

N-13910.2-B

N-13910.2-B

PHOTOGRAPHS

OF THE

ATOMIC BOMBINGS

OF

HIROSHIMA AND NAGASAKI

Instructor Reading this Document
Sign Below

Name

Date

The atomic bombings of Hiroshima and
Nagasaki. Manhattan Engineer District.
(1945)

This Document

IS A HOLDING OF THE

ARCHIVES SECTION

LIBRARY SERVICES

FORT LEAVENWORTH, KANSAS

DOCUMENT NO. N-13910.2-B COPY NO. 1

CGSC FORM 140
18 Mar 51

Army—CGSC—P1-1367—20 Mar 51—5M

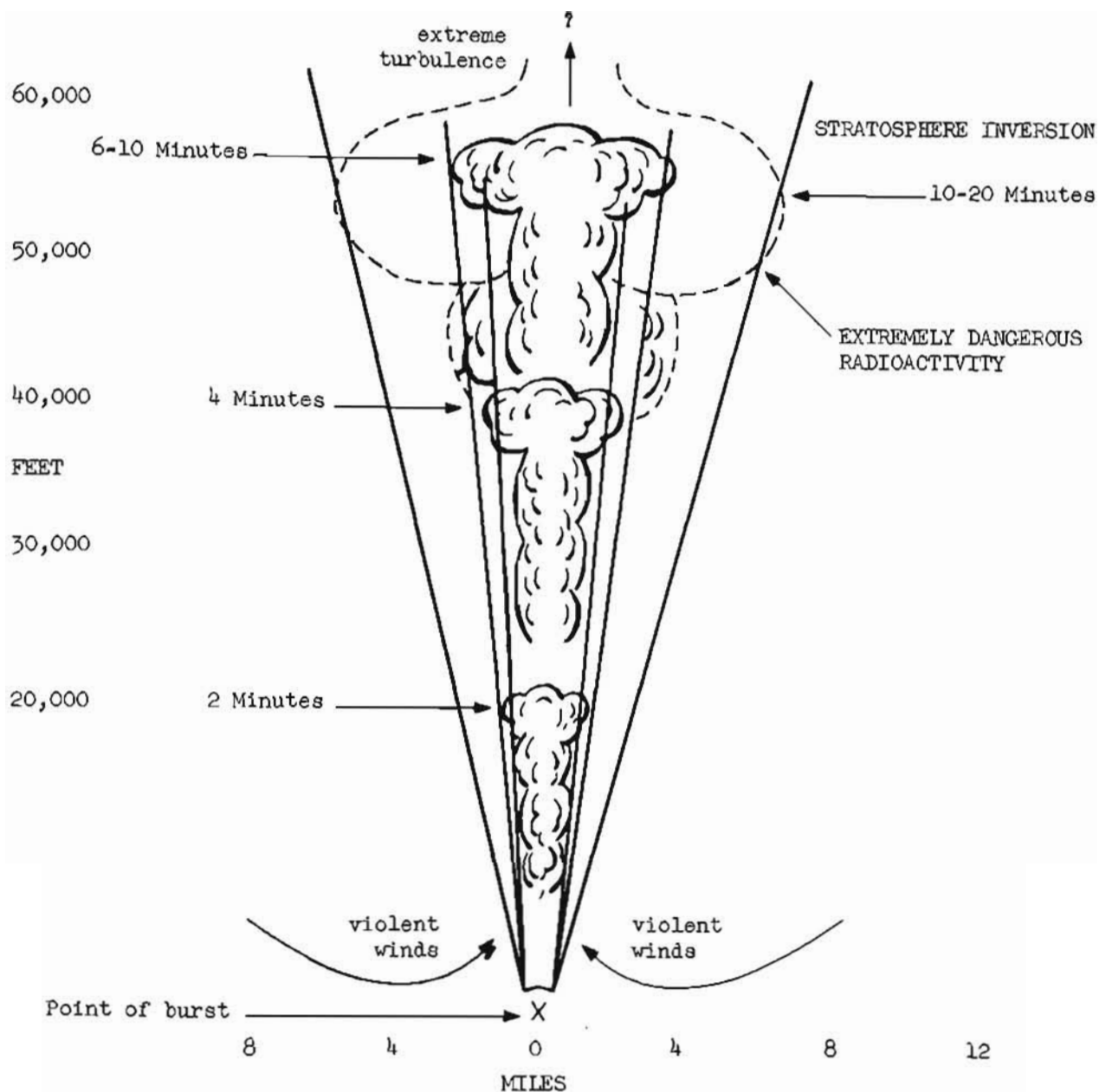
by

The Manhattan Engineer District

MAR 29 1951

SWCN 1531-57

No Po Po



PROBABLE POSITION OF RISING CLOUD
AT INTERVALS AFTER EXPLOSION

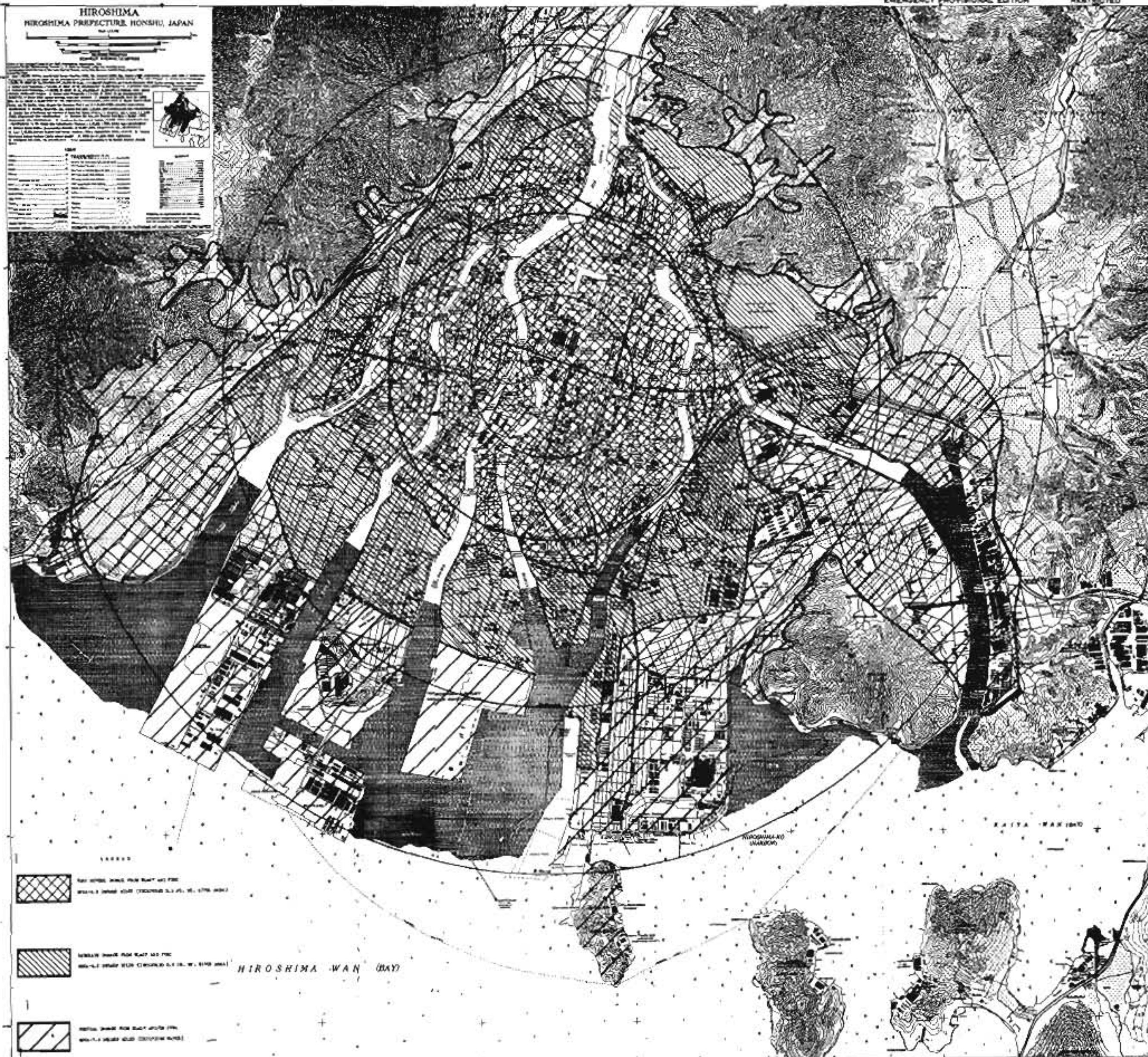
Figure 1

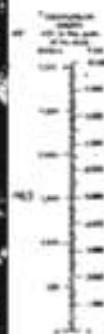
Probable position of rising cloud
at intervals after explosion

HIROSHIMA

MIYOSHIMA PREFECTURE, HONSHU, JAPAN

0000-0000-0000-0000







3.3 Miles

2.6 Miles

Figure 4

Pre-strike aerial view of Hiroshima showing the high density of the built-up area. Fire lanes cleared by the Japanese are plainly visible.

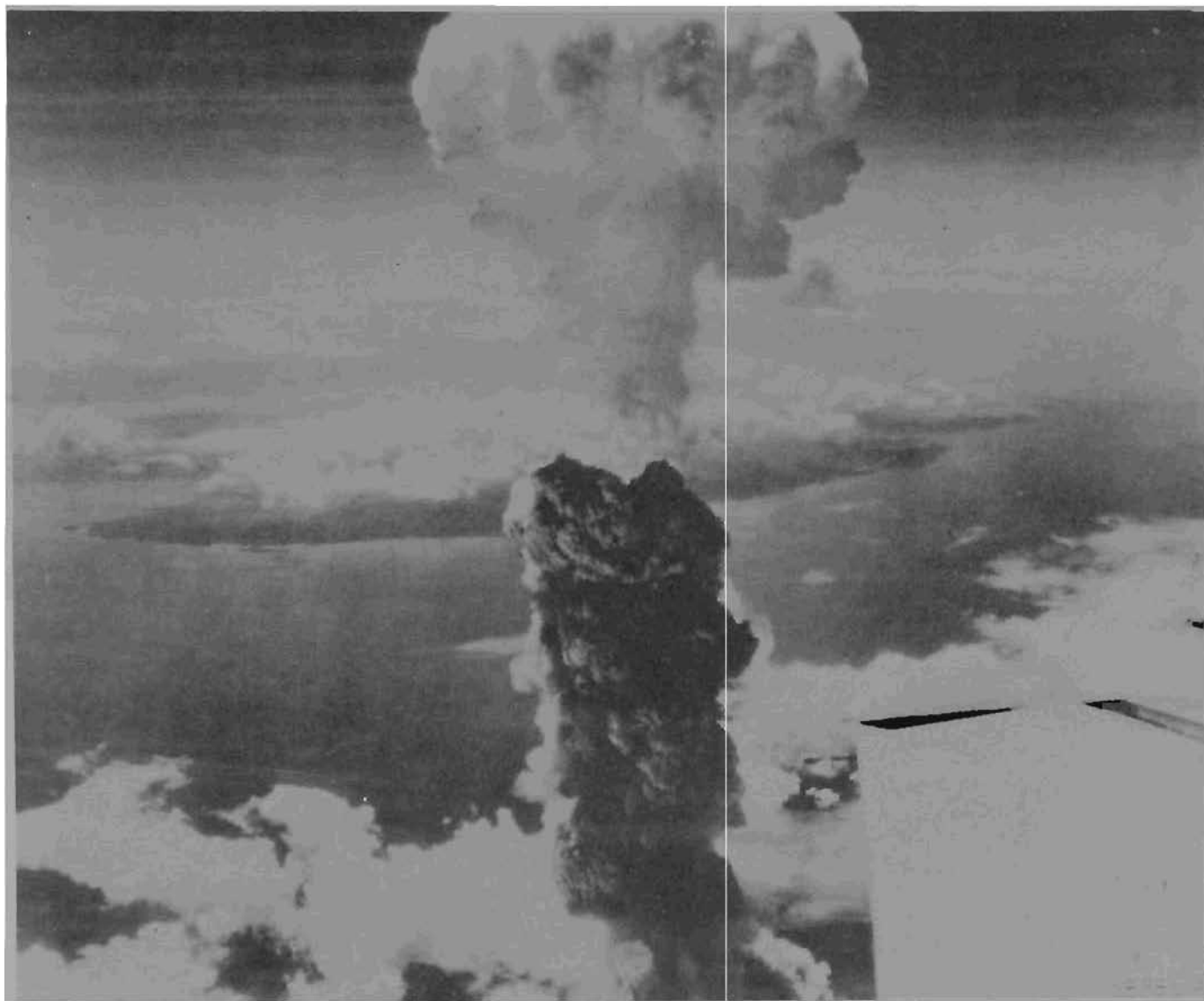


Figure 5

The atomic bomb explosion over Nagasaki, taken from about 8 miles distance. The height of the top of the cloud is about 40,000 feet.



Figure 6

The Atomic Bomb Explosion over Hiroshima.



Figure 7

Panoremic view of Hiroshima after the bomb



Figure 8

Aerial View of Hiroshima after the Bomb.



Figure 9

Panoramic view of Nagasaki after the bomb. Taken from North of X, looking south. The V-shaped foundations in the foreground are the remains of the prison. All of this area was thickly covered with factories and dwellings.

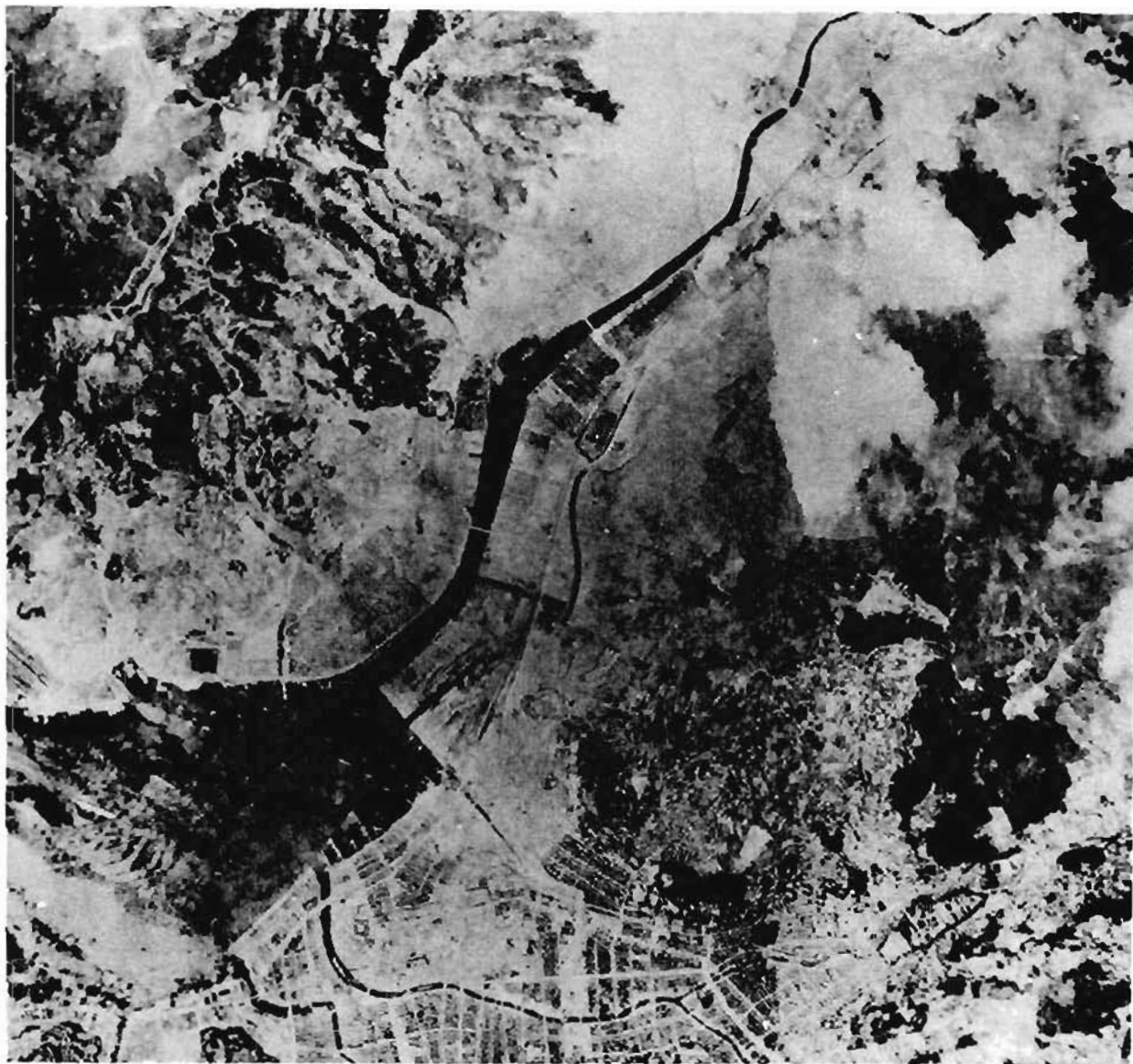


Figure 10

Aerial View of Nagasaki after the Bomb.

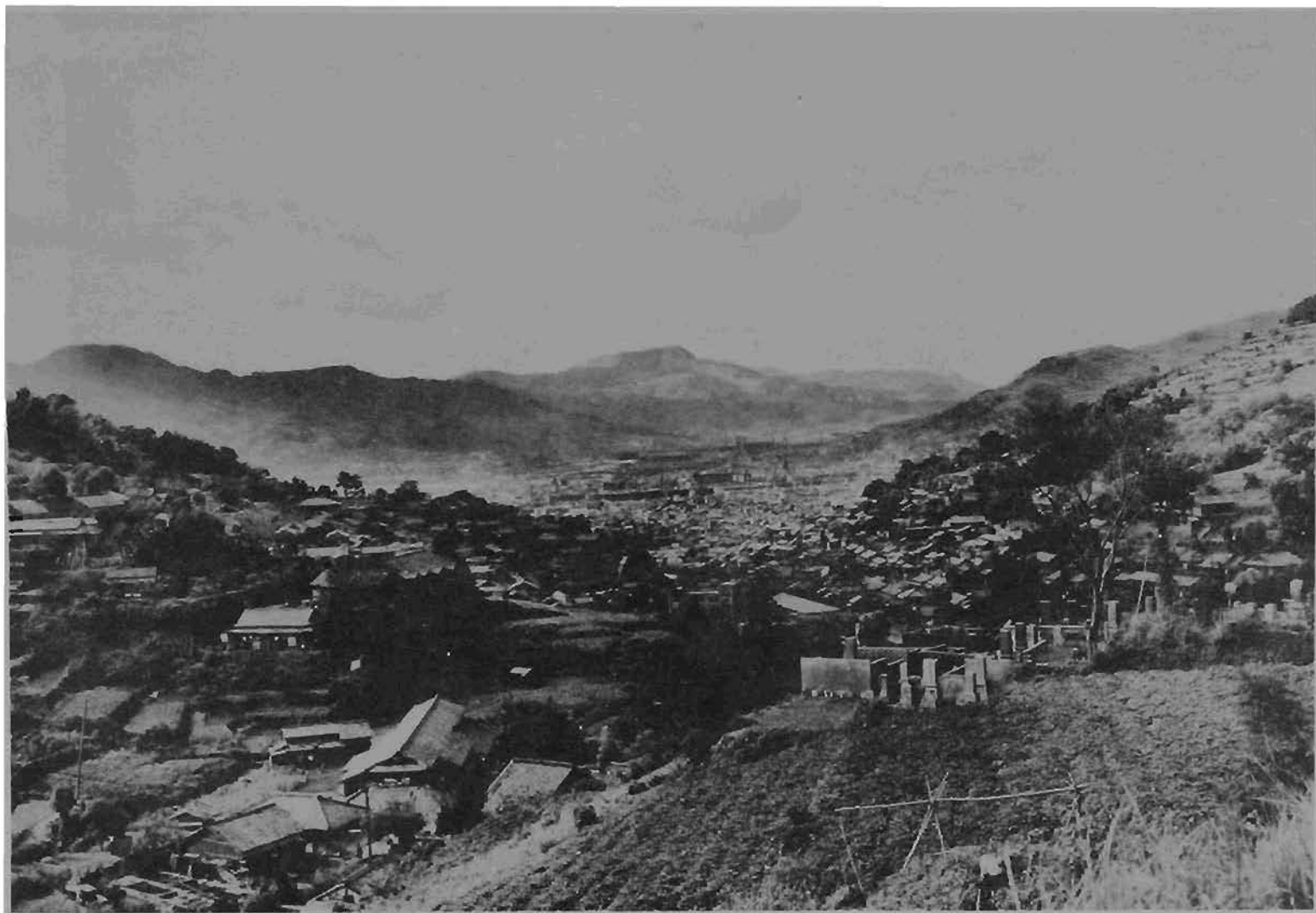


Figure 11

General view of Nagasaki taken from about four miles southeast of X. The chimneys in the background are located at the Mitsubishi Steel and Arms Works. The hills in the right foreground shielded a large part of the business and residential section from the full effects of the bomb blast. This view shows typical Japanese residential construction, consisting of light frame houses with tile roofs, and shows how the hillsides are cultivated and inhabited almost to the tops.



Figure 12

Typical Japanese dwellings with flimsy wooden frames and tile roofs.



Figure 13

Another view of typical Japanese dwellings.

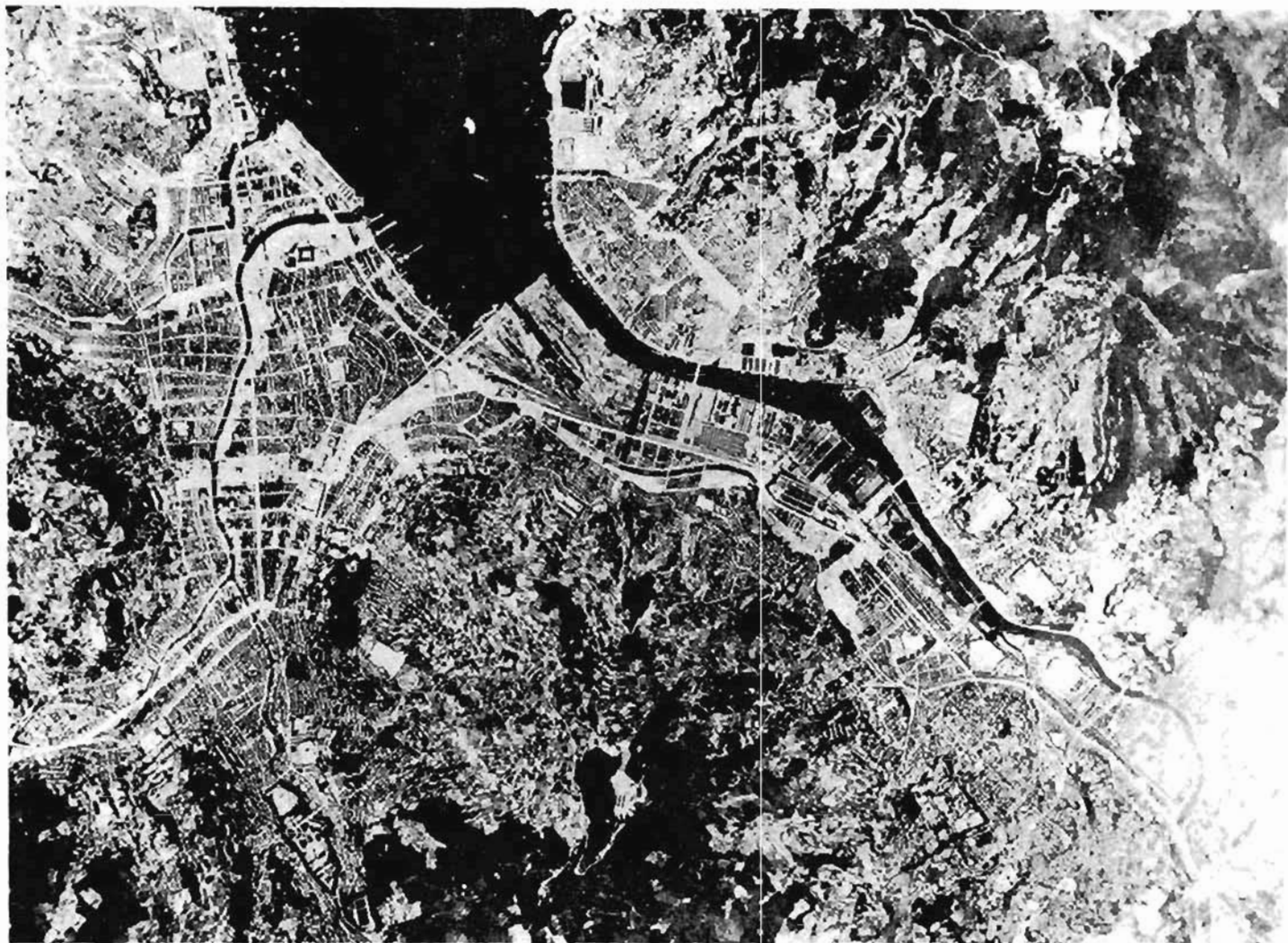


Figure 14

Pre-strike aerial view of Nagasaki. X is just northeast of the stadium which is visible in the upper right portion of the photograph. The main targets were the Mitsubishi-Urakami Ordnance Works (Torpedo Works) in the upper righthand corner of the picture, and the Mitsubishi Steel and Arms Works, which is spread out along the east bank of the Urakami River, in the central part of the picture. Note how the industrial valley is inclosed by steep hills which tended to shield the main business and residential portion of the city (righthand portion of the picture) from the full effects of the blast. Fire lanes effected by the Japanese are also visible.



