scripture devotee, particularly monks who were devotees of the *Lotus Sutra*.

The story of someone punished by leprosy that appears in the *Konjaku monogatarishū* reflects this idea. The monk Shinkai of Mt. Hiei disrupted a solemn Buddhist ritual because he came from humble beginnings, and he was jealous of the more venerable monks. As karmic retribution in his present life, he contracted white leprosy. Even his old nurse, who had sworn to be a parent to him, considered him defiled and would not let him approach her. With nowhere to go, he took refuge among the leprosy sufferers at Kiyomizu-zaka, the foot of the slope up to the Kiyomizudera temple.[38]

There is also, however, the famous eighth-century myth (recounted in I.IV.2) of the deeply devout Empress Kōmyō, who sucked pus from the lesions of a leprosy sufferer at a medicinal bathhouse, whereupon the man emanated a bright light and was revealed to be one of the five Wisdom Buddhas, Akshobhya (Jp. Ashuku). This account first appeared in the late Heian period and was further elaborated in medieval times into its current form.

In its first telling, the story was simpler: that Kōmyō personally bathed 10,000 people, and Akshobhya appeared. By the time of the *Kenkyū gojunreiki* (Record of a Pilgrimage in the Kenkyū Era [1190–99]) from the early Kamakura period, it had become a story of the empress performing meritorious deeds at a medicinal bathhouse.

According to the latter incarnation of the story, at the time the empress was working hard to have the temples Tōdaiji and Hokkeji constructed, a voice from the sky commanded her to build a medicinal bathhouse as an act of merit, so she proceeded to do so and vowed to bathe people with her own hands. Just as she began her labors, a man who appeared to be from Kiyomizu-zaka came in. The area was home to a community of leprosy sufferers. When the empress looked upon him without reproach (because merit does not discriminate), the man asked the empress to scrub his back. He was so dirty that she hesitated, but the man said that not to bathe him would be to

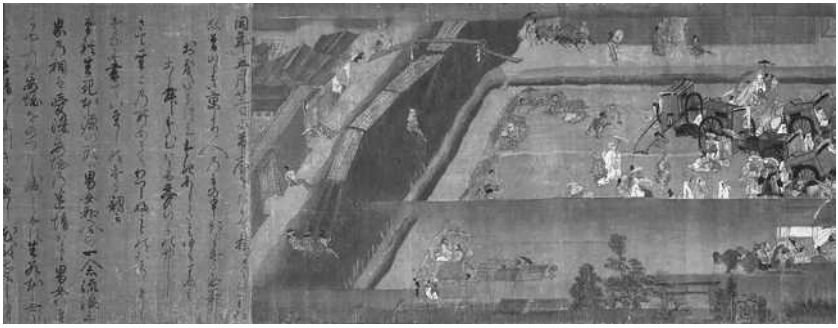
38. Translation adapted from Marian Ury, *Tales of Times Now Past: Sixty-Two Stories from a Medieval Japanese Collection* (Berkeley: University of California, 1979), 129.

repudiate her vow, so she went ahead and touched his skin. When she asked him to keep their interaction a secret, he announced that he was Akshobhya and emitted a radiant light and a sweet fragrance as he rose to heaven.

At this stage, the legend was nearly in its final form. An earlier story that appears to have influenced that formulation appears in the second story in book 19 of the *Konjaku monogatarishū*, a tale about charity bathing told by Nengu when he returned from Tang China. When the monk Jakushō (d. 1034) went to Song China, he visited Mt. Wutai. As he heated water to bathe common people as part of his practice of the virtues, an extremely unclean woman appeared: "This woman was covered with scabs, and her filth was without limit," the story notes. The people cursed her and tried to cast her out, but Jakushō gave the woman food before trying to send her on her way. She asked to bathe just a little to heal her scabs, but she was driven off. She then entered the bathhouse secretly, where she splashed around in the water and bathed. The people heard this and went to the bathhouse to eject her, but she vanished before their eyes. A shining purple cloud rose into the sky. The people gazed at it and said, "That was the bodhisattva Mañjúsrī (Jp. Monju) who came here to us in the form of a woman." They wept in grief and worshipped, but there was nothing to be done, so they gave up their crying. The bodhisattva Mañjúsrī's appearance as a woman covered with scabs is a typical Buddhist legend.

The story of the Tang pilgrim Xuanzang (Jp. Genjō Sanzō, 602–64) in book 6 of *Konjaku monogatarishū*, in the section on China, undoubtedly had a major influence on the legend of Empress Kōmyō. A woman covered with sores has been abandoned deep in the mountains. She asks Genjō Sanzō to suck the pus from her sores, which a doctor has told her will cure them. Once Genjō Sanzō sucks all the sores down to her waist, the air fills with light and fragrance, and the woman is transformed into the bodhisattva Avalokitešvara (Jp. Kannon), who says, "You are truly a holy man of pure and sincere heart." She confesses that she assumed the form of a sick woman to test him, and she offers him the *Heart Sutra*.

In these stories, deep compassion leads the protagonist to treat a leprosy sufferer without discrimination, and for this they are duly rewarded. The Empress Kōmyō myth that appears in chapter 18 of the *Genkōshakusho* (Genkō-Era [1321–24] Annals of Buddhism), the comprehensive collection of Buddhist biographies in Japan, seems to combine elements of these.



The monk Ippen preached also to homeless invalids. (En'i, *Ippen shōnin eden* [Illustrated Biography of the Itinerant Monk Ippen], scroll 7, 1299, handscroll, Tokyo National Museum, Tokyo. Courtesy of the Tokyo National Museum.)

3. Buddhism and the Care and Salvation of Leprosy Sufferers

In Kyoto, as noted before, a community of leprosy sufferers had formed at the foot of Kiyomizu-zaka, close to the entrance of the Toribeno burial ground. This community formed in the middle of the Heian period. On days when Fujiwara no Michinaga was in a critical condition, he donated rice to the poor and to those at the foot of the Rokuharamitsu slope. After his death, on the eighteenth day of the third month of 1031, salt was given to those living in Kiyomizu-zaka, while on the twenty-eighth day of the eighth month, rice was given to the ill and the poor along the Kamo River.

The frequent distribution of rice by nobles to the poor owed much to the circumstances of the time. The Hiden'in welfare institution had been washed away when the Kamo River flooded in 1017, taking with it over three hundred invalids, while the Higashi Hiden'in (Eastern Welfare Institution) in Kujō-minami, in the south of the capital, had been scrapped. Later, activity also tailed off at the new Hiden'in built in Sanjō, closer to the imperial palace. Donating rice was left up to individual nobles, who were accordingly also the target of occasional demands for rice donations from leprosy sufferers.

The *Ippen shōnin eden* (Illustrated Biography of the Itinerant Monk Ippen; see image above) depicts leprosy sufferers among the disciples following Ippen on his travels. The afflicted are shown eating in their own circle separate from the other disciples. Many of the Buddhist faithful, however, believed

that leprosy sufferers were incarnations of Ashuku and the bodhisattvas Avalokitešvara and Mañjúsrī.

The priest Eison, widely known for his restoration of the Saidaiji temple in the mid-thirteen century and his efforts to save leprosy sufferers through the worship of Mañjúsrī, pointed out that it was necessary to practice compassion because the bodhisattva appears to worshippers in the form of an impoverished, solitary, or afflicted being. At "non-discriminatory" Mañjúsrī offering assemblies, he instructed his followers to give offerings to outcasts (*hinin*) as though they were manifestations of bodhisattvas.

When Ninshō, another follower of Mañjúsrī faith and Eison's contemporary, was living at Saidaiji, there was a hostel for leprosy sufferers called Kitayama-Jūhakkendo at Nara-zaka, outside the city of Nara. One man there had become so infirm that he had lost use of his limbs. Ninshō would go to the hostel every morning to carry him to town to beg for alms and then retrieve him each evening. When the man was on his deathbed, he vowed to return to earth and work for Ninshō to reward the priest's virtue, saying that he would be recognizable by the sores on his face.

When a man with sores on his face later appeared among Ninshō's followers, people said that he was the reincarnation of the leprosy sufferer whom Ninshō had helped.

4. Leprosy and Sex

Leprosy sufferers who lived in Kiyomizu-zaka and Nara-zaka came into the city several times each year to solicit alms, calling out "*monoyoshi*" ("felicitations" or "good luck") as they walked. The implication was that giving them alms would bring good luck to the giver, prompting givers to do just that for the sake of their own merit.

According to historian Suzuki Noriko, people's perception of leprosy sufferers changed over the years. The meaning of *monoyoshi* changed as well, coming to refer to those who suffered from leprosy.

In the Edo period, the distinguished doctor Okamoto Ippō of the later seventeenth century explained in one of his books that leprosy sufferers were called *monoyoshi* with reference to their strength when it came to "dark chambers," or sexual intercourse. The term had taken on sexual overtones.

The younger brother of the famed dramatist Chikamatsu Monzaemon

(often described as the Shakespeare of Japan), Okamoto translated many Chinese medical texts into Japanese.

The belief that leprosy sufferers were saints—incarnations of the Buddha—gradually faded in the Edo period, and people began to view them as no more than lazy vagrants. Another common preconception was that they had strong sexual appetites.

In the Edo years, there seems to have been a marked surge in the number of leprosy sufferers in Kumamoto. Murai Kinzan, a domain doctor in Kumamoto, wrote in his compendium *Wahō ichimanpō* (Ten Thousand Japanese Formulas) that leprosy was an incurable disease caused by menstrual blood. Where it had previously been quite rare, the illness had increased over the past twenty or thirty years because morals had declined to such an extent that couples were even engaging in sexual intercourse while the woman was menstruating rather than eschewing the pollution of menstrual blood. Women purged themselves of blood every month because menstrual blood was the worst of all bad blood. If a woman had intercourse while that blood remained in the womb, it would persist in the body of the child and develop into leprosy.

In other words, leprosy was the fault of the sufferer's parents. At the time, it was widely believed leprosy was an inherited disease, but Murai did not believe that. He thought that it was brought on because the sufferer's parents engaged in misconduct.

The myth that leprosy sufferers had strong sexual appetites lingered stubbornly for many years. After the first leprosy prevention act was enacted in 1907, leprosy sufferers with no one to care for them were put in sanatoriums at the order of an administrative officer. Amendment of the law in 1931 strengthened the rules surrounding compulsory institutionalization. Once the decision was made to put a leprosy sufferer in a sanatorium, the person was expected to enter a completely separate world, relinquishing the surname inherited from their ancestors and ceasing all family contact.

After beginning life in the sanatorium, the person could form a household, but men received vasectomies so they could not have children. At first, the procedure was restricted to men who planned to marry, but it was eventually extended to all men in the sanatorium based on the belief that their children would contract leprosy.

Because of the terrible disfigurement caused when the disease attacks the skin and nerves, leprosy sufferers were treated in a manner that would have been inconceivable in the case of any other disease. The natural course of many people's lives was undoubtedly changed completely.

Today, a visit to the National Hansen's Disease Museum in the suburbs of Tokyo offers a glimpse of the harsh and inhumane treatment once experienced by leprosy sufferers.

V. The Beriberi Controversy

Beriberi is rare these days, but for many years it was a disease found primarily in Japan. It is a local disease that occurs only in parts of Asia where white rice is the staple food, so Westerners first encountered beriberi when they arrived in Asia.

The history of beriberi research is a fascinating topic, firstly because of the excellent opportunity that it afforded for Japanese researchers to make their international debut in the field of modern medicine, the foundation for which had been firmly established in Japan by that stage. Second, it was research on beriberi that prompted the discovery of vitamins. Here, however, we focus on the disease's emergence in Japanese history.

Beriberi is an acute peripheral neuropathy that starts with loss of feeling in the legs. When the inflammation reaches the heart, it causes heart failure, and the mortality rate becomes extremely high. Beriberi is caused by malnutrition—more specifically, by a vitamin B1 deficiency—but this was not discovered until the late nineteenth century.

Prior to this, doctors knew from experience that grains and other foods had an effect on beriberi treatment. For example, Tōda Chōan, a physician of Chinese medicine of the late nineteenth and early twentieth centuries who was renowned for his success in treating beriberi, made grains and beans the main ingredients in his prescriptions. While he identified these through empirical experience, they happen to contain large quantities of vitamin B1.

Today, to avoid beriberi one need only follow a varied diet. The disease occurs in people who eat only polished white rice (milled to remove the husk, bran, and germ), without enough other foods.

Symptoms begin with numbness in the hands and feet, altered perception,

and heaviness in the lower legs. The patient suffers general fatigue and difficulty walking, including trouble lifting the feet, and frequent stumbling and falling. As is well known, patients will not respond even to a sharp tap on the patellar tendon, because the peripheral nervous system is paralyzed. Beriberi becomes frightening when the heart rate becomes elevated and the patient struggles to breathe. Chest pressure is accompanied by low blood pressure, the lower legs and face swell, and the pulse becomes rapid. Death comes suddenly. This is commonly known as beriberi-induced heart failure.

1. Yamato Takeru

According to leading beriberi researcher Yamashita Seizō, Japan's first beriberi sufferer was the folk hero Yamato Takeru, said to be the son of the legendary Emperor Keikō. While there is no way of being certain, the legend at least suggests that Yamato Takeru met his end from the disease.

Shunned by his father the emperor who feared his bold temperament, Yamato Takeru wandered Japan nominally for the purpose of pacifying the regions. He was a tragic figure who used up the last of his strength and died in Nobono in Ise (present-day Nobono-chō in Kameyama, Mie Prefecture). To this day, many parts of Ise bear names that refer to Yamato Takeru's illness. The place where his legs swelled until they resembled a ship's helm was called Takino ("Ship's Helm Field"), located in what was then known as the Taki District in Mino Province. The spot where his symptoms worsened and he needed a staff to walk was dubbed Tsuetsuki-zaka ("Walking Staff Slope"), in what was then Mie District in Ise Province. He later arrived at a village where he said that he was extremely tired, and his legs "so lacked strength they could fold in three (*mie*)." The name Mie (then Mie District) was attached as a result. He walked on, however, until he reached Nobono, whereupon his condition became critical, and he died while composing a poem about his love for his country.

From the way Yamato Takeru's symptoms progressed, Yamashita Seizō is convinced that he suffered beriberi-induced heart failure.

2. Tokugawa Iemitsu

Beriberi manifested clearly in the Nara period (710–94) and became rife among the royalty and nobles of the Heian period. Samurai of the Kamakura

period, however, appear to have been free of the disease, which died down in the Muromachi (1336–1573) and Sengoku periods, only to gradually increase in the Edo period with the advent of peace.

Iemitsu, the third shogun of the Tokugawa dynasty, contracted malaria in 1628 at the age of twenty-four. Immediately afterwards, in the sixth month of the year, he also came down with beriberi. He complained of pain in his legs so intense that he was unable to fulfill his duties.

It took a week for him to recover from his ailment, which was his first bout of beriberi. From that point, he was plagued by the disease from spring through fall every year. Various prominent physicians were called to his bedside, addressing his treatment in force. He was prescribed numerous drugs thought to be effective, but there was little improvement in his condition. The head government doctors—Nakarai Narichika and Imaōji Chikamasa—incurred the wrath of Iemitsu, who was doubtless frustrated by the situation.

In 1639, when Iemitsu was thirty-five, he ordered all shogunal physicians to submit wonder drugs from their respective traditions. While the doctors consulted with one another to determine which drugs to give the shogun, it was unusual for them to be ordered to present their most effective secret medicines. Iemitsu was looking for a miracle cure, but none was to be found. He brought in famous physicians from in and around Kyoto and quizzed them on their treatments. Still no magic bullet appeared. No one understood that there was a connection between beriberi and diet.

When the temperature dropped, Iemitsu's symptoms would abate. Whenever he felt better, he liked to engage in falconry and sword and spear practice. In 1651, however, when he was forty-seven, his symptoms changed. From the first days of the New Year, he complained of tightness in his chest. Much to his servants' relief, this disappeared in the second month, and Iemitsu even talked of going to Nikkō in Tochigi Prefecture, where the Tokugawa family shrine was located.

Thanks to a steady recovery, he returned to sword and spear training, went to watch *sarugaku* (a form of theater based on mimetic movements), kabuki, and *kyōgen* comic theater, and even took baths. In the fourth month, he showed Hotta Masamori and other daimyo how well he was walking, and he had Inoue Masashige feel his stomach to show how it had returned to normal from the swelling caused by abdominal dropsy.

Ten days later, however, his condition suddenly worsened, and he died around four in the afternoon. The cause of death was clearly sudden heart failure caused by beriberi.

3. Tokugawa Iesada and J. L. C. Pompe van Meerdervoort

Many puzzles surround the death of Iesada, the thirteenth shogun of the Tokugawa dynasty. According to the *Tokugawa Yoshinobu-kō den* (A Biography of Lord Tokugawa Yoshinobu), Iesada was always sickly. He had come down with terrible smallpox when he was a child, which left his face severely disfigured by pockmarks. He also had epilepsy, causing strange behavior such as eye and mouth twitches, accompanied by head nodding that made it seem that he was laughing. He hated talking to people because he stuttered. Nervous tics such as these are very troublesome for sufferers. There was no treatment at the time. Shogunal physicians were ordered to do all they could, but no effective medicines were identified. His illness notwithstanding, Iesada was an excellent dancer, with no impairment in his movement when he danced to noh music both stately and wild. As soon as the music stopped, though, his tics would return immediately.

As an adult, Iesada's condition made him very shy, and he hated interacting with people, often closeting himself behind bamboo blinds with two or three close advisors. In that suffocating environment, with no conversation with the opposite sex, his epilepsy grew worse. His mood darkened, and Iesada described himself as depressed. The inner chamber guarded this secret closely, pretending to the outside world it was just the strange behavior typical of epilepsy. People assumed he must be feeble-minded.

Iesada's official date of death was the eighth day of the eighth month of 1858, but in fact he had died a month prior on the sixth day of the seventh month. Three days earlier, on the third of that month, the shogunate appointed practitioners of Western medicine Totsuka Jōkai and Itō Genboku as shogunal physicians, along with Tōda Chōan, who, as noted earlier, was renowned for his beriberi treatments.

On the sixth, when Iesada died, his private secretary Shiga Kinpachirō committed suicide, and the shogunal physician Oka Ryōin was ordered to confine himself to his home. This prompted a flurry of rumors. The day after the shogun died, two more doctors of Western medicine were appointed

to the court. According to the shogunate's official records, for the month between the sixth day of the seventh month and the eighth day of the eighth month, when the shogun's death was officially announced, Iesada's sickness was recorded as colic. The appointment of the two Western medicine practitioners can only have been a cover-up.

Dutch naval surgeon J. L. C. Pompe van Meerdervoort provided Japan's first education in Western medicine. Reproduced by permission from the Nagasaki Museum of History and Culture.

The year of Iesada's death (1858) was also the year in which Japan and the United States signed the Treaty of Amity and Commerce, opening Japan to the world. In the seventh month, Edo experienced a major cholera outbreak. The shogunate may have been forced to delay the announcement of Iesada's death for a month to avoid public unrest.

Dutch physician J. L. C. Pompe van Meerdervoort, who was teaching medicine in Nagasaki at the time, knew that Iesada was not expected to live long, because he had been consulted about the shogun's symptoms. He also knew from a report that he had received on the twentieth day of the sixth month, shortly before Iesada's death, that there was no chance of a recovery. On the twenty-first day of the sixth month, Iesada's heir, Iemochi, was appointed the fourteenth shogun of the Tokugawa dynasty.

In Iesada's final days, his symptoms included loss of appetite, edema (swelling throughout the body), breathlessness, and anuria (low urine output). In the streets, however, it was rumored he had been assassinated, or contracted cholera.

4. Tokugawa Iemochi

The star-crossed shogun Tokugawa Iemochi died at the age of just twenty-one. The eldest son of the Wakayama domain lord Tokugawa Nariyori, he was appointed shogun at the age of fourteen after Iesada's death. He married Princess Chikako (later known as Kazunomiya) in 1862 as part of the

movement to unite the court and the shogunate (*kōbu gattai*), but the time he spent in Kyoto every year meant they had very little time together.

After his third trip to Kyoto, he stayed at Osaka Castle as he prepared for the Second Chōshū Expedition (intended to quell anti-shogunal forces in the Chōshū domain), and it was there he died in 1866. Again, the announcement was delayed, and rumors flew as to the cause of death.

According to the *Tokugawa Yoshinobu-kō den*, Iemochi had begun complaining of chest pain in the fourth month of that year. At one point, he showed reassuring signs of recovery, but in the sixth month, his symptoms returned. By the end of the month, his legs had swollen and he was in terrible pain. Doctors were called in from Edo and Kyoto, and at the imperial palace, prayers and incantations were performed for the shogun in the hall where the sacred mirror was enshrined. The shogun's symptoms continued to worsen, however, and his condition became critical.

When Iemochi's ward, Yoshinobu, visited him in the seventh month, Iemochi's swelling was so bad that he struggled to sit on the floor. He was in exceptionally good spirits, however, and acted his usual self. Iemochi died on the twentieth day of the seventh month in Osaka Castle without ever returning to Edo.

His symptoms suggest that he, too, died of beriberi. Yet there was also speculation the shogun had been assassinated, based on discord between the shogun and emperor over imperial sanctions for the Treaty of Amity and Commerce and the opening of Hyōgo ports.

5. The "Edo Affliction" and *Yoiyoi*

During the Edo period, white rice finally reached the tables of commoners, bringing with it beriberi. Because people coming to the shogun's capital from the countryside were contracting the disease, it was dubbed *Edo wazurai*, or the "Edo affliction." By that time, however, beriberi was rampant in Kyoto as well as Edo, and the medical terms *hare yamai* ("swelling disease") and *kakke shuman* ("leg-swelling disease") came into use.

Shoshin beriberi spread throughout Kyoto between 1801 and 1804.[39]

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39. A fulminant form of beriberi, often presenting with severe lactic acid buildup in the bloodstream (lactic acidosis) and cardiogenic shock.

The horrifying nature of the disease is clear from its nickname at the time: *mikkabō*, or "three-day priest." Once someone contracted beriberi, three days later a priest would be needed to conduct funeral rites.

The beriberi epidemic reached its peak between 1804 and 1830, a time when ordinary people ate white rice but made do with very few side dishes. At the time, the disease was called *yoiyoi* ("tipsy dipsy") and *shuman* ("swelling").

6. Takaki Kanehiro and Mori Ōgai

In the Meiji period, there was a massive outbreak of beriberi in the army and among young people living in close quarters in dormitories. Beriberi became a social issue of such magnitude that it was called a national disease.

For young people coming to Tokyo from rural areas, white rice was a luxury. They were quite happy without side dishes if they could eat rice.

For an employee at Tokyo's Nihonbashi Echigoya store (now Mitsukoshi department store) in 1886, breakfast typically comprised miso soup, eggplant, daikon radish pickles (*takuan*), and white rice. Lunch was broad beans, sugar, soy sauce, daikon pickles, and white rice. Dinner was daikon pickles and white rice. In other words, the staple food was white rice, with daikon pickles and tiny portions of vegetables as side dishes. There was almost no fish or other protein. The poor dinner menu was the result of the custom of giving workers cash to buy their own side dishes. Workers who wanted to save a little more of their wages to send to their families would make do with white rice and daikon pickles. As a result, they came down with beriberi.

It was the same in the army. For soldiers who had been drafted from all over the country, white rice was a great luxury. Likewise, many students living in dormitories at Tokyo Imperial University were so poor that had only a little money to spend on food and had to get by with white rice and daikon pickles.

The prevalence of beriberi in communal living environments made Erwin von Bälz, a German instructor of medicine at Tokyo Imperial University, believe that it must be a contagious disease. Heinrich Botho Scheube, who was teaching and practicing medicine at Kyoto General Hospital, arrived at the same idea around the same time. Both published papers on their theories in 1881.

Neither realized that beriberi was in fact due to an unbalanced diet. When their papers appeared, the search began for the beriberi pathogen. The army,

which had a close relationship with Tokyo Imperial University, changed soldiers' living conditions in line with the contagion theory.

The navy had a similar beriberi problem. Statistics from 1878–83 show that one-third of sailors had beriberi. And it got worse. When the battle cruiser *Tsukuba* voyaged to Australia in 1882, 88 of its 333 crew members grew sick with beriberi by the time it returned home. The same year, when Imperial Japanese Navy warships stood off against Qing troops over the possible Japanese incursion onto the Korean Peninsula, their crews were so stricken with beriberi that they were in no condition to fight.

Deeply concerned, the naval leadership made the search for a cure a priority. Takaki Kanehiro, who had just returned from studying in Britain, had observed that there was no beriberi in the West. Thinking there might be a connection between diet and soldiers coming down with beriberi, he proposed that sailors on ocean voyages be put on a Western diet. The result was a dramatic decrease in the number of beriberi sufferers. Takaki had demonstrated for the first time the connection between diet and beriberi.

