# FIGHTING CHANCE

*John 8: 31-32* *Proverbs 22: 3*

Newsletter Vol. III, No. 1 September 1990

## AMERICAN LEGION MOBILE SHELTER TOUR

The American Legion has a long-standing policy in strong support of civil defense. This position accurately reflects the opinions of the Legion's three million members and auxiliaries. Until recently, however, the Legion lacked an effective means by which to communicate this interest to grass-roots Americans. The **Fighting Chance** mobile shelter display program has now provided that means.

In August, Mr. Steve Alley of Unity, Maine - an active member of the American Legion and a strong supporter of **Fighting Chance** - flew from Maine to Oregon, borrowed our shelter towing truck, drove to Pennsylvania, and borrowed the Pennsylvania mobile shelter display. With the sponsorship of American Legion Post 50 of Unity, Maine, the State of Maine American Legion, and the National Commander of the American Legion, and the help of American Legion volunteers, Mr. Alley began a tour of fairs in the Northeast.

The American Legion schedule through October includes fairs in Maine, New Hampshire, Massachusetts, and Pennsylvania with a combined attendance of approximately one and one-half million people. The shelter bears large American Legion seals which are attached with velcro fasteners over the seals of the State of Pennsylvania.

This tour is being financed jointly by **Fighting Chance**, Steve Alley and his newly formed New England Civil Defense Association, and contributions which are received by the American Legion at the fairs.

This is a very encouraging development. As mobile displays become available throughout the United States, it will become possible for all American Legion Posts to borrow a mobile shelter display for parades, fairs, and other public events. The educational impact of this program as carried forward by volunteers from the American Legion's three million members and auxiliaries can be profound.



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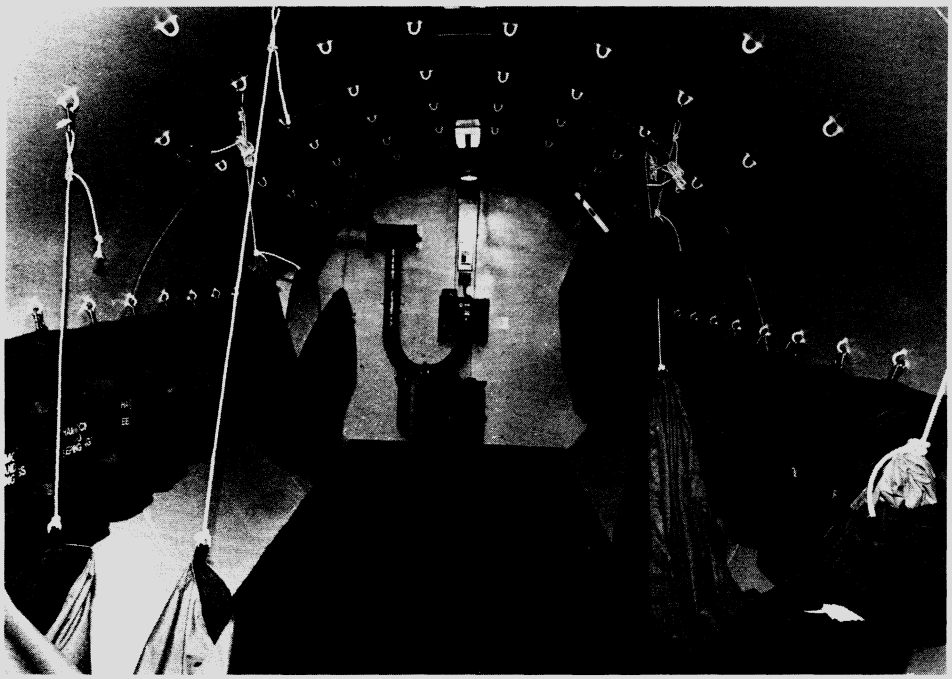
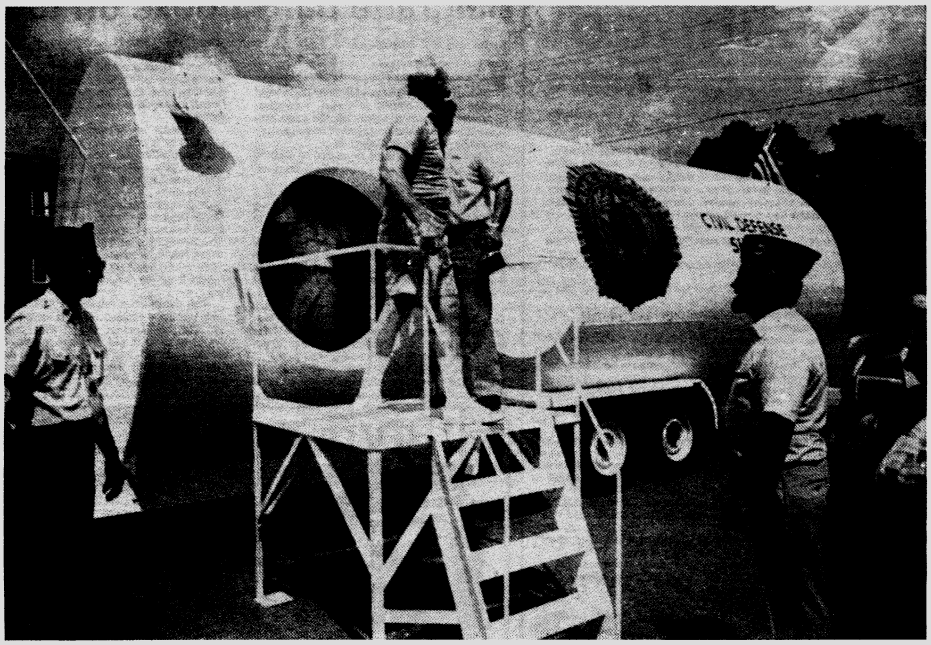
American Legion Volunteers



