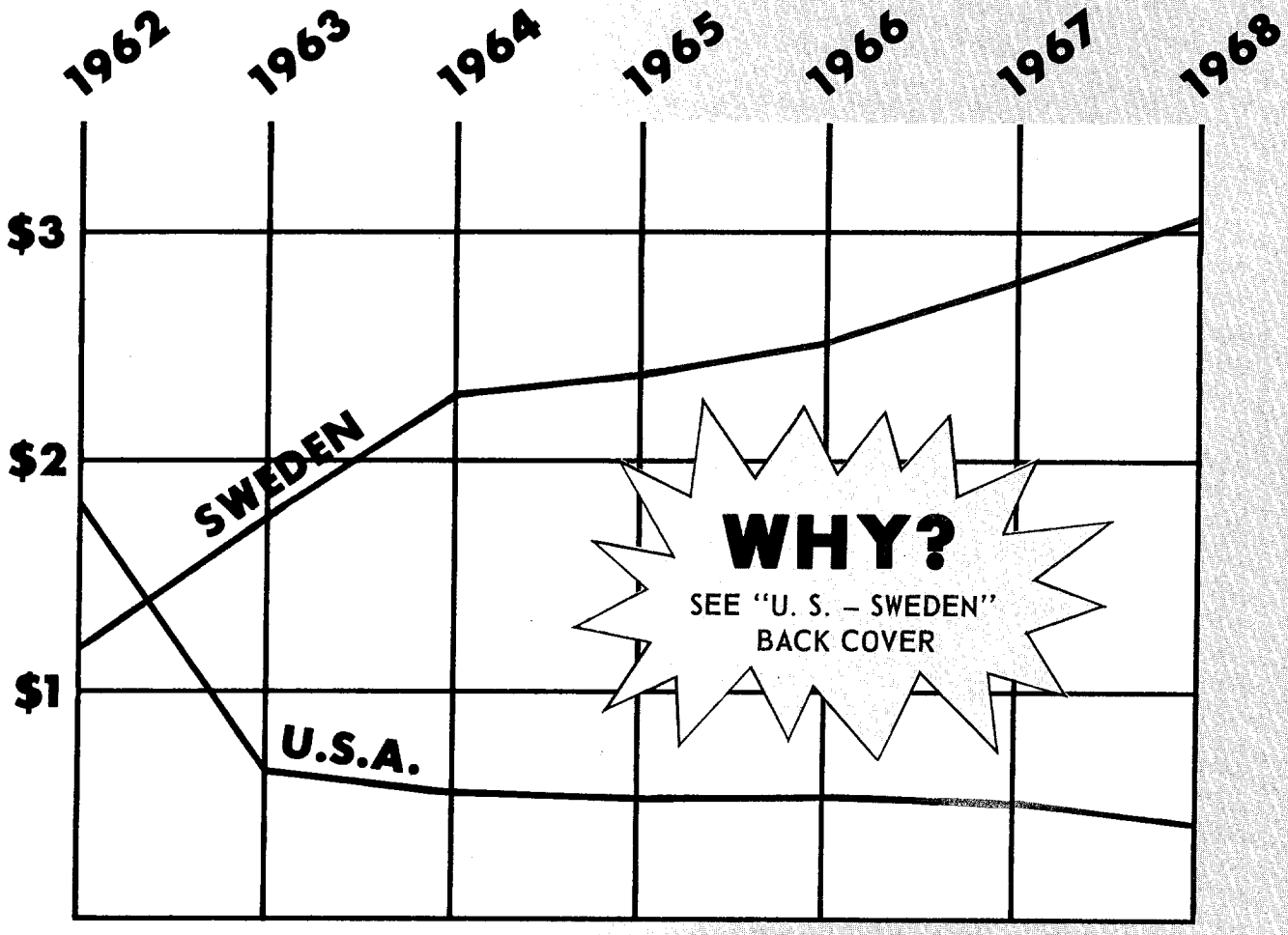
. . . . . AN AMERICAN JOURNAL OF CIVIL DEFENSE

VIVE

VOL. 1 NO. 2 JULY - AUGUST 1968

PER CAPITA ANNUAL NATIONAL CIVIL DEFENSE EXPENDITURES - U.S. AND SWEDEN:



CIVIL DEFENSE FORUM

OAK RIDGE CIVIL DEFENSE SOCIETY

ASSOCIATION FOR COMMUNITY-WIDE PROTECTION FROM NUCLEAR ATTACK

IN THIS ISSUE:

SURVIVE VOL. 1 NO. 2 JULY - AUGUST 1968

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AIA Looks at Civil Defense

According to Roscoe C. Burr, Seattle-King County Civil Defense Director, the American Institute of Architects (AIA) will weigh the possibility of more active support of the Federal Civil Defense Program at its summer meeting. AIA President Robert Durham is scheduled to present evidence of the need for such support to the AIA General Assembly. Burr implied in a prepared statement that a lack of government leadership has been responsible for professional apathy in the field of protective construction. Said Burr:

> "In the matter of Public Fallout Shelter Design, the President has *not* stated publicly that it is needed; federal statutes do *not* require it; and there has been *no* tax incentive to promote it."

Burr has compiled a booklet of statements by political leaders and prominent citizens to be used as "preponderance of evidence" at the AIA conference.

Among SURVIVE contributors

Edward Teller

Edward Teller, author of "Civil Defense in the Age of Russian Superiority" (page 1), is founder of the United States Atomic Energy Commission laboratory at Livermore, California. He is one of the world's leading theoretical physicists, has served on the faculties of top research institutions such as the University of Chicago and the University of California at Berkeley. Under his guidance the United States won the race to develop the first H-Bomb, thereby making this powerful weapon first available to the free world. Dr. Teller has participated in the development of nuclear weapons from their beginning. From his vast knowledge in nuclear weaponry he points up the likelihood that the Soviet Union has overtaken the United States in nuclear offensive capability and the effect this has on the need for civil defense.

