THE PSYCHOLOGICAL IMPACT OF ATOMIC ATTACK ON THE UNITED STATES

4 May 1955

2249

CONTENTS

	Page
INTRODUCTION--Dr. L. C. Hunter, Member of the Faculty, ICAF	1
SPEAKER--Dr. Donald N. Michael, National Science Foundation	1
GENERAL DISCUSSION	14

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Publication No. L55-135

INDUSTRIAL COLLEGE OF THE ARMED FORCES

Washington, D. C.

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DR. HUNTER: General Niblo, gentlemen: This morning we come to grips with a new phase of our problem, the psychological one. Very understandably, in dealing with a massive attack on this country from the air, our attention is first fixed upon the material damage by the attack; the destruction of property and plants; and we have given a lot of attention to trying to arrive at some estimate of the possible scale of the physical destruction in this problem, as you know. Yet, the effects of massive atomic attacks upon the minds and upon the morale of the people may be equally devastating and may be equally important for the outcome of the war. There is no classified appendix dealing with this phase of the problem.

To discuss this aspect of the problem this morning, "The Psychological Impact of Atomic Attack on the United States," we are fortunate to have with us Dr. Donald Michael of the National Science Foundation. Dr. Michael is a social psychologist by training, who has given much thought to this subject and has been engaged in various projects relating to it.

Dr. Michael, it is a pleasure to have you with us this morning.

DR. MICHAEL: General Niblo, Members of the Class of 1955: Every time I face up to the problem before us today, I am reminded of the words of that distinguished American Philosopher Pogo Possum who has rightly warned us that: "You must be sure that you don't word the answer so that it ruins the question." For anyone trying to answer the questions implicit in the catalogue description of this talk, Pogo's injunction is especially germane. So let me say first off that I don't propose to tell you what in fact the psychological consequences will be for Americans exposed to atomic attack. Rather, I hope to discuss with you some conjectures on what these consequences may be. I'll also indicate what some of the factors may be which can contribute to the dominance of one psychological state of affairs rather than another.

My source materials will be the various studies of civilian behavior in World War II, particularly the United States Strategic Bombing

Surveys, which I will refer to as USSBS from now on, and the investigations, over the last few years, of civilian disasters conducted by the Committee on Disaster Studies of the National Research Council. Also I shall occasionally draw on those findings about individual psychology which seem to be sufficiently characteristic of people in general to be applicable to our problem.

Since the aspects of our problem are so diverse, I will use the next 40 minutes to outline what I believe to be the areas important to your mission and leave it to you, during your question period, to indicate those aspects of the problem on which you want more information. I'll be glad to elaborate on them--if I can.

One final introductory remark: I am speaking to you today as a private citizen who has been involved professionally and privately in the study of this problem for some years. However, as far as I know, I represent no particular school of thought or interested organization. Moreover, I represent no dogma. The fact that each assertion in my forthcoming remarks is not preceded by the clause "in my opinion" or "it seems to me" is dictated by the exigencies of time and style--not by any attempt to convince you of the finality of my predictions.

It seems to me from reading past materials prepared by classes at the Industrial College that this talk will be most useful to you if it is put in terms of (1) what may happen to civilians; (2) what can be done to minimize the adverse consequences and maximize the good ones; and (3) in those areas where our ignorance is deepest, what answers should we be preoccupied with obtaining which would be most useful for future planning and thinking. I'll try to apply these criteria as we go along.

Since your main concern today, as I understand it, has to do with the recuperative and operational capacity of our civilian population as they are affected by psychological factors, I will limit considerations of pre- and immediately postattack conditions to those factors which can affect civilian behavior from days to months afterwards.

There are two factors with preattack behavior which can have important consequences as far as the longer run psychology of the survivors is concerned:

1. The effect of preattack behavior on the total number of casualties, and

2. The effect of this behavior on the state of mind of the survivors.

The casualty level will depend, of course, to some considerable extent on whether the victims respond to the warning sirens by orderly evacuation, by paralysis, or by panic. To my mind, the important differences between World War III and the psychological and physical preattack contexts surrounding civilians in World War II are so great as to make the World War II data practically useless for predicting World War III behavior. So we can't look for much enlightenment from those sources. At this time, I see no way to predict which state of affairs will be dominant. On the face of it, probably paralysis, panic and orderly evacuation will occur in each city, the dominant mode varying from city to city.

