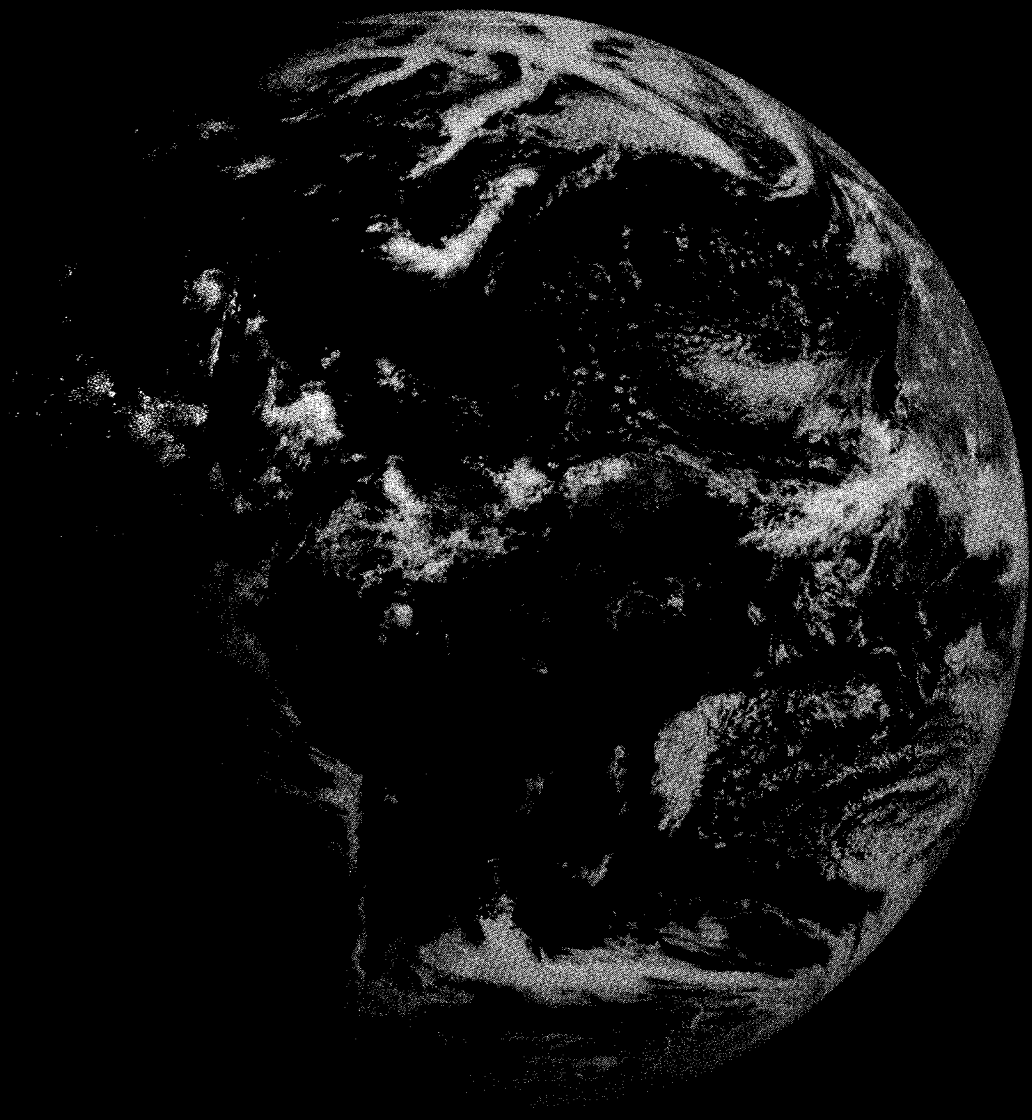
AN AMERICAN JOURNAL OF CIVIL DEFENSE.....

SURVIVE



VOL. 4 NO. 2

See: *MUST WE FREEZE IN CRISIS?*, Page 4.

MARCH - APRIL 1971

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

Sponsored by:
Civil Defense Forum
Oak Ridge Civil Defense Society
Association for Community-Wide Protection from Nuclear Attack

SURVIVE

VOL. 4, NO. 2
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PREPAREDNESS AWARDS—1971

SURVIVE "preparedness awards" will be given to outstanding local civil defense organizations beginning with 1971. Eight regional awards are planned, with one of the eight winners to be selected for a national "grand prize." County and municipal organizations are eligible, and nominations may come from county, city and state civil defense directors.

Awards will be based on selected categories such as:

Shelter
Organization for disaster
Staff operations
Training
Warning
Local government support
Rescue capabilities
Functional planning

A Preparedness Awards Judges Committee is to be designated by the SURVIVE Policy Board. Contributions may be made to the SURVIVE Preparedness Awards Fund, P. O. Box 910, Starke, Florida 32091. Further details will be given in the May-June issue of 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

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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.

Authors are encouraged to submit manuscripts for consideration by the advisory board for publication Articles (preferably illustrated) should be 1,000 to 1,500 words in length, slanted to the non-technical reader, and oriented toward the civil defense field. Views expressed in contributions to *Survive* are those of the authors and do not necessarily reflect *Survive* policy.

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Reader Comment

Dwight, Illinois

To *Survive:*

I wonder how history will record forty million needless American deaths?

Will the record show that every competent civil defense official in the U. S. A. was aware of the perilous position of the civilian population in that nuclear war? Will the record show that every competent military commander was aware of the perilous position of his military personnel in the same nuclear attack?

Why have our people not been given a chance to develop an adequate shelter complex? Why have we not developed strategic stockpiles of food?

Why? Is it because civil defense is "political suicide"?

Every knowledgeable person knows in the event of a nuclear attack that Main Street U. S. A. would be the front line of battle and that forty million bare-chested Americans would needlessly die in the holocaust. Congress has been told repeatedly that this is the stake in the shelter program.

Some say that no nation would be so barbaric as to explode a nuclear bomb on an unprotected city. They forget Hiroshima!

Errors have been made before in the history of the U. S. A. by a politically motivated Congress and by aging departments of the Army and Navy. A farsighted general named Billy Mitchell was court-martialed and cast out of the defense posture of the U. S. A. because he challenged the establishment with his air arm.

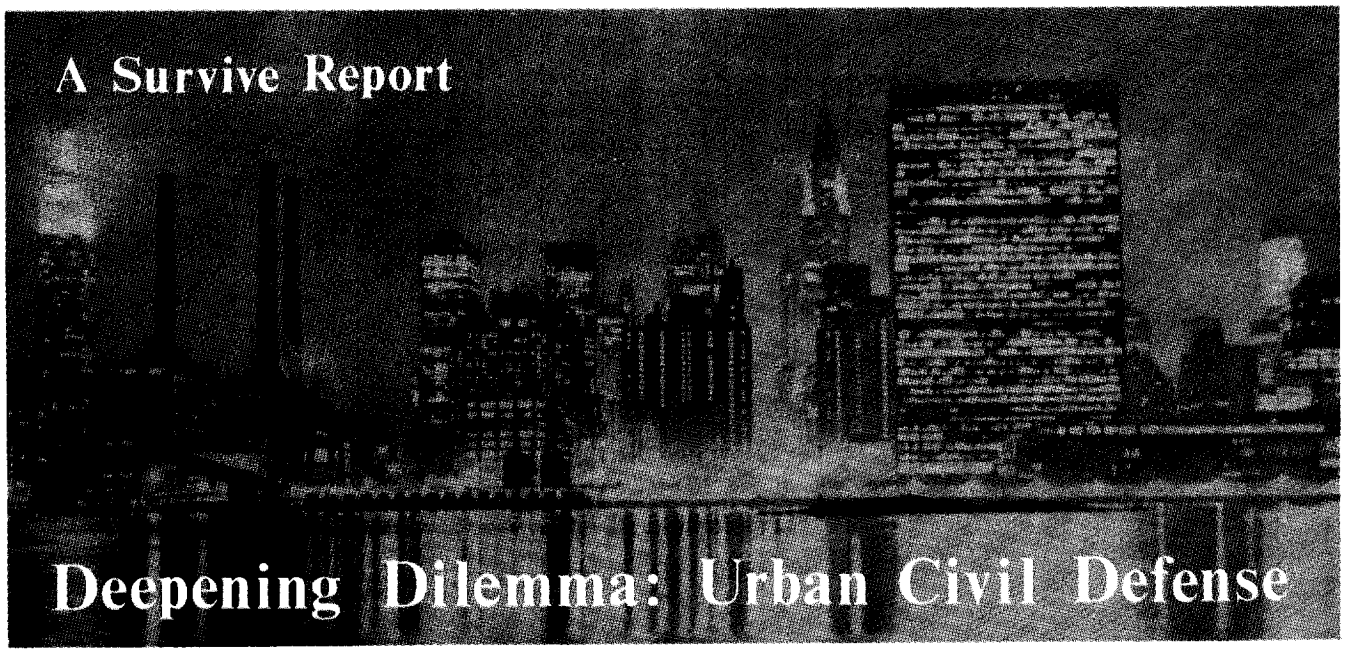
In spite of this blunder America was given time to reverse its field and develop a World War II military machine that tipped the balance.