Figure 15

General panoramic view of Hiroshima after the bomb. This picture shows the devastation from X to a point about 0.4 miles south of X.



Figure 16

General panoramic view taken from the Nagasaki Medical School and Hospital, looking southeast. In the foreground, at the foot of the hill on which the Medical School is located, the double-track street railway loop to the hospital buildings will be noticed. There was practically no damage to the tracks themselves, but the trolley wires were knocked down and the tracks covered with debris. The whole area shown in this picture was covered with industrial buildings and small residences almost as close together as it was possible to build them. In the background, the skeleton remains of the Mitsubishi Steel and Arms Works can be seen. Note that the reinforced concrete office buildings still stand amid the wreckage of steel frame buildings. In the reinforced concrete school buildings at the foot of the hills in the background, the doors, windows, ceiling, and building contents were damaged by the blast.



Figure 17

View of the Military Area in Hiroshima. This view shows the almost complete destruction of ordnance, storage, and administrative buildings located in the northeast section of the military area.



Figure 18

Post-strike aerial view of Hiroshima after the Bomb.



Figure 19

Aerial view looking directly down on X in Hiroshima, showing the target area completely leveled except for reinforced concrete building frames. Roofs and intermediate floors collapsed on five of these buildings leaving the exterior walls partially standing. The dark spots on the roofs of other buildings are depressions formed by the downward distortion of the roof structure.



Figure 20

Aerial view of Hiroshima, looking down on X which is in the center of the picture.

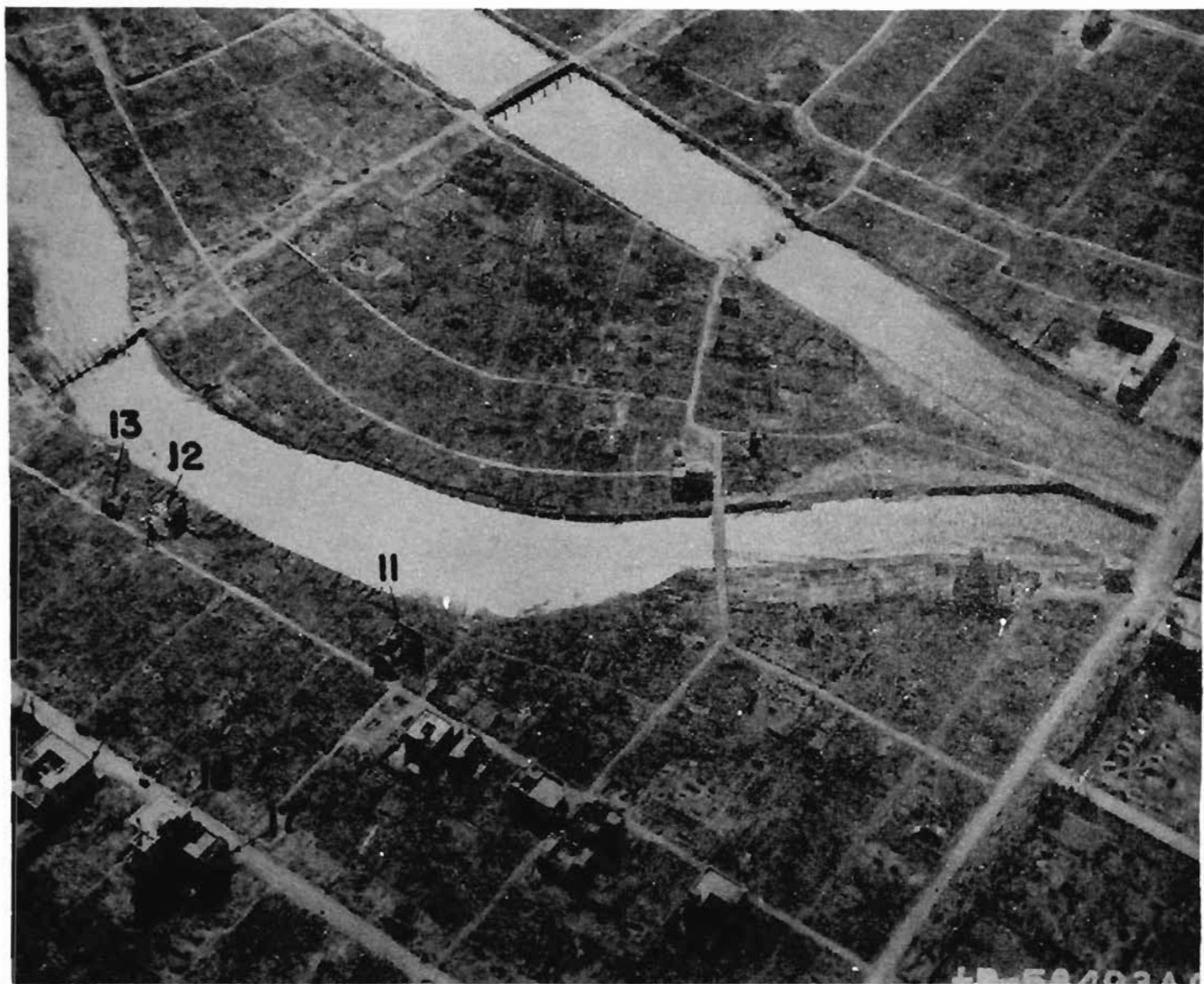


Figure 21

Another serial view of Hiroshima showing the area immediately surrounding the center of damage.



Figure 22

Looking east from X. The trunk of a small tree standing in the foreground indicates that the force of the blast was directly downward in this area.

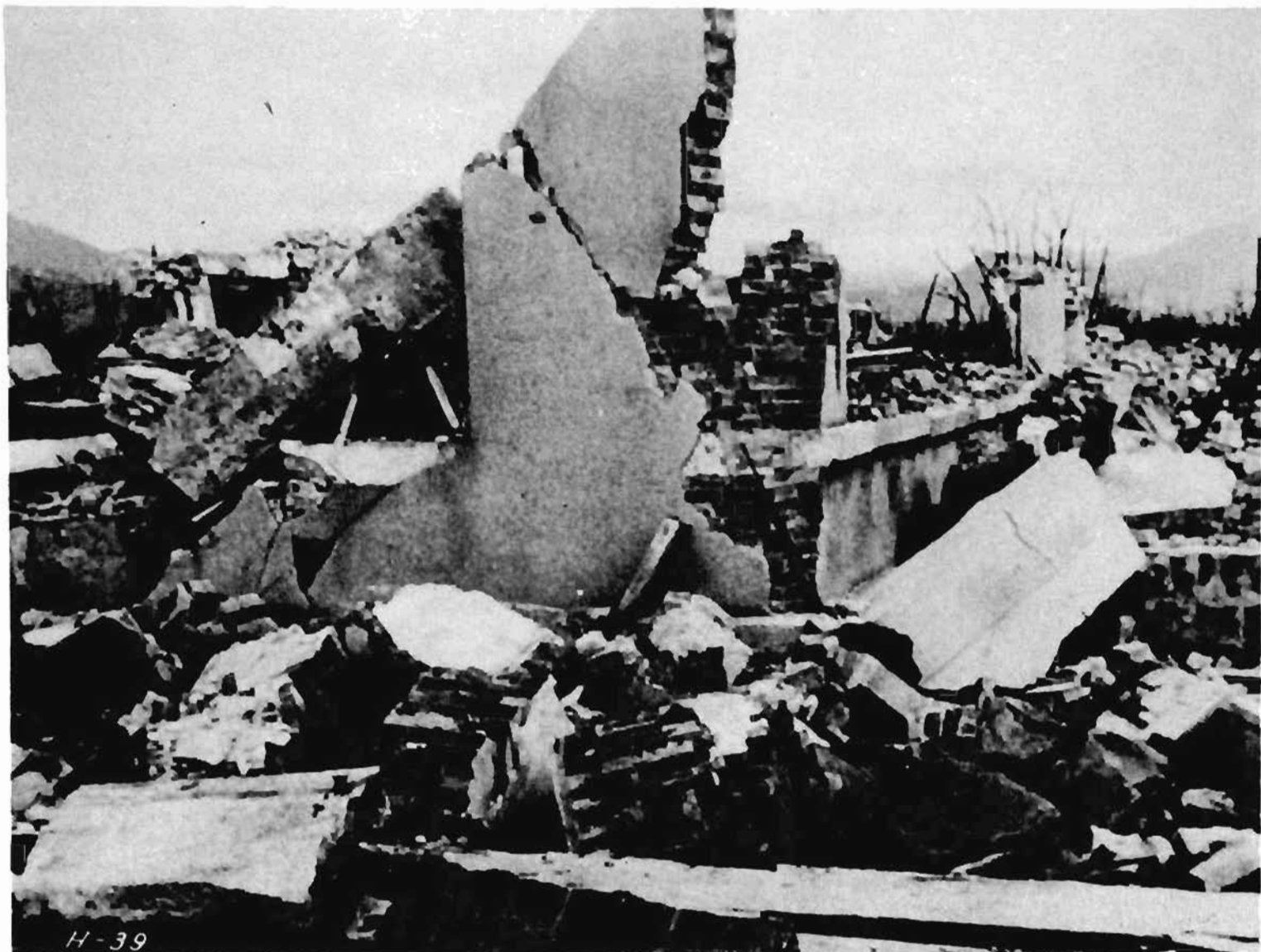


Figure 23

The shattered walls of a brick building near X in Hiroshima.



Figure 24

A concrete vault 200 feet north of X in Hiroshima.



Figure 25

The devastated area south of X in Hiroshima. The collapsed Hiroshima Gas Company buildings may be seen at the left of the picture. The Electric Company building, 0.4 miles from X, may be seen in the background.

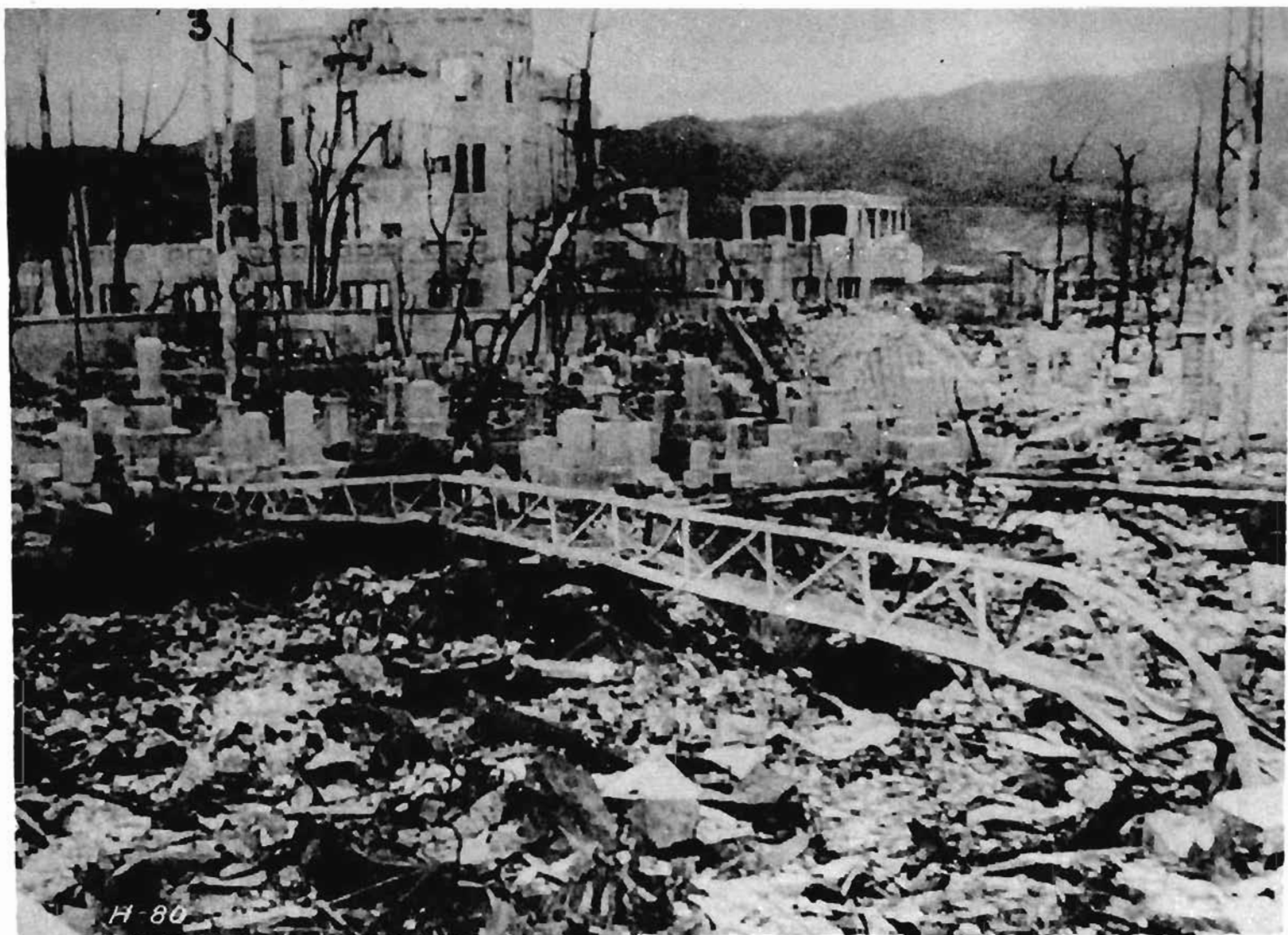


Figure 26

Commercial Museum 700 feet west of X in Hiroshima. The steel tower in the foreground collapsed in the direction of the blast. The monuments in the cemetery were not overturned because the blast pressure was largely downward in this area.

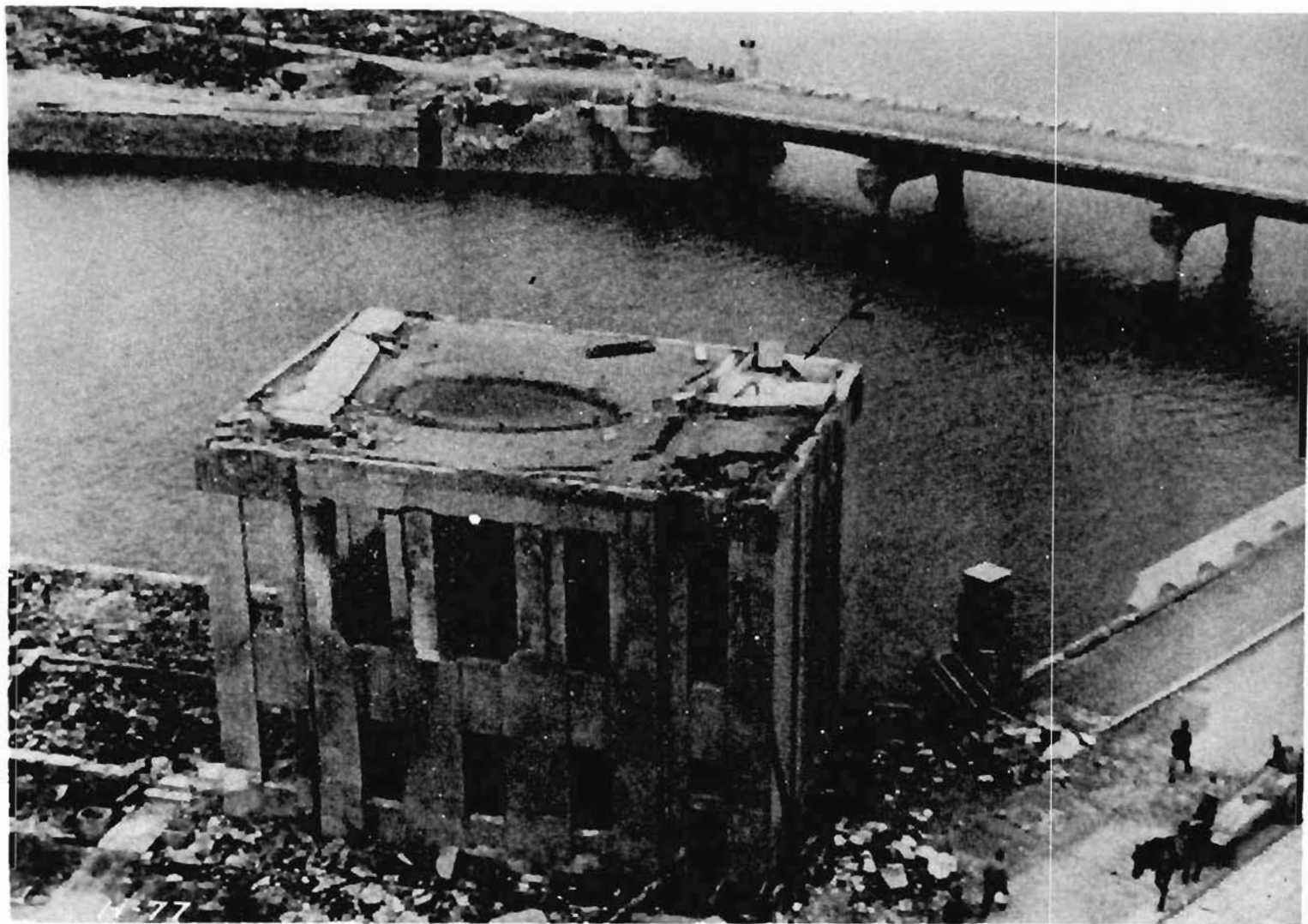


Figure 27

Typical reinforced concrete building 1000 feet northwest of X. The concrete roof slab was supported by concrete beams with no interior columns. The interior beams failed, causing the roof slab to settle as shown. The entire parapet wall was demolished, one section resting on the road, having blown in the direction of the blast.

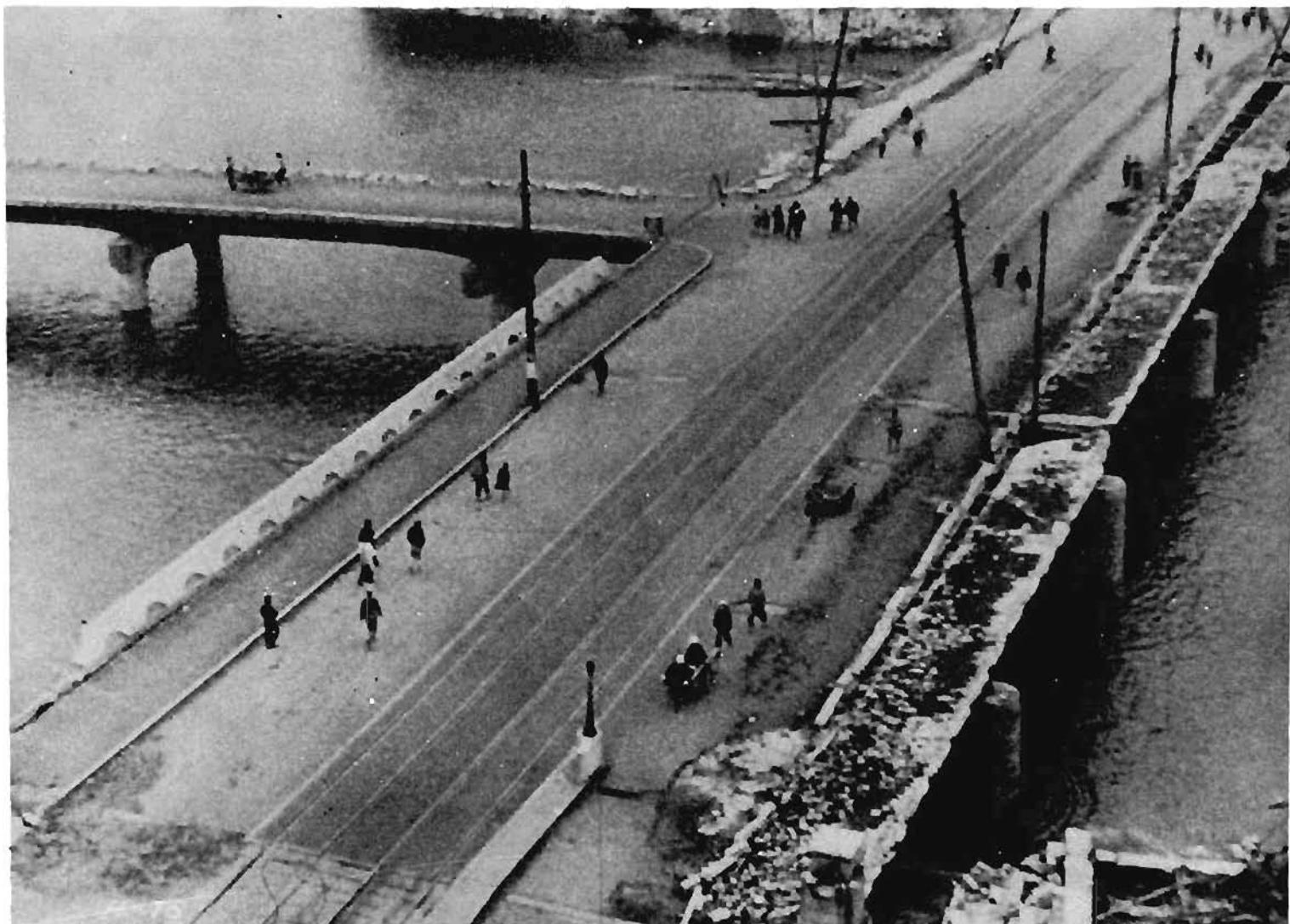


Figure 28

Bridge, 1000 feet northwest of X in Hiroshima. The blast pressure at this point had a considerable vertical component. Along the center and left side of the bridge, the concrete girders supporting the floor slab did not fall; however, to the right of the center, girders under several spans failed, causing considerable settlement in the floor slab. One depression can be seen in the right foreground of this picture.



Figure 29

Steel post 1000 feet northwest of X in Hiroshima, showing flash burns on the side facing the blast. The two small buildings in the background were built after the explosion.