Inside the Mobile Shelter Display



American Legion on Tour

To contact Steve Alley, write to the New England Civil Defense Association (NECDA), P.O. Box 539, Unity, Maine 04988. NECDA is a non-profit organization. I strongly recommend that you write to Mr. Alley to thank him for his work and that you send a contribution to NECDA to help with the continuation of their efforts.

## THE ENVIRONMENTALIST WAR

President Bush is now moving toward the commitment of hundreds of thousands of American lives and enormous amounts of money and equipment to a land war in the Middle East. Idealistic reasons may be given, but these have a hypocritical sound in view of American actions elsewhere in the world.

Most observers assume that the President is acting for one central reason: to preserve the primary source of foreign oil for the United States. Actual large-scale fighting may be avoided this time, but sooner or later this policy is likely to lead to a major war.

Loss of Middle Eastern oil might trigger a depression in the United States. In any case, it would surely lead to very great economic difficulties. It is not surprising that America is willing to go to war to prevent the loss of a large part of her supplies of energy. Wars have been fought for much less compelling reasons.

It can be convincingly argued that the President should avoid this war and use the opportunity to institute a sensible policy of energy independence for the United States. If American borders were closed to outside energy and complete freedom of action were given to American industry, free enterprise would solve this problem within a few years. Energy supply and demand would balance, and one of the primary potential causes of World War III - a nuclear and chemical holocaust - would be removed.

President Bush apparently has decided that war avoidance and energy independence are not politically possible. The reason for this decision is rooted in the immediate cause of the current crisis. It can be summed up in one word.

*Environmentalism.*

This word, which formerly represented the normal aspirations of almost all Americans for clean air and water and the general preservation and improvement of the environment in which we all live, has been taken over by a militant political mob which places its own radical agenda above the lives and freedom of the American people.

The signposts along the path of America's descent into chaos are clearly marked - mysticism and irrationalism, earth worship, animal worship, the politics of envy, the false hope of greed, and the murder of the unborn (which has by now denied the right to life to 10% of our entire population). These signposts have marked the rise of seemingly irresistible forces in American politics which our leaders lack the courage to oppose. One of the most virulent of those forces calls itself "environmentalism".

Our churches have read these signposts, but, in a mistaken view of their own self interest and a wholesale failure of their responsibilities, have refused to tear the signposts down. Our industrialists have read them and responded with products, environmentalist funding, and political influence designed to optimize their profits from the new trends. Our intellectuals, unrestrained by absolute morality or by rational economics, have sought personal prestige as keepers of the new path.

The pervasive influence of environmentalism has affected our civilization in many ways. One of these has been the irrational self-destruction of our own energy independence. Environmentalists have effectively attacked every practical energy production technology.

The greater the potential of a technology to provide energy for America, the more vigorous has been their attack - and they have repeatedly won. The only technologies that have escaped their vengeance are those not yet sufficiently developed to provide for America's large energy requirements, such as solar power. It is a safe bet that even solar power will feel their wrath if it begins to supply significant quantities of energy.

Just the sensible development of American nuclear power alone would have entirely prevented the current crisis in the Middle East. Instead of safe, clean, inexpensive nuclear energy, the environmentalists - by halting the construction of nuclear power plants - have given us expensive and dangerous Arab oil.