We shall not be given time again. Our political leaders are frozen to civil defense inaction. How *will* history record those 40 million deaths?

Clement J. Steichen

CD CALENDAR

March 14-17	Conference, United States Civil Defense Council, – Washington, D. C.
June 13-17	Conference, National Association of State Civil Defense Directors – Grand Teton National Park, Wyoming
October 17-22	Conference, United States Civil Defense Council – Las Vegas, Nevada



From President Richard Nixon's Press Conference of March 14, 1969:

Q: Mr. President, what effect, if any, will your Safeguard program have on the shelter program? Can you tell us anything about your long-range plans in this direction?

A: Congressman Holifield, in the meeting this morning, strongly urged that the Administration look over the shelter program, and he made the point that he thought it has fallen somewhat into disarray due to lack of attention over the past few years.

I have directed that General Lincoln, the head of the Office of Emergency Preparedness, conduct such a survey. We're going to look at the shelter program to see what we can do there in order to minimize American casualties.

* * *

Reports on the condition of civil defense in the United States have a habit of being hushed up. The Rockefeller Report was never published. Neither was the Gaither Report. The most exhaustive study ever made of civil defense –the *Harbor Report**–was not published as one of the shower of free documents distributed by the Office of Civil Defense (which had requested the study) but was put out as a 39-page condensation by the National Academy of Sciences and weighted with a $1.25 price tag. A follow-up "Harbor" meeting took place in 1967. Two years later, after much fussing, the *Little Harbor Report*** was published. Again OCD did not use it as one of its pamphlets. Was it because "Little Harbor," like the *Harbor Report*, stressed the importance of blast shelter–not a point of OCD emphasis? This time it was printed by the U. S. Atomic Energy Commission–quietly.

Now the Lincoln Report. It has been two years since President Nixon asked for it. During this time it has been held out as a tempting carrot for local and state civil defense officials who, like Nixon and Hollifield, knew only too well that prompt corrective action was needed. It was assumed that the change in administration would bring about a change in attitude toward assuming public safety responsibilities.

What are we waiting for? Could it be that Americans are hiding facts from Americans? Is there really a fear that we might achieve a capability of protecting our homeland? Must we agree to expose Americans to aggressor H-bombs?

In July 1969 the Executive Committee of the National Association of State Civil Defense Directors drew up a "position paper" intended to furnish General Lincoln and his assistants with pertinent information for their study. The paper said in part:

"The country should enter into a larger, more vigorous and positive program that more adequately meets the threat. The public recognizes a lack of blast protection, especially for urban areas, and is concerned. So is Congress. Blast shelter, suburban shelter for evacuees, rural shelter, shelter incentives, industrial shelter and an accelerated program of shelter system management is warranted. The public wants to be told by the President and by Congress that such protection is required. . . .

"While local government interest has advanced, the federal government interest has been a rapid retrograde movement. This is evidenced by the following:

*Project Harbor Summary Report, *Publication 1237, National Academy of Sciences–National Research Council, 2101 Constitution Ave., N. W., Washington, D. C. 20418, Price $1.25. (1964)*

**Little Harbor Report, *TID-24690, Division of Technical Information Extension, U. S. Atomic Energy Commission, P. O. Box 62, Oak Ridge, Tennessee 37830, available without charge. (1969)*

1. A constantly decreasing federal budget of civil defense;

2. The absence of executive interest or support;

3. Constant refusal of most federal agencies to provide fallout shelters in their new construction. . . .

"If civil defense were closer to the Chief Executive, and if Congress would insist, other programs of government, especially those of a construction and hardware nature, could, by slight modification (at no or little extra cost) enhance our total passive defense capability. For example: Urban renewal and mass transport plans for subway systems could provide blast shelter space with the only cost being for creature comforts, blast doors, ventilation, etc. To be viable, civil defense must be where the action is and not hidden away in a never-used, dusty, war-time-only emergency operating center. . ."

* * *

The following remarks are excepts from "position papers" submitted by civil defense directors at the Seminar for Metropolitan Area Coordinators held at the OCD Staff College in Battle Creek, Michigan January 5-7, 1971:

Evar P. Peterson, Long Beach, California: "It [Community Shelter Planning] fails, however, to satisfy the additional need of protection from blast. I find that people are *not* greatly concerned about shelter because they are simply not aware of the implications. It appears that they have a blind faith that if and when their well-being is placed in jeopardy the government will provide."

Russell E. Pennell, Sr., Columbus, Ohio: "For over two decades now we have been aware of the need for not only fallout shelter protection but in metropolitan areas blast protection when possible. I am still somewhat amazed that as the freeways, innerbelts, outerbelts, and similar arterial roadways are being built throughout our metropolitan communities that someone has not suggested incorporating fallout/blast protection within these roadbeds."

William R. Woodward, Atlanta, Georgia, "Fallout shelters should be used by those in the general area, but people should not be encouraged to race into the downtown area to survive fallout only to be destroyed by direct hits. Therefore, the CSPs [Community Shelter Plans] for metropolitan areas should be developed for evacuation as well as the use of fallout shelters."

Peter C. McGillivray, Detroit, Michigan: "Areas likely to be targeted must relate their planning to a reasonable estimate of the time available for the movement after the warning, and they must utilize shelters that are least likely to be in the target area. . . . And such cities should not in any instance conduct mass movements toward the central portion of the target area."

Leroy B. Hansen, Oklahoma City, Oklahoma: "Even the most liberal strategic planner would have to assume our major cities will be targets in a major nuclear exchange. If this assumption is correct, then it seems reasonable to direct our National OCD policy and programs toward development of a protective shelter system designed to protect large city residents from the direct effects of nuclear weapons."

William B. Marty, San Diego, California: "In addition, the CSP [Community Shelter Planning] concept of moving people to 'shelter concentrations' in metropolitan centers seems a cheerless reinforcement of the 'McNamara-Enthoven Doctrine' that our city people are the offered hostage: and it is not at all compatible with the safety of people and the emerging but compelling concept of population dispersal in a crisis or tension mobilization situation."

William J. Allen, Jr., Denver, Colorado: "A study has been made to develop data necessary for making a decision whether to send the population of the area to shelter before an attack has actually been detected or to leave the population dispersed until the danger of a hit on Denver has passed. A policy position of this grave matter has not been finalized to date."

In a question-and-answer session with National Civil Defense Director John E. Davis on the closing afternoon of the seminar the following questions were among those asked:

"As the world's richest nation, who really believes that we cannot afford blast protection for probable target communities?" (Pennell—Columbus, Ohio.)

