AT THE MOMENT OF THE A-BOMB STRIKE...

8 : 15 A.M., Monday, August 6, 1945. Weather: Fine and clear.

Three U.S. B-29's approached the city of Hiroshima from the northeast, maintaining an altitude of approximately 8,500 meters (27,800 feet), as observed by an anti-aircraft artillery unit. One of them passed over the central part of the city, and dropped the Atomic Bomb. Making an abrupt right-turn, it departed at full speed. At the instant of the bomb explosion, the plane had flown sixteen kilometers (about ten miles) to the northwest.

The bomb fell rapidly with a thick trail of red flames, and exploded with terrific force forty-three seconds later, at an altitude of 580 meters (about 1,900 feet) above ground level. According to some eye-witnesses, the unimaginably huge fireball was of bluish-white or pinkish-white hue.

Soon after the explosion, an enormous pillar of smoke rose up and swirled to 9,000 meters (about 29,700 feet), in the shape of a mushroom cloud. The blast caused by the detonation scattered dust all over the city, and most houses were destroyed or heavily damaged. Fire broke out in many places, and much of the city was consumed in the conflagration.

The air-raid "all-clear" alarm had sounded that morning. This led to a sence of relief but also resulted in unpreparedness and human casualties of over 200,000.

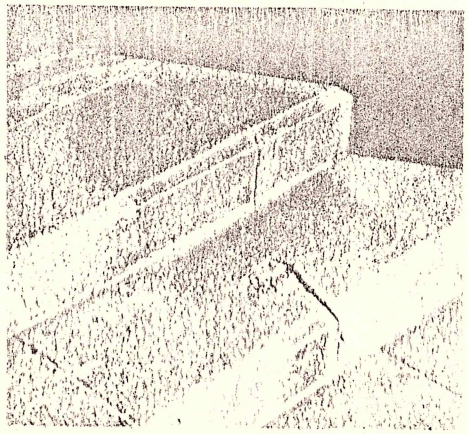
THE THREE EFFECTS OF THE ATOMIC BOMB

The yield of the Hiroshima A-Bomb was equivalent to about thirteen kilotons of TNT in explosive power (1.3×10^{13} calories of energy). Three factors are considered to have worked concurrently at the instant of the atomic bombing. They are thermal radiation, blast pressure, and radiation.

1. Thermal radiation

The temperature of the fireball that developed in the air is estimated to have been 300,000°C, 1/10,000 of a second after the detonation. 0.3 second later, the fireball attained a surface temperature of 7,000°C, and one second later, a diameter of 280 meters and a surface temperature of about 5,000°C.

The intense thermal radiation released by this fireball caused burns on the bodies of those who were within 3.5 kilometers of the hypocenter. Clothes and wooden houses also burned, and the surfaces of granite stones within one kilometer of the hypocenter melted in the heat. Glass-like bubbles formed on the surfaces of roof tiles within 600 meters of the hypocenter.



A human shadow imprinted on the steps at the entrance to the Sumitomo Bank

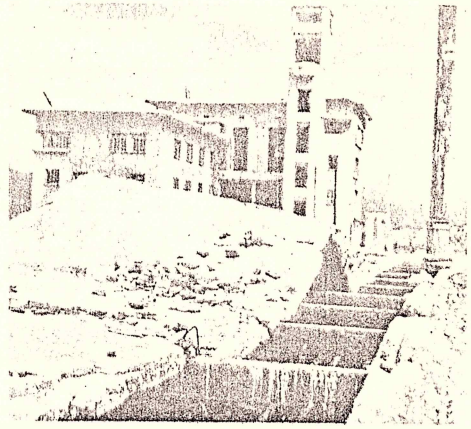
Photo by Y.SASAKI

2. Blast Pressure

The blast pressure at ground zero is estimated to have been approximately 35 tons/square meter, and even at 1.3 kilometers from the hypocenter the maximum blast pressure and velocity are calculated to have been about 7t/m^2 and 120 meters/second respectively.

The effects of the blast on human bodies were tremendous, and some victims were blown off the ground for several meters. The blast stripped off clothing, tore off burnt skin, and caused the rupture and expulsion of intestines and other internal organs of some victims.

Wooden buildings within a radius of 2.3 kilometers were almost totally obliterated, and those within 3.2 kilometers were half-destroyed. The outer structure of most large concrete buildings endured the blast, but ceilings caved in and doors and windows were shattered, leaving the interiors to the menace of raging fires.