Environmentalists have restricted our nuclear power output to only 19% of our electricity (in France it is 70%) by means of a group of myths similar to those with which their political fellow travelers (often the same people) have argued against civil defense:

1. *Nuclear waste is dangerous.*

It is dangerous only if we concentrate it in highly radioactive waste disposal locations as the environmentalists demand. (Even then, the dangers of properly managed waste are minimal.) Pulverized, dissolved, and dispersed in the oceans it would contribute virtually nothing to the vast amounts of radioactive material already dissolved in the oceans. (Imagine, however, the fate awaiting any politician who proposes the disposal of uncontained nuclear waste in the ocean.)

2. *Nuclear power plants can self-destruct in nuclear explosions. ("We almost lost Detroit.")*

It is physically impossible for anything in a nuclear power plant to achieve the 'critical mass' required for a nuclear explosion. High school physics should make this intuitively obvious to every American. National Education Association 'anti-nuke' propaganda courses have, however, replaced high school physics. These have the additional "advantage" of not requiring preparatory training in math and rational thought.

3. *Runaway nuclear reactions can melt down and burn holes through the center of the earth. (The China Syndrome)*

Unfortunately, this also is physically impossible. Imagine the possibilities for drilling geothermal wells and deep oil and gas wells if this non-phenomenon really existed.

4. *Radiation from nuclear power plants is dangerous, and radiation from nuclear power plant accidents could cause millions of deaths in a single event.*

There is power-plant-generated nuclear radiation at, for example, the front gate of the Three Mile Island nuclear power plant. That dose is approximately the same as the dose received by standing next to an environmentalist (or any other human being with the normal radioactive components of the body.)

It is indeed possible to scatter a lot of radiation around, for example by burning a graphite-mediated nuclear reactor without a containment building, as the Soviets did at Chernobyl. Even in that case, the number of deaths was remarkably low. This, however, is not a consideration in the United States, where it would be unthinkable to build a nuclear power plant without a containment building. As Dr. Petr Beckmann in his newsletter, Access to Energy, has pointed out, the Soviets have a different economic and political system in which people are more expendable than concrete. (Dr. Beckmann's newsletter, available from P.O. Box 2298, Boulder, CO 80306 is an excellent source of reliable technical and political information about nuclear energy.) Additionally, US commercial power reactors are mediated by water, which does not burn.

5. *The second law of thermodynamics shows that energy use and consumption increases undesirable disorder in the environment. (Environmentalist Jeremy Rifkin produced a best-selling book based on this assertion which has since been repeated by numerous theologians and other opinion molders.)*

The second law is entirely inapplicable to this issue, but without thorough understanding of physical chemistry, Americans are helpless against this sort of lie. The use of the words of science with concealed perversions of their real meanings has been a very effective tool for the environmentalists in this period of increasing technical ignorance.

These and related myths have not only induced unreasoning fear in scientifically illiterate Americans, but also have completely obscured the positive facts that nuclear power is cheaper and safer per kilowatt than are its logical competitors such as coal and oil.

The environmentalists used these myths to create an artificial "perceived risk" from nuclear power which was great enough to prevent its further development in the United States. No new construction permits for nuclear power plants have been issued in America during the past twelve years. Civil defense could have removed even that perceived risk, but it has not been deployed.

As you follow events in the Middle East - events that this time or perhaps next time could easily precipitate the carnage of a World War - remember this environmentalist victory over nuclear power. That victory has ensured American dependence upon Arab oil.

The Middle Eastern countries may well be fated to decimate their populations and civilizations by continual warfare as have European countries during many centuries. It was, however, not necessary that America should be dragged into this irrational maelstrom.

The next time you see an "environmentalist" working against energy production in the United States, thank him on behalf of the Americans who may die in the Middle East. They, unfortunately, will probably not have an opportunity to express appropriately their appreciation for his work.

## SHELTERS IN THE SAND

President Bush has said that "a line has been drawn in the sand" of Saudi Arabia. He has also said that he will rid the world entirely of chemical weapons during his administration.

In this second objective he will certainly fail. He cannot erase modern chemistry from the world. Chemical weapons can be made too easily from starting materials that will always be easy to obtain. To paraphrase a comparable slogan: 'When all nations agree that the possession of chemical weapons of terror will not be allowed in civilized nations, then only terrorists will have chemical weapons.' They will make them in basements from universally available agricultural and industrial chemicals.

With regard to his line in the sand, I hope that America has better luck than did a belligerent acquaintance of my great, great, great grandfather in Ohio. According to newspaper accounts, one day, egged on by some relatives and friends, he challenged my great, great, great grandfather to a fist fight. When his challenge was not accepted, he drew a line on the ground and stated that my great, great, great grandfather was a coward if he would not cross the line and fight.

