ENGINEERING

Create Bomb-Proof House

➤ NO ONE in the United States appears to want a house that will protect him from a nuclear bomb blast, but such a house has been created anyway.

Compressible walls that roll with the punch of an atomic blast or hurricane gust comprise the main structural feature of the brick house. A design feature of the house is a group of windowless rooms in the center, each wall being heavier rather than thinner than outside walls as in the case of conventional houses.

Officials of the Structural Clay Products Institute, Washington, D. C., believe the house offers the best protection against nuclear blasts available within considerations of cost and appearances. However, their surveys have shown "no public interest at all" in such protection.

Since the public is not interested in A- and H-bomb protection, the designers are promoting the building for construction in hurricane and tornado areas. There the public seems willing to spend 5% to 20% more for the compressible brick wall or for the "inner safety core" that proved themselves in the 1957 nuclear tests in Nevada.

Staff engineer James G. Gross said the SCPI created the house "out of a sense of duty to the public." The home was designed by SCPI's research affiliate, the Structural Clay Products Research Foundation, Geneva, Ill., whose engineers submitted a brick schoolhouse to the 1957 atomic survival test.

The schoolhouse's brick walls were unharmed by the blast since an "arching" structural feature caused them to bow one-quarter of an inch and then return to their original configuration after the blast pressure was released.

Inhabitants of houses made with arched brick walls need not fear major structural damage from natural or man-made disasters —unless an A-bomb were to explode virtually on top of the house—Clarence B. Monk Jr., manager of the engineering and architectural research division, said.

However, Mr. Monk pointed out, the big danger observed last year in Nevada was the probability of being cut to slivers by flying glass. Since nobody wants to live in a windowless home, he said, SCPRF designed the inner safety core as a family retreat. The windowless, reinforced area normally would be a den or hallway.

Of the approximately 30,000 home building contractors operating today in the United States, the structural brick authorities told SCIENCE SERVICE, less than five actively promote nuclear war safety features in their homes. And these three or four, one official said, offer only such rudimentary features as bomb dug-outs or shelter basements.

However, many builders in tornado and hurricane areas are expected to offer designs based on the brick group's house. The safety core alone would add about five percent to the cost of a house. With the arching wall feature, combined costs are expected to add about 20%.

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CONSERVATION

Try Saving Cahow Birds

➤ CONSERVATIONISTS think they have found a way to save the last 14 Bermuda cahow birds in the world from extinction. They narrow the bird's nesting burrow with cement to keep out the bigger and more abundant longtail, a death-dealing home jumper.

The Bermuda cahow used to rule the roost in Bermuda more than 300 years ago. Hundreds of thousands of the birds swarmed around the Island during breeding season, long before man came to settle. It was man's settling that finally unsettled this small white petrel.

Between the years 1612 and 1630 Bermuda suffered a famine. The Island's colonizers thwarted starvation by living on the cahows. So great was the slaughter that the cahow was not seen on the Island again until 1906, when one was discovered by the late Dr. L. L. Mowbray.

Two other birds were found between 1906 and the Second World War, both having hit man-made obstacles. It was not until 1951, however, that nesting sites of the cahows were rediscovered by Dr. Mowbray's son, Louis S. Mowbray, director of the Government Aquarium in Flatts, Bermuda.

The cahow nests on three little islets off the coast of Bermuda. They come in from the sea in October to court and then leave again until late December, when they re-arrive to nest in burrows and hatch their one egg per female. In early March the eggs hatch—there were four new young last year —and feeding goes on through early June, after which the birds fly out to sea for a four-month or so stay.

Unfortunately for these last few birds of their kind, the bigger longtail breeds during part of the same time. Unlike the cahow, the long tail is not particular where it nests, just so long as it is a burrow. Inevitably, a longtail will enter a cahow nesting burrow, attack the newly hatched cahow chick and kill it.

To thwart the longtail, conservationists such as Mr. Mowbray and David Wingate, employed to follow the birds' survival attempt, have made artificial doors for the cahow burrows. Since the cahow is smaller than the longtail, the added cement keeps the longtail out, but permits the cahow adult to come and go to feed its young.

There is even a movement afoot in Bermuda to adopt the cahow as the avian symbol for the Island.

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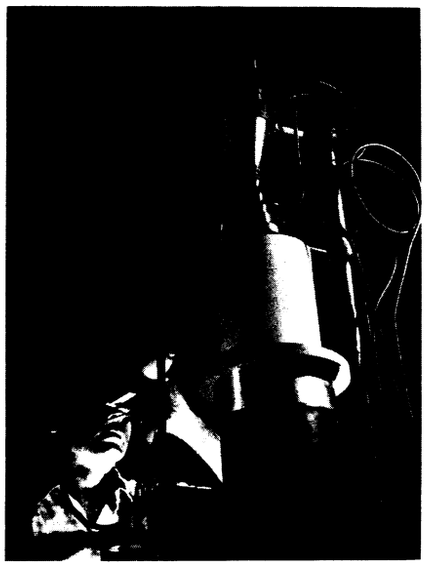

MAKING CONVERTERS—A special furnace is required to make thermoelectric materials capable of converting heat into electricity.

ENGINEERING

Heat-to-Electricity Convertors Show Promise

➤ A POTENTIALLY useful means of developing electrical energy directly from heat by the use of materials related to pottery and brick has been revealed.

Tiny electrical power generators that do not involve moving parts or require bulky storage batteries may be developed to operate guided missile and artificial satellite instruments, as a result of research on ceramic materials.

Dr. Clarence Zener, director of Westinghouse Research Laboratories, Pittsburgh, described the new flame-to-electricity conversion materials to a conference on thermoelectricity sponsored by the U. S. Naval Research Laboratory.

The materials, when heated by a flame or other high temperature source, set up on electrical current that can be harnessed for useful work.

Dr. Zener explained that the ceramic-like materials overcome disadvantages of earlier heat-to-electricity conversion techniques. They are common materials, compounds of metals such as nickel and manganese, and would put no burden on our stockpile of critical materials. They do not require ultra-high-purity refining, high-vacuum operation or complex electronic apparatus.

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● RADIO

Saturday, Sept. 20, 1958, 1:30-1:45 p.m., EDT

"Adventures in Science" with Watson Davis, director of Science Service, over the CBS Radio network. Check your local CBS station.

Capt. W. W. Wilbourne, commander of the Naval Ordnance Laboratory, Silver Spring, Md., will discuss "From Underseas to Outer Space."

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