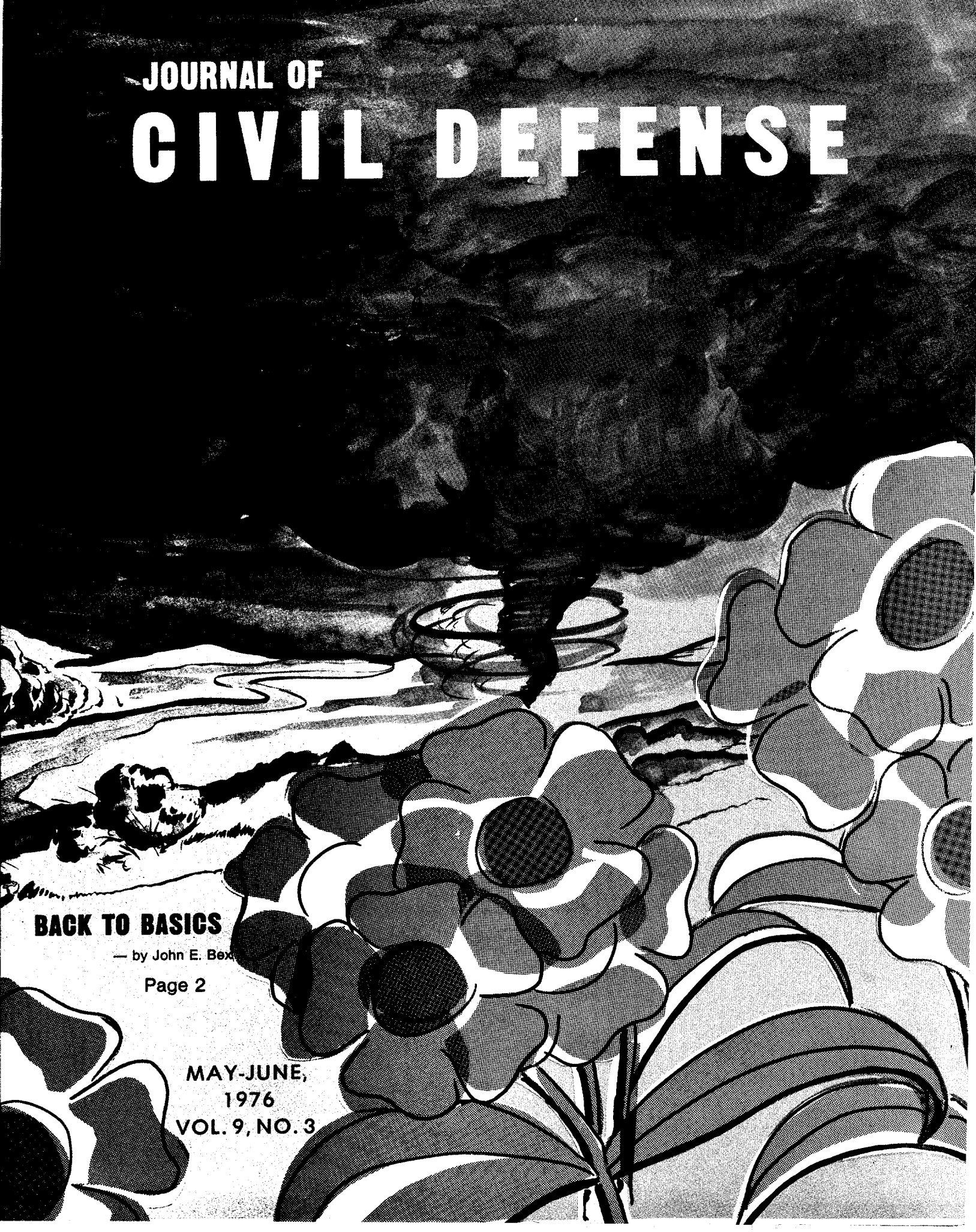
# JOURNAL OF CIVIL DEFENSE



## BACK TO BASICS

— by John E. Bex

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MAY-JUNE,
1976
VOL. 9, NO. 3

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## COVER PICTURE

To artist Frank King civil defense means "hope" in the face of tragedy. His springflower-tornado scene expresses his idea that no disaster is so overwhelming that it cannot be brought to its knees through the judicious application of known disaster preparedness techniques.

### TORNADO CONFERENCE AT TEXAS TECH

A 3-day symposium on tornadoes will take place at Texas Tech University June 22-24. Lawrence Institute of Technology's James J. Abernathy will present his paper on "Protection of People and Essential Facilities" on June 24th. His paper will be one of twenty symposium analyses.

Symposium objectives are "(1) to summarize existing knowledge regarding tornadoes, (2) to discuss applications of tornado knowledge to societal problems, (3) to delineate future research needs in tornado technology, and (4) to promote dissemination of information between severe storm meteorologists, architect-engineers and planners."

Further information may be obtained from: Dr. Kishor C. Mehta, Department of Civil Engineering, Texas Tech University, P.O. Box 4089, Lubbock, Texas 79409.

"For the next five years or so there is only one way for the U.S. to make measurable progress toward the goal of energy independence, and that is by conserving energy. There are two kinds of energy conservation. One approach is to have the country lower its standard of living. . . The other approach to conservation is to improve the efficiency with which energy is consumed.

—H.A. Bethe in the January issue of *Scientific American*


**Journal of CIVIL DEFENSE**

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The Association for Community-Wide Protection from Nuclear Attack





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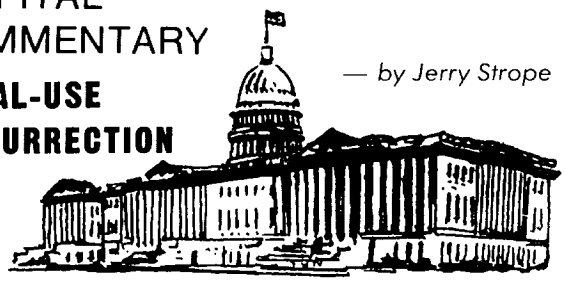
The JOURNAL OF CIVIL DEFENSE presents authentic information relating to civil defense — to the survival of free government, the United States and peace in the nuclear age. Its aim is public education in this field and service as a forum.

Authors are encouraged to submit manuscripts for consideration by the editorial committee for publication (the JOURNAL, as a non-profit organization, pays no fees). Articles, preferably illustrated, should be 500 to 1,200 words in length, slanted to the non-technical reader, and oriented toward the civil defense field. Views expressed in contributions to the JOURNAL are those of the authors and do not necessarily reflect JOURNAL policy.

# CAPITAL COMMENTARY

## DUAL-USE RESURRECTION



— *by Jerry Strope*

The long-awaited "oversight" hearings on civil defense were completed in early March, just one month after they were initiated by a panel of the Investigations subcommittee of the House Armed Services Committee. All in all, the hearings and their sequelae were a smashing victory for civil defense and its advocates, although the legislation is still in process at this writing.

The "panel" consisted of its two Democratic members, chairman Robert Leggett of California and Donald Mitchell of New York. The Republican member never attended. Because of multiple ongoing hearings, the CD sessions usually were scheduled from 5 to 7 in the evening two or three times a week. The committee staffers, Ralph Marshall and Herbert Roback, did an excellent job of organizing the hearing of numerous witnesses, who represented a good combination of technical expertise and CD experience. Two issues dominated: the need for an augmented civil defense effort to maintain a credible deterrence, and the egregious proposal on the part of the Administration to make DCPA stop all support of planning for natural disasters. The panel heard plenty on both counts and became convinced midway through the hearings.

