Figure 1.1 "The Demon in the Freezer" by Richard Preston

The smallpox virus first became entangled with the human species somewhere between three thousand and twelve thousand years ago—possibly in Egypt at the time of the Pharaohs. Somewhere on earth at roughly that time, the virus jumped out of an unknown animal into its first human victim, and began to spread. Viruses are parasites that multiply inside the cells of their hosts, and they are the smallest life forms. Smallpox developed a deep affinity for human beings. It is thought to have killed more people than any other infectious disease, including the Black Death of the Middle Ages. It was declared eradicated from the human species in 1979, after a twelve-year effort by a team of doctors and health workers from the World Health Organization. Smallpox now exists only in laboratories.

Smallpox is explosively contagious, and it travels through the air. Virus particles in the mouth become airborne when the host talks. If you inhale a single particle of smallpox, you can come down with the disease. After you've been infected, there is a typical incubation period of ten days. During that time, you feel normal. Then the illness hits with a spike of fever, a backache, and vomiting, and a bit later tiny red spots appear all over the body. The spots turn into blisters, called pustules, and the pustules enlarge, filling with pressurized opalescent pus. The eruption of pustules is sometimes called the splitting of the dermis. The skin doesn't break, but splits horizontally, tearing away from its underlayers. The pustules become hard, bloated sacs the size of peas, encasing the body with pus, and the skin resembles a cobbled stone street.

The pain of the splitting is extraordinary. People lose the ability to speak, and their eyes can squeeze shut with pustules, but they remain alert. Death comes with a breathing arrest or a heart attack or shock or an immune-system storm, though exactly how smallpox kills a person is not known. There are many mysteries about the smallpox virus. Since the seventeenth century, doctors have understood that if the pustules merge into sheets across the body the victim will usually die: the virus has split the whole skin. If the victim survives, the pustules turn into scabs and fall off, leaving scars. This is known as ordinary smallpox.

Some people develop extreme smallpox, which is loosely called black pox. Doctors separate black pox into two forms—flat smallpox and hemorrhagic smallpox. In a case of flat smallpox, the skin remains smooth and doesn't pustulate, but it darkens until it looks charred, and it can slip off the body in sheets. In hemorrhagic smallpox, black, unclotted blood oozes or runs from the mouth and other body orifices. Black pox is close to a hundred per cent fatal. If any sign of it appears in the body, the victim will almost certainly die. In the bloody cases, the virus destroys the linings of the throat, the stomach, the intestines, the rectum, and the vagina, and these membranes disintegrate. Fatal smallpox can destroy the body's entire skin—both the exterior skin and the interior skin that lines the passages of the body. (p. 23)