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## Part V:

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ed 40,000 people and injured 60,000 more. Three square miles of the city were destroyed, less than Hiroshima because of the steep hills surrounding Nagasaki. By January 1946, 70,000 people had died in Nagasaki. The total eventually reached 140,000, with a death rate similar to that of Hiroshima.<sup>60</sup>

### Surrender

Still the Japanese leadership struggled to come to a decision, with military extremists continuing to advocate a policy of resistance to the end. Word finally reached Washington from Switzerland and Sweden early on August 10 that the Japanese, in accordance with Hirohito's wishes, would accept the surrender terms, provided the emperor retain his position. Truman held up a third atomic attack while the United States considered a response, finally taking a middle course and acknowledging the emperor by stating that his authority after the surrender would be exercised under the authority of the Supreme Commander of the Allied Powers. With British, Chinese, and Russian concurrence, the United States answered the Japanese on August 11. Japan surrendered on August 14, 1945, ending the war that began for the United States with the surprise attack at Pearl Harbor on December 7, 1941. The United States had been celebrating for almost three weeks when the formal papers were signed aboard the U.S.S. *Missouri* on September 2.

### The Bomb Goes Public

The veil of secrecy that had hidden the atomic bomb project was lifted on August 6 when President Truman announced the Hiroshima raid to the American people. The release of the Smyth Report on August 12, which contained general technical in-

formation calculated to satisfy public curiosity without disclosing any atomic secrets, brought the Manhattan Project into fuller view.<sup>61</sup> Americans were astounded to learn of the existence of a far-flung, government-run, top secret operation with a physical plant, payroll, and labor force comparable in size to the American automobile industry. Approximately 130,000 people were employed by the project at its peak, among them many of the nation's leading scientists and engineers.

In retrospect, it is remarkable that the atomic bomb was built in time to be used in World War II. Most of the theoretical breakthroughs in nuclear physics dated back less than twenty-five years, and with new findings occurring faster than they could be absorbed by practitioners in the field, many fundamental concepts in nuclear physics and chemistry had yet to be confirmed by laboratory experimentation. Nor was there any conception initially of the design and engineering difficulties that would be involved in translating what was known theoretically into working devices capable of releasing the enormous energy of the atomic nucleus in a predictable fashion. In fact, the Manhattan Project was as much a triumph of engineering as of science. Without the innovative work of the talented Leslie Groves, as well as that of Crawford Greenewalt of DuPont and others, the revolutionary breakthroughs in nuclear science achieved by Enrico Fermi, Niels Bohr, Ernest Lawrence, and their colleagues would not have produced the atomic bomb during World War II. Despite numerous obstacles, the United States was able to combine the forces of science, government, military, and industry into an organization that took nuclear physics from the laboratory and into battle with a weapon of awesome destructive capability, making clear the importance of basic scientific research to national defense.