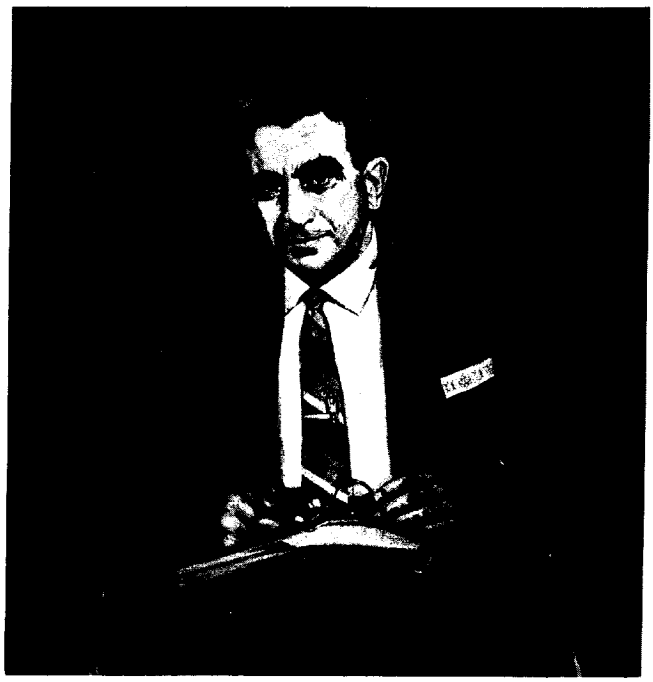
Uher-Broyles

Dr. Richard A. Uher received his PhD degree in physics at Carnegie-Mellon Institute in 1966. The research leading to the article "How Many Can Be Saved?" (page 4) was completed at the Oak Ridge Civil Defense Project during his period of assignment there from 1966 to 1968 by the United States Army. Dr. Uher is now a Senior Scientist in the Transportation Division of the Westinghouse Electric Corporation. Dr. Uher's work is summarized by Dr. Arthur A. Broyles, Professor of Physics at the University of Florida, a member of the **SURVIVE** Editorial Board, and President of the Association for Community-Wide Protection from Nuclear Attack (APNA).

CIVIL DEFENSE IN THE AGE OF RUSSIAN SUPERIORITY

by Edward Teller

One of the world's top nuclear scientists, architect of the first H-bomb, sees a practical solution for a 2nd place America during difficult times to come.



EDWARD TELLER

In the last years there have been increasing signs showing that the Russian effort to build rockets which carry nuclear explosives greatly exceeds the effort in the United States. Statements of former Secretary of Defense McNamara to Congressional committees clearly show that our lead in missiles is decreasing, and one may infer that it will disappear in the near future. Considering the uncertainties on a subject on which complete information cannot be available, one has to recognize the possibility that even today the Russians might have a stronger nuclear offensive capability than the United States. That the Russians will be superior to us in this respect within a few years seems probable.

At the same time the Russians have made clear statements to the effect that they have deployed a ballistic missile defense. We have just started on this activity.

Under these conditions it is important to raise the question of civil defense with particular urgency. At a time when our superiority is lost, defense is obviously more needed.

The first question is whether indeed Russian superiority is meaningful. It has been stated that both sides possess the capability to overkill their opponents and thus numerical superiority should become meaningless.

This argument would be indeed valid if war and in particular nuclear war would be predictable. History shows the great uncertainties of any prediction connected with armed conflict. The consequences of the unprecedented catastrophe of a nuclear war seem to be particularly hard to evaluate.

One relevant example is connected with missile defense. The main point to keep in mind about this much debated topic is that no one really knows how effective such a defense is going to be. Those who speak of overkill ignore the possibility that missile defense indeed may work. The effects of new technical developments have all too often been ignored.

One of the main advantages of missile defense is that it introduces an uncertainty. Considering the cautious nature of Russian leaders, this uncertainty will have a restraining influence.

A second important consequence of missile defense is that it forces the attacker to put less emphasis on very high yield weapons bursting at relatively low altitudes. The shock effects from such weapons are particularly destructive and are apt to cause extensive damage even to blast shelters. On the other hand, these big weapons are easily defeated by missile defense. Therefore the attacker probably will introduce many small nuclear explosives instead of a very big one; then missile defense becomes more difficult.

It is at this point that the connection between active missile defense and civil defense becomes particularly clear. Numerous small missiles will give rise to extremely high overpressure areas over a quite limited region. More limited shock pressure over extended regions becomes the main agent of destruction. This pressure is high enough to destroy almost any kind of building except well constructed shelters,

which will survive even when they are constructed in an economical fashion, costing about $200 per sheltered person.

There is a second connection between missile defense and civil defense. One of the most difficult problems in any plan to save our population is the relatively short time of warning which is available in case of a sudden attack by enemy missiles. The difficulty is compounded by the fact that the population in the United States may not heed the warning even when it is given. It is likely that missile defense will manage to stop the first wave of incoming missiles. This will prolong the time available for seeking shelters. In addition, it in itself constitutes a type of warning which no one can ignore.

Apart from the deployment of the antimissile force, civil defense enters in an important way into the strategic balance. It will be particularly important in a time when the Russians possess an advantage over us in offensive missiles. The eventual outcome of a nuclear exchange will greatly depend on civil defense. There can be little doubt that in the absence of civil defense a determined attack such as the Russians can launch against us will destroy the United States beyond any possibility of recovery. On the other hand, good civil defense may insure our national survival. Countries have quickly recovered from massive damage to their cities and from a high rate of casualties. Recent examples are the recoveries of Russia, Germany and Japan after World War II. One reason why such recovery is possible is the economic fact that the total value of goods in a modern country does not amount to much more than three times the annual gross national product.