At this same time, however, research was also being conducted on the military diet by army surgeon Mori Ōgai, then studying in Germany. When Mori analyzed what soldiers were eating, he concluded that a rice diet provided enough of the four major nutrients. As a result, the army continued to feed its soldiers rice.

Mori also pointed out that, unlike the navy, the army was constantly moving, so it could not carry along large ovens for bread.

Around that time, Christiaan Eijkman, a Dutch physician and pathologist in Batavia (present-day Jakarta), found that if chickens were fed solely on white rice, they developed a peripheral neuropathy similar to beriberi, but they recovered if that was changed to brown, or unpolished, rice. In 1910, agricultural chemist Suzuki Umetarō discovered that unpolished rice contains oryzanin (which he called aberic acid), a substance essential in preventing beriberi. The main component of oryzanin is vitamin B1.

VI. The Terror of Cholera

Cholera, which causes terrible diarrhea and vomiting, is legally designated as

an infectious disease in Japan. There are two types of cholera: classical and El Tor. The El Tor biotype is now the dominant strain. Cases of this biotype skyrocketed in the 1960s, even as classical cholera practically disappeared. In 1964, the World Health Organization General Assembly designated the El Tor strain a quarantinable disease.

Japan uses quarantine inspections at ports and airports to prevent cholera from entering the country. In 70–80 percent of El Tor cholera cases, symptoms are mild. It is certainly nothing like the terrifying contagion of old. Up to 1994, the average number of cholera patients in Japan was under 70 annually, but in 1995 this suddenly shot up to 274. In some cases, symptoms are so mild that they are overlooked when an infected person enters the country, becoming a source of infection. As a result, El Tor cholera has been found in people who have never traveled overseas.

With classical cholera also not entirely eliminated, a sudden major outbreak of either type is possible, and we must remain vigilant.

Cholera existed in the delta areas around the Ganges and Brahmaputra river deltas in India around 400 BCE. When Europeans reached India in the eighteenth century, the disease spread worldwide. The first cholera pandemic occurred in 1817, and a total of seven pandemics have occurred since then.

The first pandemic began in August 1817 in Calcutta (present-day Kolkata). It spread throughout Asia, including China, Korea, and Japan, as well as to southern Russia, parts of Europe, and Zambia. The pandemic continued for ten years before finally subsiding in 1826.

After first spreading across India, the disease moved out into the wider world in 1820 via three routes. It traveled to Japan via Southeast Asia. From India, the disease traveled to Java in 1820 and Borneo in 1821, spreading to Guangzhou and reaching Beijing in 1822. It traveled down the Korean Peninsula to Tsushima, arriving in Nagato (in the northwest of today's Yamaguchi Prefecture) in the eighth month of 1822.

Jan Cock Blomhoff, head of the Dutch trading post on Dejima in Nagasaki, went to Edo at the beginning of that year to pay respects to the shogunate. While there, he told Katsuragawa Hoken and Udagawa Genshin, scholars of Western learning, that Java was experiencing a cholera epidemic.

Blomhoff explained that when he set out for Batavia, Java, in the summer of 1821, there had been some kind of epidemic. Both locals and Europeans

had fallen ill, and a huge number of people had died of the disease, which he called by its Latin name *cholera*. He gave Katsuragawa the field notes of a Dutch doctor who had been in Batavia during the epidemic.

The field notes explained the disease and its treatment. When Udagawa Genshin told his adopted son, Udagawa Yōan, what he had heard about cholera that day, Yōan borrowed the volume that Katsuragawa had received from Blomhoff. Promising to return it the next day, he translated it overnight. This became Japan's first cholera textbook.

1. The First Japanese Cholera Epidemic of 1822

At the time of the country's first cholera pandemic, Japan's policy of isolation was insufficient to prevent the disease's arrival via the port of Shimonoseki. It was 1822, several months after Blomhoff had informed his colleagues in Edo about cholera and a year before Siebold arrived in Japan.

The Shimonoseki outbreak was preceded by a massive outbreak in Tsushima arriving from the Korean Peninsula. Vomiting, diarrhea, and sudden fever were accompanied by intense stomach cramps, with people dying in only two or three days. Two to three hundred people died every day.

At the time, no one knew anything about cholera. The disease spread in the blink of an eye from Shimonoseki to Hagi, in Yamaguchi Prefecture, before anything could be done. Because the sick dropped dead within three days, people called this strange disease *mikka korori* ("three-day collapse"), a pun on the English word *cholera* that reflected the rapid progression of the disease from first symptoms to death, or just *korori* for short.

The cholera spread like wildfire from Hagi to Hiroshima and Okayama, and further through Hyōgo Prefecture, raging across the entire San'yō area before it exploded in Osaka. By the tenth month, however, even the Osaka epidemic showed signs of abating.

Mortality rates were high everywhere the disease struck, but they were particularly bad in Nagato and Osaka. Saitō Hōsaku, a scholar of Western learning who lived in Osaka, told a friend about it in a letter. He said that the disease had spread from a ship anchored in the Aji River in western Japan, with two to three hundred funerals now being held every day in his city alone. The proprietor of a local inn, unaware of the danger of the disease, had given a bed to someone with cholera, and his whole family became infected immediately after, Saitō wrote.

Cholera spread along the river from the inn to the city, and then throughout the whole city. Infection was particularly rampant close to the piers. Cholera spreads via water, so the watery city of Osaka provided an ideal environment. People were helpless in the face of this unprecedented disaster.

Kyoto also experienced a cholera outbreak, but just as the seasons were turning, with the cooler temperatures of the tenth month preventing the epidemic from reaching the same level of severity. There was also almost no eastern spread from the Tōkai region (encompassing Shizuoka, Aichi, Mie, and Gifu Prefectures), and the 1822 epidemic ended.

Doctors in Edo received letters from colleagues witnessing the disease for the first time. Katsuragawa and his fellow followers of Western medicine got together to discuss whether this could be what Blomhoff had called cholera. They concluded the epidemic experienced in Osaka was cholera, but no one knew how to prevent the disease. They thought that it was akin to *kakuran* (acute infectious gastroenteritis), a disease that had existed in Japan since ancient times, failing to recognize its pandemic proportions. The information they had garnered from Blomhoff was of little help with that outbreak.

2. Later Cholera Pandemics

The second cholera pandemic was the world's first true pandemic. Beginning in 1829, and continuing for around twenty-three years until 1852, it traversed the globe, including Asia, North Africa, Europe, and the Americas. Fortunately, Japan's policy of isolation enabled it to escape that particular wave unscathed. It was severely shaken, however, by the 1828 Siebold incident.

In the third pandemic, which began in 1852–53, it took time to identify the pathogen and the infection route. In places where cholera took hold, the disease vanished over winter as though taking a breather. As summer rolled around the next year, however, it began to revive, albeit sporadically. In 1854, the third year of the outbreak, cholera exploded in Europe, taking an unprecedented toll.

This time, John Snow, a doctor in London's Soho district, recorded on a map where cholera was occurring, leading him to a certain public water pump at the heart of the outbreak. With London's water supply infrastructure still underdeveloped, many people shared use of the pump, and the disease was spreading among this group. Snow successfully identified the contaminated

pump as the source of the disease and banned locals from using it. The London authorities followed Snow's lead and introduced strict controls on drinking water and wastewater, bringing cholera to a halt. Britain never again experienced a major cholera epidemic.

The third cholera pandemic also heavily impacted Southeast Asia and China, and in 1858 (Ansei 5), it arrived in Nagasaki. That was the beginning of the Ansei cholera epidemic.

3. The Ansei Cholera Epidemic

On the nineteenth day of the sixth month of 1858, Japan and the United States signed the Treaty of Amity and Commerce, ending Japan's isolation. A month before, when the USS *Mississippi* docked at Nagasaki from Shanghai, on the twenty-first day of the fifth month, its crew was carrying cholera. On the second day of the sixth month, around ten days after the crew landed on Dejima, some twenty to thirty people came down with the disease. Cholera raged through the city.

From Nagasaki it spread to the Chūgoku (western Honshu) and Kansai areas, and by the second half of the sixth month, cholera was rife in towns all along the Tōkaidō road, reaching Edo soon thereafter.

At first, it was restricted to the coastal areas of Akasaka, Reiganjima, Tsukiji, Shiba, Teppōzu, and Tsukudajima. By the eighth month, however, it was spreading rapidly from Edo's urban center to the suburbs, peaking midway through that month. The streets of Edo overflowed with the sick and the dead. The *Ansei korori ryūkōki gairyaku* (Summary of the Ansei Cholera Epidemic) vividly depicts the terrible sight. There were not enough coffins for the number of corpses, so bodies were put in empty sake barrels. Once again there were so many bodies that barrels were piled high as crematoria struggled to keep up. Terror gripped the residents of Edo.

In the eighth month, Nakaya Man'emon, a paper wholesaler from the Yokoyama-chō area of Edo, wrote a letter to Mito daimyo Tokugawa Nariaki that captured the state of the epidemic. So many people were dying, he said, that some 250 funeral processions were making their way down Kuramae-dōri every day. In many cases, entire families were struck down, and many people lodging around Bakuro-chō had also died. Few people were staying long in town, so Edo's economy was slumping, which was a nightmare for merchants.

Feverish activity at an Edo crematorium, with coffins piled high during the 1858 cholera epidemic. (*Ansei uma no aki korori ryūkōki* [Chronicle of the Cholera Outbreak of Fall 1858], 1858. Courtesy of the Tokyo Metropolitan Museum.)

Moreover, with the disease also rife in Kansai, almost no one was traveling the Tōkaidō road in either direction—an unheard-of situation. Cholera had not reached Mito at that point, but it had apparently spread as far as Tsuchiura, midway along the highway to Mito, Man'emon noted.

The Edo cholera epidemic began to die down in the ninth month, with the disease vanishing entirely at the end of the month. The city gradually regained its equilibrium. While cholera had also spread from Edo to northeast Japan in the eighth month, there too it subsided by the end of the ninth month.

4. Preventive Measures against Cholera

In 1855, at the request of the shogunate, the Dutch navy provided naval training, teaching Japanese counterparts how to maneuver a fleet. The shogunate also asked that medicine be taught to Matsumoto Ryōjun and other shogunal doctors, leading Dutch naval surgeon J. L. C. Pompe van Meerdervoort to start teaching medicine in 1857.

Since arriving in Japan, Pompe van Meerdervoort had cautioned that the cholera sweeping Qing China would soon invade Japan and had taught preventive measures to his students. Just as he had warned, cholera broke out in Nagasaki in the sixth month of 1855.

Pompe van Meerdervoort immediately wrote to Nagasaki magistrate Okabe Nagatsune. A disease causing vomiting and diarrhea had broken out in Dejima and elsewhere in Nagasaki, he said, and many crew members on the steamship USS *Mississippi* were suffering from the same gastrointestinal disease. The disease therefore appeared to be contagious. He had heard that it had spread through the coastal cities of Qing China and caused many deaths. Europeans on Dejima were trying to prevent the diarrhea from becoming actual cholera, he reported.

He also opined that Nagasaki should implement the same measures against cholera as the Dutch. Specifically, he advised that the authorities inform people of the need to manage perishable food and announce health measures along with a list of prohibited foods.

The magistrate took Pompe van Meerdervoort's advice and proclaimed a list of cautions for Nagasaki and the area under his jurisdiction. The magistrate also noted that he had heard of some cases in which the disease had struck so suddenly and so severely that there was no time to treat it, while some poorer members of society were receiving no care at all. Consequently, he decided to station doctors at the medical training school in Ōmura-chō. In response to any request made at the training school, day or night, a doctor would be dispatched for a home visit. People with mild symptoms, however, were asked to come to the training school for treatment.

No quarantine was imposed at that stage. Pompe van Meerdervoort filled the training school with his students, doing his best to treat patients.

In the second half of the seventh month, the disease finally receded, and Nagasaki saw a drop in the number of acute patients. The work done by doctors during the epidemic did much to give the impression that Western medicine was superior to traditional Chinese medicine.

According to statistics gathered by Pompe van Meerdervoort and his colleagues, of the 60,000 people living in Nagasaki, 1,583 contracted cholera and 767 died. Though the mortality rate was a high 48 percent, the fact that fewer than 1,600 people contracted the disease testified to the success of the preventive measure of prohibiting uncooked foods and unboiled water. While

no precise statistics exist for Edo, around 30,000 of the town's one million citizens died, representing 3–4 percent of the population.

Doctors practicing Western medicine played a role in Edo as well. In 1855, the shogunate reversed its ban on appointment of medical officers with Western medical training, and Itō Genboku and four of his colleagues were appointed for the first time as shogunal physicians.

As Pompe van Meerdervoort noted in his *Vijf Jaren in Japan* (Five Years in Japan), the pandemic added momentum to a movement advocating the expulsion of foreigners. The USS *Mississippi* had brought cholera to Japan from Qing China. This terrifying disease had not even been mentioned in Japan since 1822, but the epidemic was now producing many victims. People felt beaten into the ground. They said it was due to Japan opening to the world, and in some cases, they began to regard foreigners with downright hostility, Pompe van Meerdervoort said.

In Nagasaki, it was rumored that the cholera outbreak was caused by foreigners poisoning wells.

5. Pandemics and Japan

The fourth pandemic began in 1863, starting with an outbreak of cholera among pilgrims to Mecca, who carried the disease far and wide.

In Japan, the Ministry of Education's Bureau of Public Health compiled a report on cholera countermeasures based on overseas medical literature. Another domestic epidemic was not to occur, however, until 1877, the year of the Satsuma Rebellion.

Also known as the Seinan War, the rebellion was driven by Kagoshima samurai in support of Saigō Takamori, who had returned to his hometown after opponents in the government quashed the idea of invading Korea. The rebellion began in February 1877. It was supported by samurai from around Kyushu who were unhappy the government had abolished privileges traditionally accorded to the samurai class. On February 22, they attacked the garrison at Kumamoto Castle. The rebellion was crushed by government forces in only seven months.

The government brought 58,600 troops and nineteen battleships to fight against Saigō's 30,000 samurai. On September 24, the fierce campaign ended with the fall of Saigō's army on the hill of Shiroyama above the city of

The cholera pathogen depicted as a monster with the head of a tiger, body of a wolf, and scrotum of a *tanuki* (racoon dog). It does not flinch, no matter how much carbolic acid is poured on it. (Kimura Chikudō, *Korera no kiyaku* [Cholera Miracle Drug], 1886. Courtesy of Katagiri Seiryūdō and the Naito Museum of Pharmaceutical Science and Medicine.)

Kagoshima. After he was shot, Saigō committed ritual suicide.

On September 16, however, in the last days of the war, cholera broke out among the government forces. Cholera spread among soldiers returning triumphant from the battlefield on troop transport ships. On one ship that docked in Kobe in October, six people were dead, and fifty more were at death's door. Sixteen died during disembarkation, and another forty soldiers came down with cholera immediately after arriving in port.

Quarantine officers sought to prevent the troops from landing, but terrified by the horrific situation on board, the soldiers threatened the officers with guns and forced their way ashore. The quarantine officers could do nothing. Cholera spread throughout the Kansai region.

By that stage, the disease had already appeared in Yokohama and Nagasaki.

At the beginning of September, staff at an American tea processing company in Yokohama came down with cholera. This spread through Yokohama to

Chiba Prefecture, Tokyo, and the silk production areas of Yamanashi, Gunma, and Nagano. Boats running between Yokohama and Haneda in Tokyo as well as Chiba Prefecture carried the virus, and silk buyers transmitted it to other areas.

On September 6, cholera broke out on a British ship at anchor off Nagasaki, killing more than a dozen sailors. The bodies were buried on a hilltop in the suburb of Ōura, and cholera soon began to spread from that spot.

Having received news of a worldwide cholera pandemic, the government published the *Guide to Cholera Prevention* on August 27. The guide required doctors to implement preventive measures and report cholera cases. If someone contracted cholera, the area had to be thoroughly disinfected, and the patient was not to be moved. This was the predecessor of the later Communicable Disease Prevention Law.

The 1877 cholera outbreak was the first major epidemic since 1858. Following the guide, the Tokyo Metropolitan Police Department announced preventive measures. Winter brought an end to the disease, but another epidemic swept through the population two years later, in 1879.

Ground zero for the 1879 epidemic was a fishing village in Ehime Prefecture. News of a cholera outbreak emerged on March 14, and disinfection measures were promptly taken. Some villagers, however, opposed disinfection, fearing that it might be harmful. This opposition became a trigger for a refusal to take preventive measures, which left authorities unable to contain the spread of the disease.

From Ehime Prefecture, cholera sped through Beppu in northwest Kyushu, and from there to the whole of that island. It was rife throughout western Japan by May and spread to eastern Japan by June. It was now a national epidemic. That year, 162,637 people contracted cholera and 8,027 died—the highest figures in the history of Japanese statistics.

Africa was the source of the fifth pandemic, which began in 1883. By that time, German microbiologist Robert Koch had discovered that bacteria cause infectious diseases.

The German government responded to the new pandemic by sending Koch to Egypt. The French government also sent a survey team from the Pasteur Institute. The two countries vied to be the first to identify the cause of cholera.

Koch discovered the cholera bacillus *Vibrio cholerae* in 1884.

The last cholera pandemic began in 1899 and ended in 1926. Strict

quarantines imposed in Europe prevented major outbreaks during peacetime, and while both sides of the 1870 Franco-Prussian War experienced cholera outbreaks, other countries went almost entirely unscathed.

Since the end of World War II in 1945, cholera has again become an epidemic disease in certain parts of the world, with El Tor the dominant strain.

VII. Smallpox and Vaccination

Smallpox was once one of the most terrifying diseases known, but it has now, for all intents and purposes, vanished. The large-scale eradication campaign that public health administrator Arita Isao spearheaded at the World Health Organization has successfully expunged it from the earth. The last known case occurred in 1977 in Somalia.

In 1980, the World Health Organization declared smallpox eradicated. Smallpox is the only infectious disease that has been successfully erased through human agency.

We do not know exactly where and when smallpox began, but it appears in Indian Buddhist scriptures from two thousand years ago. Smallpox scars are also visible on the face of an Egyptian mummy dating from 1157 BCE. From this we surmise that the disease was already prevalent in Central Asia and Egypt in ancient times.

One theory is that smallpox came out of Central Asia and spread around the world from there.

Smallpox first appeared in Japan with the advent of Buddhism.[40] As early as 735 and 737 it reached epidemic proportions. Many people, regardless of social status, contracted the disease and died. After that, epidemics recurred every few decades, but the intervals gradually grew shorter. By the Edo period, the disease had become endemic, with epidemics occurring almost annually.

The first sign of smallpox was a high fever that continued for three days. Blisters then spread from the face to the whole body. These became blood

40. As noted in I.III.3, smallpox historically went by various names in Japan, including "pox pustules" (*hōsō*), "pea pox" (*wanzugasa*), and "gown pox" (*mogasa*).

blisters, which suppurated, turned blue-green, and finally scabbed over. This process took about seven days. One characteristic of smallpox was that all the stages might be present at any given point, because the blisters did not erupt all at once but rather over time. Recovery took fourteen to fifteen days, but many people had lost their lives to this dreaded disease by that point. Those who were fortunate enough to recover were often permanently disfigured by hideous pockmarks all over their faces.

In the Edo period, when there was no way of escaping the disease, families rejoiced when a child managed to recover from smallpox. They would celebrate with friends and relatives, holding a special ritual called *sasayu*—where warm water mixed with sake was poured over the child's head. In some places, children were given names only after they had survived smallpox.

1. Measures against Smallpox

In the Nara and Heian periods, famine and disease were believed to occur because the emperor had neglected political affairs and failed to honor the gods. The emperor would send envoys to shrines to make offerings and give prayers as amends. The great smallpox epidemic of the Tenpyō era (729–49) has already been discussed in the section on Emperor Shōmu (see I.III.3).

When natural disasters occurred, the *ōharae* purification rite would be held at the gates of the imperial court, with many monks chanting sutras. The same procedure was followed during smallpox epidemics. During the smallpox epidemic of 928, one hundred monks gathered at the Shishinden, the ceremonial hall at the imperial palace, for a great sutra reading.

The sutra recited in response to this and many other smallpox epidemics was the *Great Perfection of Wisdom Sutra*. These large-scale sutra recitations ceased with the shift from the Heian to the Kamakura period, when power moved from the hands of the aristocracy to the samurai class.

It was common practice to change the era name when a major disaster or auspicious event occurred and smallpox epidemics from the last days of the Heian period through the Muromachi period were greeted with the following era names, which incorporate providential or auspicious characters: Tenryaku (947), Eikyū (1113), Daiji (1126), Ōhō (1161), Chōkan (1163), Angen (1175), Jishō (1177), Ken'ei (1206), Jōgen (1207), Karoku (1225), Katei (1235), Kengen (1302), Kōwa (1381), and Kyōtoku (1452).

By the Edo period, smallpox and other epidemics had ceased to be regarded as linked to political failings, and the shogunate no longer held large-scale prayer ceremonies. Commoners instead made their own prayers to Shinto and Buddhist deities to ward off disease.

These epidemic diseases were, however, clearly differentiated from diseases like syphilis that were understood to be caused by individuals neglecting their own health or engaging in misconduct. When epidemics occurred, entire villages and towns turned out for festivals, processions, and other events to drive out demons who were thought to be the cause.

People offered prayers to smallpox deities, known as *hōsōgami*. It was believed that proper worship could prevent an epidemic, while neglect could cause one. The *Shōni hitsuyō sodate gusa* (Handbook of Childcare and Child-Rearing), an early eighteenth-century medical text, advised people to worship Sumiyoshi Daimyōjin as a smallpox deity. People associated Sumiyoshi Daimyōjin with victory over the disease because they believed smallpox had originated in the Kingdom of Silla and Sumiyoshi Daimyōjin was worshipped as the guardian deity whose protection had led to the surrender of the Three Kingdoms to invading forces from Japan.[41]

In Edo, Sagi Myōjin, a deity enshrined at a subordinate shrine of the Izumo Taisha shrine, was worshipped as a smallpox deity who could inflict smallpox if not appropriately appeased. Sagi Myōjin is now enshrined at the Ōtori Jinja shrine in Tokyo's Zōshigaya neighborhood. When smallpox broke out, people pasted protective spells outside the doors of their houses to keep the deity from coming in.

Later in the Edo period, as information began to circulate more widely, people realized that smallpox was less common in more remote areas.

In 1810, in the last days of the Tokugawa shogunate, physician Hashimoto Hakuju wrote in his *Hon'yaku dandokuron* (Translated Treatise on Eliminating Poisons) that from antiquity to the present, smallpox had never been seen in Ontake and Akiyama (Kiso), Shirakawa (Hida), Iwamura (Mino), Hachijōjima (Izu), Tsumari (Echigo), Kumano (Kii), Iwakuni (Suō), Tsuyu no Mine (Iyo), Besshi (Tosa), Ōmura and Gotō (Hizen), or Amakusa (Higo).

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41. Silla, Paekche, and Koguryŏ were the three kingdoms into which the Korean Peninsula was divided between 57 BCE and 668 CE.

Their freedom from the disease was due not to the protection of Shinto and Buddhist deities or the use of medicines, but rather from keeping out infected persons and prohibiting their own residents from passing through areas where infection was prevalent. In the rare event that someone contracted the disease, this was termed "airborne smallpox" (*hihōsō*), and a hut was built away from the village. People who had recovered from smallpox were employed to provide nursing and medicine. Infected people could return home only after their scabs had fallen away. People who found themselves in an area where there was a smallpox outbreak were advised to flee immediately. Should they manage to evade the disease in this way, they might avoid contracting it for the rest of their life. Hakuju argued that smallpox was a contagious disease like measles, syphilis, and scabies, rather than being attributable to climate or some fatal characteristic of a given year.

Hakuju clearly stated that smallpox is not caused by deities but is rather a contagious disease. He further noted that regions with no smallpox had taken rigorous measures to prevent it, but that once smallpox arrived, it soon spread.

In the Ōmura domain (around today's Nagasaki Airport), authorities instituted rigorous quarantine measures. If someone caught smallpox, a hut was built in the mountains, well away from other homes, and the smallpox sufferer was sent there. No one other than designated care providers was permitted to go there: visits from family members were prohibited; food, drink, and daily necessities were carried in by mountain men who were working in the vicinity.

The care of the quarantined person cost one hundred *kan*,[42] so smallpox became known as a hundred-*kan* disease. Lower- and middle-class households went bankrupt under the burden of this cost. This approach did, however, contain the spread of smallpox in Ōmura, which also adopted the variolation method developed in Akizuki in Kyushu in the late eighteenth century (Kansei era [1789–1801]).

