CONFERENCE ON FIELD STUDIES OF REACTIONS TO DISASTERS

Held at the
University of Chicago
January 29-30, 1952
under Contract DA18-108-CML-2275 PO #1-11311
With Chemical Corps Medical Laboratories
Army Chemical Center, Maryland

NATIONAL OPINION RESEARCH CENTER
University of Chicago
January, 1953

Report No. 47

Copy No. 25

C O N F E R E N C E O N

F I E L D S T U D I E S O F

R E A C T I O N S T O D I S A S T E R S

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[Star, Shirley A., ed.]

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SUMMARY OF CONFERENCE

This conference on Field Studies of Reactions to Disasters was called by the National Opinion Research Center at the instance of the Army Chemical Center to consider the current status of sociological and psychological research into disasters. Persons in attendance are listed in an appendix to this report.

The conference dealt first with the scope and objectives of government-sponsored research into disasters. The interests of the Department of Defense were described, as well as the role played, within these interests, by the Army Chemical Center. The disaster research program of the National Opinion Research Center, which is carried on under contract with the Army Chemical Center, was similarly outlined. The interests of the Federal Civil Defense Agency were also presented. This section of the conference closed with a presentation of a plan to integrate and coordinate the diverse research programs and interests of the agencies concerned with disaster planning and control under a permanent committee of the National Research Council.

The conference next considered the problems inherent in conducting social-psychological research into disasters. The National Opinion Research Center reported in detail its experience, including the administrative, technical, and analytic difficulties which arise. Techniques of research, notably interviewing techniques, were discussed, and the conference heard reports of field investigations of disasters from three contractors of the Army Chemical Center--the Department of Psychiatry, University of Maryland School of Medicine; the Department of Clinical Science, University of Illinois College of Medicine; and the National Opinion Research Center, University of Chicago. Among the incidents reported were: A poison liquor episode in Atlanta, Georgia; a mine explosion in West Frankfort, Illinois; a series of house explosions in Brighton, New York; and an airplane crash in Flagler, Colorado. This section of the conference closed with discussion of some of the unresolved problems in disaster research, including those connected with the selection of disaster incidents for investigation, the timing of field investigations, the use of credentials in field investigation, the substantive analysis of the field materials collected and the need for greater coordination among the various disaster research projects.

A number of substantial agreements emerged from the conference. These were:

1. Social-psychological research into disasters should be oriented toward the practical objectives of understanding how people respond to disasters in order to be able to supply information as to the probable effect of a disaster on the efficiency of functioning of a community and its inhabitants and as to means of minimizing any impairment of functioning that may occur.

2. The plan to coordinate all such disaster research under the National Research Council will serve to increase the effectiveness of and value of this research. All agencies represented at the conference indicated their intention to support and cooperate with this plan.

3. The disaster research which has thus far been carried out by the contractors of the Army Chemical Center has demonstrated its importance and merits further support.

The conference further made two recommendations in support of some of these conclusions:

1. Widespread disaster reporting systems should be established under the jurisdiction of the Disaster Research Committee of the National Research Council.

2. Further financial support should be given to the Disaster Research Project of the National Opinion Research Center in order to enable it to:

   a. Establish a permanent, full-time disaster research staff in place of the present part-time staff; and

   b. Undertake thorough content analysis of the data collected by the research project, so that fuller use may be made of the conclusions and recommendations inherent in them.

ADDRESS OF WELCOME

Clyde W. Hart, Director
National Opinion Research Center

We are certainly delighted to have all of you here to talk about the subject of study in which not only all the people here are commonly interested, but in which there is much more general interest. You will find at your place a statement of the agenda as it stood yesterday afternoon. We hope it is not absolutely inflexible, particularly as to time allocations. It was designed to provide outside limits. If any portion of the program does not have enough significance to justify the use of the full time allotted, there will certainly be other topics that may require more.

This morning's session is a kind of background session in which we hope to get the disaster studies that are being made by the National Opinion Research Center, by the University of Maryland group, by the University of Illinois group and by other groups not represented here into the proper context and setting.

The afternoon meeting, as you will note from a glance at the agenda, is concerned primarily with some considerations pertaining to methods of research in this area, with an appraisal of our own past experience, with some discussion of techniques of research in which the Maryland people and the National Opinion Research Center will take the lead. We have available some illustrative material drawn from the protocols we have acquired in connection with our interviewing, which may add some concreteness and provide a somewhat better basis for the discussion of techniques.

Tomorrow will be concerned still more concretely with reports of field investigations of a specific sort, where our people or the Maryland or the Illinois people actually moved out into the field to study disasters of at least a minor order. In the afternoon, tomorrow, we will be concerned with a discussion of unresolved theoretical and practical problems, incident to the study of disasters.

I. SCOPE AND OBJECTIVES OF ARMY CHEMICAL CENTER'S PROGRAM FOR DISASTER RESEARCH

Dr. Amadeo S. Marrazzi, Medical Division, A. C. C.

This is actually the third of these conferences that I am familiar with. Back in 1948 there was a conference on the psychological research in Chemical Corps; and in 1950 there was one more closely related to this, named the psychological aspects of disaster. This then is by way of being a progress report, I take it, continuing from last year.

From our point of view, when we think over what we want, we reflect that in common with all other military groups we have two objectives—of offense and defense. We are quite cognizant that the terrifying and consequently destructive aspects on the community, be it military or civilian, of any weapon is one of the major factors in its effectiveness. These fearsome aspects of weapons are particularly characteristic of those which the chemical corps is responsible for; namely, chemical or gas warfare, biological warfare, radiological or atomic warfare. The Chemical Corps, therefore, has had to be and has been alert to the possibilities on one hand of exploiting these aspects, and to the equal importance of the desire to cope with them in whatever way possible.

Now, to come to the Medical Laboratories of Chemical Corps, which is the group we are representing, the Medical Laboratories are actually predicated on a policy of long range or basic research, against which background, using the most adequate available scientific methods, it attempts to give immediate answers, immediate and practical answers on military questions. Those are questions again of defense and offense.

In keeping with that point of view, then, it is necessary to develop reliable and adequate means of studying this community reaction to these weapons; namely, disaster; and interpreting its effects, understanding them, so that we can manipulate them and cope with them. That in turn means that we need to understand human conduct in disaster or impending disaster or catastrophe. Such altered behavior, which may be merely apprehension or anxiety or fear or actual panic, as is to be expected, disrupts judgment and constitutes a very real hazard. And so we would like to understand it. Since it is not ordinarily, except in wartime, possible to induce this phenomenon at will, particularly since we do not wish to perpetrate hoaxes of the Orson Welles' sort, we have to rely upon the studies of natural disasters, and we want to be as fully prepared as we can to make studies that will have meaning.

The community in which these studies are to be conducted, the community on which we are focusing, is really of two sorts, or really has two parts to it. It is the local community, and it is also, in addition

to the immediate community, the surrounding, the adjacent communities and the total community; so there are several parts to the effects that we are interested in. And before the point gets beyond me, I want to point out that our interests in these two aspects are represented by studies that are said to be in depth, conducted on individuals by Dr. Finesinger's staff at the University of Maryland, and studies that are said to be in breadth, or on groups, conducted by the National Opinion Research Center.

For emphasis we may recall that we must depend on leadership to substitute a plan for the individual's desire to obtain his personal objective, a plan that he will accept in lieu of his own individual desires and thus possibly avoid chaos. So it is apparent that panic of a community--at least it is conceivable that panic in the community might be corrected, and that is what we hope. We are well aware, of course, that we have to be equally concerned with the far more serious condition of panic of the leaders in which all may be lost.

As I said, I really do not want to say any more than briefly outline this, and therefore, I do not really think it is worth restating this in as many possible ways as I can think of, even though there may be a little to be gained. We would rather hear what you people have to say. One type of question may perhaps highlight some of the more complex thinking that must be involved; namely, what is the rationale of disaster management? Do we want to truly avoid or allay completely all anxiety, or do we want to keep a modicum of it to supply the necessary motivation and orientation towards the leadership that we hope will be available?

As was apparent in previous conferences, and I have no doubt will become evident again in our discussions, problems such as those of sampling, questionnaire, and clinical observation, the degree of clinical observation, how it is to be conducted, are far from settled. In fact, the major benefit to be expected from both the N.O.R.C. and the University of Maryland studies, as now set up, is a contribution to the solution of just these problems.

Now, as in almost all of our work at Army Chemical Center, we have short and long range objectives, and among the short range objectives we envision manuals of disaster study, manuals of disaster management. Among the long range objectives, which we consider equally important, would be the training of personnel to carry on such studies adequately and the determination of what we might call the natural history of disaster, its genesis, its course, its termination and the means of diagnosing and modifying the conditions.

The Army Chemical Center program, though distinct from the others, is not to be carried on in isolation, so we are hoping to have it integrated, still retaining its individual characteristics, in other national studies of this type.

II. HISTORICAL DEVELOPMENT OF INTEREST OF FEDERAL MILITARY AGENCIES IN CIVILIAN DISASTER RESEARCH

Colonel John R. Wood, M. C.

Back about roughly four years ago, the staff at the Army Chemical Center recognized that in dealing with the nerve gases we had some rather unique chemical agents that had a potential for psychological effects which were considerably greater--really of a different order of magnitude than anything we had already encountered, and that we had psychological problems that we had not yet met. It is true, we had taught a course in the Chemical Warfare School for some time during the war to medical officers on the psychological aspects of chemical warfare; but I must say that we were rather vague in our ideas and not very definitive in our recommendations. But here we had a real problem which urgently needed attention.

So we tried to set about our plan as to how we would go about this thing. We talked with many consultants, and the result of it eventually was our contract with the National Opinion Research Center, certainly as an initial constructive move. That, I believe, began about three and a half years ago--something of that order.

Now, it also became rather clear to us early in the day that these problems extended actually far beyond the field of chemical warfare; that certainly such problems were inherent in atomic explosions. They were certainly well known from World War II in major bombing attacks with explosive bombs or with fire bombs. And there had been much experience gained in Europe, particularly Germany and England, on the behavior of populations and on the conditioning of populations to withstand such attacks. But in the United States there is no similar experience. We have not been subjected to a major attack by enemy action from any weapon in many, many years, certainly. And it simply is not known as of now how the American people, either civilian or military, will behave in the event of a sudden catastrophic disaster.

It became our belief, rather early, that the only way to gain any such information was to study the American people in as many disaster situations as we could possibly investigate, and to try to extrapolate from that to military situations. And it was hoped that, if we could do this, we could anticipate how an essentially untrained population would behave, and that this might point out ways and means of conditioning a population to behave in a more favorable manner; that it would point up the sociological and psychological problems involved in major upheavals which are necessarily caused in any community by such an attack, and would lead to some sound planning which might minimize the effects on the population and its organization and its services, and lead to a lesser catastrophe and to a more

rapid recovery and the beginning of community functions again.

Now, on that basis, I at that time moved from the Army Chemical Center to the Surgeon General's Office, where I had more intimate contact with people who should have an interest in such problems. So my early move was to contact my counterparts in the Navy and the Air Force, in particular, and I obtained ready agreement from them that the problems were of equal importance to all of the services. This is not merely an Army problem. And so Captain Christopher Shaw and Captain Charles Schilling, of the Navy, respectively the Bureau of Medicine Surgery and the Office of Naval Research, and Colonel A. P. Gaggey of the Air Force, and I sat down and pooled our information on what are the problems as we could foresee them that would necessarily arise in a major disaster, and what sort of investigations, as a preliminary straw man type of protocol, we would envision for such research; the idea being that this would be circulated widely for criticism to as many groups as we thought had any interest and to as many experts as we could lay hands on, and that appropriate revisions would be made and this would be presented to the office of the Secretary of Defense's Research and Development Board.

This was done, and it became clear at that time that the Civil Defense and Federal Civil Defense Administration certainly had an interest as great as that of the Department of Defense in this field, and, furthermore, by law they had a responsibility in this field. So it was agreed that the best arrangement would be to draw up a joint program with the Federal Civil Defense Administration, and this was done by several conferences. This plan was then presented jointly to the Federal Civil Defense Administration and to the Secretary of Defense through his Research and Development Board, and complete agreement was reached on a tentative plan. This tentative plan, as we foresaw it, is set forth in rather complete form. If any of you care to obtain copies, I am sure they can be made available to you from the Committee on Medical Sciences of the Research and Development Board, Department of Defense. The document concerned is RDB—MS 200/2.

I think, first, before stating the objective of this plan, every investigation must have a logical basis or reason for its existence. I think perhaps it might be well just to state, in a very few words, why we think disasters ought to be investigated in the first place. The power of modern weapons is so great that the impact is likely to be sudden and of catastrophic proportions, and to impose upon a people a major disaster situation perhaps as great as, if not exceeding, anything that we have seen in the past. And furthermore, there exists the real possibility that these can happen here. That same potential for disaster has not existed before.

We must think in terms of the atomic weapon as perhaps the premier weapon of mass destruction. It is a type of weapon which can be carried in a single plane and for rather great distances, and so the possibility of attack from an overseas base is admitted by all logistics people concerned.

It is a real possibility. The Air Force, furthermore, has published in the newspapers that it is not feasible for any air defense, even radar-assisted, to prevent more than about thirty per cent of the planes from getting through an air defense. So we can count on some 70 per cent of planes, in the present state of development of our air defenses, penetrating such a defense. That being the case, there is a real likelihood of an atom bomb attack succeeding against a given target.

I am sure that you have all read the approximate potential of the so-called standard or 20 kilo-ton atom bomb; that we expect probably in excess of 50,000 casualties from such a bomb on a modern target city. Fifty thousand casualties in any given location, I assure you, is a major disaster. It overloads any possible medical facilities, for one thing. It disrupts the community to the extent that it cannot recover certainly for many days, and it essentially knocks out the target for quite a long time.

Now, turning to other possible new weapons, I shall say very little about the field of biological warfare because this is an untested, untried field. The enthusiasts for biological warfare believe that it will accomplish a major result. Certainly, it will not be of the sudden catastrophic type occasioned by an atomic explosion, because the results of biological warfare develop slowly over a period of days to even weeks. Nevertheless, if the major effects hoped for should occur, then at the time of the development of large numbers of casualties there will certainly be major psychological upsets of the types which occurred when we had great epidemics of yellow fever in our ports, for example, in Philadelphia and New Orleans, back at the turn of the century or before.

Proceeding to the field of radiological warfare, we find that again this is a weapon which will develop not the sudden type of impact of an atomic explosion, but rather more the biological type of result, which will occur slowly as radiation doses accumulate and as the slowly developing effects of radiation develop in the individual victims. It probably would have an impact much like biological warfare, and may not be actually adequate as an anti-personnel weapon, but rather an area denial weapon, which will force people to leave an area and offer really great obstacles to its reoccupation and use.

Finally, I think we arrive at the field of chemical warfare among the special weapons. It has been my belief certainly since 1943 that no chemicals of the World War II types lend themselves to long range attack. The reason is entirely logistic. It takes many tons of even our best World War II chemical agents—mustard gas, for example—to accomplish a real result of military significance. It is probable that other types of weapons could be carried more feasibly and accomplish a greater result than World

War II types of chemicals.

Now at the end of World War II we ran across a new group of chemicals which you know as the nerve gases, which prove to have a different order of magnitude of toxicity, which means, logistically, that in order of magnitude less transportation is required to accomplish a given result. This being the case, then it becomes entirely logistically feasible to make a long range attack with this one type of chemical agent. It is my own belief that this is the only group of chemical agents we now know which can logically be used against us from an overseas base, at long range. This is not to discount the use of other chemicals at short range when an enemy has obtained a lodgement within our borders or very near them. But I think initially we are talking in chemical terms only about the nerve gases.

It is fair to state that the nerve gases pose against an unprepared and undefended civilian population a very real threat of major casualties, and that this attack is quite feasible to be launched suddenly, without warning, from long range. Now, I do not wish to give an exaggerated idea of the potential of the chemical weapon, because against a prepared people who have at hand adequate defense in the form of a gas mask which can be put on rather quickly, or who have adequate shelters or collective protection, they are, under this protection, immune essentially to the gas. It then becomes a problem of how many people are surprised and attain a dangerous amount of gas before they use such protection. Certainly the number of casualties would be immensely less than that of an unprepared, undefended population; and the chemical weapon, of course, loses its greatest potential against such a prepared population.

Now, I think this in essence sums up what is the potential from disaster from long range and initial surprise attack. I think that it would not be well to try to assess shorter range attacks. Many things could be used which would impose real disaster situations from short range. They run all the way from weapons which I have discussed, these special weapons, to include other types of chemicals, to include fire bombs, high explosives, etc.

So I think the problem is real. It exists, and if this country is brought suddenly under attack I think the disaster situations are most likely to occur.

So the objective in this proposal was first to determine the mass and individual psychological reactions of our people in major disasters, sociological upheavals which are brought about by these disasters, and the rescue, medical and logistic problems involved in adequately handling these disaster situations. We wish to determine the effectiveness and failures of both the spontaneous and the organized rescue efforts in such disasters, and to develop sound data upon which both civil and military defense disaster planning could be based.

In order to do that we proposed several types of study. The first

of these was to study the psychological reactions and behavior of both individuals and local populations in disaster, for the purpose of developing methods for the prevention of panic, for minimizing emotional, psychological, and psychiatric failures. Secondly, to study the sociological upheavals caused by major disasters in order to devise means to keep the essentials of community government, utilities and services functioning. Third, to study the organization of communities to cope with disaster, to assess its effectiveness, to discover its failures, and to, if possible, devise improvements which might overcome the defects. Fourthly, to study the rescue, first aid, transport, treatment and disposition of casualties in order to devise ways and means of improving the handling of the injured victims. Fifthly, to study the effectiveness of extra-community assistance in disaster in order to improve plans for bringing in timely outside aid. I think this point should be stressed particularly, because any major disaster, particularly of the atomic explosion type, is likely to so disrupt internal community services--particularly rescue, medical, etc., that the community itself which is struck may have its potential sharply reduced or even abolished to help itself. The most effective aid may actually come from nearby communities rather than from the community itself which is affected directly by the disaster. And lastly, we wanted to determine how the Armed Forces can best assist civilian communities in major disasters; and I might add at this point, or vice versa.

Now this, as you recognize, is quite a large chunk of investigation that we had bitten off here, so we set about thinking about how we might chew on it a bit. We hoped from the start--we were all in agreement about this--that the program could be centralized in the National Research Council. We hoped that this organization, the Council, would appoint a committee on disasters which would serve as the steering and advisory group which would plan, guide and review the work and draw such conclusions and make such recommendations to the participating agencies as they may deem appropriate.

We further hoped that the central administration of the program could be vested in the National Research Council, and that they would be willing to set up a central administrative office, perhaps small to begin with, who would act as the nerve center of the disaster investigations, who would be the central office to which a disaster would be reported as early as possible, who would be in a position to contact the facilities that we had for investigating them and to get the right group discharged in a timely manner to the disaster to begin the investigation.

We hoped to have scattered throughout the country in about twenty strategically located cities field teams which are multi-disciplined, and which contain, as far as it is practicable to provide them, specialists for each type of investigation which the committee of the council agreed upon as a protocol. We hoped that each of these would be headed by an able man known to be a good organizer and investigator, and that the teams would be trained as rapidly as possible to carry out the agreed protocol to the limit of their personnel and capabilities, and would be prepared to stand by to proceed on short notice to disasters anywhere within their assigned territories. It was strongly pointed out that the mission of these teams is the investigation of disasters and not

disaster relief, and that they must not be diverted from their primary purpose except for the most compelling reasons, and then only to the extent that it will not interfere with the investigations.

We hoped that there would be one special team, in this case, the National Opinion Research Center, which would be prepared to investigate, according to their already developed protocol, training and experience, would be able to proceed anywhere in the country that it was appropriate for them to go, and to materially assist the local team in their investigations. Now this is particularly important, we believe, because of the broad experience of the National Opinion Research Center in investigations of all types requiring field work. The local teams as they are organized by the National Research Council would necessarily be inexperienced teams, starting more or less from scratch with virtually no experience in investigating disasters, and we believed that the backing of the National Opinion Research Center teams in such disasters is extremely important, and particularly important in the initial phases of the work.

So we rather hope--and I make a plea at this time--that as far as is practical to do so, that the National Research Center work be coordinated with the work proposed under the National Research Council. I do not for a moment intend to imply that the direction of the work is to be transferred from the National Opinion Research Center's own staff and from the project group at Edgewood to the National Research Council, but only that it proceed in a coordinated manner with the other work, and that the results of the Council's investigations be made known to the N.O.R.C. and vice versa. And I would hope that in the field that they could work in a complimentary fashion.

There is in the reference which I gave you to begin with, a suggested protocol for each of the five types of investigations which fall under the headings: psychological, sociological, rescue, medical and logistic. These can be perused if you wish to attain a copy from the Research and Development Board's Committee on Medical Sciences.

We proposed that this work be coordinated with other agencies which traditionally or by law have responsibilities in the field of disasters, notably the American National Red Cross, the U. S. Public Health Service, the Home and Housing Finance Agency; and that other groups who already have programs under way such as the East River Project, the projects under the Operations Research Office of the Army, which as you know is centered at Johns Hopkins University, be brought into this program also and coordinated with it.

Undoubtedly, there will be other types of investigations which should be undertaken other than those visualized as purely field investigations. It was proposed that upon recommendation of the National Research Council that such investigations be undertaken, and, as investigators can be found for it, that the services or the Federal Civilian Defense Administration, or any other appropriate agency affiliated with the program would individually support such research via contract through their usual contracting agency.

Now that essentially sums up what we visualize here; and bear in mind

that the whole thing is predicated upon the National Research Council's willingness to undertake this, to establish the Advisory Committee, and for the Committee to begin its work and establish protocols. We cannot turn a wheel until that is done.

Now, I can report to you today how far that has gone. It has been, I assure you, a slow and painful process. I do not mean to imply from the Council's standpoint, but all of the coordination, and an immense amount has had to go into this project, all takes time.

The services are agreed to put initially $50,000 each into the program. It has proceeded to the point that our office has been designated to be the responsible agency to see that the show gets on the road; and I now have in hand the $150,000 from the three services.

We have sent a proposed contract to the Council and it is under consideration at the present time in their business office. This follows a meeting held by the Council which considered the desirability, or feasibility, shall I say, of the Council accepting this responsibility. We have no definitive word from the Council as to just how much of this proposal will be accepted, or precisely in what form it will be executed, and we do not have the contract signed, sealed and delivered, so to speak, yet. It is in the hands of the business office of the Council, and we are still hopeful that the Council will see fit to undertake and centralize this program and that they will agree to accept the contract as proposed.

Roughly half of the money, at their suggestion, has been offered as the initial contract; the remaining half to be held in reserve for the time being to determine how much research outside of the field team type of research is to be undertaken. All of this money will be committed either through the Council or through other investigators prior to the end of the fiscal year, June 30th.

That is essentially the status at the present time.

COMMENT ON THE ROLE OF THE NATIONAL RESEARCH COUNCIL

Dr. William N. Fenton, Division of Anthropology & Psychology, N. R. C.

It might help to give the picture of developments from within the N.R.C., since the ad hoc conference on disaster studies on December 6th. Colonel Wood outlined the proposal to us at that time, which he has again gone over this morning, and the group which met December 6th thrashed the problem around with the idea of who were the groups that were already working on disaster studies? What is the magnitude of the problem? What aspect does the problem assume?

Without going into the details of that meeting, I think it was pointed up rather clearly that the central problems which require research lie in what are known as the behavioral sciences, with the problem of coordinating other disciplines and competences that are involved in the specialties at work in disaster study and disaster relief.

At the end of the conference it was moved to approve the request in principle, and to recommend to the Board of the National Academy of Sciences and the National Research Council that the project be undertaken and that a contract be drawn up. It was further suggested that a permanent committee on Disaster Studies be considered by the Academy Board and appointed by the Chairman of the National Research Council.

I went to work at the Research Council on January 1st, and I must confess that in the 28 days that have followed I have not succeeded in hatching a committee and I have not succeeded in hatching even a permanent chairman of that committee. The problem I faced first was who are the persons concerned with disaster studies and what has been their experience? And we have started, from the correspondence that preceded the December 6th conference, a "Who's Who in Disaster Study"; and without imposing on your generosity or kindness at this time, I am going to ask the group, the persons who are here, to complete for our records as a start toward that coordination, a 5 x 8 form which every person who comes from Washington emerges with sooner or later; which will give your name, present occupation, address, disaster study experience and remarks. During the recent war we found, in approaching the problem of foreign area study, this type of "Who's Who" a very useful thing. You can usually think of the person, but it is nice to have some sort of an objective thing to check your opinion with.

The second thing, beside the persons, we are concerned with, is where are the projects, and I presume I shall learn more about that in the next two days, than I have known up to the present. I have heard of projects in other Universities, such as the University of Oklahoma, and so forth.

On the matter of the contract, the contract that was drawn up and mentioned by Colonel Wood has gone through the business office and has been

submitted to the Executive Board of the National Academy of Sciences, and it has been approved in principle. I believe the formal negotiations are in process. The Board took these steps in advance of meeting on February 3rd. So Sunday when they meet I shall report observations on this conference, and attempt to brief them on the present status of disaster studies and the accomplishments that are reported here.

For the time being we have, after considerable arm-twisting on individuals who had competence, succeeded in getting the Vice-Chairman of the Division of Anthropology and Psychology, Dr. Warren Isley, the Chairman of the Anthropology Department at the University of Pennsylvania, to accept provisionally the Chairmanship of the permanent committee, hoping that a permanent Chairman will emerge from the group after it has organized.

As I see the thing from where I sit at the moment, the committee will meet periodically, and sooner or later it is going to have to delegate its research functions to a director in charge of the research, and possibly another executive secretary to carry on the work of the committee. From that point on, I think it will develop. Actually we do have some slight accomplishment that I can report at this time, and the committee will be impaneled following February 3rd, and we hope to make it representative of interests involved, and of parallel interests, as much as is humanly possible.

I might comment that one of our difficulties is that, of the three councils in and near Washington, the National Research Council is the one that is able to aid and advise the government on problems of this sort. Unfortunately, in its make-up, historically, it does not include the most important discipline in disaster studies, namely, sociology. Anthropology includes a few individuals who have had training in sociology, and psychology includes a modicum of persons in social psychology, who have worked in those fields. So the problem of studies in breadth is a problem of co-opting the services of sociologists; and I think that participation in the work of a committee like this may in time lead to a broadening of the Research Council itself, which will be a good thing.

III. SCOPE AND OBJECTIVES OF THE N.O.R.C. DISASTER RESEARCH CONTRACT

Dr. Shirley A. Star, Disaster Project Director, N.O.R.C.

I think that both Dr. Marrazzi and Colonel Wood have said enough so that I don't have to repeat again the very real and enormous problems that research in this area is directed toward. The size of the threat that Colonel Wood outlined left me practically speechless. They have also given you a good idea of the really grandiose scope and objectives that this research program has to include ultimately to be of any use. We, of course, are just one small contract under that research project, and what I am going to do is give you a sort of worm's eye view of it, although I have to admit that we get a little large in our thinking too.

One of the most reassuring things for me in the remarks of both Dr. Marrazzi and Colonel Wood is that disaster research by this time is so well established that we can review a history of it. We can point with some pride, I think, to the fact that we got in this field in 1949, and that is ancient as far as this subject goes. I think it was '49 when a research group from Ohio State University who held a contract, came to us and talked about the possibility of going into Donora, Pennsylvania, where a "smog" disaster--if you call it a disaster--had occurred, and trying to get a picture of exactly what went on in a community that is threatened by something as vague and as unknown as this. It was right in our department and we were extremely interested in it, and we could see how urgent and important it was going to be to have research of this kind done.

We could even see in advance it was going to be a difficult kind of research to execute. In the course of trying to negotiate arrangements in a formal way to go into Donora, what we learned is that you cannot do research of this kind unless there are prior arrangements made long before the disaster occurs to do it, because what happened was that, after some four or five months of negotiation, there still wasn't a clear channel for the sub-contracting organization to go on. We began to think that Donora, Pennsylvania wasn't such a hot place anymore, and maybe we weren't going to find out very much, so we abandoned Donora. But out of that came what to us has been a very important development:

The Army Chemical Center entered into a small contract with us, simply asking us to draw up what we considered to be an adequate plan in studying of future disasters.

I worked on that and drew up a plan, and this was submitted to the Army Chemical Center, and some 20 to 30 advisors went over it very carefully and made suggestions, and it was revised. At the conference two years ago, on January 30, 1950, the Conference on Psychological Aspects of Disasters, held at the Medical Division, the whole thing was quite thoroughly reviewed, and ultimately this "master plan" of ours was incorporated into our contracts with the Army Chemical Center. Since we really have not changed our basic thinking very much since this plan, I would like to review briefly what went into it.

We did take as our starting point--I think we are here in such complete agreement with Dr. Marrazzi and Colonel Wood that I will just be repeating--that the ultimate objective of this social-psychological research into disasters was to obtain sufficient understanding of human reactions, of the way people acted, their behavior, their reactions during the disaster, to be able ultimately to make recommendations to be useful in the control of the civilian populations during disasters; and more particularly, of course, we saw the problem on which this research must bear was one of rapidly re-establishing community morale or maintaining it, and maintaining community efficiency of operation in the face of the kinds of civilian disasters you have to anticipate in event of another war. And our proposals for going about this kind of research were really, in conception, I think, very simple. They did not prove this way in execution.