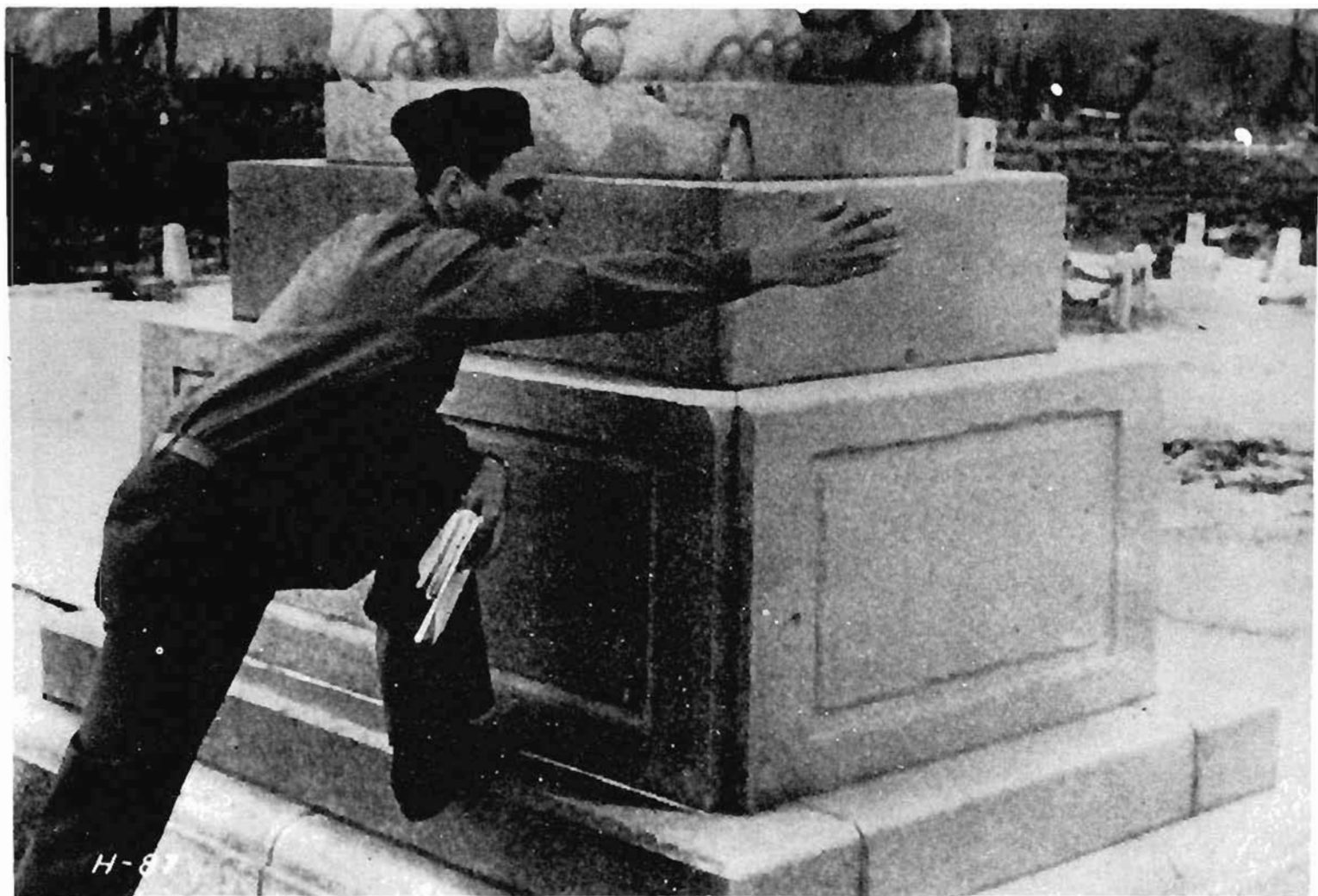


Figure 30

Shinto Shrine $\frac{1}{4}$ mile north northwest of X in Hiroshima. The soldier is pointing toward X. The stone surfaces on the right were roughened by the blast while the darker surfaces on the left retained a polished surface.

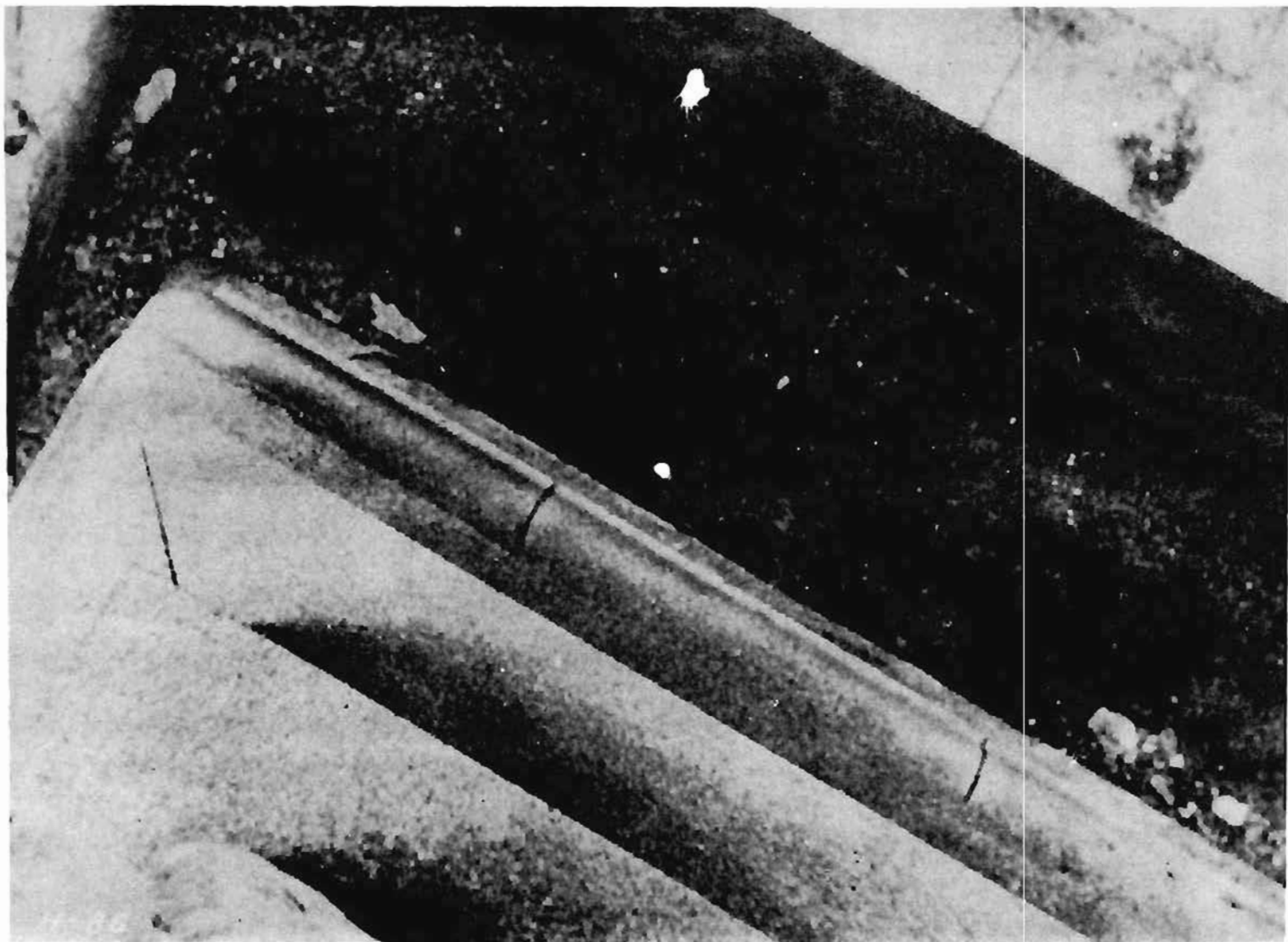


Figure 31

Shinto Shrine $\frac{1}{4}$ mile north northwest of X. This close-up of the base of the monument shown in the preceding Figure shows the roughened surface of the stone at a corner exposed to the blast.

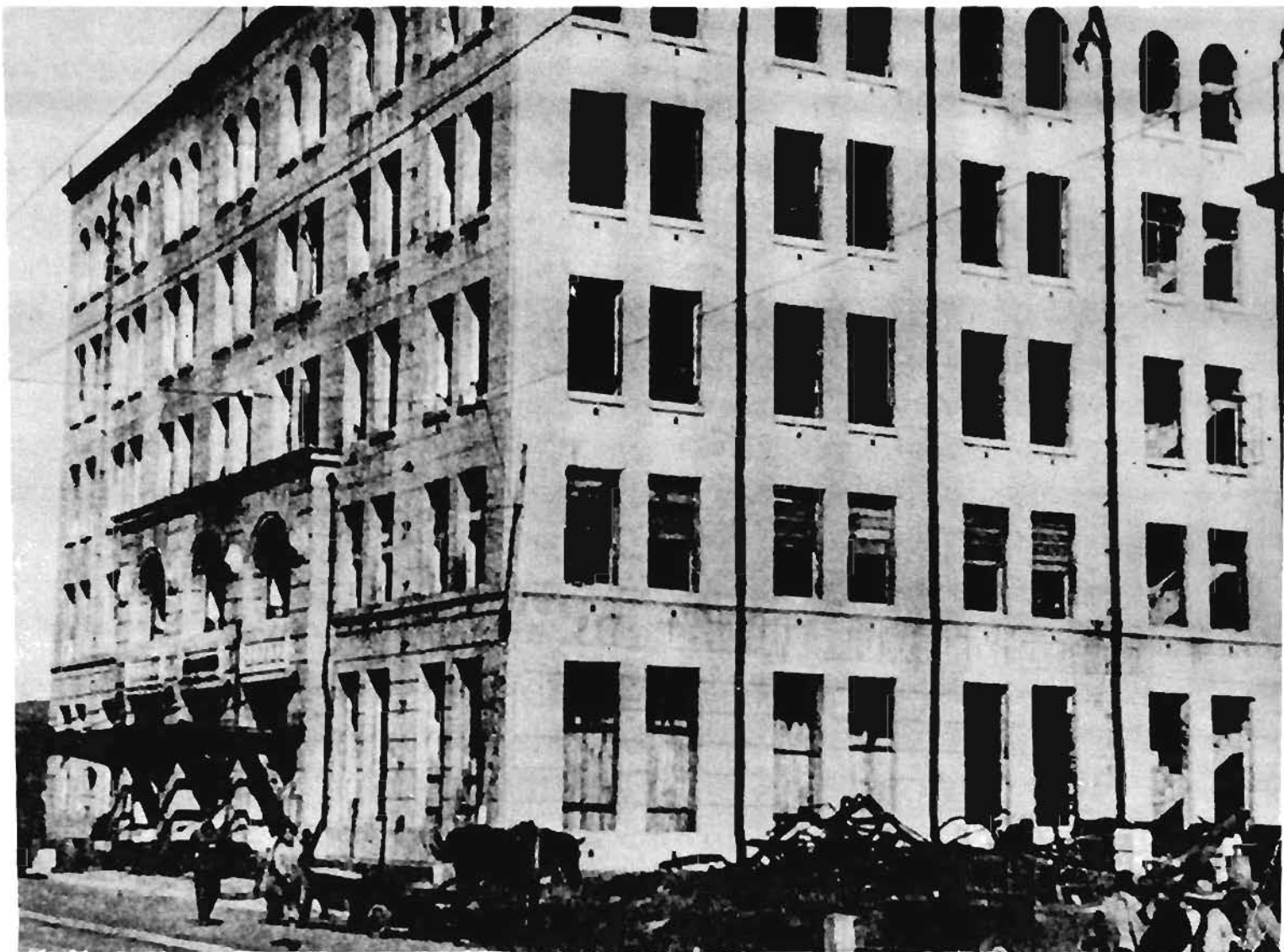


Figure 32

The Electric Company building 0.4 miles south of X in Hiroshima. This five-story reinforced concrete building was not severely damaged by the blast; however, fires of secondary origin gutted the building. At the time this picture was taken, the building had partially been reoccupied.

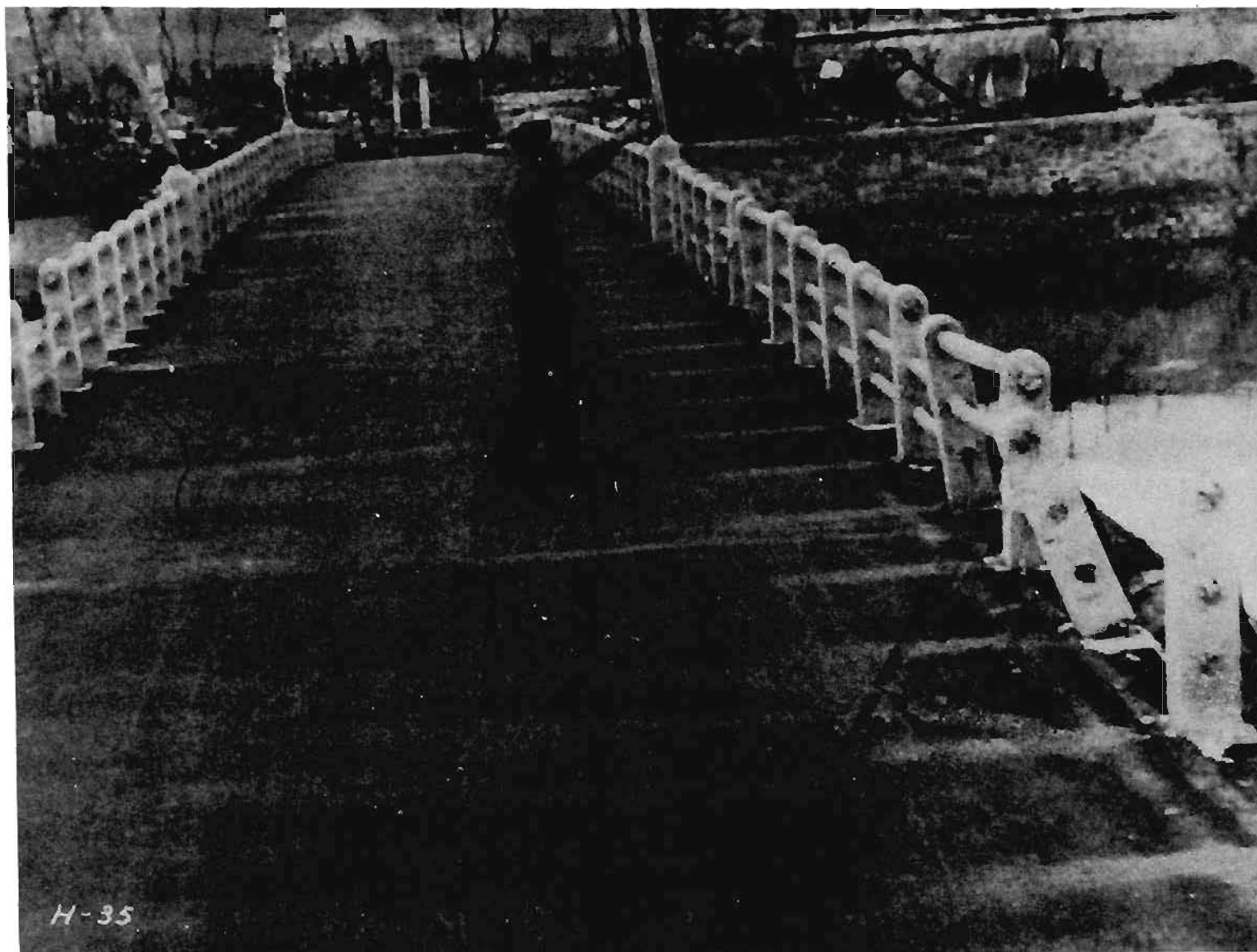


Figure 33

Bridge 0.6 mile southwest of X in Hiroshima. This view shows asphalt pavement darkened by flash burns, except where shielded by bridge posts or railing. The soldier is pointing toward X.



Figure 34

Panorama of Hiroshima looking northwest from the Red Cross Hospital 0.9 mile south of X. This view shows the burned-out area extending to the hills along the west side of the valley.



Figure 35

Looking east from the Red Cross Hospital, 0.9 mile south of X. The reinforced concrete Communications Bureau building in the right foreground is one mile from X. Damages to the building were not extensive and were similar to those at the Red Cross Hospital. The two standing walls in the center background are parallel to the direction of the blast. The framework of two gas-holders may be seen in the center background 1.2 miles from X. The crowns of the holders were disbed down and torn open. The buildings of the Commercial Gas-works were seriously damaged. Large building seen on the right of the gas-works and farther back are part of the Army Clothing Depot. The burned out area extends to the river in the background.

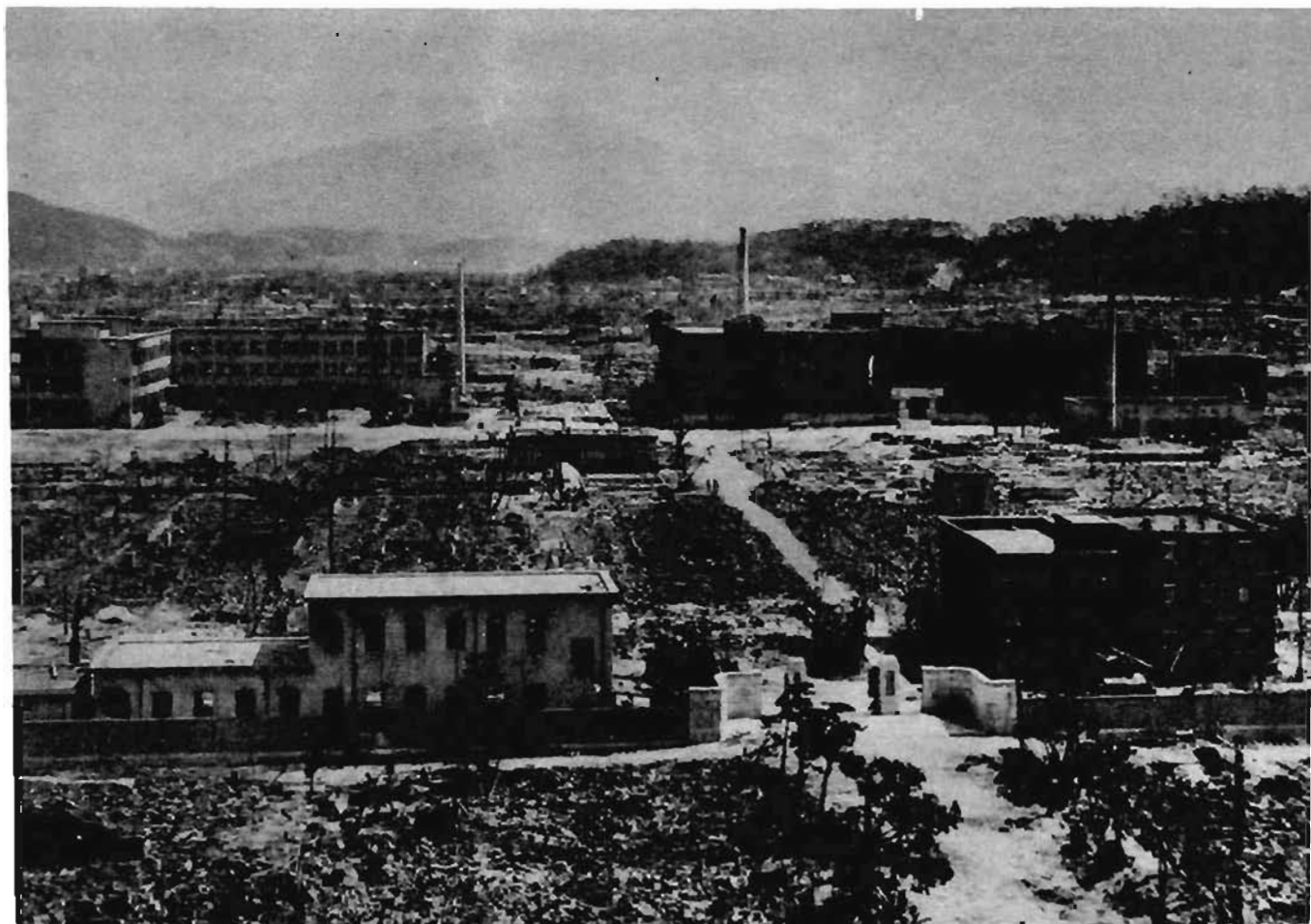


Figure 36

University of Hiroshima, 0.8 to 0.9 mile south of X, looking northeast from the Red Cross Hospital. The buildings shown were of reinforced concrete construction and were not severely damaged structurally. Other buildings in this group were of wooden construction and were destroyed by blast and fire. The buildings still standing were gutted by fires of secondary origin. The end walls of two otherwise demolished buildings may be seen in the center background; these walls are parallel with the direction of the blast which was from left to right.



Figure 37

The East Hiroshima Railroad Station, 1.1 miles east of Y. This view shows discharged Japanese soldiers waiting in the damaged station.



Figure 38

This view shows damaged buildings which are generally classified as "moderate blast damage to frame buildings", and is typical of damage to frame buildings 1.25 to 1.50 miles from X in Hiroshima.



Figure 39

Part of Hiroshima College 1.6 miles southeast of X. The frame work of the upper story has been shoved in the direction of the blast.

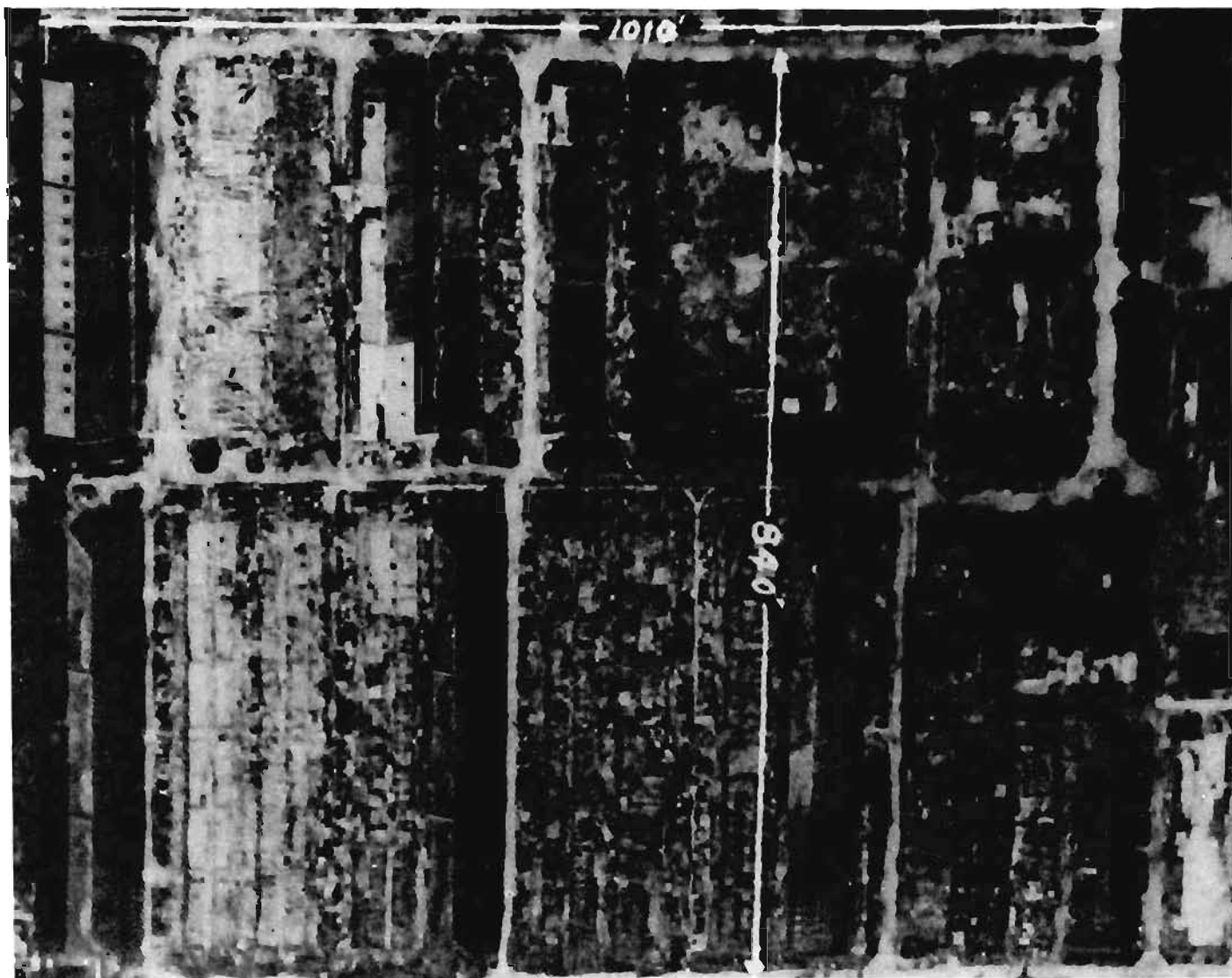


Figure 40

Aerial view of the demolished Army Clothing Depot, 1.7 miles southeast of X in Hiroshima. Ten large warehouses were demolished in this area. Of the eight warehouses remaining, two show extensive roof damage.



Figure 41

Typical residence damage four miles from X. Windows were shattered and one section of the window framing broken.