According to one legend, the island of Hachijōjima was free of smallpox because the smallpox deity was afraid of the fierce warrior Minamoto no Tametomo (also known as Chinzei Hachirō Tametomo), who had been exiled

42. A *kan* was a unit of currency equivalent to 1,000 *monme*. A *monme* was the basic unit of silver coin traded by weight at approximately 3.75 grams per unit.

there, and consequently shunned the spot. Some talismans consequently depicted the valiant figure of this warrior.

Smallpox did eventually reach the island, however. The physician Yamakawa Yōan wrote a book about this in 1857. Where smallpox had previously been unknown on Hachijōjima, he said, in 1809 a used clothing merchant arrived from Sendai. People caught smallpox from the clothing, and the disease spread around the island in an instant. Everyone from small children to the elderly fell ill, and many died.

Before this, the physician Suzuki Ryōchi (also known as Sokō) likewise described in his *Ikai reisoku* (A Collection of Essays on Medical Subjects) how smallpox had flashed across this previously untouched island. When he sailed to Hachijōjima in 1791, he wrote, all the men and women had smooth faces, and only one or two out of a hundred people had suffered from measles. Yet he also noted that, ten years before his arrival, the village of Kashitate had experienced a major smallpox outbreak when someone had brought back a barrel found floating on the sea. The barrel contained a sacred rope made from red paper. According to Suzuki, villagers were shocked to see something that had obviously been created as a prayer to a smallpox deity. They threw it away, but the person who found the barrel contracted smallpox, which then spread across the island.

2. Superstitions and *Nishiki-e*

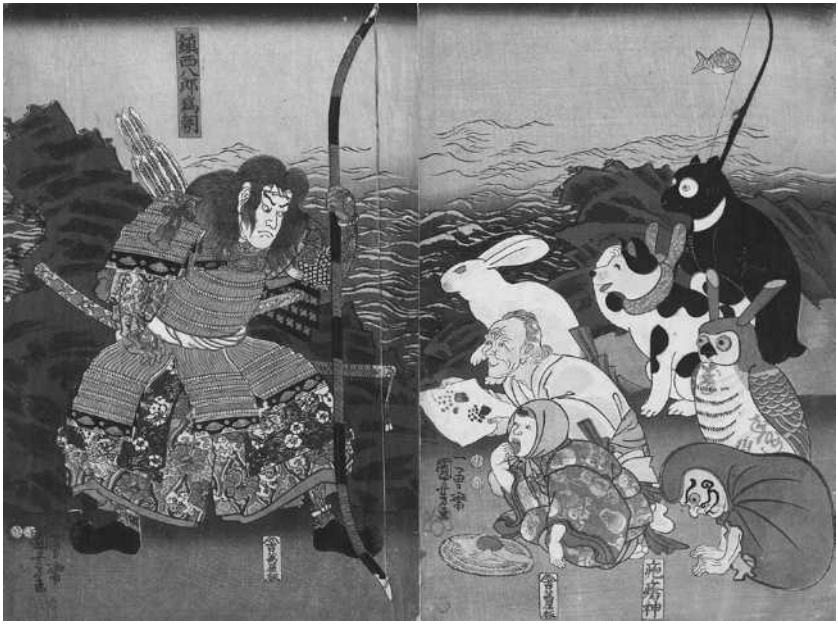
Toward the end of the Edo period, *nishiki-e* (colored woodblock prints) that were said to prevent smallpox were sold in large numbers. Images depicting Chinzei Hachirō Tametomo were particularly popular because, as noted above, smallpox deities were said to have avoided Hachijōjima because they feared Tametomo. Among the many prints is a masterpiece showing a smallpox deity and various toys (given to sick children, considered to be under the deity's control) prostrating themselves to Tametomo. The deity and the toys are presumably asking Tametomo to spread smallpox for them.

By the late Edo period, people recognized the contagious nature of smallpox, but while the cause remained unknown, it was felt that the only means of protection was to rigorously observe ancient traditions.

According to the *Tōsō suikyōroku* (Smallpox Medical Guidebook), sickrooms should face east or west; shutters, paper sliding doors, and screens

should all be closed; and incense should be burned to ward off unclean moisture. Red garments should be hung on clothing racks and screens, along with a red curtain at the entrance of the room to block the wind. Mosquito nets should be used to keep out flies and mosquitoes. When a child caught smallpox, red curtains were hung in the room, and everything around the sick child, including the mattress and bed linens, should be red and red only. Undergarments were made for the child from red pongee and red cotton and were not to be changed for twelve days. It was vital that the patient remain in bed and rest.

It was not only the patient who wore red. Caregivers would wear red garments, and toys, books, and all other items were also red. This practice began in the late seventeenth century and continued until widespread use of the smallpox vaccine caused the disease to recede.



Utagawa Kuniyoshi, *Chinzei Hachirō Tametomo, hōsōgami* (Chinzei Hachirō Tametomo and the Smallpox Deity), 1849–52, woodblock print, diptych. Courtesy of the Tokyo Metropolitan Library.

3. Introduction of the Smallpox Vaccine

People had long known that smallpox survivors became immune to the disease. A similarly old notion was that a light case of smallpox could confer that immunity on a child—that is, a form of vaccination.

Smallpox inoculation is thought to have begun in Central Asia with variolation, or deliberate infection. Two different methods were employed: an Eastern version used in Song China, which was widely practiced in the Ming era, and a Western version, which was used in Turkey and spread from there to Britain and then the European continent. Variolation as a treatment for smallpox was introduced to Japan from China in 1744, when Chinese physician Li Renshan came to Nagasaki.

In Japan, doctors injected serous fluid from smallpox blisters into as-yet uninfected children (the Western, or Turkish, method); had uninfected children wear clothing previously worn by infected individuals; or pulverized scabs and blew the powder in the nostrils of uninfected children (the Eastern method). This last method was later researched by Ogata Shunsaku, a physician from the Akizuki domain in Chikuzen (present-day Fukuoka Prefecture), who developed a safer variolation method in the late eighteenth century (Kansei era). The method was widely used in Kyushu and elsewhere, achieving quite good results, but was superseded by the Jennerian vaccine once it arrived in Japan.

The Jennerian vaccine was developed in Britain by the physician Edward Jenner at the same time that Ogata Shunsaku was refining his variolation method in Japan. Concerned by the many failures of the Turkish variolation method used in Britain at the time, Jenner invented a safer method. He perfected his cowpox vaccination method, which used cowpox instead of human smallpox, in 1796.

The cowpox vaccination method was first used in Japan in 1849, but word of the vaccine had reached the country much earlier, when Dutch commissioner Hendrik Doeff brought the news as information from the West in the early nineteenth century (Kyōwa era [1801–4]). Then in 1813, physician Nakagawa Gorōji returned to Matsumae, Hokkaido, after five years of captivity in Russia, bringing with him a Russian translation of Jenner's treatise on vaccination. In 1818, when a British battleship came to Uraga, in Yokohama, a naval officer spoke of the Jenner vaccination method to Baba

Sajūrō, who was interpreting for him at the time. He even showed Baba the actual vaccine. Finally, when Philipp Franz von Siebold came to Japan in 1823, he brought the vaccine with him to perform vaccinations, only to find that it had spoiled on the long sea voyage.

News of the wonderful Jenner vaccination method having reached Japan through these various routes, scholars of Western learning in particular were eager for it to arrive safely on Japanese shores. After the Siebold incident, however, the Dutch trading post deferred visits to Japan by other Dutch doctors for some time, which delayed the arrival of the vaccine. It finally reached Japan in 1849, more than fifty years after Jenner had invented it.

Doctors following Western medicine as well as those who were using the variolation method could not contain their excitement over the much-awaited vaccine. Successful vaccinations performed in what is now Nagasaki and Saga in the seventh month led to the rapid spread of the method throughout Japan. By the end of the year, doctors all over the country had adopted the practice.

VIII. The Arrival of Syphilis

Japan is an island nation, and epidemics have generally arrived from overseas. Much has remained uncertain, however, about when they arrived and how they spread. The one exception is syphilis.

1. Syphilis Symptoms

Syphilis is transmitted through sexual intercourse, as our ancestors were well aware. Indurations appear in or on the genitals some three weeks after contact, with inflammation causing the soft tissue to become thicker and harder. Three months later, a rash develops. Because the rash or infected area resembles the fruit of the bayberry tree in color and shape, the Chinese called the disease "bayberry sores" (Ch. *yangmei chuang*, Jp. *yōbaisō*).

In about three years, other symptoms appear elsewhere around the body. Ulcers called gummy tumors appear in the mouth. The nose cartilage breaks down, causing the nose ridge to collapse and the nose to flatten.

While these symptoms are seldom seen today, they were extremely common

until effective treatments appeared, leading to the satirical senryū poem "A son hoodwinks his parents and thus falls flat on his nose."

In the final stages of syphilis, blood vessels are affected. Aortic aneurysms may occur, which may rupture, killing the sufferer.

When the infection reaches the spinal cord and the nerves, it causes locomotor ataxia, a cruel development that brings intense pain and deprives the patient of precise control over bodily movements. Should the sufferer survive this stage, the infection finally attacks the brain. Progressive paralysis causes dementia, known as neurosyphilis.

Until an effective remedy became available during the Meiji period, whatever course the disease took, a terrible end awaited.

Because the symptoms changed from the time of infection to onset, and again as the disease progressed, syphilis had many names. The most common was "pox poison" (*kasa no doku*), but "poison pox" (*sōdoku*), "bean pox" (*mamegasa*), "dampness" (*shitsu*), and "chill" (*hie*) were also used. When the disease progressed and spread through the body, it was also called "poisoning" (*ketsudoku*). When it attached to the spine, it became *honeuzuki*, meaning "bone infection"; and if it caused orchitis (inflammation of the testes), it was called "inflamed jewels" (*kasagintama*).

2. The Transmission Route

A common theory is that syphilis originally came from the Americas, brought to the Old World by Christopher Columbus and his crew. A countertheory, however, is that syphilis was present in Europe since the Stone Age.

In any case, the disease did not attract much attention until 1490; but by the end of the fifteenth century, it was rampant throughout Europe. In the sixteenth century, it reached Asia. As the curtain rose on the Age of Discovery, syphilis had established itself in all corners of the world.

Syphilis came to Asia with Vasco da Gama's second expedition in search of new sea routes in July 1497. Leading his fleet around the Cape of Good Hope, he entered the Indian Ocean and stopped at Calicut on India's Malabar Coast. Syphilis, carried by da Gama's crew, spread through India and from there to Indonesia and China, coming through the Ryūkyū Islands to the Japanese mainland.

3. Arrival in Japan

Syphilis came to Japan in the 1510s, more than thirty years before the first Europeans arrived with their firearms in 1543. That is, the syphilis originating in Europe reached the archipelago before Europeans did.

The first record of syphilis in Japan is found in the 1512 medical treatise *Gekkairoku* written by Takeda Shūkei. He observed that many people had sores resembling eczema. It was a type of impetigo or petal-like lesion that he had not seen before. Treatment was the same as for the skin disease *shin'in,* a disease characterized by an itchy rash with sores all over the body, and the disease itself was known as "Tang sores" (*tōsō*) or "Ryūkyū sores" (*ryūkyūsō*).

Dermatologist Dohi Keizō, author of *Sekai no baidokushi* (A World History of Syphilis), surmises that it was probably visitors from China or the Ryūkyū Islands who brought syphilis to Japan.

4. Names for Syphilis

Names for syphilis often referenced the place where the disease was thought to have originated—so, in the case of Japan, "Tang sores" or "Ryūkyū sores."

In China, it was thought to have spread first in Guangdong, so syphilis was called "Guangdong sores." In Europe, the disease raged in Naples during the Italian wars of the late fifteenth and early sixteenth centuries. Neapolitans claimed that invading French troops had spread it, so they dubbed it the "French disease." And because French soldiers came home from Naples with syphilis infections, the French called it "Neapolitan disease." While it was the Portuguese who brought syphilis to India, the Indians called it the "French disease," a name that stuck for many years thereafter.

In Okinawa and parts of Kyushu, syphilis was known as *nabankasa* or *nabaru*—dialect versions of *nanbankasa*, or "southern barbarian sores"—because the disease began to spread there with the arrival of "southern barbarians" (Europeans who had come via Southeast Asia). On the main Japanese island of Honshu, syphilis was called "Hizen sores" (*hizenkasa*) because someone came home with syphilis after traveling in Hizen Province (modern Nagasaki).

These names reflect the imagined transmission route of the disease. In other words, syphilis was thought to have come from the Ryūkyūs, Tang China, or Southeast Asia and spread northward from Kyushu throughout Japan.

The source was, in fact, Europe. The physician Carl Peter Thunberg from

the Dutch East India Company, who visited Nagasaki in the mid-eighteenth century (Edo period), wrote in his account of his travels in Japan that he had no doubt that it was Europeans who exported sexually transmitted diseases to Japan. It was the same, he said, in other countries that Europeans had entered.

When syphilis was first transmitted, the various names reflected the range of conjectures about the disease's transmission route. But as time went on and syphilis became more widespread, opprobrious toponyms became obsolete and were replaced with names based on symptoms and causes.

In China, because of the lingering nature of syphilis sores, one name for the disease was "mold sores" (*mei chuang*), after the mold that forms during the damp and humid rainy season. Because the Chinese words for "mold" and "plum" are homonyms, the first character was changed from "mold" to "plum." Japan followed suit, calling syphilis "plum sores," or *baisō*, the Japanese reading of the same characters.

5. Sexual Mores and the Syphilis Inspection System

Syphilis was particularly contagious when it first arrived in a new place. Wherever it went, it spread in a flash. The rapidity of the spread reflected sexual mores.

The Portuguese missionary Luis Frois, who came to Japan in the sixteenth century, was surprised that chancres—regarded in Portugal as shameful and unclean—were seen in Japan as normal for both men and women, and no one seemed at all embarrassed.

This was still the case in the Edo period. The government allowed licensed prostitutes, and while it was commonly known that syphilis infections came from the so-called pleasure quarters, no institution was made responsible for officially monitoring syphilis or other sexually transmitted diseases.

Dutch naval surgeon J. L. C. Pompe van Meerdervoort, who taught medicine in Japan in the last days of the Tokugawa shogunate, criticized this in his *Vijf Jaren in Japan*, an account of his time in the country. He wrote that strict medical supervision was needed in brothels, but no such oversight existed in Japan. He tried various means to persuade the Tokugawa shogunate that constant supervision was its responsibility. The shogunate, however, argued that this would be very difficult in Japan. It was impossible to compel sex workers to pay attention to hygiene. People were responsible for their own

bodies, and no one, including the authorities, had any right to intervene. Pompe van Meerdervoort lamented that while Japan was a beautiful country in many respects, when one looked deeper, signs of decadence were apparent among the Japanese people.

He further observed that government neglect was creating a terrifying and insalubrious situation. It was vital to address the depravity making inroads into the bodies and souls of the Japanese people. No one should forget that a sound mind resides only in a sound body. He wrote of his earnest hope that other countries would band together to pressure Japan into bringing an end to the evil practices prevailing there.

As Pompe van Meerdervoort's account makes clear, the shogunal Magistrate's Office had evaded responsibility with the excuse that the people were responsible for their own bodies and it was in no position to intervene. But once foreign pressure came to bear, this stance became untenable.

British officers stationed in Japan after the country ended its 250-year isolation pressed for Japan to set up syphilis inspection centers. While the British Royal Navy might have conquered the seas, its battleships were returning home from foreign ports bearing sexually transmitted diseases. As a consequence, the British Navy pushed local authorities in every country

Prostitutes waiting for an inspection. Lots of medicine bottles are visible. (Utagawa Kuniaki, *Shin Yoshiwara shōgi baidoku byōin kensa* [Inspections at Shin Yoshiwara Prostitutes' Syphilis Hospital], 1883, woodblock print, triptych. Reproduced by permission from the Museum of Medicine and Dentistry, Nippon Dental University.)

to implement regular inspections of prostitutes. Japan, too, was compelled to accede to this request. Syphilis clinics were set up in pleasure quarters around the country, beginning with the famous Tokyo red-light district Shin Yoshiwara.

6. Syphilis Treatment

In the Edo period, syphilis infections continued to rise. Sugita Genpaku, author of the *Kaitai shinsho*, the first full translation of a Western anatomy text in Japan, noted in his memoir *Keiei yawa* (Conversations with My Shadow), which he penned at the age of seventy, how difficult it was to treat syphilis, candidly admitting that he was powerless.

Wanting to be of use to the shogun and to his ancestors, Genpaku said that he had looked around for a disease that was causing suffering and was difficult to treat. He came to the conclusion that there was no disease more widespread, more difficult to heal, or more painful than syphilis. He set his sights on treating syphilis, wishing to gain the knowledge to cure this one disease. When he was young, he made a point of visiting any doctor renowned for syphilis treatment to learn their treatment method. He would then apply the method himself, without success. Thinking that perhaps the disease was beyond human power, he turned to the gods for help, making a hundred-day pilgrimage to pray to Tenjin, the deity of learning (see I.VI.2), morning and night, but again to no avail.

In the midst of his obsession, he dreamed one night that a powder made of equal parts safflower and *tenreigai* ("soul's heaven-like cover," or ground human skulls) would have a miraculous effect. He immediately put the concoction to the test, but, yet again, without success. It was only a dream born of fixation with the challenge of syphilis.

Thinking that he had simply lacked sufficient learning, he immersed himself in hundreds of ancient and modern texts, but gave up halfway. Accusing himself of innate laziness and lack of energy, he decided to at least read up on every syphilis treatment. He extracted these from every book he could find, recording hundreds of formulas. When he tried the formulas on patients, however, there was no significant change.

In the meantime, Genpaku gained what he considered an unwarranted reputation, and the number of patients coming to him increased every year

until he was treating more than a thousand people annually. Of these, seven or eight hundred had syphilis. In the course of forty or fifty years, he treated tens of thousands of syphilis cases, but at the age of seventy-seven, he had yet to find a magic bullet. Whether it was because of patients' imprudence, the inadequacy of the treatment he provided, or simply that syphilis was so hard to treat, Genpaku rued the fact that nothing had changed since his youth.

The vast proportion of patients Genpaku treated suffered from syphilis, showing how dire the situation had become. In fact, the skulls of many Edo-period skeletons excavated from around Japan show signs of the disease.

The cure that evaded Genpaku all those years was finally discovered in 1910 by German scientist Paul Ehrlich and his collaborator, Japanese bacteriologist Hata Sahachirō. They developed the antibiotic arsphenamine, also known as Salvarsan, which was a complete cure.

Salvarsan was difficult to use, though, because of its strong side effects. Ultimately, the problem was solved by penicillin, the widespread use of which after World War II saw the dreadful symptoms of syphilis fade into history.

IX. The First Occupational Disorders

1. Emperor Shōmu and the Great Buddha at Nara

Of all the monuments of the Nara period, the most familiar is perhaps the Great Buddha. Construction of the Buddha began in 743 at the demand of Emperor Shōmu. Two years prior, in 741, the emperor had ordered the construction of provincial monasteries and nunneries throughout Japan, with the Tōdaiji temple built to serve as the head temple for these.

The following year, Shōmu issued an edict noting that he had felt keenly the shame and horror of his blame for several years of poor crops and epidemics and had wanted to bring great happiness to the people. He had therefore ordered that shrines be built around the country, with each shrine to construct a statue of the Buddha 4.85 meters[43] tall and to copy parts of the *Great Perfection of Wisdom Sutra*. As a result, he said joyfully, the weather had

43. The height of the Buddha statues was designated as 1 *jō* and 6 shaku. 1 *jō* is equivalent to 30 shaku, or 3.03 meters.

been good from spring through fall, and there were abundant crops of the five grains. He commanded that if this was a sign that the gods had fulfilled the wishes of the faithful, even more worship should be given to them.

The emperor's increasing devotion to the Buddha led him to pursue the spread of Buddhism as a national policy, but this did not prevent his twenty-six-year reign from being marked by a succession of natural disasters and epidemics. He lost close attendants to sickness and rebellions, and his bad luck continued.

Despite these internal administration troubles, the period produced many cultural assets that are still treasured today. They include the Great Buddha at Tōdaiji, as well as the many personal effects donated to the temple by Empress Dowager Kōmyō on the forty-ninth day after Shōmu's demise (as discussed earlier in I.IV.5). These are housed in Tōdaiji's purpose-built Shōsōin repository.

While today we are awestruck by the monumental figure of the Great Buddha, commoners of the time had mixed feelings about it, because to them it meant heavy labor and high taxes. It was a hard time for commoners.

2. Repeated Relocations of the Capital

Emperor Shōmu conceived of building the Great Buddha in 740 when he first visited the Chishikiji temple in Kawachi Province (in modern Osaka Prefecture) and saw Vairocana Buddha.

Vairocana is the primary buddha of the *Flower Ornament Sutra,* considered to be the manifestation of ultimate truth. The emperor doubtless came upon the notion of building a Vairocana image in hopes of acquiring its omnipotent power. Three years later, in 743, he ordered the construction of the Great Buddha.

As noted earlier, Shōmu's reign was plagued by natural disasters, epidemics, and famines, causing great social unrest. Believing that all the calamities were the result of his own lack of virtue, the emperor issued a series of repentant edicts.

The print-like handwriting in sutras transcribed by the emperor reveals a sensitive and meticulous nature. He was probably easily frightened, readily inclined to believe slander and jump at shadows.

In the tenth month of 740, the emperor suddenly left the capital.

Over the course of five years, he moved the capital to Kuni in Yamashiro Province, Shigaraki in Ōmi Province, and then Naniwa in Settsu Province, before returning to Heijō in the fifth month of 745. His officials, too, had to move each time. Despite the huge personal burden that this must have

imposed on them in terms of cost and labor, the emperor managed to relocate the capital several times without any major rebellions.

Heijō was the cursed city where the four Fujiwara brothers died of smallpox in 737 (see I.III.4). The emperor was not alone in hating the place. Tachibana no Moroe, who had advanced to minister of the right, also wanted to move the capital away from the city built by Fujiwara no Fuhito, since Moroe had seized power in the vacuum left by Fuhito's dead sons.

Another reason often given for the emperor's peregrinations, however, was Fujiwara no Hirotsugu, who had been sent off to Kyushu that year. Hirotsugu declared that the frequent disasters of the times were due to policy failures. He demanded the dismissal of the monk Genbō and the scholar Kibi no Makibi, both of whom had enjoyed special favor from the emperor since returning from study in Tang China in 735 (see I.III.3). Hirotsugu accused them of whispering in the emperor's ear, causing him to govern badly. He declared himself in rebellion.

Hirotsugu was the oldest son of Fujiwara no Umakai, who was Fuhito's third son. After Umakai's untimely death from smallpox in 737, Hirotsugu was appointed to junior fifth rank, lower grade, but his problematic character saw him demoted to Dazaifu deputy governor late that year.

When Hirotsugu saw that his advice was being ignored, he mobilized all the soldiers in Kyushu and rose in revolt against the emperor. No one had ever before so openly accused the emperor of political mismanagement. Given his sensitive nature, he must have been extremely shaken. Another theory is that the emperor feared that the Fujiwara clan, which had lost many key members in the smallpox pandemic of 737, would sympathize with Hirotsugu.

3. Edict on the Construction of the Great Vairocana Buddha

According to the *Shoku Nihongi*, the emperor announced his plan to construct a colossal buddha (the Great Vairocana Buddha) on the fifteenth day of the tenth month of 743. His determination is clear. This edict discloses the circumstances in which the Great Buddha came to be and expresses the emperor's strong belief in Buddhism:

> Having respectfully succeeded to the throne through no virtue of our own, out of a constant solicitude for all men, we have been ever intent

> on aiding them to reach the shore of the Buddha land. Already even the distant seacoasts of this land have been made to feel the influence of our benevolence and regard for others, and yet not everywhere in this land do men enjoy the grace of Buddha's law. Our fervent desire is that under the aegis of the Three Treasures, the benefits of peace may be brought to all in heaven and earth, even animals and plants sharing in its fruits, for all time to come.[44]

Here he is declaring his determination to begin building a Great Buddha, in the hope of summoning the power of the Buddha to bring universal peace and prosperity for later generations. He goes on:

> We take this occasion to proclaim a great vow of erecting an image of Vairocana Buddha in gold and copper. We wish to make the utmost use of the nation's resources of copper in the casting of this image, and also to level off the high hill on which the great edifice is to be raised, so that the entire land may be joined with us in the fellowship of Buddhism and enjoy in common the advantages which this undertaking affords to the attainment of Buddhahood.
>
> It is we who possess the wealth of the land; it is we who possess all power in the land. With this wealth and power at our command, we have resolved to create this venerable object of worship. The task would appear to be an easy one, and yet a lack of sufficient forethought on our part might result in the people's being put to great trouble in vain, for the Buddha's heart would never be touched if, in the process, calumny and bitterness were provoked which led unwittingly to crime and sin.
>
> Therefore all who join in the fellowship of this undertaking must be sincerely pious in order to obtain its great blessings, and they must pay homage three times a day to Vairocana Buddha, so that with constant devotion each may proceed to the creation of Vairocana Buddha.