A bridge blown up by the pressure wave

Photo by T.KAWAMOTO

3. Radiation

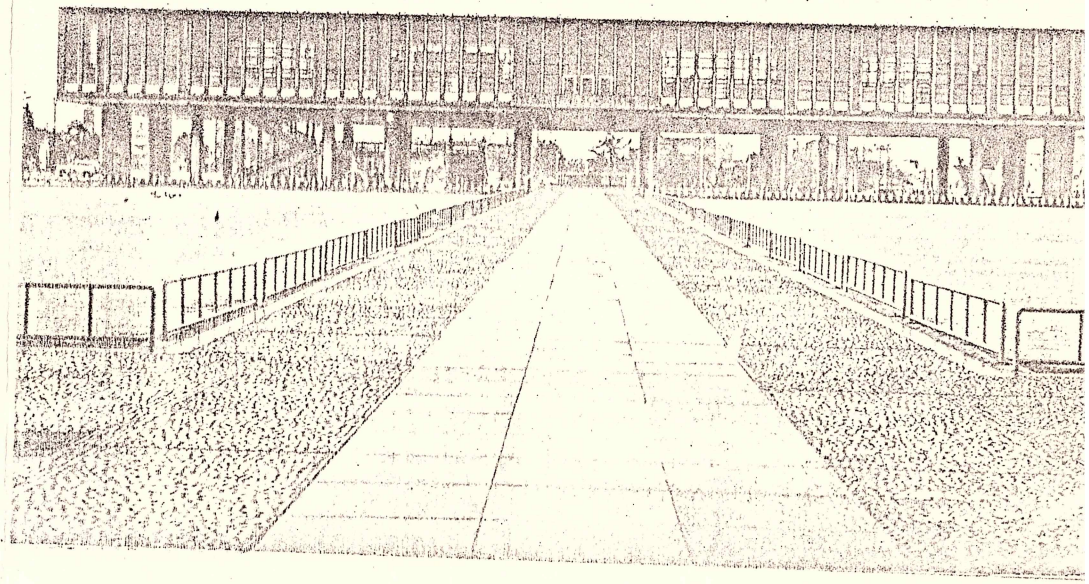
Gamma rays and neutrons played a primary roll in the radiation emitted within one minute of the bombing, causing numerous physical disturbances. In this regard, the A-Bomb differed from conventional weapons, and the effect extended as far as 2.3 kilometers from the hypocenter. The area within a radius of one kilometer from the hypocenter was most seriously affected by a large dose of radioactivity.

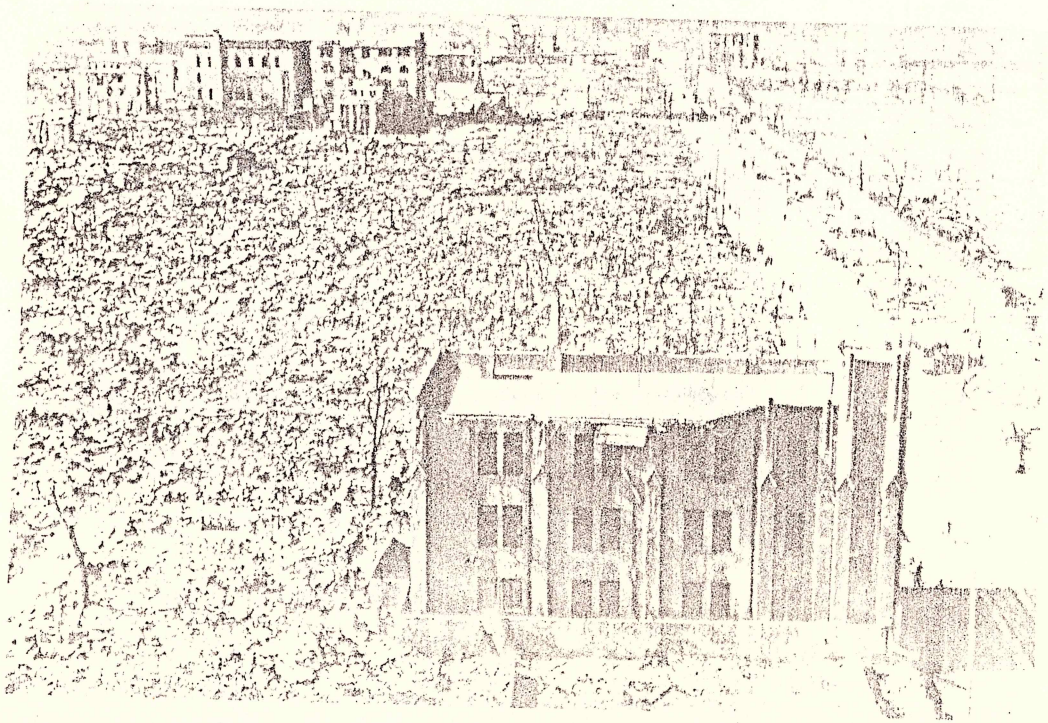
Residual radiation was present on the ground for a long time from one minute after the explosion. Anyone who entered the area within one kilometer of the hypocenter to aid victims or search for relatives within 100 hours of the bombing was considerably affected by exposure to gamma rays. Then, from thirty minutes after the explosion, a "Black Rain" fell on the city for ninety minutes, containing huges doses of lethal radioactivity.

Many have died over the years from chronic illnesses caused by radiation, including leukemia and malignant tumors. Some are still suffering in hospital beds, victims of radiation-related sickness.

The Atomic Mushroom Cloud

HIROSHIMA PEACE MEMORIAL MUSEUM





Address : 1-3, Nakajima-cho, Hiroshima City

Tel : (0822) 41-4004

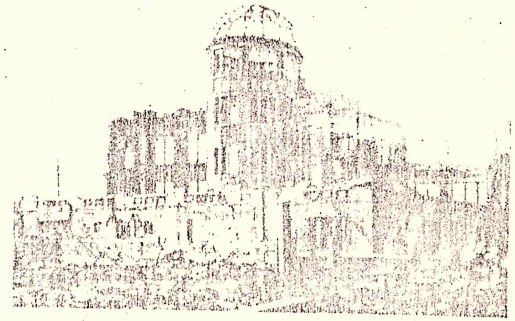
Inauguration : August, 1955

Exhibits : Panorama, relics, diagrams and photographs showing the severe damage caused by the atomic bomb dropped on Hiroshima in August, 1945.

Museum Hours : 9 : 00 AM ~ 4 : 30 PM.
Open all year, except the last three days of each year, and the first two days of the new year.

Admission Fee : Adults ¥50 (Groups more than 30, ¥40 each)

Children ¥30 (Groups more than 30, [illegible])



A-bomb Dome Photo by K.HAYASHI