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What the Atom Bomb Would Do to Us

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By
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WHAT would have happened if one of the atomic bombs we dropped on Japan had been used on New York? Specifically, on the Empire State Building?

I asked this question of Major General Thomas F. Farrell, who was second-in-command to Major General Leslie R. Groves on the atomic-bomb project and officially inspected the catastrophic damage done to Hiroshima and Nagasaki.

"If fused correctly," General Farrell said, "one of those bombs could blow the Empire State Building to hell. There might be a sort of stump left for a few floors above the ground, but it would be completely unlivable. And it's also quite possible, if the bomb went off exactly

where one wanted it to, that it would push the whole upper part of the Empire State Building right over." Not even one of our largest preatomic bombs could have done anything remotely comparable.



Many experts, scientific, medical and military, surveyed the damage at Hiroshima and Nagasaki. Among them were 114 technicians of the U. S. Strategic Bombing Survey, who questioned, measured and took photographs on the spot for periods up to two months. As a result of their elaborate studies, they can judge pretty accurately what such a bomb would do to cities elsewhere in the world. *Unanimously, and*

often violently, the experts take issue with Major de Seversky's estimate that, if dropped on New York or Chicago, one of these bombs would have done no more damage, and killed no more people, than a ten-ton blockbuster.*

And they believe that Major de Seversky's article dangerously minimized the menace of atomic bombing and tended to lull people into a false sense of security at a critical time.

*See "Atomic Bomb Hysteria," The Reader's Digest, February, '46.

Over Hiroshima and Nagasaki the bombs were purposely exploded rather high in the air, in order to subject as wide an area as possible to the crushing waves of pressure from the blast. The center of the explosion was perhaps 2000 feet up — the exact height is secret. Even at that distance from the explosion, some reinforced concrete buildings were totally destroyed, among them a prison with eight-inch walls. Other concrete buildings a little farther away had their upper stories bashed in. Multistory brick buildings were flattened out up to a mile; one-story brick buildings up to a mile and a half. At Nagasaki, factory chimneys were displaced, cracked or overturned up to 4000 feet. Some barracks collapsed at four and a half miles. At seven miles, ten percent of the glass was broken. Some glass was broken up to 12 miles.

When we raise our eyes to the proud towers of American city sky lines, it is easy to believe that they are far less vulnerable than the flimsy cities of the Japanese. It is easy to forget that nine tenths or more of even our greatest cities are composed of low brick, masonry or wooden buildings not much stronger than those which crumbled at Hiroshima and Nagasaki.

General Farrell, now back at his former job as Chief Engineer of the New York State Department of Public Works, has been a construction man for most of his distinguished career. When I asked him to enlarge upon what would happen

in New York, he replied: "If a single atomic bomb were detonated at the right height above a typical New York City area, I believe that the radius of severe blast damage alone would be a mile or more." That means over three square miles of dwellings crushed or made unlivable for whatever inhabitants survived.

But wouldn't our great office buildings withstand the blast? With Dr. Philip Morrison, a physicist on the staff of the laboratory at Los Alamos, New Mexico, where the bomb was assembled, I sat gazing out on the canyon of a midtown New York street. "American skyscrapers," he said, "look stronger than they are. They are made of panel upon panel of brick and stone facing, each panel resting within a frame of steel. If an atomic bomb, Nagasaki model, went off in the air nearby, these buildings would shed their panels of facing as a tree sheds its leaves, killing or wounding the people inside, blocking the streets with rubble. And if the bomb went off near enough the ground, the bricks and stone would become artillery."

General Groves, in hearings before Senator Brien McMahon's Special Committee on Atomic Energy, was asked what the bomb would do to Washington. "If dropped in the center of the Pentagon," he answered, "there wouldn't be any Pentagon left." And General Groves ought to know, for he supervised the Pentagon's construction. "If dropped in what would probably be the goal of any enemy," he went on, "so that

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it hit on the federal triangle and the offices of the Government, it would destroy an area maybe two miles in diameter." In other words, it would probably cause enough damage and kill enough people to make the Government of the United States put up a sign, "Closed for Repairs."