"[What is the] national policy for civil defense directors to follow if cities are construed to be targets?" (*Buchanan—Memphis, Tennessee.)*

"Is it possible for primary and secondary targets to be identified to the local director?" (*Eldridge—Phoenix, Arizona.*)

"May we officially make attack dispersal (evacuation) plans for our own communities if we deem them necessary?" (*Blodgett—Jacksonville, Florida.*)

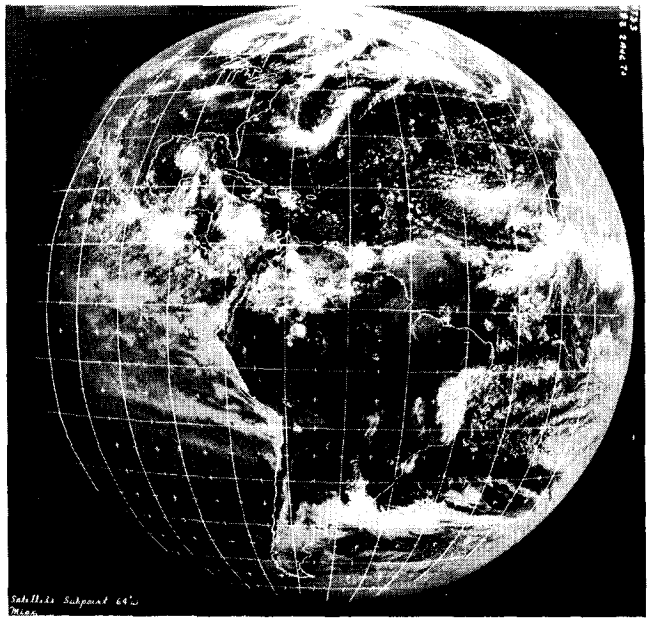
"We operate under the obvious constraint of inadequate funding, but we also have 'Program' constraints fostered by the federal government, which cause the overall program to be suspect in the public's mind, such as a failure to recognize the need for blast protection in the vicinity of targets. Shouldn't we try to make the program more creditable by being more realistic in assumptions and requirements?" (*Peterson—Long Beach, California.*)

In the light of inherited policies and the pending Lincoln report answers were difficult for Davis. He did, however, say that the past was due for re-evaluation, that money was certainly a factor in blast shelter construction, but also that our foreign policy in Southeast Asia and our position in the SALT meetings are reflected in civil defense program considerations. He added that the SALT talks were expected to throw additional light on these questions, and that common sense—which the local directors were free to use—had a lot to do with local decisions. He advised the directors to consider all the facts and to "make up your own minds." ■

What makes national response to war threats tick? A Canadian Government official takes a probing look at the "go-no go" complex which he claims has been bred into modern decision making. He asks –

MUST WE FREEZE IN CRISIS?

by Burke Stannard



Cover Picture

Weather satellite picture (courtesy of National Hurricane Center, Miami, Florida) shows deadly Hurrican Celia in the Gulf of Mexico on August 2, 1970. On August 3 it devistated Corpus Christi, Texas. Grid and continent outline are added here.

International crises since World War II have revealed the vulnerability of our defense arrangements through the lack of an adequate system of strategic warning (as distinct from tactical warning systems). The slowness and uncertainty of the decision-making processes at all levels of government in a time of crisis should lead us to examine the nature of strategic warning, its reliability and measurability.

In August of 1969 Hurricane Camille moved into the Gulf of Mexico. As weather offices plotted the tortured turmoil of cloud, Red Cross and Civil Defense officials evacuated threatened areas of Louisiana, Mississippi and Alabama and assisted industries and home owners in preparing for the expected onslaught of the storm. Later it was estimated that preparedness and precaution had saved thousands of lives and millions of dollars in property loss.

But in October of 1962 an even more ominous cloud had roiled the Caribbean. The fearful reality of the Cuban Missile Crisis was brought home to the American people as President Kennedy told them that they might within days face the fury of a nuclear war. A comparison of social reaction to both events shows the inadequacy of national response to man-made crisis and also the obvious deficiencies of related civilian decision-making at all levels.

The war threat was many times greater than that from Camille–whose actual damage was 1.5 billion dollars. It was also just as real and just as immediate. Many citizens sought advice from many sources, but not very much was offered. A state official in California and other authorities suggested that families buy emergency stocks of food. The resulting demand on local stores was immediate. Britain, too, felt the cold sweat of national fear. But the sober throngs of London took little action to lessen their vulner-

Engineer-journalist Burke Stannard was born in Saskatchewan in 1914 and obtained degrees in engineering and physics from the University of Saskatchewan. In 1938 he completed studies for his Master of Science Degree in Electrical Engineering at the University of Wisconsin. After working with Canadian Westinghouse and the Canadian Broadcasting Corporation he served in the Canadian Armed Forces from 1942 to 1947. From 1947 to the present he has held a number of positions with the Canadian Defense Research Board. These include an assignment to Scientific Intelligence (1947-1959), duty with the Defense Research Staff in London (1959-1963), Scientific Advisor to the National Coordinator of Civil Emergency Planning (1963-1969), and his current Emergency Planning role with the Defense Research Analysis Establishment.

Stannard's published writing has focused on the fields of education, foreign aid, emergency planning, and comparative risk.

ability. There was a mild run on gasoline supplies following a British Broadcasting Company comment that stalled cars would cause serious traffic jams in a real emergency. Canada was also caught in the frozen grip of indecision, ignorance and uncertainty.

And yet competent military analysts have claimed that forty-eight hours of clear strategic warning of the imminence of war could save more lives than the total defense preparations of the last twenty years.

If people and communities act in a matter-of-course way to lessen their vulnerability to an approaching natural storm why should they fail to do so in the face of a greater man-made danger?

Since the end of World War II, the world has lived through several serious international crises and no one has suggested that it will not experience future situations where there will be a real risk of war. Each person knows that he may one day be in great personal danger; there is no place to hide. Therefore the logic which persuades communities to buy fire protection and individuals to pay life insurance premiums should move society to study the possible usefulness of strategic warning of nuclear war. How should a country best react to strategic warning? What actions should be taken at all levels from that of the federal authorities right down to the private citizen? Or in plain words, what would be the most effective national response to an international crisis?

"Each person knows that he may one day be in great personal danger; there is no place to hide. . .It is sometimes assumed that there is in fact a contemporary national capability to react, but in reality is there any such capability?"

It is sometimes assumed that there is in fact a contemporary national capability to react, but in reality is there any such ability? Would we not, in the real event, sit in stunned fascination until we were engulfed?

To answer these questions requires an examination of the nature of strategic warning, its reliability and its measurability.

To return to the comparison with natural disaster, strategic warning would correspond to the discovery that a hurricane had been born and was following a path which might make it a threat.

"Accidental war is only a very remote possibility. . . .An initial accident would not be likely to precipitate a massive response."

There are two methods of obtaining strategic warning. One is through the covert actions of secret intelligence operations and the other is through the analysis of current events. Strategic warning obtained through secret intelligence with no concurrent existence of crisis could only occur where an antagonist intended to launch a surprise attack.

Major war without preceding crisis in theory could occur through the accidental use of nuclear force. Mistaken orders, an insane commander or a malfunctioning computer have initiated total war in a number of fictional works. However, an examination of the multiple safeguards that now exist, together with the fact that retaliatory weapons are now less vulnerable to immediate destruction, leads to the conclusion that accidental war is only a very remote possibility.

This mention of the stabilizing effect of less vulnerable retaliatory weapons needs a brief explanation. When long-range missiles were in known locations and were on the exposed surface of the ground, the owner was under some compulsion to use them immediately upon obtaining tac-

tical warning of any attack. Otherwise they would be destroyed and be ineffective. However, retaliatory weapons whose position was unknown or uncertain—such as those carried by submarines—or which were located in deep underground shelters and could be expected to survive any conceivable attack, would be much more likely to be withheld until the owner was certain that he had indeed been intentionally attacked and knew from whence the attack came. Thus an initial accident would not be likely to precipitate a massive response.

A war without a forerunning crisis could also happen if some nation decided that it was worthwhile or necessary to launch a surprise attack. Surprise has always been a major element in military tactics, but in the second generation of the nuclear age it has been reduced to the point of being both illogical and suicidal. This results from the fact that no matter how one of the main adversaries were to plan and carry out a surprise attack, his victim would still have enough surviving nuclear force to retaliate with an unacceptable amount of punishment.* This is the simplistic form of the argument that strategic surprise is no longer an acceptable offensive option and is therefore improbable.

Thus we are left with but one major avenue for the initiation of a nuclear war. This is through confrontation and/or escalation which of necessity would be accompanied by heightened international tension. And so it does appear most probable that any future war would be preceded by a period of crisis and that strategic warning would indeed be available. This has led to the new defense philosophy of "crisis management."

"It is very tempting to assume that the future will merely be an extension of the present."

Man's view of the future is often obscured by his problems of the present. And during an extended period of relatively low international tension so-called détente—it is very tempting to assume that the future will merely be an extension of the present. Defenses may be allowed to run down on the basis of capabilities which have been assumed but not proven. Reduced to its simplest terms the crisis management philosophy says: "There is no need to take this defense action now or to spend this particular defense dollar at this time because any future major war will be preceded by a period of crisis during which there will be ample time to complete the action in question."