The panel's recommendations, upheld by the full Committee, recommended a DCPA appropriation of $110 million, language to recognize the usefulness of peacetime disaster preparedness in nuclear defense readiness, removal of a time limit on authorizations, and an annual review of the status of CD. Mr. Leggett later testified strongly before the cognizant Appropriations subcommittee and there is every prospect that the House, for the first time in history, will appropriate more funds for DCPA than the President requested. Budget hearings in the Senate have also been congenial to an increase in funding. Happily, the civil defense issue arose just when the inclination to cut defense appropriations is apparently at a minimum.

As for the dual-use concept so essential to many local (and State) civil defenders, it is most likely that the Administration's position will be dealt a strong rebuff. Nonetheless, things will never be the same as before. The marriage of peacetime and wartime disaster preparedness has been written into the record as supportive of the latter and the annual review by the House Armed Services Committee will ensure that crisis relocation and other nuclear planning gets its fair share of attention at last.

There are subtle indications that the Administration will not block the realization of the actions now moving through the legislative process. The longer-term prospects for civil defense are not quite so clear. Whether Secretary Rumsfeld will embrace civil defense as a strategic imperative, as Schlesinger seemed to be doing before he left, is a prime unknown. The House hearing record makes a strong case but next year's hearings may turn out to be even more pivotal than those just concluded. □

## "OVERSIGHT" EXCERPTS

*Conrad V. Chester* (Oak Ridge National Laboratory):

The first and most important step to correct the present situation is that the U.S. potential for survival be recognized at the highest levels of government. The use of rhetoric at high government levels describing nuclear war as "the end of mankind" or "the end of civilization" must be discontinued. In addition to being untrue, this misinformation of the American people undermines morale and may discourage scores of millions from taking measures which can save their lives in a future crisis.

*Leon Goure* (Center for Advanced International Studies, University of Miami):

Soviet spokesmen make the specific point that "Soviet Civil Defense does not incite, does not promote and does not provide impetus for war," but, on the contrary, that it "constitutes one more major obstacle in the way of the unleashing of a new world war by the imperialists," i.e., it strengthens the Soviet deterrence of the United States. . . Commenting on the scope of the [civil defense] program, a high Soviet official said: "In our country, there is not one economic branch or area of social endeavor that is not in one way or another associated with civil defense."

*Eugene P. Wigner* (Rockefeller University):

The present counterargument is. . . that civil defense is too expensive. As far as counverevacuation is concerned, this argument is clearly ridiculous. And, as for blast shelters, China, with a gross national product a fraction of ours, can afford it! . . .

Let me end on a bit more hopeful tone which is, however, as sincere as was the rest of my statement. This is the hope that an effective civil defense may not only protect our country and our freedoms, but it may also lead to a more true peace than the present one, which is based on the fear of destruction. I hope such a peace in which no rulers are tempted to increase their domains will come into being!

*"A single, unified agency with a clear name and function is required so that everyone will know to whom to turn for help when disaster occurs or threatens."*

# BACK TO BASICS

*— John E. Bex, Director, Region Two*
*Defense Civil Preparedness Agency*

There are times when it is important in any field to return to fundamentals and take a fresh look at all its problems in the broadest setting. Both domestic and international events, recent and looming on the horizon, now call upon us to rethink our whole approach to civil defense, and to disaster preparedness.

We need to reconsider these matters not from the point of view of the existing structure and the reforms and readjustments that might seem advisable. On the contrary, it is better to forget for a moment about current institutions and implementations, jurisdictional niceties, personal prerogatives and the like, and return to the needs which all these things are meant to serve. History, the pressure of immediate events, political compromise and expedients have cumulative effects which may no longer be rational in terms of current and future needs.

**". . . capture the imagination of the American people."**

Therefore, let's ask: What do the American people need? And let's work upward from there.

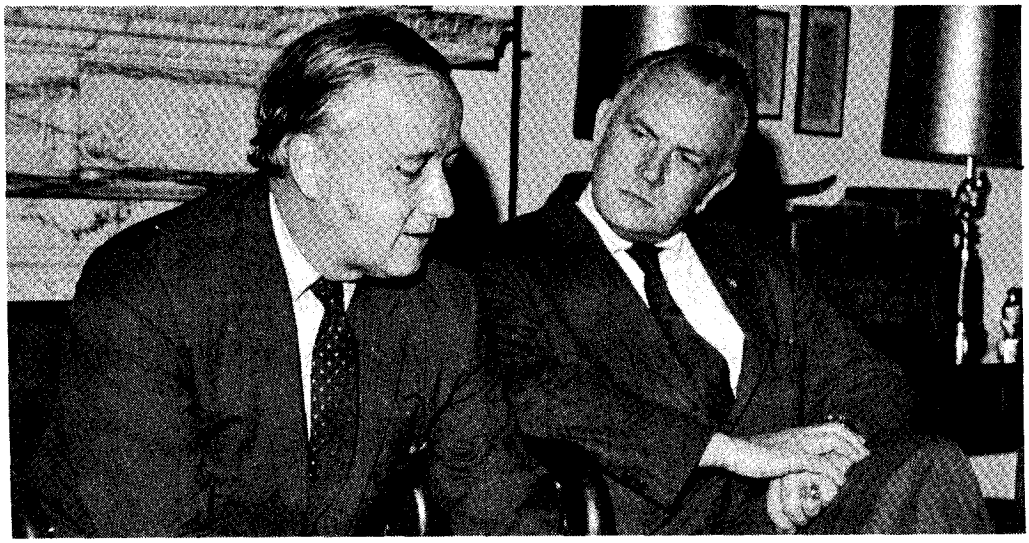
Certainly they need a program that provides them with as much real security as is obtainable and a new sense of security. But the only hope for such a program in the coming period is to create one that will somehow capture the imagination of the American people, since broad support will be absolutely essential and cannot be taken for granted.

This means something clear, simple, understandable, with unmistakable purpose and impact. No piecemeal ad hoc approach will serve. A single, unified agency with a clear name and function is required so that everyone will know to whom to turn for help when disaster occurs or threatens.

The crux of the matter is that we have so far failed to sell civil defense and emergency preparedness to PUBLIC OFFICIALS AND THE AMERICAN PEOPLE. Progress depends on facing this fact squarely and doing something about it. If the American people are presented a convincing, impelling image of a *single modern agency* which is going to take care of these needs — or rather help them to take care of them — then all else may follow in the way of local government support, Congressional support, etc.

Otherwise nothing, otherwise the current effort may dwindle still further, especially in the probable peacetime environment of the coming period. Therefore, the *opportunity* to create something new is at the same time a critical *demand*.

A fully unified and integrated effort would include not only all the current activities of Defense Civil Preparedness Agency and Federal Disaster Assistance Administration, but many other things as well, drawing in and coordinating information and research about all types of disasters and potential disasters. A shift toward more disaster-preparedness long-term research can be undertaken once there is such a cen-



**John E. Bex (right) listens to home defense views of Maryland Senator Charles McC. Mathias, Jr.**

tral organization with full responsibility and a long-term charter.

