

MEDICINE

# A-Bomb Effects Studied

People of Nagasaki and Hiroshima need to be studied for many years to determine long-range effects on blood, disease resistance and reproduction.

► THE PEOPLE of Hiroshima and Nagasaki must be followed for many years to determine the long-range results of atomic bombing on their blood, resistance to disease and ability to have normal children, Capt. Shields Warren of the Navy Medical Corps, declared at the meeting of the American Association for Cancer Research in Atlantic City.

Capt. Warren, who is president of the association, was chief medical officer of the Naval Technical Mission to Japan and his report is the first official public account of the Navy's medical investigation of the effects of the atom bombings.

"The distinctive feature of the atomic bomb is the large amount of radiant energy which it produces," he pointed out.

Its chief effects on the body are: 1. the effects of heat, producing primary injury of the flash burn type and secondary injury due to fires started by the bombing; and 2. the effects of short-wave radiation and neutrons which closely parallel the effects familiar to medical scientists from experimental studies of the effects of X-rays.

"This radiation was produced in an instant," Capt. Warren reported. Security prevented his stating the exact duration of time and the type and quantity of radiation.

The immediate effects from radiation injury as a result of atomic bomb explosions were weakness, malaise, fever and often death. These effects appeared usually within 48 hours. Capt. Warren and his group looked for the delayed effects in the blood, blood-forming tissues and sex glands, tissues known to be particularly sensitive to radiation.

Damage to the blood-forming tissues fell into three chief groups. The first was the one in which the white cells of the blood, important defenders against disease germ invasion, were greatly reduced in numbers. Infection, particularly Ludwig's angina, was the outstanding feature. The great bulk of deaths in this group occurred within the first three weeks after the bombing.

Within three to five weeks after the bombing, a considerable number of per-

sons died of hemorrhage, the result of lack of elements in the blood necessary for clotting. This was due to radiation damage to certain cells of the bone marrow. The hemorrhages varied from extensive black and blue spots to massive bleeding from various openings of the body. Although Capt. Warren did not say so, these hemorrhages might have been what gave rise to rumors of elderly women being rejuvenated by the atomic bomb's effects.

Those with serious bone marrow damage who weathered the first few weeks developed anemia later with red blood cell counts in some dropping to as low as 1,000,000 or less, which is less than one-fourth the normal.

The atomic bombing's effects on the sex glands were much more prominent in

the case of men than women, Capt. Warren reported. Changes noted in previously normal high school girls may have been due to psychic shock and malnutrition as well as to direct effect on the ovaries, he suggested. Although women of child-bearing age only occasionally showed damage to the ovaries of a kind to interfere with ability to have children, this type of damage in men was striking.

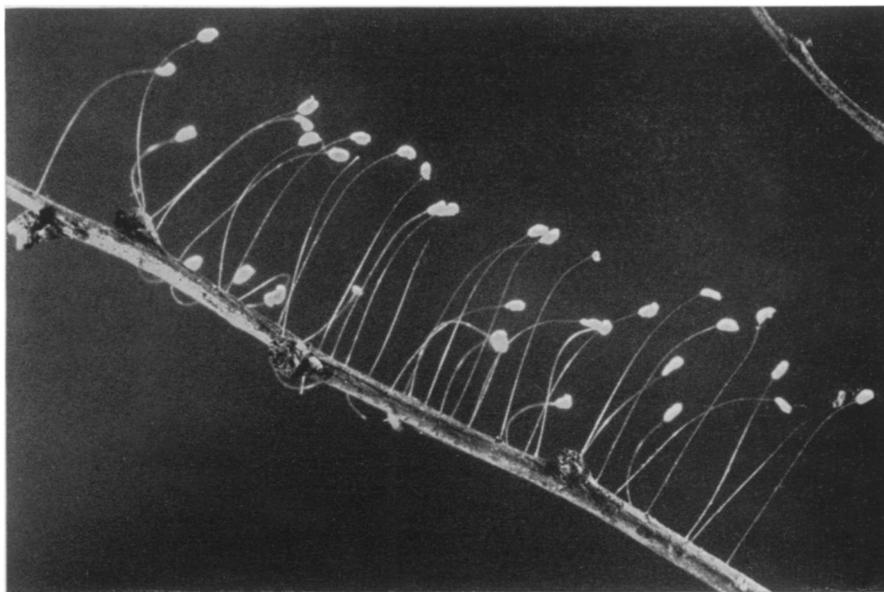
The treatment given A-bomb victims by the Japanese was "utterly inadequate," Capt. Warren found.

The number of deaths should have been materially reduced if victims had been given repeated blood transfusions and penicillin to control the infection during the period of white blood cell anemia.

On the much discussed question of danger from left-over radioactivity in the area after atomic bombing, Capt. Warren stated:

"We were fortunate in locating a number of persons who had entered the bombed areas soon after the explosion and had remained there. None showed any deleterious effects."

In other words, the area was safe for



**INSECT EGGS**—This photograph shows the odd way in which the lacewing fly places her eggs as a means of preventing her carnivorous offspring from eating each other. The young, called aphis lions, are so hungry when they hatch that the first one out would eat up all the eggs containing the others. So she secretes a series of stiff, silk-like stalks with her eggs attached to their ends. Then as each larva hatches out it crawls down the stem and goes away from the rest of the eggs in its search for something to eat. Aphis lions feed on plant lice, and are very valuable in keeping down these pests.

Photograph by George A. Smith, of Quarryville, Pa.