This is an attractive theory which may in fact offer certain real advantages. But before acceptance it should first be shown that the reaction to a future crisis can be both systematic and reliable. Otherwise new terms such as "crisis management" and "defense cost deferment" may really be only synonyms for procrastination. It has to be shown that strategic warning would be perceived and would be acted upon. With but a small amount of study it becomes obvious that the subjective or intuitive element in national decision-making would have to be reduced or eliminated before there would be any real defense value in strategic warning.

The relationship between subjectiveness and decision-making immobility should be examined and understood.

Decision makers have always been, and still are, loath to take action on the basis of stated odds or levels of risk. They have always preferred unqualified predictions at either zero or one hundred per cent probability. They have asked for advice on an "either it will or it will not" basis.

Ancient kings employed soothsayers on the "yes or no" system. No renowned prophet ever said "maybe." The king's adviser who was observant of natural phenomena may

"No renowned prophet ever said 'Maybe'. The application of soothsayer control to modern defense seems unthinkable, yet. . ."

have had a better-than-even chance of guessing right several times in succession and thus enjoying a period of fame and influence. But under a system where he was forced to say either "yes" or "no" his ultimate downfall was almost certain.

This concept of unqualified prediction on the part of the leader has become ingrained in many parts of the human social structure and has been carried down to present times as a "go, no go" rule as far as any significant reaction to an immediate war threat is concerned. The feeling that the future is uncontrollable or preordained and that there are but two extremes of a probability has contributed in many ways to this rigidity. It is seldom realized that an unqualified "yes" or "no" is a mathematical absurdity.

The application of soothsayer control to modern defense seems unthinkable, yet it has in fact been a basic element in many countries in national decision-making during many, if not all, crises. Consider the modern parallel of the king and his prophet. A tense international situation exists. The head of state summons his intelligence experts and directs them to examine the portents. Will there be war or will there not be war? If the prediction is that there will not be war then no costly or disturbing actions need be taken. But the system is severely biased towards this attractive negative decision. What government would dare to predict the certainty of war when to do so and to be proven wrong would invite the wrath of the populace? Elected officials today exist at the pleasure of the community much as the prophet kept his head at the pleasure of the king. History has examples of those who said "Peace in our time" and were proven wrong. But seldom, if ever, has a head of state

**This view is not in conflict with that expressed by Wigner in his article "The Myth of Assured Destruction," Survive, Vol. 3, No. 4. The circumstances under which Wigner considers the doctrine of assured destruction to be a myth involve evacuation of the cities of the USSR and subsequent confrontation. They do not refer to the situation of a sudden attack. -Ed.*

dared to say "War is upon us!" The overpowering temptation is towards optimism and inaction.

If one examines the reactions of various governments to the Cuban crisis it is obvious that most of the Western countries remained in the frozen grip of the "go, no go" system.

"Many individuals appointed to the existing effort have been mentally pre-conditioned by years of association with the conventional armed forces."

As long as the defense decision-making apparatus is controlled by subjective components it must of necessity develop greater and greater inertia as a point of total war is approached. This is true by its very nature. The subjective system can never say "yes" until there is certainty and there can never be certainty in advance of the event. Therefore, if there is any defense value in strategic warning it can only be on the basis of an objective and graduated response to that warning. This leads to the question: "Is it possible to clear the system of subjective components?"

The parallel may be further explored by again examining Hurricane Camille. The meteorological services in the hurricane-prone areas of the United States have developed an entirely objective warning system. At no stage are subjective elements introduced to warn that there will definitely be or not be a hurricane at a particular point. The whole system of protecting the population involves a graduated response to objective information. As more and more indicators read positive, successive defensive actions are initiated. At early stages, when only a few indicators are positive, schools may be closed and hospitals warned. When a greater number of indicators become positive, elements of the population may be evacuated. The indicators are always factual, and defensive actions are initiated automatically at pre-agreed levels of combinations of indicators.

In like manner, in order that there be any real defense value to potential strategic warning, there would have to be an automatic and graduated response to an agreed scale of objective indicators which were in some way directly related to the immediate probability of major war.

In the years following the beginning of the atomic age, most countries decided that some form of passive defense would be meaningful and potentially effective as part of a total defense effort. In most of the Western European nations, civil defense has been accepted as necessary and has received a reasonable degree of popular support. As far as it is known, this is also the case in Eastern Europe. However, in Great Britain and in North America there has been a distinct disinclination to make any realistic, reasonable, and unemotional value-comparison of non-military defense potentials with modern complex and expensive systems of military hardware.

This attitude has resulted from two main factors. The first of these has been the comparatively unimaginative and offhand approach to non-military defense. Many of the individuals appointed to the existing effort have been mentally pre-conditioned by years of association with the conventional armed forces. Possibly for this reason the whole range of passive defense potentialities was either insufficiently examined or undersold. Certainly this side of defense has not been accepted either by government or public on a real-value basis.

The second factor has arisen from the pattern of individual and group behavior in contemporary society. Somehow the concept of survival by avoidance, by hiding, or by running away still clashes with the lingering aura of military tradition. We remain the brave and the bold! To many civilians, passive measures, or at least concern about passive measures, seems "chicken"; to the soldier they are somewhat demeaning. And yet, to the unemotional analyst, they are impressively effective. Why, he asks, do we not apply the same common sense we exhibit in dealing with natural disasters?

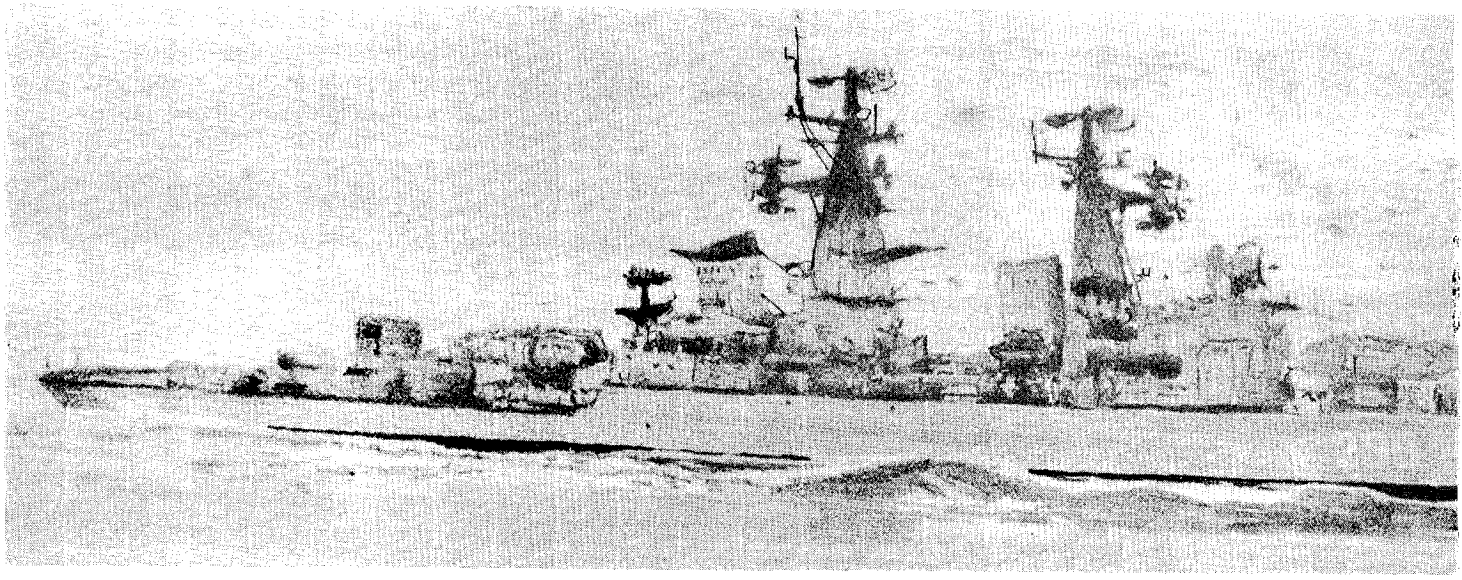
The passive measures advocated by civil defense are reasonably well known and are centered primarily around the provision of shelter. But hail insurance is difficult to sell in November and society always faces a variety of demands both urgent and immediate. Thus it is too tempting to say: "Let's wait a while."