For recovery to be possible, it is necessary that a considerable fraction of the people should survive, that organized effort in the country should continue, and that the basic materials and tools should remain available for the work of rapid reconstruction. A meaningful civil defense must satisfy all these conditions.

The first purpose of course is to save lives. There can be no doubt that a properly distributed effort on missile defense and on civil defense can insure the survival of the great majority of our people. It is probable that in the most effective distribution of expenditures on these two efforts the more costly component will be missile defense. On the whole, shelters are relatively cheap.

If we manage to limit the casualty rate it will become easier to maintain order after an attack. A lot has happened already to insure the survival of centers of government and of industry. More should be done in this respect and one should specifically give thought to the practical and legal aspects of the unprecedented state of emergency that will follow any nuclear attack. One strong argument for doing this is that what is required here is mostly foresight. The cost will be minor.

The last and in some respects most significant civil defense requirement is to insure the material means of post-attack recovery. It is at this point that the economic strength of the United States is likely to be particularly important. We have food surpluses; if properly secured and distributed, they will probably last for two years. The Communist countries are barely producing enough food for the year-to-year needs of their populations. In this important respect we seem to enjoy a lasting advantage.

Our industrial equipment is abundant, in some respects overabundant. In many cases it would cost very little to mothball equipment which is declared obsolete because something better and more efficient has been developed; such equipment is still fully serviceable. No similar situation exists in Russia even though that country has been quite successful in developing its industry. One may use a biological analogy. The idea that the fat man is not a good fighter is well known and valid. It is less frequently remembered that fat is nature's way of insuring survival during times of desperate shortage.

The statement that Russia will be ahead of us in offensive missile strength during the early 1970's is contradicted by many. Various people have various reasons to deny this disturbing probability. One reason is that Russian superiority may appear too terrible to contemplate. Another is that classification of information has prevented the widespread concern which would be appropriate.

There is at least one point of view which will permit us to look into the dangerous future with some confidence. The great economic strength of our country should give us the tools by which to establish civil defense which will be needed in the near future. Such defense is in full consonance with our desire for peace and indeed it is likely to avert war by making it doubtful whether the Russians could accomplish the aims of a nuclear attack.

The fact that so far we have invested in civil defense a negligible part of our effort is most disturbing in a situation which appears darker with each passing year. Civil defense may still save our country and may still prevent a nuclear conflict. But time to get prepared for the difficult period that lies ahead is running out fast. ■

C D SPOTLIGHT

SWISS RADIATION MEET BARES NEW FINDINGS

300 participants from 21 nations attended the Symposium on Radiation Protection at Interlaken, Switzerland during the last week of May. Sponsoring organization was the European "Fachverband für Strahlenschutz". The seven-day meeting featured searching analyses of a number of pertinent radiation questions. The following passages are quoted from a special on-the-scene report to **SURVIVE** on the results of the conference:

"Perhaps the most significant items of interest were in the area of physiological responses to exposure to radiation from fallout. Dr. Gordon Dunning of the U. S. Atomic Energy Commission, long associated with research in this field, reported that 18 out of 19 children who were involved in the Rongelap Episode (Bravo Test, Pacific, 1954) developed over a period of years clinically significant problems with thyroid glands. It was suggested that the long-term hazard from iodine radio-isotopes may have been grossly underestimated and that more attention should be given this problem in future civil defense planning.

"A re-evaluation of the American National Committee on Radiation Protection and Measurements Report No. 29 by the chairman of the group which wrote it, Dr. George V. LeRoy, was particularly provocative. The basic concept of 'ERD' (Equivalent Residual Dose) was examined in the light of animal research over the past six years since the report was issued. Many civil defense publications which give general guidance on planning protection from fallout radiation use this concept. It appears that even the original report was a consensus, rather than a unanimous issue of the committee, and recent scientific evidence casts further doubt as to the validity of the concept. Dr. LeRoy did not offer a specific alternative, but he did recommend that the report be completely revised.

"The question of 'anti-radiation' pills was discussed by Dr. Langendorff of the University of Freiburg, Germany. Some optimism was expressed as to the possibility of increasing human resistance (to radiation) by a factor of two or three. However, several of the medical doctors from the United States were very skeptical about the possibilities of the pills having any significance for civil defense purposes. . ."

Other subjects of special interest were a critical review of shielding calculations, a look into the problems of radiation exposure control in the post-attack period, new information on sizes of local fallout particles, and recommendations for changing the term "local fallout" to "early fallout" and "world-wide fallout" to "delayed fallout" in order to provide terms that would tend less to breed misconceptions. ■

CIVIL DEFENSE RAPPED IN U.S. SENATE

Persistent civil defense opponent, Senator Stephen M. Young of Ohio, makes colorful copy. His latest broadside at the CD establishment came in the U. S. Senate on May 29th when he attempted a last-ditch compromise cutback of the extension of civil defense matching funds. Said the Senator:

"In my judgement, the entire civil defense program should be scrapped. There is no such program within the Soviet Union, the only nation in the world capable of launching a nuclear attack on us. I believe the program should be done away with altogether. It is a huge boondoggle.

". . . It provides easy money and maintenance at the public trough for some so-called deserving Democrats or Republicans who need jobs of some sort. It is only natural that they urge continued spending of taxpayers' money on this frivolous and useless program. To claim, as Mr. Romm did, that there is public acceptance of this program is absurd. . .