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44. All *Shoku Nihongi* excerpts in this section (II.IX.3) slightly adapted from the translation in *Sources of Japanese Tradition from Earliest Times to 1600, Vol. 1,* 2nd ed., ed. Theodore de Bary, Donald Keene, George Tanabe, and Paul Varley (New York: Columbia University Press, 2021), 106–7.

Here, the emperor is calling on the people to participate wholeheartedly in the construction of the Great Buddha.

The people were not to be forced into participation, however. He notes:

> If there are some desirous of helping in the construction of this image, though they have no more to offer than a twig or handful of dirt, they should be permitted to do so. The provincial and county authorities are not to disturb and harass the people by making arbitrary demands on them in the name of this project. This is to be proclaimed far and wide so that all may understand our intentions in this matter.

The emperor clearly wants people to participate in the project of their own free will. In practice, however, there was little free will involved.

4. Construction of the Great Buddha

Four days after the edict, the project began. Temple grounds were opened in Kōga, where Shigaraki was located. The Buddhist priest Gyōki participated in the construction process, and work progressed as far as the completion of the statue's spinal column.

Only two years later, however, in 745, the emperor changed his mind and left Shigaraki to return to Heijō. Construction of the Great Buddha in Shigaraki was suspended. In Heijō, the emperor selected temple grounds in the village of Yamagane in Soekami District, Yamato Province (in present-day Nara Prefecture) and work on the Great Buddha resumed there.

Construction of the Great Buddha at its current location at Tōdaiji began on the twenty-third day of the eighth month in 745. The casting was completed in 749, except for the spiral curls on the Great Buddha's head, on which work began in the twelfth month of that year. Gold plating began in 752 and took five years to complete.

The Konkōmyōji temple workshop was in charge of the construction project, which involved eleven Buddhist priests drawn from among the sixty-one court officials. The master sculptor Kuninaka no Kimimaro directed the construction of Buddhist sculptures, with Saeki no Imaemishi and Ichihara no Ōkimi as his deputies. Around five hundred workers were mobilized in the space of a month, including sculptors of Buddhist images, copper artisans, and

gold leaf artisans. The materials totaled roughly 500 tons of refined copper, 8 tons of refined tin, 440 kilograms of smelted gold, 2.5 tons of mercury, and 4.63 cubic kilometers of charcoal. It was truly a major national project.

5. Gold Plating on the Great Buddha and Mercury Poisoning

No records remain of the gold-plating process, but Miura Toyohiko, an expert in the history of occupational diseases, says that it probably entailed using chisels to remove burrs from the surface of the cast Buddha, filing that surface smooth, and then plating it.

For the plating, the surface was cleaned by rubbing it with green plum or pomegranate acid; then an amalgam of gold and mercury was applied with a stiff cloth, turning the whole surface white. This white surface was then heated to around 350 degrees Celsius, causing the mercury to evaporate so that only the gold remained. The surface was then wiped again with cloth. The process was repeated around three times until the plating was complete.

As noted above, amalgam is created by dissolving gold in mercury. Judging from the amounts of each element used for the Great Buddha, the mix was around six parts mercury to one part gold. This is much more mercury and much less gold than used in modern amalgams. When heated, the amount of mercury released would have been tremendous.

Moreover, all the plating was done within the hall built to house the Buddha. All that mercury released in a confined space would have made the danger of mercury poisoning extremely high. It would not be surprising if many people died as a result, but there is no record of whether this happened.

On the ninth day of the fourth month of that year, less than a month after the plating began, a ceremony was held to open the eyes of the Great Buddha.[45] Retired Emperor Shōmu, Empress Dowager Kōmyō, and Empress Kōken arrived at Tōdaiji with civil and military officials in tow. Officials of fifth rank and above wore formal dress, while those of sixth rank and below came in their best clothes.

Ten thousand priests were invited, and everyone from the government office in charge of court music, as well as from the various temples involved

45. A ceremony in which the pupils in a newly created statue or image of the Buddha are painted in so as to "open its eyes," thereby enabling the image to be endowed with spiritual properties.

in the music, also gathered. Rare dances were performed, with musical accompaniment, on the east and west sides of the pavilion.

The ceremony was said to be the most spectacular since Buddhism was introduced into Japan, echoing the Buddhist service held on the first day of the New Year.

With the gold-plating process still underway, the air was probably full of mercury vapor. Some of the guests in the Great Buddha Hall probably felt quite ill, but I could find no records concerning this.

6. Sutra Transcription and Disease

Sutra transcription is a practice that dates far back into history and continues to this day. While it is unclear exactly when it began, the oldest known record is from 673, the second year of the reign of Tenmu. Enthroned after the Jinshin Rebellion of 672, the emperor ordered transcription of the complete Buddhist scriptures at the Kawaradera temple.

In the Nara period, sutra transcription studios were built at the imperial court and at temples and shrines. Emperor Shōmu, in particular, was a devout Buddhist, so transcription became very common during his reign.

Initially, transcription was an activity undertaken voluntarily by the pious, but this era saw the introduction of a dedicated sutra copyist system, making transcription a paid profession. Sutra copyists sat for long hours as they copied out sutras, so they would have suffered various health problems. Documents in the Shōsōin repository show that copyists sometimes took a leave of absence because of illness. According to a study by historian of medicine Shinmura Taku, the oldest record of such a leave was a twenty-four-year-old copyist in 731, who requested time off because of eye strain. The Shōsōin records end in 772.

During this period, every epidemic or natural disaster was greeted with mass sutra readings by monks, and sutra transcription was correspondingly ordered. During the smallpox epidemic of 737, Shōmu ordered the creation of statues of Vairocana Buddha and his attendants as well as transcription of the *Great Perfection of Wisdom Sutra*. In the fifth month of 740, Empress Kōmyō ordered the transcription of the complete Buddhist scriptures. In the sixth month, she had each province produce ten copies of the *Lotus Sutra* and build a provincial temple with a seven-story pagoda.

Most occupational disorders afflicting copyists were leg-related, followed

by stomach-related diseases such as dysentery and diarrhea. Others included lower back pain; diseases involving sores, such as on the head or in the groin; heart diseases; and coughing diseases. Their work hours were from morning to evening, but when a transcription was needed in a hurry, they continued late into the night, sometimes even sleeping at their stations.

Their leg problems arose from long hours of sitting, but they probably also had beriberi due to poor diet. Either way, leg problems were occupational disorders suffered by copyists.

Copyists also frequently experienced diarrhea and other stomach conditions. In 771–72, there were reports of *sekiri*, a term now used for dysentery. While dysentery does not emerge in the historical records as an epidemic disease until 861, the disease could well have been around earlier, but the communal quarters in which copyists lived would presumably have produced many more cases. Given the sedentary nature of sutra transcription, copyists may in fact have been suffering from hemorrhoids, with the resulting blood in their stools being mistaken for dysentery.

Comparing what we know of the lives of copyists with those of courtiers in Heian court literature, it seems copyists were not considered victims of diseases caused by grudges borne by evil spirits and the like. Copyists worked hard to transcribe sutras for noble families and the state, but there are no reports that they ever said prayers or copied sutras for their own illnesses.

X. The Long History of Dysentery

Dysentery was a common complaint in ancient China, Greece, Egypt, India, and elsewhere. As suggested by the characters used for the Japanese word for the disease, *sekiri*, meaning "red flux," dysentery was distinguished from diarrhea in those days by the blood and pus that would appear in the stool. Dysentery is also characterized by fever and rectal tenesmus, the persistent feeling of needing to move the bowels, even immediately after defecation, such that one cannot leave the toilet. In the Edo period, dysentery was also called "painful bowels" (*shiburibara*).

Dysentery is common even today, with major outbreaks occurring during times of famine and major disasters, as well as among wartime refugees.

While dysentery may not strike an entire country the way cholera or plague do, it used to recur on an annual basis until antibiotics were developed. Over a long period of time, it made a great many people sick, causing more harm than any other epidemic in human history.

1. Shigella Bacteria and Shiga Kiyoshi

The cause of dysentery was discovered at the end of the nineteenth century with Shiga Kiyoshi's identification of the dysentery bacillus *Shigella dysenteriae*.

In 1895, when Japan was riding high on its stunning victory in the First Sino-Japanese War, dysentery was making its way through the populace. In 1893 and again in 1894, when Japan was at war, 150,000–160,000 people came down with dysentery every year, but in 1896, the number of cases exploded.

Shiga Kiyoshi graduated from Tokyo Imperial University in 1896 and joined the Institute for Infectious Diseases, where Kitasato Shibasaburō assigned him to search for the cause of dysentery. In 1897, less than a year later, Shiga discovered the dysentery bacillus *Shigella dysenteriae* and immediately reported his findings to German journals.

At the time of his discovery, Japanese scientists were producing very few world-class results. Nationalism was beginning to gain ground around this time, and Shiga's achievement was widely publicized, stirring many hearts. When other dysentery bacilli were later discovered, academia classified them all as Shiga bacillus in honor of Shiga Kiyoshi.

Alongside bacillary dysentery, which is caused by the bacillus discovered by Shiga, there is also amoebic dysentery, which is caused by the amoeba *Entamoeba histolytica*.

From 1876, when Japan began to collect statistics on contagious diseases, bacillary dysentery, including infant diarrhea, was perennially at the top of the list. It was one of the six designated notifiable infectious diseases when the Regulations on the Prevention of Infectious Diseases were announced in 1880.

Even after World War II, numbers failed to drop, and as late as 1952 and 1953, there were more than 100,000 dysentery sufferers. In 1952, when antibiotics became available, the mortality rate was still 17 percent. It was a terrifying disease.

Amoebic dysentery is prevalent in tropical and subtropical areas worldwide. It is spread through drinking water, food, and fingers infected by excrement

from carriers. Light cases are characterized by loose stools and irregular bowel movements, but in serious cases, patients excrete strawberry jelly–like stools. Most people who are infected become carriers, spreading the disease even when manifesting no symptoms themselves. In recent years, Japan has seen a growing number of middle-aged men contracting the disease.

2. Historical Records of Dysentery Outbreaks

While dysentery undoubtedly spread from China to Japan early in history, the first time it appears in historical records is in the *Nihon sandai jitsuroku* in 861. In the eighth month of that year, dysentery was apparently widespread in Kyoto, causing considerable suffering and many deaths.

Dysentery makes its next appearance in Japanese records in 915. According to the *Nihon kiryaku*, dysentery struck many people in the ninth month of that year. The *Fusō ryakki* notes that smallpox and dysentery had broken out in the capital and provinces, and on the twenty-fifth day of the ninth month, the emperor ordered that the *Benevolent Kings Sutra* be read for three days at temples and shrines. It was rare for dysentery to appear in official history books, not because there were no dysentery outbreaks but rather because it was constantly present and it was rare for there to be a major outbreak of dysentery alone.

In the Nara period, for example, on the twenty-sixth day of the sixth month of 737, during a major smallpox outbreak, the Council of State issued an official document on the treatment of measles, noting that in cases of fever and diarrhea, if the person was not treated quickly, "bloody flux, etc., etc." would result. In other words, people were being encouraged to watch out for dysentery accompanying smallpox and measles. Dysentery often occurs when the body is weakened by, for example, smallpox outbreaks or major famines.

In the eighth month of 947, there is a record of 15,000 kilograms[46] of white rice and thirty baskets of salt being handed out in Nara and Kyoto in response to an outbreak of smallpox and dysentery. It was on occasions such as these that dysentery appears in historical records.

The entry for the fifteenth day of the eighth month of 990 in the *Shōyūki*, the Heian-period journal of Fujiwara no Sanesuke, notes: "Emperor Ichijō

46. 100 koku.

has been suffering from dysentery these last few days. His suffering has been particularly bad since yesterday."

The emperor also suffered from heart disease, and the entry for the sixteenth day notes his symptoms had grown worse, but also that it was unclear whether this was due to his heart disease or to dysentery. It appears to have been a case of dysentery accompanying physical weakness caused by another condition.

Retired Emperor Reizei died under similar circumstances. According to Fujiwara no Michinaga's journal, *Midō kanpakuki*, when Michinaga went to visit the sick emperor on the nineteenth day of the tenth month of 1011, the sovereign was extremely ill. He died five days later. Michinaga appears to have realized early in the tenth month that Reizei was incurable.

According to the *Gonki* (Diary of the Vice Senior Counselor), the journal of Fujiwara no Yukinari, when he met Michinaga on the ninth day of the tenth month, Michinaga described the emperor's condition as follows:

> The retired emperor has had dysentery since the first day of the ninth month and has been confined to his bed. Going into the tenth month, he has lost his appetite and no food at all has passed his throat, so he has become extremely emaciated. A day or two before the ninth, the swelling in his arms and legs became much worse, and he is in a critical condition.

Was Reizei's death due solely to dysentery? The "Hikage no kazura" ("Cord Pendants") chapter of the *Eiga monogatari* implies that the emperor had some mental issues. In any case, dysentery was undoubtedly the direct cause.

3. Treatment of Dysentery

Today, dysentery can be cured with antibiotics. As a consequence, we tend not to take the disease seriously, even though it is designated a Class II infectious disease under the Infectious Diseases Control Law of 1998. Even now, improper antibiotic use can result in the emergence of antibiotic-resistant bacteria, turning dysentery back into a nightmare.

Fujiwara no Sanesuke's *Shōyūki* spans fifty-five years in the life of an individual who was at the heart of politics in the Heian period. In addition to the long period of time it covers, the value of the journal lies in its authorship by someone able to critically observe Fujiwara no Michinaga, who enjoyed absolute

power at the time. Sanesuke himself lived almost to the age of ninety, but it is his many accounts of various people's illnesses that draw our interest here.

Sanesuke wrote little about his own illnesses, but an entry for the fifth month of 987, when he was thirty-one, records a bout of dysentery. It began with ten or twelve episodes of diarrhea a day. He used *kariroku* to treat his condition, but it still took close to two months for him to recover, and he was not back to normal until the end of the sixth month.

Kariroku (*harītakī* or yellow myrobalan) was made from a fruit used to treat eye diseases, "wind maladies," and bowel movements. Harvested from a tree grown in India and Indochina, the rugby ball–shaped fruit was also used in spells for expelling evil spirits. The fruit was bound with cord and hung on a wooden interior pillar.

In the Muromachi period, in place of the *kariroku* fruit, oblong effigies of the fruit were carved in ivory, copper, or stone, around 20 centimeters high and 8 centimeters wide. These were placed in bags made of white satin damask or twill and hung from scarlet cords attached to a pillar to ward off evil spirits.

The *Shōyuki* records a bout of dysentery suffered by Minister of the Right Fujiwara no Akimitsu in 1016. Chief Counselor of State Fujiwara no Michitsuna also had dysentery at the time and was visiting the toilet more than twenty times a night—a clear case of the rectal tenesmus accompanying dysentery.

The *Suisaki*, the journal of Minamoto no Toshifusa, who served as minister of the right and left at the time of Emperor Shirakawa, in the later eleventh century, records Toshifusa suffering from smallpox and dysentery at the same time. In 1077, Toshifusa came down with smallpox with an accompanying case of dysentery. A smallpox epidemic sweeping the country that year took the lives of many officials. On the twenty-fifth day of the seventh month, Toshifusa felt ill from early in the morning but went to the court anyway. By afternoon, he felt even worse, and on the twenty-sixth, he did not go to the court but rather stayed home. On the twenty-seventh, he developed symptoms of smallpox, as he had feared. On the evening of the twenty-eighth, he was racked with fever and terrible fatigue. The following day, he received precepts from the high-ranking monk Engō (his rank, *hokkyō*, is the third highest for a Buddhist priest) and that evening he ordered the monk Dōei to carry out the *shōkonsai* rite, designed to lead back a soul that had drifted away from the body due to sickness. Dōei himself was sick with smallpox, however, so he had a student perform the ritual in his place.

On the first day of the eighth month, Toshifusa's condition worsened still further, and he was covered in smallpox blisters. Many officials died of smallpox around this time. On the fourth day, just when his smallpox had begun to abate, Toshifusa came down with dysentery. He was in a terrible state.

The physician Tanba no Masatada came to Toshifusa's home. He directed Toshifusa to eat red bean and rice gruel and dried sea bream. That evening, however, Toshifusa again suffered terrible diarrhea, and he ordered various shrines and temples to pray for his recovery. His condition calmed slightly by the following morning, but the diarrhea continued unchanged. Toshifusa again received precepts from Engō, who also performed various prayers, but to no immediate effect.

On the sixth day, he felt better and was experiencing fewer bouts of diarrhea, but he took a turn for the worse again in the evening. Early on the seventh day, the abbot Kōsan came to offer his sympathies. Tanba no Masatada came to examine him again in the afternoon, advising him to eat salted sea cucumber intestines—which were good for stomach ailments—whenever he had a fever. Toshifusa complied immediately, but in the evening he felt worse.

On the ninth day of the eighth month, he was still battling diarrhea. He remembered reading a story that recommended eating Chinese chives for diarrhea, so he did so. But his fever remained high, and he still felt poorly. He had Koresue from the Kamigamo Jinja shrine give prayers for the elimination of disease and the extension of life and in the evening he ordered Buddhist offerings and a soul-summoning rite. From that time, his condition improved, and by the twelfth day of the eighth month, he had fully recovered.

This account from the end of the Heian period demonstrates much greater faith in prayers than in medical treatment. Toshifusa thereafter remained in good health, going on to serve three emperors (Shirakawa, Horikawa, and Toba). He died of natural causes in 1121 at the age of eighty-seven.

The *Azuma kagami* (Mirror of the East), which chronicles the military government of the Kamakura period, records that the shogun frequently suffered from dysentery. On the twenty-fifth day of the sixth month of 1240, Kujō Yoritsune (also known as Fujiwara no Yoritsune), the fourth Kamakura shogun, came down with dysentery. That evening, a dysentery ritual was conducted at the imperial palace. Yoritsune suffered two additional dysentery

Prayers to cure illness. (*Fudō riyaku engi*, 14th century, picture scroll. Courtesy of the Tokyo National Museum.)

attacks before he died sixteen years later in 1256 at the age of thirty-nine. When he finally fell ill and died in Kyoto on the eleventh day of the eighth month, it was again diarrhea that afflicted him.

After this, the term *sekiri* (dysentery) almost disappeared from the history books, until the Edo period. Common names for the disease in the Edo period included *ribyō*, *rishitsu*, *shiburibara*, and *harayakubyō*.

The term made a return with the introduction of Western medicine, when doctors realized that while *ribyō* had been used for everything from simple diarrhea to cholera and other fulminant diseases, including dysentery, each of these was in fact different.

XI. Deadly Measles

Japan no longer experiences nationwide epidemics of measles—*mashin* or *hashika* in Japanese—but this sickness still produces more sufferers in Japan than any other designated notifiable infectious disease except tuberculosis.

The designated notifiable infectious diseases were laid down in the Regulations on Notification of Infectious Diseases in 1947, not long after

World War II. They comprise measles, whooping cough, polio, influenza, yellow fever, tetanus, infectious diarrhea, scrub typhus, rabies, anthrax, malaria, filariasis, and relapsing fever. Regulations require any doctor diagnosing an infected person to notify the chief of the nearest public health center within twenty-four hours.

Patient numbers for most of these diseases were sharply curtailed by the late 1960s, but tuberculosis and measles have remained obstinate standouts. Measles used to strike every year or two over winter and spring, and few children escaped its clutches. Most people of middle age and above (as of this writing) have experienced measles.

Discovery of the measles virus in 1954 and the subsequent development of a live measles vaccine in the 1960s made measles preventable. Japan instituted routine immunization immediately, cutting patient numbers by half. People continue to contract measles, however, and the disease even appears to be on the rise again.[47]

1. Measles in the Edo Period

Measles is known as a childhood disease, but in the Edo period, gaps between measles epidemics often exceeded twenty years, so that children born between one epidemic and the next would not experience measles before reaching adulthood. As a result, adults, too, contracted the disease.

Senryū satirical poems of the Edo period played on this theme. One from 1804 read: "Revealed by measles, the prostitute's age," while another from 1856 joked, "You're good to go! Have at it again, the pediatrician winks." The former refers to a prostitute whose real age is exposed when she does not come down with measles, meaning she must have contracted it and gained immunity during the previous epidemic many years before. The "it" in the latter poem refers to sex. Pediatricians would have checked for measles as a matter of course. Measles patients were expected to refrain from baths and sexual intercourse.

The year 1862, when the Tokugawa shogunate was in its final days, saw a

47. In the first five months of 2023, there were 11 cases of measles recorded in Japan following the lifting of COVID-19 restrictions, compared with only 2 cases over the course of 2022. National Institute of Infectious Diseases (NIID), https://www.niid.go.jp/niid/ja/iasr-measles.html.

measles epidemic of unprecedented proportions. Over a hundred published *nishiki-e* woodblock prints showed measles prevention methods and how to take care of one's health. These were called "measles prints" (*hashika-e*).

Some of the prints depict an ilex leaf, inside which is written the following verse:

> The god of wheat got measles before he was born.
> The pustules are now gone, and healed am I.

People believed that putting up these prints at the entrance to their home would prevent the measles demon from entering. *Tarayō* (*Ilex latifolia*) is an evergreen tree from the holly family. Writing firmly on the back of the leaf would bring the letters into relief. Sutras were apparently once written on ilex leaves for that reason, and some say that this is the origin of the Japanese word for postcard, *hagaki* (literally, "leaf writing").

Measles symptoms include a tingling or stinging sensation in the throat or on the skin, as if the area is being abraded by a bristly wheat awn. This sensation is captured vividly in the Kansai dialect by the term *hashikai*, or *inasuri* in the Kantō region.

The verse above is a spell meant to fend off the measles demon. It is based on the idea that the god of wheat caught measles before his birth and recovered, so will not fall prey to it again. It suggests that, like the god of wheat, no one else in the household will fall victim to the disease.[48] During the 1824 epidemic, the verse and the age of the as-yet uninfected person were written on a holly leaf, which was then placed in a river or stream to be swept away by the current—together, it was hoped, with the disease.

Over the 260 years of the Edo period, there were thirteen major measles epidemics. The first was in 1607. The next broke out around a decade later in the tenth month of 1616, followed by another in 1649, thirty-three years on. The records are then silent until forty-one years later in 1690, when an epidemic ran from the third month that year until the fifth month the following year. No one, young or old, male or female, escaped the disease.

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48. The connection between the god of wheat and measles is based on a pun. One name for the wheat awn is *hashika*, which is also the term for measles. Because wheat has this *hashika*, the god of wheat was thought to have recovered from the disease *hashika*.

Until the end of World War II, measles also caused many people to lose their sight.

Between 1708 and 1862, measles epidemics occurred at intervals of ten to twenty years:

1708	Winter through the following spring
1730	Winter through the following spring
1753	From the fourth to the ninth month
1776	From the third month to fall
1782	The fifth month
1803	From the fourth to the sixth month
1824	From the fourth to the sixth month
1836	From summer to fall
1862	From the fourth month to fall

A measles print. When ilex leaves were not available, holly leaves were used instead. (Utagawa Fusatane, *Hashika karuku suru hō* [How to Alleviate Measles], 1862, woodblock print, diptych. Reproduced by permission from Waseda University Library.)

The 1803 epidemic was particularly ferocious, said to have begun with the transmission of measles from a ship from China docking in Nagasaki that year. The physician Ogino Taishū notes that this pandemic had spread through the Korean Peninsula the previous year and arrived in Nagato Province (present-day Yamaguchi Prefecture) from Korea via the island of Tsushima, spreading east and west to affect all of Japan.

Prior measles epidemics appear to have taken the same route. Nineteen years later, the 1822 cholera epidemic likewise spread from Korea through Tsushima to Nagato and from there to western Japan.

2. The Measles Epidemic of 1862

The 1862 measles epidemic, which sparked innumerable prints, was the first in twenty-six years. The terrible nature of that particular epidemic is captured in the *Edo rakuchū hashika ekibyō shibōnin chōsho* (Record of Deaths from Measles in and around Edo), which put the number of deaths in Edo alone at 75,981. In fact, the figure was far greater. Temples in Edo reported 239,862 graves for people killed by measles.

The *Bukō nenpyō* says that deaths from measles topped deaths during the great cholera epidemic of 1858. The Edo Magistrate's Office issued a proclamation about measles on the twenty-ninth day of the seventh month. (Based on that proclamation, it appears that measles was not the only disease raging at that time; as described in the next section, a sickness resembling cholera was also spreading.)