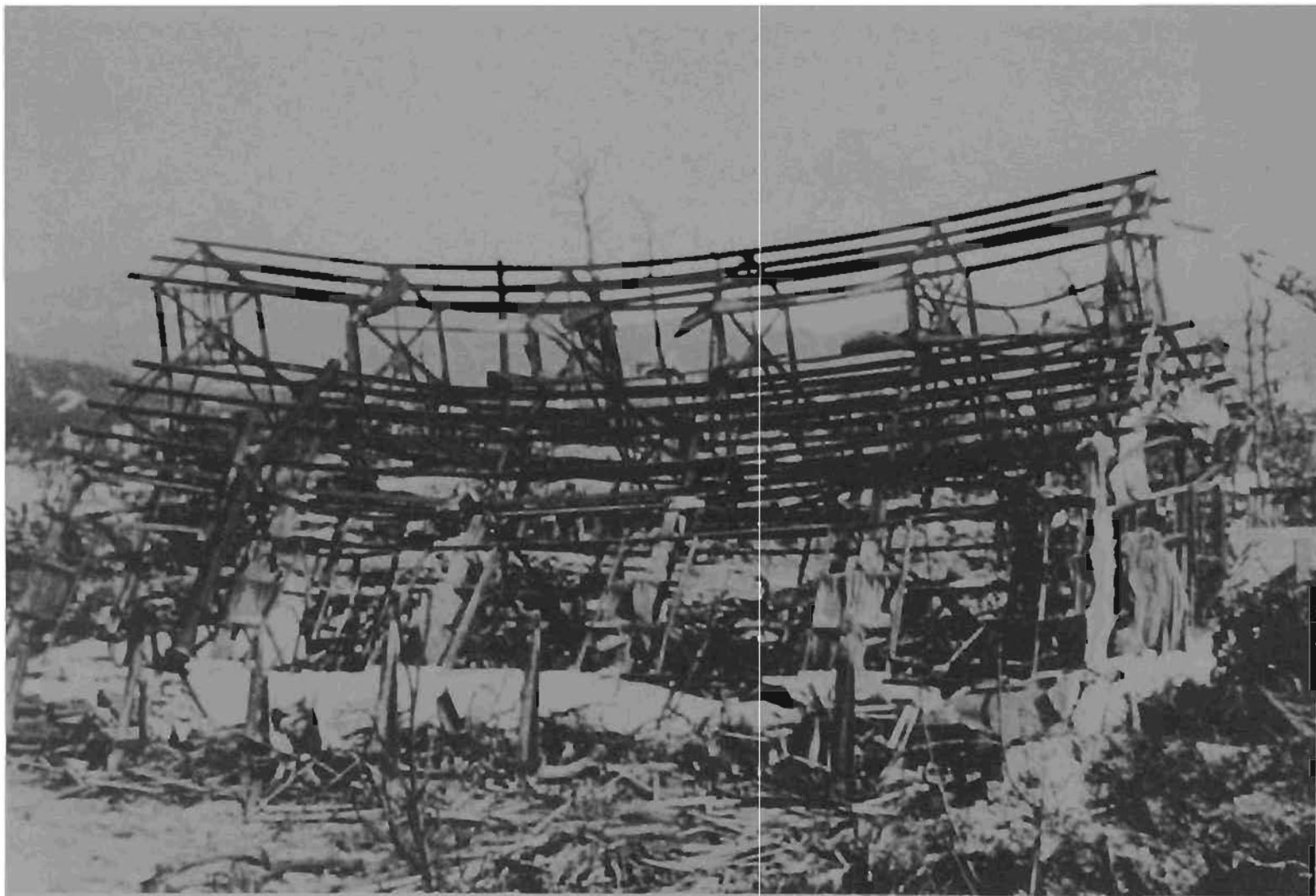


Figure 42

Steel-Framed building, 0.3 mile east of X in Hiroshima. The entire framework of this building was distorted downward in the direction of the blast.

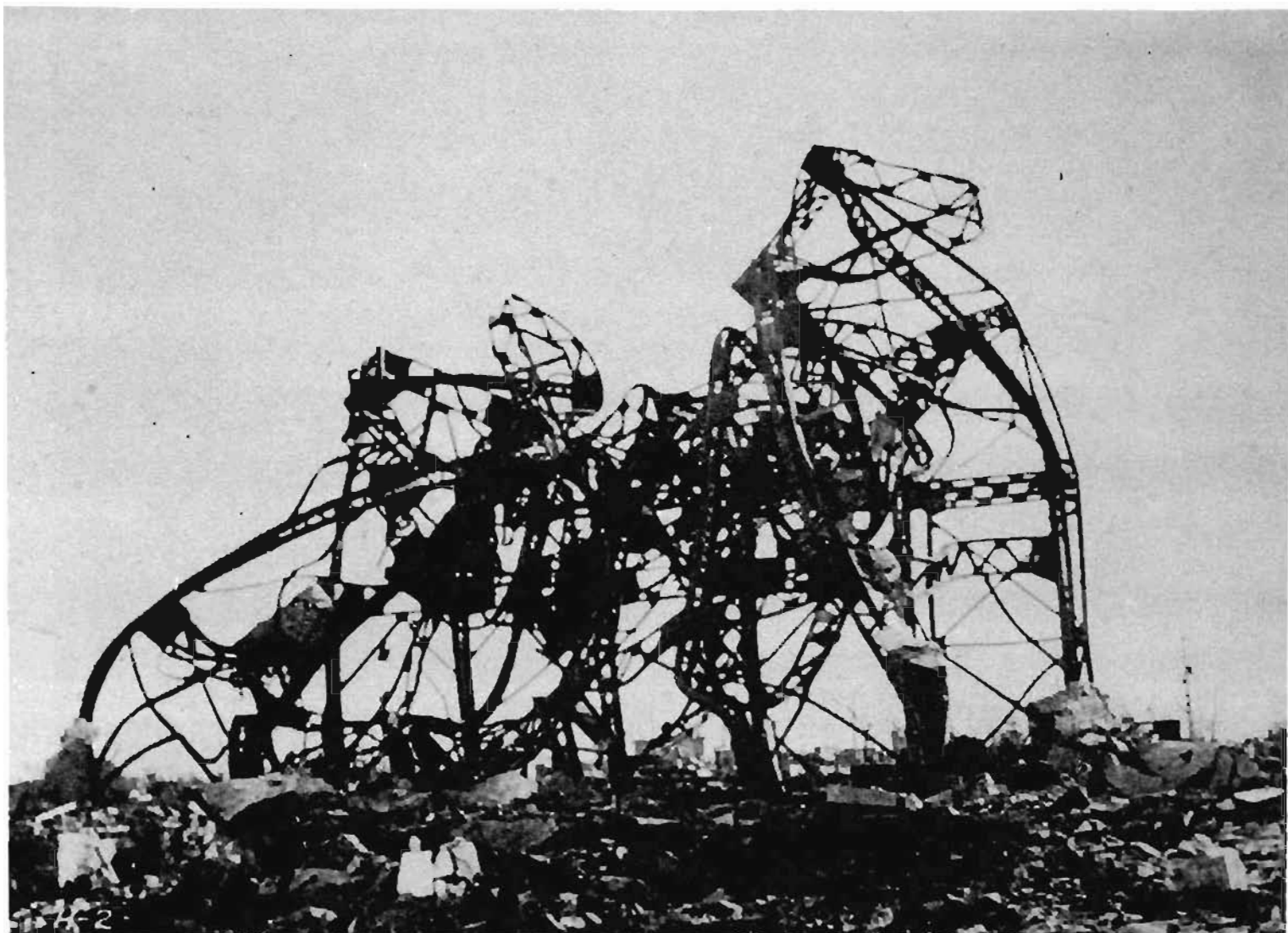


Figure 43

Steel structure, 0.5 mile east of X. This distorted structure shows that the blast force acted almost vertically down in this area. Concrete rubble may be seen on the ground and fragments are still attached to the structure.



Figure 44

Aerial view of Nagasaki, after the bombing, showing the two principal targets.

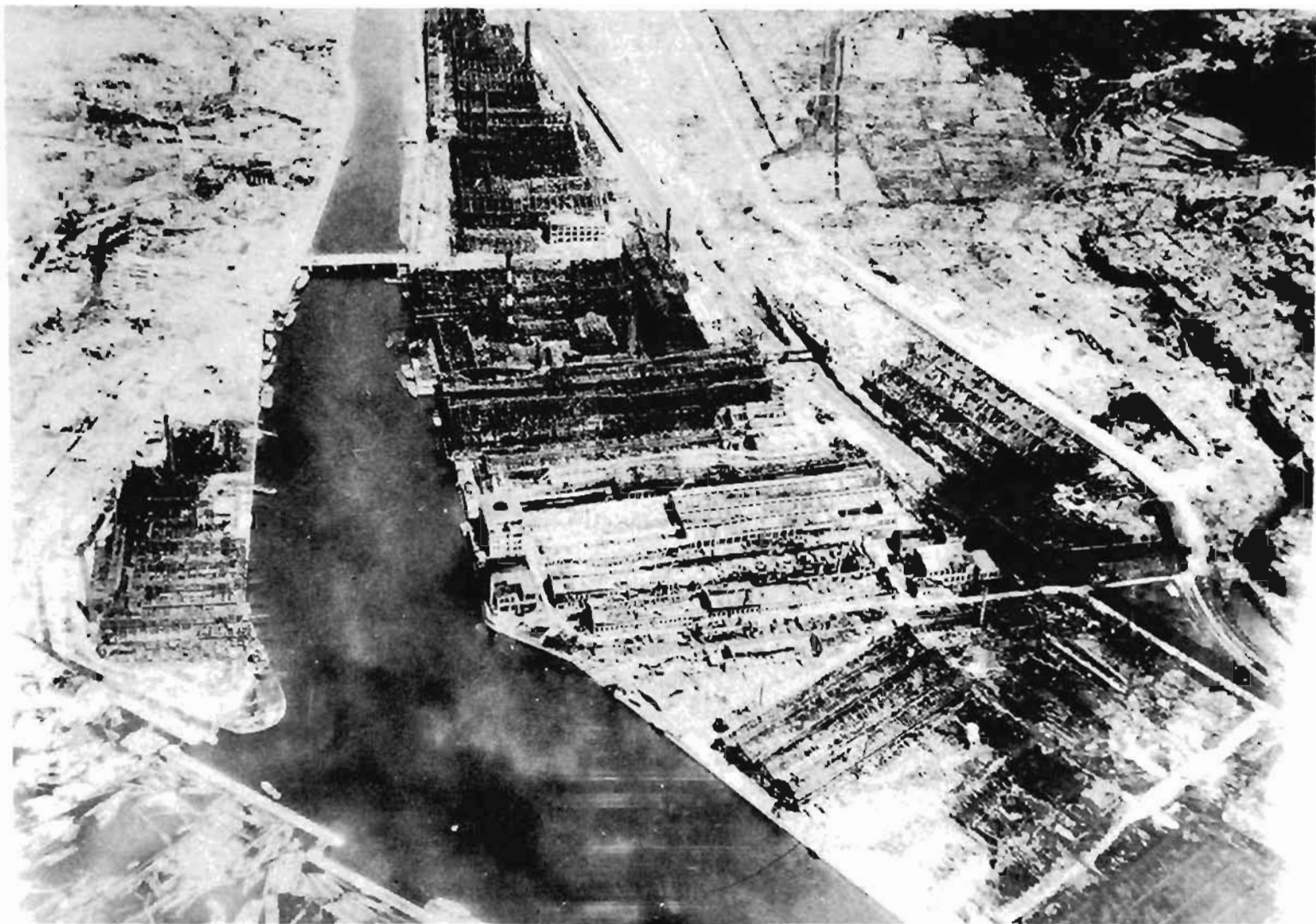


Figure 45

Aerial view of the Mitsubishi Steel and Arms Works in Nagasaki, from 0.3 to 1.2 miles south of X. This view looking north toward X shows that the middle three-fourths of the above plant with the damage caused by the atomic bomb. The long buildings in the south (between reinforced concrete offices) are concrete arch-roof structures that collapsed. The buildings on the west bank of the river are the remains of the Mitsubishi Steel Casting Plant.



Figure 46

Panorama of Nagasaki. This aerial view shows the devastation north of X and west of the Urakami River. All of the heavily built-up areas were completely destroyed, and dwellings were seriously damaged almost to the tops of the hills. The large reinforced concrete building remaining in the left center of the picture is the Shiroyama School. The south wing facing X was badly wrecked.



Figure 47

Nagasaki Panorama, taken from a point west of the Urakami River, looking east toward X, about 0.25 mile away. All of this area was thickly covered with small factory buildings and dwellings.

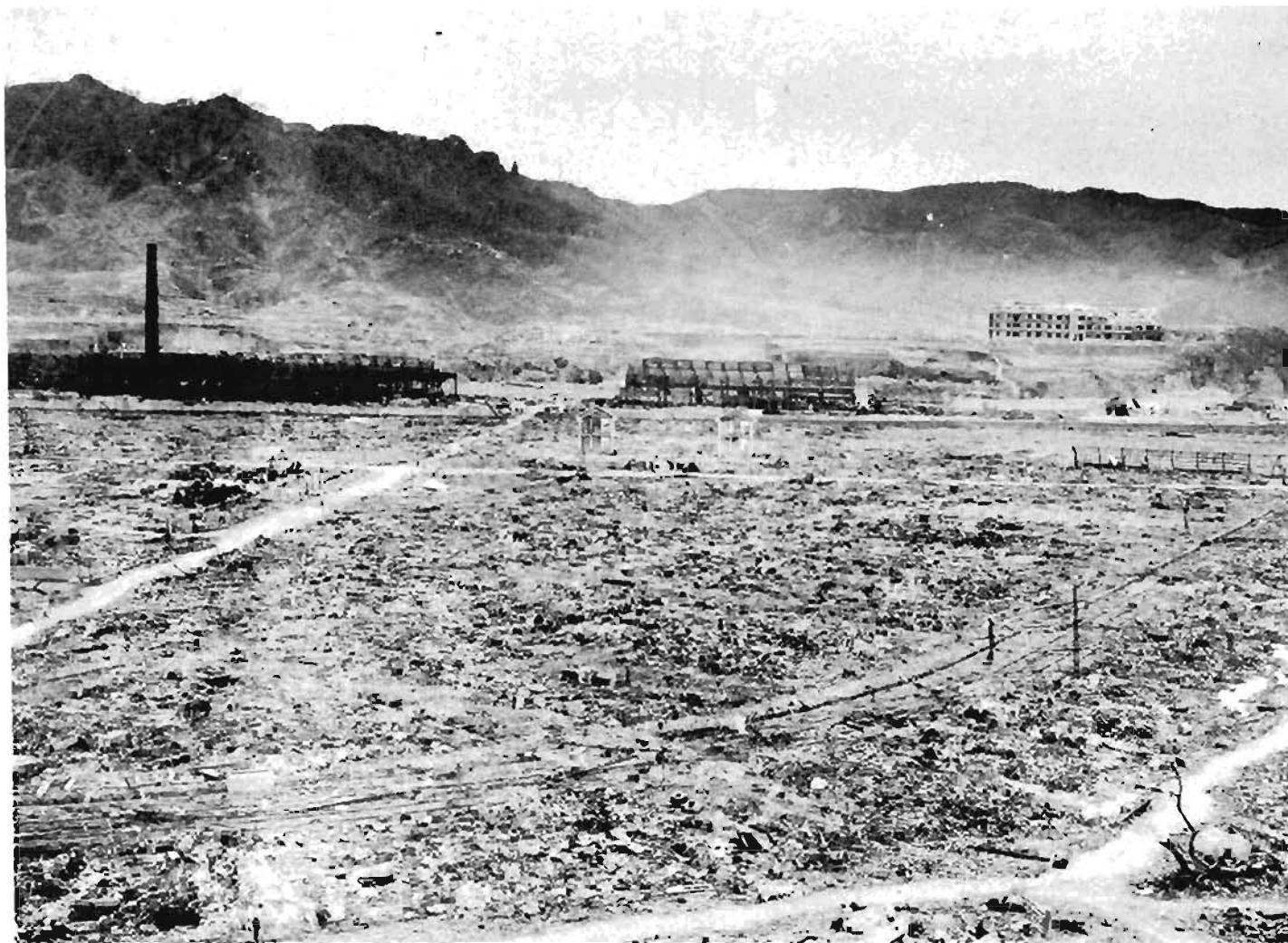


Figure 48

Panorama showing the general destruction in the industrial valley of Nagasaki, looking west from the Medical School and Hospital toward the reinforced concrete factory training school at the foot of the hills in the background. The north end of the Mitsubishi Steel and Arms Works can be seen in the middle portion of the picture. The reinforced concrete chimney, though still vertical, was cracked by the blast. This area was covered with factories and homes. The tracks of the street railway trolley were covered with debris, but were not otherwise much damaged.

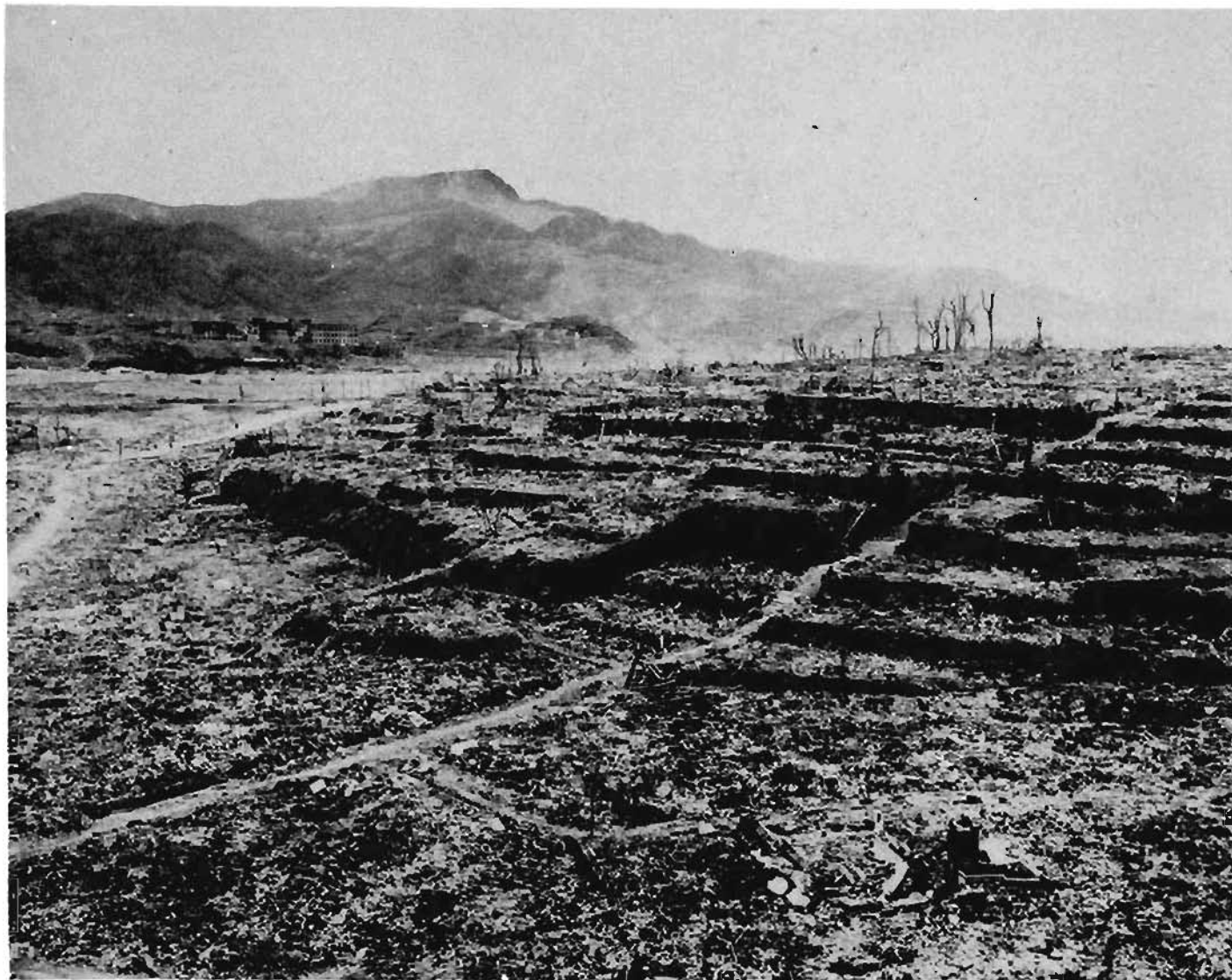


Figure 49

Panorama looking northeast from the Nagasaki Medical School and Hospital toward X. This area was covered with small factories and homes.



Figure 50

Panorama of Nagasaki, looking east toward the ruins of a large church. The small dwellings in the center of the picture were erected after the blast.



Figure 51

The Nagasaki Medical School and Hospital, from 0.4 to 0.55 mile southeast of X. This view shows one of the court yards, and several of the buildings of modern construction. The first building on the left (far end - second story) was hit by a bomb eight days before the atomic bomb hit Nagasaki.



Figure 52

Nagasaki Medical School and Hospital, showing a room in the hospital building on the south-east corner on the second floor, facing away from X. The damage shown is the result of an internal explosion caused by a bomb dropped on 1 August 1945, eight days before the atomic bombing. This picture illustrates the modern reinforced concrete frame used in 22 of the buildings of the Nagasaki Medical School and Hospital.



Figure 53

A granite monument, 0.4 mile from X, at the Medical School in Nagasaki, which was toppled and moved by the force of the blast.



Figure 5b

The roof of a reinforced concrete school building, 0.25 mile west of X. This view shows the damage to the reinforced concrete and tile roof resulting from the blast wave.

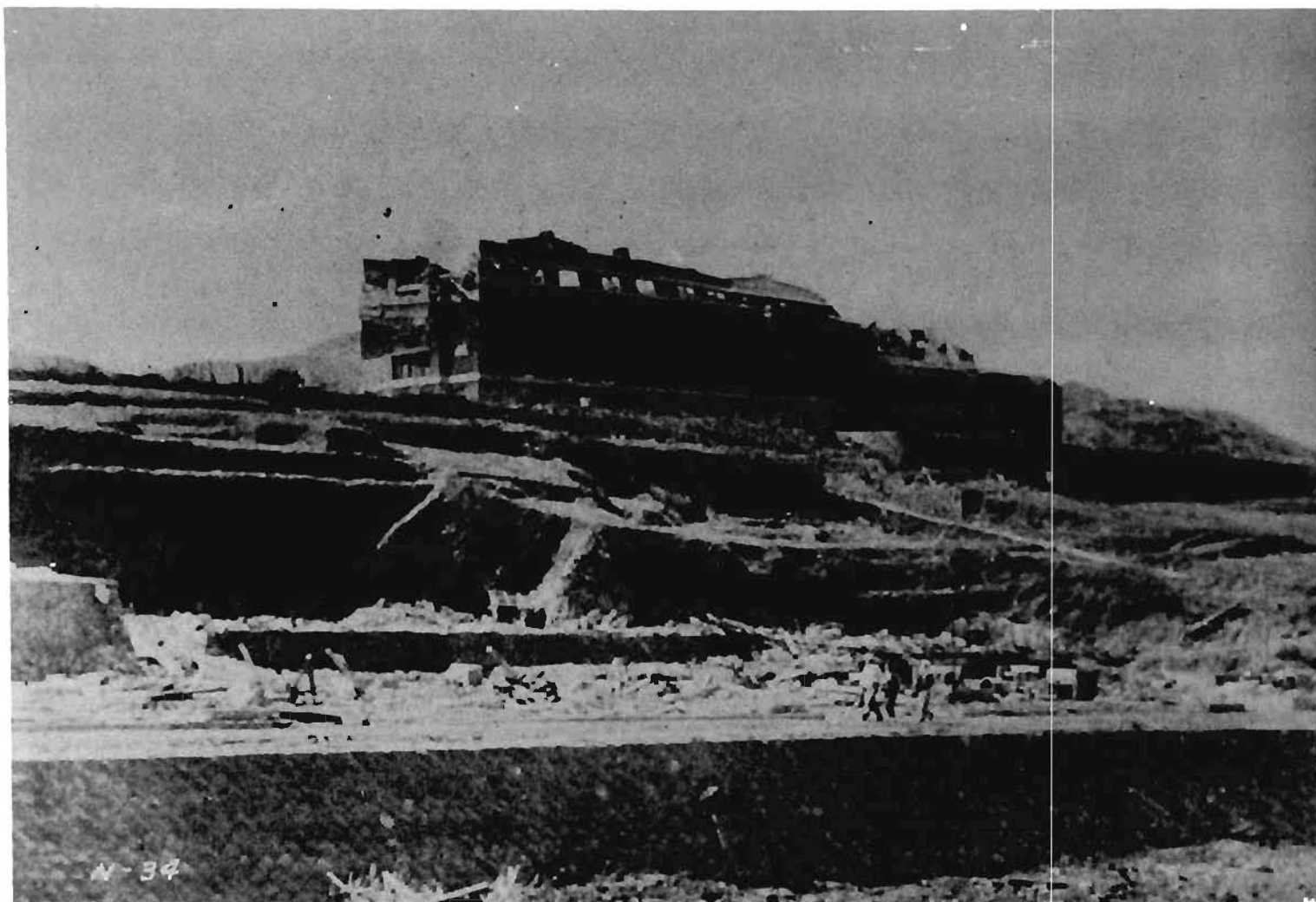


Figure 55

Reinforced concrete school building, 0.3 mile southwest of X. This building was used as a factory training school. The damage on the left end resulted from a parapet wall pulling loose. Damage on the right end was caused by failure of wall columns which permitted collapse of structural steel roof trusses.