But what we said was: Let us start out by just picking one disaster and studying it as carefully as we can to see how much you can get out of studies of this kind. Let us pick the kind of disaster which approaches as closely as we can anticipate now the kind of disaster to be expected in event of war, so that if there are findings from this study they will have some maximum usefulness. Then let's just wait and see.

We felt that probably the most important sorts of findings that bear on the social control of disasters could only be derived from comparative studies of a number of different kinds of disasters, so you could see how much difference it made if one thing went one way one time, or one way another time. But even so, the program just couldn't begin except by starting with one study, and, for those sceptics who were present in the audience two years ago, there was a lot of doubt, and a number of real problems about whether this sort of research could be executed; we said, "Let's make it a pilot study and see what comes out of it."

The second part of our proposal was purely procedural. Since we had no way of knowing when there was going to be a disaster which would permit the pilot study to be done, the only way we could see to execute such a study was to make preparations for it immediately. We wanted to recruit and train a staff of people capable of carrying out this investigation and hold them in readiness--have them there so that when something happened we could execute this study. In fact, it was only this second, procedural proposal which was actually incorporated into our second contract with the Army Chemical Center. It turned out that there was a great technicality revolving around our contracting to do a study which we might not be able to do within the time period of the contract, since we had no control over disasters. So, actually no mention has been made in the contract of the ultimate study we want to carry out. We simply agreed to recruit, organize, train and hold in readiness a research team. Much of what we will be saying the rest of the day, this afternoon especially, will deal with the trials and tribulations of organizing and running a research team of this kind; but this morning I would like to go into some detail about the scope and objectives of that indefinitely-future, full-scale disaster study that we hope some day to be able to do.

In this original master plan which was submitted we did include a tentative questionnaire. I should say, parenthetically, it is a field study and we intend to interview people. We submitted this tentative questionnaire primarily

because Federal law requires the submission and prior approval of questionnaires to be used in field investigations sponsored by government agencies. Since we knew in advance that we could not know in advance exactly what the situation we were going to be studying was, we knew that this questionnaire could not be used in exactly the form that it was offered. It was regarded as a framework, defining the scope of the investigation and indicating the problems to which our interest would be addressed, and it also helped to fulfill Federal requirements. I am sure a large number of you by now have seen this questionnaire. It has been circulating for two years.

To go over it briefly, it included questions covering eight problem areas. There was first of all a set of questions designed to get a chronology of events--exactly what had happened to this person at a given time from the time he knew something was happening until either the time the disaster was all over, or the time of the inquiry, depending on which came first. In addition to his objective experiences in this situation, we were interested in all of the emotional and subjective accompaniments of his experience--his fright reactions, panic, fears, fantasies, things that at one time or another proved reassuring, or the opposite.

And of course, we wanted to determine the extent to which each person we interviewed had suffered in the disaster--exactly what his losses were, whether he had physical injuries, loss of loved ones or deprivations of one kind or another--partly because this is part of the picture of what happens in a disaster, and also because it might help to explain the kind of reactions people have during disasters.

Then we were also interested in getting this person's view of the disaster control and relief operations as he saw them. Again we are getting a worm's eye view. These are people who do not necessarily know the decisions being made in the top echelon of disaster control, but they see what is being done for them and for their neighbors.

In the same way, we wanted to cover the emergence of leadership in disaster--that was the performance of the people who by formal place in the social structure were supposedly leaders, and the performance of people who just emerged as emergency leaders, and we were interested in the people's notion, not only of how the leadership had behaved but also of how the leadership might better behave for more effective disaster control.

Another area that very much concerned us was the problem of the information policy in disasters--exactly what was done to handle any breakdown in communications that happened? As far as we can see now, breakdowns almost always happen, even if there is no physical destruction to the newspapers and radio stations, etc. They just cannot keep up with as current information as is needed. This, of course, leads to the whole problem of the rumors starting to circulate in a situation like that. We were interested in the possibly destructive quality of such rumors, and how this can be controlled.

Finally, we were also interested in what had been suggested in some of the studies of strategic bombing, the possibility that resentments and aggressions against subgroups in the population emerged--scapegoating, blaming one section or another for something they had or had not done. This itself is destructive to

a civilian organization, and we wanted to know about this too.

Now, as I indicated, what we had in mind was to investigate these problem areas by means of intensive interviews, and this afternoon we will dwell on intensive interviews, and what we proposed was that we do a representative sample of a disaster-struck area, and that also, we interview beyond the rank-and-file sample--all key figures in the community with respect to disaster relief and control. This meant people in strategic positions, like the chief of police, or the head of Civilian Defense, or the mayor. And it also meant anyone who emerged from prior interviews as standing out in the public mind as a hero, and perhaps even those who stood out in the public mind as a rat, too.

I think these major headings that I have outlined still do cover the major considerations in understanding the control of human behavior in disasters, and they were, of course, not original with us, exactly. They were developed on the basis of a good deal of consideration in reading of the literature about disasters and thinking about the nature of disasters; and I think you can see that there is implicit in these areas a lot of hypotheses about how people do behave in disaster, and these are the things we hope to test. It just stands to reason that you have to think about what you are going to investigate before you investigate it, and we have also now had a good deal of experience interviewing people who have been in situations that at least approach disasters; and, while most of what we have been doing has been done in the interest of developing methods and training a staff, and also familiarizing the staff with some of the gory kinds of materials that they have to be able to deal with, we also have found that you cannot really do anything methodological in a vacuum. All kinds of questions and even, sometimes, answers are suggested to us by the data we are collecting.

We have felt some pressure internally to try to order our thinking in this field so that we would have a more and more explicit kind of formulation of the theories that we are proceeding on and, again, a more rigorous definition of our ultimate scope and objectives. I think if I sketch in for you the dimensions of our thinking about the problems of disaster now that I probably will document more clearly than I yet have what we take to be our scope and objectives.

First of all, we found we had to try to define more and more precisely what it was we meant by a disaster. I might mention parenthetically, that much of this work that we found ourselves having to do, on the conceptual side, certainly, and even on the empirical side, comes about because the literature on disaster is just woefully journalistic and descriptive and speculative. We have thus far a bibliography of 2,161 titles. Charles Fritz has read more than I have, but I doubt if we have gotten more than one idea out of those more than 2,000 titles. There just isn't anything done. We do hope--I say rather than plan--some day to put out a complete annotated bibliography of these titles as part of our contribution to systematizing thinking in the field. So far, this is hope because we haven't had the time or the resources to devote to it.

Coming back to this problem of what we mean by a disaster, we all started, of course, from the notion that a disaster involves some real danger to a group of people; but there are many kinds of situations that fit under this rubric.

We started asking ourselves questions like: If six people are held up by one gunman, is this a disaster? Or if five people are injured in an automobile wreck--this is danger and a group of people, do we mean to include these things as disasters? Then you move one step further and say: Suppose this vehicle that is in a wreck is a school bus, and suppose it contains three-fourths of the kids in that community? Is that a disaster? And what about an airplane crash, or men trapped in a mine, or a ship sinking, or the bombing of a city, earthquakes, floods? Why is it that we call some of them disasters, and for some of them we have words like "accidents," "catastrophes," "personal tragedies," and so on? At first blush it may be that we are likely to call it a disaster in terms of the sheer range of the destruction, and you end up with an answer like "The more people killed the more likely we are to call it a disaster."

I am not sure that we have really the complete answer to this question, but we at least came to the conclusion that what we were trying to study is something that might be called a community disaster. We define that really, as something that happens to a place. It happens to a place with a permanent organization and a geographical location. So that when London is bombed, we say that is a community disaster. Even when Kansas City is flooded or Donora is cluttered up with "smog," those are community disasters. On the other hand, we say that if an airplane crashes that is not a community disaster no matter how many passengers are killed and no matter what the number of people on the plane was who were potentially exposed to danger. On the other hand, then, we put in a qualification: if the crash of that plane seriously menaces the town where it crashes, that is acommunity disaster for the town, not for the people on the plane.

So the accidents which can happen to groups of people who are temporarily collected together--the groups on a ship, or in train wrecks, or the thing we saw a few weeks ago when the trains were marooned, or even a mine cave-in, or even, to be really extreme, a fire like the Cocoanut Grove incident--we say all of these are only community disasters if and to the extent that the group that is involved in them has, through association, formed a sort of quasi-community, as you often do on shipboard, social relationships spring up, or if the people involved in them were so widely drawn from one locality that the event and its aftermath has an impact that is community-wide. As you might say for the Cocoanut Grove fire, the group represented a sampling of the town collected in its dancehall, and its repercussions reached out in all directions in the community.

What we are trying to get at is that a community disaster involves a group of people who are bound together by more than just accidental, chance circumstances, and together they encounter a threat that is somehow so great that it strikes at the very roots of their life together. From the standpoint of the people involved then, the thing which distinguishes a community disaster from other types of personal threats or disasters, is that there is a breakdown to some degree of the customary social functioning that the individual lives by, that he finds himself in a position where he cannot turn to the usual social channels to assist him with his problem and to render him service. For a while, at least, there is such an altering of life conditions that he simply has to improvise his behavior rather than rely on habitual mode of acting. And this, we think, is typical of the things you see in wartime disasters, and needs to be taken account of. Not only is the individual threatened, but everything he

took for granted in life is threatened, and that makes the difference.

So we have said that to be able to study the full range of disaster reactions and behavior, we must have a situation in which there is not merely danger to the people in the situation, but it must be a situation in which there is a breakdown of the social functioning which they usually rely on. But from what we have seen so far, even if you take a limited concept of community disasters like this, there is a very great amount of variation among disasters, both in the amount to which the group is threatened and the extent to which there is social breakdown in the face of that threat.

I do not think we can yet substantiate this, but we feel that the individual reactions that you will see in disasters will vary. Both the way people behave, the way they feel, and the solutions that they seek to get out of the dangerous situation they are in will be in part dependent upon the type of disaster it is. We know that testing this kind of a hypothesis calls for a very long series of comparative studies, and we may never do them. What we have begun to do is to work out a typology of disasters, so when we do study one we at least know what it is we are dealing with in that one. It helps us to understand the nature of the beast and to define the type most suited to the pilot study.

The most obvious way to begin is to arrange disasters from natural disasters to man-made disasters; and of the latter we make a division into the unintentional and the intentional. We are talking about, at one end, acts of God like floods, earthquakes, cyclones, avalanches, to the unintentional man-made disasters like industrial accidents, the very intentional enemy aggressive acts like bombings, chemical warfare and so on.

If you speak more theoretically about it, what we are talking about is a ranking of disasters into terms of the inevitability of the precipitating force from those with the most unavoidable origins to those which, from one point of view or another, might have been prevented. We think this makes a great deal of difference. Certainly, you cannot blame the government if a river overflows. You may blame the government for its failure to take precautions against the river overflowing. That is different from having a ready-made target on which to project blame for the event happening in the first place.

Now very similarly, I think, this precipitating force may strike suddenly or it may be preceded by prior warning. Floods usually nowadays are forecast for days or weeks in advance, and you can do something to get ready for them. On the other hand, if the enemy decides to bomb a target today, nobody will know that until minutes or hours beforehand. So this really gives you a continuum in terms of the degree to which preparedness is possible. And this too makes a difference. Dr. Powell suggested to me this morning that, if you are really prepared for a disaster, it is not a disaster, and you cannot use the word that way. I think there is something to be said for that. If you are really fully prepared there is not this breakdown in community structure that we've said is essential to disaster.

Beyond that, the destructiveness of this precipitating force may operate instantaneously or it may have a progressive force. Floods are progressive, certainly. It is important to us to consider, because very often, if you have

an instantaneous force, the real disaster is over before people even know what happened. On the other hand, if they are living in a continuously dangerous situation you have a different set of problems to consider.

You can introduce a number of other distinctions which I do not think are quite as important, except for the one about the length of time that the threat continues to operate. As we say in the jargon of our field, and knowing that it will sound very bad to those outside, Texas City was a wonderful disaster because the threat was there after the explosion took place, and the people were still living in fear, and it gave you time to make a field investigation under realistic conditions.

Disasters can also vary in terms of the size of the area and the amount of destruction done, and factors of that sort. Out of this typology, to ensure that the findings of our study will have implications useful for wartime disasters, we are looking for man-made disasters that strike with little prior warning but which should leave some remaining damage or threat of danger as many of the war agents do now--atomic contamination and germ contamination, and the fires that follow bombs and so on strike fairly instantaneously but they do linger; and it should be one that threatens an entire community and does a good deal of damage. This is our goal in life, to find such a disaster.

So far, of course, nothing this meaty has presented itself to us, and we have been far less purist in our practice than we are in our theorizing. For the purposes of training of this staff, we have so far covered 74 separate events, most of them relatively minor events in Chicago, like fires, or a gang bombing, or major accidents, or things of this sort. We have been to larger events as you can see by the pictures on the wall. Even though they have not been real disasters in the sense in which we were defining the term, they do have one thing in common, from the smallest fire in Chicago to the biggest one of these we investigated. In every case, they were situations in which people were in danger for some period of time, where they quite realistically were in danger, had a right to feel they were in danger, and so we can begin to build up something about how people behave in dangerous situations, even though it is not the full disaster picture. And what we are working toward, out of the materials we so far have, is a kind of a descriptive natural history of what goes on in those situations where people are endangered. If I have the time I would like to sketch in a little of that, because this again helps to show what problems we are working on. (I should say, that most of our data bears on things that strike rather suddenly and for which people are not prepared and have little warning. I don't think that what we say could be extended beyond situations of that type.)

There is at that point where the individual suddenly discovers that his house is on fire, or the street car is going to crash into the truck, or the explosion, and so on--there is at that point a moment in which the situation is completely undefined for the individual. There is an abrupt change that he has not been counting on, and the most immediate reaction that we see in almost every one is described to us as "shock" or "stun" or "paralysis." They just stand there frozen. I think one of the most characteristic ways it is said is, "I just couldn't take it in." There is this temporary, very brief usually, I believe, numbing in which it may be that it is almost a physiological process to shield you from too much shock until you make the necessary adjustments

in the nervous system to realize where you are and can get going again. Very often, following this, the first overt behavior is a reflex action which has no relationship to anything, any practical course of action. I mean--I think you have all seen it if you have seen any accidents--people will cover their eyes or fall or just grasp an object with no particular course of action in mind. I think the first one I ever saw was when a car overturned, and the man somehow walked out of the car alive, and his first act was to rush over and stop the wheel from spinning. He stopped the wheel and that somehow gave him a sense of control. You see a lot of that sort of action.

Thereafter, people do begin to mobilize their behavior by defining the situation in some way to themselves. Very often there is reliance on other people. If there are other people in the situation, they tend to turn to one another and see what someone else is doing, and it somehow helps them to define what is going on and to get some clues as to what they ought to be doing. Very often there is an intense concentration on your own little portion of the world. You see over and over again that people tend to assess what has happened in terms of something in their immediate locality. Hersey documented this even for the atomic bomb explosion. Everyone interpreted as "My stove exploded" or "My neighbor's stove exploded." They do not begin to take in the bigness of the event in the beginning. It is something personal happening to them and it is defined in terms of their rather immediate surroundings. It may be that in doing this there is really again a reduction of psychological shock to the person, and obviously there is a limiting of the attention that enables him to concentrate all of his action on getting out of whatever predicament he is in.

It also generally turns out in the early stages of these dangerous situations that everyone has a slightly divergent view of what is happening, and ends up with a slightly different view of what ought to be done. Therefore, there are a number of different courses of action that individuals can embark on, and it is this very heterogeneousness of the kind of behavior that is going on that gives an outside observer an illusion of great confusion and irrationality. It often turns out that most of the people in the situation were acting perfectly rationally, they knew what they were doing, they were going about their business, but it just was not coordinated with what anybody else was doing, so you get this picture of great social disorganization, but very often the personal disorganization that people read into it is not there.

Obviously, of course, there is variation in individual reactions to disasters, and we certainly do not know enough yet to say either how many of each kind of reaction you get, or who will react which way. But one of these reactions, of course, is panic. This is a highly overrated one, from our experience. If you take panic in any strict sense to involve flight behavior, like the stampeding of animals or just some sort of mad flight without any concern for where they are fleeing, although the individual may think that he is fleeing from danger, but it could actually be that he is fleeing into danger, it is that incoherent in organization, I think we have not seen any real display of mass or collective panic. There has been an occasional individual or two who lost his head and went tearing off. But we are gradually coming to feel that there is a great exaggeration of the danger of panic in this country, and that this itself is turning into a major danger. There is so

much concern for it and so much planning for it that it may operate to suggest to people that they ought to panic. I think if we come out with nothing more than a mild suggestion like playing this down, then we have done something.

On the other hand, you do see a large number of people who withdraw from the point of danger. It is not panic, because it objectively is a removal from danger, and it usually represents some consideration of what you can do and a realistic, practical decision that there is nothing to do but to get away from whatever is dangerous. Of course there can be other goal-oriented behaviors that do not involve fleeing from the danger. A person may define the situation as dangerous, yet move toward it in order to combat it or in order to save persons or things which are important to him. Everything we have learned so far suggests that there is a fixed order in this; that only after you have insured your own safety do you act with reference to the safety of others.

Another kind of behavior we have seen in disasters, which presents something of a problem for controlling and organizing people, is what we would call expressive behavior, or what you might want to call hysterical behavior. People do not do anything; they just sort of express their emotions. They scream and shout and cry, or stand there waving their arms. They know that the situation is dangerous, but they just haven't yet brought their attention to bear on what it is they can do to get out of it. They are just expressing themselves, and this, of course, is a problem for control. I think, in part, you see it in all crowds that collect at these episodes, who are doing several other things, but they are also getting some release of tension by standing around and getting in the way and watching. There is always a control problem to get the spectators and the people who are ventilating their feelings out of the way.

Another one we have seen--and this one interests me. I don't know how to explain it--are the physical collapses that sometimes occur. People just faint and pass out and remove themselves from the situation by becoming unconscious. It is often very difficult to separate out this problem-solution from unconsciousness following physical injury. We think we have some evidence, however, that there are persons who become unconscious immediately just from the strain or the shock, and the odd thing we've come upon, although I don't think this is fully substantiated, is that the people who become unconscious immediately, if they survive at all, have far less severe and persistent emotional effects from the disaster experience than the people who remain conscious and go through the whole episode. I wouldn't even begin to speculate on that. Perhaps, some of the psychiatrists in our midst will.

These are the main types of early response, and these are often individual lines of reaction. But, after this initial impact and everyone starting off, there is a good deal of interacting and communication with everyone else involved in this situation. People really become highly suggestible in this situation. The confrontation of danger leads to feelings of helplessness and particularly renders them suggestible along any lines which appear to define the situation and suggest action that will relieve the threat. Feelings of helplessness are particularly characteristic of the initial experience of persons involved in disaster. I think we hear this over and over again, and it is very characteristic of the initial experience: "Well, you cannot take it in. And then you take it in and you are just bewildered. You just can't see anything that you can do. You just feel so helpless and you wait for some-

one to rescue you." It is obvious that people have had very little preparation for these experiences, and, just at the time when he has to act quickly, he feels cut off from people by the event that has happened, and it leads to this generally helpless feeling. There is a great readiness, therefore, to turn to other people and take suggestions and advice as to what to do. Because you are feeling so impotent yourself, anyone who has a suggestion sounds almost like God.

You see a pattern of people almost milling around like a crowd and exchanging suggestions and rumors and information, and out of this there may emerge some sort of a program of action--somebody tosses out a suggestion, and then everybody acts on it. And this word of mouth communication, as we have suggested, does turn out to be very important. Rumors, in this sense, fly around, in terms of exactly what it was that caused the event and how much danger there has been. You can even classify to some extent

If the threat or the danger, the precipitating agent of the event is over quickly, then the rumors generally concern themselves with the amount of damage caused, loss of life; the amount of damage; physical injury and so on, and everyone has a different story about the event. They just want to know the history of what the disaster did, because this is the kind of information people need to adjust themselves to a danger that is past. In a disaster where there is a continuing threat, the content of the initial rumors will have to be different. It has to deal with subjects that people have to know about in order to mobilize their behavior again and act with regard to the threat. These rumors will deal with the possibility of additional danger, and whether or not something else is going to go up in smoke, and places where it is safe, and the best way to get to a safe place, and things of this sort.

Also, of course, rumors will vary with the particular group. If you have a focalized disaster, with the group initially involved here and the community around them, the rest of the community may be full of rumors about exactly what is going on; what caused the disaster; how many people are involved, and things of this sort. The people in the disaster know these things already, so they don't really have to rely on rumor for information about this, and they will be concerned with whether it has spread to the outside part of the community; what is being done outside their immediate area to get in to them and relieve them; and what is going on outside their area of immediate attention.

Also, of course, rumors vary with the stage. Initial rumors are generally concerned with this kind of information that you really need on how to act. Later rumors usually turn up about the reasons for the disaster. They attempt to assess blame. Usually some days after the disaster these rumors will start and they may circulate for a considerable period afterwards. I think probably the Flagler kind of rumor was a good case in point. The Flagler disaster happened at an air show, which had been a bone of contention in the community. Ordinarily they celebrated Founding Day in this community with a rodeo, and there was a young brash faction that was pushing for an air show instead of a rodeo and they won, and had the air show. One of the planes crashed into the crowd and killed a sizeable number of people. Now the rumors assessing blame that finally got around and were circulating in the community for weeks afterwards were in terms of placing the blame on the people who wanted the air show instead of a rodeo. This kind of rumor or way of thinking about the disaster may even persist for years, and leave some sort of tensions and frictions in the town between the

factions. As I say, these rumors may stay for a considerable period of time, unless there is a very authoritative way to decide who is to blame and close the question; or unless it is a natural agent and there isn't any need to assess blame.

Now, one other factor about these early organizings of behavior in the face of disaster is leadership, of course. One of the interesting things to watch is the way that leadership emerges. To some extent, it is fortuitous in that you always have to allow for the fact that maybe the best leaders are among those killed or seriously disabled and could not, therefore, take over the positions of leadership. Aside from this, however, we do have a good deal of evidence now that the leadership is largely situational in character. Two types of leaders emerge. On the one hand there are a group of people whom we have come to lump roughly as professional danger fighters, although this includes all types of people really. There are people who because of their professional or occupational roles are peculiarly situated to take the lead. That is, in a disaster which is primarily a question of relief to the sick and injured and clearing away the dead bodies, doctors will emerge as leaders. They begin coping with this, and leadership very often is merely a matter of taking the lead and people will follow you, so that they will emerge.

In Brighton, where there was a problem of turning off gas mains in the homes, some of the utility workers who were not so afraid to go in and turn off the gas emerged as leaders. These people who are professionally experienced or trained to deal with danger--doctors, nurses, priests, policemen, newspaper men, utilities workers, etc.--people who are either inured to danger or prepared to do the kind of things the danger calls for very often emerge as leaders.

On the other hand the other sort of leader who emerges are those who happen not to have strong ego-involvements in the disaster. For others, a conflict can arise. The professional danger-fighter group may, of course, be emotionally involved to such extent that they are completely preoccupied with themselves and with other persons with whom they are closely involved. They may have family or relatives or property of some sort, and when you are faced with a choice like that, between performing your professional role and pursuing your personal attachments, as we see it, you usually take care of the personal attachments first. There is this pattern, as I suggested, in behavior, that the first thing you attend to is yourself; secondly, the family; thirdly, your friends. After the immediate objects of your attachments are taken care of, you concern yourself with your property, your belongings, your material possessions, if they were threatened. And only after all of that do you get around to more abstractly thinking of people in general and the community. So that we do get, then, the emergence of people who are for some reason spared by the disaster or relative strangers to the community, and this fits very well with the suggestion of relying for relief on a neighboring town rather than the disaster-struck town itself. These people are better prepared to act because they are not quite so deeply involved.

One of the final areas in which we have collected some data is on the changes that are brought about in both communities and people by virtue of having been in a dangerous situation together. One of the rather obvious things that always emerges is a great change in friendship groupings, the formation of cliques--people who went through it with you who are exalted in your esteem, and people who did not go through it with you, at least for a while, are no

longer so close to you.

We've also seen some real changes in the status and power of groups within the community. Mr. Fritz will tell you tomorrow about Flagler, in Colorado, where a Catholic priest who played a key role in the community raised the whole prestige of the Catholic church because of his role in the disaster. The mayor's stock went way down during that disaster because he did not participate in that disaster. The ones we have seen so far--maybe because they are small and do not do as extensive damage as a war disaster will do--have all tended to increase the social solidarity of the people who were affected. It seems to be that this sharing of this common experience and the increased mingling with people with one another have had this effect. Common participation and common suffering seems to have, in the small situations we have seen, promoted morale rather than destroyed it, and it seems also to enable people to recover from the impact, psychological and emotional, more easily than they otherwise could. Also this greater solidarity rapidly disintegrates back to the state that it was in before the disaster struck; it's a kind of emergency good feeling. But I don't think we have an instance as yet where disasters have had any long run demoralizing effect.

For the individual, there is usually quite a rapid change in his standards, at least for the emergency, and you see this in such obvious things as people becoming inured to the sight of bodies lying around the streets and destruction and things of that sort. One of the things that has been surprising for us, is the almost universal occurrence of physiological manifestations of emotional reactions. You take a list like nausea, vomiting, nervousness, headaches, uncontrolled crying, loss of appetite, fainting, inability to concentrate, fatigue, emotional numbness, recurrent catastrophic dreams and nightmares. Just about everybody we have ever interviewed has had at least one of these, no matter how small the disaster or danger situation was. And the persistence of these reactions varies considerably with the individual, but we have seen them as much as a week after the crisis period. A number of other more specific psycho-physical symptoms have also emerged. The ones encountered most frequently include muscular spasms or tics, soreness or stiffness of the muscles, coronary symptoms, neuro-dermatitis and colitis, and things of this sort. We encountered these more frequently than we would have expected. In many cases these symptoms have appeared for the first time; in others, they are a reactivation of previous complaints by the dangerous situation.

Taking all these signs of stress in the individual, it is odd, on the intellectual level at least, most people come out of one of these things feeling re-assured, that now they have been through it and they know what it is, and it wasn't really as horrible as it was in their imagination, and next time they will be far better able to withstand it and survive it. They have a feeling that they have tested their confidence, and it is a reassuring feeling.

I think I have gone all over the place trying to give you some idea of what we take the scope of our research to be, and it just about covers anything human that can happen in a dangerous situation. And you can also see from the form of the data I summarized that we are really a long way from the goal of understanding enough about behavior during disasters to be able to suggest anything concrete about controlling behavior toward constructive ends. Our immediate goals so far have not been substantive goals, and much of what I have been able

able to say is simply a by-product of the training we do, and I think I will be satisfied if I have conveyed to you the breadth and the scope of the materials that we are trying to deal with.

IV. DISCUSSION, First Session

Col. Wood: I would like to make one comment which occurs to me at this point, and which perhaps is not appropriate to a meeting of this kind. I was very much struck with Dr. Star's remarks on the individual reactions of people in disaster and in danger and to compare that with what we have noted already in our soldiers going into combat for the first time. That is not precisely a disaster situation, but it is a danger situation, which they fully appreciate, and many of these same reactions occur in soldiers going into combat for the first time. There is this tremendous fear. Finally, there is also that very strong realization of dependence upon one another; the development of a very strong comraderie among the troops; and finally the feeling of exaltation when they come out of it unscathed, and realizing that at least they have not behaved disgracefully and that they have met the test. This fellowship or group spirit is so strong among those groups that actually when a man is wounded or ill and removed from his unit some of them just don't want to stay in the hospital very long because they are afraid they will be assigned to a different unit, and they go through many of these same reactions. It is very interesting to note that.

Mr. Hart: It is an interesting point from our point of view because, naturally, as a university organization we are very much interested in the generic aspects of any of these findings, and the wider the applicability of any of these inferences that we make, obviously, the more our feeling that maybe we are getting down to something fundamental.

Col. Wood: I would like to ask one question, which if it isn't appropriate at this time could be answered at a later time. I am very interested in how the N.O.R.C. gains entree into disaster areas with field investigators and what sort of problems they have met in trying to do this.

Dr. Star: Some of this we will be talking about this afternoon. More generally, I can say that the situations in which we have gone have not been so enormous that anyone couldn't get in. There were no instances, in the situations that we investigated, for instance, where there was a temporary military government set up. We do have in an informal way to establish our bona fides in a small town, or a community so that people will talk to us; and, anticipating some of the things that we will be talking about this afternoon and tomorrow, we have a problem of credentials because the situations always turn out to be over-investigated, not from a research standpoint so much, but there may be a half dozen different investigatory bodies in there trying to determine what happened and who's to blame. The state licensing commission, the insurance adjusters from different insurance companies are all wandering around, sometimes making it very difficult for us. In one instance, the newspaper reporters from out of town acted so badly that no one wanted to talk to any one. In many of the local incidents, the owner of the building that had a fire may instruct all the tenants not to talk because he's falsifying his insurance claim and fears that the wrong person may get the information.

We have had to find a technique by which we can sharply differentiate

ourselves from these people. We aren't in there to award damages or say who's to blame, we are in there to get the kind of knowledge that will help the people who in the future find themselves in a situation like they are in. That is our constant theme, that what we are trying to do is to get the benefit of their experience for other people, so that we want to keep our functions clearly separate from these other groups and to present them to people in such a way that they believe us and accept us.