"The fact is that not only do these officials detract from our national defense effort by utterly wasting taxpayers' money, but also foster the illusion that there is such a thing as a defense against the hydrogen bomb and other deadly atomic weapons. . ."

Senator Richard B. Russell of Georgia and Senator John O. Pastore of Rhode Island defended civil defense. Young's proposed limiting of funds failed. Observed Senator Russell:

"The Office of Civil Defense is the only instrumentality of Government I can bring to mind at the moment that has not had any increases whatsoever in its authorizations or its appropriations for the past several years. This result is largely attributable to the adamant opposition of the distinguished Senator fron Ohio. . ."

Senator Young's conclusions are also in conflict with the findings of Congressman F. Edward Hébert's 1963 congressional subcommittee. (See editorial, "Looking Back. . . And Ahead. . .", page 7.) ■

HOW MANY CAN BE SAVED?

by Arthur A. Broyles

A dedicated scientist and veteran civil defense campaigner dissects a research study on shelter costs vs survival levels and achieves for the layman a revealing picture of what kind of federal financing it could take to protect our American society from the effects of an ABM-oriented nuclear attack.

How many people can be saved - and at what cost? These are the pointed questions asked about civil defense measures such as shelters, antimissile missiles, etc. They are also extremely difficult questions to answer, principally because of the large number of pieces of information that must be given beforehand. For example, it is necessary to know the numbers and sizes of bombs delivered, the targets chosen, wind directions, etc. The best that can be done is to make simplifying assumptions and to calculate specific cases.

A recent study of this type has been completed at the Oak Ridge National Laboratory by Dr. Richard A. Uher, a member of the Civil Defense Research Project. His report is entitled, "Blast Shelter Systems with a Light, Area-Ballistic Missile Defense". This study was motivated by the recent decision by the U. S. Government to deploy a light ballistic missile defense system. Dr. Uher started out by asking, "How many people can be saved by blast shelters built with a given amount of money if a ballistic missile defense system has already been deployed?"

The simplifying assumptions made are that:

(1) people have time to get into shelters,

(2) everyone has a fallout shelter also giving fire protection,

(3) the enemy makes his attack in just the right way to create the most fatalities for a given shelter system, and

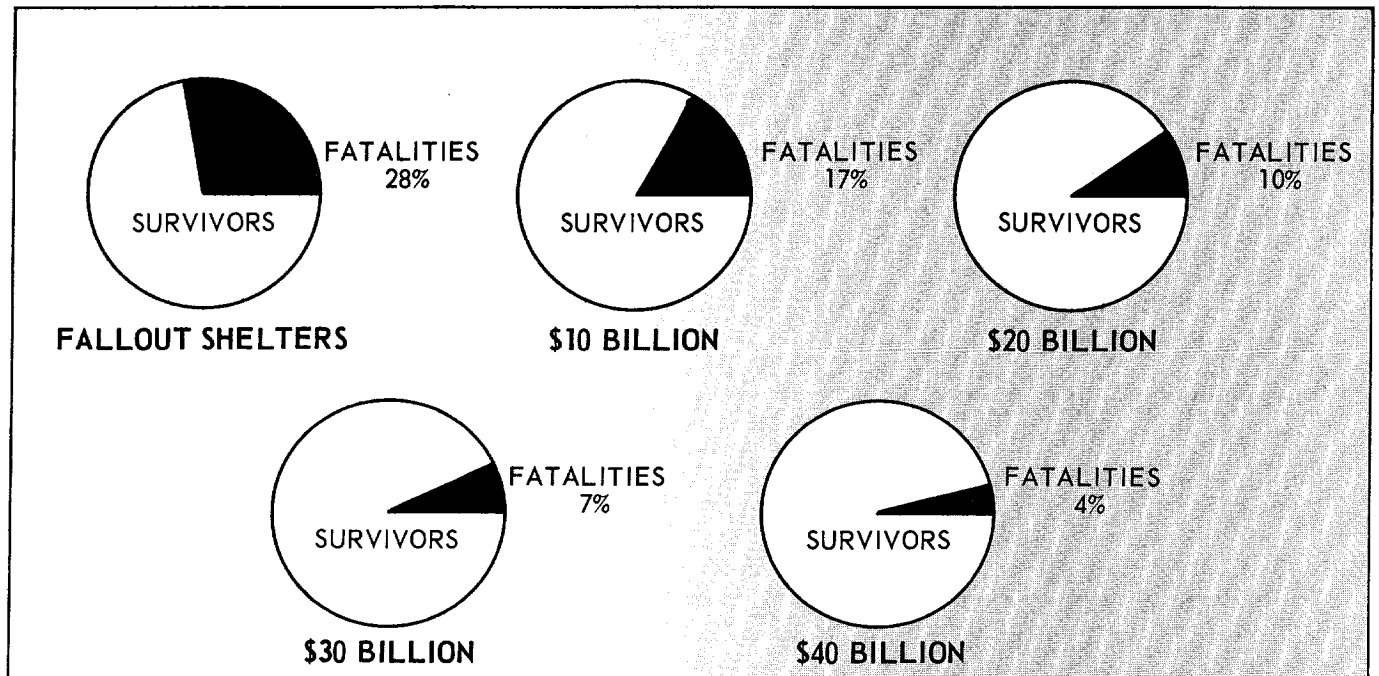
(4) the only effect of the missile defense system is to force the enemy to use multiple warheads, each having a yield of three-tenths of a megaton.