However, one factor which will importantly affect the success of evacuation is the amount of evacuation practice civilians get now and in the future. And to make this practice maximally useful requires that civil defense activities be sufficiently supported both financially and socially to permit realistic or quasi-realistic practice evacuations--traffic tie-ups, night evacuations, evacuations in winter, and so forth. Unless these practices are as realistic as we can make them, the shock of the real thing may be more demoralizing than it would be without practice simply because the real thing doesn't turn out to be like the practice experience in which people will have come to believe. With enough practice, and with realistic practice, it should be possible to vastly reduce the prevalence of those forms of behavior which will lose lives rather than save them.

The second consequence of preattack behavior--the state of mind of the survivors--is a complex one. All I'll do at this time is suggest typical preattack circumstances which might well affect postattack psychology. One example: All the information we have on people both from peacetime and wartime disasters indicates that family "togetherness" is a primary precondition for attaining or maintaining high morale. If evacuation is disorganized, families may be separated and getting them together again will be slow and difficult and demoralizing.

Another example: Panic behavior may result in deep guilt over feelings of foresaking others or actually contributing to their death or injury. If played on skillfully, these feelings of guilt could be used

to motivate some survivors to participate in hazardous or especially fatiguing activity in the postattack period. However, if bungled, these exhortations to action may backfire by producing hostility toward those who remind the survivors of their moral failings.

And a third example of the consequences of preattack behavior: Guilt feelings of many survivors may be seriously increased if fall-out shelters are so few or so poorly located that men have to fight for a place in them--or for a place for their children or wives. Later, when I discuss pseudo-sickness, we will consider one of the many possible consequences of these guilt feelings.

I think it is evident then that part of the long-term psychological consequences for civilians are intimately related to the extent to which evacuation is orderly and organized. Practice and planning are necessary--much more than present finances, or in some cases present motives permit.

Now what can we expect of the immediate postexplosion period which is pertinent to your larger problem? Since at this time most if not all aid for the wounded will have to be local, it is important for us to consider the psychological factors affecting the quality and quantity of this aid. Aside from manpower considerations, the more wounded who can be saved, the less will be the demoralizing burden of grief, guilt and loss for the survivors. Let us divide the survivors into two groups: One group are the "near miss" victims who find themselves still alive in a partially destroyed area. And by "near miss" victims, I mean those who have had a narrow escape from death, or have seen others, especially loved ones, die, or who have themselves been wounded. The other group are those persons so far from the center of the explosion that they are uninjured and their environment is whole for all intents and purposes.

Among the "near miss" group all the evidence from peacetime and wartime disasters indicates that the dominant mode of behavior is at worst a kind of passive disorganization--seldom panic or any kind of frantic behavior. At best, those victims who are able to try, actively help other fellow victims. Let me quote to you from an Operations Research Office report on the disaster in which a shipload of nitrate destroyed a large part of Texas City. The quotation goes:

"The remarkable thing about those survivors who remained conscious is not the fact that they were less aware of pain than of being 'stunned' or 'dazed.' It is that, with unbelievable calmness and efficiency, so many of them set about the task of extricating not only themselves but others."

As for the passively disorganized victims, they are almost completely docile and some are devoid of self-direction at this stage. The very best many of them can do seems to be to try to extricate themselves, if they're pinned down, and to give aid to their immediate family--though even this behavior may be more of a gesture than a realistic appraisal of the situation. Hence, persons from outside moving into this area can do a very great deal to minimize further loss from unattended injury and from behavior which would lead to further injury or loss. Note that this passively disorganized group is likely to be large under evacuation conditions since the population density at the periphery of the total destruction zone is likely to be higher than normal--unless, of course, evacuation has been completed. Hence, proper attention to this group will permit the recovery of a substantial segment of the surviving population which might well otherwise be lost.

Incidentally, the rate of psychological recovery in this group varies from a few hours to a few months, during which time there is jitteriness, varying degrees of loss of a sense of reality, anger, and so forth. Recovery rate clearly depends to some extent on psychological and physical succor from others. Without this, recovery may take a very long time; with it, the time varies but certainly it is shortened.

Parenthetically, I submit that there is a real planning problem here. Humaneness aside, is it more efficient to use a lot of man-hours of "healthy" persons to get these psychological invalids to the point where they are useful to the war effort and not a burden on the food and housing? Or should the man-hours of the healthy be primarily devoted to other activities, letting the sick recover as they may? It would seem that one variable in this problem is whether or not we're fighting a long or a short war. We will return to a variant of this problem later.