During epidemics, inadequate care for many people without family resulted in their deaths. The Magistrate's Office set in place a system so that landlords and five-household neighborhood units, which provided mutual aid and self-protection, ensured that the ill were seen by doctors and received food and medicine. The costs incurred were paid in advance by the town and reimbursed by the Magistrate's Office.

A staggering 267,844 people were helped in this way by the Magistrate's Office. Nowhere else in the public health statistics collected as of the Meiji period do such high patient numbers appear. Occurring just four years after the terrible cholera outbreak that accompanied the end of Japan's isolation, this measles epidemic frightened and unnerved the populace. Not much later, the Tokugawa shogunate's power began to erode.

3. Causes and Symptoms

One measles print (see image at right) describes the symptoms of measles. It warns that the patient will suffer greatly for the first three days with chest pain, a dry throat, and diarrhea. They will be thirsty and unable to eat, will feel very lethargic, and their limbs will feel numb, it continues. Particularly in summer, the text concludes, the patient will come down with fever if they do not take proper care, so good diet and health practices are important.

Areas of daily life where moderation was required included sexual intercourse, bathing, moxibustion, and alcohol. (Utagawa Yoshifuji, *Hashika yōjō no den* [Treatments for Measles], 1862, woodblock print. Reproduced by permission from Museum of Fine Arts, Boston.)

Measles symptoms usually comprise a fever of around 38 degrees Celsius, cough, runny nose, sneezing, pink eye, and eye discharge, all lasting two to four days, followed by a high fever and a distinctive rash that starts behind the ears and spreads over the whole body. After three or four days, the fever drops, and the rash leaves behind dry skin that flakes off as the body recovers.

In 1862, people experienced ongoing diarrhea as if they had cholera, and white mucus remained in their throats even after the measles rash was gone.

The renowned physician Asada Sōhaku records that the rash would continue for two or three days and then vanish in a day, but would not dry or flake off. After the rash vanished, serious symptoms such as high fever, convulsions, and impaired consciousness would appear, and the person would die suddenly. Even today, one person in 100,000 contracting a natural infection experiences serious complications. Whether because severe measles and cholera coincided that year, or because another contagious disease was also

present at the time, the 1862 measles epidemic produced a horrific number of victims.

One measles print observed that people catch smallpox and measles once in their lives and never again. It said that smallpox comes from the womb and manifests outwardly. Measles, by contrast, remains in the womb, so while measles causes red spots to appear, they do not fester. It was well known that anyone who survived measles or smallpox would be immune thereafter.

Smallpox appears first on the face before gradually spreading across the body, whereas measles spreads across the body almost immediately and then disappears some days later. People believed that this was determined in the womb. They also thought that inescapable diseases like measles and smallpox were caused by a poison inherent in the womb (*taidoku*).

People described the sudden disappearance of measles spots as the measles "retroceding" or "striking inward." Because this was accompanied by high fever and other general symptoms, the disease striking inward was something to be feared—in other words, poison innate to the womb that should manifest outwardly instead manifested inwardly. To detoxify this poison inherent in the womb, the best treatment was believed to be flushing the rash out to the skin as much as possible. It was being struck by the wind that caused the disease to strike inward, so sick children were wrapped up heavily and forbidden from going outside so that the wind could not strike them. This custom remained common until after World War II.

In Chinese medicine, it was believed that contagious diseases were caused by external evil entering the body. It was only much later that viruses came to be understood as the source of these diseases. One measles print depicts demons surrounding a person stricken with measles. In another print, a demon clings to the palanquin of a doctor making house calls. In Japan, demons were believed to cause measles.

Physician Hashimoto Hakuju from Ichikawa in Kai Province (present-day Yamanashi Prefecture) was the first in the country to explain that measles was caused by exposure to something specific and external. Pregnant women who caught measles often suffered miscarriages. In his 1810 *Hon'yaku dandokuron*, Hakuju described how Fusa, daughter of Goemon from the village of Kanō in Kamo District, Izu Province, who was pregnant during the 1776 measles epidemic, moved around to avoid measles-infected areas and did not contract

measles. He used this example to argue that measles was a disease that spread from person to person. Hakuju rejected the theory of an innate poison, positing infection as the real culprit.

4. Things Good and Bad for Measles

Popular prints depicting measles often listed things that were good and bad to eat, or good and bad to do. Good foods were dried gourd shavings, carrots, wax gourds, daikon, dried strips of radish, loach, sweet potato, potato, lily root, miso pickles, freshwater clams, dried noodles, barley, azuki beans, sugar, dogtooth violet starch, clams, loquats, green beans, *yakifu* (dried baked wheat gluten), *yuba* (tofu skin), aged radish pickles, wakame seaweed, kelp, and *hijiki* seaweed.

Bad foods included river fish, pickled plums, burdock root, squash, Japanese snake gourd, broad beans, taro, salted rice-bran paste for pickling, spicy foods, shiitake mushrooms, dried seaweed, spinach, green onions, sorghum, oily foods, devil's tongue jelly, and nashi pears.

Activities that people were to avoid were sexual intercourse for seventy-five days, bathing for seventy-five days, moxibustion for seventy-five days, alcohol for seventy-five days, soba noodles for seventy-five days, and shaving the top part of the head from the forehead to the crown (*sakayaki*) for fifty days.

Most of these prohibitions were directed at adult victims. They were also supposed to do these things only in moderation even after they recovered. Such lists led more than a few businesses and occupations to suffer greatly in major epidemics such as that of 1862. Among these were noodle shops, barbers, bath houses, sake dealers, brothels, sumo wrestlers, and actors. One measles print depicted some men from the above categories gathering around doctors and pharmacists to give them a beating.

5. The First Measles Epidemic

Measles was present very early on in China. The Chinese characters for the disease, read *sekihansō* in Japanese, first appear in historical texts in Japan in 737. While many court officials died of the disease, it has been confirmed from other materials that the 737 outbreak was in fact not measles but rather smallpox.

An outbreak that was definitely measles occurred in 998. As noted before,

according to the *Fusō ryakki*, an epidemic raged from summer through winter, and in the sixth and seventh months, many men and women of the capital died. Commoners got sick but did not die; the greatest number of deaths occurred among wives of nobles of fourth rank and above. Foreigners likewise, the text relates, did not die. Yet no one escaped this disease, from the emperor down to commoners, the high and the low, the young and the old, priests and laypeople, men and women.

The "Uraura no wakare" ("The Separation of the Brothers") chapter in the *Eiga monogatari* observes that the disease that broke out in 998 was not the usual smallpox but rather something that caused a heavy rash of bright red spots. It afflicted all ages and classes. Some cried out in anguish and eventually died of the disease.

The second time that a measles epidemic appears in historical documents is 1025, twenty-seven years later. It was a particularly bad epidemic, and even royalty and nobility were not spared. Among the infected was Fujiwara no Kishi, consort of Imperial Prince Atsunaga and fourth daughter of Fujiwara no Michinaga.

When measles appeared in the seventh month, Kishi was in her final month of pregnancy. On the twenty-ninth day, she developed a fever and a rash. Prayers and incantations were performed, and she appeared to be recovering. On the second day of the eighth month, Kishi went into labor. She was moved to a birthing suite decorated entirely in white, but measles and a malicious spirit caused her great suffering.

On the third day of the eighth month, after a difficult labor, she bore a son, and a magnificent purification ceremony was held. On the fifth day, however, despite nursing care, she passed away at the young age of nineteen. Michinaga's state is noted in detail in the "Mine no tsuki" ("Moon over the Peaks") and "Soō no yume" ("The Dream of the King of Chu") chapters in the *Eiga monogatari*. When Kishi was on her deathbed, he lay at her side, and later, when he moved away from her corpse, he was so dejected that he took to his bed. He wept a storm of tears. Account Office Assistant Morimichi climbed to the roof of Kishi's birthing suite to the east of the main palace building, shook Kishi's clothing, and conducted a soul-summoning rite, but her soul did not return.

Middle counselor Fujiwara no Nagaie and his wife also caught measles that

year. It was only seven years on from the time that Fujiwara no Michinaga had penned his famous full moon poem in 1018. From that point on, Michinaga rapidly lost heart and ultimately decided to enter a monastery.

Part III

The Changing Face of Disease

I. Cancer Patients in the Meiji Period

Immediately after the Meiji Restoration, which brought the Tokugawa shogunate to an end, Japan began to westernize in all areas, with medicine leading the way. In 1868, the first year of the Meiji period (1868–1912), the imperial court reversed its previous refusal to appoint Western doctors, marking the beginning of the westernization of Japanese medicine.

In 1870, it was decided that German medical teachers would be brought to Daigaku Tōkō (predecessor of the University of Tokyo Faculty of Medicine) to develop a full medical curriculum. All the original teachers were German, and all classes were taught in German. This resulted in the rigorous implementation of a type of Western medical education never before experienced by the Japanese.

By the late 1880s, a cohort of Japanese doctors had emerged from the university with an impeccable education in Western medicine.

1. Iwakura Tomomi and Esophageal Cancer

The spread of Western medicine enabled doctors to diagnose diseases such as stomach cancer. Traditional Chinese medicine had no names for cancers of the internal organs, so the only cancer Japanese doctors had previously been able to diagnose was breast cancer.

There are records from around this time of people dying of cancer, but not many—casting into prominence those who did. One victim was the statesman Iwakura Tomomi, who died of esophageal cancer. Iwakura was treated by Erwin Bälz, a name older Japanese will recognize from Bälz lotion, a popular moisturizer that he developed. Bälz arrived from Germany in 1876 at the invitation of the Japanese government. He was hired to teach at the University of Tokyo, and, as a lecturer in internal medicine, he promoted the

modernization of Japanese medicine for twenty-nine years until 1905. Bälz's journal entries from 1883 record the progress of Iwakura's cancer, from its onset until his death.

On June 12, 1883, in Kyoto, Iwakura experienced sudden chest pain and could no longer eat. Cancer had narrowed his esophagus to the extent that food could not pass through. Officials from the Ministry of Education and the Imperial Household Ministry summoned Bälz, passing along an imperial command that he go to Kyoto to examine Iwakura.

Bälz boarded a ship to Kobe with an assistant. When he examined Iwakura, he found that the cancer was quite advanced. Iwakura was extremely weak, but he had regained the ability to eat a little food. The doctor stayed until the end of June to treat his patient.

The treatment must have had some effect because Iwakura and Bälz took a boat together to return to Tokyo from Kobe. On the journey, Iwakura pressed Bälz to tell him everything about his condition.

Bälz admitted that there was unfortunately no hope. He was relating this, he said, because Iwakura had asked for the truth, he wanted Iwakura to have an accurate understanding of the situation, and he knew that Iwakura was not afraid to die. The patient thanked him for his honesty and said he would prepare accordingly. Yet he had one favor to ask. As Bälz knew, statesman Itō Hirobumi was in Berlin and was supposed to return to Japan with a new constitution for Japan.[49] Before Iwakura died, he wished to communicate his will to Itō, so he would summon Itō and have him board the next boat home. But it would be weeks before the statesman arrived. Could Bälz keep him alive until then? Iwakura added in a lower voice that this was far from a personal matter.

Bälz promised to do his best, but he knew it was impossible. Iwakura's condition deteriorated rapidly. He was soon completely unable to eat, and as he was essentially starving, his body wasted away. Methods of providing nutrition intravenously were yet unknown.

Within a few weeks, the end was nigh. When Bälz told him this, Iwakura directed the doctor to bring in statesman Inoue Kowashi. His voice now

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49. In 1882–83, Itō Hirobumi studied constitutional systems under legal scholars in Europe and particularly in Germany. The constitution he drafted was promulgated in 1889 as the Constitution of the Empire of Japan, known informally as the Meiji Constitution.

reduced to a thread, Iwakura asked Inoue to kneel close to him.

Bälz sat a few steps away on the opposite side and prepared to give Iwakura an injection at any moment. Battling every second against death, Iwakura whispered his will into the ear of his confidant, word by word, even as he gasped for air. Finally, he breathed his last. On July 20, 1883, Iwakura passed away at the age of fifty-seven.

At the time, esophageal cancer was more common than stomach cancer. Most cases were not discovered until they were too advanced to treat, so many patients died. Stomach cancer may have been rare because it was more difficult to diagnose.

Erwin Bälz and his wife Hana. Bälz taught at the University of Tokyo. He conducted research on scrub typhus and other diseases.

Esophageal cancer also killed Aoyama Tanemichi, the first professor of internal medicine at what is now the University of Tokyo. Other victims included Ōtori Keisuke, a Tokugawa military commander and Meiji diplomat; Ogata Masanori, a hygiene professor at the University of Tokyo; and entrepreneur Asano Sōichirō.

2. Nakae Chōmin's Record of His Battle with Cancer

Nakae Chōmin, leader of the pro-democracy Freedom and People's Rights Movement, died of cancer on December 13, 1901.

His cancer emerged when he was living in Osaka. An August 1901 article in the daily newspaper *Yorozu chōhō* described his condition:

> His visage appears little changed from when he left Tokyo at the end of March. His energy is not diminished in the slightest, and he is as animated as always. The tumor in his neck is already putting pressure on

> his windpipe, however. He is just able to breathe through an incision in his larynx. With a smile, he pulls out a handwritten manuscript, written as his duty as a scholar. He says this is his farewell and parting gift to society and to his friends, which he wishes to be made public after his death.

The article was written by Kōtoku Shūsui, and the manuscript Nakae entrusted to him was later published as *Ichinen yūhan* (A Year and a Half), becoming a bestseller. The subtitle was "A Posthumous Manuscript."

The book opens by explaining the origin of its title:

> In November 1900, my throat started to feel odd, and going into the New Year, the pain became intense. I wondered if it was cancer. When I went to a specialist in Osaka in April, he said that I needed surgery. When I asked the doctor how long I had left, he reflected for two or three minutes, then replied that I should count on only one year, two if I looked after myself properly. That's why I chose "A Year and a Half" as my title.

The lump on his larynx gradually grew. Because he was struggling to breathe, he underwent a tracheotomy on May 26. After that, if he coughed, spittle would come out of his neck rather than his mouth. His voice was barely a whisper, so he could converse only at close range. He communicated almost exclusively with pen and paper. His condition went progressively downhill.

He returned to Tokyo on September 10 and went straight to be examined by Okada Waichirō, Tokyo Imperial University's first professor of otorhinolaryngology (ear, nose, and throat medicine). Okada told him that if he was lucky, he had until February or March. Nakae said that he did not wish to endure four or five months' more suffering and asked to be killed sooner by sword. Okada recommended that, as Nakae could use medicine to dull the pain, he should write a sequel to his earlier work, *Zoku ichinen yūhan* (A Year and a Half, Continued), as planned. Nakae dashed it off in ten days, literally with his dying breath.

His condition continued to deteriorate, and he passed away at the age of fifty-five.

A postmortem examination revealed that he had advanced esophageal cancer, not laryngeal cancer. The cancer had also spread to both lungs. The

X-ray had been discovered in 1895, but doctors were not yet able to use it to diagnose cancer.

II. The Terrifying Death Sentence of Tuberculosis

Tuberculosis has plagued humanity since prehistoric times. Until drugs to treat it were discovered in the mid-twentieth century, the disease was feared as a death sentence. There was great jubilation when a cure was finally discovered.

The frightening thing about tuberculosis is that it is not immediately apparent when infection has struck. It takes time for symptoms to develop, and during that time the infected person is spreading *Mycobacterium tuberculosis*, the bacterium responsible for tuberculosis, to everyone around them. This remains unchanged today, attesting to the difficulty of our centuries-long battle with this disease.

1. Etymology of Tuberculosis

Kekkaku, the Japanese word for tuberculosis, is an official medical term created after the advent of modern medicine. The disease also goes by other names, based on where it attacks the body: *haikekkaku* (pulmonary tuberculosis) or *chōkekkaku* (intestinal tuberculosis). There were, however, various earlier terms for the disease. In older times, it was called "chest disease" and in the Edo period (1603–1867), *rōsai* or *rōgai*. The term *rōgai* ("consumptive cough") literally refers to weakness and a cough resulting from fatigue.[50]

In the Heian period (794–1185), the *Makura no sōshi* (The Pillow Book), the early eleventh-century journal of the court lady Sei Shōnagon, lists the following as typical diseases: "Chest trouble. Illnesses caused by evil spirits. Beriberi. Illnesses that cannot be properly identified yet that make people lose all their appetite."[51] While "chest trouble" obviously also included heart disease, it was primarily tuberculosis.

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50. It appears the connotations of the Japanese character *rō* in this context evolved in a fashion similar to the English term "consumption," which was also originally used to describe any potentially grave condition that "consumed" the body but over time came to apply more specifically to tuberculosis.

51. Sei Shōnagon, *The Pillow Book of Sei Shōnagon*, trans. and ed. Ivan Morris (London: Oxford University Press, 1967), 159.

The book goes on to describe the deep sympathy felt for a young girl suffering from chest trouble:

> On another occasion I saw a girl in an unlined robe of soft white material, an attractive trouser-skirt, and a bright aster cloak. She had a terrible pain in her chest. Her fellow ladies-in-waiting visited her one after another, while outside her room a crowd of young noblemen had come to inquire about her. "How dreadfully sad!" they exclaimed. "Has she ever suffered from this before?"[52]

In *The Tale of Genji*, too, there is a beautiful description of Genji being saddened by Lady Murasaki's suffering from chest trouble.

It was not just in Japan that tuberculosis was described with exquisite imagery. In the West, there are many tales of beautiful women destined to die young and geniuses who met a premature end because of tuberculosis.

The Genroku era (1688–1704) during the Edo period was also a time when pulmonary tuberculosis claimed the lives of many young women. The *Onna chōhōki* (A Compendium of Treasures for Women), published in 1692, gives reasons for young brides suffering from consumptive cough:

> Girls are more deeply loved by their parents than boys and are raised in great freedom when they are children, but when the time comes for them to marry, they suddenly have to learn many things and are unable to follow their own minds. Once they are married, they are so busy watching their mother-in-law's expression and being mindful of their husbands that many suffer from a consumptive cough at the age of sixteen or seventeen. This is a disease that one does not notice oneself and that cannot be observed from the outside; rather, over a period of days, the face gets thinner and becomes clouded with sorrow; in the evening, a fever emerges, and the woman shivers with cold; her periods become irregular; she gets night sweats; and she suffers from phlegm, coughing, and lack of appetite.

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52. Sei Shōnagon, 159.

Rōsai ("consumptive debilitation") was the other name for tuberculosis, and the *Mukashi mukashi monogatari* (Tales of Long, Long Ago), from later in the Tenpō era (1830–44) of the Edo period, describes popular songs in the earlier Keichō era (1596–1615) called *rōsai* ballads (*rōsaibushi*). *Sai* means "to be worn out," referring to the way that the person would become thin and melancholy. So melancholy were those ballads that they came to be named after the condition.

Later, in the Genroku years, the woman in Ihara Saikaku's novel *Kōshoku ichidai onna* (The Life of an Amorous Woman) describes how being pursued day and night by spoiled young men made her feel *rōsai*. In other words, the term *rōsai* was also used in the sense of "melancholy."

From the Heian period until the end of World War II, tuberculosis was a disease of the young, and no one could find the cause. Various explanations were expounded in the Edo period. Perhaps excessive eating and drinking were depleting the spleen and stomach. Perhaps it was caused by indigestion, or mental fatigue, or too much sex.

Tuberculosis is highly contagious, so it often spread within families. Often, if one family member caught it, the rest would succumb and the whole family would die, leading to another name for the disease: *denshi*, or "infected corpse," referring to the way people became infected and died. Households where even one family member came down with tuberculosis were regarded as having a lineage of "consumptive cough" or "chest trouble."

In the Meiji period, these old names for tuberculosis were abandoned in favor of *haibyō* ("lung disease"), a condition associated with a certain kind of cough and phlegm, and sometimes the coughing up of blood, leading to gradual loss of weight.

"Lung disease" was feared and hated, but following the publication of Tokutomi Roka's novel *Hototogisu* (The Cuckoo; also known in English as *Nami-ko*), which was serialized in a newspaper, tuberculosis came to be regarded as romantic and beautiful. For years thereafter, the cuckoo became a metaphor for tuberculosis.

2. Overseas Study and Tuberculosis

It was in the Meiji period that tuberculosis became a social issue. After the Meiji Restoration, outstanding students were selected to go abroad to study.

Many caught tuberculosis during their sojourn and had to return home or died while still overseas.

These students were heading to Europe at a time when, on the heels of the industrial revolution, capitalism was expanding and factories were springing up everywhere. With low-income earners and laborers living in inferior and unsanitary environments, tuberculosis was rife. Japanese students arrived in that environment with no means of protecting themselves. Studying hard, and often too poor to afford much food, many contracted tuberculosis.

Shimizu Ikutarō, Ume Kinnojō, and Shindō Jirō, top students from the first graduating class of the University of Tokyo's Faculty of Medicine, were selected to study in Germany on the promise that they would later serve as lecturers at their alma mater. They were chosen to study obstetrics and gynecology, ophthalmology, and pathology, respectively. Shindō got sick during his studies and had to return to Japan. Ume and Shimizu came home after completing their courses and became lecturers, but both later died of tuberculosis. Many other Japanese went overseas to study on the promise of careers in their respective fields but had to abandon that future because of tuberculosis.

At home in Japan, many young people from the countryside who relocated to Tokyo and other big cities to study contracted tuberculosis and were forced to abandon their studies and return home.

Over a century ago, Shibayama Gorosaku, head of the Infection Division at the Institute for Infectious Diseases, lamented the situation in the monthly journal of the Greater Japan Private Practitioners' Public Health Association in 1901:

> To understand what a baneful influence tuberculosis is exerting on our lives and how much damage it is causing, as an experiment, try recollecting how many of your acquaintances, and particularly how many educated, talented, and able individuals, and how many young people on whom hopes were pinned for the future, have been taken by this disease. Go to hospitals, spas, and sanatoriums and ask what type of patient is most common. Ask that sweet orphan what disease killed their parents.

3. Tuberculosis and Society

As this discussion suggests, tuberculosis spread from developed to developing

countries and, within countries, from urban to rural areas. The main carriers of the disease were factory workers. After the Meiji Restoration, as Japan transitioned from an agricultural to an industrial society, laborers from rural areas gathered in cities.

In harsh working environments, many of these workers contracted tuberculosis. When Britain experienced the industrial revolution in the eighteenth century, it went through a similar process of urbanization, industrialization, and tuberculosis infection. A century later, the same sequence began in Japan.

It was not until the 1880s that people in Japan recognized this. Nagayo Sensai, head of the Hygiene Bureau at the Ministry of Home Affairs, spoke of the sudden surge in lung disease in 1884 at a meeting of the Greater Japan Private Practitioners' Public Health Association. He said that 2,335 people died of lung disease in Tokyo in 1882. Most victims were between the ages of twenty and thirty—the prime of life. Where other infectious diseases were seasonal epidemics, tuberculosis was rampant year-round, occurring in conditions of air pollution and poor nutrition. Nagayo was warning that lung disease was as dangerous as cholera and typhoid.

With Robert Koch discovering the tubercle bacillus in 1882, when Nagayo gave the above report, it was already known that tuberculosis was an infectious disease spread by *Mycobacterium tuberculosis*, but Nagayo was not yet aware of this. In 1890, however, when he gave another lecture on tuberculosis, he called it not "lung disease" but "pulmonary tuberculosis."

By that stage, pulmonary tuberculosis had become a widespread problem powerful enough to affect the fate of the nation. Yet an appropriate response was difficult, he said, because tuberculosis did not respond to the same kinds of measures against acute infectious disease that had succeeded with cholera.

Because pulmonary tuberculosis, unlike cholera, spreads almost silently, committee members could not simply do the rounds to identify the source of infection and cut it off. Nagayo said the most important thing was for doctors to inform everyone of the danger the disease posed.

Therein lay another problem. Back then, it was as difficult to tell patients that they had tuberculosis as it is now to pass on a cancer diagnosis, because the condition was known to be incurable. Moreover, people with lung problems tended to be in a delicate emotional state, so learning that they had tuberculosis,

which would almost certainly kill them, could shorten their time still further. Doctors were admonished to be very cautious in giving patients the news.

It was believed that phlegm was the source of infection, so people were careful about handling it. Knowledge of tuberculosis's transmission routes, such as airborne infection, was insufficient at the time. Investigating preventive measures became an urgent task in the early 1900s.

4. Tuberculosis and the Pitiful History of Female Factory Workers

The government-operated Tomioka Silk Mill, built in 1872, became the heart of Japan's industrial revolution. As told almost a century later in Yamamoto Shigemi's *Aa Nomugi tōge: Aru seishi kōjo aishi* (Ah! Nomugi Pass: A Pitiful History of Female Silk Mill Workers), however, tuberculosis caused tragedy at the mill.