The psychological aspects are of the utmost importance if the broadest public support is to be gained. The greatest improvement we can make in this direction is achieving maximum value for our total investment through public relations. What we do, how we do it and the effect it has upon the citizens of the nation is where the thrust of public relations must be directed. The public should know that someone is thinking and worrying about all the possible disasters that threaten it, that nothing is allowed to fall between two stools because of jurisdictional differences or complex divisions of responsibility.

### ". . . could raise security to a new level. . ."

Many progressive companies have safety departments and safety engineers. What about a safety engineer for all of us? Why shouldn't we have an agency that acts as our national safety engineer, looking at the country as a whole as a problem of safety design and disaster mitigation? It could raise our national security to a new level entirely and give every citizen an added sense of security.

Any significant addition to the general sense of security would doubtless be appreciated in these times and here is an area where something can be accomplished if the problems are approached in a comprehensive, unified manner. This would be much easier to come by than other types of security such as military security and economic security.

A new more integrated approach designed to have the fullest psychological impact and acceptability based on an unmistakable assignment of responsibility has further advantages. Persons given a long-term continuing responsibility to concern themselves with a certain problem can often accomplish more with modest means than can be done by start and stop, sporadic one-shot efforts of various kinds. Such an effort can seize the interest of young people who may want to make a life-time career of such work.

Such a new type of agency should have a particularly well chosen name, one that projects just the right kind of image, and such names are not easy to find or are already taken. DCPA (Defense Civil Preparedness Agency) is much too big a mouthful. Veteran civil defense people still have to think to remember what it stands for — then decipher what it means. We offer the following as two of many possibilities:

- OCD (Office of Civil Defense). There's really nothing at all wrong with the old name. We've had it twice. It has instantaneous meaning. It's a grass roots simple description of the agency and its mission.
- ODP (Office of Disaster Preparedness). If we need to change the name it should be a *simple* change. ODP would not be bad.

There are a number of others. The word "disaster" or its implications should not be avoided. This is the core of the problem. Those so fearful of disaster that they cannot bear to utter the word are unlikely to be able to cope with the reality.

During the Second World War, when Winston Churchill spoke to the British people he didn't pussyfoot or deny the gravity of the situation but said, "What I have to offer you is blood, sweat, and tears." And he obtained in response a tremendous wave of support from the British people. We need to develop the same sense of rapport with the American people to capture their approval, and to absorb them in the drama of a joint undertaking. Honesty and plain speaking are essential.

There is indeed a certain nobility about the concept of a general agency to foresee and warn, to protect against all types of disasters at a higher level, since it will probably be the first such agency for any nation anywhere. Thomas Jefferson wanted to be remembered as the author of the Declaration of Independence and the founder of the University of Virginia and didn't mention his other roles as President and as a member of Washington's cabinet.

Similarly the creation of such an agency, raising national security to a new level, might some day be recalled as one of the brightest, most enduring contributions of this administration. After all, the provision of new kinds and levels of security for every citizen is an important part of the meaning of civilization.

It is, in a sense, civilization itself. □

### QUO VADIS?

Today in Washington, D.C. the following government agencies are among those which have major independent disaster roles and respond to disaster situations on their own:

DEFENSE CIVIL PREPAREDNESS AGENCY
FEDERAL PREPAREDNESS AGENCY (A PART OF GSA)
FEDERAL DISASTER ASSISTANCE ADMINISTRATION (A PART OF HUD)

plus:

Small Business Administration
Department of Agriculture
Federal Aviation Agency
U.S. Army Corps of Engineers

In addition to these there are over twenty other government agencies which have defined disaster roles.

In one assessment of the situation one U.S. Senator said:

"This splintering of Civil Preparedness preparation at the Federal level is contrary to the folk wisdom and common sense of the American people. No wonder the States and local governments are confused about where to turn for Federal leadership and help."

## Reactor Anatomy - II (Second of a Four-Part Series)

# ENGINEERING ENERGY OUT OF NUCLEAR FUEL*

— C. M. Haaland

Emergency Technology Section
Health Physics Division
Oak Ridge Laboratory

The first article in this series described how heat is produced by nuclear fission and how this process differs from simple combustion. In this second article we will trace the movement of nuclear fuel from "ground-to-ground," that is, from the initial removal of the uranium ore from mines, through the reactors and reprocessing, and finally to burial of nuclear wastes in underground vaults. A typical nuclear fuel cycle is shown in Fig. 1.

Uranium mines (1) (for all reference numbers refer to Fig. 1) are located primarily in New Mexico, Colorado, Wyoming, Utah, and Texas in the U.S. Two of the primary mineral materials being mined for uranium are uraninite and pitchblende, (described in Table 1), which contain 3 to 10 lbs. of uranium oxide ($U_3O_8$) per ton of ore. There is usually a mill in the vicinity of the mine in which the ore is crushed, ground in a ball mill and then processed chemically to extract the $U_3O_8$.

The second step (2) in the cycle is to further purify the $U_3O_8$ and convert it into the gas, uranium hexafluoride ($UF_6$). This step is necessary for the process of "enrichment" of the fuel (3) by the process of diffusion of the gas through miles of filters inside a huge plant.

The gas $UF_6$ becomes "enriched" when the ratio of uranium's two isotopes, of $U^{235}$ to $U^{238}$, is shifted in favor of the fissionable isotope, i.e., the amount of $U^{235}$ is increased. In natural uranium oxide, about seven atoms out of one thousand uranium atoms (0.7%) consist of the isotope $U^{235}$. Enrichment brings this percentage up in the range of 1.5% to 5%, depending on what kind of reactor the fuel is to feed. The higher the enrichment, the smaller the possible core size.

In enriched fuel the average number of neutrons produced per absorbed neutron slightly exceeds two, whereas in our natural uranium reactors an average of about 1.4 neutrons is produced per absorbed neutron. This seemingly small difference has enormous significance for a new type of reactor, the breeder reactor. When a neutron reacts with a fissionable nucleus, both this nucleus and the neutron disappear but new neutrons are produced. One of these neutrons is needed to maintain the chain reaction and another one to produce a fissionable nucleus to replace the nucleus originally struck by the incident neutron. Hence, an *increase* of number of fissionable nuclei, that is breeding, is possible only if *more* than two neutrons are emitted in the reaction of the incident neutron with the original fissionable nucleus.

* Research sponsored by the U.S. Energy Research and Development Administration under contract with Union Carbide Corporation.