During the years in which strategic warning has been ignored there has been an assumption that large cities could not be evacuated. This also hinged on the "everything or nothing" concept. Certainly it seems unlikely that the complete evacuation of Montreal or Toronto could ever be ordered. But in London, when a twenty-four hour subway

"Why do we not apply the same common sense we exhibit in dealing with natural disasters?. . .The ability to shift portions of the population needs to re-examined in the light of strategic warning."

strike was planned for a workday, the London County Council effectively countered it by publicizing the need for commuters to take one day of their official holidays. The city was not evacuated, it was just less filled. The ability to shift portions of the population needs to be re-examined in the light of strategic warning.

Slowness of national response might have been tolerated when vital heartlands were not threatened with obliterative attack and when threats to organized existence developed with comparative lack of haste. But to be handicapped by inertia in the face of the potential impact of present and future war is not acceptable. An automatic reflex must be developed in the overall social structure of the country as a defense necessity. ■



SOVIET SEA CHALLENGE

Condensation of an article published in the *Naval Reserve Association News* (December 1970) based on a report by the office of the Chief of Naval Operations.

Approximately 5½ years from now the United States of America will celebrate its 200th anniversary. It is entirely possible that the celebration could take place in a grim and unpleasant setting. Unless we, as a people, immediately understand the serious nature and scope of the Soviet challenge at sea, that possibility will edge ever closer to probability.

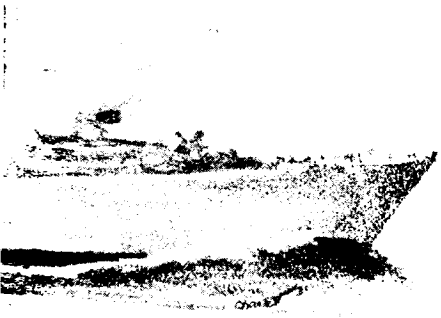
The extent and seriousness of the Soviets' naval building program unfolded gradually. To a great extent we did not register full awareness of the momentum it would achieve. Modern cruisers, such as the Sverdlov class, began to appear back in 1953. While today we look at this ship as out of date, bear in mind that our Sixth Fleet flagship, the USS Springfield, was 10 years old when the first Sverdlov was christened.

Today, Soviet cruisers, and warships, compare favorably with any afloat, our own included. The Kynda class guided missile cruiser appeared in 1961, and there are four units in operation today. Kynda has a speed of 35 knots, and is armed with surface-to-surface 400-mile missiles, surface-to-air missiles, guns, torpedo tubes and two 12-barrel ASW rocket launchers.

The follow-up to Kynda was the Kresta class guided missile cruiser, which appeared in 1964. She is somewhat larger than Kynda, but with similar armament. Six of these are operational today, and two to three per year are being built.

Soviet destroyers have had a similar evolution. In 1955, they introduced the conventional Kotlin class armed only with gun-type weapons. But just three years later, in 1958, Krupnyy class DDGs appeared, the first Soviet ship designed as a missile DD from the keel up. They have six of these units in the fleet today.

The culmination of the Soviet destroyer development, the gas turbine powered Kashin frigate, the largest such warship in the world, appeared in 1962. There are at least 15 Kashins in the Soviet fleet today, all equipped with the



Soviet guided missile cruiser – Kynda class.

Goa surface-to-air missile.

In 1967 we saw the first radical departure from earlier building programs in the helicopter carrier Moskva. Built on a cruiser-type hull, Moskva and her sister ship Leningrad are 650 feet long, have a beam of 120 feet, displace 15,000 tons, and are capable of over 30 knots.

Moskva is well set up for antisubmarine warfare. She has two 12-barrel ASW rocket launchers, also torpedo tubes. For air defense, she mounts two twin-armed launchers for the Goa surface-to-air missile. Moskva has a variable depth sonar installed in the stern, and employs between 15 and 20 Hormone KA-25 helicopters. It gives her the potential for vertical assault in amphibious operations, as well as her primary ASW role.

And potent and modern as the surface warships are, we have an even greater concern in the Soviet submarine force. It totals about 350 boats with 80 of them nuclear-powered.

One of the most modern and dangerous of the Soviet undersea force is the Yankee ballistic missile class. It is similar to our Polaris ships in appearance and like the Polaris is armed with 16 missiles capable of being ejected under water. They have over 14 of these, and are building about eight each year. At this rate of construction, they will exceed our Polaris force of 41 SSBNs by 1974.

And the Soviet Navy is working as hard with its people as it is on its weapons. The Red navy man doesn't go ashore much, and when he does, it is in an organized group led by a petty officer. Underway, at anchor, or in port, his time is largely spent in training, study and in sharpening his weapons and seamanship skills. From all accounts and indications, he is making a superb sailor of himself.

One hard fact that we should never overlook—in a nation of over 260 million people where less than 10 percent are members of the controlling Communist party—over 80 percent of all Soviet naval officers are party members.

We credit the Soviet navy today with some 2,800 ships, including over 450 large combatants and submarines. The remaining 2,350 units include escorts, submarine chasers and auxiliaries such as tenders. It also includes about 150 missile patrol boats, fitted to fire the SSN-4 "Styx" missile with deadly accuracy out to about 20 miles.

The Soviets are giving equal massive attention to their commercial shipping or merchant marine. They have some 1,400 merchant ships, and like the newness of their navy, 80 percent of them are less than 10 years old.

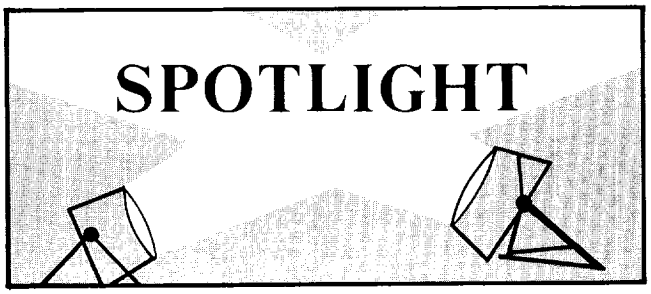
In total tonnage, the Russians now rank sixth in the world, just behind the United States, and 65 percent of our tonnage is over 20 years old.

They are adding nearly one million tons per year—their stated objective is to reach 23 million tons by 1980—not an unrealistic goal since as of 1 July. 1970, the Soviet governement had on order 314 merchant ship hulls.

But the point is that these merchant ships can be used for political purposes as well as the economic. At the rate of 850 port visits to 100 countries per year, a massive amount of Communist idealogy can be exported—there is no question that the increasing presence of these modern new ships flying the hammer and sickle is making an impact on the world.

It is much the same story with the tremendous Soviet deep-sea fishing fleet. Factory ships and trawlers roam the world ocean to place the Soviet Union third behind Peru and Japan in ocean catch. Cannery ships enable them to completely process fish products and deliver to customer countries without even touching base at home.

Finally, the new Soviet sea power is anchored to a sound foundation of oceanography and ocean engineering programs, Some 185 oceanographic research ships operate in any and all quadrants of the globe. The values are obvious, with undoubtedly a tighter integration with the military aspects of sea power than we ourselves employ. ■



West Coast Quake Reaction . . .

In the controversial wake of the 6 A. M. February 9th earthquake Californians are asking again for better building codes. A more general application of those which grew out of the 1933 Long Beach earthquake, they point out, would have done a better job of holding down 1971 damages.

Demands are based on the fact that California is a prominent part of the 12,000-mile North American-South American earthquake prone Pacific Coast strip. Forecasts are for major quakes to come—which is about as safe as predicting that winter snow will fall in Manitoba.

Dr. Charles F. Richter, developer of the Richter earthquake intensity instrument and the California Institute of Technology's seismic specialist, has for the last 10 years warned of a major quake due in southern California. He also warned that preparations for it were sadly deficient.

20TH CENTURY EARTHQUAKES—EAST PACIFIC OCEAN COAST

1906—California	1960—Chile
1906—Chile	1964—Alaska
1933—California	1965—Chile
1939—Chile	1970—Peru
1949—Ecuador	1971—California

20TH CENTURY CALIFORNIA EARTHQUAKES

Year	Location	Killed	Damages
1906	San Francisco	700	$ 500,000,000
1933	Long Beach	115	40,000,000
1971	Los Angeles	62	1,000,000,000(Est.)

According to serious critics two main considerations govern practical anti-earthquake construction design. In oversimplified form these are (1) "solid ground" sites and (2) the judicious use of reinforced concrete. Initial costs of this type of construction are markedly greater than those of "conventional" construction. But extra costs can be wiped out in time by cumulative savings in maintenance, insurance, and temperature control. In addition there are the further advantages of greatly increased building life, improved environment, and safety in other types of disaster (windstorm, fire, and total war.)

