

EG:400-L1
Unit Main Title

HIROSHIMA AND NAGASAKI

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EG:400-L2

THE EFFECTS OF NUCLEAR BOMBS

Although the destruction of entire cities by conventional bombing had become common as World War II progressed, the atomic bombs dropped at Hiroshima and Nagasaki introduced a number of new elements. These included an intense burst of ionizing (high energy) radiation; an exploding fireball instantly inflicting burns and starting fires; an enormously powerful shock wave; a mushroom cloud propelling fission products and irradiated material into the upper atmosphere, from where it returned as "radioactive fallout"; short-term effects of radiation sickness, including death within a few days among the heavily exposed; and long-term effects of radiation exposure, including cancer and birth defects.

Thus the destructive effects of the atomic bombs in Japan were not simply those of an equivalent tonnage of conventional bombs. Some, like leukemia, became apparent only years after the events.

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EG:400-L3

GROUND ZERO:

HIROSHIMA, 8:15 A.M., AUGUST 6, 1945

NAGASAKI, 11:02 A.M., AUGUST 9, 1945

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EG:400-L3a-P3a
(main panel backdrop?)
Tom C.'s no.: P2

Hiroshima, August 6, 1945: The mushroom cloud as seen 15 to 20 minutes after the explosion from the Mikumari Gorge, some 6.5 kilometers (4 miles) from ground zero.

Photograph by Seizo Yamada

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EG:400-L3b

"At first I saw rainbows, one over the other, then a mushroom cloud began to rise, and I heard the sound of a tremendous explosion."

Seizo Yamada, Hiroshima

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EG:400-L3c-S3c
(Artifacts in this section are preliminary; based on initial request to the Hiroshima and Nagasaki Museums.)

This wristwatch was smashed when its owner, Akito Kawagoe, was buried beneath the debris of the Futaba-No-Sato army barracks, 1.8 kilometers (1.1 miles) from the explosion. He escaped and survived.

Loaned by Akito Kawagoe and the Hiroshima Peace Memorial Museum

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EG:400-L3d-S3d
Broken wall clock,
Nagasaki

Label copy to be provided.

Loaned by Nagasaki International Culture Hall

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EG:401-L1-P1

Hiroshima, 8:17 a.m., August 6, 1945: The base of the growing mushroom cloud as seen from near the Kanda Bridge, 8 kilometers (5 miles) from ground zero, two minutes after the explosion.

Photograph by Mitsuo Matsushige

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EG:401-L2-P2

Hiroshima, 8:30 a.m., August 6, 1945:

Gon'ichi Kimura was stationed at the Army Water Transport Headquarters, Ujina, about 4 kilometers (2.5 miles) south of ground zero. He snapped this photo of the cloud roughly 15 minutes after the explosion.

Photograph by Gon'ichi Kimura

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EG:401-L3-P3
P5

Nagasaki, 11:12 a.m., August 9, 1945: This photograph of the Nagasaki cloud was taken from Koyage Island in Nagasaki Harbor, 10 kilometers (6 miles) south of the explosion.

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EG:401-L4-P4
P6

Nagasaki, 11:12 a.m., August 9, 1945: The Nagasaki cloud as seen from a spot only 8 kilometers (5 miles) from ground zero. Judging from the size and shape of the cloud, the photograph was taken about 10 minutes after the explosion. Twelve minutes after the blast, the top of the mushroom cloud had already reached an altitude of 12 kilometers (7.5 miles).

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EG:410-L1
Main Title

BEFORE THE BOMB: TWO CITIES AT WAR

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EG:411-L1

HIROSHIMA: A MILITARY CITY

On the morning of August 6, 1945, Hiroshima was the seventh largest city in Japan, with a population of 350,000, and an important industrial center and army base of 40,000. Located on the southwestern end of the main island of Honshu, where the delta of the Ota River enters the Seto Inland Sea, the city took its name from the Hiro-shima-Jo ("Broad-island-castle"), a fortress established by a local lord in 1594.