Whereupon my great, great, great grandfather stated that he did not want to fight and he was willing to acknowledge that the other fellow was the better fighter. Never-the-less, he would step across the line to show that he was not a coward. As he did, the challenger leaped forward and pummelled him with his fists. At this point, my great, great, great grandfather regained his balance and hit the challenger once with his fist -- and killed him.

He was tried by a jury of 12. They found him guilty of fighting and fined him two dollars. Then he put his family in a covered wagon and moved them to Iowa to be away from his adversary's relatives and friends. I still have an oak chair that he made for himself. If he really was as wide as the seat of that chair, the fellow was a fool to have drawn the line.

If Iraq steps across President Bush's line, there will be a terrible fight in which literally millions of soldiers and civilians could ultimately lose their lives. Chemical weapons will probably be used. In that event it is important to realize that on the Iraqi side there will also be lines *under* the sand.

In its war with Iran, Iraq deployed shelters very similar to those advocated by **Fighting Chance** for American civil defense. (The supply of these shelters to Iraq was officially approved and encouraged by the United States government.) The Iraqi shelters are equipped with ventilation systems of the same sort that we have recommended. These are installed in cylindrical steel shelters of a size comparable to those we recommend.

The principle difference between our recommended configuration and the Iraqi shelters is that theirs can be quickly assembled on a battlefield and may be dug up and easily moved when necessary. For this reason, they are constructed of bolt-together corrugated metal plates that are easy to transport and assemble.

Our recommendation for this ventilation equipment is supported by its impeccable Swiss quality and its recent field tests on real chemical warfare battlefields between Iran and Iraq. Now the men who performed those "tests" may soon use it again against Americans.

More discouraging still is the knowledge that Iraqi terrorists could easily use chemical weapons against unprotected civilians in an American city. "Unfair" or "immoral"? Yes. But do American civilians really think that they will be forever spared the experience of war, other than to watch it on television?

If President Bush unleashes American air power against Iraq, tens and perhaps even hundreds of thousands of Iraqi civilians are likely to die. What sympathy do we think they will then feel toward American civilians?

If the worst happens, don't blame the Germans. Iraq could easily have obtained the required chemicals in many places. Nor should dying Americans be envious of those fine Iraqi shelters with their filtered ventilation systems. The Swiss have been trying for years to sell them to Americans at a remarkably low price per person protected. Except for a small group of **Fighting Chance** supporters, there have been very few takers.

The reason for this lack of demand is that most Americans do not know about the existence of this sort of equipment, nor have they been honestly informed by their government about the nature of the threat and the lack of preparations to meet it.

If the mobile shelter display program continues to expand, **Fighting Chance** will overcome this lack of knowledge for tens of millions of Americans at public events across the country.

# FOOD STORAGE

We have previously recommended a food storage ration of 300 pounds of wheat, 100 pounds of corn, 75 pounds of pinto beans, 75 pounds of soy beans, 5 gallons of soybean oil, and 10 pounds of salt for one adult for one year. For infants, we suggested that canned dried milk such as that produced by Maple Island also be stored. To avoid the need to sprout grain during a crisis, we suggested that vitamin C (only in the form of crystalline ascorbic acid) which is available from Bronson Pharmaceutical at a very low price also be stored.

Since we made this recommendation, the price of pinto beans has increased and, in our opinion, the need for stored food reserves has become more urgent. Moreover, it is essential that the resources of knowledgeable people be used to store as much food as possible, because they must also provide for their many fellow Americans who are not knowledgeable enough to act.

Therefore, we now recommend an even less expensive ration. This ration consists of 240 pounds of wheat, 240 pounds of corn, 120 pounds of soybeans, and 10 pounds of salt for one adult for one year.

This ration provides 120 grams of protein with a good amino acid balance, 45 grams of fat, and 2,700 calories of energy per day. The carefully considered recommendations of Kearny and Franz, which are tabulated in Nuclear War Survival Skills, call for 55 grams of protein, 30 grams of fat, and 2,600 calories of energy per day.

Since this is recommended as a minimum cost ration, it assumes that part of the grains would be sprouted before eating if the diet were utilized as a sole food source for many months. Without sprouting, it would be deficient in several vitamins.

For quantities of 800 30-day-ration lots (one truckload quantities), Preparedness Products (telephone (801) 261-8823) recently quoted a price of $9.89 (33 cents per day) for food shipped in vacuum-packed metalized bags or $6.54 (22 cents per day) for food shipped in paper sacks plus freight. Per 30-day ration one should allow about $1 to the Northwest, $2 to the Southwest, and $3 to the Northeast and Southeast.

Therefore, the delivered price for a one-year supply for one adult, exclusive of long-term storage containers and including shipment half-way across the United States in truckload quantities, is $106. Without the freight, this ration costs $82 per person-year. Freight costs for small amounts are, in some cases, as much as 50% of the cost of the food itself.