Currently, all of our interviewers carry a letter which we wrote explaining what we are trying to do and linking it to the importance of civilian defense. This has turned out to be a boomerang, I am afraid. All of a sudden, we find respondents who have read this letter eulogizing civilian defense, and tying what they say in with it. It has become a biasing influence. They feel that you want them to talk about civilian defense, and that is all they talk about. One of the problems we want to raise in talking about unsolved problems is a letter that will come from a high enough echelon in the government to impress people without giving them leads as to the direction that their answers should go.

Mr. Fritz: I think we could over-emphasize the biasing effect of the term civil defense. I don't think it really biases response except that they talk more perhaps than they usually would talk about civilian defense. I don't think it is biasing except that maybe they will talk a little more in certain areas that they feel have relation to civilian defense.

Col. Wood: To whom do you say this in the community? To the mayor? To the city council? To the chief of police?

Mr. Fritz: We have instructed our interviewers to give them this letter. Usually when they go out into these field investigations out of town, we try to get letters written to the officials in that community explaining the purposes to them, indicating that it does have implications for civilian defense and so on. We usually do not try to show this letter to the respondents, unless we have to, unless we have to go beyond explaining just verbally some of the general purposes of the study. So the letter is usually addressed only to those people who might block access to respondents. In other words, we try to secure their cooperation in getting other respondents in the community.

Col. Wood: What sort of people are they?

Mr. Fritz: A good example is--there is the little community of Flagler, a community of about 800 population in southern Colorado, which is very isolated and very hostile to strangers generally. It was particularly so, however, after we got into the community because a number of outside newspaper reporters had come in and had performed very, very badly in the situation. They had gone into the hospital, pulled blankets off of people and tried to photograph them, lying in the morgue, and tried to photograph mangled bodies and so on. The people were up in arms about the behavior of these reporters. When we got into the community, aside from this however, the CAA investigating body had been there and two or three other investigating bodies. When we had gotten there they had become rather hostile to outsiders, and there were, of course, other factors related to this. One was that the mayor presumably had acted rather badly during this situation, had not taken

the sort of leadership role that was expected of him and, as a consequence, he rather felt his position threatened. Our first contact in the community was a local newspaper editor. We cleared with him first and explained our purpose and so on. Then we went to the mayor and gave him the letter and explained our purposes. Well, things seemed to be very smooth at first. We got into the community, started investigating and everything went very smoothly. About two or three days later, however, things began tightening up. I made several appointments, for example, with the head of the local hospital, with several other officials in the community, and no one wanted to talk. They cancelled appointments that had been made. So I went to the local newspaper editor and asked him what the matter was, why things had been closing down. "Well," he said, "I don't think we have enough knowledge about you people. I think we ought to know more about you. Why are you here? Who is sponsoring you?" He is a very perceptive man, and, perhaps logically, rather suspicious of outsiders. So, as perhaps some of the others can attest, we had some difficulty in clearing ourselves, but we finally convinced him of the purposes of the study, and through several long distance calls and so on got him the necessary information, and then everything opened up completely again.

Mr. Hart: A charter member of our Board and our legal counsel lives in Denver, and is one of the best known and most highly respected attorneys practicing in the Federal courts in that area, and it may not have been necessary, but we did get his good offices and a call from him created pretty much open sesame again in the community, didn't it?

Dr. Star: This would only be typical of small towns. No single person could exercise this much influence over whether someone could talk to you or not in a large town. Often the problem is one of persuading the individual person to talk. Normally, we clear either with the chief of police or the FBI in the area, not only on these studies so that if people suspect our motives, they have a phone number to call to find out that you are not a spy. Aside from that, and aside from contacting officials, because we want to contact them too and find their reactions, we do not find too much opposition.

Mr. Gorden: I would like to add too that a certain amount of investigation was done before we went into this Flagler area. Before we decided to go to the newspaper man there we had investigated in Denver and determined that he was much more of a key man in that community than the mayor, for example, and that the banker was more of a key man also than the mayor. This was established through the father of the mayor, and through newspaper men and other people in Denver who had connections with this small town. And they were right. They were correct in giving us a steer to the editor as being more influential, which was indicated by the fact that the community directed all their complaints and inquiries to him and not to the mayor. He was the one who threw the monkey wrench into the machine.

Dr. Marrazzi: I have a few questions to ask that bear on defense, and possibly should come later; but there is a general question that might be appropriate now, and I would really like to ask Col. Wood this question and get Dr. Star's comment. Don't you think that untried

weapons might be initially as productive of disaster?

Col. Wood: Productive of fear reactions and panic, certainly. It is very clear that individuals and communities are more fearful than is justified of the unknown. We find that even in rather well trained individuals. I saw it in 1942 in England in going through their chemical warfare training schools; that they were quite open and frank and matter of fact and confident about mustard gas and their defense against it. But when you mentioned this new and fearful nitrogen mustard, about which they knew practically nothing, they almost quaked in their boots, when actually when it is known, nitrogen mustard is no more, and possibly considerably less dangerous than mustard gas itself. But there was a true fear of the unknown nitrogen mustard gas at the time.

Dr. Marrazzi: That brings us to the definition of a disaster as involving a real danger. If that were literally true how could a hoax be as effective as it has been in some instances? May not a disaster be entirely mental?

Dr. Star: I don't think you could call it a disaster. It is certainly a scare of some kind, and, for the moment, you begin to see the kinds of reactions you might get in a real disaster. From a very practical standpoint, our objection to hoaxes is that once they are over people are so embarrassed and ashamed of themselves that they won't talk about it, and it is not a very practical research situation; whereas, when they have been in real danger, they have every right to talk about it and they will talk.

Dr. Dwight Chapman: I wonder if that is a safe assumption in the purposes of civil defense, let alone the openness to sabotage from rumors, in a community. I am thinking also of the technique of the kind of warning to the civilian populations open to bombing, that there is a raid coming. This may or may not be followed up according to your calculus of gains.

Dr. Star: I am sure that all of these things figure in psychological warfare and in the defense of psychological warfare, but I don't think we should try to include them all under the heading of disasters. They have certain similarities, and a population's reactions may be quite uncontrolled and in need of control. In this sense, there is a common set of problems.

Dr. Chapman: It simply seems to me that your two criteria for defining a disaster, something which happens to an organized community, and which is of the nature of something which throws it out of its normal organization, are better criteria than is criteria of the reality of the threat. Those two I would almost consider quite enough.

V. SCOPE AND OBJECTIVES OF OTHER DISASTER RESEARCH PROJECTS: A. PROJECT EAST RIVER

Dr. Dwight C. Chapman, Project East River

There isn't a great deal to say about Project East River except that it is quite general because we are still relatively early in our work; but I suppose the main things are: What is it? And what is its mission? And where is it?

What it is: It is a project jointly supported by the Federal Civilian Defense Administration, the Department of Defense and the National Security Resources Board. It is operating on a contract let through the Associated Universities, Incorporated, which is an organization of several major universities which provides the service of mounting such projects when they become advisable and which runs the Brookhaven National Laboratories out on Long Island.

The mission of the project is that we are to examine the available information and research concerning the problem of civil defense of the United States and to come up in June with recommendations based on that information for what seemed to us the most necessary and feasible and desirable civil defense measures, including, I think, recommendations also as to further study which should be made of various civil defense problems.

The group itself is a highly inter-disciplinary group, and we have on it one person who is nearly anything that you might name that is conceivably connected with civil defense. It runs from medical people to people who are experts on transportation or construction of buildings or insurance or atomic weapons or biological warfare or mass reactions and so on.

The project is, of course, interested in the problem of what faces us by way of public reactions and the end-discernible measures to control these, and to make people's behavior as effective in saving life and property in cases of catastrophe as possible; and that of course is our interest in this kind of research, as well as in all sorts of other research that are connected with civil defense.

Where we stand is that we are relatively early in our thinking and putting-together of ideas on this project because we have been through a long but very useful series of briefings, information-giving sessions, with the agencies that are concerned with various aspects of civil defense and the Civil Defense Administration itself, the Department of Defense, and so on. We have been getting an over-view of the problem and an over-view of how civil defense is now operating and so on, and we are beginning to split into working groups on various particular problems, including such problems as those connected with disaster.

I would be glad, if I can, to answer any questions; but that seems to be the picture as it now exists.

Dr. Powell: Do they contemplate any actual field experimental or investigational work?

Dr. Chapman: We are not a research-doing agency in that sense. I think it would be rather more our job to discern such

things as occurred to us ought to be done, and to recommend that they be done.

Dr. H. Kenneth Gayer: I would like to add one phrase which we have applied to the project, and that is "an optimum combination." We feel that there are so many different measures that can be taken in civil defense, and that these overlap and have an affect on each other. For example, the favorite one to cite is that, given no warning at all of the attack, then there is not much use in having shelters. If you have a very limited warning of two or three or five minutes, this conditions your shelter program to providing shelter very close to where people are. Given long warning, long enough, presumably, you could get everybody out of the city, and you don't need any shelters at all. We are striving, through project East River, to get at that optimum combination with the potential of the funds that are available.

Dr. John Spiegel: I don't want to seem too curious, but what is the meaning of the term "East River"?

Dr. Chapman: Nothing at all. As I understand it, it got named when some people were sitting at the Associated Universities office up in the Empire State Building and were discussing this, and somebody looked at the East River and said, "Let's name it that." This is just a kind of military procedure in which you have a handy name for every project, and the handy name is anything that is easy to say or easy to remember. I think also there is a requirement that it be two syllables or two words.

Dr. Marrazzi: I would like to ask a rather naive question. Are you so far finding that there are valuable sources of information on measures that one may take?

Dr. Chapman: Well, that seems to me to be the case, that there are certainly valuable sources of information, and I think that the sponsoring agencies have done well in getting this information.

Dr. Marrazzi: I guess what I mean is, are your sources of information all hypothetical or are there some that are based on experience? For instance, you get information from us. That is based on the effects we know and what we imagine are the things that civil defense might do for itself. We don't know.

Dr. Chapman: We are very much in that position too. I don't believe we have become aware of any mine of information that you are not aware of in the matter of disasters.

Dr. Marrazzi: And the situations outside of the United States are not altogether pertinent, are they?

Dr. Chapman: Well, I suppose, even worse, one does not know in what respects they are pertinent or not, because cross-cultural predictions are pretty treacherous.

Mr. Sidney Roth: I would like to add two points to what has been said. One, in answer to this last part, that we are not unaware of the possibilities of studying foreign disasters. They may be fruitless and they may not be, as was just said. We have this great difficulty of cross-culture. Two, the implications of the project are not only for Federal Civil Defense Administration, but they cut through the total civil defense structure, ans the practices affect not only the civil defense organization but the other sponsoring agencies; so that, for example, a philosophy of civil defense, we trust, will emerge, which will be integrated within the total national security structure. And that I think is a very important contribution which East River can make.

B. DISASTER RESEARCH IN THE FEDERAL CIVIL DEFENSE ADMINISTRATION

Dr. H. Kenneth Gayer, F. C. D. A.

The research activities of F. C. D. A. include one that does come rather directly to the meeting today. We have had, for the past two years, a contract with Dr. Lickert's group at the University of Michigan; more directly, with the Survey Research Center, under the direction of Angus Campbell. They have carried out so far two rather broad-gauge surveys on public attitudes and opinions regarding civil defense. The first of these was in September of 1950, and the second one in August of 1951.

First of all, those were surveys into the eleven largest cities of the country. It was not intended to be a national survey. It was a survey of those cities alone. The second of those surveys did go into the suburbs, somewhat, which the first one had not done. Our plan is to follow this up with a third survey in March of this year, covering the same cities again, going into the suburbs a little more deeply and sampling small towns and the rural element of the country.

Back of that is our very strong feeling that the success of the build-up of civil defense efforts in the country hinges pretty much on public acceptance of the program as reflected in the actions of Congress. There are something like 90 million people who do not live in towns, and 60 million who do, and so the controlling factor may well be the rural element of the country as against the city element, whereas, it is the cities that are subject to attack.

I did not come prepared with anything to draw upon as to the results of these surveys; but in a general way the surveys have shown that there is a rather thorough acceptance of the responsibility of civil defense on the part of individuals, provided they have somehow learned what civil defense is, enough to know that it is something that individuals are going to have to volunteer their efforts to. There have been wide-spread charges of apathy concerning civil defense. I think our survey shows it is not apathy, but a lack of awareness. Possibly with any specific questions about these surveys, I might be able to recall what the facts are, but I did not come prepared to speak on those. I don't think they are really very germane to disaster studies of the kind we are talking about here.

Our contract with the University of Michigan provided, in addition to the public attitude surveys, for rather intensive studies of several selected communities. Some work has been done on this but we have not actually selected the community and the studies have not been made. Our objectives there were to get at factors about organization and leadership and the position of civil defense in the city's structure and thinking, so that it would give us a clue to what makes civil defense go or not go. As I say, we have not gone very far with that.

A third topic to be taken up by the contractor was to design a disaster study facility and to get it into a state of readiness to go into field work if we directed it to be done. This work has gone to the point of having the manuals, forms, instruments, whatever are needed to do this kind of work

for the training of field workers--these are all ready, but we are having to defer any possibility of field work for two reasons. One is that we wanted first of all to be coordinated with the committee on disasters which we have jointly requested with Defense and others that the National Research Council sets up. Secondly, we don't have any money for it. So for that reason we have not gone any further with actual disaster studies under our direct sponsorship.

Now, there are other research projects which have some bearing on the problem of disasters, naturally, since they are aimed at getting some answers for civil defense. For example, we have a contract just about completed on the design of shelters. That is a technical design contract. We have had studies under way for more than a year by the Census Bureau on population distribution. First, they know the resident population. We are getting from the Bureau of the Census, their best estimate of the peak population by census tracts both day and night, so we can get a pretty good idea of where people are during the different times of the day. It is remarkable, on the average, I believe cities increase about twenty per cent during the day time in actual numbers of people who are there over the resident population. In the congested downtown part, this increase over the average density may be as high as seven or eight times, as figured on a square mile basis.

We are following that up with studies to estimate the number of casualties, if you assume a ground zero point at the most congested part of the city, and figuring the effects, using the effects data as best we have them from the Department of Defense and the AEC, what the number of casualties would be; and these are much more blood-curdling, I believe, than the figure Col. Wood quoted this morning. The number of casualties, on the average, I think, if you take the total of the major cities, around 70 or 80 cities, the average number of casualties, with the bombs which the AEC said we must calculate now to be somewhat larger than the nominal bomb, the number of casualties may average around 130,000 to 140,000, rather than 50,000 or 60,000.

I believe those are the main studies that would be of interest. I will gladly expand on them if you would like.

Mr. Roth: I would like to add a quick comment to that last point. One of the things that we have been trying to find out, really, is what is the basis for these statements that there will be casualties of X number of people; and the best that can be said, I believe, is that we are extrapolating from Hiroshima and Nagasaki experience, with a factor of something. When we consider the differences in geography and structure of American cities, this leaves a question mark; maybe not as big as some of us would like to think, but nevertheless, a fair-sized one. This has great implications for setting up a civil defense organization in terms of requirements and personnel and structures, all the way up and down the line.

Col. Wood: One point that ought to be made clear is that in lower Manhattan, for example, where the streets are largely caverns, the buildings, from the standpoint of the initial flash, will offer very great protective value against burns. Only those people who are more or less under the flash would be seriously burned. Also, certainly, there would be some protection from blast due to those structures.

Dr. Gayer: It apparently goes beyond the capabilities of any group to analyze the effect of shielding both from blast and radiation, both thermal and nuclear radiation, to analyze what this combined effect may be.

Dr. Marrazzi: I believe, as Dr. Roth knows, that the most detailed estimates of that are available in the Radiological division, because it is their business to make such estimates.

Mr. Roth: It would be interesting to note, also, that a group has gone through the effects handbook and have discovered some rather serious errors in calculations there, which are currently being taken up with the Atomic Energy Commission, who have agreed that there are serious errors there.

Dr. Gayer: I would like to say one more thing in passing, if I may. We have felt that probably the civilian defense in the country is so vast and complex that the only approach we can take is the very broad approach which is represented by Project East River, and we look on that as the foundation structure for the future attack on our problems, separating out into different fields. The things we have done up to date have been pretty obvious and I think we probably have not gone too far off the track in having them done, but I hope these will give us some guide lines.

Dr. Fenton: Would it be appropriate to inquire now about other projects? I understand Dr. Gayer says that, other than the Survey Research Center, you have no other contracts on a national basis. I wonder, are there local contracts between state civilian defense organizations and local university groups that might be worth mentioning briefly?

Dr. Gayer: I don't know of any.

Dr. Fenton: I understand that New York State and New York City group has undertaken some study on an informal basis, but I have no information about it.

Mr. Roth: They are. At New York University last year--I guess it is more than a year now--they formed something called an Institute of Disaster Prevention and Control, which did a little work with New York State in studying some work in connection with civil defense, but it was of a minor nature, and I know that they are undertaking the kind of study that your federal team is undertaking in several cities.

Dr. Powell: It seems to me we are talking about research at two levels here, really, aren't we? One is research extrapolating from what is so far known into the probable magnitude of conceivable disasters. The other thing which, in comparison with that--I don't know whether Dr. Star would agree with me--but it seems like testing out a slingshot to see what will happen when the volcano goes off--the methods of research that are available to us. As a matter of fact, the analogy in my mind is really that wonderful job of extrapolation that was done originally in the Manhattan Project, where you had a fraction of a micro-milligram or something of a new substance and determined its properties under a microscope, and then built a multi-million dollar plant based on the derived principle. Maybe that is something like

what we hope we are doing; taking the reactions of people in much more homely levels of accidents, and seeing if that would give a basis for coming at these predictions in another way, on the other side. I think actually one of the problems of research that probably every one would be happy to bypass is whether the sheer change in quantity can eventually become a qualitative change, or should we just let that go by the board and assume that what we find for a few hundred people probably would be validly applicable to 100,000.

VI. APPRAISAL OF PAST EXPERIENCE UNDER NORC DISASTER RESEARCH CONTRACT AND PROPOSED REVISIONS IN PROCEDURES

Dr. Shirley A. Star, Disaster Project Director, NORC

We spent most of the morning sketching out some of the broader scope of combined research in the field, and then I dealt, in some length, on what our objectives were, as well as some of the general formulations which are beginning to emerge from our work.

Just as a sort of review and proof that what we are saying is relevant, we got the objectives out of the way this morning. Tomorrow morning you are going to be hearing some concrete field reports from our investigations and other investigations. Before we get to those, we would like to dwell right now on what procedures are used in getting these data. We would like to describe exactly how we go about making one of these investigations, and indicate what some of the problems were and still are, and then we hope that tomorrow afternoon all of those who have not yet had the opportunity to talk at great length will bend their talents to telling us how these problems ought to be solved.

Just to put this all in context, I think this morning we were talking about step one in a piece of research. We were defining just exactly what information it was we were going to seek. Then we got around to step two, which is to decide who or what is going to be the source of information. And step three: How shall we get the information from this source. And step four: What do we do with the information after we get it.

Now, I think I said enough about step one this morning. If you want to reduce it to a single sentence, our objective is and has been from the very first formulation we ever made, investigating just about every aspect of human behavior that has to do with disasters. That is probably the most accurate if not the easiest working definition. It is a kind of shotgun approach in research, with broad objectives, as compared to singling out some nicely-formulated problem of human behavior in disasters for investigation; but I think research has to begin with a number of these more broadly descriptive types of studies before you can begin to formulate the precise sub-problems that can be investigated; so that except for the kinds of difficulties we get into and our staff gets into in having to be prepared to investigate almost anything, we haven't any real objections to the way we have defined the problem. Some of you may see more serious difficulties with it than we have.

I will leave that for the moment and come to what have been the more difficult problems for us. We have defined this study as a procedure of getting our information by interviewing people, primarily--almost entirely. Now, if ever we carry out this full scale study of disaster we talk about, one of the most serious questions we are going to be up against is to define just who are the people who should be interviewed in this sort of a situation.

To give the results any generality and reliability, we have always felt that some systematic sampling procedure would have to be used. But just like that questionnaire this morning, we really are not in a position to design a

sample until we know exactly which town we are going to be studying, and, I think more important from our standpoint, what condition we are going to find in that town when we get there. For this reason, one of the staff members of the disaster research team is a sampling statistician, and his only task is to move very quickly into the disaster-struck community once we know it, and figure out practically overnight some way of sampling that town, no matter what condition he finds there.

In anticipation of this D-day that we keep waiting for, we have had hypothetical discussions about how we might proceed if we found that, or if we found this. And I think we are pretty well agreed that the major consideration in sampling of this kind will be to give proper representation to subgroups in the population who are defined primarily in terms of the degree to which they were hit by the disaster, rather than more permanent characteristics. If you take a focalized type of disaster, if you think of a thing that starts with a dock explosion, for instance, the sampling might be pretty much the same thing as taking successive samplings at points more and more geographically remote in circles around the focal point.

But in other types of disasters where the areas of destruction are not that clearly defined, we may simply have to classify the people who lived there--and I said "lived" in the past tense, before the disaster struck--into the dead, the hospitalized, those evacuated, those homeless, those in relocation centers, and take samples of these relevant groups--excluding the dead, of course.

Another approach that we have given serious thought to is to reconstruct the location of houses in the town before the disaster struck, and take a sample of those houses, tracing down the people who are no longer in the houses--that is, where the house is destroyed the people have gone somewhere. They are among the dead or hospitalized and can be located, we hope. We have discussed the tracing out then from a series of the housing standing before the disaster, to the people who lived in those homes for an interview. In other words, we are committed for this one full study to interviewing a really representative sample of the disaster-struck community; and beyond that, these primary informants I have described this morning--people who played special roles in the disaster and can give us some broader point of observation than the average person. But we still have no procedures in mind. We are committed to improvising the best we can under disaster conditions, and we have not been able to do very much in the way of preparing this sample. In the nature of the problem, I just do not see what you can do to get ready for sampling, and, aside from the fact that our statistician gets periodically uneasy about this, it is not a pressing problem.

The bulk of our attention has been concentrated primarily on how we are going to get these data. We have been recruiting, training and maintaining a staff of interviewers. This is what our contracts really provide for. Mr. Fritz will be telling you more about our interviewing techniques, but I will say just a word about the kind of interviewing we do, in order to make clear why we have had so many problems.

We simply did not feel from the start that this was the kind of research that could be approached with a relatively simple question-and-answer technique. If you are thinking of the kind of thing people ordinarily think of when you mention polling or public opinion surveying, that is not what we

are doing. It just did not seem that the subtle kind of material we were after could be gotten by a simple procedure like that. What we have been doing, and always planned to do, is an intensely qualitative interview. Actually, we think of this interview as having two major parts. In the first part, we are just trying to get the individual's life history during the disaster; where he was and what he was doing when he first realized that something out of the ordinary was happening; going on through to the end, as I said this morning. And all of this is to be accompanied by exactly what his thoughts or fears or anticipations or emotions were at any stage of the game.

We have a short-cut vocabulary for this. We usually refer to this as getting the inner and outer chronology of the individual's experience during the disaster. Beyond that personal chronology that we get from each respondent, we also want from each individual the kind of information that is probably more usual to survey investigations. We want his observations and evaluations of how other people acted; how much damage was done; why so much damage was done. In other words, summing it up, we get his experiences, on one hand, including this inner life experience, and his opinions of the total situation, on the other hand.

And in getting this information it comes out almost in any order; it is hopeless to believe that you can start a person at the beginning and keep him going to the end and get any kind of a useful interview. The order of the material in the interview is set entirely by the respondent. He starts at one point and goes in any direction; he back-tracks, and picks up six hours earlier, and goes all over the place. I think, if I don't pat ourselves on the back too much, it is in many respects very close to being a psychiatric interview, in form and in difficulty, although we, of course, have no therapeutic intent and do not have quite as much of the individual's life to cover nor any need for as deep exploration.

The point of giving you this description of the interview is to stress that it requires tremendous interviewing skill. The interviewer has to keep the respondent talking; has to keep track of what has been covered and what has not been covered; the little clues in what the respondent is saying; the things he is not saying and should be later brought to say, and so on. There are just relatively few individuals who have this skill to begin with, and certainly of the few who have it even fewer of them are either interested in or able to meet the rigorous conditions that we have to set for positions on the disaster research staff.

The staff is organized about as follows: There is a project director at the top of it, who does nothing--that is me. I plan, coordinate and supervise, I suppose. And directly under me is Mr. Fritz, who is assistant project director and full-time field and staff director, who does the work. Attached to Mr.Fritz are two assistant field directors. One of these is the sampling statistician who does not have anything to do until we sample. The other is Mr. Gorden, sitting at the end of the table; and he and Mr. Fritz carry most of the responsibility for training and supervising the 17 interviewers who make up the staff.

Now, aside from Mr. Fritz, the sampling statistician and myself, all

of whom are full-time members of the NORC staff, the disaster research staff people are all part-time workers. They are paid for 20 hours of work a month, and they are not paid very much for that--that is, when they are not actually in the field. In the field they are paid for all working time, when it comes to over 20 working hours; but the minimum carrying rate is payment for 20 hours a month. In return for this munificent employment, they are pledged to leave for the field on 24 hours notice at any time during the year, and they are subject to two or three such calls a year; so you can see that being on this research team is not only being badly paid, but it is extremely disruptive to anything else that you may be doing. Holding a full-time job, subject to being dragged off at any time, is not an easy arrangement to come to.

We have been confronted from the start with very difficult recruiting problems. People who already had the requisite interviewing skills--people like psychiatric social workers and other types of professional interviewers --always had other job commitments which simply did not permit the kind of flexibility that we needed, and we could not find trained interviewers. We had to come to a decision to train our own staff; and we ended really by building this staff out of graduate students in the social sciences. We figured we could get students who had some theoretical interest in the research problem and sufficient background in psychology, social psychology or sociology to have some of the insight needed to do the kind of interviewing we were trying to do. And in all honesty, to get it on the record, we came to students because students would accept the theoretical interest of the subject matter, the chance to get practical field experience, or the possibility of developing related theses and dissertations in the project in lieu of adequate pay and employment. And being students they do have sufficient flexibility in their schedules to get out in the field when we need them. But being students, they are in a very impermanent state of life. Sooner or later the day comes when they are not students, and the day they are not students they seem to want a full-time job, and, once they want a full-time job, they don't want to be on the disaster staff any longer.

What we do is sign the staff to one year contracts, which we try to make as water-tight as possible; but any time a person really wants to get out, there just isn't any sense to enforcing the contract, because this is not a field where the unwilling worker is going to deliver the job you need done.

We have even finally succeeded in staggering these contracts so they do not all expire at the same time. At any rate, there is a tremendous turnover in staff. We have to figure on a 100 per cent turnover in the course of a year. This is the most difficult problem from all points of view. We recruit this staff and spend months of the year teaching them the basic interviewing skills they need. The year ends and the staff disappears, and we start the whole process over again. So the whole thing is both expensive and frustrating.

Under this contract the Army Chemical Center is normally making an investment in highly perishable capital equipment, and if at the end of the year the equipment has not been used, it just vanishes and you have to start making the same investment over again. There is a great deal of effort and a lot of money too being spent without very much tangible yield. This is one of the things that is most disturbing to us who put forth the effort that goes

into this. And it might even be disturbing equally to those who put up the money. I am not sure there is any real solution to this problem, but maybe we can come back to that when we have seen the other problems of the staff.

We define, for our own purposes, the 20 hours of work a month that each staff member performs as a minimum, as being entirely devoted to training to do the real, full job should a disaster ever occur. They come to us as not very experienced interviewers. Some of them have done some interviewing in a graduate course or two, or on their own research problems, but not much more. We spend a great deal of time and a lot of supervision in trying to turn them into good interviewers. We succeed pretty well, but it takes work.

The training is a minimum amount of reading whatever has been written on disasters, on which there is not much, and what has been written on interviewing techniques, on which there is even less; and we hold a monthly staff conference for the discussion of substantive problems and problems of interviewing technique; but above everything else, training consists of practice and more practice.

Under the previous contract we had with the Army Chemical Center--and it was the way we originally planned it, and I am not criticizing Army Chemical Center--the only funds we had provided for this training covered only the monthly payments for 20 hours' work and supervision of this work. This arrangement forced us to use whatever we could find in Chicago by way of training situations; and for the period of almost a year that the contract was in force we became the greatest ambulance chasers and fire engine chasers on record. We still get a daily listing of all fires that take place in Chicago, and even now, I believe, we cover every important fire in Chicago.

The episodes we covered and still cover in Chicago have one thing in common: they are all situations in which people, preferably more than one, have been in some real danger. This meant that, in miniature, they did contain some of the problems people would face in a disaster, and allowed some practice in techniques. Aside from fires, we have covered collapses of buildings and small bombings and major transportation accidents, and there was a hold up or two, I believe. We have covered all these minor personal crises in Chicago. In the course of that first year, when we were working solely with incidents of this kind, we were not only training interviewers, but we were working out our own techniques, both of training and what we were trying to do and the best way to go about it. As I recall it now--of course, this is almost 18 months ago--we began by just leaving it up to each interviewer to locate which incident he was going to interview in, and I think we threw them into qualitative interviewing with no more training than to say "Just ask such questions from the questionnaire as seem relevant to you, and then supplement them with such probes and questions of your own that are adapted to the situation you are interviewing about." This didn't work, but we learned a great deal out of it.