This "near miss" group is not the group from which we can expect looting and violent efforts to obtain for themselves or their families food and shelter. Rather, if it occurs anywhere, it is from those out of the "near-miss-shock" range that violence may be expected--though not inevitably, of course. Whether or not violent appropriation of

supplies and shelter occurs to any serious extent will certainly depend on two factors, whatever other contingencies arise. These are the extent to which the fleeing population is prepared to believe that enough supplies and shelter are available for all and the extent to which undeniable evidences of authority are clearly evident. I'm afraid that local law enforcement personnel are not likely to constrain a determined mob unless they are profusely supplied with evidently lethal weapons and even then their own state of mind may not be firm enough nor motives sure enough to act with the leadership and firmness required. However, I do think that people will pay attention to the military when they will pay attention to no one else. Under these circumstances, it may well be that the only accepted symbol and trained implementer of disinterested order will be the military. Military personnel especially trained for this function might well accomplish much in terms of expediting the return to order and recovery. In a long war their temporary withdrawal from strictly military activities might be more than compensated for by the more rapid return to productiveness which their presence among civilians may encourage.

However, I don't want to underestimate for you the humanitarian and altruistic tendencies in people to help their fellow man. We have evidence from the behavior of civilians in Hiroshima and Nagasaki, in Germany and England, and from civilian disasters, such as the Arkansas tornadoes and the Chestertown fireworks explosion, that there are often many people who at great risk to themselves will aid their fellow men.

Unfortunately, the picture is not clear as to the circumstances under which altruism becomes the dominant mode of behavior. The United States Strategic Bombing Survey in Hiroshima indicates that only around 17 percent of a sample of survivors gave aid to or received aid from strangers. Studies by the Committee on Disaster Studies in two small towns in the United States show a much higher level of aid. However, these towns were so small that practically everybody knew everybody.

It is not clear therefore whether the demands for succor of anonymous persons in a large American city would be sufficiently compelling to deflect the average man's motivation to provide maximum protection for himself and his immediate family. In the Texas City explosion, for example, many people outside of the zone of primary destruction fled the city while others, especially those having relatives in the explosion area, moved in to help. Certainly, we can expect some of

those in the safe zone to return and help those in the blasted and burning area if--and I think these are very big "if's"--it is clear that their families will be cared for; if it is clear that their families and possibly themselves are not in the path of dangerous fall-out; and if they do not believe that returning to the edges of the city means sickness, sterility and/or death from radiation.

Let's assume for the moment that their families will be taken care of, that there is no fall-out, and that there is no serious residual radiation in the city, how can the would-be helpers be convinced that these are the facts? Well, I think there are some things that can be done now which will help a great deal then:

1. There ought to be considerable publicity given to reports and demonstrations of food and shelter stockpiles surrounding metropolitan areas. Tours to these areas, their use in practice evacuations, their use as camping areas by boy scout jamborees, as picnic grounds and parks, and what have you--anything should be done which gives the public a continuing familiar and secure feeling before war that rough as things may be, still they will not be totally destitute in the event of attack.

2. There ought to be permanent radiation detection installations, similar to a fire box if you will, distributed all over the surrounding countryside in such a way that people could easily find them--perhaps one at the base of every 500 telephone poles. (Naturally, for visibility, we would paint the pole a brilliant fluorescent yellow.) Again, by publicity and demonstrations, people could and would learn to depend on the readings of these instruments to tell them if they were in danger or not. I think the counter-rumor value of the detectors alone would be immense. Such indicators should also be distributed throughout the city as a symbolic and practical safeguard for the rescue squads.

3. To lead and encourage would-be rescuers we need symbols of disinterested authority and competence. And, again, I know of no group who, ipso facto, are endowed with these characteristics except the military. Perhaps we might integrate units of the National Guard or of the local military into Civil Defense plans--have demonstrations of their participation in Civil Defense exercises. Since the military are already symbols of security, their association with Civil Defense may very well build up in the public an expectation of security from the Civil Defense organizations.

Let us turn to three other psychological problems which may very well be serious, especially during the first few weeks after an atomic attack and sporadically for a long time after. They are: (1) demoralizing rumors; (2) pseudo-sickness; and (3) reactions to the wounded, especially to the burned victims.

Rumors arise whenever individuals are confronted with a situation which is important to them but where the meaning and significance of the situation is unclear. Obviously, the postattack period will be a fertile ground for rumors. Now how do they affect your problem?

Well, an analysis of 1,000 rumors prevalent in America in 1942, during our first year of war, indicated that 66 percent of them were hostility rumors, driving wedges between various groups and institutions in the United States; 25 percent of the rumors were fear rumors about the enemy; and only 2 percent were wishful thinking rumors. I don't know whether the proportions would be the same in World War III, but I suspect that in the face of shortages and ambiguity as to the real state of affairs, good morale may be chronically subject to the erosion of rumors arising from bitterness and fear.