This price is for the highest quality of hard red wheat, corn, and beans. Soft wheat or grains and beans purchased directly from farm sources are considerably less. If you are filling underground steel tanks with grain (as are some **Fighting Chance** supporters), talk to your local grain elevator about bulk loads of grain and beans at farm prices.

Including the salt, wheat, corn, and soybeans, the current agricultural price of this very nutritious ration delivered at central grain elevators in the United States is:

**$35 per person per year**

Therefore, a one-year civil defense food ration for every citizen of the United States would cost the amount of money that the United States government spends *every 3 days*. Actually, the cost is much less on a nationwide basis, since the government would only need to pay the increased costs of storing a part of the normal agricultural supplies near population centers instead of in the locations where they are currently stored as a normal part of farm commerce.

This is the reason that several of the Senators with whom I discussed nationwide civil defense in Washington told me that the food supply part of civil defense would be easy to pass through Congress. It would, if proper political work were done, be almost impossible to vote against.

Unfortunately, **Fighting Chance** does not have the financial resources to undertake this political effort which would need to be carried out full time in Washington, D.C.

Even Senator Proxmire, who was not a friend of Federal Emergency Management Agency (FEMA) budget requests, demanded that FEMA deliver to Congress a sensible recommendation along these lines, but FEMA never responded.

In any case, food is the greatest bargain in America today. Buy and store the right food in as large a quantity as you can afford. You and your country may need that food at a future time, when it might not be available at any price.

## CHEMICAL WARFARE

Recently the United States has been carrying out a program to dispose of all of its chemical weapons, even though the threat of retaliation with such weapons has probably been the primary means for preventing their use on most (but not all) battlefields in this century.

The Soviets have also declared their intention of disposing of their chemical weapons (which they did not admit to having until 1987). However, they state that there is a small problem due to a lack of a suitable disposal facility. Estimates of the Soviet inventory, which is by far the largest in the world, vary between *three hundred and five hundred thousand tons* of chemical warfare agents. ( They admit to possessing 50,000 tons.) Some disposal problem!

Actually, the Soviets under the direction of Mr. Gorbachev have disposed of some of their chemical arsenal recently - on Soviet citizens in Georgia and on Afghan villages.

Meanwhile, the United States military is scrambling to acquire equipment to protect our troops from Iraqi chemical weapons. They apparently stockpiled rubber suits and gas masks, but neglected to obtain a suitable supply of decontamination rooms and protective shelters. Perhaps they would like to borrow the **Fighting Chance** mobile shelter displays. They are fully functional. Buried in the sand, they would protect against Iraqi artillery, too.

If this or some future Middle Eastern war becomes protracted as President Bush recently projected, there is a high probability that some American television viewers will have a more active role than they expect. Chemical weapons are spread throughout the world; they are easy for terrorists to obtain and not impossible for them to make; and they are the weapon of choice for an Arab counterattack upon an American city. (You think perhaps that President Bush will be allowed to blow up their cities without retaliation?)

Chemical weapons are much less efficient than nuclear weapons. They are much heavier per destructive equivalent. If, however, you do not happen to have a nuclear weapon and your opponent has thousands of miles of borders which leak tons of drugs and hundreds of thousands of unapproved immigrants like a sieve, chemical weapons are the obvious alternative.

Perhaps we should invite the Soviets to fight Iraq. After all, it is the Soviet oil exporting industry which is receiving one of the greatest economic profits from the trouble in the Middle East, and it is the Soviet arms industry that produced most of the Iraqi armaments. Moreover, Soviet citizens are prepared for a chemical attack.

As a part of the Soviet civil defense system, each Soviet citizen is provided with a gas mask. Instruction in its use begins early in grade school. One of our Soviet Civil Defense video tapes contains a Soviet civil defense chemical attack training film.

After making sure that his mask is of the proper size and that he understands its use, the Soviet citizen is instructed to go to a local testing facility wherein he will be gassed with a test substance while wearing the mask. Of course, he will only require this mask when outside the civil defense shelters, since they are equipped with chemical filters.

Once people are enclosed in shelters, it is relatively easy to protect their air supply from chemical and biological agents. Each of the gas filters in the mobile shelter displays provides 2000 continuous hours of protection for 60 people against the Swiss standard chemical agent concentrations. This protection is required by law for every citizen in Switzerland.

Shelters are the only really effective protection for civilians. Protective clothing (some agents kill on skin contact) and gas masks are difficult to use and only provide temporary safety until shelter can be reached. Banning chemical weapons from the world is just wishful thinking in view of their ease of manufacture. Shooting down delivery vehicles such as ballistic missiles is important, but as Senator Sam Nunn has pointed out, our opponents can just ship them in marijuana bales, since we cannot seem to keep those out.