We learned, for instance, that when you talk to any person who has been in any one of these situations, they have a great preference for sticking to the externals of the event. When you ask them how they felt, or what they thought, or what happened then, it is always an external reference. The interviewers also seemed to share these preferences. The fact that they were

interviewing about relatively minor situations which were not fully reported in the newspapers helped them to slip into a sort of reportorial role of trying to find out exactly what happened factually. They tended to slip over into the almost frustrated feeling of, they had to find out what really happened, and we tended to get interviews with a highly reportorial content --whether the fire engines arrived five minutes later or seven minutes later. This was especially true because they were getting only a few interviews in any one situation. In a major study, where you are going to do four or five hundred interviews, the interviewer will soon have a picture of what happened and cannot very well be devoting his interest to finding exactly what happened.

To counteract these tendencies we had to incorporate several things into the training. The first thing we did was to tear up the questionnaire for the time being. Inexperienced interviewers fell back on this question and answer format whenever they didn't know what to do, and, because there were a lot of questions of fact in this questionnaire, every time they fell back on the questionnaire they found another question of fact in this questionnaire instead of a question of feeling or emotion. We concentrated several months' interviewing practice on just interviewing for feelings, with relatively little attention to any of the other objectives. One month, for instance, the interviewing assignment said, "Probe such words as 'hysterical,' 'scared,' 'nervous, 'numb,' etc., and see how much more you can elicit from the respondent on what he means exactly when he uses such words." This, of course, results in another kind of overemphasis and later we have to counterbalance that by reintroducing the other phases of the investigation.

What we have found is that it is easier for training purposes to start with the difficult parts and add the easier ones when the difficult ones are grasped. Nowadays we simply start right off from scratch to teach a person how to carry on a two or three hour interview, simply from a knowledge of the broad objectives of the interview and an opening question like, "Tell me what happened."

We also did a lot of experimenting with interviewing people at various points removed from the incident. Since it was likely that in any real disaster, people would vary in the degree to which they were hit by it, so it is realistic training to see that our interviewers take one incident, and take the central victim, his close family, neighbors, and get people more and more remote from the incident. Doing this, from a training standpoint, puts the emphasis on how reactions will differ with where you were in relation to the disaster, and takes the emphasis away from the facts of what actually happened in that disaster.

Incidentally, it also got our staff somewhat closer to people who had the gory stories to tell. One that we covered, a slum fire in which a number of children were burned to death, ended with two resignations from the disaster staff, because they couldn't take the constant listening to details of this sort. But I think we would rather lose them early in the training process than to get them out into something really disasterous and find out they cannot go on working.

There were a number of other procedural problems that we had to play around with that we no longer have to worry about. One of them was, how long

after the event could we get a useful account from the participants? Two years ago there was a great deal of concern about this. Some of the participants at the conference then felt if you didn't get the people in a matter of not hours, but minutes, that you couldn't possibly get an account. We have tried interviews now from a matter of minutes and hours after a happening to several weeks after a happening, we now feel that the field schedules we have planned of doing the bulk of the interviewing in two weeks after the disaster is quite realistic, and the information you get will not be too much clouded by the time element.

Dr. Chapman: How did you get that? Did you interview the same situation at various periods?

Dr. Star: Comparable situations rather than the same one. We have interviewed people who have been involved in fires of a certain type with no loss of life, but danger and some loss of property. We must have had fifty or sixty of those. Some of those people we interviewed immediately after the fire, and some of them a week or two weeks later. We might interview several families involved in a fire over a period of weeks. Not that we get the same stories from everyone, but we do not feel that the quality of the material we get has been much affected by the passage of time. The event is still quite vivid to them, and their stories don't seem to be frozen by constant repetition or rationalization either. You can't say that definitely on the basis of experimental test, but at least we have inner confidence in that now.

Dr. Chapman: Couldn't you test it fairly easily by taking one in the same disaster, and extend your interviewing over quite a length of time?

Dr. Star: We have done that, as I say. With a given fire we may have interviewed the six families involved over a long period of time. This is not an exact test because the fact that one family gives you a different set of reactions than another family might have been true if you interviewed them both at the same time. All we can say is that the ease with which we get the data, the richness of the data, and the completeness of the recall does not seem affected by the time lapse.

Dr. Spiegel: I would certainly go along with what you say in this matter during the war. Sometimes you had to wait because after the immediate disaster or trauma you could not get so much material. There was too much disorganization.

Dr. Star: I think that by getting these things quickly as we try to do, we put a premium on getting the material in a disorganized fashion, and create a problem of dealing with the material after we have it.

Mr. Fritz: There is one remark that might be made. I think the later interviewing does perhaps place a little more burden on the interviewer. After most disasters, after people have talked it over, there emerge certain consensual elements, certain agreements about the story and so on, and we are quite aware of that problem and we continually have to have the

interviewer sensitive to going back and trying to separate out the consensual elements from what his initial definition of it would be.

Dr. Star: Isn't it true that we have this problem no matter how soon we interview? Didn't you make the point that people have a great deal of difficulty distinguishing what they thought then and there, as we get this time sequence, from what they later thought about what happened then and there? This is a difficult distinction to make, no matter when we time the interview.

Mr. Fritz: I think we have good techniques for getting at that. When we get a remark that sounds like it might be consensual, we say, "Did you actually hear that?" "Did you actually do that" or "see that yourself?" You're continually having to separate that out, if you are interested in the individual element. Of course the collective elements are important, and we are interested in that, but we try to separate it out; and it can be done fairly well if the interviewer is sensitive to the problems.

Dr. Hughes: I've heard from the people who are doing this kind of thing for the Canadian Army that they did a time lapse study. The story, as I remember it, was essentially, in the first few days after this very large and disastrous fire--well, the story was that some little nun in the town took things in hand and ran it pretty well, and there was some hostility toward the priest and the mayor. Within a month later they had corrected this situation and they had come back into their proper roles, and authority took its place and everyone believed they had done the right thing. I don't know whether those reports are available or not.

Dr. Marrazzi: You said that the immediate technique places a premium on disorganization, which of course, it does. But isn't that one of the things we want to know? You have to allow for that.

Dr. Star: Yes, and no. You might hear a recital of how disorganized the behavior was in an orderly fashion; or you might hear how disorganized the behavior was in a disorganized fashion, which makes it more difficult to follow the account of the disorganized behavior.

Dr. Marrazzi: Do you later get an adequate representation of the disorganization?

Dr. Star: Yes. That is what we mean when we say that in a given disaster situation the picture that would emerge of what happened there would not be too different if you interviewed a week later or a day later. You start early and you start as soon as you can, and you keep going until you are finished. So one of the things we discussed with the sampling statistician was to sample through time, so we could have matched samples of people at different time points along the way, and in doing a full scale study we would have more definitive data on how much difference in the picture we got that the lapse of time was making. This may not be possible under the field conditions in emergency and rush, but we certainly have it in mind.

Dr. Spiegel: Is there any way you have of getting at the reliability of the individual? For instance, again to come back to

the traumatic neuroses of war, interviewing under the effects of drugs, for instance, we found that there was a type of individual who would give you inaccurate data. We had one person who described an entire mission with all the traumatic events that had occurred, but it had never happened to him. It had happened to another person.

Dr. Star: We encountered this just once, and it was in reverse. This was a girl who had behaved very badly and hysterically as a spectator to a fire in which she was in no danger at all. She had to be carried to the ladies rest room. Ice was put on the back of her neck. She had gone completely blank. Her account of her behavior had nothing to do with six other people's accounts of how she behaved. Here we have to rely on the fact that we do hear from other people how other people behave. We get both their own behaviors and their observations of others. One thing we know, for instance, is that, in everybody's account, he himself has played a far more heroic role, usually, than he plays in anyone else's account. The only way you can single out the real heroes and the real leaders is to watch the people who do get mentioned by other people. Almost everyone sees himself as the central actor in this drama, and, therefore, his account has that kind of subjective distortion which we allow for. From his standpoint he is quite correct.

Dr. Fenton: I'm interested in this problem of sampling because it presents itself in ethnological studies, where very often you have to work with subjects or informants with whom you come in contact, with whom you can establish rapport. If you are going to interview several hundred people do you take them at random, or do you give any priorities to parts of the society, or the various roles and statuses that these people occupy in the society?

Dr. Star: They would be random within some set of strata, defined for the needs of the problem. In disaster, the main thing we would be trying to do is to make sure we had enough cases of each degree of involvement in the disaster. So the main sampling problem would be, how shall we get to the hospitalized? How shall we get to the homeless? How shall we get to people who were only midly hit? And various other special groups in the community. Within any one of those groups, we would try to take a random sample, in order to be able to generalize our conclusions to the whole community. Where you use selected respondents, you really are on very shaky ground for generalizing your findings to anything beyond the group interviewed.

Mr. Hart: Except that we do go beyond the sampling to interview key people; but we don't look upon them as a sample. We look upon them as roles within the society, so to speak.

Dr. Star: Yes, we look upon them as informants, as separate from the subjects of the study. They have special knowledge of what actually was done.

Dr. Fenton: The other point that struck me as a close parallel to ethnological studies is the random order in which the information comes, so that you have to follow down leads as they develop. In my own experience, in ethnological field interviewing, where you try to follow with many informants a set schedule of events, you find what you call a good informant--a person who has considerable information or interest in a

problems, and he soon gets off on some tangent that suddenly becomes much more important to you and him than the events on the schedule. After several days of this, you find you have no balanced data, but you have some nice depth in data on some event.

Dr. Star: What we do is a compromise. I think the worst thing you can do is to cut the respondent off when he is telling you something relevant, because it's in the wrong order. But what we do say is that it is up to the interviewer to hang on to that respondent long enough, so even though he goes into greater depth on some subjects than other respondents, he also covers every other subject that we want covered.

Dr. Fenton: I am also struck by the fact that there is a lack of literature on interviewing. I know that in ethnology you can never get any person to explain, that is, short of demonstrating his method of interviewing. There is no written account of how Kluckholn does his work or of how I do mine, or how anything is done.

Dr. Star: I didn't really mean to say there was no literature on interviewing. I meant to say it was like disaster where there are 2,171 items in the bibliography, but really not worth reading.

Dr. Fenton: There is no data on ethnological interviewing, although a great deal of it goes on.

Mr. Hart: You can almost make the statement general at least by saying that the literature on interviewing is thin and spotty. Every organization has its manual. In the last three years we spent a good bit of Rockefeller money studying certain phases of the interviewing process; but that is not available yet to other people.

Dr. Fenton: Would these persons who have escaped from your training program, to other occupations be available as possible recruits for local teams?

Dr. Star: I doubt it very much.

Dr. Fenton: That's one of the problems. If we are going to have these twenty teams over the country how are we going to recruit people for them? Are we going to train people de novo or are we going to be able to find people who have experience?

Dr. Star: I no longer believe, as I once believed, that a disaster research team was a resource: that you invested in recruiting and training it, and then you filed it under "R" or "D" or something and kept it there until you needed it. It disintegrates in your hands, and the problem of recruitment for your teams will be exactly like ours. Who wants to commit himself to leaving on a moment's notice, no matter what he is doing? Very few people can do this, and they cannot go on doing it indefinitely. I think you are going to be up against the same sorts of problems that we have been up against in this situation.

If you fall back on students, you fall back on a group which, for any

given disaster, may be inexperienced. When we had our entire staff turning over at the end of a year, we were in a nasty spot because there was a month or two when we had a totally inexperienced team, and just at that time a disaster might occur. Now we have it staggered, but the team is never totally inexperienced, but, by the same token, the team is never totally experienced, either. This is the best we can manage.

When you get those twenty teams, I would like to see them.

Dr. Marrazzi: Are you really saying that it is a financial problem as far as training of the individuals; because obviously, if you take part-time graduate students you must have a turnover. You know that ahead of time. Is it impossible to get permanent additions to your staff? Or is it a financial problem?

Dr. Star: If you want to pay 25 full-time people to do something, I am sure we could put them to advantageous use when they were not interviewing. The bibliography needs work and so on.

Dr. Marrazzi: Let's put the question this way: Do you get enough return out of your investment in the part-time people, or is it necessary to consider a much greater financial investment? Otherwise, the results may not be sufficiently worthwhile. How would you react to that?

Dr. Star: I would like to postpone most of this sort of discussion until I have completed the picture of what we are doing. But I would like to say that this is feasible, to get 25 full-time people and to employ them usefully while they await field studies. But I think it would be very difficult to maintain the morale of a staff like that, which is one of the problems that occurs.

Mr. Hart: I don't think it would be possible to maintain them, unless there were far more ample funds for travel and maintenance in the field so you could cover a wider range of disasters and keep them more actively employed, even though they were full-time. It isn't the full-time or the part-time factor that operates there so much.

Dr. Star: It is the morale, the opportunity to do something.

Mr. Hart: Training becomes stale and flat unless you have an opportunity to do something.

Dr. Marrazzi: You could do that with the possible expansion of the program.

Col. Wood: If we do establish twenty teams throughout twenty strategic areas in the country, and it is proposed that the National Opinion Research Center operate on a national basis, might not you wish to send two or three interviewers or perhaps more to almost every disaster which is investigated by a local team? If that is the case, the chances that you would have a great many more to investigate, at least in part, would exist and build up, it seems to me. You could then usefully employ full-time people to a much greater extent.

Mr. Hart: A question was raised by what Col. Wood says, and this is the problem which Dr. Star raised this morning, and which will also be discussed tomorrow: that is, the question of what kinds of disasters we are studying; and we would hate to be put in a position of having that choice made for us in twenty different places, let us say, by people who are in no sense under our control, with whom it might be difficult to maintain sufficiently close liaison. There are a lot of questions of that sort.

Dr. Star: I think these questions now cut so broadly that I would rather we go ahead.

Dr. Marrazzi: I would like to make one more comment that is pertinent to this one. It is my impression that the sampling statistician, then, occupies a really key position, and determines the whole outcome of the experiment; and, of course, in keeping with that, he is a permanent member of your staff; but it is such an important position that I am impressed with the responsibility that particular individual must show. The whole experiment actually is to a very large degree determined by him.

Dr. Star: That isn't the way the research operates. In the first place, the sampling applies to the full-scale study we have never done. In the second place, the general plan of the sampling is a decision that is primarily in the hands of the project director. It is up to the statistician to execute that plan.

Dr. Marrazzi: Granted; but if it is going to have statistical validity, it is the sampling that will determine that.

Mr. Hart: He would come under the project as a full-time person, when a full-scale study was required. He would not be doing this with his little finger. He would be right there in the field.

Dr. Marrazzi: I think I have served my purpose if I have underlined that point. To me it is very impressive.

Mr. Fritz: I wonder if I could make one more statement with regard to the sampling. Dr. Star was talking at this point about the final study in terms of sampling. On our actual field trips--I might as well indicate this now--we usually sample in a sort of structured-purposive way. We do a lot of cross-checking, get a lot of cross references in the interviews, and we try to build up a purposive sample and supplement that with random samples as well--rough random sampling. In a town like Flagler, we will try to find who were the informal leaders who emerged--this comes out from the interviews; then we will interview some of them; at the same time we supplement it by having the interviewers take every third house and get interviews there, so we can get the full range of involvement between the maximally involved and the minimally involved. In this sort of situation it is slightly different than the final study.

Dr. Fenton: You do run into the situations where if you don't talk to A first you cannot get anything from B and C, because of the status relationships in the community between those individuals.

Dr. Marrazzi: In these rather small disasters wouldn't it be possible to employ both methods on a comparative basis? That is to say, you can really interview every one concerned, and you can also try to sample, and then compare them.

Dr. Star: You cannot always interview every one.

Dr. Marrazzi: I said in the selected small ones.

Dr. Star: In the small ones you cannot get anything from the sampling, however. You have to have a large population to get a sample that will mean something.

Dr. Marrazzi: Choose one where you can do both.

Dr. Star: A sample that would stand any statistical test would have to have several hundred cases in it. If this is a sample of anything, there would have to be some thousands in the total, and to try to interview all those thousands would present problems of resources and time and whatnot that would make it very trying, to say the least.

Dr. Marrazzi: I agree with all that.

Dr. Freeman: Wouldn't that come out in retrospect rather than in the initial planning, by the very nature of the thing you are investigating, since you cannot plan the disaster or the magnitude of it or the timing? Isn't it necessary to write off a certain amount of effort, statistically, as not being significant, since it just cannot be? In other words, I don't see how one can guarantee that everything is done in a disaster study necessarily to come out precisely the way you want it.

Dr. Star: No, but you can try to get as close to the standards necessary to generalize from sample data as possible.

Mr. Hart: That is not only true in disaster studies; you come out with approximations. Statistical procedures could be applied to a given community after the disaster struck by quick movement on the part of the sampling people. All we can plan in advance is the general guides for the sampling statistician when his services are needed in that full-scale way.

As Dr. Star pointed out, we may find that no matter how much experience we had with minor disasters, and no matter how carefully the plans have been laid, those sampling schemes, even so, may have to be modified in the field to some extent. That I think is in line with your reservations.

Dr. Star: I want to get the rest of the picture of what we are doing before you, and maybe some of the questions can be more easily discussed then.

On this practical operating side, I think the only other thing we finally worked out was the problem of recording these long, detailed interviews. Even interviewers with shorthand, especially those who were relying on their own note-taking systems, could not possibly get everything down that was being said and also listen intently to everything being said in order to remember what other

questions had to be asked, what points needed elaboration, and which objectives were covered and which were not.

We finally made the basic decision to use tape-recorders in the field, for the full-scale study. We also used them on our field trips to record all interviews. This meant we had to add to the interview training the manual skills necessary to operate the machine, and some techniques for walking into a respondent's house and planting your machine down and plugging it into their electricity, and to do this with enough aplomb so there is no trouble, and then get the respondent to forget about being self-conscious because everything is being recorded, and get the interview running smoothly. Mr. Fritz, I am sure, will tell you more about how we handle all these problems. I mention it as that is one of the things we had to work out.

Finally, another one of the problems we had to work out is this business of getting the cooperation of the respondents. I think I said enough this morning in answer to Col. Wood's question to cover that, and so I will skip that now.

Under the current contract, we still maintain this training program in Chicago, which I feel is valuable enough so that, certainly, as a starting-training first step, we would never abandon it. But under the new contract, we are authorized to take six to eight field trips a year to events which you might say are intermediate in importance. Staff members who are not on the field training trip, spend their twenty hours a month interviewing in these local crises. These field trips again are very valuable to us from the training standpoint. One of our big worries used to be that we never had an opportunity for a dry run, a test to see if we could really mobilize the staff that we are pledged to move in 24 hours and get them out of Chicago, and have them organized and equipped so they can descend on the community and start their work.

Theoretically, we had records of the whereabouts of every member of the staff. They had to keep us informed if they moved for a period of 24 hours, and so on; but we just did not know how it would work. And one of the things that we have gotten out of these field trips is the chance to see that our paper procedures will work in practice and they are ready and can move. In the same way, for the staff to have to arrive in a strange place and set up their living arrangements and get familiar with the town's transportation, and learn to get around and reach respondents is a very different thing from going down to the corner and getting on a street car and going over to a fire on the north side, or something like that; and it is good that the staff is getting experience in handling these problems, too.

The other big thing from the training standpoint was that these situations in Chicago were so minor that large portions of our proposal which defined objectives and goals just were not relevant to these sorts of situations. You could not talk very much about leadership and community relief work and aggressions and resentments and rumors. All these things were on such a small scale that parts of the interview got played down to a tremendous extent. We began to be worried that the interviewers wouldn't have much experience in interviewing on these portions of the interview, but they might even be so overtrained on the other portions that they might forget in a concrete situation

to cover the more unique features.

I think Mr. Hart suggested that there were a number of psychological considerations, that there is no such thing in a training program in this field as teaching the form and procedures without people also getting their hands on some content. Although the interviews we were doing were regarded as primarily for training purposes, and the main use made of them was to discuss with the interviewer the techniques used, criticize errors of technique and try to develop sensitivity to the interviewing process, still they did have content that was similar from interview to interview. With a staff of the calibre we have, there was a good deal of consideration of the substantive implications of the interviews and some tentative conclusions and hypotheses were being established which led everyone to want to go further, substantively.

We say, yes, that is interesting, but really you cannot put it to a real test at a fire. Now if a disaster would happen, we could find out more about this. And one of the things that these bigger situations do is to get us closer to a substantive approach. For staff morale purposes, you just cannot go on training forever. The training is being done for some purpose, and, if you are going to maintain the staff's enthusiasm, interest and alertness, they have to feel that something is coming out of this training, that their skills are being put to some use.

Beyond this, we developed the feeling every time that anything happened anywhere in the country, more or less, our tongues were hanging out. We began to feel that we knew more about it than anyone else, and we really wanted to get there and see it for ourselves and get a chance to work with it, and we just were not set up to do this without the field trips, so we did ask for this revision of the contract, and we do now take six to eight field trips a year; but they are in no sense this full-scale study that I keep talking about.

We organized these to send two to four members of the team out to the locality where something had happened; and as you see around the wall, we went to the Flagler, Colorado stunt plane crash, and a series of house explosions at Brighton, New York; we went down to West Frankfort for the mine disaster, and we have gone to Elizabeth, New Jersey for the plane crash a little over a month ago. And we were also there this week investigating the latest one because we feel the accumulative effect of this may have something different than just a single plane crash has. The team stays in the field from a few days to two weeks, as the situation seems to warrant, and as Charlie was just indicating, they try to distribute their interviews between key figures in the community and representative participants in the disaster at various removes from it. But there is nothing like a formal statistical attempt at representative sampling. When they get back, they prepare a report very much like those that you will be hearing tomorrow; and this again, is quite an informally prepared, qualitative report, with no attempt made at quantitative analysis of the data we are getting.

So as we have these set up now, each member of our staff gets out to something that approaches the real thing, at least, about twice a year, and from the training standpoint it has been invaluable. We don't know how we managed without it. The problems confronting the interviewer are so much more realistic. With the teams being on their own, and having the feeling

of having to deliver, and the much greater degree of involvement that the staff can get with a large scale thing than with a minor episode, all make for far more detailed interviews. And when the interviews come back, they are far richer and failures of technique can be seen to have rather serious consequences, in the total picture of this study. For training, as I say, it is invaluable.

The main problems that the use of these six to eight field trips a year has created for us are two, really. First of all, it has been very difficult to try to select the incidents we are going to cover. Mr. Fritz has estimated that something on the scale of these that we have been to recently, happen around 20 to 30 times a year around the country, and with the set-up we have, it isn't practical to think of covering more than six to eight. It isn't practical simply because, with the staff we now have, sending them out two or three times a year results in six to eight trips. If we tried to enlarge the staff, I think we would have recruitment difficulties of a vast order, and if we tried to take the present staff, or the kind of people that we could recruit to replace them, and asked them to take more than two or three trips a year, I don't think we would have very much of a staff left. The solution may be this full-time set-up that Dr. Marrazzi is proposing. We just have never thought in such astronomical financial figures in our thinking before.

If we knew in advance what these 20 to 30 events a year were going to be, I don't think there would be any problem in picking out the best six or eight to go to. The problem comes about just because each time an incident occurs, you don't know what else is going to happen and you have to decide, shall we go on this one in view of the fact that if something better happens we won't have the money to go to that one? But we don't know that anything better is going to happen.

Dr. Powell: Do you think that a review of the journalistic accounts of the happenings over the last five years would give you a basis for prediction?

Dr. Star: You get into a year where Texas City happened for instance--and this is just what we are waiting for. But if we waited this year out for a Texas City, we would be making a mistake. The funds would just revert without being spent.

Mr. Roth: The Metropolitan Insurance Company has issued a resume of the major disasters in the country for the last two years. They put this out in their statistical monthly bulletins. I have a copy of it here somewhere. It may be of interest to you, that there is a statistical analysis, so that you may be able to save your eggs for a juicy basket.

Dr. Marrazzi: Are not there types of disasters that you are interested in that you have either covered or have not covered?

Dr. Star: Yes, but the problem is this: If this disaster were really the type we were after, we would be out there doing the full-scale study. None of them are exactly what we are looking for. They all have this feature that is good, and this feature that is not so good, and it

is this darn weighing of, well, it isn't exactly what we want, but are we going to get anything better? I don't think there is a real answer to this, except to keep firmly in mind what types of things do happen and which features we most want to get.

Dr. Hughes: I think you ought to keep a record of your thinking and reactions on this, because this decision on your part, whether it is a big enough disaster or not, is part of the very psychology of disasters. I do hope you keep a good record on that, and I think you should think and act on that. Somebody has to decide in a bureaucratic headquarters about every disaster whether this is it or not.

Dr. Star: There are two other aspects of this which complicate it. First of all, we are trying to make this decision in a hurry. The minute we hear about this we want to know are we going or aren't we going and we want to start moving, if we are going to. So we are thinking on our feet, and perhaps making mistakes in judgment sometimes. The other is that the information we have about this disaster is very sketchy, and very incomplete. The first newspaper or radio reports are vastly inaccurate; so that we not only are trying to decide whether we will go to this event, but we are also trying to infer from the few facts we can get what this event is in the first place so we can decide. Newspapers have proven to be very misleading.

Dr. Hughes: Does it make any difference whether it comes from a "stringer" out in the country, or whether it comes from a press center in the city?

Dr. Star: I think the one really firm conclusion we have arrived at on the basis of all our work is that the newspaper accounts, either immediately or later, are never accurate.

Mr. Fritz: We are getting a beautiful check on the accuracy of newspaper accounts. They are just so grossly distorted that you can never rely on them at all.

Dr. Marrazzi: This point indicates again the advantages of a national set-up. In that case, there would be some teams located relatively nearby and you could have a more intimate source of information.

Dr. Star: Yes, if you knew someone whom you trusted in the town you could call and find out what is going on.

Mr. Hart: Didn't you have a third point that you skipped?

Dr. Star: I said two: we are trying to make the decisions fast, and we don't have accurate information.

Mr. Hart: We are trying to make the decisions on the basis of these two considerations against an acute awareness of an extremely limited budget.

Dr. Star: Yes. As I say, if we go to this one, we may not be able to go to another one that is more suitable.

Dr. Powell: You may feel that this might be a very good training one so that you would have a staff ready for a big one if it came later.

Dr. Star: Fortunately, aside from the fact that they must get out relatively fast for training purposes, the best disaster for training purposes is that which most approximates the best one for substantive purposes. There is no conflict of purposes there. We would rather our team saw the real thing before they faced the real thing. The closer they come to the kind of disaster which is what we are looking for for the full-scale study, the better off we are.

We do still look for one that is reasonably sized and hits a whole community, and is man-made, and this kind of consideration. And from other standpoints, and from the possibility of elaborating an entire theory of all types of disasters, there is something to be said for going to other types--the enclaved disaster like a mine cave-in, or the isolated train being marooned, and that kind of thing. We have felt that with the little resources we have we had to give priority to the kind of disasters that would probably be more typical of war disasters. That about sums up where we stand, aside from these difficult problems and decisions when you are faced with choices and you don't know what you are choosing between.

Dr. Marrazzi: I think Dr. Hughes' point ought to be registered very clearly. It might be an excellent idea to write a report on how the selections were made and which ones were passed by.

Dr. Star: I think this has been mostly settled in conversation between Mr. Fritz and myself, and I think we can practically repeat our conversations on any given disaster. We were rather negative about West Frankfort, because only one person came out of there alive, and the only other people intimately involved were the bereaved relatives of the men who died. It didn't give us a wide range of disaster problems. We also felt that a plane crash, unless it threatened the town it fell on, was not too good. The first time we went to Elizabeth there wasn't too much to investigate. On the other hand, going back to Elizabeth seems quite reasonable because, with the repetitiveness, it becomes more of a threat somehow to the entire community, and this time it did do more residential damage than the other time. We were delighted with Brighton because it gave us repeated threats that went on and the danger lingered for some time. I don't know about Flagler. Flagler was about medium.

Dr. Marrazzi: Can decisions of this sort be permanently recorded?

Dr. Star: It is, practically. It is engraved on our hearts and souls, believe me.

The other problem raised by these six or eight field trips is that revolving constantly around the conflict we have between training a staff and substantive research. In a way this brings us to the fourth step of what I was outlining, in the very beginning, as four steps in a research problem: What

it is we are going to do with all this information once we have it. Just like all the other steps this is sort of vague too.

We do have plans for the analysis of the data collected in a full-scale study. They are vague plans because, like sampling, it has not been a problem that is confronting us on a day to day basis, and so it tends to get pushed into the background as something that we will have to worry about some day, but we are busy getting the interviewers out somewhere now.

There happen to be a number of serious problems of technique involved in the data we do collect. Just simply to transcribe one of these two hour interviews takes about a minimum of twelve hours of clerical time, and then some professional time--the interviewer's time to make sure an accurate transcription is being made. Then we have a document that runs anywhere from 25 to 50 or more typed pages, and if you multiply that by the four to five hundred interviews we are planning to conduct in a full-scale investigation, you can see the enormous quantity of paper we have to cope with, if nothing else. Each of these interviews, moreover, is one of these free-flowing narratives, in which the order of the material is probably unique to the interview. So if you are interested in a given subject matter--say, if you just want to go through the fear reactions that each person has experienced, or the extent to which they observed any signs of looting, or any one problem of this sort, you have to read through the whole of each of these interviews to find the relevant material. You cannot just say, "Look at the top of page six for that problem." It is all over the place, and the problems of analyzing material of this kind are pretty close to being overwhelming.