Female factory workers who flocked to the mill from the countryside caught tuberculosis and took it back to their villages, spreading the disease through rural Japan with disastrous results.

In its rush to establish Japan as an industrial nation, the government had no time to worry about tuberculosis among female factory workers. The first time that tuberculosis among factory laborers appears in official records is in 1903, in the Ministry of Agriculture and Commerce's report *Shokkō jijō* (Conditions of Factory Workers). Publication of the report did not result in immediate countermeasures. It was only in 1911 that the government threw itself behind the task with the formulation of the Factory Law—which was then not implemented until 1916. Until then, female factory workers continued to work under terrible conditions.

In 1903, the same year the Ministry of Agriculture and Commerce report appeared, Kagawa Prefecture engineer Takahata Unta submitted a report on tuberculosis patients among female factory workers in Kagawa Prefecture. It contained records of female spinning mill workers who left Kagawa to work in other prefectures. Takahata was driven to write the report by the growing number of workers returning home to recuperate.

Female factory workers of the time worked long hours, sometimes deep into the night. They would stop menstruating soon after beginning their jobs and gradually weaken. They were treated for so-called stomach and uterine

diseases, but if they did not recover within three months, the company would fire them and send them home. Most workers who caught tuberculosis died.

Jokō aishi (The Pitiful History of Female Factory Workers) is another famous account of the subject. A work of reportage, it was written in 1925 by Hosoi Wakizō based on his and his wife's experience working at a spinning mill.

5. *Hototogisu* and Tuberculosis

Literature played a major role in promoting the image of tuberculosis as a romantic disease wearing away young prodigies and beautiful women. The archetype of such literature in Japan is Tokutomi Roka's *Hototogisu*, a novel serialized in the newspaper *Kokumin shimbun* from November 1898.

The story begins with the heroine Kataoka Namiko happily married; but after she contracts tuberculosis, she is soon torn away from her beloved husband by her mother-in-law and dies a lonely death. The heroine's father is a viscount and a lieutenant general in the army. Her husband, Kawashima Takeo, is a naval officer. Readers were particularly intrigued by the real-life models for the story: Ōyama Nobuko, eldest daughter of army general Ōyama Iwao, and her husband Mishima Yatarō, eldest son of Mishima Michitsune, superintendent general of the Metropolitan Police Department and later governor of the Bank of Japan. The real-life Nobuko fell ill within days of her marriage and returned to her parents' house. Her husband divorced her, and she spent her last days convalescing quietly in private rooms built in her parents' garden.

Though it was just a novel, readers wept bitter tears over the misfortunes of the beautiful and refined Namiko, while also getting a glimpse into the lives of the upper class.

Many writers of that era died of tuberculosis, including Higuchi Ichiyō and Masaoka Shiki. This fact reinforced the alluring image of tuberculosis and led the public to forget about sufferers who languished in the corners of barns in rural villages, out of the public eye.

III. Black Death and the Rats That Carried It

Cancer is probably the most hated disease today. But back in 1899, plague was

striking terror in hearts all around Japan. It was the first arrival of the dreaded disease on Japanese shores.

Before that point, very few people in Japan were aware of the true horror of plague. When they discovered that it was called Black Death in Europe and had killed a quarter of Europe's population, they were shocked to the core.

Plague is categorized as bubonic plague or pneumonic plague, depending on the transmission route and symptoms. Bubonic plague is transmitted to humans by the bite of infected fleas, which are carried by rats. It is named for the buboes (swollen lymph nodes) that emerge in the groin and armpits. Because it occurs only where there are rats, it is more limited than pneumonic plague.

Pneumonic plague is the variety that causes pneumonia. An airborne infection, the bacteria are spread through coughing and phlegm. Highly infectious, it spreads rapidly and has a high mortality rate. It is far more dangerous than bubonic plague.

1. Japan's First Plague Victim

In 1894, First Secretary Nakagawa Kōjirō sent a telegram from Hong Kong to the Japanese Ministry of Foreign Affairs, noting that a pestilence had broken out in Canton (now Guangdong) Province. The onset was sudden and unheralded, marked by high fever, terrible headache, and clouded consciousness. Within twenty-four hours, the lymph nodes in the neck, armpits, and groin would swell up and consciousness lapsed, with death arriving within forty-eight hours. A second telegram arrived immediately after. Plague had broken out in Hong Kong, so all boats from China should be quarantined.

This late nineteenth-century appearance of plague in Hong Kong began as a local disease in China's Yunnan Province, but spread suddenly to the highly populated towns of Canton Province and moved southward from there.

In Hong Kong, the spread of the disease began in the poor and overcrowded Taipingshan area, killing 2,683 people in around three months. Because Hong Kong was then a colony of Britain, the British army was mobilized, and a European-style prevention campaign was launched. Traffic blockades were set up and house-to-house inspections were conducted. Anyone found to be infected was promptly quarantined, and the house was burned down with all its contents.

Around this time, plague also broke out in India, appearing in Calcutta (now Kolkata) in 1895 and in Bombay (now Mumbai) in 1896. The epidemic was said to have originated in China, but another theory is that it was caused by pilgrims in northern India.

The government in Japan immediately instituted quarantines in several ports, while ordering Kitasato Shibasaburō, director of the Institute for Infectious Diseases, and Aoyama Tanemichi, a professor of internal medicine from Imperial University Medical College (successor to Daigaku Tōkō and now the University of Tokyo Faculty of Medicine) to go to Hong Kong to investigate the epidemic, search for the pathogen, and research prevention methods. On the sixth of June, the two rivals and their four-person retinue were seen off with much pomp and splendor from the square in front of Tokyo Station.

On June 20, the Minister of Home Affairs received a telegram from Kitasato saying that he had beaten the rest of the world in discovering the cause of the Black Death.

On July 3, however, the good news was followed by the report that Aoyama Tanemichi and his assistant Ishigami Tōru had contracted plague and were in critical condition. Fortunately, they were both soon removed from the critical list. The rest of the mission returned to Japan on July 26, while the two waited until they were fully recovered before making the trip on September 1.

In Japan, Kitasato was fiercely attacked by Aoyama and others on the grounds that Swiss-French bacteriologist Alexandre Yersin had discovered the real bacillus. Yersin had been studying plague in Hong Kong at the same time as the Japanese team. Later, when Kitasato investigated plague in Kobe in 1899, he conceded the pathogen was indeed the Yersin bacillus. Later, however, it was confirmed that the Yersin bacillus was identical to that originally discovered by Kitasato.

2. Communicable Disease Prevention Law

Japan had its first experience with an infectious disease brought home by troops dispatched overseas during the First Sino-Japanese War of 1894–95. This, along with repeated cholera epidemics, led to the 1897 enactment of the Communicable Disease Prevention Law, which identified eight legally designated infectious diseases: cholera, dysentery, typhoid, smallpox, epidemic typhus, scarlet fever, diphtheria, and plague.

Immediately upon receiving the telegram from First Secretary Nakagawa Kōjirō about plague, the Ministry of Home Affairs applied the new law and sprang into action. Head of the Hygiene Bureau Hasegawa Tai was called in to a cabinet meeting and told that the government would disburse whatever emergency funds were required, so he was instructed to use any means possible to keep the country safe.

The Communicable Disease Prevention Law was later found to have deficiencies with respect to prevention of plague, so the section on plague was substantially rewritten in 1905.

3. The Arrival of Plague in Japan

Plague arrived in Japan in 1896 through a Chinese passenger aboard a US steamer from Hong Kong that docked in Yokohama. Extremely sick, the passenger stumbled to the home of a Chinese family and soon died at the Chinese Hospital in Yokohama. He was buried at the Negishi Foreign Cemetery, but the body was exhumed amid drizzling rain at one in the morning on suspicion that the deceased had plague. The examination confirmed that suspicion.

Other passengers carrying plague were found on boats coming into Yokohama from Hong Kong, but in all cases, Japan's border controls blocked the disease from spreading further.

In November 1899, however, a company employee from Yokohama returning from Taiwan came ashore at Moji in Fukuoka Prefecture and, while traveling home overland, fell ill and died in Hiroshima.

A few days later, on November 8, a boy working at a rice store in Kobe died of plague, followed by an eleven-year-old girl in Osaka on November 17. Around that time, rats dying of plague were found at a goods depot in Gifu Station. Then, a cargo handler at Hamamatsu Station also contracted plague and died.

In just two weeks, the disease had spread to Hiroshima, Kobe, Osaka, Gifu, and Hamamatsu. Apart from Hiroshima, none of these places had an offshore connection. Hysterical newspaper write-ups caused stock prices to fall by one yen in the Osaka stock market.

In the space of two months, between the first case and the end of the year, forty-five more cases emerged in Wakayama, Nagasaki, and Shizuoka, in

addition to the locations mentioned earlier. By the end of 1899, the disease had claimed forty victims.

4. Rat Extermination

Since the days of the Old Testament, it has been known that rats are linked to plague, because scores of rats were seen dying before plague spread among humans.

When plague appeared in Japan, however, it was not known how plague spread from rats to humans. At first, people believed that the disease was transmitted via rat feces, so Tokyo authorities banned walking outside in bare feet. In those days, it was common for people to walk around without shoes.

Because it was clear that rats carried the plague pathogen, in December 1899, the Tokyo authorities launched a campaign to eradicate 200,000 rats, paying five sen per rat.[53] A year later, more than 3 million rats had been caught.

A large rat cenotaph built in 1902 at the cemetery entrance to the cemetery of the Shōunji temple in Hiroo, Tokyo (right), has become a famous sightseeing spot.

People were encouraged to keep cats to catch rats. When the bacteriologist Robert Koch, who was in Japan at the time, heard about this strategy, he said that to exterminate something natural, it was best to use natural means. His comment led to an explosion in the number of cats in Tokyo.

In 1910, the Plague Research Laboratory in Bombay discovered that fleas played an important role in the transmission of plague from rats to humans. Until that point,

Nezumizuka, a rare example of an animal cenotaph. Shōunji temple, Hiroo, Tokyo.

53. One sen was worth one-hundredth of a yen.

people had believed the source of the disease was rubbish favored by rats, such as old wadding or old paper.

5. Spinning Mills and the Plague Epidemic

In December 1899, baffled at the outbreak of plague in Japan despite the rigorous epidemic prevention measures instituted in ports, the Japanese government banned the import of rags, old wadding, old clothing, and old paper from India and Hong Kong. The raw cotton used for spinning was not on that list.

Plague continued to erupt around the country, however. When an infected person was identified in a terraced house in Yokohama in October 1902, the authorities ignored the many warehouses in the vicinity. They bought up all thirty terraced houses on the block, surrounded them with a zinc-galvanized fence, and burned them all down. The intense flames sent up showers of sparks, and a warship offshore had to hose down the flames to prevent the nearby imperial villa from burning as well. It was through such frantic efforts that the government attempted to prevent plague.

The first plague victim in Tokyo was a worker at a spinning company in Honjo. Because it was pneumonic plague, it spread like wildfire through the neighborhood and did not stop there. It even took the lives of medical staff treating the disease, including young doctors from Komagome Hospital and the director of Honjo Hospital.

A second outbreak at a spinning mill occurred in 1905, this time in the dormitories and company housing of Kanegafuchi Spinning Company in the Kansai region.

People began to think that plague was somehow spread through raw cotton. But spinning was Japan's most important industry. Stopping raw cotton imports would deal a major blow to industry and impact the economy. Research on the transmission route of the plague bacillus was a matter of utmost urgency. It was vital to prove that raw cotton was not the source.

Before a definitive conclusion could be reached, however, the outbreak that had begun at the Kanegafuchi Spinning Company spread throughout Osaka and from there to Kobe. The outbreak peaked in 1907, became sporadic, and finally started to die out.

By that point, most people had come to believe that plague was carried by

rats in raw cotton imported from India. The Kanegafuchi Spinning Company threw itself into an extermination campaign, leasing a warehouse just to store rat-proofing equipment to stop the rodents from entering the country. These rigorous measures were meant to prevent a recurrence of the disease.

Authorities in Osaka spent over 1.6 million yen on plague prevention over the two years of the outbreak (1906–7), to say nothing of the damage suffered by citizens, commerce, and industry. The massive cost was a stark reminder of the importance of early prevention and the dreadful nature of epidemics.

The intense nationwide prevention campaign that was rolled out later saw the number of plague victims gradually fall from a peak of 646 in 1907, and the disease disappeared entirely after producing its last two victims in 1930.

The success of Japan's plague prevention efforts is testimony to the country's rapid westernization. As a result, the Japanese people did not experience the full terror of plague. This may have fostered a very different sense of crisis with respect to disease in Japan than in Europe. There, the first experience of plague dated back to the Middle Ages, and the horror of the disease has been unconsciously communicated over the centuries by the monuments that still stand in towns all over Europe.

The more relaxed attitude taken to AIDS in Japan compared with the West has undoubtedly been influenced by the country's much milder brush with the Black Death.

6. Scientists Who Risked Their Lives to Stop Plague

Manchuria in northeast China suffered a major plague outbreak in 1910–11. When the Trans-Siberian Railway opened, the mountain ranges of Heilongjiang Province ceased to be a barrier to the plague's southward advance from Russia. The disease spread throughout the region south of Harbin.

The strain of plague that spread from Siberia through northeast China that winter was pneumonic rather than bubonic, so it was particularly destructive.

Japan tried to prevent plague spreading southward by setting up a temporary prevention headquarters in Mukden (now Shenyang) and instituting the same kind of preventive measures as in Japan—but these measures failed.

The outbreak began in October, just as workers who had come to northern Manchuria from Shandong Province were going home to their villages. It was also soybean export season. The timing prevented authorities from instituting

strict travel restrictions, and plague spread to Mukden in a flash.

Rumor spread among the Chinese that the Japanese had deliberately spread plague to seize Chinese land. The result was strong anti-Japanese sentiment that impeded the implementation of infection prevention measures.

In Mukden alone, plague killed around 44,000 people in around three months. Scottish missionary Dugald Christie covered the epidemic in detail in his *Thirty Years in Moukden 1813–1913*. The outbreak recalled for him the Black Death of medieval times.

The Japanese government feared that the outbreak would spread from Manchuria to Japan, so it set up prevention facilities in various spots around Manchuria. Few records of these facilities now remain.

I was fortunate enough to receive from a firsthand source valuable documents concerning an epidemic prevention station in Jilin Province. These record the voices of medical personnel who literally put their lives on the line to eradicate plague, dying in Manchuria or returning home unrewarded after the war.

According to these documents, the 1910–11 epidemic was followed by further major outbreaks in northeastern China in 1920, 1927, and 1928. Each epidemic produced many victims but then died out naturally.

In 1932, however, when Japan established the puppet state of Manchukuo, bubonic plague emerged and subsequently returned every summer. The Jilin Province epidemic prevention station gave people preventative injections every spring. On receiving notice of an outbreak, they dropped everything to go to the infection site. In so doing, they were exposed to infection by plague and to attacks by bandits. They were nonetheless deeply committed to eradicating plague as soon as possible.

Every summer they were consumed with treating and preventing plague. In winter, all the staff at the Qian Gorlos County Epidemic Prevention Station in Jilin Province, from director Katō Masashi down, pursued research to identify where the plague bacillus hid during winter.

The director became convinced that the plague host was the black or brown rat, not the tarbagan marmot (a common burrowing rodent). He caught a string of marmots in hibernation and examined them to see if they carried the bacillus, thereby proving that Manchurian plague was carried by the black or brown rat.

He also revealed to the world for the first time the cycle whereby the bacillus hibernates over winter in the rat's gallbladder and returns to the rat's bloodstream in summer. From there it enters fleas on the rat and infects humans via these fleas.

When the war ended, these achievements went unrewarded. On their way home, despite grave personal danger, Katō and his team threw themselves into addressing an outbreak of epidemic typhus at Changchun Prison. Katō lost his life as a result, dying on January 3, 1947, at the age of forty-two.

IV. Violence-Related Injuries

In a number of incidents, doctors have been caught up in events causing violent injury or in terrorist attacks. Here I examine a few incidents of historical significance.

1. Ōmura Masujirō and Anthonius Bauduin

Even after the Meiji government was established, the movement to expel foreigners from Japan continued unabated, sparking various incidents around the country. One particularly shocking occurrence was the ordeal suffered by Ōmura Masujirō, first assistant to the minister of the newly created Ministry of War. Ōmura was a military strategist and a linchpin of the new government.

Ōmura was the son of a rural physician in Suō, Yamaguchi Prefecture. In his youth, he was called Murata Zōroku. He traveled around the country to study Western science and medicine, earning a reputation as a scholar of Western learning. His life is depicted in Shiba Ryōtarō's novel *Kashin* (God of Blooming Flowers).

Having also studied Western military tactics during the Boshin War (1868–69), Ōmura was attached to the government army as a retainer from the Chōshū domain. After the Meiji Restoration, recognition of his skills as a military strategist led to his appointment as first assistant to the minister of war.

In the new government, Ōmura played a key role in reforming Japan's military system. He advocated the creation of a unified military system and a national conscription system, abolishing the private armies maintained by the regional daimyo. He also pressed for samurai to retire their swords and

cut off their traditional topknots. Omura's foresight drew widespread praise, and many of his proposals came to fruition, but his premature death meant not all his ideas were realized in his lifetime. After his death, a bronze statue of Ōmura was built at Yasukuni Shrine.

Just after the Restoration, however, Ōmura had many opponents. In 1869, he was given permission to visit his aged father back home. He left Tokyo for Suō on the twenty-seventh day of the seventh month. On the way, he was ordered to stop off in Kyoto, inspect the social situation in the Kansai region, and submit a report to the Ministry of War.

From the moment he left Tokyo, he knew that his life was under threat. To avoid assassins, he deliberately took the Kiso Valley route through Nagano Prefecture. He arrived safely in Kyoto on the thirteenth day of the eighth month. There he stayed at a residence in the Kiyamachi area maintained by the Chōshū domain.

He toured parts of Kyoto, sent his report to the Ministry of War on the fourth day of the ninth month, and sat down to eat with a sigh of relief. During the meal, he was attacked by thugs. One of his companions, a Chōshū domain retainer, was mistaken for Ōmura and killed. Ōmura himself received deep cuts to his forehead and right thigh. Seriously injured, Ōmura fled to the bathroom and hid in a tub of water. He escaped his attackers, but his wounds became infected, and his fever refused to abate.

He was transferred from the residence in Kiyamachi to another Chōshū domain residence in the Kawaramachi section of the city, where a doctor treated him and friends visited, but his condition did not improve. He asked for instructions from Tokyo, and was told to seek treatment from Anthonius Bauduin, a Dutch physician at a hospital in Osaka. It was dangerous for Bauduin to go to Kyoto, so Ōmura was taken to Osaka. On the second day of the tenth month, Ōmura was carried on a stretcher through the back of the house and put on a boat heading downriver on the Takase to the Yodogawa, finally reaching the hospital in Suzuki-chō, Osaka.

Assisting Bauduin in treating the military leader were Ogata Koreyoshi and Mise Shūzō. The former was the second son of Ōmura's former teacher, the famous scientist Ogata Kōan, and had just returned from Holland. The latter was a former student of Ōmura's. Born in Ōzu, Mise had learned Western studies under Ōmura at Uwajima and was working as Bauduin's assistant at the time.

It was a top-notch medical team, but Ōmura's septicemia was beyond the treatments available at the time. His condition deteriorated, and he was in great pain. The only option was to amputate his right leg. Time was of the essence, but despite the urgency, government permission was required before an official as senior as Ōmura could undergo such a serious operation.

It took more than ten days to receive a response. Ōmura's leg was amputated on the twenty-seventh day of the tenth month, but it was too late. Ōmura accepted his fate. He wanted his amputated leg to be buried at the grave of his mentor Ogata Kōan. After assuring himself this was done, he died on the fifth day of the eleventh month of 1869, two months after he was injured. He was forty-six.

Anthonius Bauduin, a Dutch physician who came to Japan as J. L. C. Pompe van Meerdervoort's successor, photographed in 1869. Reproduced by permission from the Nagasaki University Library.

It is said that at Ōmura's request, Kusumoto Ine, daughter of German physician Philipp Franz von Siebold, came from Tokyo to nurse him. The two had been close since Ōmura's time studying in Uwajima and Nagasaki. Contrary to Shiba Ryōtarō's depiction in his novel *Kashin*, the two were not in love, their descendants insist.

2. The Assassination of Mori Arinori

On February 11, 1889, the day the Meiji Constitution was promulgated, Mori Arinori, Japan's first minister of education and the founder of Japan's modern education system, was stabbed by an assassin as he left his official residence in Tokyo's Nagata-chō. He died the next day.

There had been endless rumors of a plot by those opposing Mori's actions and the Western thought he propounded. His perceived failure to follow

religious protocol during a visit to the Ise Jingū shrine over a year before had also incurred public outrage that continued to follow him around.

At eight in the morning on that fateful day, Mori was about to leave his residence to attend the ceremony for the new constitution. A short man with sharp eyes and unusual features arrived, seeking an urgent audience with Mori. He claimed that he had come to warn the minister that university students were planning to attack him on his way to the palace. Mori had reason to heed the warning. Days before, he had provoked outrage among students when he blamed a fire at a university on a student who died in the conflagration.

Mori's wife urged him not to go to the palace, but the minister, who was ready to go, simply laughed, saying that forewarned is forearmed. He asked his secretary, standing nearby, to hear the man out.

The secretary ushered the visitor to a drawing room to hear more. The man insisted that he must meet with the minister, but the secretary turned him down. Just then, Mori came in dressed in full uniform. The man flew at Mori and grabbed him by the waist. He drew a kitchen knife concealed in his clothes and plunged it in the minister's side. The secretary tackled the man, and the two struggled. Another attendant drew a wooden sword and smashed the man's skull, killing him. Mori promptly lost consciousness, after saying only that he profoundly regretted being felled by such a villainous attack. The curtain closed early the next day on his brief life of forty-three years.

The assassin was Nishino Buntarō, an ultranationalist descendant of a samurai family from Yamaguchi Prefecture. Furious over the Ise Jingū incident, he had waited for a chance to assassinate Mori. He took the student riots as his opportunity to commit the crime on the first day of the Meiji Constitution.

Mori was born in the Satsuma domain to a lower-class samurai family. He was educated at a domain school. In 1865, the domain sent him to study in London. While overseas, he also traveled to the United States, where he was influenced by spiritualist Thomas Lake Harris. Returning to Japan in 1868, he demonstrated skill as a bureaucrat in foreign affairs. He returned to the United States in 1870 as a chargé d'affaires, working on finance and cultural exchange. He became passionately committed to introducing to Japan the learning and institutions that he studied in the United States.

Arriving back in Japan in 1873, he gathered like-minded colleagues to organize Japan's first modern intellectual society, the Meirokusha. They published the *Meiroku zasshi* (Meiroku Journal) to educate compatriots about Western thought. Mori attracted public attention for his advocacy of religious freedom, equal rights for women, and other principles.

He served as ambassador to Qing China and ambassador to Great Britain before becoming minister of education in the first Itō Hirobumi cabinet in 1885. The ordinances he issued included new regulations for imperial universities and reform of Japan's education system. A progressive thinker with a decisive nature, he was frequently misunderstood.

In December 1887, Mori visited the Outer Shrine at Ise Jingū. He did not remove his shoes before entering. He also pushed aside a sacred veil with a walking stick to look inside. The story grew with each retelling. According to the rumors that circulated, he entered an area of the Inner Shrine open only to the imperial family in his shoes. To make matters worse, after pushing aside the sacred veil with a walking stick, he left without praying, or so the gossip went. These allegations of disrespect stirred up resentment against him. In 1889, over a year later, the rumors continued to spread, resulting in his shocking assassination.

Mori's wound ran 7 centimeters to the right from his navel and another 7 centimeters downward before hooking another centimeter to the right. Some 10 centimeters of his intestines spilled from the wound. Army Surgeon General Hashimoto Tsunatsune, Navy Surgeon General Takaki Kanehiro, and navy doctor Saneyoshi Yasuzumi rushed to his side, and court physician Tazawa Takakoshi was also dispatched from the imperial household. But the unconscious Mori had already lost so much blood that nothing could be done. Physician Erwin Bälz noted in his diary that day that it had taken over three hours for the doctors to reach Mori—an incomprehensible delay, he felt. If the incident had occurred in the West, Mori might have been saved.