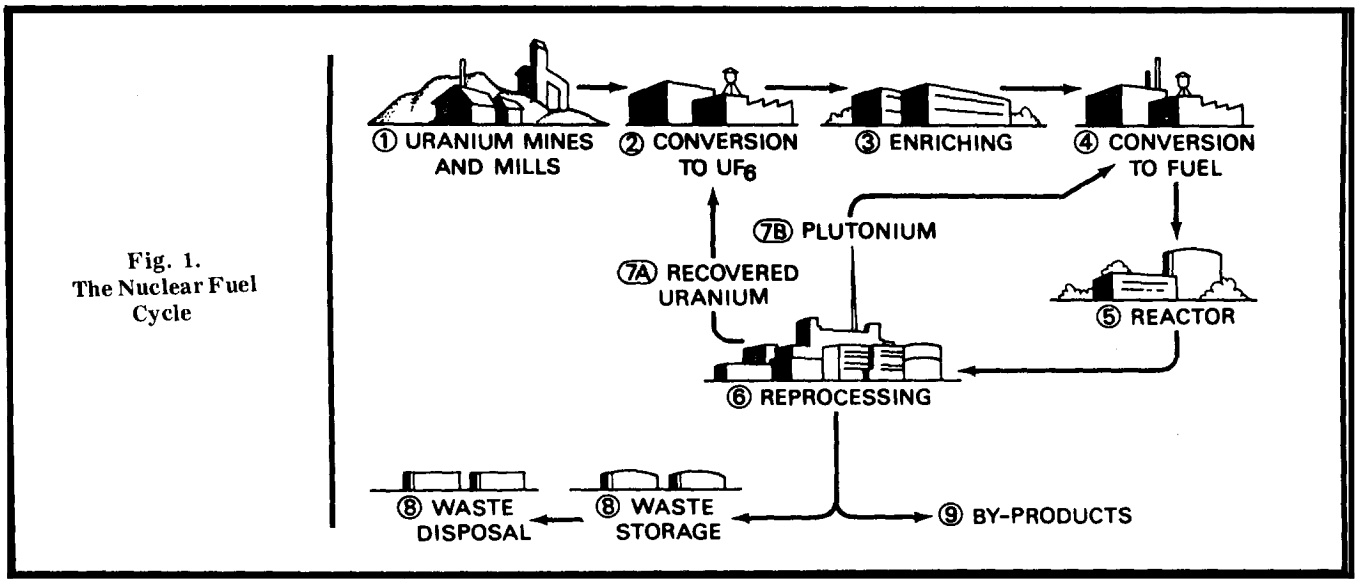



Fig. 1.
The Nuclear Fuel Cycle

There are no commercial breeder reactors in operation in the United States at the present time. If power from fusion proves to be impractical, breeding still could be used to produce nuclear fuel and thus become the basis for providing energy for a world population of twenty billion people for millions of years (Weinberg and Hammond, 1970).

Some reactors use natural uranium without enrichment. Some of these are called "burners" because they merely burn (consume) $U^{235}$ and produce only small amounts of new fissionable material. If all future reactors were of this type, the world supply of uranium fuels would be exhausted in a few hundred years—as conventional fossil fuels are now being exhausted.

The enriched $UF_6$ gas is converted chemically into a metal or oxide form (4) and is usually shaped into small cylindrical pellets to be inserted into hollow rods in the core of the reactor (5). Throughout these cycles up until the fifth stage, the uranium is only mildly radioactive. After the first stage, the mechanical enclosure which holds the uranium fuel is quite adequate to protect anyone from its radiation. The uranium ore is quite harmless and chunks of it can be handled in one's bare hands without any radiation hazard.

It is important in a nuclear-fueled electric generating plant that the fuel be arranged in a definite pattern within the core for several reasons:

1. Most of the fissionable pellets must be properly surrounded by other pellets so that neutrons from the fission which takes place in the original pellet are not lost but are absorbed in one of the surrounding pellets.

2. Control of the locations of the fuel pellets and of the materials between them must be achieved in a safe and proper manner to prevent the fission chain reaction from going too fast; and,

3. Proper flow of the coolant must be maintained to prevent material failure and to carry off the heat to drive the turbines which drive the electric generators.

Unlike a coal or gas-fired furnace, the nuclear reactor contains all its fuel within its core, enough to operate a large power plant for months. The core of a large reactor may be a cylinder only about 6 to 12 feet in diameter and as many feet tall (Fig. 2). The rate of consumption of the fuel in the core and the power level of the reactor, the heat producer, is a direct function of its neutron flux (that is, the quantity of neutrons active at a given time). So the control of the reactor requires the regulation of the neutron flux.

This regulation is usually accomplished by insertion of neutron-absorbing rods between the rods which house the fuel pellets. If control of these neutron flux regulators is lost, the chain reaction of neutrons (the flux) and the fissionable fuel may rapidly build up in some reactor designs, resulting in extremely high temperatures which can actually melt the metals of the core (called a "meltdown"). Because of this possibility, reactors are designed with multiple, redundant systems of control rods. If the unprecedented or extremely improbable situation of a meltdown occurs, there may be a steam explosion but never a nuclear explosion (Shea, 1976). The radiation hazards which might result from such an explosion and protective measures against them will be discussed in a future article.

The economics of reactor operation call for refueling of the core after a reasonable burnup of the fuel in order to recover the useful remaining fuel and to remove the fission products. The physical appearance of the fuel is practically unchanged, but its radioactivity is multiplied perhaps a million times. The process of fission results in daughter products which are highly radioactive. The fuel pellets become very hot, in temperature as well as "radioactively." Before this material can be shipped to the reprocessing plant (6), the "spent fuel" is allowed to cool off for several months in storage in a pool of water at the reactor site. Shipment of this material to the reprocessing plant involves first its transfer under water to massive, heavily shielded and cooled portable vaults, called "casks." These casks, the most carefully

TABLE 1. NUCLEAR VOCABULARY

PROTON: A basic particle of matter which is almost 2000 times more massive than an electron, but has a positive charge of electricity. It is one of the constituents of the atomic nucleus.
NEUTRON: The other basic constituent of the nucleus. It has about the same weight as a proton (the nucleus of the hydrogen atom) but has no electrical charge.
NEUTRON FLUX: The number of neutrons striking a unit of area during one second.
ISOTOPE: Any of two or more species of atoms, the nuclei of which have the same number of protons but differ in the number of neutrons. For example, $U^{235}$ and $U^{238}$ are isotopes of uranium. Each of them contains 92 protons but $U^{235}$ has 143 neutrons and $U^{238}$ has 146 neutrons.
URANINITE: One of the primary ores of uranium, of black color with hues of gray, green or brown. It is found in veins and also dispersed in sedimentary rocks.
PITCHBLENDE: A term often used interchangeably with uraninite but usually applied to the massive form of uraninite found predominantly in veins.
FUEL CYCLE: The sequence of processes dealing with fuels beginning with extraction of the ore from the ground, and the processing and "burning" thereof. The sequence ends, finally, with the disposal of the waste products.
CHAIN REACTION: A sequence of events so related to each other that each one initiates the next. In reactors the events consist of the fissioning of uranium nuclei, the release of neutrons by these nuclei, the capture of some of these neutrons by other uranium nuclei, the fissioning of these, and so on.
CORE (REACTOR): The heart of the reactor in which the fissionable fuels are brought together to form a "critical mass" and thus produce a controlled chain reaction.
BIOLOGICAL SHIELD: A wall of material which surrounds the reactor core in order to prevent the escape of radiation and neutrons. These would otherwise be harmful to humans.
CONTAINMENT VESSEL: A heavy walled steel container which surrounds the core and the biological shield to prevent escape of fission products in the event of damage to the biological shield.
BREEDER REACTOR: A reactor which produces more fissionable fuel materials than it consumes.

designed commercial shipping containers in human history (Dukert, 1975), are then used to transport the material to the processing plant.

The unused uranium recovered from spent fuel can reenter the fuel cycle (7A), but first it must undergo additional enrichment because some of its $U^{235}$ was fissioned during its stay in the reactor. Purified plutonium can go at once to a fuel manufacturing plant. Nuclear waste of low radioactivity can be disposed of locally at the reprocessing plant without further processing.