In April 1945, the Second General Headquarters, which was to plan and lead the defense against the expected American invasion, was established in Hiroshima. Supplies for Imperial forces in China, Southeast Asia and the Pacific had passed through the city's Ujina port throughout World War II.

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EG:411-L1a-P1a

P7

(For consideration as a large graphic underlaying the Hiroshima labels.)

An Army Air Forces aerial photograph of Hiroshima before the attack. The distance between each circle represents about 300 meters (1,000 feet). The aiming point, the T-shaped Aioi Bridge, is just above and to the left of the center of the inner circle.

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EG:411-L1b-P1b

P8

An aerial photograph of Hiroshima taken after the bombing.

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EG:411-L1c-P1c

P9

This photograph of Hiroshima, taken on May 20, 1936, shows the Aioi Bridge, the aiming point for the atomic bomb. The explosion took place 300 meters (1,000 feet) away, at the foot of the Moyasu Bridge in the lower right-hand corner of the photo. The island in the center and the areas on either bank were the heart of the business and shopping district.

Courtesy of

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EG:411-L1d-P1d

P10

The Industrial Promotion Hall before the bombing. Prior to World War II, it had housed trade exhibitions that showcased local industrial products.

Courtesy of

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EG:411-L1e-P1e
P11

The shattered dome of the Industrial
Promotion Hall would become the symbol of
a shattered city.

Courtesy of

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EG:411-L2

HIROSHIMA AT WAR

Hiroshima had escaped the firebombing campaign that was destroying many smaller cities. Puzzled, some residents of the city speculated that the city had been spared because of its beautiful location on the Inland Sea. Others believed it was being protected because so many Japanese American families had emigrated from the region. One wild rumor even suggested that Hiroshima was the birthplace of President Truman's mother.

Convinced that the B-29s passing over the city each night would eventually strike Hiroshima, city officials prepared for an attack. Concerned that flooding would result from the destruction of a dam above the city, they issued bamboo floats to the leaders of neighborhood associations and ordered that similar floats be constructed for everyone in the city. Students were released from class and put to work clearing firebreaks in the center of the town. Sand and water buckets were kept filled. The people of Hiroshima were determined to be prepared when the attack came.

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EG:411-L3

HIROSHIMA, 8:15 A.M., AUGUST 6, 1945

The morning of Monday, August 6, was sunny and hot in Hiroshima. By 7:00 a.m. people were pouring into the city center to begin the workday. Besides the usual office and factory workers, merchants, soldiers, and shopkeepers, some 8,000 junior and senior high school students were laboring to demolish buildings that had been evacuated to create firebreaks in the center of the city. This was typical of the work for which young people were conscripted throughout Japan.

The first air raid warning of the day sounded at 7:09, as Straight Flush, a B-29 weather aircraft piloted by Capt. Claude Eatherly, appeared over the city. Enola Gay, accompanied by two other B-29s, the Great Artiste and Number 91, approached Hiroshima from the northeast one hour later. At precisely 8:15:17 the "Little Boy" bomb was released from the Enola Gay. Forty-three seconds later it detonated 580 meters (1,870 feet) above the ground.

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EG:412-L1

NAGASAKI: WINDOW ON THE WEST

Founded in the 12th century, Nagasaki is located on the southwestern island of Kyushu, where the Nakashima and Urakami rivers enter the East China Sea. In 1549 the Jesuit father Francis Xavier landed on Kyushu and founded the first Christian missions in Japan. Intrigued by the new religion, and by Western firearms, Japanese leaders at first tolerated the Spanish and Portuguese presence at Nagasaki. After 1587, however, they banned Christianity and severely persecuted its adherents.