This rumor problem may become very complicated. For example, with sanitation facilities vastly overstrained, gastro-intestinal sickness may be rife. Now, how will we convince the members of a refugee encampment or the original dwellers in a town which is preparing to accept refugees--how are we going to convince them that the sickness is not the result of enemy biological agents? In 1916, for example, the villages surrounding New York City refused to allow entry to New Yorkers fleeing the polio epidemic. The usual answer is to suggest that reassuring broadcasts from those in authority will dispel the rumors. But even if we assume that familiar authority figures will be alive, there is some evidence that they won't be able to destroy the rumors in anywhere near all their listeners.

For example, in an effort to dispel the very serious rumors about the extent of the damage at Pearl Harbor, President Roosevelt broadcast a speech on 23 February 1942, devoted entirely to denying the rumors and quoting the official facts. It so happened that in a study made on 20 February of 200 college students, 68 percent of them chose to believe the rumors that the damage was much worse than the official report indicated. After the speech, 44 percent of the students still believed the rumors. Incidentally, among a sample who had not heard the speech, about two-thirds still believed the rumors. So while

authorities can help dispel rumors, I don't think we can count on them to reduce this factor to the vanishing point.

Let me give you a more familiar example. In World War II, there was a rumor rampant in the services that the yellow fever shots could kill you or at least leave you sterile. Perhaps some of you were victims of that rumor. At any rate, even with authoritative statements to the contrary, the rumor died; remnents of it survived the war's end.

There is another complicating aspect of this rumor problem deserving careful attention. I would conjecture that in an atomic war not much information about the larger local or national situation can be made public without benefiting the enemy. In a nation as used to on-the-spot news coverage as we are, the shock of little or no news may be exceedingly demoralizing. I think our people need to be prepared to expect few or no figures and facts on the extent of our wounds. Certainly, we need to give careful study of what can be safely conveyed to the population and what can be substituted for news during the very period when the demand for news may be highest and therefore when people are most likely to resort to rumors as a way of meeting that demand.

Let's turn briefly now to the problem of pseudo-sickness. I believe it is true to say that Americans are especially prone to preoccupation with health and cleaniness. It is also likely that if and until refugees are adequately absorbed into a new environment, the general level of health is likely to decline due in part to inadequate sanitation facilities--and cleanliness is certainly going to go by the board. This undoubtedly means a good deal of nausea and diarrhea and possibly skin irritations; also perhaps some fever from low class infections. Now these are also the symptoms of radiation sickness and they could be the symptoms of chemical or biological agents. It is also true that nausea, diarrhea and skin irritations are very common symptoms of emotional upset. It will be difficult enough for whatever doctors there are to make snap diagnoses; it may be a lot more difficult to convince your neighbors in an overcrowded barracks, or tent city, or village, that you aren't the carrier of an enemy-spawned disease. Moreover, it may be difficult to convince you that you haven't a dose of radiation which requires rest and rehabilitation.

Let me be very psychological and talk about unconscious motivations and perceptions for a moment. I think it is reasonable to speculate that doctors and medicine are symbols of succor and support.

If you are sick, you are suffering and entitled to exemption from the daily labors of the healthy. If you are suffering, it may reduce guilt feelings about not having done your share or about not sharing what you have--and I think it is quite safe to suppose that there are going to be plenty of feelings of guilt, during the scarcity period following the explosion at least, for the reasons I mentioned earlier. Hence, it is very likely that there will be a tendency to resort to pseudo-sickness out of unconscious needs for support and justification.

What can we do to counteract this tendency? We can tell the public now that if war comes these are likely symptoms which can mean many things and which they must expect but which they must guard against taking too seriously too quickly. We can teach our doctors what the military psychiatrists found out in World War II and in Korea--that if you don't encourage and indulge these pseudo-symptoms they occur far less frequently. Another thing we can do is provide everyone with a device for detecting radiation--a film badge or some such. It will be a lot harder to convince yourself and others that you have been radiated if the badge doesn't indicate it, and it will be a lot easier for the doctors to judge potential radiation cases quickly if people have film badges.

The biggest outbreak of rumors and pseudo-sickness will, as far as our evidence and theory tell us, occur during the periods of greatest disorganization--they occur in fact just because of the disorganization. But they also make disorganization. Hence, it is most necessary to break this vicious circle if we want to maximize the recovery rate of the country.