3. Foreign Minister Ōkuma and Trade Treaty Revision

Ōkuma Shigenobu was someone else who, like Ōmura, suffered a severe wound to his right leg in a violent attack. In 1889, the government was on the verge of achieving its long-held ambition of revising the Ansei treaties—unequal trade treaties that Japan had been forced to sign in 1858 (during the

Ansei era) with the United States, Great Britain, Russia, the Netherlands, and France. These treaties forced Japan to endure extremely low tariff rates and also prohibited the independent revision of those rates. Foreign products poured into the country, stunting the growth of Japan's own industry. Japan also had no right to try resident foreigners for crimes they committed.

Foreign Minister Inoue Kaoru, known for the Rokumeikan building[54] and other conspicuous westernization policies, had been working since 1880 to revise the treaties. The changes he proposed, however, attracted strong opposition even from within the cabinet, let alone overseas. Inoue failed to push his revisions through and took responsibility by resigning in 1887, to be replaced by Ōkuma Shigenobu.

To secure trade treaty revisions, Ōkuma offered to allow foreigners to live outside designated settlements, and to allow the hiring of foreign judges for trials involving foreigners. This drew the wrath of ultranationalists, culminating in a terrorist bombing.

At four in the afternoon on October 18, 1889, as Ōkuma was about to enter the Foreign Ministry in Kasumi-chō, Kōjimachi Ward, Kurushima Tsuneki, a member of the Fukuoka-based Gen'yōsha political group was waiting at the entrance. Kurushima threw a bomb at Ōkuma's carriage. Ōkuma suffered a compound fracture of his right leg and ended up losing most of it. Adding insult to injury, all his careful strategies and the draft revisions that he had painstakingly negotiated with the treaty partners were also blown to shreds.

When the bomb went off, Navy Surgeon General (and founder of Jikei University School of Medicine) Takaki Kanehiro just happened to be passing. Takaki rushed to Ōkuma's side and provided first aid.

Hearing of the incident, Ikeda Kensai (director general of the Bureau of Court Physicians at the Imperial Household Ministry), Army Surgeons General Hashimoto Tsunatsune and Satō Susumu (who was also director of Juntendō Hospital), Imperial University lecturer Erwin Bälz, and other leading doctors all hurried to the scene to help with Ōkuma's treatment.

Ōkuma was anesthetized with chloroform, and his wound was rigorously

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54. The Rokumeikan was a large two-story building in Tokyo commissioned by Inoue as accommodation for foreign guests. He conceived it as a diplomatic cultural tool for renegotiating the unequal treaties, but many people viewed the building as a cultural symbol that glorified the West.

sterilized and examined. It was decided to amputate the leg two-thirds down the thigh. The wound was worse than Ōmura's, but in stark contrast to that case, Ōkuma received proper care immediately after he was injured. Moreover, known methods of sterilization and anesthetization were fully utilized. Ahead of the operation, all the instruments were sterilized and a sterilization solution containing 2 percent carbolic acid solution and 0.1 percent mercuric chloride was prepared, along with gauze sterilized with iodoform, cotton soaked in salicylic acid, and bandages.

Ikeda Kensai directed the operation, which was performed by Satō Susumu. Satō was selected because he was a graduate of Berlin University Medical School and had treated war wounds during the Franco-Prussian War and the Satsuma Rebellion.

The operation was performed at the foreign minister's residence. At 7:50 p.m., three hours after Ōkuma had been wounded, he was anesthetized with chloroform and the surgery began. All went well, and the patient's heart rate after the operation sat at eighty-six, with his body temperature at 37.7 degrees Celsius.

The Japan Red Cross Hospital spearheaded Ōkuma's care after the operation, and the patient recovered steadily. Seven weeks after his injury, the amputation scar had shrunk to around 3 centimeters across. That day, Ōkuma left his official residence and returned to his private home, and in fifteen weeks, he was completely recovered. He sent Ikeda five hundred yen as remuneration for the medical treatment.

4. The Sino-Japanese Peace Treaty and the Attempted Assassination of Li Hongzhang

In 1894, Japan launched the First Sino-Japanese War, which it saw as a just war, fought for the sake of justice in East Asia.[55] The Japanese troops invaded Qing China in a hard-fought campaign. In February 1895, as it became clear China was losing, peace treaty negotiations toward an armistice began in Shimonoseki.

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55. In 1894, at the request of the ruler of Chosŏn Korea, Qing China sent troops to the Korean Peninsula to quell a peasant uprising. Japan saw this as a violation of the Tianjin Convention, signed a decade before, which stipulated that neither China nor Japan would send troops into Korea without written prior notification. That earlier conflict ended by the Tianjin Convention and the Sino-Japanese War were both struggles over supremacy in Korea.

Prime Minister Itō Hirobumi went to the negotiations as ambassador plenipotentiary, along with Foreign Minister Mutsu Munemitsu. Imperial Commissioner Li Hongzhang represented China as plenipotentiary. Li had made a name for himself as a reformist in the Qing government and was known internationally as a tough diplomat.

At the Shimonoseki conference, Japan laid down harsh conditions for the armistice: that it occupy the strategic locations of Tianjin, Dagu, and Shanhaiguan; that the Japanese army operate the Tianjin-Shanhaiguan Railway; and that China pay Japan's military expenditures for the duration of the armistice. Li Hongzhang implored the Japan side to consider China's honor, but the Japanese refused. The two sides agreed to a three-day grace period before resuming negotiations. They parted ways—and then an unexpected incident occurred.

On March 24, 1895, just after four in the afternoon, when the third round of peace talks had ended and Li Hongzhang was on his way back to his lodgings, he was shot by a Japanese youth named Koyama Toyotarō, who was convinced that Li was responsible for obstructing justice in East Asia.

Koyama stood in front of Li's palanquin and fired a pistol. The bullet hit Li's cheek, and blood poured from his face. Li wiped off the blood and hurried back to his lodgings, launching a protest with the Japanese about the attack. The wound was not life-threatening, but the shooting was a serious event that shook the Japanese government.

Military doctors were immediately dispatched to examine Li, and treatment began. Imperial orders were also issued for Army Surgeons General Satō Susumu and Ishiguro Tadanori, who were stationed at Hiroshima Temporary Army Hospital, to travel to Shimonoseki to treat Li.

The wound was about 1 centimeter below Li's right eye. The entry wound was around 8 millimeters, but subcutaneous bleeding had caused swelling and Li's eyelid was puffy. The bullet had entered through the paranasal cavity and traveled for 3 centimeters. It penetrated the cheekbone and stopped just slightly beyond. The Japanese surgeons wanted to open the wound to extract the bullet, but Li and his companions refused to allow this.

The bullet was left in place, and only the surface wound was treated. The area healed well with no suppuration, and, by April 6, it was almost as good as new.

Li Hongzhang's wound, however, placed the Japanese government in a very bad position. The allied Western powers were not exactly pleased by Japan's hard line in the negotiations, and Japanese authorities panicked they might use the shooting as a reason to intervene. In the end, Japan accepted the Qing government's terms unconditionally. When Li heard this news, his unbandaged left eye reportedly lit up with joy.

5. The Hamaguchi Shooting and Blood Transfusions

On the morning of November 15, 1930, Prime Minister Hamaguchi Osachi was walking down the platform at Tokyo Station to board the 9:00 a.m. limited express for Okayama Prefecture to observe a major army exercise. At 8:58 a.m., as he approached his first-class carriage, he clutched his stomach and collapsed. He had been shot with a pistol by a right-wing youth, Sagōya Tomeo. The sound of the shot was drowned out by popping magnesium flashes as a horde of journalists sought to capture the prime minister's departure, so it took a second for onlookers to realize what had happened. The perpetrator was seized as he tried to fire a second shot. Hamaguchi was carried to the stationmaster's office, where doctors who had rushed in from Kawashima Hospital, Tsukiji Hospital, and other nearby facilities administered first aid.

Surgery professor Shioda Hiroshige and attending physician Professor Manabe Kaichirō from Tokyo Imperial University also hastened to the scene, along with army and navy doctors. Although the bullet was lodged in the prime minister's stomach, their examination confirmed it had not struck any major blood vessels, so there was no immediate danger. They decided to move Hamaguchi to the university and operate straight away.

At a press briefing at 10:00 a.m., the doctors who had given first aid reported that Hamaguchi was currently conscious and had said, "[Dying for his country] is any man's long-cherished desire. What time is it?" "Man's long-cherished desire" became a buzzword for some time.[56]

Following the first aid treatment, Hamaguchi weakened, leading his doctors to give him a 200-milliliter transfusion of blood from his second son. Blood

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56. The translation "long-cherished desire" is from Hattori Ryūji, *Japan at War and Peace: Shidehara Kijūrō and the Making of Modern Diplomacy* (Acton: Australian National University Press, 2021), 201.

transfusions were rare at the time, but the prime minister's case had created greater awareness of the practice, resulting in its wider use. The prime minister was taken to Tokyo Imperial University, where the operation was performed. The bullet had entered his body below and to the right of his navel, damaging the small intestine in seven places before lodging in the pelvis. A full recovery was expected after the operation. Instead, the wound stubbornly refused to heal.

The shooting was motivated by miliary and right-wing resentment at Hamaguchi's acceptance of Western terms at the 1930 London Naval Conference, which had limited Japan's armaments. Hamaguchi had spurned demands from both the military and the Privy Council, which supported the military's position.

After the successful surgery, the prime minister failed to recover as quickly as expected. The government tried to ride out the situation by appointing Foreign Minister Shidehara Kijūrō acting prime minister. In Hamaguchi's absence, however, internal squabbling prevented the ruling party from selecting a successor. Shidehara lacked Hamaguchi's decisiveness, and the Diet seemed to descend further into turmoil every day. The only option was for Hamaguchi to return to the Diet. On March 10, 1931, despite his continued weakness, he arrived at the legislature looking like a ghost. His appearance caused the opposition to renew demands for his resignation. On April 13, after the Diet adjourned, Hamaguchi resigned, leaving matters to the Wakatsuki Reijirō cabinet. Hamaguchi never did recover. Dangerous bacteria called Actinomycetes had infested the wound, and there was no drug to treat this. His condition continued to deteriorate, and he died on August 26.

The Hamaguchi shooting was the first right-wing attack of the Shōwa period (1926–89). If Hamaguchi had not fallen victim to that shot, Japan's history of militarism might have gone in a different direction.

V. Vanished Diseases

Prior to the Meiji Restoration, traditional Chinese medicine was the standard practice in Japan for centuries, but at that point it was almost completely replaced by Western medicine. The change caused the disappearance of many disease names that had been familiar in Japan for hundreds of years.

In most cases, diseases simply came to be called by Western names instead of traditional Chinese ones. Some diseases did, however, vanish, because of differences between how diseases were classified in traditional Chinese medicine and Western medicine and how their causes were understood. These included diseases that had been familiar to commoners for centuries. In some cases, the name of the disease has lived on in a different form. Several of these are examined below.

1. *Senki* and *Shaku*

The terms *senki* and *shaku* often appear in literature and woodblock prints of the Edo period. Both are used to describe intense shooting pain in the stomach area. *Senki* was said to be a male disease, *shaku* a female disease.

The Japanese dictionary *Kōjien* defines *senki* as "a disease that in traditional Chinese medicine causes pain in the lower abdominal organs, such as the intestines and the genitals; a disease whereby intense, seizure-like, and recurring pain is suffered particularly in the lower abdomen; *atahara* ['sudden stomach pain']." The definition does not restrict the disease to men.

The Chinese medical text *Huangdi neijing* (discussed in II.III.3) defines *sen* diseases as lower abdominal pain arising when urine and feces are not eliminated and as caused by cold. Here again, no distinction is made between men and women.

Senryū poems of the Edo period often joked about snow striking people down with *senki* and the buds of *senki* arriving with winter. These satirical poems reveal a belief that winter was associated with lower abdomen pain.

Negishi Yasumori talks about magical remedies for stomach pain in the ninth volume of *Mimibukuro* (Tales Heard), a collection of essays written over thirty years starting in the 1780s. The book advises those who suffer from *senki* to fill a box with finely crushed ash and sit bare-bottomed and cross-legged on top so the scrotum touches the ash. By burning three moxa each on the two halves of the scrotum where marked by ash, the root of the stomach pain could, the *Mimibukuro* claims, be cut off. In this case, *senki* is clearly a male disease.

In the early Edo period, Jesuit missionaries who came to Japan compiled the Japanese-Portuguese dictionary *Nippo jisho*, or *Vocabulario da Lingoa de Iapam*, published in 1603. It remains a precious resource that records terms used by Japanese of the time.

The *Nippo jisho* entry for *senki* explains it as "a disease of the scrotum, like skin infection or a swelling; to come down with *senki*; also called *shimokaze* ['low wind,' meaning disease of the lower abdomen]." An Edo-period senryū talks about the scrotum being a resting place for *senki* "worms," while the dictionary *Setsuyōshū* (Collection of Words for Everyday Use) says the characters for *senki* should be read *fugurikaze* and that *senki* is also called *shimokaze*. *Fuguri* refers to the scrotum, so here, again, *senki* is clearly a disease that affects the lower abdomens of men.

At the time, it was said that *senki* and *shimokaze* were "tools of servants"; that is, that servants faked these illnesses as excuses to avoid work.

What was the cause of *senki*? In those days, "worms" were blamed for many ills, *senki* among them. One senryū described the testicles as "a villa for *senki* worms."[57] People also spoke of *senkimochi*, referring to people who experienced repeated bouts of *senki*. *Senki* was apparently a chronic condition.

First and foremost among chronic diseases causing swollen testicles is hernia. Until quite recently, in many cases of hernia, the intestines dropped into the scrotum, causing massive enlargement of the scrotum. It must have been painful when the scrotum shrank in the cold. Men would try to relieve the pain by standing over a brazier. Incidentally, there used to be a saying that "*senki* depends on how it hangs." That is, how one's testicles hung—their position, in other words—could affect the pain of *senki*. The saying took on the wider meaning that one could ease the pain of chronic circumstances by shifting one's stance.

During the Meiji period, people began to distinguish between *senki* as a testicular condition and as pain caused by a disease in the lower abdomen. The term *senki* fell into disuse and vanished, but the *sen* portion remained in the term *sentsū*, the sharp stomach pain known in English as colic.

The term *shaku*, on the other hand, is used today in common expressions such as *shaku ni sawaru* (to get on someone's nerves) and *shaku no tane* (cause of annoyance), but it was originally the name of a disease. In contrast to *senki*, *shaku* referred to intense pain in the upper abdomen or the solar plexus. While such a condition could presumably affect both men and women, in the Edo period, *shaku* was said to be a female disease.

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57. On worms as causes of disease before the Edo period, see I.I.3 and I.VIII.

One senryū joked about the feelings of a prostitute who would suffer *shaku* just from seeing the character meaning "to cut," which made her fear that a man would cut off their relationship. Another poem jested that *shaku* was a prostitute's favorite trick, because she would pretend to have *shaku* to draw a man's sympathy.

Actual *shaku*, however, was an intense pain. Another poem described someone with severe *shaku* as being "balled up like a caterpillar." A woodblock print depicted someone bent double from the pain. The caption uses wordplay to explain *shaku*'s connection to excessive alcohol consumption: not only is the character meaning "to accumulate" (*tsumoru*) a core component of the character for *shaku*, as an old proverb states, but the end of a drinking party is also called *shaku* ("to pour alcohol"), with the pouring (*shaku*)—and consequent accumulation and overconsumption—of alcohol at drinking parties inviting the disease *shaku*.

Shaku-onna (women employed to pour sake for men in bars, restaurants, and similar establishments) faked being struck by *shaku* when customers appeared to have ulterior motives. There were also bad women who pretended to suffer *shaku* during journeys so as to win sympathy from men and pick their pockets. Indeed, *shaku* could be feigned. One senryū talks of a woman taking to her bed for three days and pretending that she had *shaku*, presumably after a fight with her husband.

Nevertheless, *shaku* was an actual disease. The *Nippo jisho* defines it as a spleen disease, or a disease caused by blood coagulating in one part of the body. Chinese medical texts use the term *jiju* to refer to *shaku*, the character for *shaku* being a vernacular form of the character *ji* (accumulation). Referring to pain caused by energy (qi) clumping in the five viscera and six entrails (in other words, the internal organs and the bowels), it was a disease affecting both men and women.

2. *Chūki* and *Chūbū*

As noted in section II.III, *chūki* and *chūbū* are terms familiar to older Japanese as words for partial paralysis, but they have now fallen out of use. Instead, we speak of cerebral apoplexy, cerebral hemorrhage, and cerebral infarction (types of strokes). Because more is now known about the causes of paralysis, the terms *chūki* and *chūbū* have gradually become obsolete.

Chūbū is, however, an accepted disease in Chinese medicine. It arises when the body has been struck by wind (or energy). In Chinese medicine, wind has always been an important cause of illness. Not all winds of the natural world are fair winds. Gales and storms batter the mountains and fields. Similarly, it was understood that when a "bad wind"[58] enters the body through (imagined) holes in the skin, it changes into various forms and causes disease.

Heian-period doctors followed Chinese medical texts exactly, but in the Edo period, medical knowledge became less orthodox. The Edo-period dictionary of medical terminology *Byōmei ikai* (Understanding of Disease Names) divides wind maladies into three types: *shinchūbū*, *sotchūbū* (acute paralysis, or stroke), and *ruichūbū* (mild paralysis). Of these, only *shinchūbū* appears in ancient Chinese medicine as a wind malady caused when an evil wind enters the body through the pores.

Ruichūbū was caused by factors such as fire, fever, heat, and food. Today, poisoning and heatstroke fit into this category of disease. *Sotchūbū* was a condition characterized by sudden fainting and loss of consciousness. Strokes, or apoplexy, belong to this category.

By the time of physician and philosopher Kaibara Ekiken (1630–1714), *chūbū* referred only to *sotchūbū.* In his famous *Yōjōkun* (Life Lessons from a Samurai), Ekiken stated that *chūbū* was not caused by outer winds, but by inner winds. The original Chinese notion of wind striking from the outside had vanished entirely.

Ekiken also described individuals prone to *chūbū*:

> It affects pale, obese people beyond forty, whose energy is decreasing. The disease is triggered by the condition of the seven emotions and by damage stemming from eating and drinking. By constantly drinking alcohol, people destroy their stomach and intestines, their energy decreases, and heat, which produces wind, arises inside of the body. Hands and feet become shaky or numb, and suffer paralysis. The mouth deforms, and one is not able to speak. These symptoms are all caused by a lack of energy, so the condition is not experienced by the young and energetic.

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58. As noted in II.III, *kaze*, the Japanese word for the common cold, comprises the Japanese characters for "wind" and "evil," literally meaning "bad wind."

> If it does occur in a young person, that individual will certainly be obese and lacking in energy. It is a condition that rarely occurs in teetotalers. A teetotaler that experiences *chūbū* will be obese or lacking in energy. Their blood pressure will be very low, they will be weak, and they will experience paralysis and numbness.[59]

In other words, people who are obese and pale and who drink alcohol are prone to *chūbū*. By this time, the terms *chūki* and *chūbū* were used only to describe apoplexy.

Sotchūbū often led to sudden death, in people who up to that point had been perfectly healthy. One senryū poem joked, "*Sotchūbū*, so much fervor at one's demise." The poem suggests how frantic relatives and friends would be at the unexpected downfall of someone full of life.

Many people certainly experienced *chūbū* without having *sotchūbū*. One such individual was the poet Kobayashi Issa (1763–1827). His first seizure occurred on the sixteenth day of the tenth month of 1820, when he was fifty-eight. In a letter, he wrote that he had been walking along a snowy path when he fell over and suffered *chūbū*. It was likely a seizure that caused his fall. He was cured by drinking daikon radish juice. Four years later, however, in 1824, he suffered a second seizure. He died three years after that, on the nineteenth day of the eleventh month of 1827. During his battle with illness, he wrote the haiku "First snow / One treasure / Is a chamber pot, I guess," which paints a vivid picture of the constrained daily life of an invalid.

In the Meiji period, traditional Chinese medicine gave way to Western medicine, and the old Chinese terminology was replaced by Western medical names. In some cases, however, the former did not fit well into the latter.

This was because Chinese medicine and Western medicine named diseases in very different ways. For example, in Chinese medicine diseases were said to be caused by wind and energy—as we saw with *chūbū*—but Western medicine named diseases for the part of the body that was affected or the agent that caused the disease—lung disease, for example, or the roundworm infection

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59. Andreas Niehaus, "'They Should Be Called Gluttons and Be Despised': Food, Body and Ideology in Kaibara Ekiken's *Yōjōkun* (1713)," in *Feeding Japan: The Cultural and Political Issues of Dependency and Risk*, ed. Andreas Niehaus and Tine Walraven (Cham: Palgrave Macmillan, 2017), 28.

ascariasis. As a result, many diseases could not simply be renamed with a Western equivalent. Diseases such as *shaku*, for example, were difficult to fit into the landscape of Western medicine. Instead, Western medical names were translated into Japanese, and many old diseases disappeared in the process.

At the same time, old Chinese medical names were preserved wherever possible. One such case was *nōsotchū*, the modern Japanese word for apoplexy or stroke. Because the symptoms of *sotchūbū* were the same as those of cerebral hemorrhage in Western medicine, the modern Japanese word dropped the traditional notion of wind (*bū*), while adding the idea that the condition occurs in the brain (*nō*), creating a new name that is an amalgam of both schools of medicine. *Netchūshō*, or heatstroke, is another such composite.

In the last years of the Edo period and into the Meiji period, as Japanese doctors absorbed Western medicine and created new disease names, they did their best to hold on to the old name from Chinese medicine where its meaning overlapped with the Western name. Examples include *mashin* (measles), *tōsō* (smallpox), *sekiri* (dysentery), *shōkōnetsu* (scarlet fever), *baidoku* (syphilis), *rinbyō* (gonorrhea), *hashōfū* (tetanus), *nyūgan* (breast cancer), *zensoku* (asthma), *zutsū* (headache), *henzutsū* (migraine), and *nanzan* (difficult birth).

When there was no equivalent in Chinese medicine, doctors took great pains to translate the Western name to create a new name in Japanese. They did not simply transliterate the Western term in the katakana alphabet the way we do today. These efforts no doubt helped a great deal in facilitating acceptance of the new medical science in Japan.

3. *Jinkyo* (Impotence)

One term that remained in popular use in the Meiji period, despite having disappeared from medical science, was *jinkyo* ("empty kidneys"), as a word for impotence. The *Kōjien* dictionary defines *jinkyo* as "the name of a disease in Chinese medicine, serving as the generic name for conditions caused by a deficiency of energy (*ki*) in the kidneys. Commonly used to refer to a wasting disease caused by sexual overindulgence." *Jinkyo* is in fact a Japanese name that does not appear in Chinese medical texts. In China, the term used was *yinwei*, written with different characters.

In Chinese medical theory, another word for kidney was *mingmen*, or "gate of life." The kidneys were considered the source of life—the place where

vitality was created and stored. Western medicine identified the kidneys as the place where urine is created. This fact was made known in Japan for the first time with the *Kaitai shinsho*, the Japanese translation of the Dutch anatomical text *Ontleedkundige Tafelen*.

Until that point, it was thought that sperm was made and stored in the kidneys. Using too much sperm would deplete the kidneys, resulting in empty kidneys, or impotence. Even in the Meiji period, when Western medicine had become mainstream in Japan, many people still believed that impotence resulted when men emptied their kidneys by overindulging in sexual intercourse. Only after the transliteration of the English word *impotence* (*inpotentsu*) came into widespread use in Japan did the term *jinkyo* finally fall into disuse.

Jinkyo appears in numerous Edo-period literary works, among them Ihara Saikaku's *Kōshoku ichidai otoko* (The Life of an Amorous Man) and Jippensha Ikku's *Tōkaidōchū hizakurige* (Travels on Foot on the Tōkaidō). Senryū poems also alluded to *jinkyo.* One joked, "Stiff as a board, just not where it counts," while another said, "Such beauty that empties out the lord."

VI. Newly Emerged Diseases

The battle with disease is as long as human history. Some diseases have existed since time immemorial, while others have been contained and conquered.

New eras and new environments have also brought new diseases. In the less than two hundred years since the engine of society changed from agriculture to industry, a string of diseases reflecting that change have emerged to threaten our lives. These include lifestyle diseases, pollution-induced diseases, iatrogenic diseases, and new infectious diseases.

1. Lifestyle Diseases Stemming from Dietary Changes

The Japanese diet began gradually westernizing after the Meiji Restoration, but the pace picked up markedly after the unprecedented destruction suffered during World War II. Such a variety of food cultures has been absorbed that prewar and postwar Japan seem like different countries.

The first change was the replacement of rice with bread and udon as staple

foods, partly due to a dearth of rice but also, in the case of bread, due to school lunches.