From about 1600 to 1850, all foreign contacts with Japan were made through Nagasaki, where a small group of Dutch East India Company traders were allowed to operate on the tiny island of Dejima in the harbor. Nagasaki retained its importance as a center of Western economic and cultural influence following the opening of Japan to trade in 1854. Christians who had remained secretly faithful during the centuries of persecution re-emerged.

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EG:412-L2

NAGASAKI AT WAR

In August 1945, Nagasaki had a population of 270,000 people and was a major industrial center. One of the most important shipyards in the nation was located in the harbor. The great naval base of Sasebo was nearby, and the giant battleship Musashi was based there during much of 1944. The city was also home to a variety of factories critical to the war effort, including the Mitsubishi Steel Works. The torpedoes used in the Japanese attack on Pearl Harbor in 1941 were manufactured in Nagasaki.

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EG:412-L2a-P2a
P12
(For consideration as a photo underlay for the Nagasaki labels)

An Army Air Forces aerial photograph of the Urakami Valley region of Nagasaki before the bombing.

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EG:412-L2b-P2b
P13

The same area after the bombing. The distance between circles is about 300 meters (1,000 feet).

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EG:412-L2c-P2c
NASM photo 3A-3671

The Mitsubishi arms factory was 1,200 meters (0.75 miles) from ground zero in Nagasaki.

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EG:412-L3

NAGASAKI, 11:02 A.M., AUGUST 9, 1945

The morning of Thursday, August 9, was mild and humid in Nagasaki. The skies were fairly clear at 8:30 a.m., when a B-29 weather aircraft flew over the city. By mid-morning, however, a weather front moving in from the East China Sea had spread a thick layer of cloud over Nagasaki.

Having been forced to abandon their primary target, Kokura, because of haze and smoke, the B-29s Bockscar and The Great Artiste were running low on fuel as they approached Nagasaki. The bombardier of Bockscar made a radar approach and released the "Fat Man" bomb at 11:02 a.m. The weapon exploded 503 meters (1,540 feet) above the Urakami River valley, 2.6 kilometers (1.6 miles) from the intended target in the center of the city.

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EG:412-L4

NAGASAKI, AUGUST 10, 1945

Mr. Yosuke Yamabata, a resident of Nagasaki, set out with his camera early on the morning of August 10, 1945. He spent the day walking through the shattered Urakami Valley, capturing scenes of the incredible destruction--and the faces of those who had survived.

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EG:412-L4a-b-P8a-b
P19 thru P21

No labels needed.

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EG:413-L1-S1

SCHOOLBOY'S JACKET

Tetsuo Kitabayashi was a first-year student at the Second Hiroshima Prefectural Middle School. On the morning of August 6, 1945, he was conscripted with other students to work on a civil defense project near the Shin Ohashi Bridge. He returned home that afternoon, badly burned, and was taken to the Ujina aid station. He fell unconscious and died shortly after 4:00 p.m. on August 7.

Loaned by the Hiroshima Peace Memorial
Museum

#

EG:420-L1
Main title

"THE INCREDIBLE AVALANCHE OF LIGHT"

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EG:420-L2
main text

"Flash! The incredible avalanche of light seemed to last for several seconds... momentarily the bright August sun was completely absorbed and negated by it."

Kimie Akabae, Nagasaki

Few survivors who were close to the center of the Hiroshima or Nagasaki explosions would remember hearing the sound of the blast. What none of them would ever forget was the Pika--the flash of incredibly brilliant light and heat that occurred as a nuclear explosion heated the sky to luminescence. The burst of light was quickly followed by a tremendous air pressure wave that bent steel bridges, toppled buildings, and reduced wooden houses to kindling.

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EG:420-L2a-P2a
P23

The shadow of a valve control wheel, imprinted on the side of a storage tank by the flash, 1,900 meters (6,300 feet) from ground zero at Hiroshima.

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EG:420-L2b

"Then a tremendous flash of light cut across the sky.... It seemed like a sheet of sun."