Let us consider the matter of burns and wounds and their impact on civilian morale. By far the greatest percent of Japanese interviewed who were upset at all by the atomic explosions were upset by witnessing the casualties. Moreover, all the doctors, military and civilian, that I've checked with tell me that, in their experience and in their observations of others, burns are the most upsetting wounds to see. Add to this two factors: (1) Americans are seldom exposed to casualties, and (2) Americans make a national ideal out of handsome men and beautiful women. The initial consequences for morale are evident. However, this is the kind of thing we can expect people eventually to get used to. At first, though, I think we can expect disfigurement to be a source of profound shock to both the victim and his observer.

Up to this point we have been considering the possible behavior of civilians during the first days and probably during the first weeks after the attack--even perhaps during the first months. The recovery rate will depend in good part on the rate at which supplies, organization, and psychological support are available, and all three of these, given the size of the attack or attacks, are likely to arrive slowly. Note the vicious circle here: recovery dependent on supplies, organization, and support; and supplies, organization, and support are in good part dependent upon recovery.

Now how is all this likely to affect the capability of the survivors to contribute to a long-haul war effort? What data there are come from USSBS reports on long-term deprivations in World War II and from USSBS reports of surveys in Japan made three months after their surrender. The findings themselves are fairly clear but their psychological states of affairs were probably dependent on combinations of circumstances which might not hold for our problem.

For example, in Germany morale deteriorated up to a point as the total tonnage dropped on a city increased. Moreover, morale declined as community deprivations increased. Also, these bombings tended to be distributed over a relatively long time. Now we can ask, will our morale tend to continue to decrease as community deprivations persist overtime, even if a given area is bombed only once? Or will morale ebb until we make an adjustment to a subsistence standard of living and then recover somewhat under the challenge of fighting a war? I don't know. I do think, however, that it is unsafe to assume that Americans can stand anything if they have to and will strike back strongly in their fury. It may be that people can adjust to almost any way of life, but it is well worth noting that adjustments of men and societies are seldom restricted to separate segments of that life. A radical depression in standard of living may not prove intolerable but it may make a high level of technological production unobtainable. I remind you that the Japanese are by philosophy and way of life rather more spartan than we, but according to the USSBS surveys, near the war's end only 26 percent of them were motivated to continue the war. And the USSBS ascribes this war weariness in good part as the consequence of prolonged deprivations.

On the other hand, the bombed civilians of World War II did manage in one way or another to continue to produce. The answer may be that their exposure was gradual, permitting time for readjustment, and furthermore exposure was only partial. Not all the

workers in all the factories in a city were shocked and bereft simultaneously as might be the case under World War III circumstances. The fact of the matter is simply that we can't predict the long-haul behavior of Americans because the available data are not appropriate to our problem and because psychological theory is not adequate to integrate the multitude of variables involved in the long-haul picture.

What I can tell you with some assurance is that there will be a period between the postattack shock period and the long-haul period which will have significant behavioral characteristics. This is the period where jobs may be assigned and jobs filled but where the jobholder is likely to be chronically subject to absenteeism--both psychological and physical.

The reasons for physical absenteeism are not hard to deduce--preoccupation with housing and food for family and self, physical fatigue, fear of exposure to reattack, and disaster-induced apathy and helplessness. Under the circumstances we are considering, I think we can add to this list fear of radiation.

By psychological absenteeism I am referring to some consequences of the passively disorganized state of mind I spoke of earlier, namely, for an indeterminate time many of the "near miss" victims will be only partially paying attention to their jobs. Their minds will be on other things; they will be beset by vague but imperative anxieties and fears. They will be for the most part docile but also for the most part they will lack initiative. And they will lack the average abilities to adapt quickly and correctly to new circumstances. They will suffer from sleeplessness, perhaps from short tempers. They will be apathetic and express a hopelessness. Let me quote here from a Nagasaki survivor:

> "From that time to the end of the war, everybody seemed to be going crazy. Even when there weren't any planes or anything, some people were very nervous and running around all the time, and some were scared and wouldn't budge out of their shelter. Some people got very jumpy, that is, they would get angry for no reason. Some didn't do things they should have, like their job and so on; and some did lots of senseless things they needn't have. There were some people that were always dropping things from nervousness and some couldn't remember anything--names and numbers and things like that. Many people had one eye on the sky all the time. They couldn't pay

any attention to what they were doing, and they hardly heard you when you spoke. Life got all mixed up."

Obviously, for all but the most routine and unvarying of jobs, these people will show an absence of those characteristics of mind necessary for participating in a war effort of high productivity and efficiency.