Perhaps most upsetting of all the news from the disaster area is that the 1971 earthquake—a relatively moderate quake on the Richter scale—is not the major shake predicted. This is still to come.

Reaction to mistakes . . .

The February 20th blunder in inadvertantly fanning out to U. S. radio stations a warning message from the North American Air Defense Command is only further evidence that humans will make mistakes—even at those levels where heavy concentrations of expertise are sometimes assumed to have outlawed them.

Errors of this nature substantiate the opinion of many strategists that nuclear war could be triggered by mistake or miscalculation.

Although percentages are not at this date available, it is clear that a good many radio stations went off the air as they are supposed to do. They reacted correctly.

Also clear—and disturbingly significant—is the fact that a good many radio stations did not go off the air because they did not take the emergency message at face value.

Maybe the following questions need answers:

(1) In the event of a real crisis can we expect this same failure to react?

(2) If so, what would be the anticipated impact on effective emergency operations?

(3) Would similar disbelief be the reaction by other recipients through other warning channels?

(4) What conclusions can be drawn as to our capability to react meaningfully to crisis?

(5) Are there other less obvious blunders which need to be examined?

The spotty reaction to the error may be much more serious than the error itself. The error, in this light, can be considered a good thing and may give us an opportunity to make a hard-nosed re-evaluation of emergency procedures.

Needed: a frank assessment of the problem . . .

"The American people have often demonstrated their readiness to support, in effort and taxes, national goals which persuasive leaders have candidly presented to them. There is need once again for the people to hear, clearly and forcefully, the domestic and foreign requirements for national survival and success—and the price of failure on either count.

"If the cost of meeting both our international and our domestic responsibilities is high, then the ultimate cost of failing to meet both—at adequate levels of commitment—will certainly be much higher. The problem is not to choose between these two demands on the nation's resources, but rather to devise a strategy of means for meeting both requirements at levels which the people can accept as necessary and proper."

—from a statement by the Broard of Trustees of Freedom House (Freedom at Issue, Jan-Feb '71)

FEAR and ILLUSION

(From a 1970 statement of University of London's Soviet History authority, Professor Leonard Shapiro—a part of Shapiro's testimony before the U. S. Senate Subcommittee on National Security and International Operations.)

ADVANTAGES ENJOYED BY THE SOVIET UNION. These are mainly five—

(a) The virtually total control which the Soviet leaders maintain over their own internal public opinion. Such dissent as has been evident in some instances in the past (Hungary, Czechoslovakia) has been easily contained and has played no serious role.

(b) The enormous and successful propaganda operation which the Soviet Union has mounted against the United States. The main benefit which the Soviet Union derives from this continuing operation is that it enables it to dissemble its own internal and external policies. But anti-Americanism is also the cement by which the Communist movement is held together, now that unity of doctrine and disciplined allegiance to Moscow have been eroded as a consequence of the Sino-Soviet split.

(c) An illusion current among some of the Western powers at different times that some kind of "détente" with the Soviet Union is a real possibility. This illusion is based on the false belief that in some circumstances the Soviet Union would abandon its ultimate aim and its dynamic foreign policy and accept permanent equilibrium with the West in the interests of peace. The Soviet Union is not interested in peace: it is interested in the absence of shooting war or at any rate of nuclear shooting war. But otherwise it is as a result of continuing conflict that Soviet influence increases. Thus the continuing war in Vietnam has kept the United States preoccupied with her own affairs and therefore less likely to act as a restraining force to Soviet advances; and the continuing conflict in the Middle East has provided the Soviet Union with the opportunity it was seeking to secure naval and air bases in Egypt. The danger of Western belief in the possibility of a "detente" is that it leads to the risk that concessions will be made in order to bring it about—concessions from which the Soviet Union alone will benefit and for which it will give nothing in return.

(d) The illusion that fear of China as a nuclear power will make the Soviet Union ready and anxious for real peace with the United States. This is a conceivable situation which may arise in the remote future. So far as the foreseeable future is concerned, Soviet fear of China is probably real enough. But the nuclear threat from China is at present one which the Soviet Union could hope easily to pre-empt. Moreover, if the immediate fear were overwhelming, one would have expected the Soviet government to have followed the advice of some of the military leaders and to have removed Chinese nuclear installations by a combination of political subversion and a military operation in Sinkiang. The fact that the Soviet Union did not do so suggests that it is more wisely waiting for Mao to die in order to see whether better prospects of accomodation will arise under his successors.

(e) The illusion that the Soviet threat has been eliminated by the breakdown of cohesion in the international Communist movement. Obviously, the weakening of this cohesion is of great advantage to us, but the advantage should not be overestimated. Two basic facts still remain true: first, that in the last resort every communist party will side with the Soviet Union against the United States; and secondly, that the progress of a communist party is always on balance of greater benefit than disadvantage to the Soviet Union, even if that party is not one which will accept Soviet directives (Cuba, Vietnam, Italy).

* * *

The first basis for preserving something when it is faced with danger—and I think we are faced with constant danger—is to know what the danger is.

If that involves studying negative and distasteful aspects of the regime which menaces us, then they have to be studied. It is no good dismissing this as "anti-Communism."

Moreover, one cannot alter the situation by saying, "We ought to be nice to them. The problems will go away if we understand them better" —and so on and so forth.

This is not the world in which we live, as I see it. The plain fact is that the Russians have, for 50 years, pursued their policy as they see it. They have persuaded themselves that they are faced with an implacable enemy which will destroy them; that they have to, as I have suggested, pursue this constantly dynamic policy.

The moment they let up they are finished—or so they believe. Everything that helps the ultimate objective is good: everything that hinders it is bad. There are no moral or any other considerations that arise. This is how they see their relations to the West, and we have to remember that. ■

In past wars the enemy has had an equation for defeating the United States. To be sure, it has not worked well at all. But it was very simple and very tempting, and to all appearances foolproof. It was:

$$A + B + C = \text{AGGRESSOR } \textit{VICTORY}$$

where A represents an overwhelmingly powerful military Juggernaut; B represents its ruthless and cunning employment; and C represents traditional American attitudes of (1) peace at any price, (2) deliberate unpreparedness, and (3) a blind faith in aggressor good will and shaky economy.

In the past, aggressors in implementing the equation have erred in that they omitted another factor which at first appeared not to be a factor but which ultimately turned victory into defeat. This was Factor X. X represents the ability of the United States, once deceived and attacked, to rally its courage and its resources to stage a miraculous comeback. Factor X turned the tables in World War I, in World War II, and also in the Korean conflict. Factor X took time, but in past wars time was available. With Factor X the equation became:

$$\frac{A + B + C}{X} = \text{AGGRESSOR } \textit{DEFEAT}$$

Factor X was not entirely a secret. Admiral Isoroku Yamamoto of Japan, for instance, said before Pearl Harbor that Japan would have to win World War II within one year or American staying power and offensive surge would be out of control and would defeat Japan. As Yamamoto feared, Japan became the victim of Factor X.

Factor X and the equation are no secrets today. But Factor X, which cancelled out A + B + C, is itself cancelled out by a new factor, Factor N. The new arrangement is a revised equation which again provides the basis for the defeat of the United States—in the 1970s and 1980s. Factor N represents nuclear-missile power. It wipes out Factor X because Factor X requires time and Factor N denies that time. It telescopes an utterly fantastic explosive power—hundreds of times greater than that of all past wars combined—into a matter of minutes. The equation can now resume its original meaning of victory for the aggressor:

$$\frac{A + B + C}{X/N} = A + B + C = \text{AGGRESSOR } \textit{VICTORY}$$

Washington strategists, however, argue that unacceptable aggressor losses ("assured destruction") through retaliation by the United States would in this case make his victory completely meaningless and would therefore deter him from attack. This theory is valid if we presuppose an aggressor home defense posture as feeble as that of the United States. This, in fact, is the basis for the "hostage concept" wherein world powers expose their populations to annihilation in order to guarantee their non-use of nuclear weapons. The real trouble with this concept is that potential aggressors *do not subscribe to it.* In the Soviet Union, for instance, home defense—"civil defense"—includes:

a. Blast shelter in probable target areas;
b. Fallout shelter in probable fallout areas;
c. *Organized* evacuation of probable target areas;
d. Stockpiling of critical supplies and equipment;

e. Resources management planning;
f. Dispersal of industry and vital services;
g. ABM protection for cities; and
h. Defense against chemical and biological attack.