School lunches were launched to improve child nutrition in towns and cities during the war, but as the war situation deteriorated, the lunches were suspended. In the immediate postwar years, when Japan was essentially starving, nutrition degraded to a critical point. When the United Nations Relief and Rehabilitation Administration toured elementary schools in Japan, they recommended that school lunches be reinstituted with support from the United States, with most elementary schools and junior high schools resuming the practice.

At first, only side dishes were offered, but as of 1950, schools in eight major cities began to provide full lunches with bread as the staple, using funding from the US Government Aid and Relief in Occupied Areas (GARIOA) program. The conclusion of the San Francisco Peace Treaty and the consequent end to GARIOA assistance briefly threatened the future of the lunch system, but the 1954 School Lunch Act ensured its continuation. Most school lunches centered around bread accompanied by other Western food, with milk as the beverage. This was the beginning of the westernization of children's diets, leading bread to overtake rice as the dietary staple very quickly once those children became adults.

Even before the war, ordinary people had become accustomed to the Western-style dishes *karē raisu* (curry rice) and *hayashi raisu* (hashed beef rice). Another popular dish was *korokke* (croquettes), made famous by "The Korokke Song," which was a novelty hit in 1917. Curry rice arrived in Japan as a Western dish in the late nineteenth century. Curry took hold after Sapporo Agricultural College began offering it for lunch every second day, but it was when the navy added curry to its menu that the dish gained national recognition. It still took a while for people to get used to the taste, and it was not until the Shōwa period that curry rice became recognized as the king of Western food. Entrepreneur Kobayashi Ichizō's inspired introduction of curry rice to the cafeteria menu at the Hankyū Department Store in Osaka in 1929 played a major role.

The postwar period brought changes not only to school lunches but also family dining tables. Mayonnaise, hamburg steak, fried chicken, spaghetti, macaroni, salad, and milk all arrived and became favorite children's foods.

Around 1958, instant ramen and other instant foods hit store shelves, and when televisions became common and as refrigerators and then microwaves appeared in kitchens, people's diets transformed again. Dinner tables featured a series of boil-in-bag foods, and towns filled with takeaway restaurants.

Consumption of animal fats and proteins skyrocketed and carbohydrate consumption plummeted, not just in cities and towns but also in the countryside.

The westernization of the Japanese diet was accompanied by the westernization of disease. Strokes, cancer and other malignant tumors, high blood pressure, and heart disease became common. Because these were all life-threatening and struck people over the age of forty, they were initially called adult-onset diseases. This was later changed to lifestyle diseases, because the major causes are the cumulative effects of diet since childhood, social environment, lack of exercise, and indulgences like cigarettes.

Lifestyle diseases are closely tied to diet and nutrition. In 2000, the government published the Dietary Guidelines for Japanese to realize healthier diets. The guidelines called for people to develop a rhythm in their daily diets so as to develop a rhythm in their lifestyles. It advised consuming rice and cereals and balancing side dishes to avoid excessive salt and fat consumption and prevent under- and overnourishment. It also recommended paying attention to one's weight.

2. Emerging Infectious Diseases

New diseases have always arrived in Japan from overseas—the fate of an island country. In the past it was foreigners who brought in disease, but as more Japanese began to travel abroad, they themselves began to bring home new illnesses. Most were diseases such as cholera, typhus, and malaria that swept through the country in a series of epidemics, but recent years have seen new diseases such as AIDS and Ebola hemorrhagic fever.[60] People traveling from the developed world to remote regions of Africa have introduced these once-contained diseases to the wider world, where they have proceeded to wreak havoc, claiming many victims.

Outbreaks of new infectious diseases in Japan do not always come from

60. More recently known as Ebola virus disease.

abroad. Indigenous diseases of recent years that have spread nationwide include hepatitis C and *E. coli* O157, a strain of *E. coli* that causes hemorrhagic colitis.

Coliform bacteria are constantly present in the human body and are generally harmless, but sometimes, for some reason, their genetic character changes so that they produce powerful Shiga toxins, becoming Shiga toxin–producing *E. coli* such as *E. coli* O157. In the summer of 1996, there was an outbreak of food poisoning in schools all over the country, starting with the city of Sakai in Osaka Prefecture. Its origins were traced to certain ingredients of school lunches that found to be infected with *E. coli* O157.

Only in modern times were two strains of viral hepatitis recognized: A and B. More recently, a third—hepatitis C—has emerged as the main problem. The prevalence of this strain in Japan is related to the increasing frequency of surgeries such as appendectomies that accompanied economic growth. Such operations required more blood transfusions, and sometimes that blood turned out to be contaminated with the virus.

Viral hepatitis and liver cancer bring to mind the stabbing of US ambassador Edwin O. Reischauer by a nineteen-year-old youth in Tokyo in 1964. Seriously injured, Reischauer required a blood transfusion, but the blood he was given was contaminated, and the ambassador contracted hepatitis. This incident brought the problem of post-transfusion hepatitis into the spotlight, and the government subsequently banned the purchase of blood by blood banks, permitting only donations. Red Cross Blood Centers were set up around the country to manage the stored blood.

Reischauer's hepatitis ultimately led to liver cancer, and he died in 1990, twenty-six years after the stabbing incident. His obituary was a stark reminder of the deadly nature of viral hepatitis.

Subsequent years saw the development of blood-based drugs. In the 1970s and 1980s, hemostatic agents for hemophilia used blood products that were unfortunately contaminated with HIV, causing hemophiliacs to contract AIDS. At that time, many blood products were also used for purposes other than blood diseases: postpartum bleeding and heavy blood loss from wounds, for example. The many cases of hepatitis C contracted from contaminated blood products became a major social issue.

Left untreated, hepatitis C develops into liver cancer. The Ministry of Health, Labour and Welfare designated it an emerging infectious disease and

has urged anyone who received a blood transfusion or used a blood-based product to be tested for hepatitis C.

3. Iatrogenic Diseases

Iatrogenic is the term used to describe illnesses caused by medical or surgical treatment. Hepatitis C is in some senses an iatrogenic disease, but the best example would be infections that people acquire in hospitals, caused by methicillin-resistant *Staphylococcus aureus* (MRSA), a strain of golden staph that has become resistant to antibiotics. As a routine part of the body's microbiota, golden staph is harmless to healthy people, but elderly people and post-surgical patients are at risk of serious staph infections. Antibiotics are not effective in treating MRSA infections, so sepsis can occur as easily as it once did with the skin infection erysipelas, leading to death.

The history of antibiotics began with the 1928 discovery of penicillin by British bacteriologist Alexander Fleming. Mass production of antibiotics became possible in the United States around the end of World War II, and many wounded American soldiers were rescued with penicillin. Word of this drug reached Japan from Germany during the war, and a team led by Umezawa Hamao began penicillin research, but the war ended before the project was completed and penicillin arrived in Japan from overseas.

Immediately after the war, Japanese people were amazed by discoveries that had been made elsewhere while Japan was out of the loop. Penicillin was high on the list. People were delighted to learn that erysipelas and cerebral meningitis, which had once claimed so many lives, could be so easily cured with penicillin. Even syphilis—the disease that had defeated Sugita Genpaku—became curable.

Already by the 1950s, however, it was known that some diseases were resistant to penicillin, presenting a major problem for the medical world. More specifically, golden staph strains were producing penicillinase, a substance that breaks down penicillin, marking the emergence of drug-resistant strains of bacteria. To counter this, an antibiotic called methicillin was developed that was impervious to penicillinase breakdown. From around 1972, a class of antibiotics called cephalosporins became available to combat multiresistant staphylococci. These drugs suppressed hospital-acquired infections.

For a while, the medical world again enjoyed the luxury of not having to

fear infectious diseases. In 1971, however, a methicillin-resistant strain of golden staph emerged. Over the next decade, hospital-acquired infections began to proliferate all over the world. In the 1980s, such infections spread through hospitals in Japan, posing a major problem. New antibiotics and synthetic antibacterials were developed that were effective against these resistant bacteria, but later generations proved to be resistant to the new drugs, resulting in an apparently never-ending game of cat and mouse.

Extreme care must be exercised in the way antibiotics are used, but an even higher priority is avoiding hospital-acquired infections, primarily through thorough handwashing.

A similar situation occurred in the Vienna General Hospital maternity clinic in the 1840s, two decades before Robert Koch discovered that pathogenic bacteria were the cause of infectious diseases. The maternity clinic housed two divisions: one dedicated to teaching medical students and the other midwives. In the division for doctors and medical students, many patients were dying of puerperal fever, also known as childbed fever. The mortality rate was over ten times that of the midwives' division. Infection was caused by medical students performing autopsies on patients who had died of puerperal fever and then going straight into the delivery room to deliver babies without washing their hands. It was a typical iatrogenic disease.

Hungarian obstetrician Ignaz Semmelweis identified the problem through a statistical survey and animal experiments and enforced handwashing by doctors and medical students, but it took time before people believed his results.

Iatrogenic diseases also occur as a side effect of the misuse of drugs. Well-known examples include the thalidomide scandal, which became a global issue around 1962, and subacute myelo-optico-neuropathy (SMON), a disease unique to Japan that broke out around 1959.

SMON was discovered to be caused by excessive administration of the antibacterial and antifungal agent clioquinol, leading to a ban on clioquinol sales as of 1970.

Thalidomide was a nonbarbiturate sedative and hypnotic drug developed in West Germany in 1957. When used by women in the early stages of pregnancy, it resulted in stillbirths, or children born with phocomelia, an extremely rare condition characterized by malformed limbs. In Japan, there were many cases of this condition between 1963 and 1974. Class-action suits

brought by thalidomide victims in Japan were settled in 1984, paving the way for future lawsuits involving defective drugs.

4. Pollutant-Induced Diseases

Pollutant-induced diseases are contracted through exposure to industrial pollution in air, water, or soil. Examples in Japan include Yokkaichi asthma, Minamata disease, and itai-itai disease. These diseases accompanied Japan's rapid industrial development after World War II.

The environment was recognized as impacting human health even back in the Edo period. When sickness emerged in an area around mines in Akita Prefecture, the authorities apparently consulted Sugita Genpaku. Genpaku wrote in a letter that he considered the mines to be the cause of the sickness. In another incident prior to World War II, mining pollution at the Ashio copper mine attracted public attention.

Modern pollutant-induced diseases, however, were much wider in scope than those early cases, coming to public attention when previously unknown diseases began to emerge among residents in specific locations.

Some distinctly modern diseases were caused by negligence at food factories, such as those caused by the Kanemi rice bran oil poisoning incident and the Morinaga Milk arsenic poisoning incident.

The Kanemi rice bran oil poisoning incident occurred in 1968, when rice bran oil produced by the Kanemi Sōko company in Kitakyūshū sickened people who consumed it. The oil was contaminated by polychlorinated biphenyls (PCBs) used in the deodorization process and polychlorinated dibenzofurans (PCDFs) produced as a byproduct of that process. Their relative cheapness led them to be widely used in insulating fluids and heat-transfer fluids, but they were banned as of 1982 because of the Kanemi incident.

VII. Average Lifespan and Perspectives on Life and Death

The late twentieth century saw the graying of society pick up pace. By 2000, the average lifespan for Japanese women reached eighty-four years, a record in both historical and global terms.

For ages past, our ancestors regarded fifty years as the length of a human life. What was the reality?

1. Average Lifespan since the Meiji Period

Japan began collecting data on average lifespan in the Meiji period. When the first reliable statistics were published in 1891, the average lifespan for men was around 42, for women around 44. Little changed in the Taishō period (1912–26), with the figures holding at around 42 for men and 43 for women.

Things began to change in the Shōwa period. In 1935, forty-four years after the first statistical record, the average male lifespan reached 46.92, while the average female lifespan was 49.63. In approximately forty-five years, the average lifespan for men had increased by four years, for women by five. The increase was driven by a decline in infant deaths, resulting in a rapid improvement in the infant mortality rate as of the Taishō period. World War II, however, forestalled further improvement in the average lifespan. In 1945, at the end of a calamitous world war that produced extensive casualties, Japan's average lifespan had dropped to 23.9 for men and 37.5 for women.

Postwar life was difficult, but Japan's smooth progress toward recovery was reflected in the average lifespan, which—astonishingly—reached exactly 50 in 1947. Life expectancy continued to increase, hitting the 60s just four years later in 1951 and breaking into the 70s twenty years later in 1971. Factors behind this improvement included the emergence of antibiotics and cures for illnesses with high mortality rates such as pneumonia and tuberculosis.

While health insurance in Japan existed in name only until around 1949, its roots lay in the Health Insurance Act of 1922, which was implemented in 1927, as well as the new national health insurance societies, voluntary establishment of which began in 1938. In 1958, the National Health Insurance Act was promulgated, followed by the government's pursuit of universal medical care as of 1961. These finally realized nationwide health insurance coverage and made medical care available for all, factors that helped to boost the average lifespan.

As of around 1970, Japan joined the ranks of the developed nations with the longest life expectancies. In 1985, it outstripped the West to record the world's longest lifespan for both men and women. That year, the average lifespan for Japanese men was 74.78 years, 80.48 for Japanese women. As a

result, the childhood eating habits of the generation born during the Meiji years attracted widespread interest, and people around the world started to see Japanese food as a cause of longevity.

In the Heisei (1989–2019) years, too, the average lifespan of both men and women continued to increase. In the last year of the twentieth century, the average lifespan in Japan reached 77.64 for men and 84.62 for women. The country's average lifespan had been the lowest of all the developed countries around 1955, but having reached the top of the list in barely forty years, Japan saw its population age at an unprecedented speed, becoming a country with a very long life expectancy.

In Japan today, sixty is still considered relatively young, to the extent that people regard a death at the age of sixty as lamentably premature. A seventieth birthday used to be called *koki* (literally, "old and rare") because reaching that age was considered rare and noteworthy, but no more. Many people still have great health at their *kiju* ("celebration of happiness") birthday, at age seventy-seven, and their *beiju* ("rice celebration,") birthday at age eighty-eight.[61] People are still very afraid of death, however. Most say that they would like a sudden easy death, a trend dubbed *pokkuri shinkō* ("sudden death creed").

2. Lifespan in the Edo Period

A lack of data for the Edo period means that little is known about Japan's average lifespan then. One of the few surveys conducted used death records kept by a temple in the Hida-Takayama region (now in Gifu Prefecture). It was the product of many years' labor by Suda Keizō, a doctor who lived in the area. It shows that the average lifespan over the hundred years between 1771 and 1870 was 27.8 years for men and 28.6 for women. The reason for these short lifespans was the large number of infant deaths from smallpox, such a common phenomenon that children were not even named until they had survived a bout.

Economic historian Hayami Akira investigated the average lifespan in the Shinshū-Suwa region (in modern-day Nagano Prefecture) in the century before. Using temple census registers, which record details of those living in

61. The name *beiju* plays on the fact that the Japanese character for rice disassembles into the characters for eighty-eight.

a given area or belonging to a given temple, he looked at life expectancy for children who had reached the age of at least two. He found that for the fifty-four-year period from 1671 to 1725, the average male lifespan was 36.8 years and the average female lifespan, 29.0 years. Between 1726 and 1775, however, this became 42.7 years and 44.0 years. The reason that female lifespans differed so greatly between 1671–1725 and 1726–75 is unclear, but the average lifespan excluding children under the age of two differed little from the Meiji period.

With the advent of vaccination, smallpox deaths plummeted. Vaccination with the cowpox vaccine was introduced in Japan in 1849 and was practiced around the country by the next year. One example of outstanding results was the village of Saijō in Anpachi District, Mino Province (in present-day Gifu Prefecture). When Hayami undertook a survey of Saijō's late Edo demographic data as revealed in the temple census registers, he found that the mortality rate plunged for infants aged five and younger beginning in 1851, which is when the local doctor went to Kyoto and learned how to give vaccinations. From 1831 to 1840, one in five infants died. From 1851, that shrunk to three infants in one hundred. After the doctor died, however, mortality returned to the previous rate.

The first public hygiene law proclaimed by the Meiji government was the Vaccination Law. Smallpox vaccinations were made compulsory nationwide. Even in the Edo period, however, the average lifespan was higher if children, with their high mortality rate, were excluded. In the Hida-Takayama region, the average lifespan of villagers aged twenty-one and above was 61.4 years for men and 60.3 years for women. The shorter lifespan for women was probably due to deaths in childbirth.

3. Kaibara Ekiken and Sugita Genpaku

In 1694, the poet Matsuo Bashō died at the age of exactly fifty years, in line with the conventional norm. But not everyone in the Edo period died young. It was quite common for people to live beyond eighty, and it was not unknown for people to live to over a hundred. The distinguished physician and philosopher Kaibara Ekiken died in 1714 at eighty-five. The year before he died, he wrote down his experiences over his long life in his book *Yōjōkun*.

He noted that life is generally short, so there is no profit in gaining all the

riches in the world, and no use in accumulating a mountain of wealth. Rather, there is no greater blessing than following a moral path, looking after the body, and living a long life. Long life was therefore one of the five blessings and the foundation of all happiness.

Sugita Genpaku, translator of the seminal *Kaitai shinsho*, died in 1817, also at the age of eighty-five. He, too, celebrated long life. One day, at the age of seventy-nine, he gave his brush free rein to draw a portrait of himself dancing with raised hands, adding the following inscription:

> All the while knowing that I was born from a trifle of karma in an illusory world, I have said, *Why not!* and willingly let myself be deceived. But could this be a foxhole? *Kon kon*[62]
>
> The figure of an old man, who turns eighty next year, dancing and singing a buoyant modern tune, satisfied and dreaming, sketched in the eighth year of the Bunka era
>
> [Signed] Aged Nine Blessings

About to turn eighty the following year, Genpaku noted that life is but a temporary vow and that he had lived his life deceived by thinking that it was real, whereas in fact, it was simply an illusion. This is a fascinating insight from someone looking back on a life that seems to have passed in the blink of an eye.

He assumed the moniker Aged Nine Blessings in his last year. He explains its origin as follows in *Bōtetsu dokugo* (Monologue of an Old Man), which he wrote a year before his death:

> Thanks to much assistance from the gods, I have been lucky enough to live to over eighty, and until now I have not really experienced much difficulty. But I cannot say that nothing has changed from ten years ago. Nothing is really lacking, but daily life has gradually become quite different from what it once was. If there is a nearby road of 9–10 kilometers, I go out and

62. *Kon kon* is the sound of a fox's call in Japanese. The onomatopoeic phrase is also used for a door knock. Foxes are trickster figures in Japanese legends are known to enchant humans by conjuring illusions. According to the Buddhist view, the world that humans perceive as reality is also such an illusion. Knocking on a fox's door represents Genpaku's willing participation in an illusory world.

come back. Everyone I meet praises me, saying that I am the most blessed person they know. So I counted my blessings and have thus called myself Nine Blessings.

The nine blessings that Genpaku counted were, first, that he was born in a time of peace; second, that he grew up in Edo; third, that he had known people of both high and low social status; fourth, that he had enjoyed a long life; fifth, that he always had sufficient income to be able to eat; sixth, that he had experienced no poverty at all; seventh, that he was widely known; eighth, that he had many descendants; and ninth, that he had gained more energy as he grew older.

In his *Bōtetsu dokugo*, however, he also described hardships that arise with a long life, lamenting problems with his eyes, ears, and mouth (teeth) stemming from age. What we learn from Genpaku is that for complete happiness, the most important thing is to maintain one's physical health.

Self-portrait by Sugita Genpaku at age seventy-nine. (Sugita Genpaku, *Sugita Genpaku jigasan shōzō*, 1811, hanging scroll. Reproduced by permission from Waseda University Library.)

Afterword

Medicine and medical care are subjects of interest to everyone today, albeit to varying degrees. Particularly with the current obsession with health, people want to live a long, healthy life and then enjoy a quick, painless death. But as they say, if wishes were horses, beggars would ride. We are exposed to danger from the time we are in the womb, and more dangers await after we are born, with many obstacles standing in the way of living a healthy life.

Once upon a time, even being born was far more difficult, and many a new life was suddenly extinguished by smallpox or digestive problems. In some regions of Japan, a birth was celebrated and a name chosen for the child only after the horror of smallpox had been survived.

Many more hazards awaited before a child reached adulthood. Rites of passage accompanying milestones in childhood development therefore took on great weight.

In this volume, I have traced as far back as the Jōmon period, looking at what bones excavated from ancient sites reveal of life in those days and thinking about how the Jōmon people lived in that harsh environment. Their bones tell of a powerful life force and the power of natural healing. We, too, should possess that natural healing power, but a comparison with our ancestors reveals that much has been lost in today's artificial environments.

Bones from the Yayoi period show the first signs of tuberculosis, which remained an ongoing scourge for the human race until effective drugs were discovered in the twentieth century. Syphilis is another disease that has tormented humans over the centuries. Countless bones excavated from Edo-period sites reveal traces of the disease. Syphilis, too, can be treated by antibiotics these days, but as soon as we cure one disease, another—AIDS, for example—appears and disrupts us.

That said, the illnesses and infectious diseases that have shaped history were different things entirely before the advent of modern medicine.

In ancient times, people believed that epidemics were controlled by gods and that their spread was a manifestation of divine anger at the emperor's

mismanagement of political affairs. Those in authority prayed mightily to the heavens to allay that anger. Prayers were given higher priority than medicine.

Over the years, the knowledge that epidemics arrived from overseas led to rejection of the connection between politics and epidemics, with people instead coming to believe that there must be epidemic gods that caused sickness. From around that time, the idea emerged that contagious diseases spread from person to person and that quarantine could be effective.

In modern times, traditional Chinese medicine has been replaced by Western medicine and its prevention methods for contagious diseases. These days, our perspective on long-feared contagious diseases has changed, encapsulated by the fact that we now refer to infectious diseases (spread by specific infectious agents) rather than contagious diseases (spread by contact). The bogeyman of smallpox has been eradicated, and having succeeded with smallpox, we have now set our sights on polio. But nature does not give up so easily and the road is far from smooth—as we have also seen with the emergence of new infectious diseases like COVID-19 in recent years. Even with the development and use of COVID-19 vaccines, there is still no end in sight.

In the distant past, when people became ill, it was believed they were being attacked by *mononoke* that embodied grudges, so prayers were performed to get rid of them. In the premodern era, prayers were trusted more than less-than-fully-effective medicines. Modern practice separated medicine from religion by providing scientific explanations for the causes of disease, but even now, we visit shrines and temples to pray to the gods for health and recovery. We recognize intuitively the boundlessness of nature and what terrors await should we defy nature's power.

Modern medicine has made great progress in terms of treatment. Public hygiene, too, has improved, enabling us to prevent disease and save millions of people. The importance of these achievements is clear when we look back on history.

Medicine now belongs to natural science, but the history of disease and treatment remains less a scientific history than a cultural one. Medicine is effectively a cultural history of the body. Even the most powerful people cannot conquer the agony of illness. In that fact, we can observe the anguish and naked truth of the very human yearning to be spared from disease.

Historical figures who epitomized power and prosperity, such as Fujiwara

no Michinaga, Taira no Kiyomori, and Tokugawa Ieyasu, ended their lives in the pain and suffering brought by disease. Sugita Genpaku may have praised long life, but he, too, could not conquer the physical decline of his aging body, recording his distress in his final collection of essays.

Illness is a sign that something abnormal is happening in the body. Prayers once eased people's hearts, without being able to identify what was wrong. The natural science of medicine is able to isolate the abnormality from the body, examine it thoroughly, and produce results, but it has left behind people's hearts in favor of the body.

Looking back on history, we have to admire the astonishing advances that medicine has made, but we can also see gaps that have been left. The emergence of diseases that are actually caused by modern drugs, pollution, and even medical practice itself has made it apparent that a more holistic approach is needed. We are certainly headed in that direction, but we still have a long way to go.

This book is based on a series of articles that appeared in the Buddhist journal *Daihōrin* (Great Wheel of the Dharma) between 1998 and 1999. These have been revised, corrected, expanded, and rearranged into a rough chronological order of Japanese history from the ancient past to the present.

The late Koeda Kazuo from the Kōdansha Research Institute read the series and encouraged me to publish it. I found out only later that he was suffering from advanced cancer at the time, and it pains me that I was unable to fulfill his wish while he was still alive. Without the support of Mr. Koeda and his successor Hattori Chikako, this book would never have seen the light of day. I lay down my pen with heartfelt gratitude to them both.

March 2024
Sakai Shizu

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（英文版）病が語る日本史

Tales of Plague and Pestilence: A History of Disease in Japan

2025年3月27日　発行

著　者　酒井シヅ

訳　者　マリー・スピード

翻訳監修　エレン・ナカムラ、テリー・ギャラガー

発行所　一般財団法人出版文化産業振興財団
〒101-0051 東京都千代田区神田神保町 2-2-30
電話　03-5211-7283
ホームページ　https://www.jpic.or.jp/

hardcover ISBN 978-4-86658-256-6
ebook (PDF) ISBN 978-4-86658-257-3