On top of this, as we all know, jumpiness, distractibility, and apathy tend to be contagious, especially if everyone is living in an insecure and rugged environment. There is some evidence that in World War II, refugees from heavily bombed German cities reduced the morale of many in the cities they fled to by their descriptions of the bombing and their distraught states of mind. It seems to me that it is not unlikely that refugees might affect in much the same way the populations of our unbombed but potential target cities.

Just how large or how persistent this absent group will be is a moot point. As I indicated earlier, recovery will in part be dependent on the availability of supplies, organization, and psychological support. With all three, adequate recovery for most may occur in no more than a couple of months. Without them, these forms of absenteeism may persist indefinitely--in fact not only persist but increase. Under the latter circumstances, the outlook for an adequate productive base for a long war is black indeed.

In closing I would like to add a few remarks which are not meant to be optimistic but which are necessary for rounding out the picture I have tried to give you so far.

So far I have stressed the disruptive tendencies likely to be prevalent under the catastrophe of atomic attack, and I have stressed them because I think they will be the most likely responses of civilians. I have also indicated occasionally what might be done to ameliorate these unhappy effects. More, much more, can be done now and in the future and after war begins. But everything I have mentioned so far and everything else which might be done should be based on the fact that the tendency for man to be a social animal is one of the most ingrained in his whole being. It is only when he sees no other way to survive that he will resort to a battle of each against all. Given leadership--especially in disaster--he will follow it. Indeed, he craves it. Leadership means psychological support and physical organization; leadership means society.

So all our planning for recovery after attack should be based not on the assumption that the problem will be to keep society from flying apart like an exploding alarm clock. Rather our planning should be based on the fact that if he can, man will band together with his fellow-man for better or for worse. The basic psychological problem, the planning problem, is always how to give man the wherewithal to band together in such ways and in such places that his craving for the security of society will be best fulfilled by acting for and producing for the recovery of that society he loved so well before the holocaust.

Thank you.

DR. HUNTER: Dr. Michael, before we start on the question period, I wonder if you would clarify for the benefit of this group here the functions of the National Science Foundation and distinguish between it and the National Research Council?

DR. MICHAEL: Well, given the time limitation, I will have to give you just the briefest picture. The National Science Foundation is an executive agency, about five years old now, set up with two directives: (1) to grant funds in pure research, primarily but not exclusively, in the natural sciences; and (2) to act as adviser to the President on problems connected with national science policies. My own activities are in this latter area. The National Research Council, is part of the National Academy of Sciences, which is an independent agency carrying on a number of activities. One activity which I am particularly concerned with on a consultative basis is the Committee on Disaster Studies. They have, for some years, been studying in considerable detail at first-hand civilian disasters in the United States and across the world when they can get to them.

QUESTION: To make these practices realistic, the participants really shouldn't know that it is not the real thing. Would you care to comment on the net result of so-called realistic evacuations as opposed to the calling of "wolf" so regularly that people become apathetic to it?

DR. MICHAEL: This is a complicated problem and I don't by any means propose to give you the final word on it. Again, I think it is a matter of what you prepare people for. You could start by telling them, "You must understand that, if the time ever comes when we have to have a real evacuation, you will have to know what to do if you are not to become confused and disorganized. Therefore we are going

to start making these evacuations as realistic as we can and by realistic we mean there may be traffic jams, and so on." When you have gotten people to the point where they will participate in and accept this kind of realism, then you tell them: "Now you recognize that the real thing is going to come as a surprise; therefore, we would like to prepare you to the extent we can for that. This means that sometime within the next week we are going to have an evacuation. We won't tell you when." Later on, you might extend that to sometime within the next month. I don't think you will get into the cry "wolf" problem that way. You can avoid the cry "wolf" problem by explicitly telling the people why the tests are not a cry "wolf" sort of thing. This should prepare them for that fallacy and thereby keep them from becoming too apathetic.

I recognize and agree with you that this is a difficult problem which requires a lot of thought. But whatever else it requires, it requires that whenever you do decide to go on with some policy you will have to stick with the policy; you will have to be consistent.

If I can elaborate on your question a little bit, I would like to mention something I perhaps should have included in the talk. There is a lot of talk about "operation candor," whether we should or shouldn't have this sort of thing. Actually though the facts on the different types of bombs are already out; they haven't been collected; everybody doesn't know about them but they are available. The operation candor we need now is not what the facts are on the bomb, but rather what the facts are about people; what people can expect from themselves and others in different kinds of situations and how to emotionally prepare themselves for these situations. That is the kind of candor we need. We could prepare people a lot more than we have done without keeping them in a chronic state of anxiety or apathy.