Nuclear waste of high-level radioactivity is currently stored at the reprocessing plants or at the reactor sites and must eventually be removed to a safe location for long-duration storage. The problem of long-lived high-level radioactive wastes will be described in a future article. □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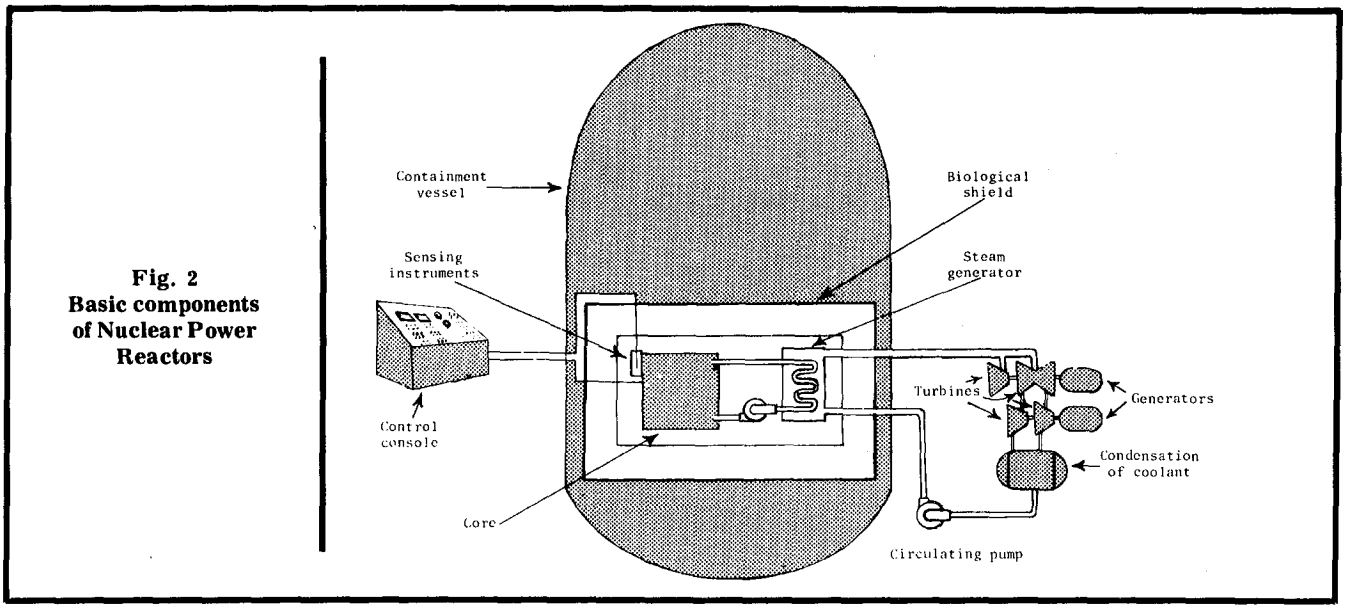



**Fig. 2**
**Basic components of Nuclear Power Reactors**

# Book Review

— *R.F. Blodgett*

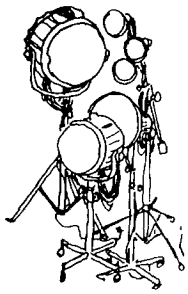
*Effects of Nuclear Electromagnetic Pulse [EMP] on Synchronous Stability of the Electric Power System,* by R.W. Manweiler (Oak Ridge National Laboratory). Printed by National Technical Information Service, U.S. Department of Commerce, 5285 Port Royal Road, Springfield, Va. 22161. 91 pages. $5.45.

First, let it be said that to truly appreciate the details of this technical report one should be knowledgeable in the workings of large electric power systems. Admittedly, this reviewer does not possess these skills. However, any layman can understand the conclusions and the magnitude of the problem. The report concludes that a nuclear weapon detonated, for instance, over Kansas at a height of 400 kilometers (about 250 miles) would present a "high probability" that the EMP would result in "an immediate and massive power failure" covering a line-of-sight area larger than the continental United States.

Stated simply, nuclear interaction with the atmosphere would cause current and voltage surges of several kiloamps and of nearly a megavolt to be produced on unshielded parts of distribution, transmission, control, and communication lines. This electromagnetic pulse interrupts the normal 60-cycle synchronization in one or more of six possible ways. The result is then similar to the Northeast Power Failure of 1965, which is illustrative of a cascading failure. That is, a failure in which one event triggers a succession of events eventually leading to collapse of the whole system.

The chaos caused by a nationwide power failure would be horrendous to say nothing about the related outages caused to hard-line and radio frequency communications systems. Imagine a country without electricity nor the means of communication to determine and resolve the situation.

Further study will be necessary before methods for reducing this complex hazard can be suggested. □



# SPOTLIGHT

**BRITISH CD: "FLACCID"**

Free-swinging General Sir Walter Walker, former NATO Commander-in-Chief, Allied Forces, Northern Europe, is a spade-calling maverick of the first water. With 20-20 political vision and a penchant for poking into sacrosanct cobwebs, in retirement he comes across clear and strong. In the March 1976 issue of his new *International Summary* he lambastes his beloved Britain for its "flaccid home defense posture."

"With the bulk of its Regular Armed Forces serving outside England," he says, "Britain has no Home Guard, no Civil Defense, only a hacked, carved-up and understrength volunteer Territorial Army, and a grossly understrength Police service — the 'thin blue line.' The Armed Forces and the Police are now stretched as tight as a violin string.

"Unlike the countries of the Warsaw Pact, unlike the neutral countries of Western Europe, and unlike most of her major European allies, Britain is now virtually without any properly constituted Home Security and Civil Defense forces in being on the ground. . . .

"Alexander Solzhenitsyn was desperately trying to tell us the truth in the BBC 'Panorama' interview on 1 March 1976, when he made an impassioned appeal for the West to come to its senses before it is too late. . .

"As was only to be expected, the reception by the media to Solzhenitsyn's warning has varied from ebullience to patronage, to the familiar effete blend of mockery and indifference and to downright ridicule and sickening drivel. As Peter Simple said in the London Daily Telegraph of 9 March, this is 'a good example of some of the things Solzhenitsyn is warning us against: the refusal of Western liberals and pseudo-liberals to hear and understand; their obstinate clinging, at all costs, to their own peculiar kind of pseudo-smart mental and moral denseness'."

* * * * * *

In his first formal address since leaving his job as CIA Director, William E. Colby underlined the importance of a virile civil defense. Speaking to the National Council of the Reserve Officer Association of the United States Colby emphasized that both the Soviet Union and the People's Republic of China have developed civil defense capabilities far outclassing those of the United States. "We have nothing to compare with the Soviet Civil Defense capability," he said. And he added: "We must show every potential enemy that we have the determination to survive as a nation."

**MEDICS AND METTAG — AN ENDORSEMENT**

METTAG (Medical Emergency Triage Tag) won the unabashed approval of doctors, nurses and medical technicians in two Florida field tests. In St. Augustine on February 18th and in Jacksonville on March 11th METTAG was used in disaster drills.

At the St. Augustine exercise the consensus was that the tag admirably lived up to its claim of saving "time, work and lives." Medics felt, too, that with increased use the tag and its advantages could be exploited even better.