The enemy will choose small multiple warheads instead of one large bomb so that the defensive missiles will be forced to fire at a large number of incoming targets at once. This technique is employed to pierce an anti-ballistic missile system, and it requires the use of significantly smaller weapons with a resultant decrease in total megatonnage. In this way penetration of the defensive missile shield is made more likely (see "Civil Defense in the Age of Russian Superiority", page 1). A single large attacking missile may be launched, but it will send out a spread of the smaller bombs a short time before it reaches the range of the defensive missiles. The study by Dr. Uher assumes that only a negligible number of these three tenths of a megaton bombs are destroyed by the defenses. The defensive missiles have been of value, however, because blast shelters are now more effective than they would be otherwise.

The study considers two types of shelter systems, one composed only of shelters built to stand a given pressure, the other optimized by allowing blast protection to vary with population density. Thus, in this optimized case, shelter providing greater protection may be placed where population density is highest. This distribution of shelter gives the smallest number of fatalities. Although it is found that the optimized system is appreciably more effective, unfortunately the optimization can be made for only one attack size. At other attack sizes, such a shelter system may be relatively poor. Thus, a shelter distribution created for an attack of a given size tends to become obsolete as people move and attack sizes change.

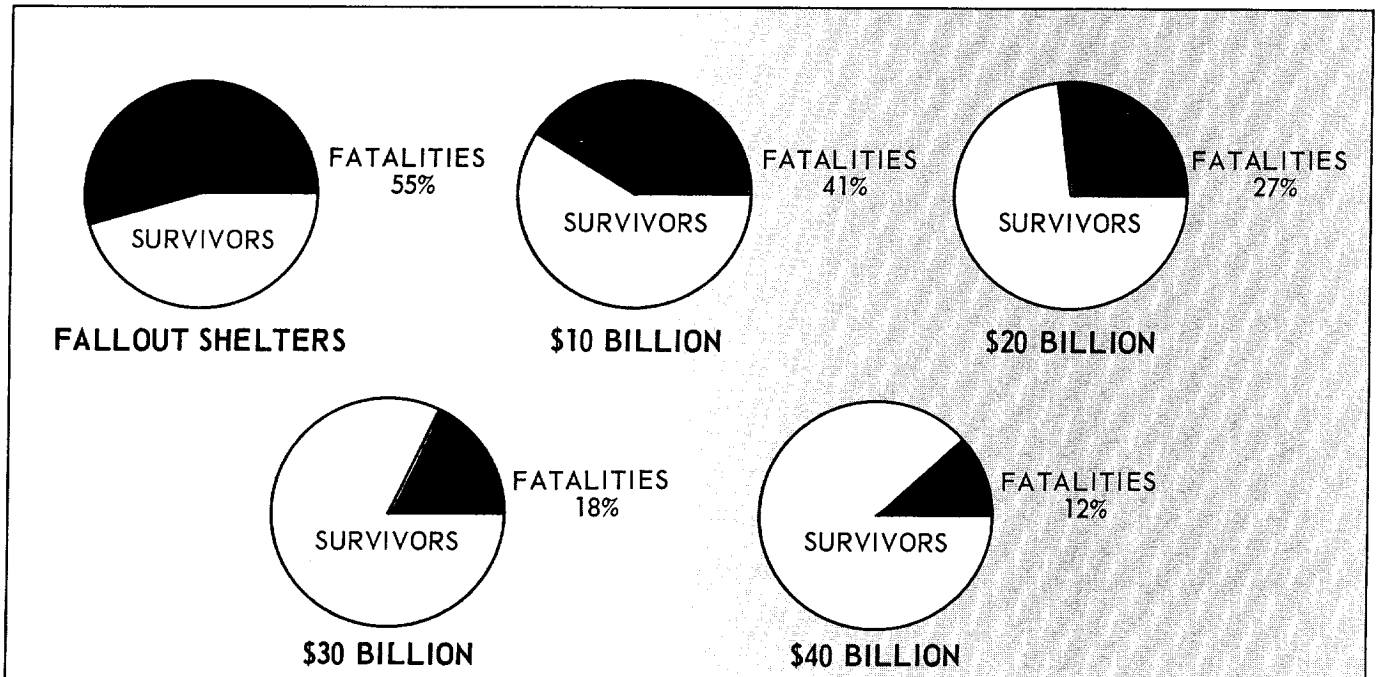
Some of the results of Dr. Uher's study are illustrated in Figures 1 and 2, on the opposite page. Increasing investments in blast shelters markedly reduces fatalities. Figure 1 is for an attack on the United States where the total yield of all the bombs directed against the population was taken to be 420 megatons. This required 1,400 of the three-tenths megaton warheads. Figure 2 gives the same results for a larger attack of 2,160 megatons total yield or 7,200 of the three-tenths megaton warheads. Optimized systems are not illustrated in these figures.

Although these results were obtained under quite restricted assumptions, they do indicate that blast shelters can save a substantial number of lives in both small and large scale attacks. Although the Russians are probably capable of larger attacks, it seems likely that a major fraction of their missiles will be directed against the military installations of the U. S. and its allies leaving a relatively smaller number for a population attack. ■



Fraction of the U. S. Population Killed by a 420 Megaton Attack.

Figure 1.



Fraction of the U. S. Population Killed by a 2160 Megaton Attack.

Figure 2.

Book Reviews

by Herbert A. Sawyer, Jr.

Fallout Shelters in Industrial and Commercial Buildings

Fallout Shelter in Industrial and Commercial Buildings, (OCD, TR-48, December 1967) is a beautifully written and illustrated booklet which says little and and reveals much. It features eleven new buildings, replete with chrome, glass, and polished stone, nine or ten of which have shelter space because it was unavoidable with the basic design used. For eight of these buildings the shelter area is either entirely or mostly in the basement areas, and for the one building without a basement, the shelter area is but three percent of the total area. Through the use of slanting techniques recommended by the OCD, shelter area in each of these buildings could have been increased substantially without extra cost. It was not done.