Chemical weapons are an excellent example of a mature technology which cannot be eliminated and for which every sensible nation should be prepared. Destroying America's chemical stockpiles and unilaterally declaring an intention not to use chemical weapons may be acceptable, providing the United States has alternative weapons and the will to use them. It is, however, very foolish to refuse to provide American citizens with a civil defense system which can protect their lives from chemical weapons.

During a terrorist attack which may turn an American urban area into a rerun of the tragedy in Bhopal, India with a cast of hundreds of thousands of American men, women, and children, it will be too late to order a Federal Emergency Management Agency planned evacuation or to "surge" industrial production of air filtration units.

I predict that, if the United States becomes involved in a protracted war with the Arabs in the Middle East, unprotected Americans inside the United States will be killed by chemical weapons. These people would not have to die if their government had provided a proper civil defense. This prediction may be viewed as pessimistic or as optimistic. Optimistic? Yes - because it assumes that the Arabs will only manage a chemical rather than a nuclear counterattack.

## SURPRISE NUCLEAR WAR

*"It is a staggering thought that even now, in the 5th year of Mr. Gorbachev's time in office, the figures show that one new Soviet submarine is being launched every 6 weeks. Two aircraft, 6 tanks and 1 missile are produced every day. The Soviet defense minister has said that the emphasis is now on quality rather than quantity.....The Soviet navy recorded a record tonnage of new surface ships during 1989. These ships are larger and more powerful than their predecessors, and have longer range and more accurate missiles."*

British Defense Secretary, Tom King,
to the House of Commons in 1990
Quoted in Daily News Digest - 8/15/90

Official American scenarios for nuclear war have always been highly improbable. Pentagon war games have tended to concentrate upon a Soviet non-nuclear invasion of Europe which gradually escalates to tactical and then strategic nuclear war. Both sides are drawn unwillingly toward the massive exchange of nuclear weapons in this or some equivalent period of high international tension between the Soviet Union and the United States.

During this period of increasing danger, the American bureaucrats move resolutely to create a civil defense system out of their filing cabinets and cumbersome evacuation plans. (To ensure "continuity of government" the bureaucrats and politicians, of course, move into their publicly funded bomb shelters early in the crisis.)

Victor Suvorov, a former Soviet Army officer, has written in his book, Inside The Soviet Army, that Soviet commanders for many years believed that this American scenario was surely just a propaganda trick to conceal actual American war plans. They believed it impossible that any knowledgeable commander in the nuclear age would risk conceding to his opponent the enormous advantages of a surprise strategic nuclear first strike. Gradually, the Soviets, after observing actual American military preparations, became convinced that the United States did in fact have such a remarkable and self-defeating policy.

In contrast to their enthusiastic adoption of advances in American technology, the Soviets did not adopt American strategy. Their strategy has remained dependent upon more realistic considerations.

The Soviets depend upon a surprise strategic nuclear first-strike, a strong strategic defense, a strong civil defense which ensures continued industrial production during a long war, endless military and political deception, and enormous quantities of simple, effective, and easily mass-produced weapons.

It is very unlikely that the Soviets would make mistakes such that news of their attack would come in advance to a small farm in Southern Oregon. In any case, I do not make predictions as to the timing of world events. The general direction of events is sometimes somewhat predictable, but timing is very uncertain.

With that said, however, I point out that the current state of world affairs constitutes a much more probable scenario for the opening stages of world nuclear war than do the more popular hypotheses.

1. The Soviets, by means of a very successful propaganda and peace offensive, have lowered America's defenses and achieved the removal of America's retaliatory nuclear weapons from Western Europe. Although the Soviets are rapidly upgrading and improving the nuclear first-strike force aimed at America, their propaganda has been so successful that even the usually sensible Wall Street Journal continually refers to this as the new "post-cold war" era.

Tens of thousands of Soviets are flooding into America and Western Europe in this sudden new era of peace. They may all be tourists, students, and newly hatched anti-communists, but they could include a large force of Spetsnaz saboteurs.

2. World economic cycles, especially in the United States and the Soviet Union, are in a very precarious period in which sharp economic contraction is producing very dangerous political difficulties. Anyone who is elated about the serious political and economic problems in the Soviet Union should remind himself that the Soviets still control the largest military force the world has ever known. Internal political and economic problems have historically been a major influence toward war.

3. America is now becoming distracted and may soon become militarily weakened by a land war in the Middle East. In that war, Americans face a fanatical enemy who is armed to the teeth with Soviet weapons. The Soviets, however, are "keeping their powder dry". The worse the situation becomes in the Middle East, the greater will be the value of Soviet exports of gas and oil. These exports will give the Soviets increasing financial and strategic power, especially in Western Europe.