Jacksonville doctors were faced with 388 train-bus collision casualties within a small area. They elected to use METTAG's color-serial number coding without written entries at the accident scene and thereby cut overall victim-to-hospital transportation time by half or better. This technique, admittedly, would apply only to mass casualties within a confined area where quick transportation and nearby hospitals were readily available.

In both disaster exercises some victims had time to become curious about their tags. None of them, however, were sure of what the color-coded tear-offs really meant. Medical personnel felt that this reaction was a decided advantage (and contrary to previous fears that some victims might be inclined to "upgrade" their processing priorities after inspecting the tag). They did, however, feel that a basic familiarity with the tag was needed for all those involved in rescue and triage work.

* * * * * *

The impression persists that in warfare casualties are borne almost entirely by the military and that civilian populations are simply sideline observers. In an article in *ZS Magazin* West German Civil Defense Director Hans Arnold Thomsen observes that the First World War produced around 5% civilian fatalities, while in the Second World War this figure rose to 48%. In the Korean War civilians represented 84% of war deaths, and in the Vietnam War the figure rose still higher. Thomsen sees this as a mandate for a more serious approach to defending civilians.

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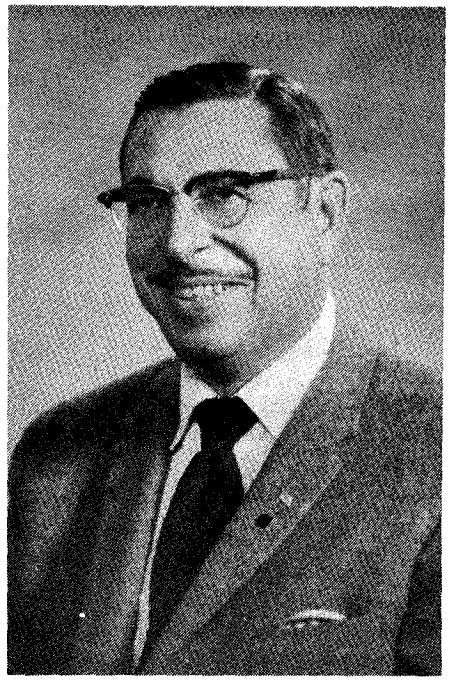
*"Men occasionally stumble over the truth, but most of them pick themselves up and hurry off, as if nothing had happened,"*

— Winston Churchill

*"We find ourselves in the dilemma of being virtually abandoned by the Federal Government."*



# THE DESTRUCTION OF MEDICAL PREPAREDNESS

## — A Physician's Warning To President Ford

— Max Klinghoffer

Max Klinghoffer, M.D.
127 E. Vallette St.
Elmhurst, Illinois 60126
Terrace 2-2615

August 28, 1975

Gerald R. Ford
President of the United States
White House
Washington, D.C.

Dear Mr. President:

This letter is written because of my deep concern over a dangerous decrease in emergency medical facilities in the United States, which has taken place over the past year and a half.

At this time there are approximately one and one-half million hospital beds in the United States. About one million of these beds are located in metropolitan areas. Less than one-half million are located in outlying areas. This is to say that in case of any attack involving the cities of the United States, two-thirds of our hospital beds would be neutralized. A somewhat similar proportion also applies to the physicians in this country.

### FACILITIES WHICH AUGMENTED OUR EMERGENCY CAPABILITY IN THE PAST

Until about a year and a half ago, there were three programs which augmented the emergency facilities in the United States.

1) The Packaged Disaster Hospital
2) The Hospital Reserve Disaster Inventory
3) Medical Self-Help

### THE PACKAGED DISASTER HOSPITAL [PDH]

The Packaged Disaster Hospital evolved from the Mobile Army Surgical Hospital (MASH) of the Korean War. The MASH unit evolved from the Field Hospital of World War II, but was much more mobile than the Field Hospital. With the successful use of the MASH unit, it was recognized by personnel in the Department of Defense and the United States Public Health Service that modification of the MASH unit might provide a means of survival for casualties in case of any disaster striking the Mainland of the United States or any regional area emergency. On this

basis, the first Civil Defense Emergency Hospital (CDEH) was developed. This unit was further modified and improved, and finally became the Packaged Disaster Hospital.

The PDH represented an elaborate MASH unit, which could be stored in non-metropolitan areas of the United States to be mobilized and set up at the time of any major disaster. The PDH was used in one of three ways:

1) As an independent hospital entity
2) In conjunction with an existing fixed hospital
3) Less often, as a depot of medical supplies

The PDH of the 1960's weighed approximately 25 tons and consisted of austere medical equipment sufficient to set up a complete functioning hospital of a quasi-military type. It was divided into sections, such as triage (including radiation detection); shock; wards; operating; central supply; x-ray; laboratory; engineering, etc. The hospital was inventoried according to these sections. Written and schematic inventories were available to those who were assigned the responsibility of setting up such a unit. During the time the PDH was in existence in this country, cadres throughout the United States, comprised almost exclusively of civilian medical personnel, conducted training in the establishment and maintenance of the Packaged Disaster Hospitals. At one time, there were approximately 2,600 of these hospitals distributed throughout the United States in non-metropolitan areas. Because these Packaged Disaster Hospital units were in outlying areas and because each hospital could, on an austere basis, be expanded to approximately 600 beds (or more), the capability of the Packaged Disaster Hospital actually exceeded the capacity of the existing fixed hospitals in the United States.

## HOSPITAL RESERVE DISASTER INVENTORY [HRDI]

The HRDI system was established as an additional inventory of emergency medical supplies to be used in case of disaster. HRDI was set up in storage space within the existing fixed hospitals. The hospital pharmacy and central supply were in charge of this unit. The HRDI was designed to augment the existing inventory of these hospitals and to be used in times of disaster. It was the responsibility of the hospital personnel to rotate this equipment in order that the material would not be lost through expiration of shelf life. HRDI served as a reserve supply of emergency medical equipment for any period of time in which there was interference with communication, and transportation of supplies.

## MEDICAL SELF-HELP PROGRAM [MSH]

Medical Self-Help was a program designed to teach the average citizen of the United States the elements of austere medical care in emergencies. While the original purpose of this program was to prepare the public in case of nuclear war, it soon became apparent that this type of training benefited a great many people when they were confronted with the situation of a roadside accident or when they were involved in a natural disaster. The Medical Self-Help Program employed austere methods, and the lessons were geared to individuals from about sixth grade up. Medical Self-Help was taught in the schools of the United States, in neighborhood groups, and on educational television. As a result of this program, millions of American citizens learned the elements of emergency medical care. While these trainees were not capable of providing the same type of medical care as would be provided by a physician or a registered nurse, they were nevertheless able to apply life-saving methods in the case of an emergency until professional help was available. The lessons in Medical Self-Help included healthful living in emergencies; radiation protection; treatment of shock; control of bleeding; treatment of fractures; treatment of burns; emergency childbirth; nursing care; transportation of casualties; care of the newborn.

In 1973 it was considered necessary to up-date the Medical Self-Help course on the basis of recent medical developments. The Committee on Community Emergency Services of the American Medical Association was invited to Washington to help bring this course up-to-date. Some months prior to the meeting in Washington, each member of the committee had been given a section of the course to work on modifications and revisions. These revisions and the up-dating were discussed at the meeting, and it was assumed that the Medical Self-Help program would be up-dated shortly thereafter. Instead, the course was dropped.