QUESTION: Right along that line, Doctor, I don't think people are ready and willing to prepare and go to the extent of these evacuation drills; what are the dimensions involved, not only the corporate skills, but the disclosure to the individual? What kind of indoctrination or program is there in being to build up to the point where they will accept reality?

DR. MICHAEL: It is often hard to get people to accept reality. I agree with you on that. Moreover, the amount of money available for this sort of activity and the amount of consistency in planning are both small at this stage. So far as I know, there are no consistent

overall, large-scale plans. However, I think there are a few optimistic signs of efforts at indoctrination. One sign is something that has just come about in the last couple of months. Radio advertisements about it started here in the last few days, namely, civilian defense is here primarily to help us during wartime, but it also wants to help us during peacetime. Hence they are now issuing and making available to the public identification tags. I just got back from Las Vegas where I didn't see a test explosion. The kids there are already wearing these tags. The problem there is that the kids are also exchanging dog tags. One of the manufacturers of these tags has hit on what he thinks is a good idea; give everybody two dog tags, one of which is cut in the shape of a heart, or some such, to distinguish it from the other one. This is the one for trading. From the few surveys that have been made, this is working.

This is the kind of planning you have got to do. As you get people to accept the dog tag situation, you move on. For example, start stockpiling foods outside the cities. It will have to be well away from the cities and since that stockpile area is going to have to be on local government or Federal Government land, turn it into a park and let people know it as "Stockpile Park." Let them go there for picnics; build boy scout camps there and make it convenient to use. You don't have to make people violently aware of the necessity for being on their toes all the time. Rather, gradually incorporate "being on their toes" into their everyday activities.

You say they aren't ready for evacuation. Well in the few cities where evacuations have been tried, at Bremerton, Portland, Mobile, and so on, the people have gone along with it, and they have been proud of participating. You can make people feel this sort of thing is important if it gives them a sense of importance by being part of it.

I think you can get people more quickly ready to accept reality if somebody picks up the ball rather than waiting for the ball to move itself. We are prone to think that these national preoccupations have to grow from ground swells. Ground swells are important, but somebody has to start the wave or some group has to start the wave, or plan it at the start even if it is going to depend on grassroot support in the long run.

QUESTION: You alluded several times during the formal part of your presentation to the fact that the public would look to the Army or to the military for control. Would you care to give us the pros and cons of the Army taking over this job and the problems involved?

DR. MICHAEL: I suppose you mean political pros and cons. I have said a lot of things here as a private citizen. I don't have to think of whose toes I am stepping on. I know this is a touchy problem. I know there are differences of opinion in different agencies--civilian, military, and so forth. I don't know precisely how, within the existing framework, one would go about integrating military and civilian civil defense groups. All I do know is that, if we are going to do something, we had better think seriously about this and recognize that it is likely that we are going to have to integrate these groups. Implementing these suggestions and other suggestions cost money. Sure, they cost money, and take time, but you have got to decide: Do you want to spend money and spend some time or do you want to have a useless civilian population in time of war? Certainly, it is easy to rationalize these aspects away saying, "We can't do anything about it because it costs a lot of money or because there are difficult political and procedural aspects involved." This is an easy excuse for not doing anything. But I don't know specifically how we would go about it if we do take action.

QUESTION: All your talk seemed to be predicated on the Russians being very kind and dropping only 50 kiloton bombs. What is going to happen if a couple hundred megaton bombs are dropped. What happens to the psychological approach then?

DR. MICHAEL: I think there will be fewer people to be psychologised on. There is this problem and it comes up perennially: After you have killed enough people is the shock of loss in itself sufficient to utterly demoralize the remainder? Will they be unable to carry on the basic operations of running society? I don't know. I have yet to hear any argument based on any data or theory which I find convincing as to what you can expect of people under those circumstances. You have this: Each group is relatively isolated and doesn't know how much damage has been done to other groups. While one city has been 80 percent wiped out, the survivors won't know that other cities have been 80 percent wiped out, and I have an idea that they are not going to know for a long time. Consequently, you are not likely to get an utterly demoralizing shocking of the population if only because they won't know the extent of the loss. Also, it doesn't make much difference if you tell someone 10 million have been killed or if you tell him 50 million have been killed; numbers this big don't mean very much at this point. Fundamentally you have fewer people around with the megaton bomb and the new problems would derive mainly from a manpower shortage rather than different psychological problems, I think.