Rev. Kiyoshi Tainimoto, from Hiroshima by John Hersey (1946)

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EG:420-L2c

"Suddenly there was a brilliant flash, like a photographer's magnesium flash.... Then came the blast with a deafening bang and I felt as though I had been kicked in the guts.... The world was black."

F. J. Johnston, Australian prisoner-of-war in Nagasaki, 1945

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EG:420-L2d-S2d

The pressure of the blast crumpled this sheet of metal like paper.

Loaned by the Hiroshima Peace Memorial Museum

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EG:420-L2e-S2e

The Imperial Army Clothing Depot was located 2.7 kilometers (1.7 miles) from ground zero at Hiroshima. Even at that distance the blast was strong enough to bend these steel shutters from the building.

Loaned by the Hiroshima Peace Memorial Museum

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EG:420-L3

A MOMENT FROZEN IN TIME

The flash of light generated by the detonation cast shadows on walls, steps, buildings, and even stands of bamboo in Hiroshima and Nagasaki. The unbelievable heat, which reached 3,000 to 4,000°C (5,400 to 7,200°F) at ground level under the explosions--roughly the temperature of the surface of the sun--altered the color of the surrounding material, etching the shadows in place.

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EG:420-L3a-S3a

The shadow of leaves imprinted on bamboo stalks.

Loaned by the Hiroshima Peace Memorial Museum

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EG:420-L3b-S3b

The shadow of a washline and blades of grass imprinted on a Nagasaki fence.

Loaned by the Nagasaki International Culture Hall

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EG:420-L3c-P3c
P24

The shadow of a ladder imprinted on a metal surface.

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EG:420-L3d-P3d

A rescue worker found this scrap of a poster in Hiroshima on August 6. The dark letters, which absorbed heat more readily, have been burned out of the lighter colored paper.

Loaned by the Hiroshima Peace Memorial Museum

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EG:420-L3e-S3e

Ceramic roof tiles melted by the flash.

Loaned by the Nagasaki International Culture Hall

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EG:420-L3f-S3f

(Nagasaki pebbles affected by heat--label to follow)

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EG:420-L3g-P3g
P25

People caught in the open within 1,000 meters (0.6 miles) of the blast experienced temperatures so high that the dark, heat-absorbing pattern of their clothing was burned into their flesh.

Courtesy of the National Museum of Health and Medicine, Armed Forces Institute of Pathology

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EG:420-L4
(To accompany video
testimony.)

HIBAKUSHA

Hibakusha ("explosion affected person") is a term that has been applied to atomic bomb survivors for the past half century. Many have suffered the post-war prejudices of their countrymen, who believed that survivors were tainted by exposure to radiation.

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EG:430-L1
Main title

TWO CITIES IN CHAOS

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EG:430-L2

HIROSHIMA: THE FIRST HALF HOUR

Hiroshima stands on a flat river delta, with few hills to protect sections of the city. The bomb was dropped on the city center, an area crowded with wooden residential structures and places of business. Beneath the column of smoke that rose over the city following the explosion, tens of thousands were already dead or dying.

Even before the fires began to race out of control, the physical destruction of buildings and other structures within 2 kilometers (1.2 miles) of the blast was virtually complete. The sheer force of the explosion had shifted the position of a large steel bridge close to ground zero, flattened all wooden buildings and steel frame structures, and collapsed the floors and roofs of reinforced concrete buildings designed to withstand earthquakes.

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EG:430-L2a-P2a
P40

Hiroshima, 9:15 a.m., August 6, 1945:

This photograph, taken one hour after the attack, shows a first-aid station established at the west end of the Miyuki Bridge, 2.3 kilometers (1.4 miles) from ground zero.

Photograph by Yoshito Matsyshige, Chugoku Shimbun

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EG:430-L2b-P2b
P42

Hiroshima, 2 p.m., August 6, 1945:

Policeman Tukujo Fujita (with head bandaged) of the Ujina Station, preparing casualty certificates at the Minami-machi Streetcar Stop No. 2.