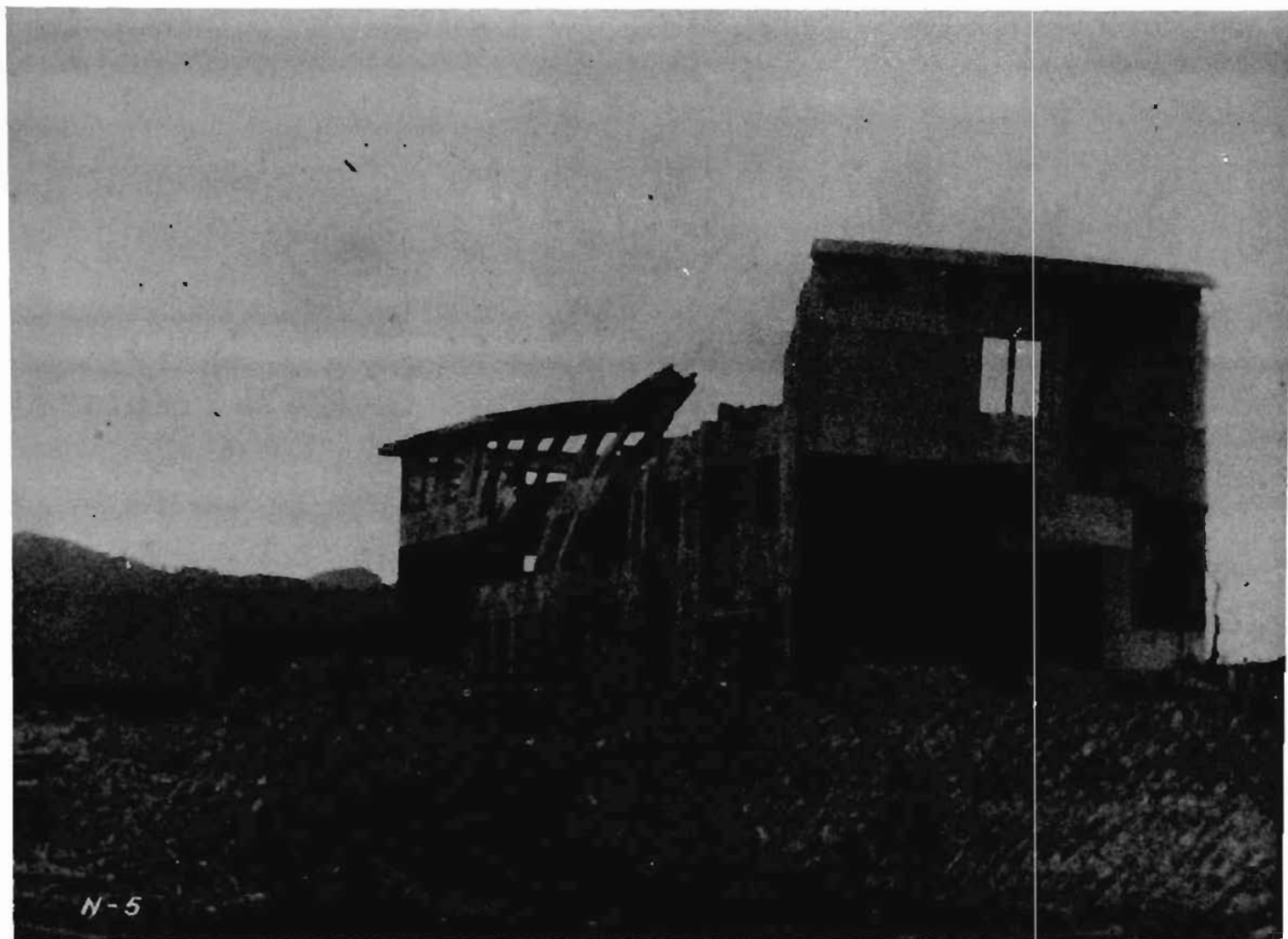


Figure 56

Heavy machine shop, approximately 0.4 mile northeast of X in Nagasaki. This view shows the failure of light concrete wall columns and the collapse of the roof.

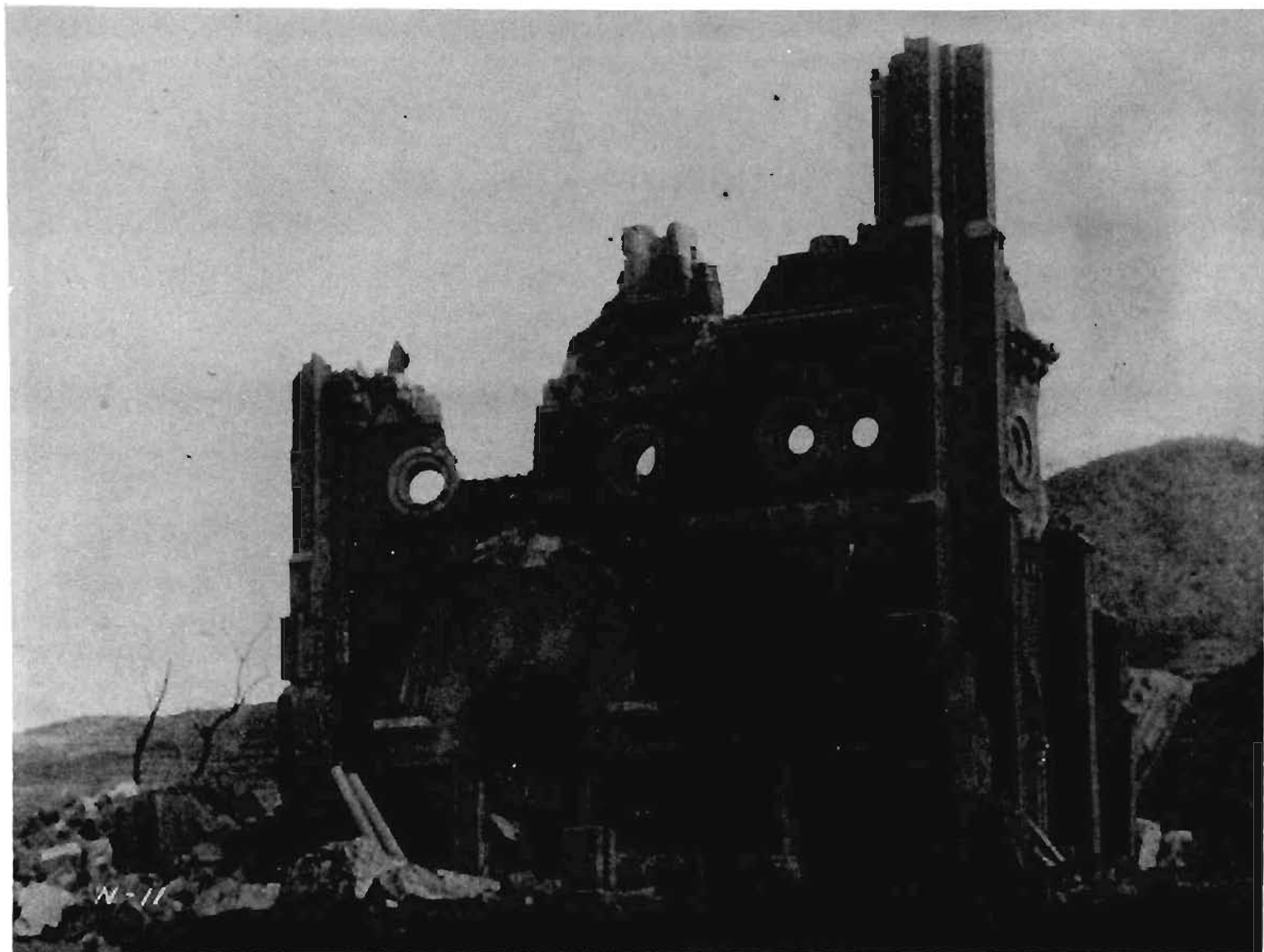


Figure 57

Wrecked church approximately 0.4 mile northeast of X in Nagasaki. The large expanse of walls with few openings offered great resistance to the blast wave and contributed to the failure even though the walls were massive and of brick construction.

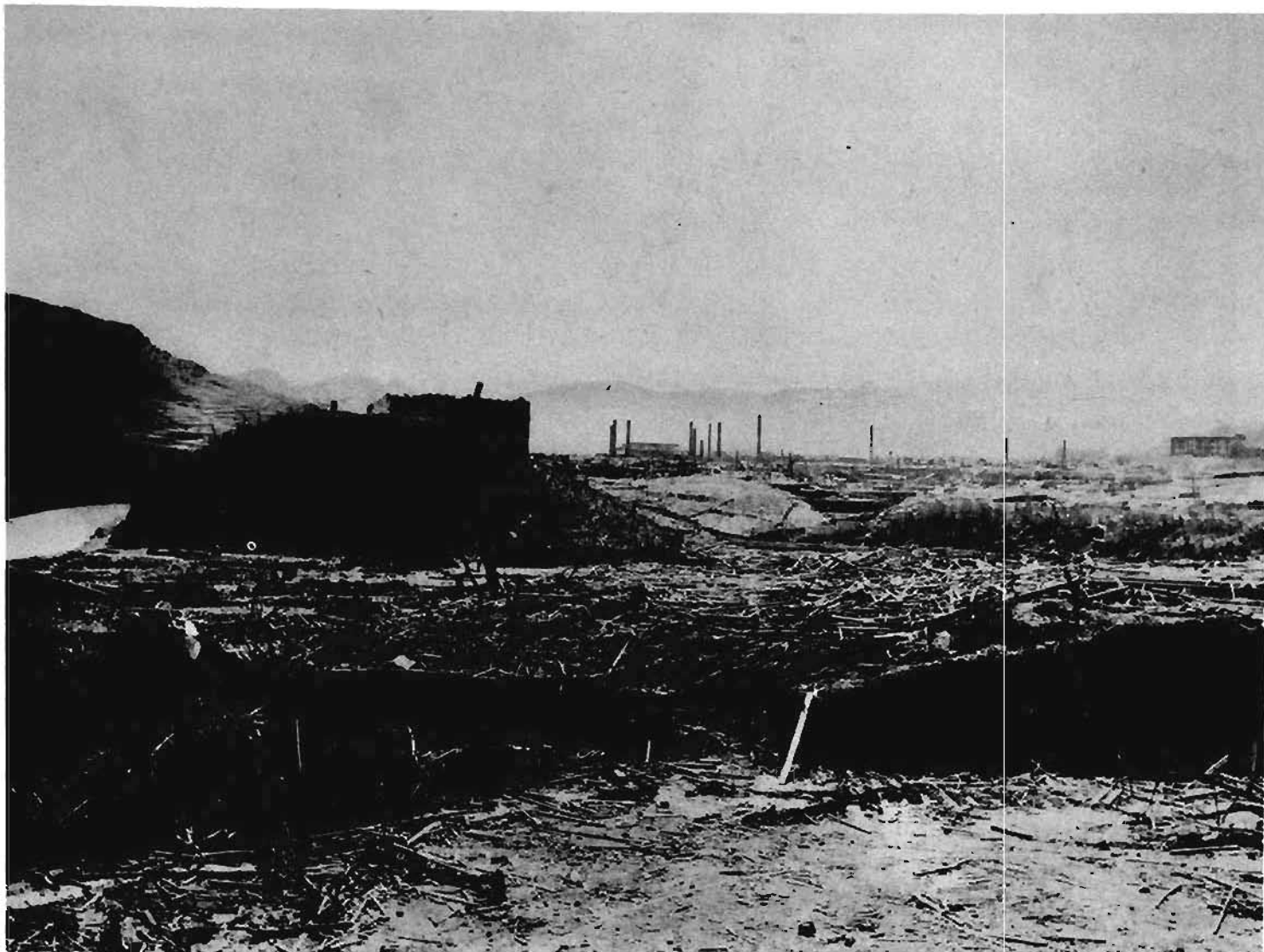


Figure 56

Panorama showing the wreckage of wooden buildings approximately 0.25 mile west of Nagasaki. The pile of broken and splintered lumber in the foreground is all that remains of the building adjoining a reinforced concrete school building.



Figure 59

Aerial view of the Mitsubishi-Urakami Ordnance Works (Torpedo Works), extending from 0.7 to 1.0 miles north of X. Many of the buildings were almost completely flattened into a mass of twisted steel and broken timber. The reinforced concrete Research Laboratory building in the right foreground sustained only moderate damage.

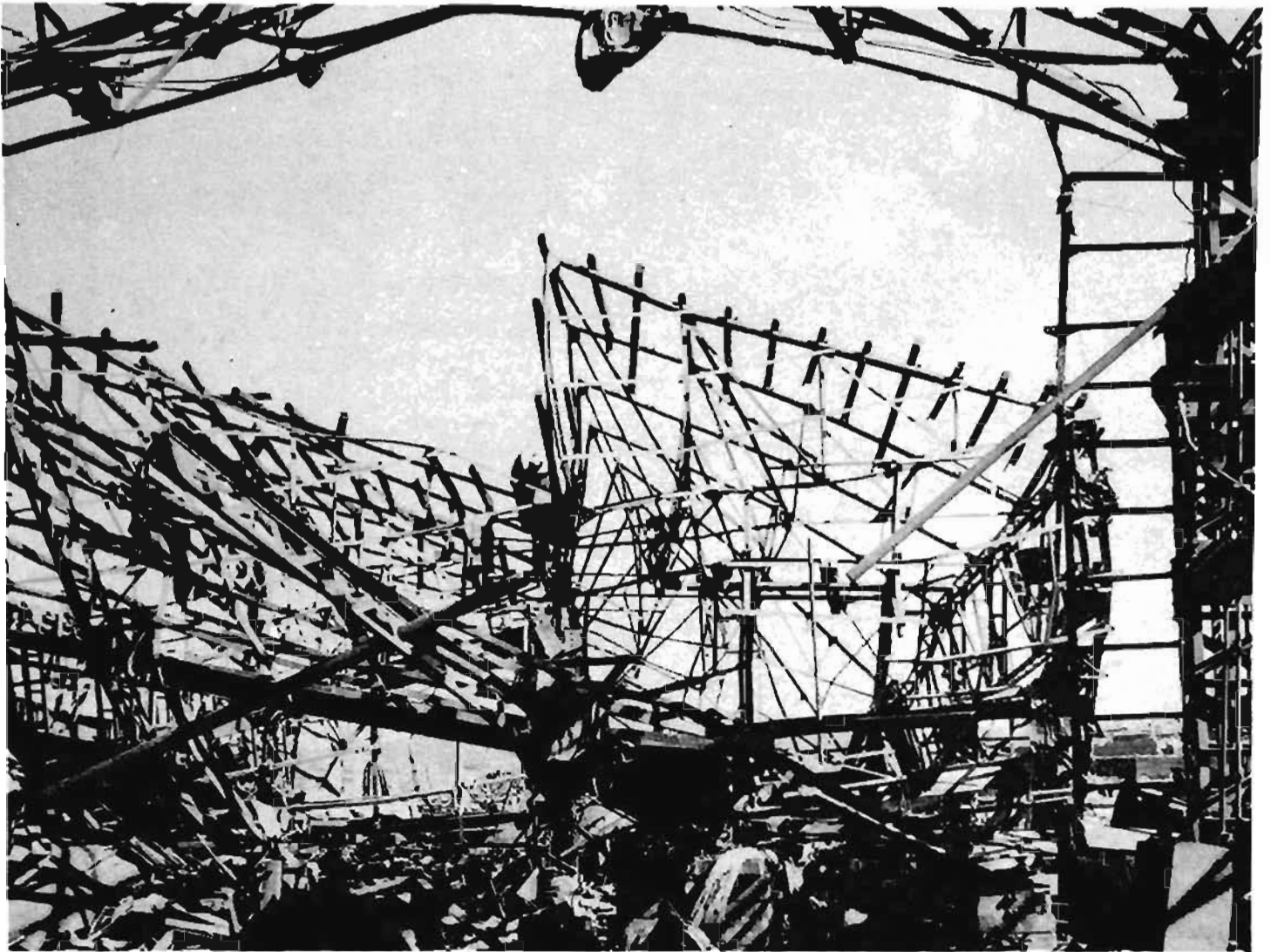


Figure 60

A view of one of the factory buildings with saw-tooth roof truss in the Mitsubishi-Urakami Ordnance Works, 0.9 mile from X. These trusses were very lightly constructed of light steel members. The roof failed from the thrust of the bomb blast, and its failure collapsed the purlins and caused the roof to fall in generally.



Figure 61

A shop building approximately 0.9 miles from X, in the Mitsubishi-Urakami Ordnance Works. This building was a total loss. The extremely light steel construction and the extensive use of wood combined to form a very weak building.

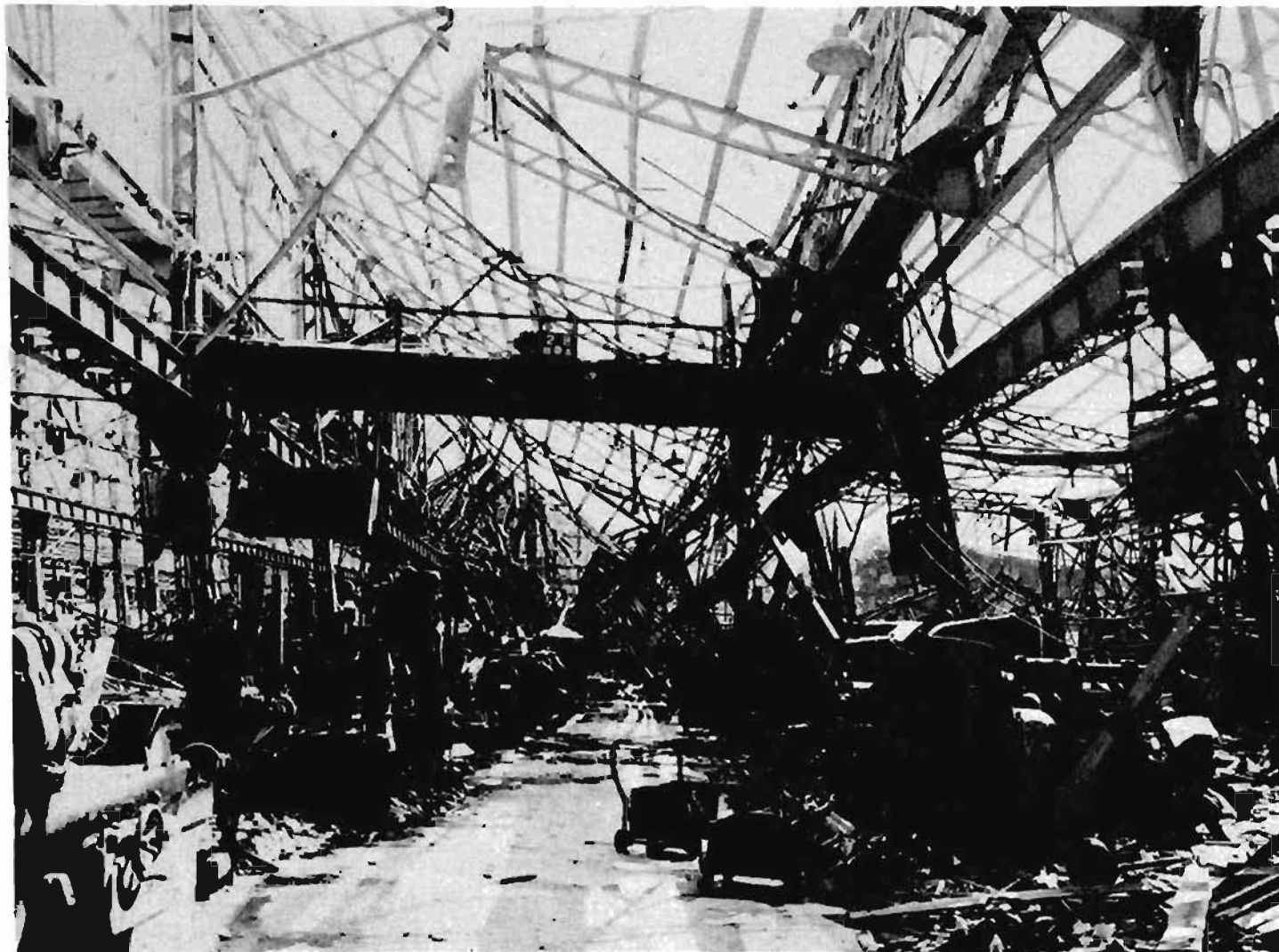


Figure 62

Interior view of one of the machine shops in the Miteubishi-Urakami Ordnance Works, approximately 0.9 miles from X. The siding and roofing was stripped away by the blast. The reinforced concrete Pill-Boxes in this building (state in center of picture) indicates that prison labor was used here.



Figure 63

Wooden building 1.5 miles northeast of X in Nagasaki.



Figure 64

Small reinforced concrete chimney, 0.25 mile north of I. This chimney was knocked over approximately 15-feet above the base. The chimney was 4.3 feet in diameter and 65-feet high. The walls were 6-inches thick and the reinforcing consisted of $5/16$ -inch round bars spaced on $6\frac{1}{2}$ -inch centers. The horizontal reinforcing was $1/8$ -inch round bars with an 8-inch spacing. The chimney was unlined.



Figure 65

Reinforced concrete bridge, 0.50 mile north of X in Nagasaki. This bridge consisted of a reinforced concrete T-beam deck with concrete abutments and piers. The three spans are approximately 35 feet long each. Failure of the west span resulted when the deck was knocked off the pier and abutment by the force of the blast from the south, causing the span to drop to the river bed. The remainder of the bridge, except for the hand rail, was undamaged.

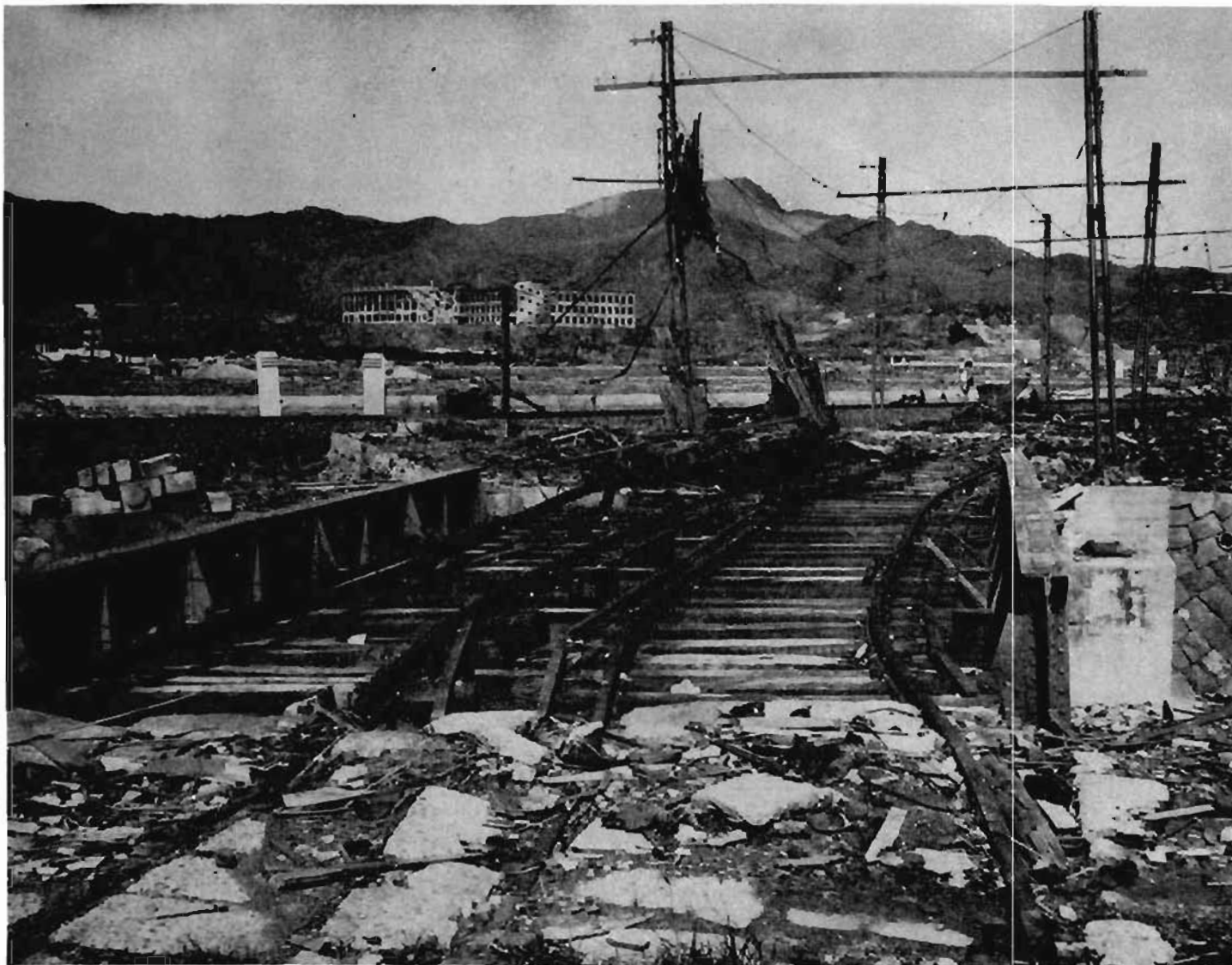


Figure 66

Steel plate girder double track railway bridge, 0.1 mile southwest of Y in Nagasaki. The plate girders were moved to the left by the blast, the railroad tracks were bent out of shape and the trolley cars were completely demolished. The trolley poles were not knocked down by the blast.