QUESTION: My question has to do with the benefits of this evacuation practice under realistic conditions. One assumption would be that warning time would be relatively short; hence, people wouldn't have time to organize for this type of evacuation. Another assumption would be that any actual evacuation occurs under a very random system. If that is true, one evacuation is not necessarily like another. Then the question becomes, how do these practice evacuations really benefit in the saving of life?

DR. MICHAEL: I don't think the problem is quite as random as you may believe. Some cities are working on evacuation plans; some cities have nearly completed them. These evacuation plans are quite flexible--day plans, night plans, evacuation with children. For example, you get children together with parents, first, in some cities and group them separately in others if it is in the daytime, and get them together in the country.

Evacuation plans are geared to some reasonable estimate of time, let us say two hours. I don't know how long that is going to remain reasonable or if it is reasonable right now. For some cities under some circumstances it won't be. Other cities may have a lot of time. At any rate, when these practice evacuations have been run, usually in the daytime and under ordinary daytime circumstances--men at work, wives at home, children in school--evacuations have been organized and preplanned so people could follow out under the real circumstances those evacuation routes which they follow out under practice circumstances.

QUESTION: Assuming that an evacuation plan is drawn up and practiced, the question of waiting for actual evacuation becomes pretty important. Our detection system is something less than infallible. What happens if you have a false alarm?

DR. MICHAEL: You mean with practice or today?

QUESTION: Assume you have a plan, you practice it, and then your trigger is out for good and it turns out to be a false alarm?

DR. MICHAEL: Ideally, you would have a fine, successful evacuation and everybody could be proud of themselves and would learn a lot and say, "See, it pays to practice." You could take advantage of this. By planning in advance, we could prepare for the reward of successful evacuation.

On the other hand, suppose it is bungled and some people were killed. (And perhaps we ought to prepare people for the fact that false alarms may occur.) If it is a false alarm and people are killed, for example, in automobile accidents, again that can be used as an object lesson. The thing I would like to stress is that object lessons will only work if we sit down now and begin to figure out what the contingencies are--what are the alternatives that will arise, what do we do to prepare for them--and then go ahead and prepare your public for its reactions, for its physical behavior, whatever it may be. So much is dependent on preparing people for what people are.

Sure, you might have a false alarm. You may know, for example, that several months ago, somebody called up headquarters in Philadelphia and said, "I have planted an atomic bomb in Philadelphia and it is due to go off at 12 midnight." Well, things in headquarters were rather frantic for a while. They finally assumed that the fellow was a crank, and fortunately, it turned out he was a crank. I don't think the thing was exploited as it could have been. It offered an excellent opportunity for preparing people for the real thing.

QUESTION: Without the false alarm aspect and assuming all the practice you care for, suppose we do have a few raids on the United States and some of the cities are not going to get hurt, how long are they going to continue to evacuate?

DR. MICHAEL: This is a serious problem. Again I don't know how far we can use our information from World War II. You know this was the great worry of psychologists and the military. We were all in the same stew before World War II, especially in England. What were people going to do under a continued threat of raids? Would they be in a perpetual state of anxiety and therefor incapable of doing anything constructive at all? The fact is that they had a lot of false alarms and false raids and so forth, and the general reaction became one of apathy. The problem may be then not one of reducing the possibility of panics from frequent arousal, but one of stimulating people enough to get them out of the city when you want them to go. That is one possibility and one we shouldn't overlook.

There is a difference here, though, I think, which makes the data we have so different in degree as to be different in kind from the present situation. These were conventional bombings. Implicitly, usually you have got a chance. After all, a bomb drops locally and it kills locally even if it is a blockbuster. So you can afford to take chances. You can

be apathetic. But I think the perception people now have is that you don't have a chance with the atom bomb. If it falls, it falls on the whole city, and you are done in. Take the public perception of the problem as it existed last year when the University of Michigan made a study of the proportion of people understanding the atomic problem. They found that only about 30 percent of the population had a realistic picture of the amount of damage to be expected from a "nominal" H-weapon, at that time. The rest of the people, the other 70 percent, all radically overestimated the area of total destruction. It may be then for the first dozen false alarms on a city you are going to get evacuation. What happens is probably dependent on how often the false alarms turn into the real thing in another city.

DR. HUNTER: Dr. Michael, our time has run out. We have here at the college eight mills busily grinding out solutions of the final mobilization problem. I think I can say you have tossed a lot of grist into their hoppers. Thank you very much.

(16 June 55--500)K/sgh