If this booklet is representative, architects, engineers and planners are still, in general, either not willing or not able to slant, and this despite the intense, and generally well conducted, missionary and educational efforts of the OCD.

The eleventh building of the booklet, a microwave relay station of the American Telephone and Telegraph Company, is also a poor example of slanting, but fortunately, for the opposite reason. This windowless structure, with 12-inch reinforced concrete walls and roof, has evidently been designed for levels of fallout, blast, and fire protection too high to be attainable by mere slanting and thus requiring considerable extra expense. This structure is another example of the high degree of "survival" orientation of much of American industry.

What a preposterous situation! The cold facts of the marketplace justify the costly assuring of "survival" of the paraphernalia of industry in the face of fallout, blast, and fire. But a supposedly benevolent government spends so little on civil defense--one penny out of every 20 dollars--that it can do nothing more than *examine* the chrome, glass, and polished stone structures spawned by our affluent society and hope to find holes and corners where its people *might* survive low levels of fallout-radiation. ■

In Time of Emergency - A Citizen's Handbook

In Time of Emergency - a Citizen's Handbook. . . . (OCD, H-14, March 1968). With the collaboration of nine other federal and independent agencies the Office of Civil Defense has begun distribution of a new disaster information manual. An attractive and comprehensive booklet of 92 pages, it ties in preparation for nuclear attack with preparation for natural disasters. The National Association of State Civil Defense Directors and the United States Civil Defense Council were two of the nine consultant groups. Within the scope of OCD survival policies, the booklet is very adequate. It is meant primarily to replace the 1961 H-6 booklet, *Fallout Protection: What to Know and Do about Nuclear Attack,* which had much less coverage of natural disasters. Published in a 6 x 9-inch format, the new handbook uses a black and white and blue color arrangement with excellent impact.

Physically, the booklet has two shortcomings, perhaps related. Its increased coverage does not justify its being almost three times as big as its predecessor, H-6. As a result, its length is such that the average citizen probably will not read it before an emergency nor will he have time to read it in time of emergency. Also, and perhaps because of this length, it has been printed in such limited quantity that requests for it immediately exceeded stocks. It may be years before stocks are large enough to put into effect the intended distribution. Typical of local reactions to this shortage was that of St. Johns County Civil Defense Director Fred V. Willis, Jr., of St. Augustine, Florida, who observed:

> "I have got to have H-14 in sufficient quantity to fill the need it is intended to fill for the *citizen* as is indicated on the cover. My one copy won't do that. If another hurricane hits us this fall, H-14, to do any good at all, must be in the hands of the families in my county and not included in future budget estimates. I know OCD is tightening its belt, but this is the wrong place to do it."

Technically it is discouraging to see this booklet (on page 11) fail to point out that effective protection against fire and blast effects is feasible. Actually, comprehensive protection which would provide considerable fire and blast, as well as fallout, protection could be provided for about 25 billion dollars - expended over a period of five or more years. The *annual* spending for military activity in 1967 exceeded the spending for the same activity in 1962 by about this amount. The *annual* federal non-defense budget increased about 50 billion dollars during this same period. Perhaps comprehensive protection against attack is not politically feasible. ■

"The need for an effective Civil Defense is surely beyond dispute. . . No city, no family nor any honourable man or woman can repudiate this duty. . ."

—Sir Winston Churchill

EDITORIALS

LOOKING BACK. . . AND AHEAD. . .

Five years ago, in the summer of 1963, the proposed national shelter program was given an exhaustive analysis by Subcommittee No. 3 of the House of Representatives Committee on Armed Services. The subcommittee chairman was Representative F. Edward Hébert of Louisiana. The hearings, which took over two months to complete, resulted in passage of the shelter legislation by the House. The bill died in a Senate Committee without benefit of the kind of evaluation Hébert's committee had given it.

In his opening remarks at the hearing Hébert said ". . . I think that civil defense is a subject on which there is a great deal more opinion than knowledge among the lay public. And at this moment, I believe we members of this committee, to a very great extent, are a part of the lay public."

What happened during the long days of the hearings is best revealed by turning to House Committee on Armed Services Report No. 715, which reads in part:

"During the hearings testimony was taken from 108 witnesses almost all of whom possessed a special competence in one field or another related to fallout shelters. . .At the beginning of the hearings on May 28, 1963, most, perhaps all, of the committee members were, for one reason or another, opposed to a fallout shelter program. . . The feeling of opposition to the program by the members of the subcommittee, referred to above, was fortified by the presentation of a long staff study which set out in great detail every objection which has been or could be raised against a fallout shelter program. . . What the committee does wish to say, and a matter which was clearly established as the hearings progressed, is that a dissection of the objections and a penetrating study of them reveals that they cannot stand up under informed scientific attack. . As these witnesses presented their testimony, a slow but easily perceptible change was evident in the attitude of the committee members. Opposition to the program melted and then hardened into an attitude of firm belief in and support of the fallout shelter program. . . The committee submits, and it believes quite logically, that the reversal from instinctive opposition to firm support would be repeated throughout the whole membership of Congress were the opportunity presented to the whole Congress of hearing and deliberating upon the testimony received by the committee. . . The result is an estimate, based on conservative assumptions, that 25 to 65 million lives would be saved by providing reasonable protection against fallout radiation. . .The committee heard from Mr. Gouré, and from a representative of the Defense Intelligence Agency who confirmed his testimony, that the Soviet Union gives civil defense a consideration priority and treats it as an integral part of military defense, and also heard that the Soviet civil defense effort far exceeds that of the United States. . ."