Figure 67

A view of the Urakami Gas Works, 0.6 mile north of X in Nagasaki. The wreckage of automobiles is seen in the foreground.

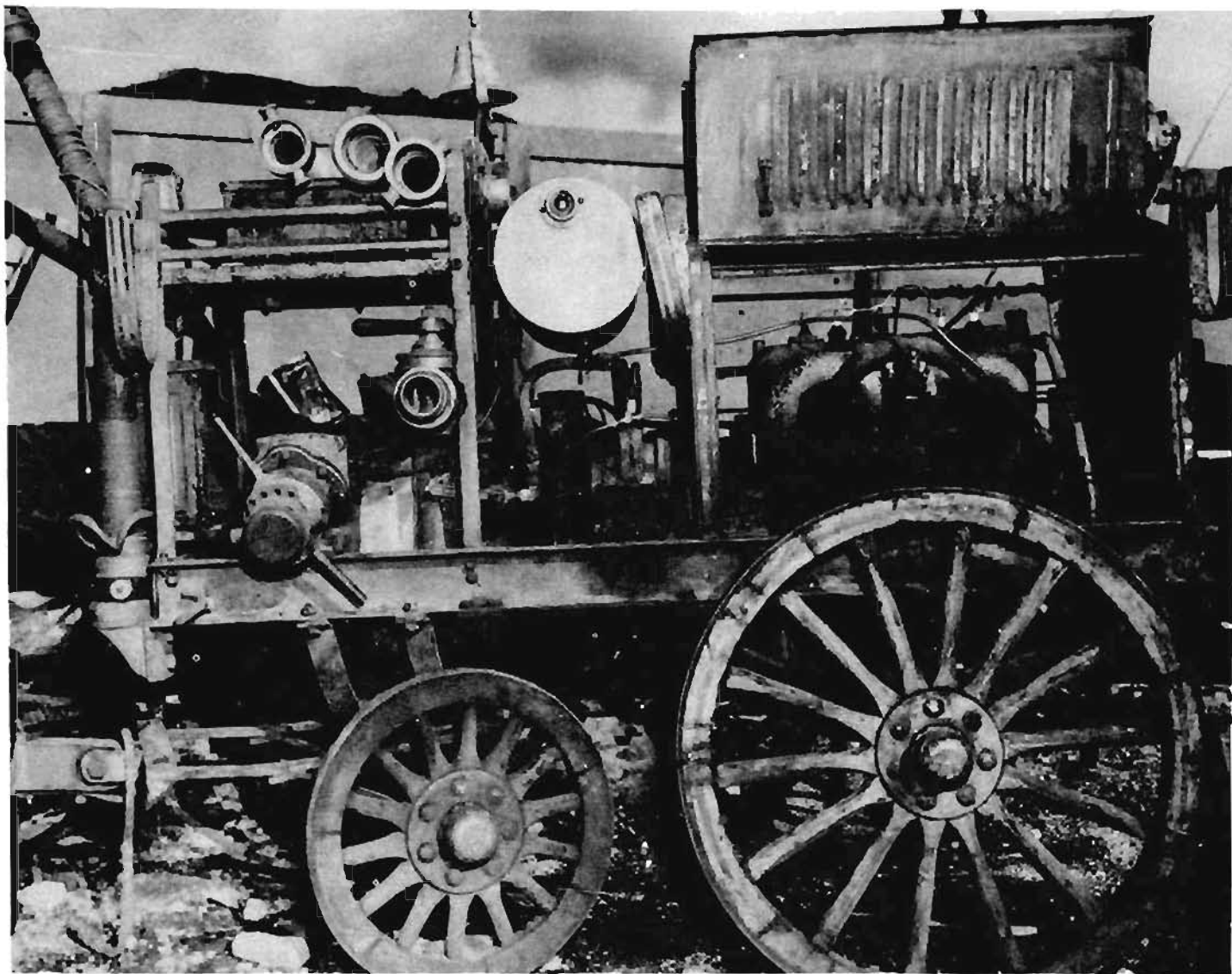


Figure 68

A typical Japanese fire engine of the type which formed a large part of their obsolete equipment. They had a limited number of much more modern fire engines.

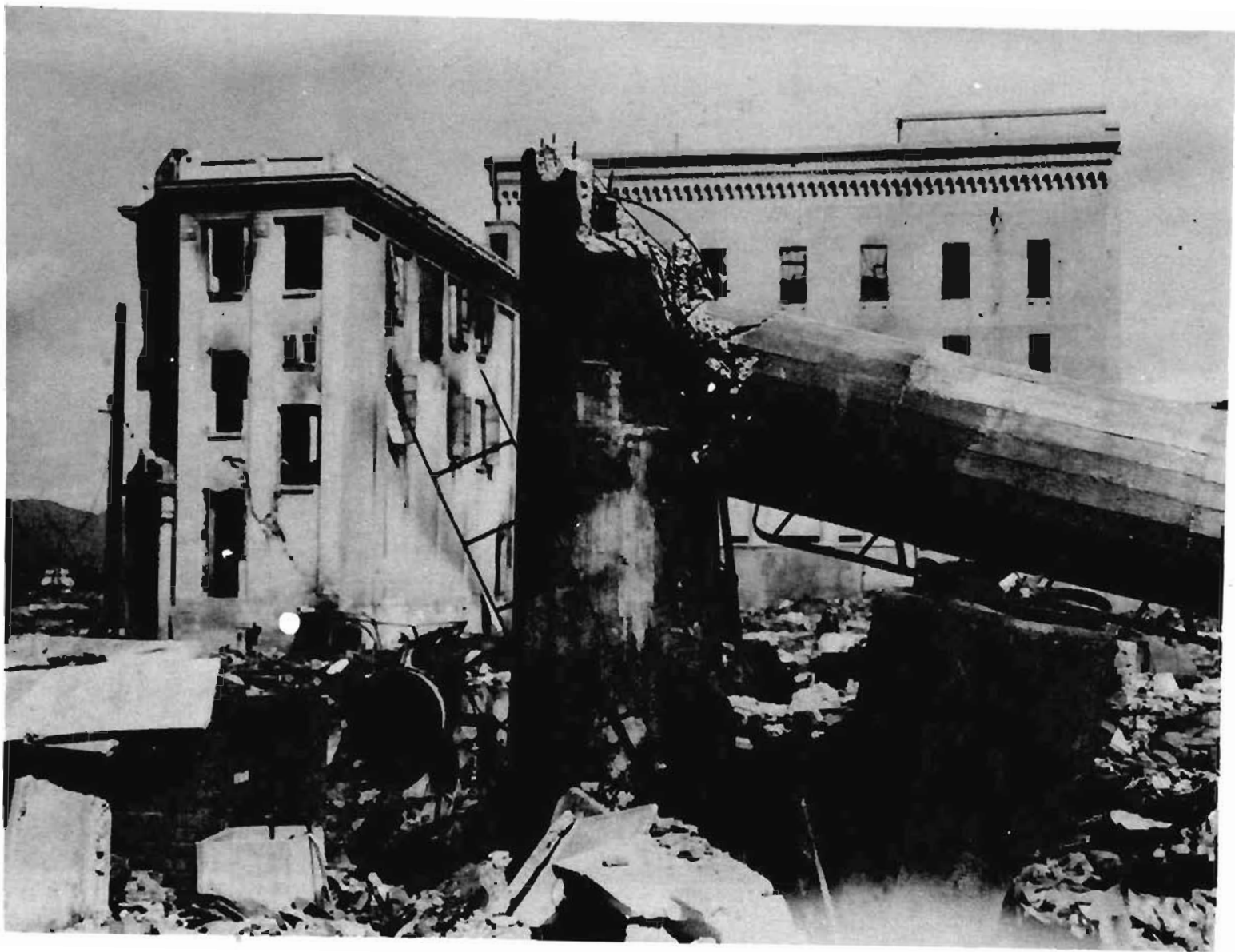


Figure 69

A concrete chimney 600 feet east of Y in Hiroshima.

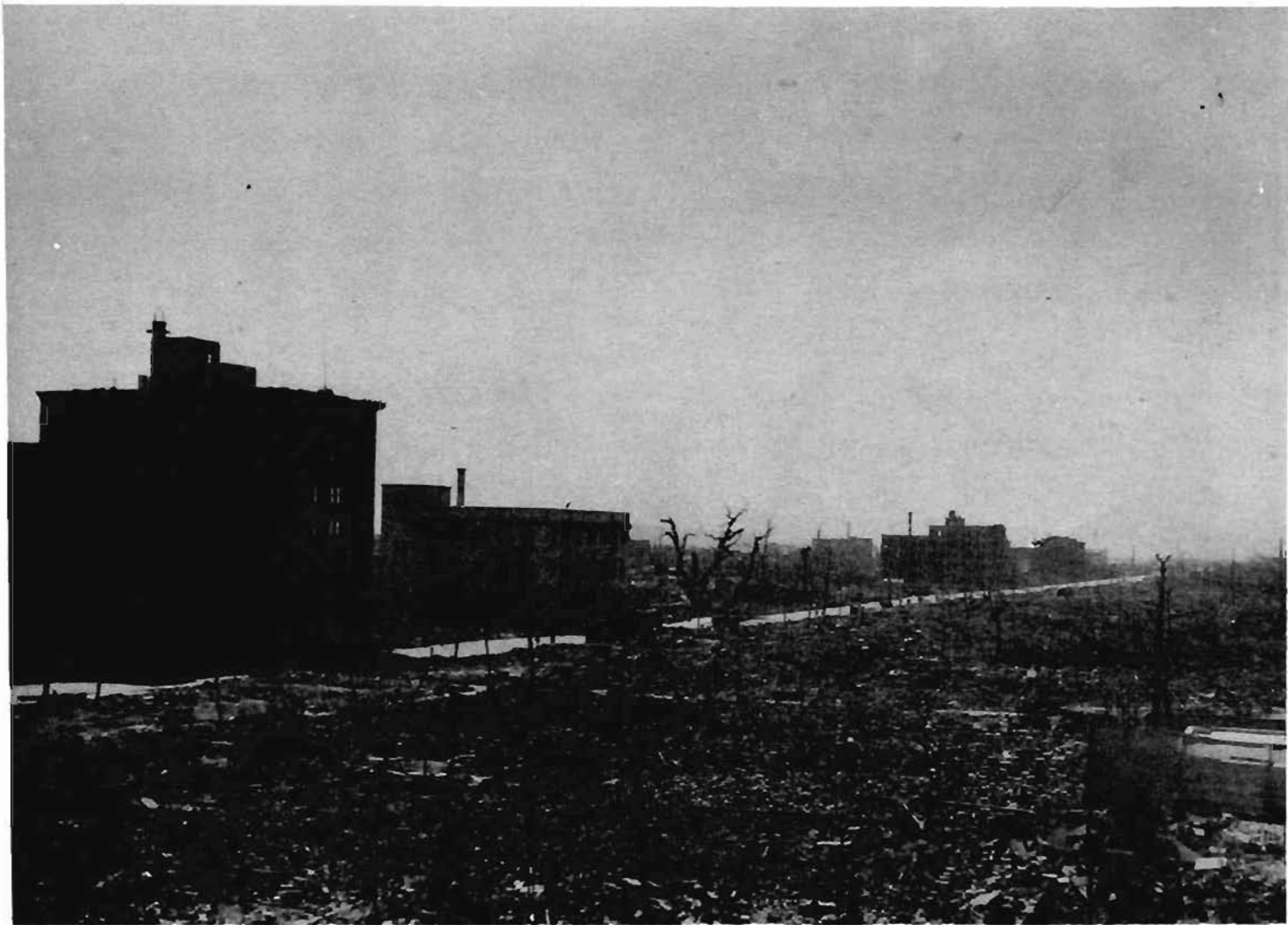


Figure 70

A view from the top floor of a building 250 feet east of X in Hiroshima.



Figure 71

A view from 200 feet east of X in Hiroshima. The military area is in the background of the picture.



Figure 72

Looking east from inside the Hiroshima Military Area, near the junction of the street car line.

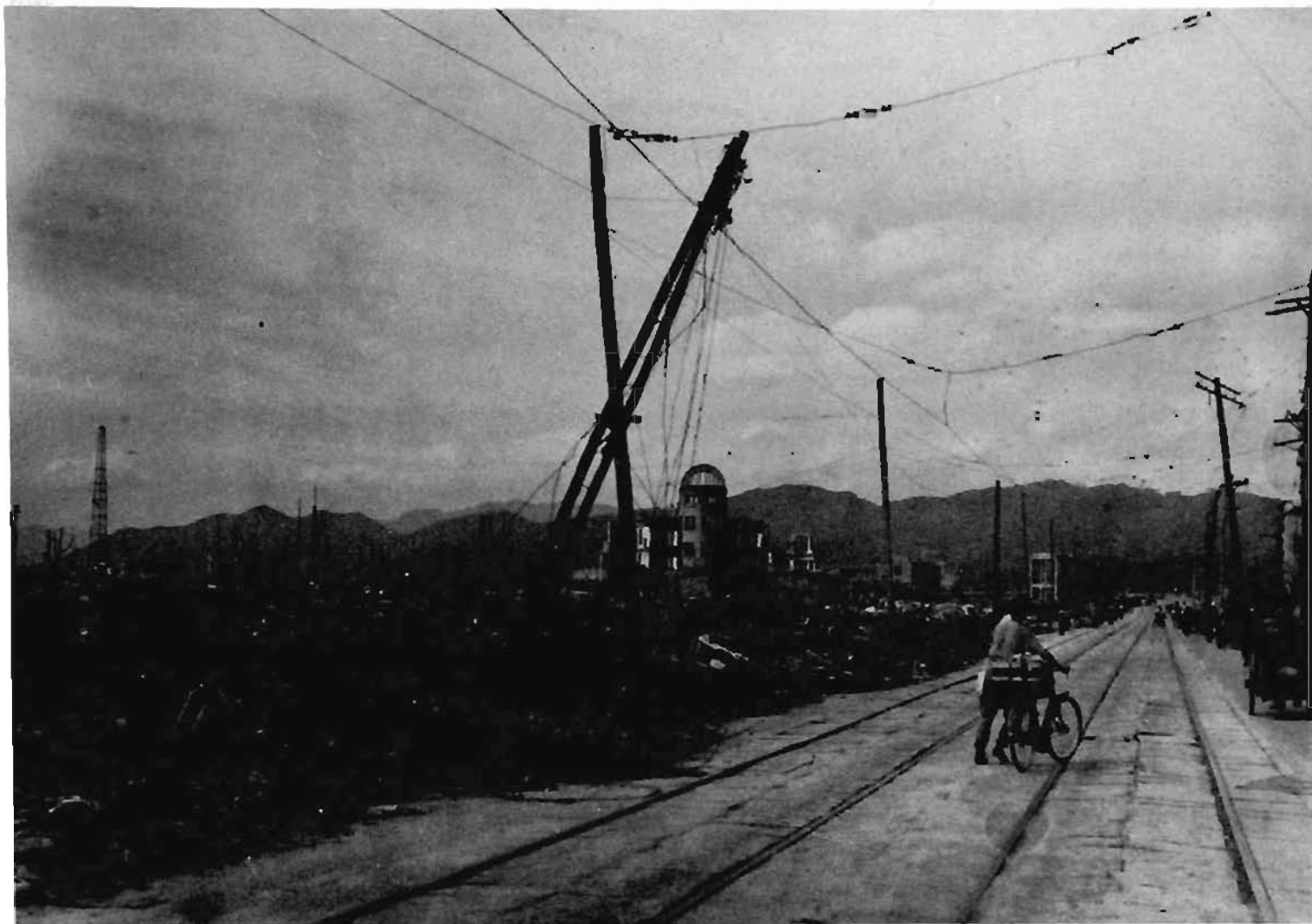


Figure 73

A view looking west northwest from a point 550 feet from I in Hiroshima.



Figure 74

An apartment building 2,600 feet west of X in Hiroshima. The very large window space was instrumental in reducing the effect of the blast and permitting the frame work to remain standing.



Figure 75

Hiroshima Panorama

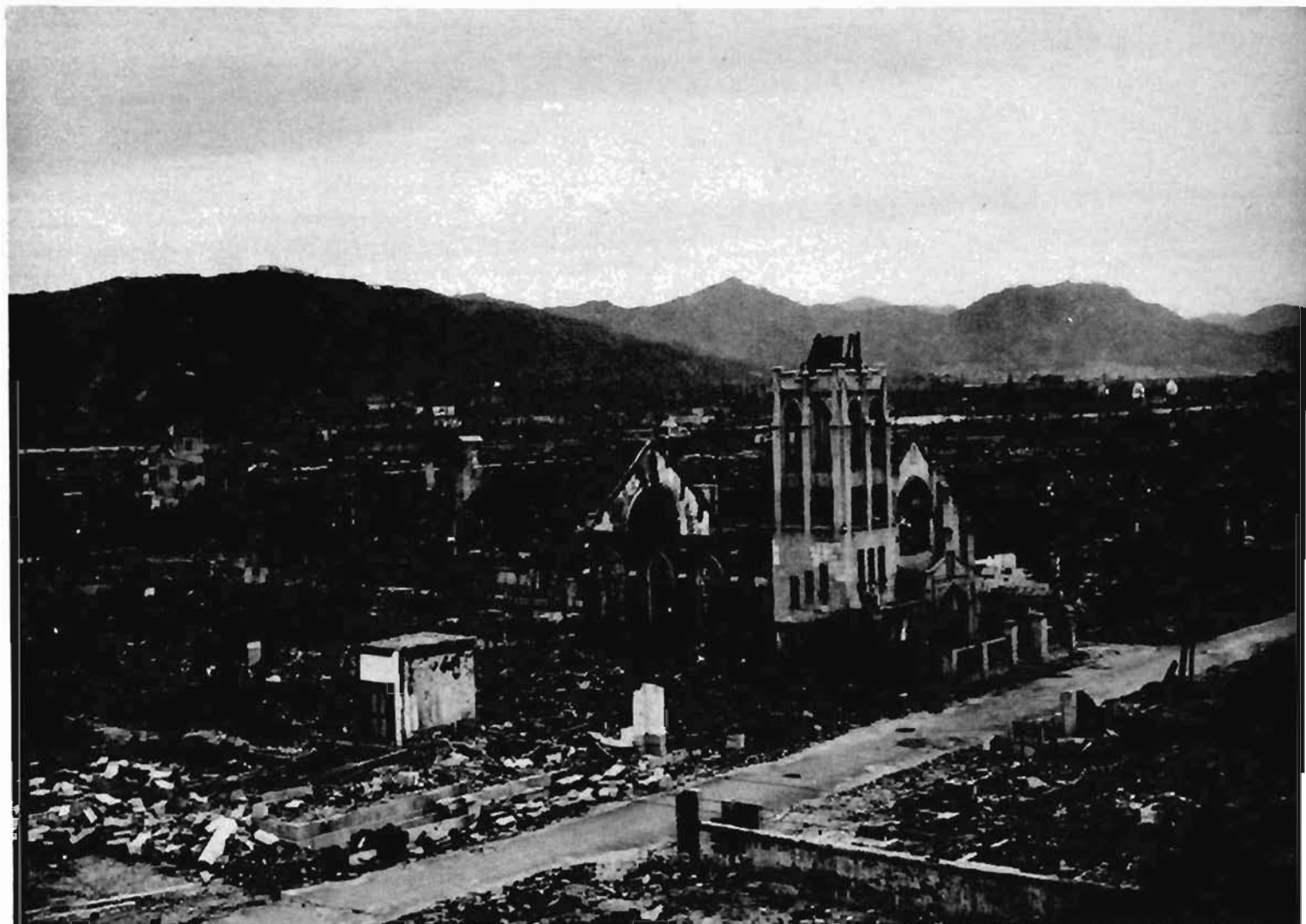


Figure 76

A view of a Hiroshima church 2,900 feet east of Y in Hiroshima.

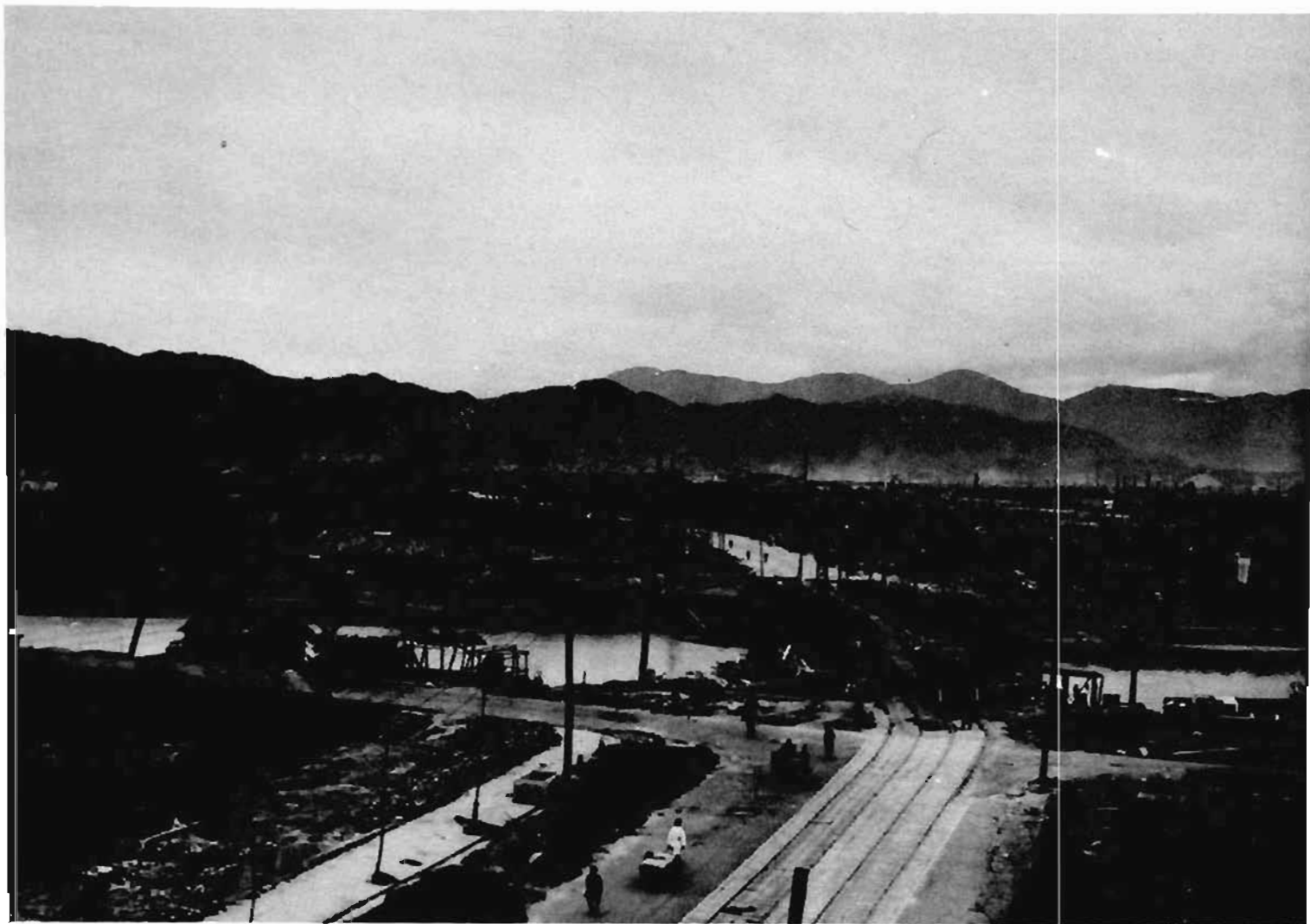


Figure 77

View of a Hiroshima bridge 4,400 feet east of Y.