The first thing we have to do is work out complex schemes for classifying the material. And we are going to need a large number of schemes or codes of this sort. For instance, one of these schemes or codes might just simply be a rating of the particular interview as to the extent to which this person was playing a leadership role. Another one of these codes would have to do with the kind of leadership he exercised or the situations in which he exercised leadership, or the number of people who followed his leadership--something of this sort. Another one might concern itself with the kind of techniques the individual was using on himself to control his fear. And still another one might be the degree to which any of these techniques was successful, and so on.

Each code that way deals with one relatively homogeneous and relatively very small area of the material, and there have to be enough such codes so that ultimately all of the significant material in each interview can be ordered within some one of the codes. It is only after you have a set of such codes set up--and this is a job that will take months--that you can begin the job of quantifying the interviews. And even to do this each interview will have to be read a number of times and assigned to a given value under each of these codes.

Dr. Powell: Are there any experts on content analysis around here? We have been wrestling with that at Maryland for some time, and have almost given up.

Dr. Star: We never give up. We shall cope with it.

The reliability and validity of the coding has to be checked, and it is only after all of this that we put the stuff on IBM cards, and it then becomes relatively simple, when you use IBM equipment and reduce the data to this form, to see what the inter-relationships are. You might investigate the extent to which the kinds of fear reactions are in any way related to the degree to which the person was threatened, or the kind of threat he was exposed to; whether a person responds differently to a threat to life, to loved ones, to property, and so on, or whether one mode of action is more effective in reducing fear than another. Or whether people who lacked essential information were more demoralized than people had been who had information they wanted. Problems of this kind can be easily investigated once the data are reduced to form. There is no end, almost, with the great variety of data we are collecting to the kinds of questions you can put to the data once it is in this form. But this job of analysis is a very difficult undertaking. I cannot underline that too much.

We have made no start on beginning to prepare for it. The reasons are pretty obvious. At first we had no data, and you cannot work out a system of classifying these various highly subjective data without a good deal of familiarity with the kind of material you get. Now, we do have enough data and a lot of familiarity with the problems, so we can begin to work out at least the outlines of a system of classification to handle the data. I am not sure that we can specify the exact details of each code in this classification, but we could at least set up a framework within which the rest of the code-building would be less overwhelming than it now is. We do feel that for many of the problems, at least, there is enough similarity between the kinds of materials we are getting from the situations we are now studying and the kinds we would get out of a full-scale disaster, so this would be a permanent investment, and just some work on trying to quantify the materials we now have would be a relatively permanent set of coding frameworks at least that could be carried over from one study to another, unlike the field staff which disintegrates.

But we have, under present arrangements, neither the time nor money to undertake this. It is lengthy and difficult and it takes highly skilled professional people to work with it, and it costs a lot of money. As we planned and budgeted the current contract--and I think this was partly our own inexperience--we looked on it as strictly a training and holding operation. We were going to get a staff and we were going to train them and hang on to them, and we just didn't see the enormous pressures that were really going to develop for doing something substantive with the data. As things now stand, we don't even have the funds to transcribe the interviews; they are held practically permanently on tape. From the training standpoint, it does not matter very much whether you listen to the interview and make notes about what's good and what's bad in the interviewing, or whether you read it. So to review the work of the staff we spend much of our time with headphones on listening to the interviews. From the standpoint of code building and analysis, it is impossible to work with it any other way than on paper.

All of these pressures have developed in the direction of getting something of substantive value from the project. Our own interests in the field have a great deal to do with the substantive implications of the data produced as a byproduct of training; and the interests of the research team in putting their skills to use, and even our feelings of responsibility to the Army

Chemical Center--and especially the uncomfortable feeling we develop about the essential wastefulness of this procedure of eternally training for something that never occurs, have us thinking more and more about the substantive implications of the data we are getting.

We have tried to meet this problem as well as we can under current arrangements in two ways. First we try to issue a substantive report on every major incident we cover. These reports have been so slow in appearing that some people think they are mythological, but you will hear summaries of them tomorrow. The slowness is a result of the same problems. We don't have the time and the money, and since we did not anticipate the need we just did not plan for it. We now try to work on these reports in any time that is left over after our primary responsibilities for administering the research team is met. There is a great deal of detailed work going into reviewing the quality of the work, continuing the technical training, and getting them into the field and out of the field. It is practically a full-time job as it stands, and only by miracles of ingenuity do we ever work on reports.

Beyond the difficulties we have had in getting these reports out in anything like reasonable time, these documents as reports of substantive findings leave, for me at least, a great deal to be desired. You will be hearing some of them tomorrow, and I guess you can arrive at your own conclusions; but I would like to say that they are highly impressionistic reports. They are prepared by the field team that investigated the particular incident, in collaboration with the field director, Mr. Fritz, and, in essence, they simply consist of the people who collected the data necessary for the systematic analysis of the incident sitting themselves down, steeping themselves in the interviews and the atmosphere they encountered in the field, and then elaborating on paper what they think the data would show, if a systematic analysis could be made. They amount to a sort of participant-observer report on the disaster, and sometimes they are not too different from more or less inspired journalism. Since the data are, so far, never reduced to a form in which they can be treated in a systematic analysis, it is impossible in these reports to investigate the inter-relationships that exist and the influence of one set of factors on another set of factors, and so on, that would be possible if we were doing systematic analysis. So, as samples of what we intend to do with the data of the full study, these field reports seem to me very misleading and not very good advance publicity; but they still strike us as better than nothing--that is, better than never trying to get any substantive findings from all of the work we are doing.

Mr. Hart: Can I interrupt for just a second? I wonder if it is perfectly clear that you are talking about two sets of protocols here? One, the reports which the interviewers prepare, and, the other, the recordings of the interviews. What you are saying now applies to the reports which the field workers prepare.

Dr. Star: What I am saying is that we don't make a systematic analysis of the interviews we have collected. We simply write an impressionistic field report, which is written by the people who have conducted the interviews, so they have some qualitative familiarity with the material, but they have not done the precise analysis that would be necessary to carry conclusions much beyond impressions.

Dr. Marrazzi: The impressionistic basis of these must be a preliminary content analysis; they couldn't be anything but that. You sort of disclaim responsibility at this stage?

Dr. Star: We are not happy with them. We feel they do not do us justice.

The second approach we have had to handling the substantive problem has been frankly exploitative. We have offered our materials and the benefit of our supervision and advice to any qualified graduate student, whether he is on the research team or not on it, who wishes to develop a thesis or dissertation from our materials. Since in doing any thesis or dissertation, the student would have to make the kind of systematic analysis that we are not in a financial position to do ourselves, we feel that to the extent that students would undertake this work under our supervision, we could get some beginnings made. This is, however, a really slow and disorganized way to proceed. We have several theses in the planning stages now, but it may be a matter of a year or even more before they begin to show any concrete profit for us; and since each one of these selects just one sub-topic within the larger area--for instance, there is one being done on leadership; and another one being done on the process of defining the situation, or perception under stress; and another one being done on rumor--since each one takes a relatively small sub-area of the material, it will never really lead to the complete system of classification that we are going to need.

Dr. Marrazzi: Are these by the part-time interviewers?

Dr. Star: Some of these graduate students are actually members of the research team. Others are not.

Dr. Fenton: I shudder to think of people working up other people's interviews when they have no sense of what happened in the field, unless you can reduce the interviews to quantitative data, the type you described before that rests on factor analysis.

Mr. Hart: Of course, the students who have not been in the field do have some access to the people who have. That is the only extenuating circumstance there.

Dr. Star: Well, our motives are most devious. We both get the material somewhat analyzed this way, and perhaps we intrigue people so with the data that we get new recruits for the disaster team. Either way, we see something in it for us and we try to exploit it.

Mr. Hart: Since you mentioned the limitations of the money for the project which does not permit this analysis, we are also limited as NORC staff members in the amount of time we can give over to the direction of dissertations, because we get no pay for that. So there are both those limitations operating.

Dr. Star: I think we can indicate that this is one of the areas where we are somewhat at a loss, really, to indicate what revisions in our procedure should be made to make room for this unresolved problem of substantive research. I think it is a simple enough thing to say that the

budget should be X times larger, and give us the time and money to do this substantive work. But before we arrive at a conclusion of that kind--I don't mean to sound like I am turning down money--we have to think about what is involved in that.

When we made the original research proposal two years ago, we estimated that a full-scale study would cost about $30,000 from start to finish, and research costs have not been going down in the last two years. Since we introduced tape recordings, and the need for extensive transcription, I would not be at all surprised if the major study would run closer to $40,000 than $30,000. Now, of course, it would not be this expensive to take the fifty or so interviews that we collect on a single field trip and subject those to a complete systematic analysis of the kind contemplated for the full study.

The big question in my mind is whether it is worthwhile at all to make that kind of an elaborate analysis of a mere fifty interviews, which in the first place do not provide enough cases for a full investigation of interrelationships. And in the second place, I wonder, if we are going to invest such a disproportionate amount of money in analyzing the interviews from a given field trip, shouldn't we reconsider the sampling problem. On these field trips, we put the emphasis on training, and on speed and on economy, and we have not bothered with systematic sampling procedures. If the data are to be elaborately analyzed for their substantive value, I wonder if they had not better be based, as well, on a defensible scheme of sampling. Therefore, I wonder, if we are going to commit ourselves first to systematic sampling, and second, to a larger sampling of interviews so we can do a complete analysis of the results, doesn't it boil down to our proposing, that each of the current field trips we make be done on the same scale as the one full-scale study we originally proposed, and the cost would be correspondingly high, it seems to me. Furthermore, I don't believe that we could finish six or eight studies a year on this scale. I think we set up the first study to get out of the field in three weeks, but we would spend maybe a year thereafter analyzing what we got in those three weeks, and with six or eight such studies a year, we would soon get centuries behind, it seems to me.

It may be that the only solution is to go on with our basically training approach to the field trips, and maybe single out one of them a year for a more full-dress treatment than we have been giving them. Then I come back to saying, if we knew in advance that any one incident a year would be worth this treatment, we could go back to our original plan of doing the full-scale study, when something worthwhile occurs. I am frank to say that I can see the merits of arguing it either way; and for me, at least, if out of this conference comes some resolution of these difficulties, I think we will have accomplished a great deal.

Mr. Roth: May I make a comment or two? The first is a semi-question, I suppose. It seems to me that the disasters that are represented around the room here--not the people seated around the table, but the pictures on the walls--represent, as Dr. Star has pointed out, perhaps, examples of disasters that we hope will give us evidence for war situations, war-time situations; but perhaps are not closely allied to them. Are there not other kinds of disasters in the country which occur that are a little better for our purposes here? I am thinking of perhaps the Kansas City floods,

or the present Ohio flood, in the sense that they cover a much wider range. They affect a larger population, even though not as many people are killed. They certainly give us a huge destruction of property, much beyond those which are represented on the wall. Am I correct in this analysis?

Dr. Star: I think this is a matter of opinion. Our opinion has been that these weather types of disasters, while big in scope and so on, are so familiar and so prepared for, so much anticipated, that they are not suitable for our type of investigation.

Mr. Roth: That's the point: they are not. Take the Kansas City flood for instance. There are such contradictory reports on it. For example, police cars were mired down. They just couldn't function. Fire engines likewise were mired down. The police cars we know were just stuck and the police had to get out and walk.

Mr. Hart: Isn't the Kansas City situation quite different from Ohio? Mr. Fritz said not to rely on newspaper accounts, but I noticed in the morning paper that these people are so accustomed to moving out that it is highly routinized. They even have hooks on the ceilings on which to hang their clothing and furniture. They have done it year after year.

Mr. Roth: The point is that the Kansas City business, the Kansas flood certainly was a case where an overwhelming proportion of the people were involved around a certain community, much more so than, I think, any one that has been studied here.

Dr. Star: I think you would have to say that we have concentrated on the fear, emotions and the individual's reactions to start with. The situations you refer to offer far better instances of breakdown of community services than we have here, without the extreme inner-reactions of the individual because of the suddenness and so on; and so far our attention has been concentrated on one rather than the other; I do think that both of them have to be covered, but preferably in one incident.

Mr. Roth: Another observation: Would one method of dealing with your problem of determining the extent of the disaster be in having some kind of a ground observer corps? I don't know how practical this is, but I am thinking in terms of newspapers. They operate this way. They have a man who will be stationed in some isolated community, and if a piece of hot news comes along he will phone in and give them that information and he will be rewarded accordingly.

Dr. Star: At every conference I have been to this comes up. It has been thoroughly endorsed by everybody present and then dropped again, and nothing has been done. At one time it was suggested that an organization, nation-wide, of radio amateurs, who acted as a volunteer disaster corps anyhow, could be enlisted through civilian defense in reporting these incidents. I forget what the name of the group was. And it was suggested that civilian defense be approached and urged to secure the cooperation of this group of radio hams in reporting incidents and so on, and that was the last I ever heard of it.

Dr. Marrazzi: Is that the problem? You do get the news.

Dr. Star: You don't really know how extensive this is, how much some of the elements you would be interested in are going to be operating in this situation. A trained observer's report coming in immediately would be helpful. He could estimate better than you can from a newspaper account to what extent services are going to break down and what all would be involved.

Dr. Marrazzi: That would mean that you would have to train all these observers.

Dr. Star: Not necessarily. Dr. Tyhurst, you may recall, mentioned that he got people at the various universities throughout Canada who were already trained observers to act as listening posts for him; and it is that kind of thing we need.

Mr. Hart: I think that is a phase of it which the National Research Council might very well give some attention to.

Dr. Marrazzi: People in various army installations could also cooperate in that way.

Mr. Roth: Then there is one other point. Has there been any duplication of coverage, say by this organization and some other kind of disaster control group, and if so, what has come of it?

Dr. Star: Frankly, there has been very little integration and intercommunication between research agencies, so that I don't even know if there has been any duplication.

Mr. Hart: There hasn't been any conflict of that kind.

Mr. Roth: I am thinking of integration, more than anything else.

Dr. Star: In terms of integration, the Illinois medical research people did accompany us to West Frankfort, and carried out certain physiological investigations, I believe. But there we are both in Chicago and work together quite frequently.

Mr. Hart: That was primarily their project, and we were accompanying them.

Dr. Gayer: I think this might bring some light on the problem of possible duplication. When we went before the Bureau of the Budget with our budget request, we were confronted with a list of eight different projects which are government supported that seemed to overlap or do exactly the same thing we said we wanted to do; and it was only because we had already made the move of attempting to get the coordination in the hands of the National Research Council that the Bureau of the Budget went along with us in approving the request of Congress for funds. These eight projects--I don't have the list--at least three or four of them were supported by the Department of Defense. We have one with Michigan, and I forget what the others are, but it was obviously an overlapping function. It looked as though each one of these projects intended

to select the best disaster they could find and all of them go in.

Dr. Fenton: Who has this information?

Dr. Gayer: Harry Alpert.

Mr. Hart: Harry Alpert told me that one other organization has even been trying to contract for and retain a crew of mobile interviewers corresponding to ours.

Dr. Gayer: There I think Harry Alpert was misinformed. If we carried it on through and provided the funds for it, presumably they would have to do this; but this has not been activated, and they have not hired additional staff.

Mr. Hart: He said that it had been proposed for approval, but was covered under some kind of contractual arrangement.

Dr. Gayer: I think that is substantially correct.

Col. Wood: I think this points up again the necessity for trying to integrate all of these parts into a program.

Mr. Roth: We know, for example, that in that South Amboy incident, at least three organizations I know of were there interviewing. Maybe they were interviewing for different purposes; but nevertheless, they were there eliciting information.

Mr. Hart: We would have been if we had had the equipment at that time. We would also have been in Kansas City, except that Lewis Killian of Oklahoma University was there under some other government contract --O.R.O.

Dr. Star: The Kansas City research group was there, too, but under their own local, private contract.

Mr. Roth: Finally, if I may pluck forth a moral out of Dr. Star's story thus far, because I think those of us who are sitting here who are primarily interested in civil defense and how disaster and civil defense coincide, I think she pointed out very, very well for us the fact that standby organizations, unfortunately, tend to crumble--that is your squads, investigators, who do nothing but train every so often, and who are not confronted by a natural situation, either lose their enthusiasm or move on to better deeds. This may be a real problem so far as civil defense is concerned if it is to remain a standby organization. I think this is something that perhaps this group might consider.

Dr. Powell: There is one other experience that could be injected into this which was not planned for. It was simply required by the circumstances. When the call came to look into the Atlanta poison liquor situation, I went down there single-handed, and left a team of four people who were recruited in Atlanta, who are still working on that, and who from now on

would be an elegant research nucleus for anything that happened in the Georgia area. The possibility of actually recruiting a team in the field, and, if you have good luck, letting them go echoing on down their own corridors, but you know they are there when you need them again.

Dr. Hughes: Part of this relates to the problem of integrating some of these part-time teams with university programs. The solution might be for the universities in question, if they are involved, to work quite actively at setting up crews which would be available for this when necessary, and would be doing other equally valuable things, but supported from other sources, for the rest of their time, and they would lose some of that standby quality. That may be the solution. You will have to integrate it with something else, so you just don't leave the rest of their time and activity to chance.

Dr. Chapman: This rather exploits a suggestion that ties in with Dr. Tyhurst's operation, and I think that is what he would love to do and has done insofar as possible in Canada; only there are very few universities and still fewer social scientists that are any way trained to interview, or to train interviewers or to act as analysts.

Col. Wood: I might point out how it is proposed to do this from the standpoint of the medical observations to be made, since I know more about that angle than I do about the other parts of it. But people like Ravden at Philadelphia, for instance, who heads the Harrison Department of Surgery at the University--he always has a staff of very active research people around and he has a great many residents on his service, young men. He himself is the type of fellow who is delighted to jump in an airplane at any time and go do something that is interesting and exciting. He says, "Why certainly, in Philadelphia give me the responsibility. I will always see that a man gets there, and a very competent young man who at least knows the experimental method, and he will make observations and we will follow any protocol developed by the National Research Council." I think we can do that in most of the cities where a university and a good department are engaging in research and have a supply of residents available. They will always have a man. I don't know how that would fit in such things as logistics or the social sciences. It may be more difficult.

Mr. Hart: It is more difficult in the social sciences.

Dr. Star: What interests me is how difficult it was in medicine for us. Our first approach was to try to get young residents in psychiatry or graduate medical students in psychiatry, or even undergraduate medical students who had an interest in psychiatry involved in the project, but all we got were turn-downs. The top men wouldn't even let us approach the students on this.

Col. Wood: No, I don't think you should approach the students. I think you should give him the problem, and get a guarantee from him that he will have a man there--and then he would. Once he accepts a responsibility you can forget it.

VII. INTERVIEWING AS A DISASTER RESEARCH TECHNIQUE

Charles E. Fritz, Assistant Director
Disaster Research Project, N.O.R.C.

Briefly stated, our major goal in these interviews is to try to get as exhaustive an account from the respondent as possible with reference to his experience in the disaster situation. As Dr. Star has indicated, our major aim is to obtain a complete objective and subjective chronology of the person's behavior during and after the crisis period. As a part of this account, we also want to determine how the person's interaction with others influenced his behavior or the other person's behavior. In other words, we want to know how the person acted in the situation, what he did in the way of overt behavior--and corresponding to that, what thoughts, feelings, emotions, and imaginings he had. And we want to know how his own behavior was influenced by the behavior of others or, in turn, how his behavior might have affected other person's behavior.

We operate on the basic assumption that we cannot understand the person's actions unless we determine how he defined or how he structured the situation; how he interpreted it. So our major aim, therefore, is to see how he proceeded, how he structured the event in terms of his own perception, rather than to try to superimpose our own values on him. So, therefore, our major goal is to try to get him initially to structure the situation, and then to stay within that structure by picking up his own terms for further probing. In other words, try to get a very exhaustive account, in which we do not in any way bias the respondent's responses.

In the process of working out our own techniques for this we have borrowed very heavily from Dr. Finesinger's article, in which he emphasizes the principle of minimal probing activity, the basic principle being that you want to maximize the response of the respondent and minimize the activity of the interviewer. In doing so, we usually start out, as Dr. Star indicated, with a fairly broad general question, in which we ask the respondent to tell us in his own words about his experience--the fire, the flood, whatever it happens to be. And then that question usually elicits a response some ten or fifteen minutes long --sometimes forty-five minutes. We have had interviews where the interviewer hasn't asked more than ten questions in a period of three hours. I had a four hour interview once, and I don't think I had more than ten questions in that whole period. In any case, this usually elicits a lot of material which is presented, however, in a fairly confusing manner, so in the process we, of course, have the tape recorder set up. In the process of the recording, the interviewer takes down things that he knows will need further probing. He tries to keep him going first of all with the minimal activity probes--things like shaking your head, glances, nods, and un-huh's, yeah's, oh's, really's, and so on. And surprisingly enough, you can keep them going quite a long time with these techniques, usually. We consider the interviewer as being just one big ear and a recording machine.

If we have to go to more activity, then we try to go from that to neutral probes. Usually we will try to pick up some of the responses he has made previously and ask him to elaborate and clarify those. He will have said things in that initial part which aren't clear, and we will try to pick up those terms

and tell them to probe with reference to them. And you will probably hear some of those on the tape we are going to play.

Of course we have problems which the psychiatrist doesn't in our interviewing. In the first place, we have to secure the cooperation of the respondent. We go to the respondent;the respondent doesn't come to us as he does in the case of the psychiatrist. We have to try to convince the respondent that the two or three hours that he may devote to the interview is worthwhile. In order to do this, the interviewer usually introduces himself as an employee of the National Opinion Research Center which is affiliated with the University of Chicago--and explains that our purpose in doing this interviewing is "to learn from the experiences of people who have been through these things" so that "other people can be better prepared in case something like this happens to them," (or words to that effect). This approach is successful with most persons who have been involved in disasters--and without further ado the interviewer walks in, looks for the nearest electrical outlet, and, after an exchange of pleasantries, sets up the recorder and begins with his first question. If the respondent is busy or can't spare the time at the moment, the interviewer tries to make an appointment for a later time. We try to make it as difficult as possible for the respondent to refuse. If they say they are too busy at the moment, we respond that we would be happy to come back just any time that suits their convenience. That frequently stumps them; and they say, "Oh, well, we might as well talk about it now." Frequently people who have said they have only a few minutes have talked three or four hours.

Just by way of introduction, both of these tapes we are going to play by no means represent either the best or the worst of the ones we have gotten. They have been primarily selected for the fact that they will reproduce to this large group. Many of them have fairly bad reproduction.

Dr. Powell: The interviewing circumstances, as I have met them briefly, are almost impossible for good recording. My favorite one was conducted in an ante room between the children's ward and the kitchen. We had screams on one side and clatter on the other, and interpreting this tape afterwards was practically a pure matter of conjecture.

Mr. Fritz: If I may, I would like to draw excerpts from two separate tapes to illustrate two types of problems. One is a very bad interview, from a technical point of view. We have used it several times as a mode of criticizing technique when interviewing bereaved persons. But this first interview is an interview with a woman who is extremely bereaved. She had a daughter killed in the Flagler plane crash. She was with the child at the time, and, I think, two other children. The child was struck down. Her arm was completely severed, her head was bashed in, and, of course, the mother was there and saw all this at the time. She suffered extreme psychosomatic symptoms for about 36 hours after the event. You may hear some of this. She lay limp on the bed, with terrific pains in her chest, gasping for breath; she could hardly get her breath. She thought she was going to die. Later, apparently, after this period, she had a conversion experience. She saw her child in the arms of Jesus, and she had a real conversion experience, after which a lot of these psychosomatic symptoms apparently disappeared. It will give you some flavor of some of the problems. We are playing it primarily because it shows one of the types of problems we run up against in training our interviewers. We are trying to get our interviewers trained to meet

any type of situation from people maximally involved to people minimally involved. This means they have to learn to handle themselves in terms of bereavement situations. This may give you some flavor of that.

Interviewer: Now, just in your own words, tell me what happened.

Respondent: Starting from when?

I: Well, just from where you came in to the air show.

R: Well, we all went out to the air show and I parked our car at the far end of the air field and we all got out of the car. I was with my four little girls, just my four little girls and I, my husband was working in Denver at the time. I was with my four little girls and got out of the car to see better, so we went up there to see. And we saw the first of the show, you know. We were sitting down on a blanket at that time. And we were looking at it when, all of a sudden, we all got moved to a different place, outside the fence just a little bit. I had all my girls with me; we were all together in a bunch. And, then all of a sudden, I just don't know what happened. The plane was getting so close; it was coming right at us. But, of course, it was supposed to do that. We thought it was stunts, so we didn't think too much about it for a second, but then, the next second, I just knew that we'd never get out of there alive. It just was awful. And then, all of a sudden, why, it just seemed like everything was flying, and the first thing I thought of was the kids. I looked everywhere, and then I saw three of them, and I couldn't find Margell. I looked around, and there she was, laying on the ground, one of her arms was gone, the back of her head was gone. I don't know what happened after that. My dad came, and I guess he took us all home. I just don't know what really happened; it just happened so fast, you know. That's all I really could tell you. That's the way it happened.

I: Did you notice any other people...?

R: Thousands of them. Oh! It was awful! People were laying everywhere, but all I could see was my little girl. She was all dressed in red, you know; it just seemed like she just stood out, and that's all I could really see. Yeah, people were just all around, screaming and, oh, just everything. You just can't imagine how awful it was; you'd have to see it to believe it. But all I could see was Margell laying there; that's all I could see. But now that I know she's in Heaven, I can talk more calm about it. She's with God, the Father.

I: Did anything like this ever happen to you before?

R: No, this is the first sad death that we've had--accidents, you know. We've been in accidents

before, car accidents, but we were just lucky, I guess, because none of us got hurt very bad.

I: Was your health affected in any way?

R: I guess it was. There, at first, I guess I was in a terrible state of shock. I couldn't breathe. I thought--Hank said he just knew I was going to die, you know, before it was over. But something come to me then that Margell was happy though wherever she was, after all this happened. I knew she was in Heaven. But this sadness of not having her with me every day.... (R. breaks down.)

I: Could you describe that feeling of shock you had?

R: Oh, it was so awful, I don't know how anyone could describe it. I knew she was gone and yet I just couldn't believe it. I just couldn't believe it... (R. cries.) And then when I saw her at the funeral, it was worse, like--it wasn't even her.

I: Did you notice what other people were doing, when it happened?

R: Well, I couldn't--I don't know too much about what they were doing. All I could see was Margell. She was dead, but I couldn't believe it. I could see some of them laying, but I didn't know who or what or what anybody was doing. All I could see was Margell, all dressed in red, lying there, with her arm gone. I couldn't see her arm. I knew she was dead, because her eyes were just too dead, just glaring, you know. I knew she died instantly, which is not as bad; she didn't suffer a minute. (R. cries.)

I: How do you feel, now? How's your health, now?

R: Oh, it's better than it was. For the first 36 hours, I just couldn't believe it, I just couldn't. All I could see was Margell laying there, all dressed in bright red. To think she was so live that morning, and then she was gone. She'd ridden in the parade--she was the cutest one there, I think, and, the next thing, she wasn't there. And then something told me that I saw her in Heaven, and I have more of a calmness. If it hadn't been for that, I don't know how I'd ever have lived through it.

I: How do you explain the fact that you remained calm?

R: I didn't remain calm for the first 36 hours. I thought I'd die. But, after that, why, I could see her. Something just came to me and took all that awful

hurt and ache in my heart away. I knew she was in Heaven; that's the only place she could have been. She was such an angel here on earth.

I: You said 36 hours later...?

R: Right after it happened. I guess I was just a nervous wreck for that long. But, after that, something just--I had that awful aching, you know, in my heart, just feeling like I couldn't get my--couldn't breathe. That's all I could think of was Margell laying there like that. Then, this vision I had--she was in Heaven; that's all I could see. After that, I knew that she was happy, even though we were sad she was gone,

I: I think you said that 36 hours later you got to feeling just a little bit better...?

R: Oh, yes. Calm came over me. Why should I feel bad? She was happy in Heaven. Of course, I'll always feel sad because we can't have her right with us, but she's in better hands now than living down here.

I: Do you remember what sort of feeling it was, when you felt a little more calm?

R: Yes, it was that that ache in my heart was completely gone. It was completely gone. I never felt it again, that awful ache. Of course, now, I can think about it and just be awful sad. We can't see her, you know, in person, but I can see her all the time in my mind, but, actually, physically, I don't see her--you know what I mean--that's what's sad. But I know she's happy now. Of course, she was always happy down here; I always tried to make the kids happy. They was always happy--one thing, we just lived for our kids.

I: How old was she?

R: She was six. She'd just started to school. She was the happiest little kid you ever saw. She'd come home, but she'd never walk in the door; she'd always run, you know, to tell me something. She never walked; she was always running and jumping. She never walked; she'd always run to tell me. It was like she was thrilled to be--to come in to tell me, you know.

I: How's your health been since that, since the 36 hours?

R: Well, I'm calmer, but, it's just that awful sadness that just comes on me so often. You just know you can't stand it; of course, you have to. Of course, I have three other kids.