## THE COST OF THESE PROGRAMS TO THE FEDERAL GOVERNMENT

While the initial cost of setting up the Packaged Disaster Hospitals, the Hospital Reserve Disaster inventories, and Medical Self-Help Training was considerable, it becomes apparent that once these programs had been set up, the cost to the Federal Government became nominal. Once the Packaged Disaster Hospitals were placed in the care of custodians, the HRDI had been placed in the fixed hospital, and once training supplies had been given to the appropriate group for teaching Medical Self-Help, then the responsibility (and most of the expense) for these programs fell to the local groups or to the medical societies in the communities or states. Therefore, by 1973, the cost to the Federal Government for these programs was small.

## THE STATUS OF THE PACKAGED DISASTER HOSPITAL, THE HOSPITAL RESERVE DISASTER INVENTORY, AND MEDICAL SELF HELP TODAY

About 18 months ago, the Federal Government dropped its sponsorship of the Packaged Disaster Hospitals, the Hospital Reserve Disaster Inventory, and Medical Self-Help. While very little of the financial backing for these

programs was coming from the Federal Government at this time, it became apparent that without the moral support of the Federal Government, these programs would fall by the wayside. In other words, these programs required the stimulation and interest of the Federal Government. Because the Government dropped its responsibility for these programs, the Packaged Disaster Hospitals for the most part have been abandoned and in many instances are being cannibalized. Medical Self-Help has virtually been abandoned; and the Hospital Reserve Disaster Inventory is a thing of the past.

### WHAT IS THE SIGNIFICANCE OF THESE CHANGES?

In simple terms, the change which has occurred in the past 18 months is that *at least 50% of this nation's capability in an emergency has been lost.* Apparently those responsible for developing these programs have forgotten the simple military principle of dispersal. They are inviting a medical Pearl Harbor.

It is true there are a number of "Trauma Programs" throughout the United States. Some of these are of value. However, a large number of these programs are largely paper and ballyhoo. There are those who glibly say, "In the case of a disaster, we will fly in a fleet of helicopters with doctors and nurses, triage the casualties, and fly them out." This may be fine in television; but in a mass casualty situation, it is fantasy.

### WHAT IS THE ANSWER TO THIS PROBLEM?

The answer to the problem is in three parts:

1) Revive the Packaged Disaster Hospital Program using (as undoubtedly was done in the past) surplus materials left in Federal depots.

2) Revive the Hospital Reserve Disaster Inventory in a similar manner.

3) Revise and revive the Medical Self-Help Program to maintain a high level of emergency medical training for the general public, using the recommendations already offered by the AMA Committee on community emergency services.

### HOW URGENT IS THIS PROGRAM?

Obviously these programs should not have been discontinued. The danger of war and natural disaster is always with us. There are strong rumors that this nation faces unprecedented violence in 1976. If this does occur, the cities will be prime target areas, which means the loss of two-thirds of our hospital beds. Should this occur, and if we have tens-of-thousands of casualties with no hospital facilities for their care, who is to bear the responsibility for this almost criminal negligence? The medical and allied professions have shown in the past that they are more than willing to support these emergency programs. Many of these medical personnel have contributed much time toward developing and maintaining these programs. But we find ourselves in the dilemma of being virtually abandoned by the Federal Government.

### CONCLUSION

We have wantonly destroyed more than half of our national emergency preparedness. I most urgently request that the Federal Government up-date and reinstate the Packaged Disaster Hospital Program, the Medical Self-Help Program, and the Hospital Reserve Disaster Inventory. With concentrated effort, this could be accomplished within a few months. The time may be short.

Respectfully,

Max Klinghoffer, M.D.

Replying to Dr. Klinghoffer's letter, Dr. Robert van Haek, Acting Administrator for the Department of Health, Education, and Welfare's Public Health Service, Health Services Administration, cited "the phaseout of Civil Defense Programs designed to respond to a national nuclear disaster." He points to current emphasis on a "strong everyday EMS capability" as the solution for response to "any disaster."

The Chicago Committee on Trauma (American College of Surgeons) and the Illinois State Medical Society have both endorsed Dr. Klinghoffer's letter, and the American Medical Association is now reviewing his stand.

Dr. Klinghoffer, a leading physician in the Chicago area, has a 35-year background of emergency medical service with the U.S. Army, the American Medical Association, the American College of Surgeons and various hospitals and rescue services. Among his awards are a Presidential Commendation (1973), the Pfizer Award (1964 and 1975), and civil defense commendations from the Illinois Office of Civil Defense (1971) and the Chicago Civil Defense Corps (1972).

Research sponsored by the U.S. Energy Research and Development Administration under contract with Union Carbide Corporation.

# SOVIET CD PLANS — 1976

— *Ruby N. Thurmer*

The 1976 training year for USSR Civil Defense has officially begun (December 1, 1975), and with its beginning has come a flood of writings. As usual, CD Chief Altunin has several articles outlining the general objectives of this year's program.

The central theme appears to be an intensified effort to insure exposure of all the country's population to the means of protection available against "weapons of mass destruction." This intensified effort is being referred to as "integrated installation exercises" or "comprehensive facility exercises." Altunin's article, "Resting on Laurels,"(1) explains the current goals.

> "Formerly, as a rule, we were limited to specialized-tactical training with units and studies based on the 20-hour program with workers and employees who did not belong to units and also with their partial involvement in command and staff exercises. Now we have shifted to the resolution of the entire complex of measures stipulated by the enterprise (farm) civil defense plan in cooperation with territorial services of the district or city, military units, and other objectives. In other words, all the workers of a facility, as well as the executive and command personnel, units and services take part simultaneously in the exercises, resolving production and defense tasks in strict correspondence with the facility civil defense plan. The population of the microdistrict closest to it is also involved in the training, including families of workers and employees of the given enterprise and the nonworking population. This makes it possible to conduct civil defense measures at every enterprise, at every kolkhoz with consideration of their peculiarities while making it possible to check the reality [credibility] of civil defense plans that were worked out and firmly consolidating practical experience.
>
> ". . . In the course of preparation and conduct of comprehensive facility exercises, it is necessary to speed up the building of protective shelters and training areas. In the process of training and exercises of nonmilitary units, it is necessary to insulate [shield] dwellings and production areas and wells, at the same time adapting cellars and basements for use as radiation shelters, making the simplest types of individual protective equipment for the respiratory organs,* and carrying out other practical measures."

Obviously, critical industries are the focal points, and stabilization of the national economy is paramount. By working out the planned exercises to test and implement Civil Defense plans of the enterprises and farm collectives, these facilities will be able to continue productivity in emergencies.

Ruby N. Thurmer conducts Soviet and Chinese news and book research and analysis for the Emergency Technology Section of the Health Physics Division, Oak Ridge National Laboratory. Her reports and articles are used as authoritative source materials in the civil defense field in the United States and abroad.

It appears that the training facilities are continually being improved,(2) i.e., more realistic conditions are maintained at the "training towns" or centers which are constantly increasing in numbers. Many of these have some areas for specialized training which indicate a most determined approach to preparing CD units and formations to face crisis conditions. Below is a statement(2) by one such trainee after he had trained at an obstacle course in the Moscow Military District.