Photograph by Yoshito Matsyshige, Chugoku Shimbun

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EG:430-L3

NAGASAKI: THE FIRST HALF HOUR

The pattern of destruction in Nagasaki was shaped by the city's geography. The bomb was dropped over the Urakami Valley, an industrial and residential area. The center of Nagasaki, the harbor, and the historic district were shielded from the blast by the hills flanking the Urakami River. But in the valley, about 12,000 buildings were destroyed by the blast or burned in the ensuing fires.

The more powerful bomb and the focusing effect of the surrounding hills resulted in even greater destruction in the Urakami Valley than in Hiroshima. Virtually nothing was left standing.

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EG:430-L3a-P3a
P43**Nagasaki, 8 a.m., August 10, 1945:**

Early aid parties entering the devastated portion of Nagasaki near the Urakami station.

Photograph by Yosuke Yamabata

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EG:431-L1

FIRESTORMS

In both cities, the atomic flash ignited fires near ground zero, which quickly spread out of control and merged into a general conflagration. There was little with which to fight it: fire stations and equipment had been destroyed, fire fighters killed or injured, water pipes broken.

In Hiroshima, the rising plume of hot gas from the conflagration generated strong winds blowing toward the center and feeding a firestorm. The winds reached 65 kilometers (40 miles) per hour two to three hours after the blast. In the center of the firestorm, temperatures reached 1,900°C (3,450°F). Wood and fabric burst into flame; the steel structures of bridges and buildings twisted out of shape; metal, glass, and stone were shattered, melted, and fused.

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Hiroshima: The extent of the destruction.

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Nagasaki: The Urakami Valley destroyed.

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EG:431-L1a-P1a
Color maps of destroyed
areas in H. and N.

EG:431-L1b-P1b

EG:431-L1c-P1c
P44

Hiroshima, 11:15 a.m., August 6, 1945:

Taken from the Kanda Bridge about three hours after the explosion, this photo shows the firestorm sweeping across the city.

Photograph by Mitsuo Matsushige

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EG:431-L1d,e-S1d,e

Coins and glass bottles fused by the intense heat of the Nagasaki fires.

Loaned by the International Culture Hall,
Nagasaki

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EG:431-L1f-S1f

Half-destroyed bronze image of the Buddha, Hiroshima.

Loaned by the Hiroshima Peace Memorial
Museum

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EG:431-L1g-S1g

The head of an angel, Urakami Cathedral, Nagasaki. Stone objects, such as the statuary at the cathedral, were the most likely to survive in a city built largely of wood and paper. This head also shows the shadows burned in by the intense heat of the bomb's initial flash.

Loaned by the International Culture Hall,
Nagasaki

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EG:432-L1

ALL THAT REMAINS...

Scattered here and there among the ashes, a handful of objects survived to remind families of members who had simply vanished.

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EG:432-L1a-S1a

A Traditional Hair Pin. This kanosashi, an ornamental hair pin worn with a traditional kimono, belonged to Mrs. (ck), one of eight family members who died in their home in the Takanakubo-machi district of Nagasaki.

Loaned by the International Culture Hall,
Nagasaki

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EG:432-L1b-P1b
P50

Photo of Mrs. (Ck) (to be obtained from Nagasaki)

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EG:432-L1c-S1c

Yoshiko Kitamura's Water Bottle. This water bottle belonged to Yoshiko Kitamura, who was conscripted to work in the Zakoba-cho neighborhood of Hiroshima at the time of the explosion. Her body was never found.

Loaned by the Hiroshima Peace Memorial
Museum

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EG:432-L1d-S1d

(Cloth Tag, label to come)

Loaned by the International Culture Hall,
Nagasaki

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EG:432-L1e-P1e
P51

(Photo to accompany cloth tag to be
obtained from Nagasaki)

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