4. The buildup of Soviet arms in Latin America continues with large, well equipped armies and huge stockpiles of military equipment ready to be used against the United States. Nor are these just assault rifles and explosives. The Soviet Union recently delivered modern MIG 29 fighter-bombers to Cuba. America can successfully defend herself from these forces, although as she is drained of forces for the Middle East the task becomes more difficult. After a Soviet first-strike in which most of America's unprotected military forces are destroyed (nuclear shelters are not even available on military bases in the United States), a Latin American invasion might be impossible to repulse.

It is obvious that the Soviets, should they decide to strike the United States, would prefer to avoid a war in Europe. The continuing American withdrawal from Europe and

the turmoil in the Middle East are raising the chances that a European war could be avoided. It is becoming increasingly possible to envisage a world nuclear war fought primarily upon American soil.

I am not predicting that a world nuclear war will certainly occur, nor am I predicting that one will begin in the near future. It is, however, prudent to notice that the events of the past few months represent a very credible scenario of those events which might occur prior to a surprise nuclear attack upon the United States.

## SHELTER FURNITURE

The furnishings of a civil defense shelter designed to resist significant levels of nuclear blast should consist solely of hammock beds and hammock chairs. Fixed furniture of the ordinary type has three disadvantages. First, it is an inefficient use of shelter space. This is a consideration even if the shelter is not designed to resist blast. Second, it provides hard corners and surfaces upon which people may be injured if they are thrown off balance. Third, it does not provide good shock isolation for the occupants.

Beds, chairs, and partitions (such as for the toilet area) made entirely of cloth overcome these disadvantages. They are efficient in use of space, cannot cause impact injuries, and provide substantial shock isolation for the occupants.

In fact, the 200 psi limit in blast resistance of our standardized recommended shelter design is largely based upon shelter furnishings. The shelter itself could easily be improved for higher resistance. However, the simple shock isolation afforded by hammock beds and chairs, the flexible plywood floor, and the minimum of dangerous objects in the shelter is insufficient above 200 psi. Without these precautions, even though the shelter itself would afford protection, injuries and deaths may be experienced by occupants at much lower blast levels. The elaborate shock protections for overpressures above 200 psi which are used in very specialized military installations are too expensive for use in most shelters.

Most Americans would not be located in areas receiving 200 psi or even 100 psi. However, even at the more probable levels of 10 psi to 50 psi, soft shelter furnishings might save many lives. If, for example, a shelter door were open during the passage of a lower pressure shock wave, the shelter furnishings might become a lethal jumble of flying objects. There is a considerable difference between being hit by a fabric hammock as compared with a wooden bedpost. People can survive remarkably high sudden pressure increases, but they can easily be killed by flying shelter components. All shelter beds and chairs should be of the hammock type.

Nuclear War Survival Skills gives detailed instructions for making expedient bedsheet hammocks and chairs. These can be made in a few minutes without stitching, and they work very well. Since most Americans have a relatively small amount of money to spend for civil defense preparations, most shelter furniture in private shelters should be made from bedsheets or equivalent fabrics in exactly the manner described in Nuclear War Survival Skills.

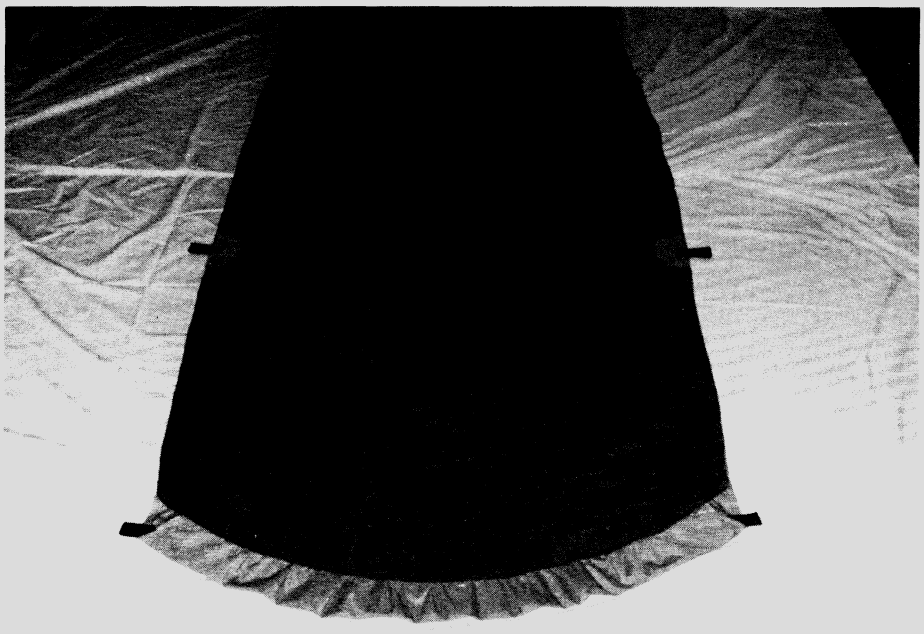
The materials and labor to manufacture a special purpose shelter hammock will cost at least $50. This is the price of a six-months supply of food for one person. You will be quite

