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PUBLIC SAFETY

Shelters Held Useless

► FALLOUT SHELTERS in areas hit by a nuclear bomb "seem only a means of delaying death," Dr. John N. Wolfe of the division of biology and medicine of the U.S. Atomic Energy Commission said in Washington, D. C.

"Thermal and blast effects and concomitant radiation would create vast areas that would be useless to the survival of man," the AEC biologist warned. "Add also fire, insect devastation and disease, and the picture in many areas becomes grim indeed."

In an interview with SCIENCE SERVICE, Dr. Wolfe took issue with recently publicized estimates that an adequate shelter program could mean the survival of 97% of the population.

"If that is true, and the devastation of a nuclear explosion can be so easily counteracted, then why should any of the nations develop nuclear bombs or consider using them as weapons against an enemy?" he asked. "You can more easily and humanely kill off three percent of the enemy population with rocks and sticks and bows and arrows."

Shelters represent only a part of a survival plan. No matter how adequate a shelter program may be, man eventually has to come out, Dr. Wolfe said. It appears likely that the environment into which he will emerge might result in a long setback to his biological and indeed psychological and mental creative developments.

The questions that have to be answered, therefore, are: "Where does man go after his sojourn in shelters? What does he do upon emerging?" Trying to find the answers to these questions is the object of special research now occupying biologists such as Dr. Wolfe in the AEC.

The answers will vary according to the nature of the environment hit by nuclear

explosions, Dr. Wolfe pointed out. "For example, what would face a man emerging from a shelter after a bomb hit New York is quite different from what would face a man coming out in a farm area in Arkansas."

The problem is to estimate the effects of such drastic modifications to varying environments and be able to provide some guidance. Consequently, a full assessment of the biological costs of nuclear conflict must be made.

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BIOLOGY

Photosynthesis By Tiny Bacteria

► THE GREEN PLANT has no monopoly on photosynthesis. Bacteria can do it, too.

This was reported to the National Academy of Sciences meeting at the University of California, Los Angeles, by Drs. Daniel I. Arnon, A. Mitsui and A. Paneque of the University of California, Berkeley.

The discovery brings new understanding of the little understood process of photosynthesis, the scientists explained. They set the process as due to a flow of electrons set up when sunshine falls on a green leaf containing the green coloring substance chlorophyll. The same process follows when the enzyme, hydrogenase, from the sulfur bacterium *Chromatium* causes a flow of electrons from cystein when influenced by light. Cystein is an amino acid containing sulfur.

Thus, the first step in the photochemical act of the green leaf is identical with that of the bacterium.

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