Where do legislators stand today? ■

NEW LOW IN CD BUDGETING

With the recent congressional recommendation of only 58 million dollars for a year of Federal civil defense activities, the United States may soon arrive at the milestone of spending over 1000 dollars on offensive weapon systems for every dollar spent on civil defense. On the other hand, Russia is spending many times as much per capita on civil defense, not to mention recent large expenditures on an ABM system. Since wars have always been fought at a calculated sacrifice in order to make a relative gain on an opponent, our great concern should be that this vast disparity in defensive shields may make war too attractive to Russia. If, following a nuclear exchange, we with ineffective civil defense are demoralized, and Russia, with effective civil defense (and some ABM protection) is not, Russia would remain as the only significant nuclear power in the world.

Dare we let this temptation get too great? ■

OCD BOOSTS DMSDP, EXPOSES SHELTER SAG

The Direct Mail Shelter Development Program (DMSDP) is one of the two most promising current projects of OCD. (The other is Community Shelter Planning.) It is now being expanded from a 7-state experiment to a 24-state operational system. States originally involved are: Arizona, Florida, Louisiana, Massachusetts, Tennessee, Texas and Wisconsin. New states are: California, Colorado, Iowa, Kansas, Maryland, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Oklahoma, Pennsylvania, South Dakota, Vermont, Virginia, West Virginia, and Wyoming.

A "Program Description" booklet just published by OCD focuses DMSDP on four steps:

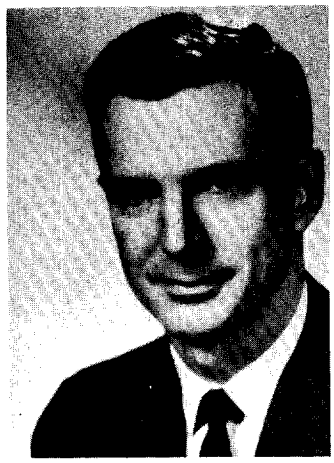
(1) Identifying owners and architects of planned construction;
(2) Encouraging them to consider "slanting";
(3) Offering them competent advisory service;
(4) Alerting state and local CD offices to new projects.

Although the booklet states that 170,000,000 fallout shelter spaces now exist in the United States it takes pains to reveal that only a fraction of these spaces can be used. One cannot therefore assume that 170,000,000 people, or 85% of our population, can be sheltered. As a matter of fact, according to statistics provided graphically by the "Program Description", in no state is there actually fallout protection for 85% of that state's population. New York comes closest with 72%. In 47 of the 50 states the figure is below 60%. In 14 states it is below 30%.

Of the shelter spaces represented by these percentages as usable, major shelter complexes in each state are located within areas which would presumably be exposed to blast and fire effects. In these circumstances they would be ineffective. ■

SO BE IT!

-by Don F. Guier



Assured survival of the United States as a nation, and of a great majority of the American people, is at last a technologically feasible proposition, despite the existence of intercontinental missiles, nuclear explosives, and other modern attack weapons.

At the same time, we are more vulnerable than ever before to nuclear attack, and more susceptible to nuclear blackmail.

This contradictory state of affairs exists for several reasons.

Wishful politicians, writers, and professors seeking some way to guarantee peace continue to assure us that the threat of nuclear war no longer exists. They argue that it would not be logical for either Moscow or Peking to order a nuclear attack on the United States, because they could not hope to win anything by such an act.

Yet we know that Soviet leaders do not accept the notion that no one could win a nuclear war under any conditions. They are moving rapidly toward superiority over the United States in offensive weapons. They are also engaged in ambitious programs for active and passive defenses for the U.S.S.R. against nuclear attack.

The past year confirmed that the Soviet Union:

--more than doubled its inventory of intercontinental missiles in one year, and continues to increase their numbers, accuracy, and sophistication;

--is developing a capability to bombard us from orbit;

--is well along in the erection of anti-missile defenses in its own territory; and

--continues to fund civil defense at about ten times what we spend in this field.

And the Soviet Union is no longer the only threat. The Joint Congressional Committee on Atomic Energy reports that Red China is now advancing faster than any of its predecessors in the "nuclear club" and will have the capability of attacking this country no later than the early 1970's.

Confronted by strong and aggressive enemies, why hasn't the United States invested its superior technology and economic capacity in assured survival?

Some have said it would be undesirable -- "destablizing". But it should now be clear to everyone that the Communist powers are not interested in stability -- they are thrusting toward overwhelming superiority.

To discourage aggression effectively, a nation must construct what General Thomas S. Power, former commander of our Strategic Air Command, has called a *complete* deterrent system. Such a system must serve two purposes: it must be able to wreak quick, decisive destruction on the aggressor's homeland and forces; and it must assure that the defended nation will be able to survive an attack and recover.

The need to meet the first requirement is well understood. and our strategic *offensive* forces - SAC's bombers and missiles and the Navy's Polaris-Poseidon submarines and missiles - have, in the past, been sufficient to convince our potential foes that retaliation by a wounded and aroused America would be decisive. However, recent U. S. policy has been based on the idea that arms have reached a "technological plateau" and on the hope of "a new race toward reasonableness." Over the last seven fiscal years, expenditures for strategic forces have slipped from 13 percent of the federal budget to 4½ percent. The U. S. is in a studied decline from nuclear superiority to parity to a limited retaliatory capability.

The second requirement - assured American survival - has never been agreed on, Our present defensive posture, in fact, tempts the aggressor powers to ever bolder action. It could, one day, lead to the war no one wants.

The federal government has clearly abandoned its stated goal of a complete and adequate fallout protection system. When the ABM system was given a limited go-ahead last year, after a three-year delay urged by a special presidential advisory panel, the promised reconsideration of the national fallout protection program was pointedly refused. Federal support for the approved, low-cost, low-priority fallout protection program is declining at a shocking rate.

But what is most significant is the continuing absence of programs to protect our "target" cities from the *direct* (shock and heat) effects of nuclear explosions.

