

What Is Workings of H-Bomb? Theoretical Outline Explained

By Paul F. Ellis
United Press Science Editor
New York, Feb. 2.—(UP)—A hydrogen bomb could be 10 times more destructive and lethal than the atomic bomb that wiped out Hiroshima. Theoretically, it could be 1000 times more powerful.

At Hiroshima, there were approximately 75,000 persons killed and another 50,000 injured. Probably No Survivors

Only about one person in every dwelling within a half mile of the center of the atomic blast escaped death or serious injury. The hydrogen bomb at full efficiency would extend the ring of death to far greater distances and probably leave no survivors.

For a city to be hit by a hydrogen bomb would be like tossing that entire city into the blazing inferno of the sun.

Just what is a hydrogen bomb and why would it be so much more deadly than an atomic bomb? Scientists in the theoretical know-how frankly discussed the possibility of a hydrogen bomb until statements in Washington indicated that the government was investigating the possibility of producing such a super-duper bomb. Then the lid was clamped down.

Theory Discussed
However, the theory of a hydrogen bomb has been discussed in the technical journals for some years and, as in the case of atomic energy, the theory is no secret, not even to the Russians.

In the first place, for purposes of simplification, the hydrogen bomb might be called a "solar bomb" or a "star bomb."

Those simple names are suggested because a hydrogen bomb exploding would be going through a process that goes on constantly in the sun and other stars.

In the case of the sun, the world receives energy and makes plant and animal life possible. Such energy, however, travels the 93,000,000 miles separating the earth and sun and arrives in proper intensity so that living things on this planet are not burned to a crisp or vaporized.

More Powerful
In the case of a man-made "solar explosion," or bomb, the energy would be released at close range. The explosion might be only 10 times, or less, as powerful as the atomic bomb, but the scientists before the lid was clamped down said that it, in theory, could be 1000 times as powerful.

The theory of a hydrogen bomb, or "solar bomb," is comparatively simple. It is based on the theory that enormous amounts of energy are left over when hydrogen, the lightest element known, is changed into helium, the second lightest element. In contrast, the atomic bomb uses the heaviest elements, uranium and plutonium.

But the operations are as different as night and day. In the atomic bomb, atoms are split with the resulting release of energy once locked up inside the atom. In the hydrogen bomb, according to the theory, the energy is obtained by the building up of atoms. Hence, atomic bomb explosions are caused by fission or a splitting; the hydrogen, by fusion or the welding together of two different elements. Heavy hydrogen probably would have to be used.

Goes On Constantly

A school child knows that

combining hydrogen with oxygen makes ordinary water. That is, two atoms of hydrogen with an atom of oxygen form one molecule of water. Of course there is no explosion when such a fusion occurs because no new element is being formed. In the case of the hydrogen bomb, one element, heavy hydrogen, is being converted into another element, helium. The scientists, in theory, have figured out that some atomic particles are lost in such a fusion, and that they are accounted for in the form of energy—enormous amounts of energy. It has been pretty well established that a somewhat similar change—ordinary hydrogen into helium—goes on constantly in the sun, thus giving us warmth and energy on earth. It is believed that light from the stars comes from the same source.

In the years gone by, however, scientists believed that man-made hydrogen-helium transmutation would be only a dream because enormous amounts of heat—more heat than any furnace

New Bakery Owners Schedule Open House

Ashland, Feb. 2.—Bill Lipsey and Nye Bernheisel, who recently purchased the Lithia bakery from Chalmers Wolfe, have announced plans for an open house Saturday.

The new owners were formerly employed by Fluhrer's bakery in Medford. Wolfe has not announced his future plans.

could stand—would be necessary to force the nucleus of hydrogen into a nucleus forming helium. The nucleus of hydrogen is composed of a particle known as a proton and another particle known as a neutron. The nucleus has a positive charge, and the law of physics sets down the rule that positively-charged particles repel each other. Thus, it would be quite a trick to fuse four positively-charged hydrogen nuclei into a helium nucleus.

Energy Released

And that's where atomic energy comes into the picture again.

It is known that when uranium or plutonium in an atomic bomb explodes in a chain-reaction that tremendous amounts of energy and heat are released. It was such heat and energy that devastated Hiroshima and Nagasaki. On a basis of that, the scientists may be thinking of using exploding uranium or plutonium to trigger, or release, heat. That will start a chain reaction of fusion between hydrogen atoms.

Thus, the hydrogen-helium bomb may be a double action operation. Atomic energy first, and then solar energy resulting from the fusion of hydrogen into helium. No scientist has made a "blue print" of how the mixture of uranium or plutonium and hydrogen would be placed in a "model bomb," but such "details" probably may be regarded as "engineering problems" that can be overcome with the same emphasis in force that was exercised in the drive to make the first atomic bomb.



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