> "You feel just like you are operating under the real conditions. I have to admit that at first I was afraid. But when you see that the commanders and more experienced comrades are charging right into the fire you try not to fall behind yourself, to operate just as resourcefully and skill-

* The fact that *this* protective measure is specifically called for indicates that the Soviets have recognized the value of reducing the dose to average citizens due to inhaled particulates.

fully. All I needed, for example, was a few training periods to get over the feeling of fear and learn how to put out fires, help comrades fight fire, and prevent clothing from catching on fire. Also, if the clothing did catch on fire, put it out."

The article which reported the above statement goes on to describe the ignition apparatus used to control the fire section of the course so that it can be a complete surprise to the participants. Other components include: (1) a scaling wall, (2) entanglement, (3) shelter, (4) ditch, (5) labyrinth, (6) fence, (7) ruined bridge, (8) ruined stairway, (9) brick wall with holes, (10) well and communications passage, (11) trench, (12) tunnel, (13) structure with stairways, (14) wall of a ruined building, (15) horizontal reinforced concrete girder across trench, and (16) a training tower.

In concluding, the Soviet authors [2] state:

"Let us repeat that practice has demonstrated that the conventional civil defense obstacle course, specially prepared and equipped, is one of the most important elements for instilling high psychological characteristics in the personnel of our units and formations. Everything depends on the creativity of the commanders, their methodological skill, and the organization of various drills and training periods."

Schools, from elementary through post-graduate, are also intensifying their efforts to improve all civil defense training courses. In Latvia,[3] the Polytechnical Institute requires that each student *conduct* at least one civil defense class with the workers at the place where he takes his practical training (a fourth-course requirement stipulating actual practice (working) in their chosen field). As a result of various conferences in the Latvian SSR last year, it was decided that "in order to achieve a more successful fulfillment of measures directed at a rise in economic stability, it is feasible to introduce civil defense training for all specialists in educational establishments for post-graduate training." [3]

Most Russian school children spend part of their summer vacation in Pioneer camps where military training and political indoctrination are continued in a more informal atmosphere. An article[4] describing the participation of 16,000,000 youngsters in a "military-sports game called Summer Lightning" reports that the final competitions for 1975 were held in Leningrad. The following excerpt from the article indicates that this type of civil defense training for children will certainly help prepare them to take the necessary action in an emergency situation.

". . . The other field located behind Krasnoye Selo was covered with multi-colored flags, ditches were dug and obstacles were placed. Civil defense competitions took place here over a 2-day period. All the young armymen participated in the civil defense competitions, because every citizen, every fighting man must know not only how to fire and attack, but also how to defend himself from weapons of mass destruction. Almost all the young armymen demonstrated a good knowledge of civil defense. It was felt that they prepared for more than one day for these competitions and therefore executed the orders in a clear-cut manner: sheltered themselves against the 'shock wave,' applied gauze bandages swiftly, administered first aid to 'the injured,' and put on their gas masks and protective suits."

The undertaking of this complex assignment for USSR Civil Defense implies that the Soviets are convinced that the outbreak of nuclear war is NOT considered "the end of mankind." On the contrary, they apparently are quite sure that, with the proper preparation, not only can the people survive, but also that it will be possible to maintain a reasonably stable national economy. By centering attention on civil defense plans worked out by enterprises and collectives (aided by various other groups), the individual critical industries will be prepared, and the work force will be nearby and well-trained in survival techniques.

As the called-for exercises are held, it will be possible for national CD Headquarters to determine if the plans for the really essential installations are adequate. It would be reasonable to assume that particular attention would be given to those industries, farms, etc. which would be absolutely necessary for continued operation of the national economy.

This approach appears to solve a problem which has troubled CD planners for many years. If every "national economic enterprise" has a good civil defense plan and trained leaders as stipulated, then the "comprehensive facility exercises" should result in a work force (with their families cared for) that can keep the nation from being paralyzed, even in the event of nuclear war. It is specified that all installations conduct at least one of these "integrated" exercises every three years. In addition, the 20-hour and 35-hour training courses for the general public and special groups are to be continued. □

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## EDITORIAL...

# HOW NOW BROWN COW?

Actions taken by the Hébert subcommittee — the "Oversight" group — can and should be greeted with gratitude and warm applause by the civil defense community. Those who worked diligently for months to assure the hearings, those who took the time and trouble to prepare and give expert testimony, and the subcommittee members themselves are among those who deserve special commendation.

But let us remember the equally stunning Hébert victory of 1963 when another House subcommittee, finally convinced by equally impressive witnesses of the vital requirement for meaningful civil defense support, took an unequivocally vigorous stand for a national shelter program.

At this moment of great triumph and quick passage by the House of Representatives, however, the old subcommittee's welcome revamp of the embryonic new CD program was in reality thoroughly *dead!* (A Senate committee peremptorily shelved it to wait for coordination with an ABM effort that never materialized.)

It could happen again. That's not really news. But the danger needs reiteration. The Hébert committee's welcome actions are Step No. 1 toward a civil defense program for the United States that will give us the protection that will discourage aggression. But it's only Step No. 1.

We can't let up. We must lock into and follow through on Steps No. 2, No. 3, and so on. Can we?



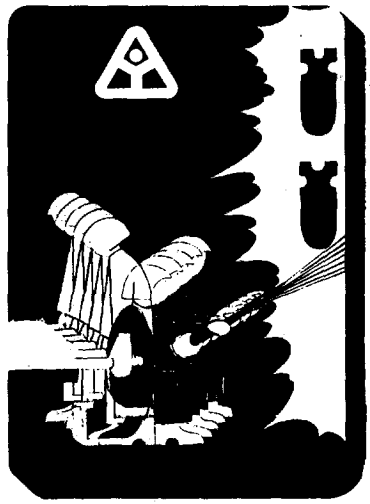
## FIVE YEARS AGO IN THE JOURNAL OF CIVIL DEFENSE

"For the Record. . . Peace and Edward Teller," by Kevin Kilpatrick analyzed Teller's deep passion for peace. It gave a number of Teller quotes, among them:

(1) "Peace has been the idealists's dream for centuries. International 'perpetual peace' plans, however, have all failed in spite of the sincerity of their designers and their acceptance by responsible statesmen. Countries with the most dedicated resolves for peace have, in spite of exhaustive and desperate efforts to avoid war, been drawn into it. This has been true of the United States, France, Great Britain, Norway, the eastern European countries and many other nations since the Middle Ages."

(2) "In a dangerous situation, we have chosen the most dangerous of courses. We have chosen not to face our danger."

# CIVIL DEFENSE ABROAD



Excerpt from a new illustrated Swiss civil defense folder distributed to the Swiss population:

*The facts. . .*

Humanity seeks peace. Heads of state and politicians advocate and extol peaceful coexistence of all peoples. Conferences on disarmament, arms limitation and nuclear arms control get banner headlines in newspapers. But, in spite of all this, distrust has not yet been dissipated, and dangers of war have not yet been avoided. Armies are continually being modernized and their strength constantly increased. Atomic powers are growing, and atomic arsenals are expanding.

The one fact that the world today has available enormous reserves of weapons of mass destruction means that humanity is in constant danger.

*. . .and our reply*

The history of daily events throughout the world clearly indicates that, in the future, wars and catastrophes are possible. It is because of this situation that our people are determined to maintain an effective total defense composed of the Army, Civil Defense, Economic Defense, and Psychological Defense.

Modern war does not spare the civilian population. Quite the contrary. The number of civilian casualties far exceeds the number of military casualties. It is for this reason that Switzerland is building an effective civil defense.

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