I. What would you say it is that makes you want to keep going?

R: Well, I have three other girls, and I know Margell would want it that way. She always was the most generous; she never was the selfish type, you know. She always thought of the other person. For a little kid, that's wonderful, you know. She never did think of herself; she just thought of the other kids. (R. cries.)

I: Do you think you've learned anything that might be helpful to other people who might suffer like this?

R: Well, the only thing I know is that you really have to have faith to ever live through anything like that. And, before that, why, my husband never did even believe in God, but, after that, you know that we've erred from God. Why, I used to go to church once in a while, you know, just to be going, as a pattern of life. But when God revealed to me that my daughter was in Heaven, that she was safe and happy, why, that was really when first that awful ache was gone from me. You really have to have faith, or you just couldn't hardly--I don't know how anybody could carry on.

I: How did that come to you?

R: Well, that's a hard thing to explain. I thanked God that she didn't suffer for an instant and all that, and I prayed to God that we could go on somehow without her. Then it just seemed like, all of a sudden, why, that complete calm descended. The next second, I didn't have an ache in my heart. I was just calm; I knew where Margell was and she was happy. Of course, we'll always be sad; we'll never forget her, but, just like my little girl said, "Mommy, you shouldn't be so awful sad, because God chose Margell." Just think, he chose her, because she was so perfect, too good for us, too good for this earth, I mean. He wanted her with Him. You just have to have a complete faith, and the kids have a blinding faith, well, that no adult could really have, but these kids, I don't know how they did it.

(End of Excerpt)

Mr. Fritz: Well, this is a pretty depressing interview. I wanted to play it because it illustrates some of the problems you run into; first of all, of course, the problem of having interviewers who are able to take this sort of thing and handle themselves properly. In this particular case, this was the first bereavement case that the man had interviewed. It also happened very suddenly. Of course this is another thing you can't expect: You go knocking on doors, and you run into something like this, and it is quite shocking initially. The interviewing technique in the beginning here is not good, as you can undoubtedly see. It illustrates, I think, the fact that you cannot really make any broad generalizations about technique. I think Dr. Star mentioned that usually people will talk most about objective events first, and you have to probe

continually for the subjective. Here is just a reverse of that situation. Here the subjective comes out immediately, and it would have been better if the interviewer had started with "What did you see? What did you do?", and so on. If he had kept to an objective chronology and tried to get as clearly as possible what she did, this subjective material would have come out in any case. She was so filled with it that she was ready to express it.

Dr. Hughes: I don't really see that. It seems to me that the people who are so near the white hot core are not necessarily the people you will rely on for what happened anyway.

Dr. Star: If you had heard the rest of this interview you would see that there are wide gaps in her story of exactly what she did. On the one hand, she said that she lay on this couch for 36 hours and did nothing. On the other hand, somehow, breakfast was made for the children, and they were put to bed. We don't even know, but, presumably, she did take care of the elementary needs of the rest of the family. The problem here is that this grief is so overwhelming that we have somehow to steer to get around it and get her to talk about something else besides this. The interview is just a constant reiteration of her grief.

Dr. Chapman: Maybe we should come back to this tomorrow when we have more time for it, but I think perhaps we need to see here the structure of the interview that you are aiming at, because I think this question is perfectly legitimate. One could ask now, even, what objective information do you want from her?

Dr. Star: Well, for instance, I would like to know what she really was doing through those 36 hours.

Dr. Hughes: Is she the right person to ask that question?

Dr. Star: Because it really indicates the extent to which this tragedy striking at her immobilized her from performing her ordinarily normal functions. On one hand, we get this statement of total collapse; on the other hand, we have signs that she managed to function to some extent. We don't know to what extent and we don't know how she managed to do this. The interview got stuck on a constant reiteration of grief. And that probe which occurs with the interviewer saying, "Tell me more about Margo. How old was she?" just brings this out more.

Dr. Hughes: But why should you? Why shouldn't you get that information from somebody else, and not rely on the person who is this involved to do this?

Dr. Star: Somebody else can tell you what she did, but they cannot tell you how she managed to do it. We have to get from her a statement that she did manage to get breakfast and of how she managed herself into managing to make breakfast.

Dr. Marrazzi: Cannot these two points of view be resolved if you state what the objective of the interview is? You are not really trying to find out the chronology; you are trying to find out what happened to this individual.

Dr. Star: We are trying to find out the chronology of this individual. When we have a representative sample of such individuals, we can say what happened.

Dr. Marrazzi: Then it doesn't matter, if that is the case, what somebody else says, but what she says.

Dr. Hughes: I think it does, in a way, because at some point you have to think about this woman and how much you are justified in getting from her and how much you ought to learn from other people.

Dr. Powell: The distinction I was thinking of before was the distinction between information gathering, which gives you the chronology of a series of public events and the things which you may get in interviews which I would call testimony rather than information, because as information it may be suspect. I think I would differ from you a little bit there on feeling that what you wanted was the personality structure as it saw itself responding to the impact of mourning. Granted that it would be good to find out whether she was able to function. It seems to me that the information which builds this sequence of events around a disaster and the testimony which suggests the characteristic individual responses are different goals, aren't they?

Dr. Star: We have to do both. We learned from this woman's husband, who was also interviewed, some of the factual material about what actually happened to this woman, what she did at a given point. But he couldn't tell, and he wasn't even asked, of course, how it was she was able in the midst of all this grief to function in certain community respects. It is quite true that you get something out of this from the way she expresses her grief and even her concentration on the ironic fact that the girl had been dressed in a red dress. Little things of this sort give you an insight into her; but notice, we not only don't have anything about what she was doing, but we haven't heard how the practical problems were handled. Who picked up the body of that child? Where was it taken? How she reacted to the way these things were managed? The so-called civilian defense aspects of this problem.

Dr. Powell: In Atlanta, it began to dawn on us finally that the mourning reactions and the hostile, aggressive or guilt reactions varied conversely with each other. If you had a person who was mourning, if the grief reaction was present, you did not have either the self-punitive guilt activity or the punishment of others, the revenge activity. Where you had the grief reaction suppressed, as notably in one of the cases in Atlanta, you have a man now who is in the state hospital as a psychotic. In other cases you had other forms of activity taking place. The sheer differentiation between the grief reaction and the alternative responses is of some value in itself, maybe. That is why I asked about the difference.

Dr. Star: You can get that without the interview sticking on the constant reiteration of grief over and over again.

Dr. Spiegel: You are assuming that if the interviewer behaved differently he would have gotten different material. I question that.

Dr. Star: She will answer any question for the moment. She starts an answer and then she reverts to her grief. But at least she

will start an answer, so if you asked a question like, "How long was it before someone came and helped you?", she would answer that, and then she might even express some reaction as to how long it took before someone came to pick up the child's body.

Dr. Spiegel: It would have required a great deal of activity on the part of the interviewer.

Dr. Star: In this instance I think that the interviewer had to intervene to keep pointing her away from her grief and towards something else.

Dr. Hughes: That is on the assumption that you want to find these objective facts.

Dr. Star: These are not objective facts--her reaction to whether people came promptly enough to pick up the body.

Dr. Hughes: Her memory of objective facts.

Dr. Star: Not her memory of objective facts. Her reaction to what she sees the objective facts to be. We can't even begin to talk about whether she is resentful about the way the rescue workers managed until we establish some of the facts about it in her mind. They are not facts; they are testimony. We have constant evidence in a number of interviews that people's time judgments in these situations are very distorted. We wouldn't treat them as facts. A respondent may say, "It seemed like hours before the fire department came there;" and there they were in three minutes; and that kind of thing. This forms some understanding of how they feel, and why they feel so resentful against the fire department.

Dr. Hughes: It might have taken so long because they resent it.

Dr. Star: You want to get both sorts of material on the record.

Mr. Fritz: We are not arguing your initial point. We are not questioning whether we want to get this material from her. We do. The question is the strategy of the interview itself. When is the best time to elicit this material? You have to have a structure of overt behavior, in order to tie these feelings and emotions to it. You have to have some structure of how this person behaved, overtly. The only question we are raising here is: When is the best time to raise it? She starts out with an extremely brief reaction, and then starts breaking down and crying. Is it better to keep her on that level and let her cry, or is it better to shift the subject slightly to asking her something about her immediate overt actions, and then we know this other stuff is coming out because it is there.

Dr. Hughes: Underneath that, however is this question: How you train people to find out the most, keeping an eye to the minimum amount of punishment of the person you are questioning.

Dr. Star: She said twice during the interview, "I knew I wasn't going to come out of it alive," and yet, she is alive. Several times she says this. Now, this is an interesting lead because there she is

alive, so explore this feeling. You don't know anything except that she claims to be grief-stricken about the death of the child. In fact, you might say that she is over-protesting in certain respects. That is one of my impressions from the start.

Dr. Spiegel: Which is the reason I question whether you will get some of this other information. It seems to me you are attributing more power to the interviewer than he has, in some cases.

Dr. Star: From the standpoint of directing a piece of research, we cannot know this until the interviewer has tried and failed. If he hasn't even tried, it's bad interviewing. The test is, did you try to steer her away from this and on to something else? If you tried and couldn't budge her, then you are right. But it should be tried first.

Dr. Hughes: I understand that what happened was that you knocked on the door and found this grief stricken woman. As far as this particular point, the behavior of deeply grief stricken people, this could have been an individual accident, couldn't it? This need not have been a sort of community disaster. This could have equally well have been something in a house or anything at all. If you were after this particular grief reaction you wouldn't have to go to Flagler to get it.

Dr. Powell: There is an alternative approach to the interviewing problem, but it gets confused with training your interviewers to follow their therapy impulse, which may be destructive of good interviewing--mainly to let her run over and over the grief reaction until it is run out, and then start in on the information.

Mr. Fritz: It's worth noting that the interviewer did note that at the end of the interview. Although he starts out rather badly, in the later portion of the interview, he does, I think, gain some control over his own reactions. This was a shock to him, but he finally becomes a little more objective about the situation. And he notes at the end that after the thing was over it apparently did have very much of a therapeutic affect. She was glad she talked the thing over, and she did feel much better, having talked about it.

Dr. Star: Let's get it on the record right now that that is the limit of our attempts at therapy. We are rank amateurs with respect to therapy and we don't want to even try.

Dr. Hughes: Do you have anywhere any of these interviewers write down their own reactions after an experience like this? That might be crucial to this whole thing. What happened to the interviewer? We need to know that. I think we ought to have them record what happened to them. That is just a suggestion.

Dr. Fenton: I would like to support Dr. Hughes' suggestion by something that occurred to me. Have the interviewers dictated their impressions of the interview on the record after the interview has been made on the tape?

Mr. Fritz: We have a factual data sheet on which the person does note down his impressions, giving his own reactions and the reactions of the respondent.

Dr. Fenton: My question originally arose from a situation in which it might not be practical to use the machine at all, or to indulge in any form of note-taking, in which the interviewer might want to hear the subject and then record his own impressions of the interview afterwards. But I can see an even more ideal situation in which he might indulge in this kind of an interview, and then immediately annotate it with his own impressions of his failures and the adequacy of the record.

Dr. Hughes: We have been doing that quite a lot with students in training this fall. We even go so far as to have a person who is not responsible and who will not report the names to the person who is doing the rating, interviewing the interviewers.

Dr. Star: We have tried this as a matter of training technique, to ask the interviewers to criticize their own interviews. By and large the ability to criticize is a function of experience again--that the experienced supervisory end of the staff has been more able to detect short-comings in the interviews than the interviewers themselves have, naturally, I think.

Dr. Hughes: How did the man feel? I do not mean a criticism of it, but what was his own memory of his reactions?

Dr. Powell: One way of structuring that might be to introduce a word again coming out of the Finesinger paper, the word "goal." At this point in the interview what was your goal?

Col. Wood: That is exactly the point. I, knowing nothing of psychiatry or psychology, would like to make a couple of naive remarks. It seems to me that one of the important things we want to know of this person is, first of all, what was she? What did she become in relation to herself, her own family and the community? Was she rendered completely inert? Was she able to function at all to help her family? Was she a person who was at all useful to the community or was she a burden in all respects, or in some respects? And it seems to me that it is only from a compilation of the total of units of this kind that we are going to determine what the impact is of a catastrophe on a given social structure.

Dr. Hughes: That raises the question about sampling. When you have discovered this woman, it seems to me at that moment you, in effect, have to abandon sampling and find all the people who could describe these relations that Col. Wood has spoken about.

Dr. Powell: There is another way of approaching that from a research standpoint. If one could find out enough about this woman to give clues to the asking of a question--that is, what types of personality structure will regain their usefulness to the community through an experience of religious conversion? What in her background contributed to that? Then you might ideally get some index of predictability; a certain number of people will respond thus and thus and become efficient through this mechanism. Perhaps that is an unrealizable ideal, but the predictability factor is one of the things we are after.

Dr. Star: That seems to be a function of the study in depth, and not through this. We haven't the competence, in the first place,

for depth studies.

Dr. Powell: But your statistical idea is aimed at predictability.

Dr. Star: I am sure we could not carry on the kind of exploration of her whole personal development that would be necessary to indicate the relationship of this conversion experience to her personality structure. I think we should be coordinated, and we did talk about working in the same disaster situation with inter-related research, interviewing of some of the same respondents by the psychiatry group and the more sociological groups.

Dr. Spiegel: You do make these estimates, because you called this a bad interviewing technique, which I don't think it is.

Dr. Star: From my standpoint it is bad because it did not begin to explore the kinds of behavior on her part which Col. Wood spoke of.

Dr. Spiegel: This is based on the idea that it is possible to make that kind of exploration, at a time when the woman is in a situation of needing to abreact, to express her emotional grief.

Mr. Gorden: We are objecting to the fact that nowhere in the next hour and a half in this interview does he try to get at that. Of course, we only listened to a few minutes of this interview; but I think that if the person wants to talk about objective things first, get the objective things first, and then find the corresponding subjective reactions. If he insists upon talking about the subjective things, he will have to do it before he will talk about something objective, anyway. But the thing is we did not hear the whole interview and don't realize that the interviewer never did get the respondent on the objective level.

Dr. Star: Those of us who are familiar with this interview are talking about the whole thing rather than this little piece of it you heard. It isn't fair to you to keep you from knowing that we know more about the interview. You may hear as much more of it as you wish.

Dr. Marrazzi: I would like to interpose a remark. Dr. Star has resorted to the clinical observations in interpreting this. She has concluded that this individual was performing her every-day functions as far as her family was concerned. You see, it really illustrates the importance of clinical observations along with the interview.

Dr. Star: Let me give you the source of my information, because it wasn't really a piece of clinical interpretation. This woman's husband was also interviewed, and some of the things he said about himself in relation to her implied to us that she had been doing some of the functioning that she would normally do. This never comes out in her interview. It comes out very tangentially, and it never is fully explored, and that is what we are objecting to.

Dr. Marrazzi: If clinical observation is an easier way to get it than the interviewing technique, why not use that as well?

If you saw that the children were cared for--

Dr. Star: Her husband might have done this, or her sister-in-law or a neighbor. We would never jump to the conclusion that she had done these things just because they were done. We have more evidence than that, and not necessarily clinical evidence.

Dr. Fenton: Would Dr. Spiegel comment on the problem of questions themselves? I noticed a number of leading questions in the interview, which I might think were bad technique. If the questions had been structured differently, could different information have been elicited?

Dr. Spiegel: I don't know how to answer that because we only heard the part of the interview that had to do with her particular need to express her grief, about which there was an element of defense, I think. It seems to be quite necessary.

Dr. Powell: The child became too angelic. I pitied those other daughters.

Dr. Spiegel: Yes. To deal with her feeling of guilt about perhaps she could have done something differently and spared the child. She might have been sitting somewhere else, or have her eye on the child at the moment; because she evidently just suddenly discovered that the child was dead. The conversion experience is a relief from that, because, if God wanted her, there was nothing she could have done anyway. She seemed to need to deal with that. So while she needed to deal with that I don't see exactly what the interviewer could have done, except to let her do that.

Mr. Fritz: Except that at some point he should have tried to tie this up with some of her own overt activities during this period.

Dr. Spiegel: The further question arises, if this is the case, if she really is defending herself against her own feelings of guilt about what she neglected to do at the particular time, even later how well would you have been able to arrive at what actually took place? How much would she tell about what she did at the time or a little later, when it is very difficult for her to think about it even because she is self-accusatory about neglecting to do some of the things she might have done? She would probably have a lot of trouble in telling and describing her own actions even after she had abreacted to this situation.

Mr. Hart: The only answer there is that you wouldn't know unless you tried it.

Dr. Star: Speculating about it, after the interviewer has accepted all this grief reaction and her involved way of getting rid of her guilt, he is creating a permissive atmosphere to go on and talk; and part of his role is establishing the kind of atmosphere where she does feel accepted and can go on and talk about the other things.

Dr. Spiegel: He could have tested for the ability that she might have developed after relieving herself of some of these feelings to handle the factual situation a little more objectively.

Dr. Powell: Dr. Marrazzi wants to know whether we would be in a better position to compare if we would listen to another interview.

Mr. Fritz: Yes, I believe so. The next interview poses another type of problem. Here is a person whom you might call a role person. It happens to be an interview with a priest in Flagler who was one of the first persons to take any action whatsoever. He took a leadership role. He was playing his role, obviously, and he sort of nucleated around himself by virtue of that other people who were suggestive and who, therefore, tended to follow his own suggestions. This is, of course, a case where a man is playing a definite social role, and I think it comes out fairly clearly. I don't know if it comes out as clearly in the first part of the interview or later.

Dr. Hughes: May I say, I think one thing that listening to this kind of material shows us is that we have certainly got to do something to train our social research interviewers to handle a much wider range of emotional situation than we ordinarily have.

Dr. Powell: It is interesting to me that this group, as a result of that first interview, got into a discussion which immediately raised some of the depth problems because of the need of evaluating the interview, and that brings me back to Dr. Star's suggestion. It probably is not possible, usefully, to separate the broad approach and the deep approach in the same situation and get what you want.

Dr. Star: Well, I think there can be a division of labor. The two can be joined together by interviewing a certain number of cases in common; but certainly, I think there has to be as much coordination between the different disciplines researching in this area as there are between the different pieces of research. Dr. Finesinger and I assumed that, come a really big disaster, the psychiatric team and our team would be working very closely together.

Mr. Fritz: It so happened that in one of the newspapers, Father _____, who happens to be the man we are interviewing here, is photographed here. He went around initially--very interestingly, almost immediately after he got over the initial shock reaction, he grabbed up a coke bottle full of water, and went around administering last rites to his own people and drinks of water to other people, out of it. You can see the coke bottle here. I might just say a few more words about this interview. This Catholic Priest lived in another community, but he had a mission church in Flagler--a small group of Catholics, about thirty families. It is a predominantly Protestant, old-settler white community. Previous to this disaster--I will bring this out more carefully tomorrow in the report on Flagler--previous to this disaster, there was a good deal of anti-Catholic feeling in the community. But as a result of his actions, plus the fact that two or three of the Catholic families themselves suffered most in the disaster, in terms of family members killed, the status of the Catholics went up considerably. It is a rather interesting result of this whole thing.

Mr. Hart: How long after the disaster were you there?

Mr. Fritz: We got in three days after it happened. We stayed there about six days.

Mr. Hart: So you don't know how persistent the new feeling was?

Mr. Fritz: That is another problem that really should be delved into. We should go back and periodically sample in time to see how persistent these things are. We can make no definite conclusions about the persistence of either the psychological or the social effects until we do make some re-studies of the same thing.

Mr. Gorden: I think, in a way, we had an ideal situation in Flagler. It was a town of some 800 people, where everybody knew everybody else. They were related to one another or just friends, and it gave us an opportunity which we did not take full advantage of, and that was the fact that you could cross-check. You can ask somebody from both ends of the conversation, or from two participants and an observer, and get all three of them and get an interesting picture, which we did do in three or four cases.

Interviewer: Well, I wonder if you would just sort of tell me in your own words your experiences over at Flagler last Saturday?

Respondent: Well, I was up there for the Flagler Day celebration. And then I was ready to leave at twenty to three--the accident happened ten minutes later. But I had a little boy with me and two girls that had been up there--they're about grade school age, about the age of seventh grade. I was parked in back of where the accident happened, but I moved towards the exit. And then, I parked my car there and we went to look for the boy--the two girls did--and we couldn't find him; and I was getting a little impatient, because I had to get back for confessions. And so then I--we sent them out again, and we still couldn't find him. Well then, they came, I think, either thirty seconds--just about thirty seconds--before the accident. And then we heard the announcer say that a plane was going to bomb this target there about a block from the crowd--dive twice, and the third time, going to bomb it. Well, soon as he said that, this plane came from the south, and I never knew till the next day that it wasn't the plane that was scheduled. Well, anyway, to my mind, it looked like he was off his course. He was this side of the crowd, you know; I never realized it wasn't the right plane. And he didn't go up high or dive down; he was flying low, see. Of course, you know all that. And then he was flying low, and looked like he started to do a barrel roll, as I say. And he got on his back, and then, all of a sudden, he veered right in the crowd. And I was on the whatacallit of my car--the running board, and I saw him get on his back and then saw it looked like he couldn't pull out of it. And he lost altitude, and he went right--he veered about a 75 degree angle, right in the crowd. And I couldn't see the motor hit itself, but I could see it come right down, and then I saw the plane just splatter into bits, dash over all the tops of the cars. And this is what you want to do--our reaction, I imagine, that was the main thing.

I: What was your first....?

R: My first reaction, for thirty seconds, was to do nothing. I--for thirty seconds there, I just did nothing. And another man, in front of me, who, later on, was a big help, too--he did nothing. And then, after about thirty seconds, whether it was the announcer speaking to control the crowds or whether it was just, of course, my sense of duty, then, well, first thing I could think of was, well, maybe some of them will need baptism, since they're dying; so I got a--so I knew some pop coolers, went by and got an empty pop bottle and filled it with water, and then I rushed over to the crowd. When I got there, the announcer'd been announcing, "You men, get together and keep the crowd back and get the women going down to the hangar." (I think he said that.) And, when I got there first, in the crowd, it made me a little mad. I was supposed to take care of the spiritual wants, and here the men--a lot of those men--my first impression, they were just--well, they were dazed like I had been, I'll tell you. They didn't do anything; they didn't push the crowd back or anything, from what I saw. So I yelled at a few of them to get coming with me and get those ladies moving. And we saw curiosity-seekers--one or two or three or four--every once in a while would be looking at it, just looking. They weren't the relatives; you could tell the relatives. We got--I moved them on, and, oh, I'd say, "Now, move down to the hangar." And one lady come up, she says "Well, what way is that?" You know, and then I had to point it out to her. And then a little boy I know was crying very much; he lost his mother. Of course, by this time then, the--I kept sending people down to the hangar, and then I thought, well now, here they probably need some more pick-ups for the ambulance, so I went down to the announcer and asked him to announce for those with pick-ups to drive on the east-west side of the accident and line up so's to take them to the hospital. Why, that was about five minutes afterwards and, by that time, the men--the doctors and the nurses that had first aid--were doing very good. There wasn't any panic in the crowd. I'd say the people were dazed, and they didn't know --some didn't know--what to do. But with the announcer there and then the professional men and a lot of people--they just started working, right away, they did. Then, of course, then I went about giving--baptising several and ministering to our people, you know, and then at the hospital. But that day, a lot of them took over at the highway and kept the oncoming traffic--that's from Highway 24--from bearing down. They stopped it, so that we could get going to the hospital whenever we wanted. It seemed, on the whole--out of the whole crowd, I'd say there were a lot of people--enough people--that had a natural sense of, what'll I say, responsibility that, within a matter of minutes, they had everything under control. I mean, everybody seemed to fit in the job that fit--suited--them. Like I say, at first, there were a lot of people who were dazed or amazed and didn't know what to do, and they never did do anything. But there were enough people there, from what I gathered, that they did a wonderful job. There weren't too many, but the ones that were

there, they just got--they had the sense of "Now, this has to be done," and each man fitted into his own position, you know what I mean--like, the doctor for that, and one for the car. And they had everything going good, and they must have called the hospitals very quickly, from the neighboring towns, because they got there--oh, they said thirty minutes, but I thought it was an hour. And then, at the hospital, somebody came up to me and asked me if they wanted any blood donors--not that they needed it; they had enough plasma; I asked the doctor; he said they had enough plasma--but they were there. So, in general, that is the main thing that was--I'd say that--now, of course, if there were fire, I don't know what would have happened. I'd say panic would have certainly broke out, at least, for a while.

I: Why do you say that?

R: Well, I just--like, I was talking to one lady, later, and she said, "Well," she says, "Well, now, if there'd been fire and my little child were in there," she says, "you couldn't blame me if I ran into the fire to save him." That's why I think that there would have been a lot more panic. As it was, there wasn't much panic. There was just more--just dazed and stunned, you know, and then everybody started--some started following their duties, and then the others just--of course, some just beat it home; some just figured, "Well, now, I'm going to get home and just get away from here." I know a lot of them said, "Well, I'm..." I says, "Now you go up to the hangar;" she says, "We're going to--" A lot of people says, "We're going to get in our car and go home." So that's very briefly, what my reaction was. My first reaction, for thirty seconds, was: I just stood there.

I: How do you account for that?

R: Well, I don't know, it was just hard to believe that that could happen where you were. Maybe, if it were a war--later on, we thought, "Well, suppose that were a bomb." But if we knew it was war, we might be prepared to know what to fit in our jobs. But, here we were, enjoying the holiday, and then, all of a sudden, it happens, and it's just hard to believe that a thing like that could happen in our little town. Where it should be expected--in a war zone or something, you'd expect that, but here you didn't. But once that first reaction got over--that this has really happened, then our sense of duty was just enough there that we went--we started doing. But I think that was partly it: it was just--well, you just couldn't believe it happened there for a minute, you know.

I: Do you remember what thoughts were going through your mind at that moment?

R: Do you mean the first thirty seconds or afterwards?

I: The first reactions you had, the first thoughts you can think of.

R: Well, just about what I say. You just sort of-- I don't know, I'll see if I can remember. Oh, it was more that--it was just--I don't know, I don't know what exactly thought did enter. It wasn't so much; it was just--you just sort of thought, now, "This has happened." And yet--well, "What shall I do?" Not so much your sense of duty the very first few seconds. You just didn't do much, and I saw a fellow in front of me who did a lot later, and I thought, "Well, gee, he's not doing anything either." That was just the first reaction, and then, after that--I don't know, maybe, when you hear a few screams or something, then you--then immediately, I started running to get the water so I could baptise them. Once I went into gear--in fact, I ran over there then, but for the first few seconds there--I don't know, it's hard to describe what thoughts. I wouldn't say, necessarily, fear, because I wasn't in it. You know what I mean? It just may be: "It's there, now what am I supposed to do?", or "Gee, it going to be--I'm going to have to do something." And, "Gee, I wish it hadn't happened,"--that's one of the thoughts, maybe. But nothing, not anything--I wouldn't say you had thoughts, necessarily, of any bravery or hero or anything like that. Once I started to come out of that first half-minute, then my sense was a sense of duty, as a priest, see? That was my main duty; that was the thing that made me go there.

I: How did you come to arrive at that decision?

R: Well, that's instilled on us anyway. See, we're, as a priest, we're obliged to take care of the sick and the dying, even at the risk of our own life. That is a matter of moral obligation with us. For example, if coal miners are trapped, and they need spiritual help, we're bound to risk our life, if necessary. Now, that isn't necessarily everybody, not every Catholic, no, but a priest is. And that's something that we hope don't happen a lot, but, when it does, you know you just got to do it. That's the reason that we did it; see, we're bound to do that, I mean. So I wouldn't say it's all purely voluntary, but it is voluntary, in a way, because you are doing it. But that's why: we are obliged, whether it's fire or whatever it is, we're bound to do it. But, the men--I admired everybody--I'd say, the small few that fit into their jobs and got things going very quickly.

I: Who were those men, mainly; do you recall?

R: Well, on the announcer. He was the main one, and he did a lot. I think some gave him some suggestions later, like saying, now, "No smoking in the immediate area." And at the time I thought, "Well, why is he saying that?" because I hadn't smelled gas, and it never gave me a thought. But, as far as the fire, it never gave me a thought about the fire until after it was over, because, when we got over there, I didn't smell any

gas. There was no fire, and, when he said, "No smoking," it never gave me a thought why he said that. But someone was thinking; someone was thinking pretty good. It seems, in any of these disasters, if you can get a few men to just call out the directions, that's all you need.

I: What did------ do, that you felt was particularly helpful?

R: Well, let's see, how'll I put it? He said, now, "You men, get busy there. You men, keep the women back, and you men get busy; organize, there, you men." I'd say that was the--a little phrase like that was the main thing.

I: When did he say this?

R: Oh, it's hard to say. Maybe, half a minute or a minute afterwards, or so. It was very shortly afterwards, though, and, of course, for the next five minutes, he was--but it was within a minute or so, he was saying that, though. I know, for myself, that was a big help. I don't know how it reacted on the other men, but, I know, like I say, when I got over there, instead of being able to take care of the people's spiritual wants, I was following his directions, partly, in trying to get some other men to come in. In fact, I did have some men help move a lady; called them over to move her to the hospital. But not all the men seemed to be doing it. Of course, now, I'm just speaking for myself. There was so much excitement there that you can't tell what everybody else was doing. But, from what it appears later, a lot of those men were very--were thinking very fast. Like one man I know, he lost a daughter. As soon as it happened, he reached down--I don't know where his unconscious daughter was--he reached down and grabbed her and was the first one to the hospital. So you know that others' reactions were quick. Of course, they were right there. In fact, the pilot fell at his feet. But it's hard to say what would happen, how close you were. But it did make us think, now, if that were a bomb, that we'd have to be ready. It did make us bring--it brought war close home to us; it did do that.