In his Digest article, Major de Seversky refused to believe that a revolution in military science had taken place, and asserted that the effects of the bombs dropped on Hiroshima and Nagasaki had been "wildly exaggerated." He was shocked by the contrast between what he saw and what "hysterical" unofficial accounts had led him to expect. There was no "bald spot" where matter had been "vaporized in the twinkling of an eye." The blast could not have been "unusual," for concrete buildings were "structurally intact"; the damage and casualties were caused by "fire, just fire" — and secondary fires at that, not fires set by the direct heat of the bomb.

To this last complaint the experts reply, "So what? Fire may be no novelty, but it did the job. The bomb was dropped after long calculations based on detailed studies of the target and of Japanese construction. The result Major de Seversky found so disappointing was precisely the result intended. The Hiroshima bomb was fused to explode, and did explode, at such a height as to flatten the maximum number of Japanese wooden houses, which then took fire. By exploding the bomb near the

ground, such weird effects as vaporization could have been produced, more concrete buildings could have been smashed, a small area could have been burned to a crisp by direct heat from the bomb. But that would have been wasteful, pointless. We were not out to create 'bald spots' and other tonsorial effects on the Japanese landscape. We were out to end a war. And we did. With two bombs. If that won't impress Major de Seversky, then he's the kind of man who will find fault with doomsday."

Major de Seversky, the experts believe, viewed all too casually devastation which had caused an empire to surrender. They point out that apparently he did not see the long concrete school building, 2400 feet from zero point, with half of its two upper stories crushed in by the blast. Nor another building, down the concrete walls of which diagonal zigzag cracks show how the whole structure suffered a gigantic push. He does not mention the 21 concrete buildings close to the blast at Nagasaki, four of which were destroyed, ten of which were structurally damaged. His findings omit the fact that many Japanese buildings are more strongly built than any similar buildings in the United States, in order to withstand frequent earthquakes. He saw flag poles, air-raid sirens and other frail objects undamaged by blast or heat, but he did not see the 20 flag poles that were bent, or the paint, glazed by heat from the bomb's flash, on a gas tank 6500 feet from zero,

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or the scorched vegetation on hills 7000 feet from zero.

Major de Seversky's opinion that if dropped on a large American city one of these bombs "would have done no more damage than a ten-ton blockbuster" seems to the experts grotesque on the face of it. Such a blockbuster would contain little more than five tons of TNT, while the atomic bomb released energies equal to the forces loosed by the explosion of 20,000 tons of TNT.

I looked at the photograph of that ponderous Nagasaki school with half of its two top stories smashed in at 2400 feet, and asked General Farrell what a blockbuster would do in New York.

"A blockbuster," he said, "is by definition a bomb that can 'bust' a whole city block. That's four acres. Let's be generous and assume that the ten-tonner fell at an intersection in a typical low-building area and 'busted' or severely damaged 16 acres. That's one 40th of a square mile. If detonated on the ground among the same kind of buildings, an atomic bomb — speaking conservatively — would do at least 80 times as much damage as a blockbuster; if exploded at the proper height in the air, at least 120 times as much."

Dr. Morrison thought the atomic bomb would do at least 100 times, perhaps 300 or a thousand times, as much damage as a blockbuster. Prof. H. L. Bowman, a civil engineer on the staff of the USSBS, put the atomic bomb at 100 to 200 times more effective than a blockbuster even against

Himsy Hiroshima. Paul H. Nitze, vice chairman of the USSBS, considered Major de Seversky's statement "completely out of the realm of any reasonable relationship."

In contrast with the thousands of man-hours of investigation and calculation by the 114 USSBS experts in Hiroshima and Nagasaki, Major de Seversky admits that he made no calculations, and was in each city two days, "not time enough, of course," as he told the Senate Committee, for "a detailed study."

Major de Seversky's article urged us to make our decisions "without doing violence to ascertainable facts." The experts reply that Major de Seversky is himself guilty of doing violence to the facts, and that misinformation on the subject of the atomic bomb is peculiarly dangerous. For if the Hiroshima bomb would — as he said — do an American city no more harm than a blockbuster, we can afford to shrink our fears down from their nightmare size, and crawl back under the eiderdown of fatuous complacency, and be less determined to fashion a world in which this fearful weapon will be controlled by global law.

"There are men living who know how to make a single bomb as destructive as a million ten-ton blockbusters. One such bomb, dropped on Washington or any other major city, may be expected to destroy its buildings utterly and wipe out its population."—Dr. Edward U. Condon, consultant on the bomb project and Director of the National Bureau of Standards.