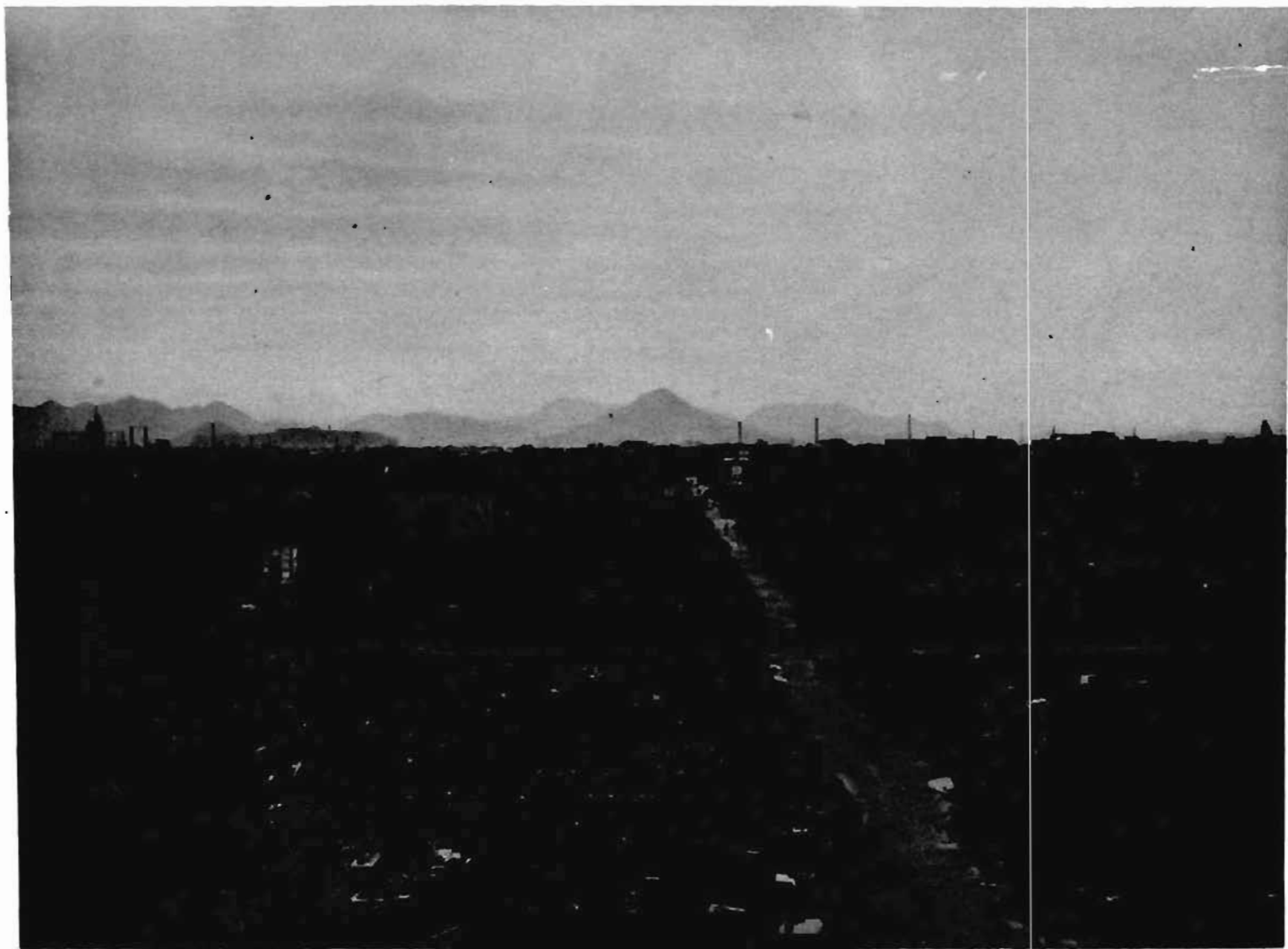


Figure 78

Hiroshima Panorama from a point 2,200 feet south of X.



Figure 79

A view of Japanese houses 5,700 feet south of X in Hiroshima. This point is about at the limit of complete destruction of Japanese houses.

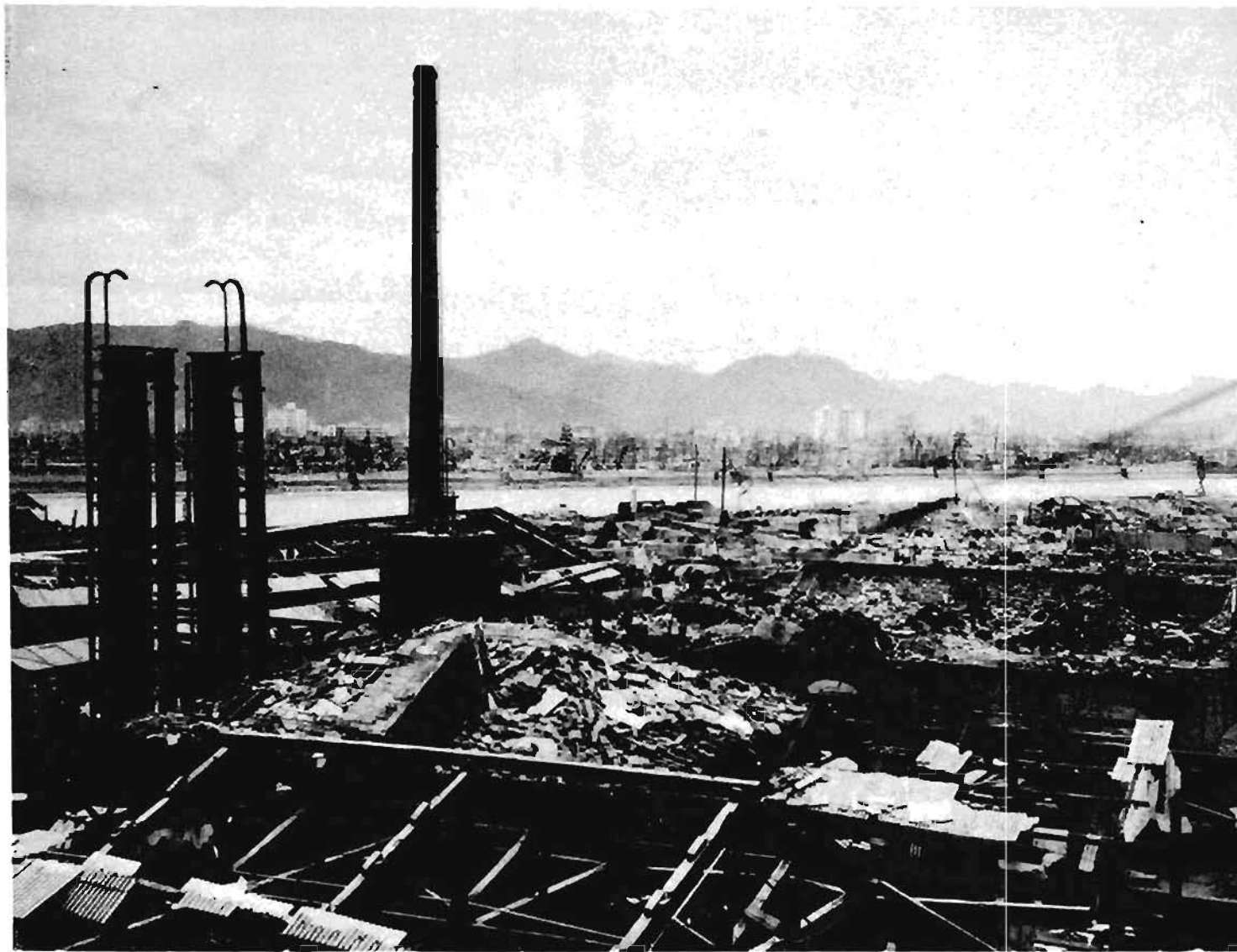


Figure 80

A view from a point 6,500 feet southeast of X.

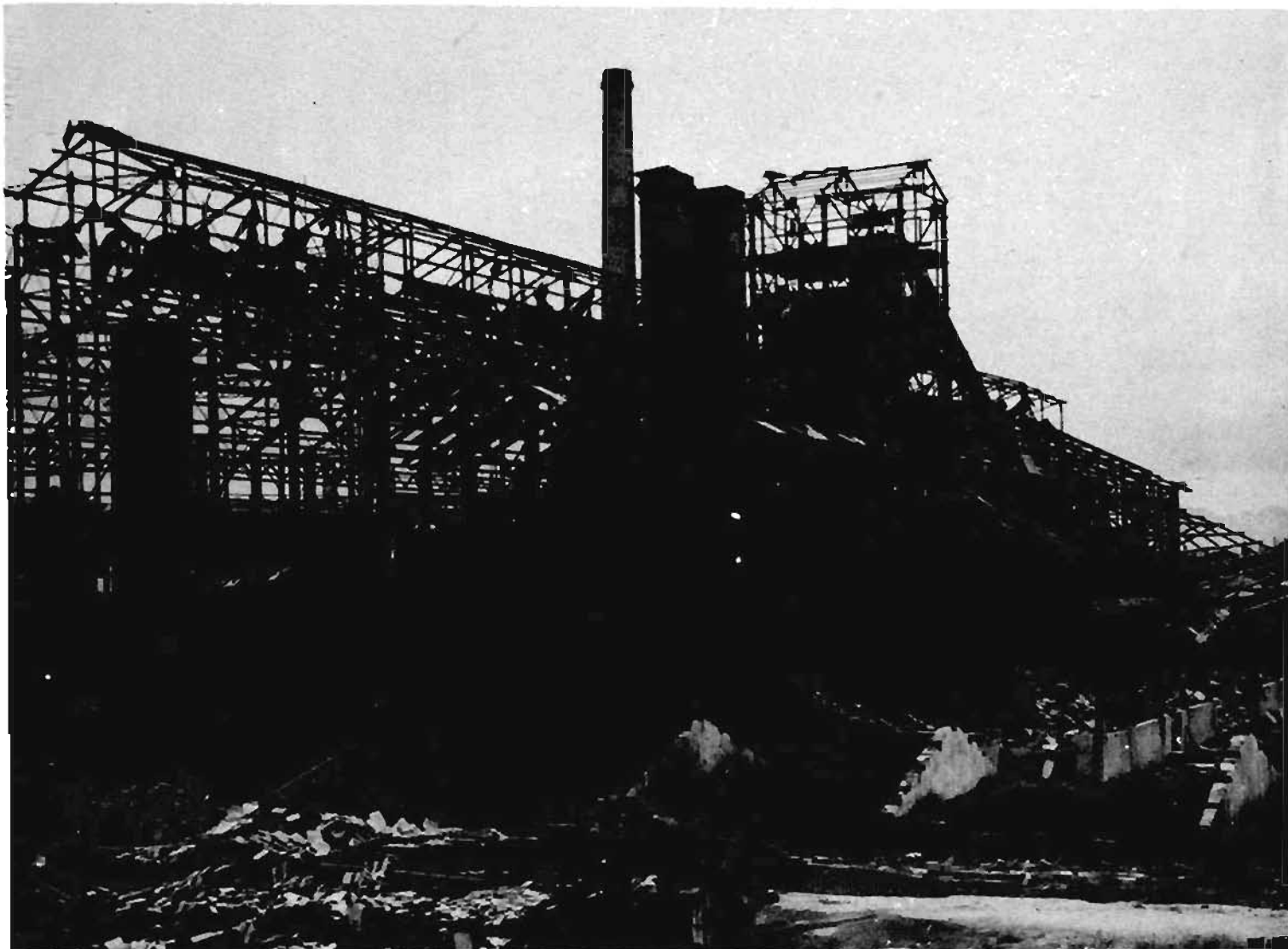


Figure 81

The Hiroshima Gas Works, 6,500 feet from X. The sheeting has been ripped from the steel frame and the directional force of the blast is shown by the bent frames on the right.



Figure 82

The Auditorium of the Hiroshima Municipal Office building, 3,600 feet south of Y, showing heavy fire damage and structural damage.



Figure 83

A Japanese air raid shelter 1,000 feet from X, showing the effect of the downward pressure of the blast.

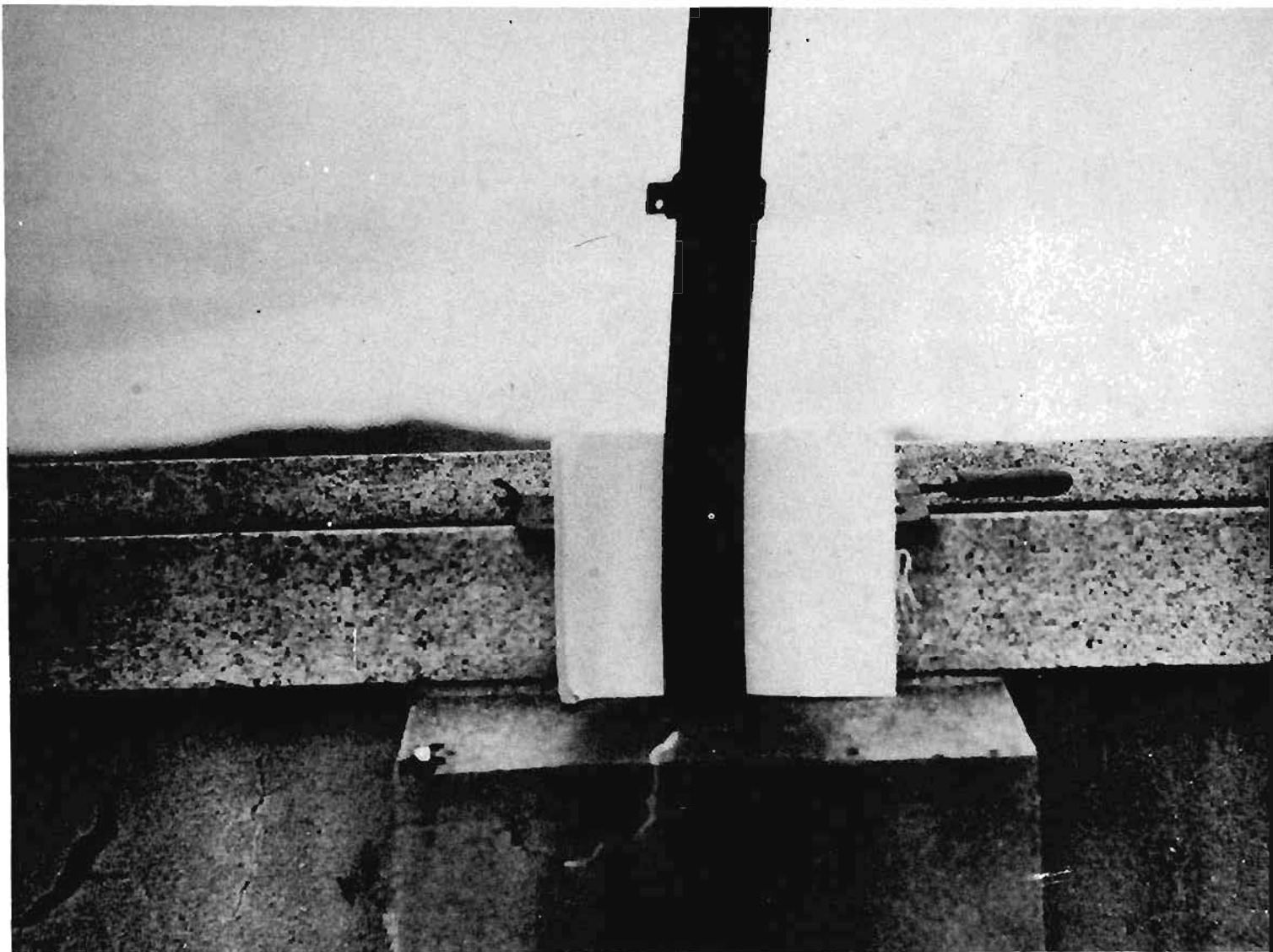


Figure 84

Flag pole on a bank building in Hiroshima, 2,900 feet from X. The pole was bent and the concrete base cracked by the force of the blast.



Figure 85

The Japanese Army Fifth Division Headquarters, 2,700 feet north of X. A network of street car rails had been placed across the principal walls and ten inches of concrete were on the roof.



Figure 86

Fire engines brought into Hiroshima after the bombing.



Figure 87

The hydraulic powerhouse of the Mitsubishi Steel and Arms Works in Nagasaki, 1,900 feet from X.



Figure 88

The remains of a small factory, 6,000 feet from X in Nagasaki.

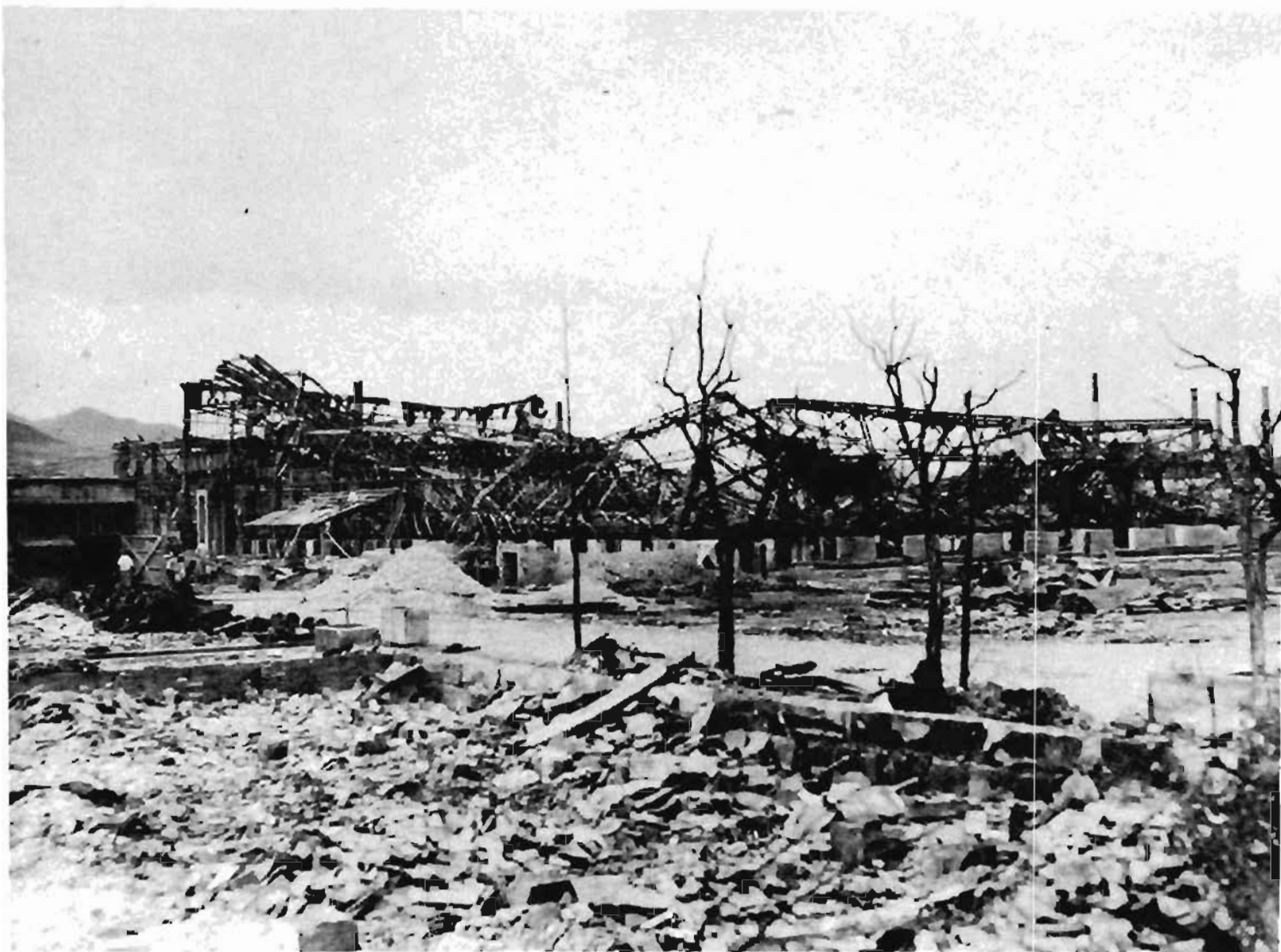


Figure 89

A wood working plant, 6,000 feet south of X in Nagasaki. Very heavy fire damage was experienced here.



Figure 90

A view from X looking toward the Shiroyama School in Nagasaki.



Figure 91

Interior of the first floor of the school building 1,200 feet from X in Nagasaki, showing failure of partitions. This is a typical building which appears comparatively undamaged to the casual observer from a small distance.

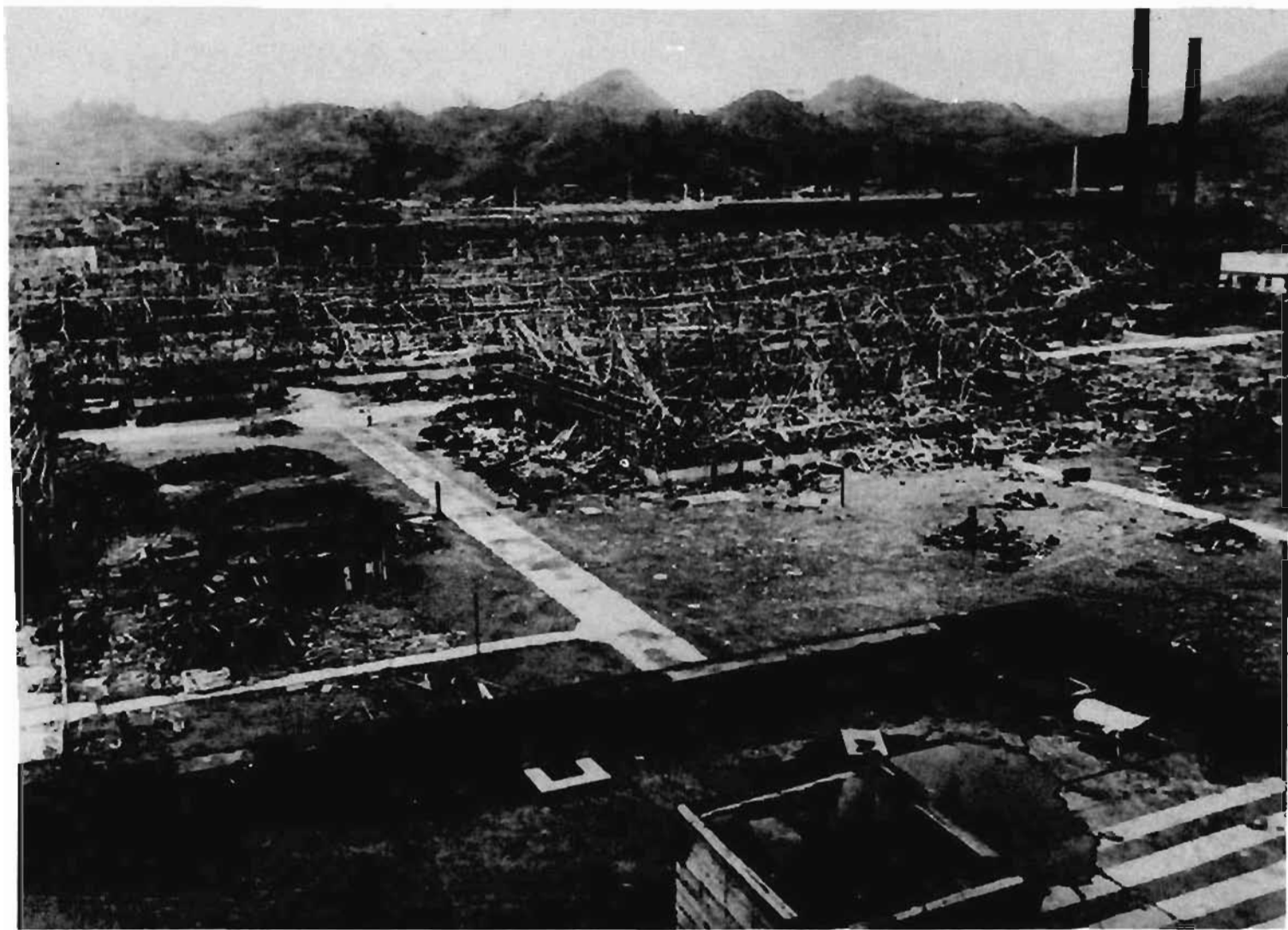


Figure 92

The Torpedo Works in Nagasaki.