comfortable in bedsheet furniture. The food is more important regardless of how much you have stored already. Most of your fellow Americans, for whom you will want to provide, have stored none at all.

Regardless of this, however, many people will want to equip their shelter with sewn, nylon hammocks. I admit that we try to keep a few in our own shelter, but these, like some of our other equipment, keep finding their way into mobile display shelters for public education. These hammocks are convertible into chairs and are made primarily in accordance with a design by Cresson Kearny.

We have experimented with several sizes and prefer very large ones even for children. They are more comfortable and easily accommodate sleeping bags. Hung lengthwise in a long shelter, the larger hammocks require little extra space, since they can be hung in a staggered configuration. In a small shelter or if they are hung across the shelter, shorter hammocks are preferable.

Each hammock has a strong nylon bottom and also a lighter weight nylon secondary bottom. The space between these two can be opened through a slit with a velcro closure. The air space between these bottoms provides some insulation and can be filled with clothing or other items to provide more insulation. It is also useful for the storage of personal effects. In public shelters as illustrated by the mobile displays, this is the only space we allow for the personal effects of shelter occupants.



Underside of Hammock Showing Insulating Bottom,
Entry Slit, Strap Attachment, and Tapered End

Securely attached nylon loops are located 52 inches down each side of the hammock. These facilitate conversion of the hammock to a chair as illustrated in Nuclear War Survival Skills. Suspension from loops in the ceiling is with strong, slightly flexible rope. If you want attachment clips like those in the mobile displays, they are specified as 5/16 X 3 1/8" interlock safety snaps and are available in many hardware stores. For example, those for the mobile displays were purchased in quantity from True Value Hardware at $1.19 each. Retail in that store for single snaps is $1.99 each.

The hammock bottom is cut from a strong rectangular piece of nylon fabric (blue in the displays) 4 feet (48 inches) wide and 9 feet (108) inches long. The ends are cut into a curve, so that the piece is 108 inches long in the center decreasing to 100 inches along the sides.

At each end of the hammock, 4 inch wide seams with open ends are made through which the ropes to support the hammock are drawn. This stitching must be very strong to hold the weight of the hammock occupant. The sides are sewn with a 1 1/2 inch closed hem to prevent unraveling.

The finished size of the hammock is then 45 inches wide by 100 inches long in the center and 92 inches long at the edge. This difference in length between the center and the edges is essential so that the hammock will hang in a boat shape. A boat-shaped hammock envelops the occupant, enhancing comfort and making it almost impossible to fall out.

Short nylon straps are attached on each edge of the hammock, 52 inches from one end of the hammock. These accommodate the side ropes when the hammock is hung as a chair. These attachment points must be very strongly reinforced. The straps are made of heavy nylon material. Circles 5 inches in diameter, made of this same material (or several layers of the regular hammock material) are sewn around the hammock edge under this strap for reinforcing. The resulting half circles are stitched across with many lines of stitches passing through both the patches and the strap. The flat sides of the half circles (two per strap, one on each side of the hammock) are right under the straps.

A secondary hammock of light-weight nylon (red in the mobile displays), 5 feet wide (rather than 4 feet) and of the same length as the finished hammock (less the seams), is sewn flat against the hammock with stitching all around the edges. A two foot slit is made in this material along the length of the hammock and three inches in from the edge. This slit is provided with a velcro closure.

Some of the hammocks also have nylons straps at each of the four corners to accommodate spreader bars which widen the hammock at the ends. We do not use the bars. These straps are optional and can be omitted. If they are there, however, do not put the hammock rope through them, as this may tear them. Reinforcing patches and extra stitching is not required for the spreader bar loops.

In bright red and blue nylon, these hammocks brighten the shelter. They have been very popular with the kids during showings of the mobile displays. If you prefer shorter hammocks, just reduce the length dimensions. I suggest, however, that you make one of this size first for comparison.

If this seems too complicated, just store one double bed sheet per person (along with the rope and other supplies listed in the hammock section of Nuclear War Survival Skills) in your shelter. You can read the book and make your hammocks during your first night of shelter occupancy - which should be a test run prior to a real crisis.