Through the continued development of these–and other –defense measures the Soviet Union does not contemplate unacceptable losses in the event of World War III. Soviet losses of substantially less than 10,000,000 are considered realistic–and 10,000,000 dead is substantially less than the number of Soviets killed in World War II.* As Soviet Premier Alexei N. Kosygin has pointed out, home defense threatens no one. It simply is a practical means of saving lives and property. In spite of popular witch tales this sort of survival planning makes a nation viable in the face of nuclear attack. It also makes for a strong international cold war posture. It helps greatly to establish a capability for "nuclear blackmail."

This same option of protecting our home front exists in the United States–if we really want it. We have lost Factor X. But we can substitute for it, as the Soviets are doing, a survival capability through the meaningful development of a home defense. In the place of Factor X we would then have a "Factor P"–*home front preparedness.* Factor P would give us a "hardened" America. Instead of contemplating losses of over 60% of our population we could anticipate losses of less than 10%. It would assure a quick recovery. It would bring aggressor defeat back into the picture. Factor P would not be overcome by Factor N, and the equation would become:

$$\frac{A + B + C}{P} = \text{AGGRESSOR } \textit{DEFEAT}$$

Unlike Factor X, however, Factor P must be applied *before* attack. It requires planning and action in time of peace. Now.

This is – or rather would be – a totally unsatisfactory equation for an aggressor. Like Factor X, Factor P is a spoiler. Better than Factor X, it is one which is *immediately* apparent to a potential aggressor. Defeat is of course the last thing an aggressor desires. He will not knowingly risk it. He will avoid anything that promises him less than sure-fire victory odds. He will back away from confrontation. In this light the equation can read:

$$\frac{A + B + C}{P} = \text{PEACE}$$

* * *

Unfortunately, we are not at this point. Far from it. America's Factor P is absent. We have ridiculed civil defense to a last priority status. We have rejected ABM protection for our population. We have allowed totally emotional appeals to hoodwink us into accepting the silly proposition that protecting our people from attack is provocative, warlike and cowardly.

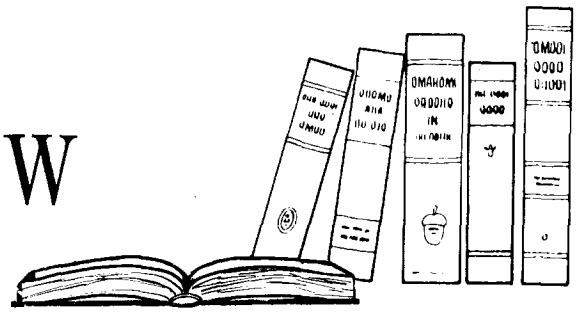
Like the proverbial ostrich, we are steadfastly refusing to look at the facts, refusing to defend ourselves, inviting attack and defeat. ■

+ C

by Robert Baffin

*See "The Myth of Assured Destruction," by Eugene P. Wigner, Survive, *Vol. 3, No. 4.*

REVIEW



Civil Defense. . . to Protect and Save Lives, by Kurt Ek (published by the Swedish Civil Defense Administration), Translation 1970.

The emphasis and the pride which Sweden places upon its civil defense are indicated in one way by its readiness to share information with other countries. It has no secrets. *Civil Defense. . . to Protect and Save Lives* is evidence of this attitude.

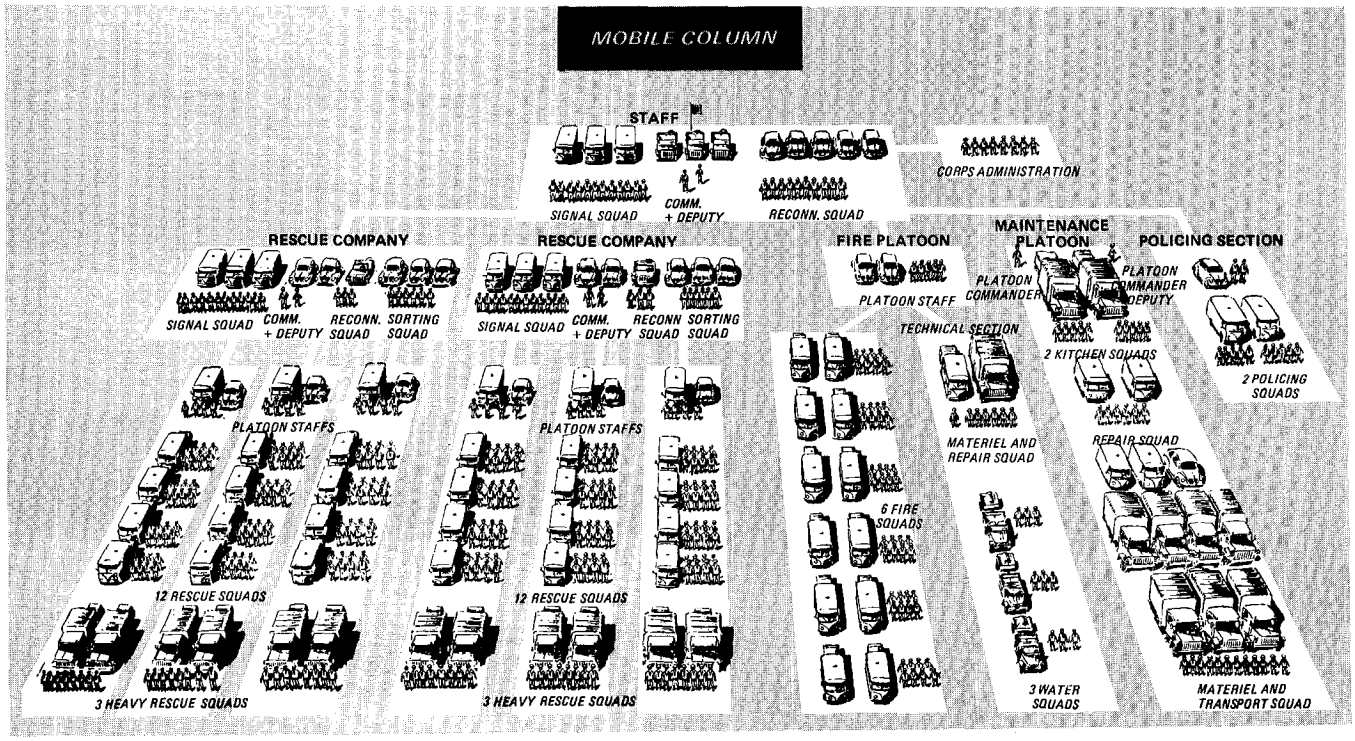
Åke Sundelin, Sweden's Civil Defense Director for over twenty years, writes a one-page introduction in large, bold print. He says:

In Swedish opinion freedom from alliances does not in itself guarantee peace. Independence increases the demands upon the defense system. Sweden strives to protect peace through efforts to which surrendering is completely foreign.

These efforts are expressed in Sweden's total defense system. In it, civil defense, with its system of air raid shelters, planning for evacuation, and damage control organization, is one of the many stones. The importance of this civil branch of total defense increases along with the growing threat to the civilian population caused by weapons developments.

This publication, primarily intended for civil defense personnel and others technically interested, aims at providing further particulars on how Swedish civil defense is built up.

Swedish Civil Defense was established in 1937 as Hitler's long shadow spread ominously over Europe. It is credited with having been a major factor in keeping the Nazi hordes at bay. The book traces the development of Sweden's civilian protection effort through the years since 1937, major landmarks being steps in legislation, organization of training, and shelter construction.



Unique in Swedish Civil Defense is the "mobile column" (see illustration). Consisting of two rescue companies, a fire platoon, a maintenance platoon, a police section, and a staff section, the mobile column is a self-sufficient, fast-moving disaster assistance team ready to be deployed on short notice as needed. It is designed primarily to enter damaged areas in nuclear attack and to rescue survivors trapped in shelters. Each mobile column numbers 450 men of military age transferred from the armed forces for special duty with the unit. All men and equipment can be moved with the column's 100 vehicles. In theory one rescue company is capable of rescuing persons trapped in 30 standard shelters within 12 hours. At present Sweden has 20 mobile columns spotted within 5 Swedish miles (1 Swedish mile= 6 English miles) of likely targets.