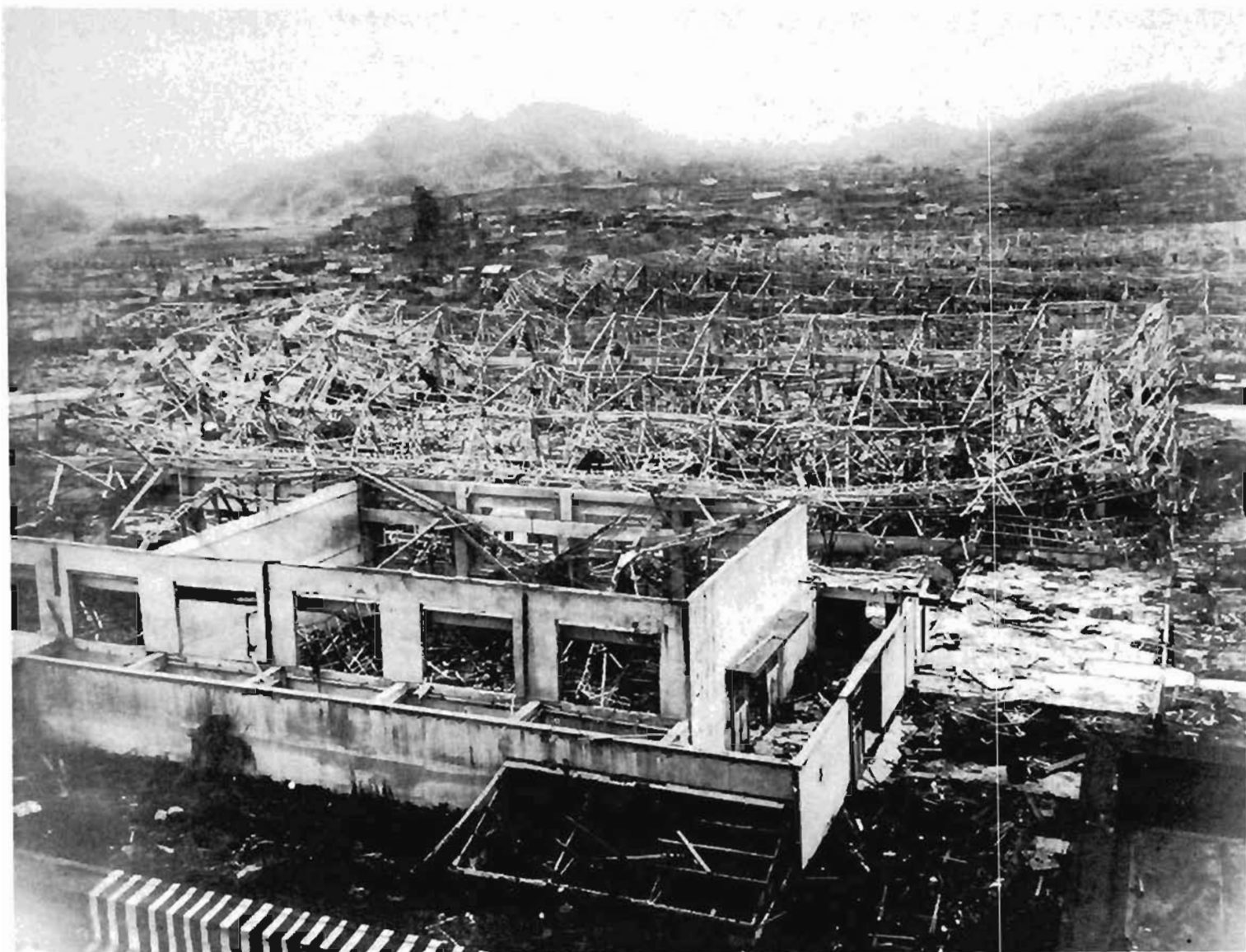


Figure 93

The Torpedo Works in Nagasaki, 4,200 feet from X.

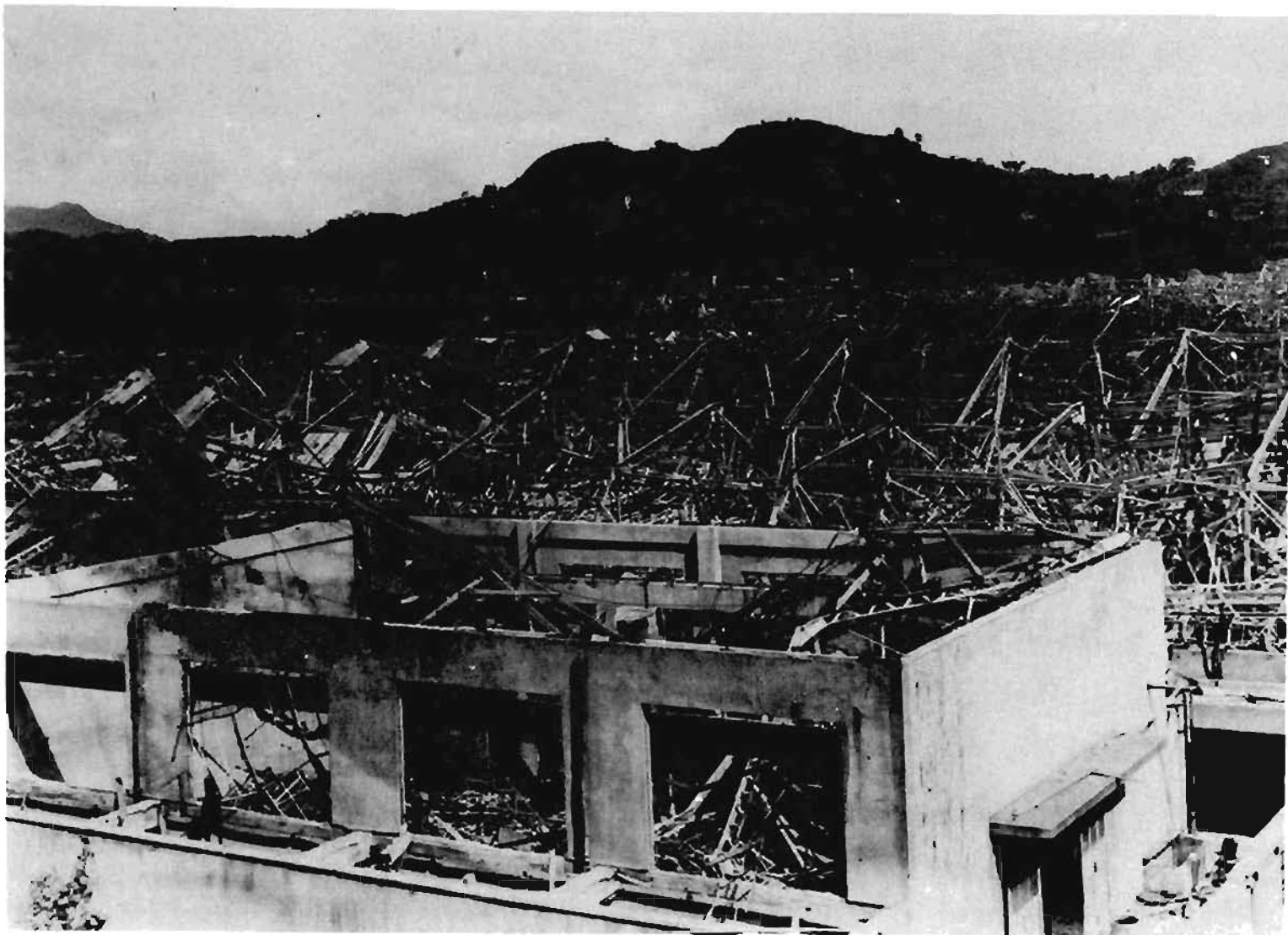


Figure 94

The Torpedo Works In Nagasaki, 4,200 feet north of X.

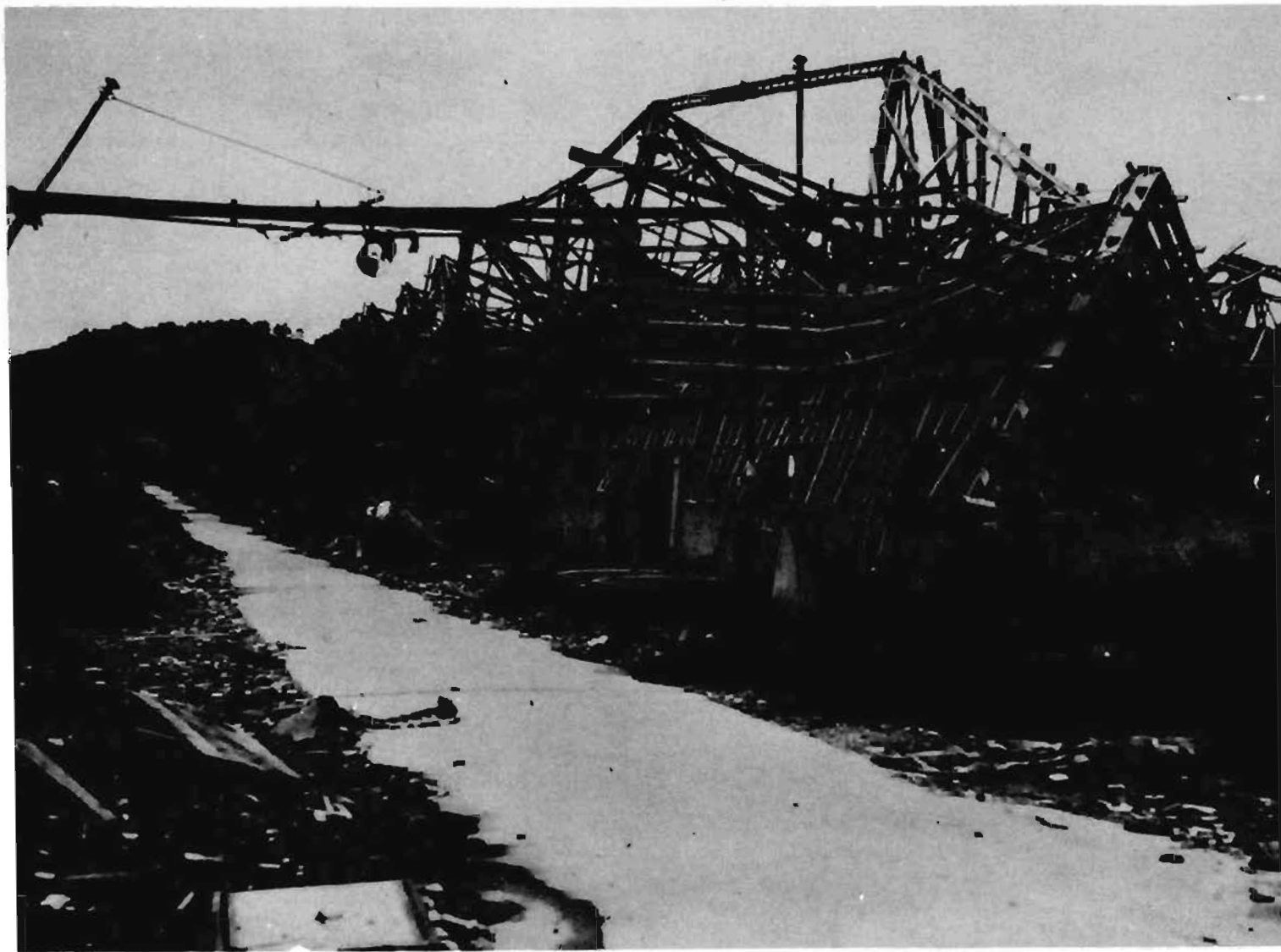


Figure 95

The Torpedo Works in Nagasaki, 4,200 feet from X.

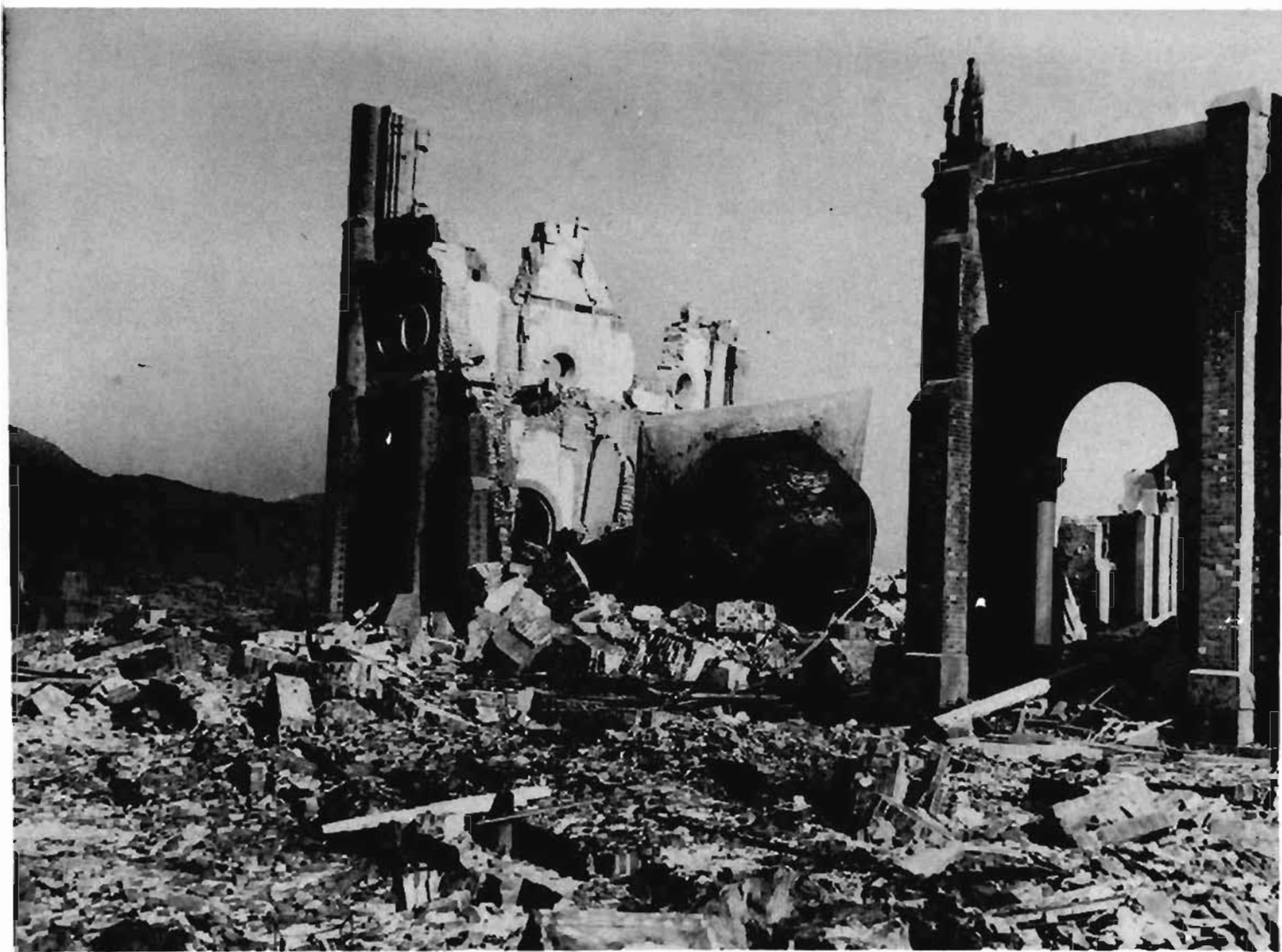


Figure 96

Church 2,100 feet northeast of X in Nagasaki. The church walls were 2 feet thick, and the end walls 3 feet thick.

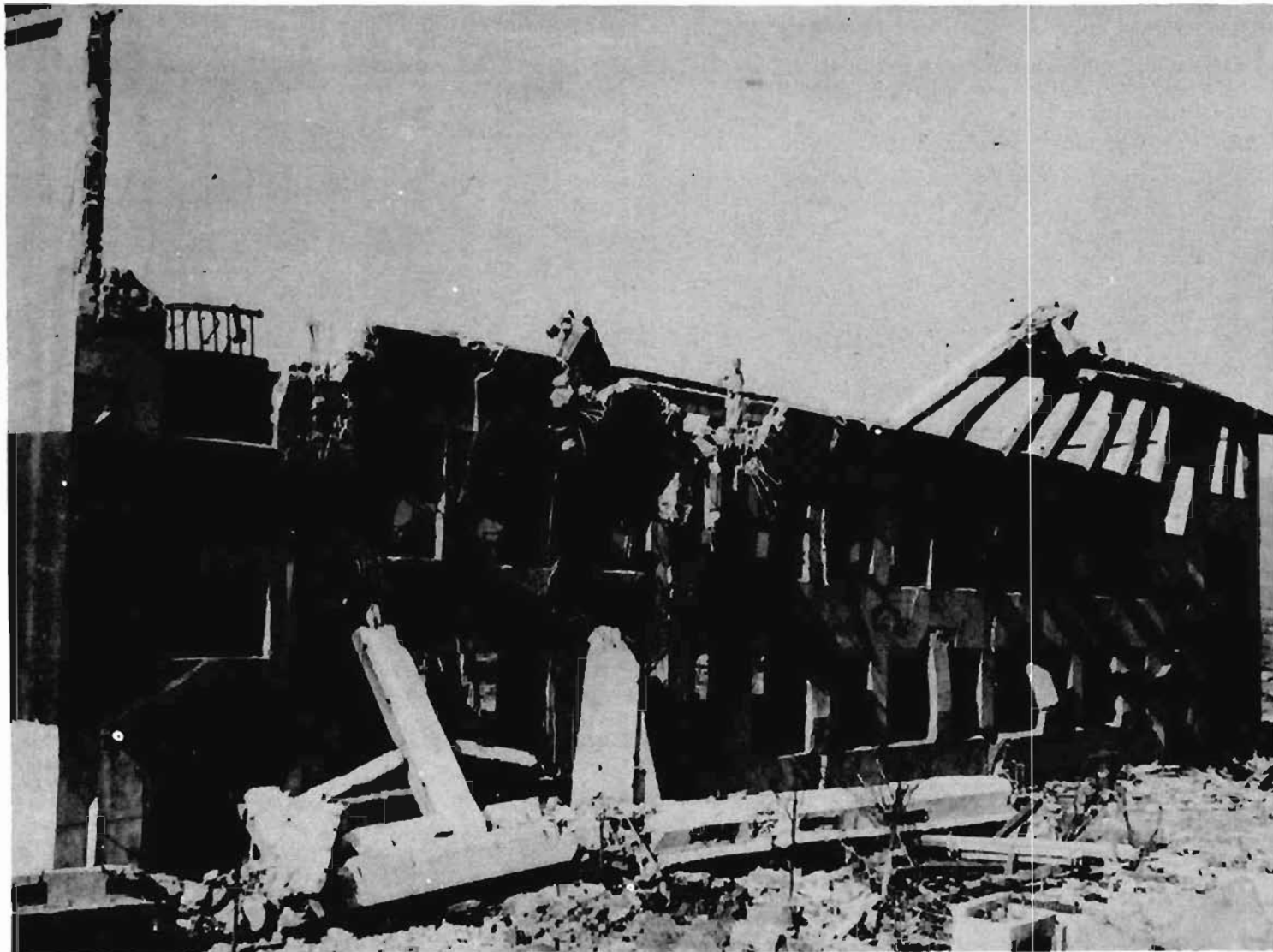


Figure 97

Heavy machine shop 2,200 feet northeast of X in Nagasaki.



Figure 98

A tree snapped by the blast in Nagasaki, 1,000 feet from X.

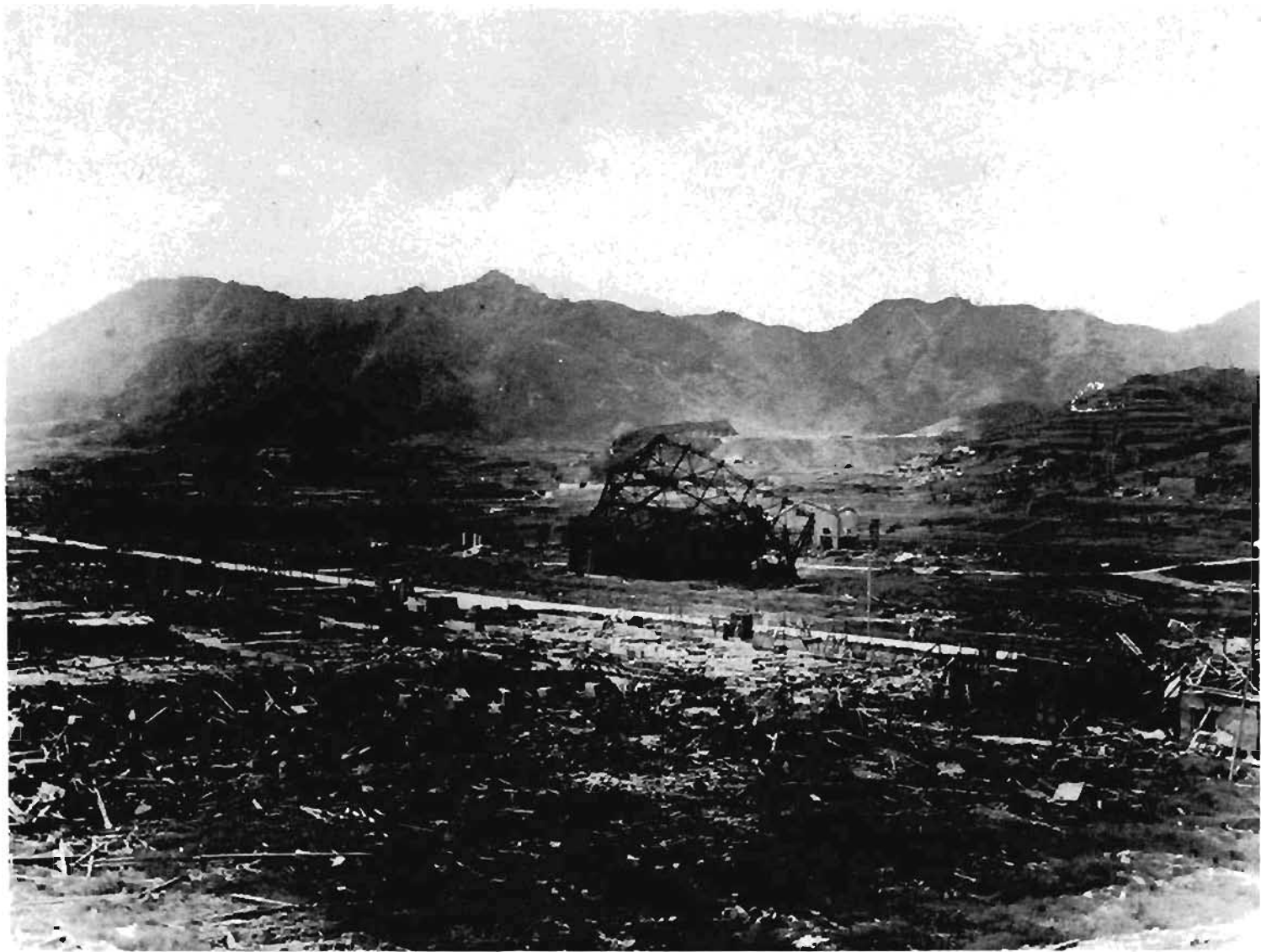


Figure 99

Looking southwest from the Torpedo Works over the Gas Works toward the Shiroyama School, in Nagasaki. The erect telephone poles were put in place after the bombing.



Figure 100

Damage to tile roof 11,000 feet south of X in Nagasaki.



Figure 101

Damage in a ravine, 7,000 feet south of X in Nagasaki. Very marked protection was afforded by a hill.