It has been argued that this is impossible. The argument is no longer true, but most Americans remain convinced that nuclear war would bring annihilation. A combination of active and passive defenses *could* assure the survival of our nation and the very great majority of our people.

Defense against nuclear attack must be effective, within our technical capabilities, and within our economic reach. It can now be all of these things.

Half of our population now lives in areas of low population density. For this part of the nation we can provide adequate, low-cost fallout shelter which will assure their survival. The threat to these Americans is from the radioactive debris that will fall to earth downwind of any nuclear explosion. Its danger is shortlived, as the radioactivity decays rather quickly. Survival, therefore, depends on shelter for a few days at the most. Surveys have shown that most of the shelter needed against this threat can be provided in existing or new buildings at a very low cost.

Another third of our population lives in suburban areas. For these Americans some further protection is necessary in most cases. Heat and blast effects of a thermonuclear explosion over a nearby target city could cause great loss of

life in the suburbs, unless shelter for the suburban population is designed to withstand or minimize these hazards. Here the cost rises, if compared to fallout shelter, but competent studies have shown that "blast" shelter, adequate for these fringe areas, can be provided for less than $300 per person. In many cases, again, existing and new structures can be used, or modified at little cost.

The remaining one-sixth of our people lives in the densely populated central cities. For them, a system of blast shelters can be created at from $300 to $500 per person, depending on the protection required and the local conditions. For the city dwellers, however, passive defense alone is not enough. Active defenses in the form of anti-missile systems like the Sentinel ABM now under development must supplement the shelters, keeping most of the attacking rockets from reaching the target areas. Blast shelters are necessary to protect city dwellers, not only from the enemy warheads which slip through, but also from the low altitude explosions of the warheads of the defensive interceptor missiles.

It has been said that the American people "couldn't care less" about their protection against nuclear attack - that they will not support or participate in a real civil defense effort. Public opinion surveys and, more importantly, the record of participation by the public, communities, industry, labor, and voluntary associations, refute this. To cite a few examples:

In the first 18 states to undertake Home Fallout Protection Surveys, some 3.7 million homeowners were sent questionnaires. Eighty percent took the time to complete the form and return it. Few advertising sweepstakes, offering tempting prizes, get a tenth as great a response to a mailing.

Of the first 120,000 building owners approached, less than three percent have refused to provide free space to stockpile emergency supplies in areas of their buildings designated as shelters in event of a nuclear attack.

Active participation by local governments in civil defense programs covers 83 percent of the nation's population. No level of government is more responsive to public attitudes than these municipal and county officials.

Over 8 million people have taken advantage of civil defense training programs. Several hundred thousand hold voluntary assignments requiring training and involving individual responsibility in a civil defense emergency.

Estimates of the number of Americans who would die in an all-out nuclear assault on this country range up to more than half our population. A combination of active and passive defense systems, well within our capabilities, and within reach from a cost standpoint, *could* reduce this figure to perhaps ten percent. If we can provide assured survival of ninety percent of our population, can we afford not to do so?

The *way* is open to assured survival. It remains to be seen whether we have the *will* to survive. ■

SURVIVE

...AN AMERICAN JOURNAL OF CIVIL DEFENSE

Sponsored by

The Civil Defense Forum
The Oak Ridge Civil Defense Society
The Association for Community-Wide Protection from Nuclear Attack

SURVIVE is published bi-monthly by The Oak Ridge Civil Defense Society. Address: **SURVIVE**, Post Office Box 910, Starke, Florida 32091. Subscription: $3.00 per year.

SURVIVE presents authentic information relating to civil defense – to the survival of free government, the United States, and its people in the nuclear age. Its aim is public education in this field and service as a forum.

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U.S. - SWEDEN

As the **SURVIVE** cover chart indicates the accent on civil defense in Sweden has been growing during the past six years, while it has been sinking in the United States. The chart would be even more striking if Sweden subsidized its private shelter program. It does not. The construction of private shelter - *blast* shelter - is *law* in Sweden. It is a part of normal construction. The builder pays all costs. Fallout shelter is not considered adequate to meet the needs of nuclear warfare and is not planned in new construction. It is in some cases used temporarily as *expedient* shelter where it already exists and nothing better is to be found.

There are other contrasts between Sweden and the United States. Sweden, for instance, provides for the evacuation of its assumed "target" areas. In the United States we now feel that evacuation is not practical. In a future world war the United States is a potential prime belligerant. Sweden is not. It has been at peace for the past 150 years and intends to assure peace by maintaining a strong civil defense. Some prominent Americans see a strong shelter program as a dangerous policy vis-a-vis Russia and a possible war provocation. Sweden looks at a successful "armed neutrality" policy in the past. It saw the need of a strong civil defense posture during World War II. It is also convinced that a system of blast shelter, organized evacuation and other civil defense measures will discourage attack in any future conflict and prevent "nuclear blackmail". Sweden *drafts* its civil defense workers just as soldiers are drafted and *pays* them for service time. The United States depends largely upon volunteers and employees from other government agencies. Swedish officials are not disturbed by a lack of civil defense support. They do not expect the public to be enthusiastic about civil defense any more than they expect it to be enthusiastic about military defense. The Swedish Government has acted in the public interest in keeping with its responsibilities, and this is conceived to be its primary duty. The American Government, however, continues to look to the citizenry for a popular demand for civil defense. The American people have shown that they are interested in strong civil defense and will *support* government leadership to this end. They will not become sufficiently aroused to *demand* more civil defense until a crisis arises. This may be too late.

In Sweden, political leaders have chosen to face the danger of nuclear attack, to analyze its potential effects, and to take steps to apply to it the best possible public safety measures. ■

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