I: Do you remember any other people who seemed to take an active role?

R: There were the doctors, of course, and then there were a nurse or two; in fact, one or two--not student nurses, but what-do-you call them--nurse's aide. They said, "I'm a nurse's aide; I know how to--Can I help?" As far as at the hospital, of course, the nurses and doctors and that, they were the main ones. Lemme see who else was especially helpful, there. Well, just offhand, I'd say the doctors and that, and the men that were assisting, bringing the people to the ambulance, and then also those at the highway. Isn't strange how you think of the little things? Now, like, they were stopping the on-coming traffic so the ones with cars from the airport could get to the hospital quickly. I'd say

that that just sort of impressed me, you know, off-hand. I don't know, there are probably a lot of others. I'm sure there were a lot of others who did outstanding jobs, but you don't always--you're not in a position to see them doing that. You know what I mean, so you just don't know.

I: Do you recall who the people were, that is, what types of people seemed to be taking the central role --the ones helping the people to the ambulance, for example?

R: Now, let's see how I can put it. They're just ordinary people. They weren't-- It seemed that a lot of the professional people, I'm thinking about doctors-- But, it seemed like-- I don't know how to put it, but -------- (the announcer), he's a thinker anywhere. I mean, he's studied a lot, I mean, reads a lot. How'll I put it? The ones that looked like curiosity-seekers, they didn't seem to be, well, too concerned, or else didn't care much. But the ones who had loved ones in it and, I'd say, the more intelligent persons in the community, I'd say they did-- Of course, I couldn't condemn the others, now, don't get me wrong. But just off-hand, on the whole, they're just ordinary persons who just realized their duty. Those were the ones that did it. It's hard to say which; you can't get a whole class.

I: Did you know any of them personally?

R: No, that's the strange thing. Outside of seeing the doctor who I could tell was a doctor and --------(the announcer) I knew, and then, of course, the hospital, I knew them. Outside of that, I couldn't-- I don't recall; they just seemed to be just an ordinary person working. But that was partly because I'm not up there quite as much as I am in Stratton. That's a mission of mine, and maybe, if I ever lived up there, I could know their faces and could tell you very easily--say, now, "This is so-and-so and that's so-and-so." Whereas, down here, I could tell you that.

(End of excerpt)

Mr. Fritz: It is interesting to note the psychosomatic reactions. He lost 10 or 14 pounds in his reaction. Seven pounds is what he says, anyway. Also, his hair started to fall out. He had dermatitis as a result of this.

Dr. Marrazzi: Did he eat?

Mr. Fritz: Apparently yes, although he had some loss of appetite, afterwards.

Dr. Marrazzi: Seven pounds is not difficult to lose by not eating.

Dr. Star: He mentioned somewhere in the interview an extreme thirst he developed, whether it was loss of water from all this running around or from his emotions, I don't know which. He finally took a swig out of the pop bottle himself.

Mr. Roth: How long was he active?

Mr. Fritz: He was active all during the day, actually, even after the bodies were removed. He went around to the families of those affected.

Dr. Fenton: How do you explain this sense of time? He mentioned thirty seconds at least five times during the interview.

Mr. Fritz: That does not make it so. You get a tremendous variation. The subjective evaluation of time varies tremendously. Some men or women said that they were stunned, and they were not able to act for two or three seconds.

Dr. Fenton: He mentioned thirty seconds and then later thirty minutes.

Dr. Spiegel: It isn't only the time; it is also spatial relations that he is very well aware of. He mentioned 75 degrees as the angle of the plane. He knew what was east and west and north and south. He has all his spatio-temporal relations plotted out, and appears to need that to feel comfortable.

Dr. Star: He makes mention and reiterates it several times of this utter shock about the woman who didn't know which direction the hangar was in.

Dr. Spiegel: He can't conceive how anybody else could get disoriented.

Mr. Fritz: In these rural communities these things are important; you do know east and west and north and south.

Mr. Gorden: We don't want to assume that, because he stuck to these figures, he had any objective accurate estimate, because how a plane could turn a 70 degree angle, tell me that one.

Dr. Hughes: That is just the semantics of our society. Engineers will always give you a figure, but that doesn't mean it has any reality.

Dr. Fenton: In societies where four is the ritual number they will structure things in terms of four.

Dr. Star: Later on he comes to say that it was just a few seconds. What he is doing is minimizing what seems to him to be a failure. He says "The guy in front of me wasn't doing anything either, and it was just a few seconds anyhow." It seems to be his justification of a quite normal response.

Mr. Roth: Is it possible that he, as a learned man, and realizing the purpose of the interview, was trying to help the interviewer by trying to be as precise as possible in his own mind?

Dr. Star: Yes, I think he says that. He indicates his self-consciousness. He says, "You know that already, and I suppose your interest is in this."

Dr. Fenton: There was a nervous reaction there in his laugh, nine or ten times.

Dr. Marrazzi: I think the important thing that impresses me, aside from the interviewing technique, if this is really representative, is the influence of training, because apparently this man did come out to be the leader, and a very effective one, and he relied upon what was inculcated into him.

Dr. Hughes: But this was defined for him way back. He accepted this role years before.

Dr. Marrazzi: But apparently that is a very effective way, if this is representative.

Dr. Star: I tried to suggest that this morning--these are the role people, the professional danger-fighters.

Dr. Fenton: He mentioned his sense of duty and the natural role he had to perform.

Dr. Marrazzi: And the fact that he had psychosomatic manifestations means that he did it in spite of his personal feeling.

Mr. Hart: And he said "We hope it won't happen very often;" and then his laugh.

Dr. Star: He makes one very interesting slip in here. He talks in the plural about "We priests have to do this," and he is talking about the theory of the church and what he has to do; and then suddenly he says that is why we went out there; and it was only he going out there, but he carries this strong sense of identification with the role around with him.

Dr. Powell: Also in the thirty-second question of what he was thinking about, he denied that he had been thinking about heroism. It seems to me that he didn't want to go out there.

Mr. Fritz: He was quite conscious of his new status in the community. People would pat him on the back and say, "You did a wonderful job." Towards the end of the interview he asks the interviewer, "What are people saying about me in the community?" You see, he was quite conscious of his new status. There is no question about the fact that his status had risen and he was quite conscious of that status.

Dr. Hughes: If this clue is of any importance, I've got a student who is studying Protestant theological students as to their conception of their role in the community and it is perfectly chaotic. I've got a priest studying the priest's conception, and it's really quite consistent.

Mr. Fritz: We have a wonderful example here. The Protestant minister who was at this event went home; he went home almost immediately, apparently; it was almost panic-sort of behavior. When he got home he found that he had left his child back at the airport, so his wife told him to go

back and pick up the child. His role was not cut out for this sort of thing. The priest's role was. It definitely fitted into the situation, but the Protestant minister went home. He didn't bother with anybody there.

Dr. Marrazzi: I don't want to get off the subject, but this is such a good transition to something that bothered me this morning that I want to bring it out. One of the definitions of disaster was that conduct was improvised rather than patterned conduct. And apparently here when the pattern is sufficiently strongly impressed it continues over, and perhaps that is one way of training.

VIII. REPORTS OF FIELD INVESTIGATIONS OF DISASTERS

A. A Poison Liquor Episode in Atlanta, Georgia

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In October, 1951, the city of Atlanta suffered what amounted, on a small scale, to a toxicological invasion. The toxic agent was methyl alcohol. The source of the poison, the vehicle within which it was distributed, the channels of its distribution, and the occasions of its consumption, were all normal components within the life of the city. They had their local meanings and values and clustered feelings; and these operated to affect, in determinable ways, the impact of this episode upon the facilities and organized resources for remedial action, preventive action, and repair. Had the epidemic of alcohol poisoning taken place in another city, there would have been differences in the pattern of response. Had Atlanta's episode arisen through one of the publicly regulated sources, such as pollution of the water supply or milk supply, the pattern of response would again have been different in several ways. As the episode stands, however, it furnishes a legitimate test of the city's response to a public calamity involving widespread apprehension. It furnishes an even more adequate example of the extent to which individual and community behavior in response to crisis is colored by the emotional structure of the culture and by the pre-existing group relationships within it. Finally, it raises in a striking form the question as to how far the meaning of data elicited by field investigation and interview is shaped by the unique elements in the local situation and culture. For the present purpose, however, these matters will be taken account of only insofar as they affected the creation of the emergency, the load on the emergency facilities of the city, and the impact on the organized attempts at remedy, prevention, and reconstruction. These do, after all, represent the sum of the practical problem in any civic disaster.

The Incident

For many reasons, largely economic, a very large proportion of the whiskey consumed in Atlanta is bootleg. Of this, a very large proportion is consumed in the colored quarters of the city. Known as "alley juice" or "white lightnin" it is purveyed in alleys, in the back rooms of stores, in certain houses that are known. Where "guv'ment liquor" (sold in privately owned liquor stores) runs around $3.00 a pint for labeled brands, alley juice can be bought for $1.50 a quart. The consumer with only a little money to jingle in his pocket can stop in and get a glass of it for $.50.* Of the white community, those who consume alcohol in large quantities on low incomes also have regular access to bootleg.

Into these channels, late in October, 1951, went nearly 300 gallons of moonshine injudiciously mixed with a barrel of methyl alcohol which had been

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*"ON" sale by the drink is illegal. There are no saloon, bars, or drinking restaurants.

supplied, with directions for mixing--by a wholesale drug firm to a white bootlegger. Along the normal channels of bootleg distribution, this flood of poison found its way through the main tributary bootleggers down into the streams and rivulets of local distribution and turned up in scores of places throughout Atlanta. Most of that which was consumed was bought in and around the settlement known as Peoplestown, a quiet, decent, low-income, colored neighborhood. Other samples of the poison, however, turned up in other parts of Atlanta, and even in other cities.

Consumption of the poison batch began on Sunday, the twenty-first of October. By Monday, the only colored hospital in the city--Emory University's Grady Hospital--with its colored emergency ward--began to be flooded with victims. Thirteen died by Monday night. By the end of that week thirty-nine persons were dead, of whom two were white and thirty-seven were colored, including a ten year old boy. Nine others were known to have been totally blinded, and many others are still returning for clinical treatment. By Monday night, Grady Hospital was on an emergency basis which lasted through Tuesday night. Nurses from the white hospital were kept on continuous twenty-four hour duty in the Negro building; medical students were taken from their studies and pressed into service in the clinics and in the laboratory. Every doctor was on emergency duty. Wards and corridors were filled with victims or with people waiting to be examined. The bodies of those who died stayed in the wards because there was neither time nor personnel to remove them, as the new victims came in to be tended to. I examined 433 clinic interview sheets of persons suspected of methanol poisoning during that one week in that one clinic. Of these 183 were reported asymptomatic. Of the remaining 250, the medical staff estimated that 75 who reported definite symptoms had not actually had any of the methyl alcohol; at least, they were negative to the specific tests which the hospital was applying.

By Tuesday, the local newspapers and radio were scare-heading the poisonings on front pages and in hourly bulletins, as the number of dead rose. On Wednesday, the editor of the Negro newspaper, the Daily World, sent out a sound truck with a record warning people that bootleg whiskey was poison,* to destroy what they had, not to drink any more, and sandwiching this record with the playing of "The Bad Bad Whiskey Blues." In spite of all these efforts at public information and warning, patients were still appearing by the end of the week who reported that they had not heard anything about poison whiskey. On the other hand, because of the public information and warning, scores of people appeared at Grady clinic asking to be examined because they feared that they might have had some of the poison.

There had been previous episodes of wood alcohol poisoning in Atlanta. These, however, had usually been confined to the participants in a single, large drinking party. The public might feel horror, but did not feel apprehension unless they had been at that party. In this case, the disaster-like aspect of the episode was lent by the widespread apprehension which arose from the fact that no one knew which of the bootleg whiskey contained the poison, and almost everyone had had some bootleg during the weekend or the days following it. Since the symptoms might be as late as four or five days in appearing, no one knew whether the drink

*Printed posters to this effect appeared in licensed liquor store windows (January, 1952).

he had yesterday might still strike him down with blindness or death or distress today or tomorrow. This one fact contributed heavily to the profound sense of identification with the victims, which underlay so many of the behavioral aspects of this episode.

Official Action: I. Police

Police acted very promptly to find the source of the poison and eliminate the remaining stocks of poison whiskey. By Wednesday they had apprehended the chief bootlegger, one John Hardy, a white accomplice, Roger Smallwood; and ten Negro distributors, of whom several had prior arrests and convictions for bootlegging. They were active in encouraging the spread of public information and warning. They tracked down the remaining stocks of whiskey, although at the end of the week they were still uncertain that all of it had been found.

On the other hand, the presence and activity of the police in this case had other consequences which hampered the remedial efforts of the hospital. In the first place, it is widely believed in Atlanta that the police are in league with the bootleggers, that the governor himself owed a large part of his campaign fund to the contributions from the bootleggers, and that the police have relations with the bootlegging fraternities such that it would be dangerous to give information. Policemen ride the ambulances to Grady Hospital, and detectives are usually to be found in the emergency clinic (Negro), where a patient seeking treatment may find a doctor on one hand taking his medical history and a detective on the other questioning him about some of his recent activities. Coupled with the equally widespread belief that the bootleggers themselves may retaliate, even to the point of killing, against those who inform on them, and coupled again with reluctance to inform on the bootlegger, who may be regarded as a friend or a necessary source of supply, the result was a considerable reluctance on the part of the victims to admit they had been drinking at all, or if they would admit that, that they had been drinking bootleg. This is further complicated by the social stigma which pertain to moonshine as a distinctly lower class type of beverage. Some of the victims died in the hospital denying that they had even had a drink.

Official Action: II. Grady Hospital

Grady Hospital rose to the crisis with unquestionable magnificence. Not only did all persons connected with the hospital give twenty-four hour service; even in the midst of the crisis of remedial action the medical and eye clinic staffs recognized the possibilities for research in this calamity, and began organizing their investigation to that end.

The hospital used two tests to determine whether their applicants had had any methyl alcohol. One was a bedside test for CO_2 absorption by the blood, developed and published by the Mayo Clinic last year. Another was the examination of the eye grounds. Where the length of stay in the hospital permitted, additional tests were made: blood and spinal fluid tests for the breakdown products of methanol, such as formaldehyde and formic acid; retinal photography; and various additional laboratory chemical tests. Post mortem analysis was also possible in a number of cases, and the eye clinic shared in this investigation.

Treatment was administered to those who were positive on the specific tests; those who were able to return home were given instructions for self-medication, usually with massive amounts of sodium bicarbonate. In an experimental

way, both cortisone and ACTH were administered to a number of the patients who were hospitalized, and the results were being watched.

Clinical Findings

The first item on my agenda had been to get from the medical staff an accurate account of the normal pathology and clinical course of methanol poisoning. This proved to be a mirage. My reading of the clinic sheets uncovered no less than twenty-four different symptoms reported by the patients singly or in groups. There appeared to be no correlation between the amount of methyl alcohol ingested and the nature or severity of the symptoms which might result, in persons sharing the pint among them equally. Some might be dead in a few hours; others might feel no effect whatever. It is also possible to acquire an immunity to methanol by patient and assiduous ingestion of it in one form or another; and within the drinking community, there were numbers of individuals who had acquired this tolerance. It was also impossible to determine with any exactness what the source of the poison might have been: while many of the victims had had Hardy's moonshine, others had habitual recourse to various adulterants to cheapen the cost of drinking, such as hair mixtures, paint thinners, etc. Whether there was a threshold factor which was passed by individuals who had drunk in small amounts over a number of days could also not be determined.

The range of symptoms reported was very great. The major effects were reported in three of the body systems: visual, respiratory, and gastro-intestinal. Stomach cramps and abdominal pains ranging from mild to extremely severe with severe vomiting were the largest group reported. Impairment of vision, pain in the eyes, blurriness, fogginess, some color blindness, central scotoma, loss of visual acuity, were variously found in a wide range of patients. Just as the medical staff was baffled by the lack of correlation between the amount of poison present and the extent of pathology or symptomatology discoverable, so the ophthalmologist, Dr. Curtis Benton, was surprised to find no correlation whatever between visible pathology in the retina and reported or testable impairment of vision. He described cases in which badly inflamed retinas and optic discs existed without any impairment of vision and other cases in which persons totally blind showed no visible damage to the eye. Others might be blind in both eyes with visible pathology in one retina, still others might be blind in one eye with that one being the less damaged on inspection. The literature is apparently equally confused. Dr. Benton told me that about half the authorities hold that permanent blindness is the eventual result of methanol poisoning, with the other half holding that initial impairment may find remission in a shorter or longer time. Dr. Benton is following up his extensive examinations and photography of patients on the spot with provisions for regular return visits to the eye clinic by about 100 of those who showed some initial impairment. He expects to publish this data, as do Dr. Ivan Bennett, Chief Resident in Medicine, and Dr. Manuel Cooper, a second Assistant Resident, who have collaborated in attempting to tabulate the medical and clinical data.

No judgment had been reached by the medical staff on the efficacy of ACTH or cortisone. A fair proportion of the victims who were hospitalized underwent psychotic episodes of from a few hours to two or three days duration, usually paranoid in form. In at least one case the doctors were undecided as to whether this was precipitated by the methanol or by the ACTH. One of the patients whom I interviewed reported total amnesia for the twelve hours following admission

to the hospital; and follow-up interviews in Atlanta over a period from four to eight weeks after the incident had elicited very widely-extended reports of amnesia for the whole episode.

Problems of Medical Action

Efforts at medical treatment were severely hampered by many factors, one of which I have already mentioned, namely, the negative response in the presence of the police in the hospital was perhaps peculiar to bootlegging as the source of poison and, perhaps, even to Atlanta. Others, however, more serious in their effects, would probably characterize any epidemic calamity of this sort with its attendant widespread apprehension.

First to be mentioned perhaps should be the factor of alternative choice on the part of those who are affected by the calamity. For many reasons peculiar to Atlanta--the activities of the police, the slowness of treatment, the Jim Crow nature of the single hospital to which Negroes can go, but from which Negro doctors are excluded--there are many persons in Atlanta who would refuse to come to Grady Hospital even in an emergency. In addition to these factors, there are alternatives such as faith healers, herb doctors, witch doctors, voodoo practice, home remedies; and there is the normal proportion of those with the predilection to turn to religious rather than secular aide. At least one of the women who was found dead at home, of methanol poisoning, was known to have turned in her distress to the nearest neighborhood church to which she asked admission to membership. Other bodies were found in homes and other places outside of the hospital, some because they had not time to reach the hospital, but others for reasons which we can no longer ascertain.

The most serious factor complicating medical remedy was that which arose from apprehension and from the tendency for identification with this calamity to take the form of hysterical symptoms. I have already said that more than 175 of those who crowded into the clinic came because they had been drinking and were afraid they might have had some poison, though they were found negative and asymptomatic. Of the approximate 250 remaining, the medical staff reported that 75 who reported definite symptoms were negative on the methanol tests. Of the remaining 175 who had been poisoned and who had symptoms, and who were treated, some died, some were hospitalized, a large number was given instruction on self-treatment and sent home. Of these, an unknown but definite proportion either failed to continue their treatments and later returned to the hospital in more serious condition, or actually returned and drank more of the poisoned liquor. Since those who are known to have done so are beyond access to interview, we can only speculate about the reasons. It seems logical to suppose that some of them felt that now that they had the antidote, they need not fear the poison--"the doctor can cure me so I'll finish this up while I've got it." I would certainly, however, not exclude the possibility of some suicidal component in this behavior; of this I shall have more to say a little later. The point so far as it concerns the overload on remedial resources is simply that, on a rough breakdown, of every 10 people who took up the doctors' time during those five crucial days, four had had no poison or showed no symptoms; two more had had no poison and did report symptoms; and only four had actually had the poison and did require treatment. Three deaths occurred in the clinic which were initially attributed to methanol poisoning, but post mortem examination found that they were due to other causes. One girl

who appeared at the clinic was found asymptomatic except for her tongue, which had been bitten by her boyfriend; the medical staff concluded that this was not a type of pathology assignable to wood alcohol as such.

Psychological Responses

Community

Most of the persons affected by the Atlanta incident were Negro, and every one of the responses which characterized the community's behavior in that incident derives part of its meaning from its position along the black-white gradient, which furnishes perhaps the most important single line of orientation in Atlanta's cultural compass. To most of the whites with whom I talked, this was something that had happened to "them." Universally among the colored respondent, I encountered the feeling "this is the kind of thing that happens to us." In the interview with Mr. Gordon, the Editor of the (Negro) Daily World, he expanded this statement with the explanation that liquor was one of the main sources of recreation and solace to a depressed community held below a fairly strict floor; that is, a level which is the white man's floor and the Negro's ceiling. The purveying of moonshine, he further said, is incidental to the conditions of Negroes' existence in Atlanta, since it offers a fairly ready source of income larger than could be obtained by most legitimate occupations. Mr. Gordon was omitting consideration of the fact that there is a large university and professional Negro culture in Atlanta, also; but I did not gather that there was much communication between the professional level and the depressed working class colored group of which Gordon was speaking. In point of fact all of the wood alcohol deaths in the last fifteen years in Atlanta have occurred within the Negro population, with the very minor exception of the three white people who were victims of the latest episode. The institutional force of this color gradient is illustrated in the fact that Atlanta does have Negro police, but that they are permitted to patrol only Negro neighborhoods, only at night, and no Negro policeman may arrest a white man, even when he is detected in the commission of a felony. Gordon said, and a judge who had sat on the white bench in Atlanta for forty years, confirmed, that no Negro had ever escaped with less than the maximum penalty for being involved in the killing of a white; no white has ever gotten more than a year at most for the killing of a Negro. The demand of the white prosecutor in the present instance that Hardy, the white bootlegger, be charged with murder for his responsibility in the death of a Negro customer, marks a very significant episode in Atlanta's legal history, and one to which the colored community appeared very alert.*

Evidence that the episode itself was bent to the black-white gradient by the people involved in it is furnished by accounts given me by members of the Department of Psychiatry, Emory University, to the effect that for the first time in many years the boxing match between Joe Louis and Rocky Marciano was looked upon and commented upon by their Negro friends and employees as a racial fight. As one Negro was quoted to me, "It'd been all right if Ezra Charles beat Joe Louis, but that Marciano, he's a white man."

I did not obtain a large sampling of white attitudes toward the calamity. I did encounter three rather special ones. One was the expression of a white

*Hardy got life imprisonment.

surgeon in Grady Hospital, who thought that Hardy should mix up another batch and "get rid of the rest of them." Another was the expression of one of the white medical residents at Grady Hospital, that he thought people like himself were over-involved and over-anxious in a case of this sort because of their own guilt as whites. A third was the expression of some of the third year students in medical school, who had been involved in the episode in the laboratory and clinic and who were deeply identified with the victims, to the effect that Hardy ought to be lynched. This was the only place in which I had heard that suggestion made.

In the assignment of blame for the calamity, I found most individuals placing the blame realistically on the bootleggers directly responsible; indirectly, on the existence of bootlegging itself. The constructive suggestions nearly all took the form that legal liquor should be made cheaper. A few blamed themselves for drinking, and some offered excuses explaining why they happened to take that particular drink. Mrs. Sifo explained that she was not a drinking woman but that she was dependent upon the hospitality of people whom she had begun to live with, and they were hard-drinking people and when they offered her a drink she did not consider that it was wise to refuse since they might think she was setting herself up as superior to them. Of the white victims whom I interviewed--neither showed any feeling that they needed to account for drinking bootleg whiskey; they simply assumed that it was taken for granted.

Identification

Several white informants assured me that the Negro community in Atlanta is bound together by profound emotional identification on an almost instinctual level. While I did find exceptions to this, for example the separation of the professional and the university Negro group from the other city groups, it seemed in general to characterize many of the responses and behavior. Beginning Monday night or early Tuesday morning, when the news of the deaths was spreading through the colored community, a line-up of Negroes began to form on the sidewalk opposite the ambulance entrance to the hospital. Five or six deep, and about half a block in length, they stood throughout the day and into Tuesday night, saying little, moving little; they acquired new members as passers-by stopped to join the throng. White students, who had to pass through this throng, reported feeling an intense emotional current running through it which some of them interpreted as hostile. In the colored quarters of town--not only Peoplestown, but elsewhere--groups of Negroes stood on sidewalks and street corners not talking much, not laughing much. Two descriptions were given of these groups: the reporter from Life described them as apathetic, with an attitude "between a chuckle and a sigh." The third year medical students to whom I talked had observed the same groups and saw them as knots of people huddled together and unwilling to separate, afraid to be alone, with nothing to bind them together except their common concern and apprehension.

The feeling of identification was shown even more strikingly in the behavior of a number of Negro individuals who by one means or another sought entrance to the hospital and to the morgue, to see for themselves the sick, the dying, and the dead. They were, in most instances, not relatives or friends. Some of them were well-educated Negro servants and professional women.

On the other side, stands such exceptions as the venerable Uncle Tom who waits on table in the hospital dining room, who explained that this is merely

the Lord's way of getting rid of "undesirable niggers;" "in Florida he use a harricane; in Atlanta he use poison liquor to get rid of the bad niggers." Two instances were reported to me further of families which had evicted boarders or roomers who were blinded by the methanol, and who had to be adopted by the Social Service Department of the hospital until charitable provision could be found for them. The victims themselves, furthermore, did not count unduly on this sympathetic identification. One of the Negro men I interviewed had had his drink of whiskey up an alley, and in one of the fastest onsets in the record, was taken violently ill and nearly blind before he reached the mouth of the alley. He made his way to a store at the corner where he had a friend. I asked him why he did not appeal to passers-by on the street, and he said, "You know what they'd say, a man comes stumbling out of an alley; they'd just say, 'he's drunk,' and hurry on by." This of course, was at the beginning of the incident, before wide public attention had been drawn to it.

The most important evidences of the power of identification, I believe, were shown in three other areas of behavior: the hysterical, the suicidal, and the response to rumor.

Hysteria

Identification of the number of patients who demanded treatment or reported symptoms without having had any of the poisons is difficult. For one thing, many of the symptoms reported by those who were poisoned lie within the range which would be produced by anxiety; stomach and abdominal cramps, dizziness, heart flutters, dyspnoea, and the type of symptoms typified by "just feel sick all over." Coupled with the difficulty of being absolutely certain of the specific tests for the presence of methanol, this gives a margin of uncertainty around the fringes of the hysterical group. The medical staff's guess was that 75 presented quite definite symptoms with definite absence of poison--as I have said, about two in every ten. One case which was reported to me by a member of the lay service staff of the hospital, and which I tried very hard to track down without success, was that of a man who had come in apparently blind, been found negative and discharged as hysteric, and returned later having drunk some of the liquor and become completely blind. Dr. Benton's guess was that this account may have been based on a patient who came in with impairment of vision, was treated and sent home, and returned later blind.

The presence of such a high proportion of hysterical victims, together with the wide variations in symptomatology even in those who were poisoned, leaves room open for speculations as to possible factors of symptom choice--"organ choice"--in the individuals who were afflicted. In the time available, however, no investigation could be made of this factor, though one of the interviews I shall report raises the possibility.

Violence

It was noted by the hospital and the police that, during the height of the crisis over the poisoned liquor, there was a marked drop in crimes of violence and in the number of persons who reported to clinics for minor repairs arising out of altercations involved. The number who went to private physicians during this time was not known. It was also noted, however, that patients who came into Grady clinic with other symptoms or complaints than those arising from

poisoned whiskey--mothers bringing children to the pediatric clinic for example--were characterized by a note of apology for having troubled the hospital at such a time.

Another factor which deserves careful study, if time and facilities permit it, is presented by the patient who went back after hospital treatment and drank more of the poisoned whiskey. This occurred apparently during the height of the public concern, when to be a Negro was to be in danger, to have taken a drink was to make one a brother in peril of life, and to die was to make the front pages of the whole city's concern. At the height of the crisis, a young Negro man drank a bottle of good whiskey, and went out and lay down on the railroad tracks where he looked, the engineer said, "just like a white piece of paper," until the crimson remains were dragged out from under the wheels. What might be called the Juggernaut factor may very well have been at work in increasing the death rate either by deliberate suicide, by inadvertent suicide, or by the marginal exacerbation of the pathology arising from the whiskey itself. This may be presumed to have higher probability in the suppressed minority section of the city's population. It cannot be presumed to be entirely absent in any situation involving widespread disaster and enduring apprehension, in a situation in which a whole community's concern is directed toward victims in such a manner as to elevate their misfortune to the status of tragedy.

Rumors

A number of significant rumors agitated the Negro community by the third or fourth day after the deaths began to occur. These were reported to me either directly or through members of the University and Hospital staff who had heard them from their own Negro friends and employees. In some instances, it was these rumors which led directly to the necessity felt by these individuals to force or trick their way into the morgues and into the hospital wards to see for themselves whether these things were true.