"Standard" shelters have now been built for 3.2 million people (Sweden's population is 8.1 million). Another three million standard shelter spaces are expected by 1980. These shelters will protect against overpressures of from 7 to 14 pounds per square inch as well as against radiation and all known gases. The cost per space varies between $30 and $50 (figured on a dual-use basis) and is born by the builder. "Rock-firm" shelters—excavations tunneled into the granite that most of Sweden rests on—are special shelters near expected targets and designed for overpressures of 150 pounds per square inch or more. Normally the solid rock roof is at least 50 feet thick.

In Sweden civil defense adjusts constantly to new combat and defense conditions. Research and training go hand-in-hand. Civil Defense is not considered to be a static art. Civil defense in the future must be geared to future war capabilities.

Sword rattling? Hardly. Sweden has been at peace with the world since 1814. It intends to remain at peace. This is the aim of its *total defense* concept. "Civil defense," says author Ek on page 9, "contributes to the accomplishment of the peace-keeping task of total defense."

Excerpts from "An Updated Civil Defense Policy," an Army War College Essay by Colonel William E. Hermann, CE-USAR:

The proliferation of thermonuclear weapons has continued until we now have five nations with some capability and a number of others seriously considering the necessity of acquiring a nuclear capability for self-perservation. In a world where we have seen no progress in the field of disarmament over the past years and only international nuclear escalation, the threat of nuclear war increases daily.

On October 22, 1962, President Kennedy issued a somber warning to Russia, to Cuba, and to the American people that the world stood on the brink of nuclear war. Our armed forces had been placed on "alert" earlier and the civilian population was alerted by the President's speech. Of course, the alerting of the civil population was essentially meaningless in this case because years of public apathy regarding civil defense had left the nation without either a shelter or an attack warning capability.

By the next time the United States faces the possibility of nuclear war, plans should be available which include all rational possibilities of tactical evacuation, blast protection, and fallout protection, all geared to the concept of graded warning time according to the relative degree of peril. It is highly unlikely that many people would survive a nuclear war if they are not sheltered. There can be no meaningful civil defense program without an extensive shelter system.

A shelter program must be based not on an estimate of the current threat of attack, but rather on an estimate of the possibility of an increased threat in future years. It is clear that tens of millions of lives can be saved by adequate civil defense.

America must survive. If we are to survive, we must have both an adequate ABM and shelter system. With these, no nation would dare attack us because they would know that we could and would fight the war that followed our counter strike.

In 7 hours of bombing in May 1941, the Germans brought London almost to a standstill.

There was terrible destruction—brought about by what we now refer to as primitive weapons. Think what the devastation could be today in our own cities! . . .

Do we ever learn anything from history?

Can we apply those lessons to changing threats?

Or if World War III does come, will we too, be unprepared?

—National CD Director John E. Davis to the Falls Church, Va. Republican Womens Club, February 24, 1971.

Missile Accuracy

How accurate do you need to be to destroy an ICBM silo? Both Soviet and American silos are estimated to have a blast protection of around 300 pounds per square inch. Missile accuracy is measured by CEP (Circular Error Probable). The CEP is a circle drawn around a target point to indicate that, with the expected accuracy of the missile in question, half the missiles aimed at the target would probably land inside the circle and half outside. Or, to put it another way, if you use one missile you have a 50-50 chance of getting inside the circle. A "hard" target requires a small CEP in order to assure destruction. If we intend to destroy the target with only one nuclear weapon the CEP must indeed be exceedingly small. 50% is not nearly the accuracy needed in planning an attack. 70% is better but still too low. 90% is a reasonable minimun. 99% is considered high but a practical and desirable goal. Much effort is now going into decreasing CEPs, especially in view of the smaller weapons to be used with MIRV. Halving a CEP produces about the same increase in a probable target hit as multiplying weapon yield by ten. With anticipated accuracy increases, it appears that the silo technique of launching missiles may become of questionable value. The table below shows what CEP values are necessary for selected hit percentages on silos hardened to withstand overpressures to 300 pounds per square inch and for several weapons yields.

Distances in the 50% column also indicate a 300 pounds per square inch overpressure range. Nuclear bursts within these ranges would presumably knock out Soviet or American silos. The use of multiple weapons on one silo greatly increases the probability of destruction of that silo.

Current CEPs are estimated to be in the neighborhood of 1,500 to 2,500 feet for weapons of all yields. Terminal guidance systems (which will further restrict weight—and therefore yield) are expected to produce substantial reductions in CEP values.

CEP VALUES FOR 300 psi RATED SILO DESTRUCTION

Desired Accuracy
(Probability of Destruction of Missile Silos)

Weapon Yield	50%	70%	90%	99%	
20KT	600 ft.	400 ft.	300 ft.	200 ft.	←
100KT	1000 ft.	750 ft.	550 ft.	400 ft.	Required CEP to obtain desired accuracy
500KT	1750 ft.	1300 ft.	1000 ft.	700 ft.	
1MT	2200 ft.	1700 ft.	1200 ft.	900 ft.	
10MT	4800 ft.	3700 ft.	2700 ft.	1900 ft.	
20MT	6300 ft.	4600 ft.	3400 ft.	2400 ft.	

EDITORIALS...

Lubbock's Bouquet

Brickbats from the bretheren are hurled at OCD almost daily, and OCD comes back smiling and with understanding and empathy. It seems fitting that when someone lets loose with gratitude and compliments these should also be recognized. Bill Payne does this. He is civil defense director of Lubbock, Texas. Lubbock was hit last spring with a $135,000,000 tornado which took 26 lives and injured 1,500. While giving generous credit to other agencies he makes a strong point of citing the fact that a capacity to deal with the emergency existed because of the Federal Civil Defense Program. It made possible for Lubbock:

(1) A planning capability;
(2) The publication of an emergency operating plan;
(3) An emergency operating center;
(4) 500 radio units;
(5) An effective emergency broadcasting system;
(6) Emergency communications with state; and
(7) The build-up of workable inter-agency liaison.

"A large part of the smoothness can be attributed to OCD assistance after the tornado struck," says Payne. "OCD's Region Five provided me with staff support. Bill Parker, Regional Director, observed our operations. Leroy Williamson, Field Operations Officer, provided a tremendous amount of support. Communications people and engineers from the Region tested equipment and provided support. And Bill Tidball and Christine Unger of Region Five have produced a valuable report of the operation."

Payne gives details in 12-page OCD Information Bulletin No. 249 (January 4, 1971). For OCD it is as much-deserved tribute.

Response to *Response*

Two issues of the new civil defense publication *Response* appeared late in 1970. One of our more vocal cracker CD directors summed up sentiments this way: "The most intelligible piece of paper ever to come out of the Pentagon."

Well, as a matter of fact, it appears to be just that. We might add that it is very well written. It crackles with news and with ideas. Someone proofreads it. Layout is excellent. There is a refreshing absence of esoteric flimflam. It communicates. It's down-to-earth. It's good.

Room 3E-349—where it is published—deserves to be roundly commended.

SURVIVE

CIVIL DEFENSE ABROAD

CUBA DIGS IN

(From a report by the Cuban Watch Committee on Cuba appearing in the Washington Report of the American Security Council, January 25, 1971.)

Having learned a lesson in 1962 when the U-2 photographs foiled their effort to smuggle nuclear missiles into Cuba, all Soviet military installations, except those naval facilities which cannot be placed underground, are being built in caves or tunnels inter-connecting the caves. Cuba has more than 3,000 natural or man-made caves which the Russians have already inventoried and explored. Marshal Crechko, the Soviet Defense Minister, visited many of these caves himself during his visit to Cuba in November, 1969. These provide the Soviets' answer to U. S. photographic surveillance of the island.

Ninety percent of the fuel reserves in Cuba are underground as are the major ammunition depots. Underground hospitals have been built at the Sierra de Cristal, near the Nipe and Levisa Bays in Oriente province, and in la Loma de San Vincente just off the road which runs between Santiago de Cuba and Guantanamo. Of particular importance are the various underground complexes lying within the quadrangle formed by Minas de Bajurayabo, Jaruco, Herradura and Mariel. Included in this area is the Nuclear Instutute at Managua. Other locations where caves have been reinforced with concrete linings of up to six feet are the Sierra de Lupe, Oriente province; the Altura Central of the Isle of Pines which contains a number of large marble caves ideally suited for underground installations.

Underground missile bases are reported in the mountains of the Gobernadora, near Mariel; in Manicaragua, La Villas province, at a place the Russian soldiers call "La Campana"; at San Cristobal and in the Sierra de los Organos in Pinal del Rio province.

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