One of the rumors which had this result was that victims were being buried before they were dead. This rumor actually had a curious historical basis. Of the first sixteen who died, one of the undertaking houses secured fifteen of the bodies. This led to suspicions on the part of rival undertakers that the successful house was taking the bodies out without waiting for official authorization. Such a charge, voiced in the hospital corridor, was overheard and reported by a Negro reporter and was repeated in the white press. The statement that bodies were being taken without authorization was promptly converted into the fear that people were being buried without being dead.

Another widespread rumor which led some individuals to the need for personal investigation was that victims were being mutilated or were dying of police violence rather than of poison. This rumor gained credence from the local beliefs about the past history of police brutality, and stories of individuals who had been picked up by the police as drunk, beaten to death, and then listed on the blotter as having died from poison whiskey. No cases of this were found in the present instance; but I was assured by reliable professional informants, both white and colored, that such incidents do take place in Atlanta and such fears are not wholly without foundation.

The most interesting of the rumors which led people into the morgue

(as observers, not as victims) was that when Negroes died of wood alcohol poisoning their bodies turned white. In the words of one professionally trained and experienced young Negro woman, this "horrified" her to such an extent that she had to go and see for herself. The suggestions implicit in this rumor and the horror which it arouses would lead very deeply into the psychology of the colored minority, perhaps not only in Atlanta. Checking in Baltimore, I encountered related incidents: one patient in the University Hospital, for example, a Negro man who had gotten acid on his face, was instructed to continue washing it vigorously with soap and water. He protested, in fact resisted, with the objection that he was afraid he would turn white. White individuals to whom I quoted this rumor have associated it with the customary white phrases indicating our peculiar horror of green: being green with envy, the use of green in horror and ghost pictures to create appropriate effects, and the rumor among the troops in Korea that bodies which died there turned green after death. In Atlanta, as in Baltimore, there are sharp social gradations among the Negroes themselves based on color, or rather on shade. In Baltimore the pure black group is quite articulate as to its own superiority to the "mixed bloods." In Atlanta the black-white gradient is as strong as it is anywhere in the South. One Negro woman patient in the hospital was quoted to me as muttering in delirium, "My life don't belong to me, it belong to the white policeman." The juxtaposition of the white symbol of superiority, the impulsive belief that people who were black can turn white, and the horror which this invokes when expressed, are powerfully suggestive of the influence of the gradient which I have spoken of as coloring the emotional responses to such a complicated situation as that set up by the methanol poisonings in Atlanta.

Individual

Through the interested and friendly cooperation of the medical staff I was able, at odd hours and difficult conditions, to interview six victims of the methanol poisoning. Four of them were Negro, three men and one woman; one man and one woman were white. One Negro man and both of the white victims had been temporarily blinded. The Negro woman was blinded in one eye and another of the Negro men was totally blind. The remaining one was a clinic patient with no definite symptoms whose connection with alcohol poisoning itself was dubious but who still appeared to illustrate some of the important questions which this investigation raised. The white man and white woman had been together in the house with the white man's sister who had died. The Negro woman had been with three other women all of whom were dead of the poison. The other respondents had been drinking alone and were not close to any deaths. On the whole, the axis of visual impairment seemed to be the logical one on which to string the selection of interviews since this represented the major threat next to death itself and since this also represented the area in which we could count on the patient's returning for further examinations at the eye clinic.

In terms of personality structure, the first patient, R. D., is apparently a well adjusted and vigorous young man in his thirties, industrious, self-sufficient, the father of a family. He revealed a tendency to avoid close contacts with other people, to stay out of what might be trouble, and to blame himself, not wholly but primarily, for anything which happened to him. The second interview was with a woman in her sixties, Mrs. S., who was blind in one eye and who had a two-day psychotic paranoid episode following admission to the hospital. She described herself, primarily, or rather allowed one to infer, that her major vision

of herself is that of a woman whose pride is based on her identification with a mother who was professionally competent and had secure status, since whose death Mrs. S. has found life rather lonely and meaningless with no friends, no settled place to live and no security of occupation. She had left her job as a restaurant waitress a couple of months before the drinking episode as a result of "heart flutters," which began to bother her and which she identified with a gesture to her right side rather than to her left, but in my interview with her, she blamed the drinking and the blindness for keeping her from working. The third Negro to be interviewed, Mr. N. D., is an obsessive compulsive with a strong mother dependency, who was totally blind as a result of the methanol. The two white patients interviewed were Mr. T., an apparently bluff and hardy metal worker who conceals himself behind this ostensibly open and friendly front of words; it was he whose sister died of the same drink which temporarily blinded him and sent him into the hospital. Mrs. F., his sister's friend, was also staying with him in the house at that time. She presents herself as a reliable and energetic sort of person coming out of a closely-knit family group; and in her story, though not in Mr. T.'s, she appears as the one who took care of the emergency at home when people began falling to the right and left of her from the poisoned whiskey, and she, herself, only realized that she was sick after the others had been taken care of. She also was temporarily blinded, and when she was discharged from the hospital early in November, reported that she still had occasional "black flashes" across her eyes. She reported herself as a waitress, but is rumored in the hospital to be a practicing prostitute. Mr. T. on investigation turns out to be alcoholic. Mr. F. D., interviewed on an examining table in the clinic, came in because he was afraid he had had more poisoned whiskey. On further question (a) the clinic records showed some doubt that he had been in before on this account, and (b) F. D., himself, began to wander and rambled off into whispered adjurations to the Lord. Of the six, two have had follow-up interviews: R. D., before he was finally discharged from the hospital, and Mr. T. when he re-entered the hospital with numbness of the feet and legs, which has been tentatively diagnosed as conversion hysteria.*

In terms of survival behavior, response to peril and planning for the future, there are interesting differences among the six although the data are not as complete on some as they are on the others. At the head of this list stands D., who--despite his reiterated reluctance to become involved with others and his tendency to assume guilt in himself at the basis of anything that happens to him--when he found himself getting sick, took prompt self-saving action, was appropriately selective of the means and was able to direct the friend to whom he went as to what he should do for him. Along with R. D. in this department stands Mrs. F. who took care of T. and his sister, running down the block to the nearest telephone, three times, barefooted, calling the ambulance, summoning the doctor, giving what first aid she could, before herself becoming sick and calling a friend to take her to the hospital. Well below them stands N. D., whose most interesting trait at present is his refusal to accept the fact that he is blind. His whole life structure was built around

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*T. entered Milledgeville State Hospital in December with undisguised psychosis.

a clerical job in a warehouse in which his meticulous obsessiveness and compulsiveness could express themselves and gain approval. In N. D.'s own words, "If I see you doin' somethin' wrong, I can't rest until I set it right." He lives alone with his mother who is the only one who understands the intricacies of his diet: only a one-inch square of ham, only certain vegetables, etc. The mother, in turn, is dependent upon N. D.'s income from his job. Thus blindness is the one affliction short of death which could sever from its roots his entire precious structure of life. In the hospital, although totally unable to see, he consistently denied that he was blind and on every test assured Dr. Benton that he was seeing a little bit more each time, although Dr. Benton assured me he knew this was not so.

Mrs. S.'s basis of survival is unclear. She is the sole survivor of her family except for one sister, whom she reluctantly contemplates joining now; she has lost two men to one of whom she was married; and very recently, last November, lost the mother on whom she evidently relied profoundly. She is now the sole survivor of a household of four women, the other three of whom died from the poisoned whiskey which only blinded Mrs. S. in one eye. She is a woman of some dignity whose future plans are being appropriately and realistically made in terms of the hypothesis that she can live with her sister if she, herself, has an income; and that being old enough and disabled enough to stop work, she should be eligible for relief to furnish her with the income to enable her to live with her sister and hold her own. Mr. T. was cared for; he appears to have done nothing in his own behalf. He has previously been cared for for delirium tremens, has had operations and illnesses in the past, and apparently relaxed readily into the status of one for whom others do the nursing and call the doctor. Mrs. F.'s only reported curiosity was the amnesia which she reports for the night after she entered the hospital. T., when I interviewed him, apparently remembered all that had gone on but when interviewed again recently, said he could remember nothing for the whole three days from the drinking until his second day in the hospital. Even in my interview his account of the timing of events is sharply variant from that of Mrs. F.; many of the incidents in whose very circumstantial story T. omitted entirely.

F. D. represents an eccentric potential on the side of survival. His behavior in the clinic suggested that he had come in out of worry and fear. His testimony suggested that he had been drinking out of loneliness since his third wife deserted him, and his going off into a private conversation with Jesus presented the appearance of one entering a psychotic episode; but without knowing D.'s cultural context, in which it is quite conceivable that this is a normal or appropriate behavior, it was impossible for Dr. Bennett or me to determine whether D. was behaving erratically or appropriately in his own terms. It should be noted again that of the six, T. is the only one who has been readmitted and there is current controversy on his case as to whether the symptoms which brought him back are conversion hysteria or actually psychotic rehearsal for being dead.

These six do not represent, either, a proportional cross-section of the victims. Five of the six were really poisoned and needed help; in the sixth case there is a possibility that he had had some of the methanol. Those hysterics whom it was impossible to identify from the clinic records within the brief time I had, it proved impossible to locate in time to interview them in the field. This balance is being redressed somewhat by the follow-up interviews at the Eye Clinic and the Medical Clinic which are currently being conducted.

The Sole Investigator

It was initially planned that field disasters would be investigated by a team including medical, psychiatric, psychological, and sociological skills. In practice it was found that only one member of the faculty could be detached, and then for only four days, to tackle the whole situation in Atlanta. With no very definite directions as to what was to be looked for, I could only utilize those hours in attempting to interview as many people as I could who had what promised to be significant perspectives either through their own experience in the crisis or through their knowledge about the kinds of people involved in the crisis.

Because more data was obviously needed even for a minimum survey, I proposed by long distance telephone to Dr. Finesinger, and received his approval for, the employment of two professional workers to follow-up what I had begun by further interviews with some of the patients I had seen and with others who might be obtained through the Eye Clinic and the Psychiatric Clinic. One of the persons I retained was John Kafka, a third year medical student who at the same time is completing a doctorate for the University of Chicago in projective testing. The other is a psychiatric social worker, Negro, named Genevieve Alston, who is on the faculty of the School of Social Work of Atlanta University (Negro). Further conferences with Dr. Finesinger on the basis of preliminary reports which they submitted to me have helped to determine the limits within which their investigations can be carried on; and the Atlanta investigation will not be regarded as completed until they have finished the assignments they will be given. It is further possible that I should visit Atlanta once more for the sake of tying up the various threads which are still loose there.

On this plan of action a solo investigator creates his own team on the spot and returns later to tie off their work. On the assumption that this may prove to be the most practical method of field investigation, I should like to raise some questions for joint consideration:

1. Utilization of Local Resources.

Atlanta offered me an unusually fortunate situation for investigation since I already had two contacts there who were in very strategic positions for my purposes and on whom I could rely. One was Dr. Carl Whitaker, the Chairman of the Department of Psychiatry at Emory University and Grady Hospital. The other was John Griffin, a native Atlantan, who works in the Adult Education and Public Relations Departments of Emory University. Between them, they could give me access to everyone I needed to see in the city. Both of them felt individual concern over the episode which was taking place, though neither of them had done any investigating. The Department of Psychiatry, its time wholly divided between teaching and therapy, had not thought to take a research approach to the poisonings. They were, in fact, not even aware that the Medical and Eye Clinics had seized the research opportunity even though the medical students working in the Psychiatry Department had been enlisted in the clinical and laboratory work attendant on the research.

Actually, of course, my authority to investigate within the confines of the hospital and with the help of the medical staff was given by Mr. Frank Wilson, the administrator of Grady Hospital. Mr. Wilson had been plagued by enough reporters and newspaper men to ask for official credentials for the investigator,

which were furnished by Dr. Dill. Mr. Wilson is a former police commissioner of Atlanta and paved my way, introducing me to Dr. Bennett, the chief medical resident, and to the hospital social worker.

Some of the problems faced by the outsider coming in to make a local investigation are suggested by my first and last interviews with Mr. Wilson who was the first person I saw in Atlanta and the last with whom I visited before I left. At our first interview Mr. Wilson suggested that I take the social worker with me to do the actual interviewing and to translate for me as otherwise I would not be able to get answers I could understand from the Negro patients. He advised me that I would not find any grief among the Negroes or any desire for revenge. At our last interview he greeted me by asking whether I had found the social worker useful in conducting the interviews, and I had to tell him that I had conducted my own interviews in every case. He asked if I had found his prediction correct that I would encounter no grief among the Negroes, and again I had to tell him "No," that I had found grief and a desire to see Hardy punished. At this point Mr. Wilson swung around and stared out the window and remarked that he didn't see why their own psychiatry department could not have made this investigation.

This was Atlanta; and, as I say, I was fortunate in my connections. If another trip were to go into, let's say, West Frankfort, Illinois, the problem of making connections with people able to give professional assistance would be quite different. In every case should we assume that prior contact will be made with the nearest institution which offers medical and sociological professional services, psychological social work, or whatever the appropriate ones may be? Should there be some prior conferences by long distance telephone with individuals there so that we can ascertain their interest in the case, the personnel they have available to give either field help or advisory conferences on the background of the situation; find out whether they have already started investigations, or whether they are in touch with others who have started them? If contact is made with such an agency there is the problem of the status of the outsider coming in, whether he should attach himself to the agency temporarily or be regarded as their guest or merely as a passer-by whom they are willing to help. The status of Outsider has both favorable and unfavorable aspects. In Atlanta, I think I was able in some cases to elicit information, being a Northerner, which an Atlantan might not have gotten from some of the people I interviewed. Conversely, some deeply significant areas are avoided with the outsider, not from secrecy but from despair of explaining what it would require a lifetime in the culture to understand.

In addition, there is the problem of remunerating those who are asked to help on the spot and in the field. Some, like members of the Department of Psychiatry at Emory, can continue to look into phases of the problem at our request merely as a part of their regular work. In other cases, as in the case of Mr. Kafka and Mrs. Alston, it is necessary to provide payment for their professional services. Guidance in finding such people near enough to do such follow-up work is extremely important. I rather think that factors of this type should be regarded as worthy of a place in the determination as to whether or not we should go into an area. That is, it may be that we should not undertake single-handed an investigation in an area where no such adjuncts in the way of professional services and local status-giving authorities are available.

2. Goal - Data and Focus

One method of approach to the field investigation problem is simply to go into the area and bring back bushel baskets full of data from which hypotheses or even conclusions might be extracted later on. It seems to me the investigator could use his time more effectively if there were more prior agreement on the type of data desired and the goals for which it is sought. Under this heading there are a number of suggestions which arise out of the Atlanta experience.

In terms of relevance to problems of disaster control, one obvious focus for investigation is to look into the factors of survival and disturbance as these affect the agencies and organizations, or institutions, or habits, or whatever the other means are in that area of remedial and preventive and reconstructive action: How one takes care of those who have been hurt, how one prevents others from getting hurt, and how one restores the normal functioning. At the first level this is sociological. It has to do with information about the giving of public information and warnings, with how actions are conceived and executed. At the psychological level, it involves one in the search for data leading to something like predictability with regard to the possibilities of action based on hysteria, on suicide drives, on the release of violence, on the channelings of group hostilities. In Atlanta, given time and facilities, I should regard as worthy of very close scrutiny, several phases of that episode: the number and the motivation of the people who after being treated, went back and drank the poison again. How many would do this if it were a polluted water or milk supply? How much of it is magical faith in one's own invulnerability, or in the omnipotence of doctors' remedies; how much the up-gushing of something like a suicidal motive--a turning inward of violence in response to a violent situation which has become the focus of public concern? I think the data on the drop in incidence of aggressive violence in Atlanta during the liquor deaths would be worth looking into: what kinds of disasters lead to this withdrawal of hostility from others; what kind lead to crimes against property, what motive forces need to be tapped by disaster in order to unleash violence against persons? These are matters partly of sociological investigation, partly of psychiatric investigation, perhaps through projective tests with selected groups of individuals. All of these types of response have direct bearing on the ability of the constituted authorities and resource agencies to function to meet the needs of those who are actually injured by whatever the disaster has been.

A third level of investigation has to do with seeking data which might offer some chance of correlation between personality types and predictable responses to crisis; such questions as the survival factors in the individuals who took successful survival action, the disturbance factors which led others to disrupt either their own chances of survival or the chances of those around them; the ability to obey public instruction or to initiate useful action of their own; relationships of leadership and followership; the kinds of people that these types rely on or reject. There is also a kind of group or community psychiatry involved, suggested in Atlanta by the quality and the nature of the rumors which led people to take action which interfered with orderly procedure: the paranoid factors, the "dreaded-wish" factors, and the other factors which are somehow bound up with the institutionalized neurosis which a repressed minority always represents.

An alternative line of approach is simply to use the crisis as a

diagnostic tool for the advancement of our psychiatric understanding of the psychodynamics of individual response to danger under certain circumstances in certain company. Here might fall such questions as "symptom choice;" the curious behavior of Mr. N. D. in refusing to accept the fact of blindness which is the one affliction which could destroy the whole structure of the rest of his life; the curious problem of Mr. F. D., and whether his whispering to Jesus represented psychosis or the contextually appropriate form of behavior for that individual; the curious problem of whether Mr. T.'s numbness of the extremities is belated conversion hysteria or a sign of psychosis: with prolonged and detailed investigation, much might be learned from individual cases of this nature.

3. The Tools of Investigation

Agreement would be useful also on the range of tools which the investigator, with or without field-recruited colleagues, should be ready to use. In addition to individual interviews and background interviews with people from the community, how far should we undertake to use other tools--intelligence tests, projective tests, performance tests? Would such a battery as the one being projected for the study project at Edgewood be appropriate for a field investigation in Atlanta or West Frankfort?

It is obvious that all of these questions, and all of the levels at which they can be followed, inter-penetrate. It was clear in Atlanta that the individual responses to my questions at interviews, and the actions about which the questions were asked, derived their character and meaning from the relation of the individual to the community in which the actions took place, in which the values were assigned to the objects and events he had to deal with. As Dr. Marrazzi has commented, the same thing would be true of the coal mine disaster in West Frankfort: this is a community where such disasters are part of the culture pattern, are well known in the past, are always anticipated in some degree; in which there is a certain psychological and organizational readiness to meet them and deal with them. Questions of individual action in West Frankfort would have a meaning derived from the culture of that community which might be different from the meaning of the same action as performed in the poison liquor episode in Atlanta, or by a group of sailors who had survived a shipwreck. My own contact with reality in sorting out the Atlanta data has been maintained by clinging to the focal principle that every action is to be judged primarily as it bears on organized efforts at remedial, preventive, and reconstruction action, or as it leads to the suggestion of potentially important types of emotionally motivated action which could be looked for in disasters of certain character.

In the light of what I have been saying, I am not sure even that there should be a very sharp demarcation between the lines of approach used by the N.O.R.C. and the University of Maryland in disaster situations. The individual response and the cultural and sociological framework in which it occurs inter-penetrate so thoroughly that for the investigation of either to proceed as though the other were someone else's business may be to miss the important point. Yet, with so much to learn and so few to study it, the duplication of efforts seem both undesirable and avoidable. The problem arises because this type of investigation is primarily diagnostic; and the pathology and the etiology of disaster are inseparable if they are to be understood. Every action of a person in crisis

is both psychogenic in origin and sociogenic; and the most fruitful lines of investigation are those which are shaped by the total Gestalt which includes both, as the investigator finds or senses it in the field.

B. A Mine Explosion in West Frankfort, Illinois

1. Medical Aspects
Dr. Martin H. Kalser*

The object was to make a physio-psychological investigation of a mine blast which occurred at 7:30 P.M., December 21, 1951, at the New Orient Mine, West Frankfort, Illinois. Psychological aspects were to be surveyed and reported by a team from the National Opinion Research Center. A team from the Department of Clinical Sciences, University of Illinois College of Medicine, was to investigate physiological and pathologic aspects, as well as ability of medical installations of local origin to cope with the emergency. Interviews were conducted from December 27 to 29, 1951 with medical personnel, coroner, morticians, rescue workers and others involved in the tragedy.

There was a general air of normalcy throughout the community during the time of the interviewing, about one week after the disaster. This is attributable to the fact that there was little direct impact on the lives of most of the town's 12,000 inhabitants. Most people had only distant relatives or friends directly involved, if anyone. The tragedy was not reflected in their daily lives since there was no disruption or alteration of routine activities or services. Gas, water, heat, light, transportation, business, etc., continued as usual. There was sympathy for, but not participation in the disaster for most people.

There was also a general air of complacency. The initial shock of the disaster had been overcome and most individuals accepted the situation as if it were part of their fate and had to be expected. They appeared like people who live in a typhoon area and expect a typhoon every so often, or in an earthquake area and expect a tremor occasionally. They did not seek to place the blame at this time. Their attitude was one of apathy rather than indignation. If an airplane had fallen on their city, or a train had jumped the track in the middle of town it would have disrupted their daily lives more than the mine blast. They would have been more acutely aware of disaster, and more apt to blame the airline or the railroad. They appear to have unwillingly anticipated this tragedy, and were sorry it had happened but glad to get out alive. They were not primarily concerned with preventing its reoccurrence, but rather cited a whole series of similar but less extensive explosions, and the inevitability of further ones.

There were innumerable words of praise for the State authorities who directed the situation and for the National Guard who assisted throughout the emergency. Whereas local attempts at rescue and general organization were spontaneous and well-intentioned, they lacked the overall direction that an outside authority could give. This appears to place a stress on the necessity for adequate centralized direction which usually must come from an outside higher authority. This would have been even more true if the disaster had actually involved more people directly or had taxed the facilities of the community. In reality only a selected segment of the community was placed under stress (hospital, morticians, bereaved families, ambulances).

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*A paper prepared by Archer S. Gordon and Frank Raymon was read at the conference by Dr. Martin H. Kalser.

Although the hospital was called upon to treat only eight cases, (five victims and three rescuers) it was quickly organized for an eventuality which might have precipitated many more cases upon them. By clearing the hospital of all except serious cases, adequate space was made available. Drugs and oxygen supplies were adequate. For blood transfusions, a "walking blood bank" was organized by taking known type O donors and using the blood without typing or cross matching. The most difficult replacement was medical personnel (nurses and technicians). These were provided from surrounding areas. If a larger number of cases had required hospitalization, drugs, oxygen, etc., would have had to be secured from the surrounding area.

Most of the mine victims were killed by blast and burns. Only a small percent of the total number could be considered asphyxia cases. These, of course, had been trapped in the mine for so long that resuscitation efforts would have been futile.

The survivors were primarily cases of carbon monoxide intoxication. All responded to therapy with whole blood transfusions, oxygen tents, and supportive care, except one. He had pulmonary edema and died one and one-half days later. However, a chest x-ray during his admission revealed bilateral far-advanced pulmonary tuberculosis in the upper one-third of the apices, and bilateral emphysema. The survival of the one case who had been trapped in the mine for about 57 hours was attributed to his having been located in a pocket where a source of air was available. Mechanical pressure breathing devices were not available at the hospital nor were they requisitioned or used for these cases.

Recommendations:

1. In further studies of disaster, physiological and/or psychological teams should be at the scene as soon after the incident as possible.

2. Before further physiologic investigations of disaster are made, it should be determined the exact type of study which is desired and which will provide the greatest amount of data for interested parties.

3. Research teams should have available various equipment which might be of use in actual physiologic tests at the scene of the disaster.

4. A protocol should be set up for accomplishing the investigations with the cooperation of the involved local medical facilities and personnel so that the teams will get the greatest benefit possible and may actually be of assistance to the local medical group.

5. Investigation of this disaster reveals the necessity for a directing authority in such instances. These will probably function to the best advantage when they use local personnel, methods and materials, but are directed by a respected and organized outside agency in the government. Attention is also directed to the reliance which must be placed upon the surrounding (or suburban) areas for additional personnel, equipment and services during a disaster.

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Abstract of Interview with W. W. L., Manager of
United Mine Workers Hospital.

Queries were directed toward organization of hospital to meet the emergency:

1. Following basketball game (about 8:30 P.M., on 12/21/51) was told of mine disaster. Undisclosed number of men known to be in mine at time. Necessary to prepare for eventuality of large number of casualties.

2. Immediately cleared hospital of all except seriously ill patients. Most patients sent home in private automobiles of hospital personnel or relatives. About 60% of hospital beds made available for possible victims. Emergency room prepared for acute situation.

3. Whole blood solicited from hospital personnel, visitors, neighbors, spectators. Only donors with known Type O blood accepted. No typing or cross matching done. Type O (universal donor) blood given where necessary very slowly to prevent reactions. No reactions observed. Very shortly, 25 pints of blood were available. No more blood taken since this appeared adequate for the immediate emergency.

4. Hospital personnel on duty (nurses and technicians) kept overtime. Personnel from day shifts called to come in immediately. Surrounding communities contacted for additional nurses and technicians.

5. Adequate supplies of oxygen available at hospital and mine. Additional oxygen made available by surrounding supply sources in response to radio and telephone messages.

6. Oxygen tents requested from St. Louis. All blood carbon monoxide determinations sent to St. Louis. No pressure breathing apparatus available at hospital. None requested or used.

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Abstract of Interview with Dr. J. S., Chief,
United Mine Workers Hospital.

Queries directed at condition of and therapy for mine workers:

1. Primary condition in most victims and rescuers brought to hospital as patients was carbon monoxide intoxication. Treated with blood transfusions, oxygen and supportive therapy. Blood was Type O (universal donor) given slowly without previous typing or cross matching. No transfusion reactions observed.

2. Patient R. K. was a carbon monoxide victim with no external injuries. Following admission he showed evidences of central nervous system asphyxia. The eyes were fixed, head and jaw stiff, and blood pressure elevated. The patient's respirations were stertorous and he went into convulsions. Patient received two whole blood transfusions. Frothy mucous collected in throat and patient appeared to be victim of pulmonary edema. Bloody mucous aspirated by means of laryngoscopic visualization. This became increasingly difficult and a tracheotomy was performed.

Despite tracheal aspiration, oxygen tent, antibiotics and transfusions, he expired one and one-half days after admission. Patient went into respiratory

arrest; heart continued to beat for ten minutes. Respiratory stimulants and artificial respiration of no avail. (Interviewer's Note: Chest x-rays on this patient revealed bilateral far advanced apical pulmonary tuberculosis and bilateral emphysema.)

3. Patient C. S. was admitted after about 57 hours in the mine. He was semi-conscious but appeared to be in good condition except for superficial burns. He also was suffering from carbon monoxide poisoning. His survival can probably be attributed to his location in the mine in some source of oxygen supply.

He was placed in a high pressure oxygen tent and given I.V. fluids and a transfusion. A blood specimen drawn 9 hours after admission revealed 30% carbon monoxide content. On the second day of hospitalization he developed a fever and cough, with weakness and shock-like blood pressure. This was attributed to bronchopneumonia, and responded well to antibiotics and an additional transfusion.

The patient had no pulmonary edema. He was semi-conscious during his first few days in the hospital. Condition now improved.

4. Patient P. D. was admitted with nausea, vomiting and headache. He had no wounds or burns and was never unconscious. He was treated with oxygen and sedation, and discharged two days later.

5. Patients C. S. and R. S. were admitted with carbon monoxide poisoning and superficial burns. The carbon monoxide content of their blood was 40 - 50% on admission. Both had little memory for recent events, but this cleared rather quickly. Pulmonary congestion and irritation were noted, but no pulmonary edema. Both received whole blood transfusions and responded well.

6. Three rescue workers were also admitted to the hospital suffering from fatigue and mild carbon monoxide poisoning. They received oxygen and sedation and were discharged shortly.

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Abstract of Interview with Dr. H. W., Mine Company M. D., who was at scene of blast where he treated rescue workers and witnessed removal of bodies. He was queried especially regarding the probable cause of death of the victims.

1. Most of the trapped miners were the victims of burns and trauma resulting from the blast. Burns and injuries had reduced most of them to an unrecognizable state. There appeared to be few cases of death from asphyxia per se. Furthermore, the intense heat in the mine resulted in rapid decomposition and swelling of the bodies. In addition most of them were covered with coal dust.

2. Most of the rescuers who required treatment were suffering from irritation of their lungs with smoke and fumes and dust. These were individuals who had been working without masks in areas declared free of noxious gases.

3. No cases of pulmonary edema were observed.

4. Oxygen equipment and pressure breathing devices were available but were not needed.

5. No specific information to account for rescue of one miner trapped for 57 hours.

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Abstract of Interview with J. W., Local Mortician. Queries were directed at obtaining information on probable cause of death of victims.

1. Sixteen of the cases were cared for by this firm. Of these, only ten were open-casket cases due to the serious burns and deteriorations of the corpses. Only two corpses appeared as if they might have expired as a result of asphyxia.

2. Closed casket cases were not embalmed. They were kept in pouches, and covered with cotton and sawdust which was soaked with formalin.

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Abstract of Interview with W. R., local mortician. Queries were directed at obtaining information regarding probable cause of death of victims.

1. Handled about twenty of the mine victims. Most of them were blast and burn cases. Deterioration with swelling was frequently encountered. This was apparently due to the intense heat in the mine, as evidenced by the fact that in one case the heat fused the gears of a victim's watch.

2. In some instances victims were found side by side, one severely burned and traumatized, the other only slightly injured. This is apparently attributable to the fact that some men, who were working at the entrances to the rooms were thrown by the blast to the back of the room where they struck or landed near victims who had been working in this area originally.

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Telephone Interview Abstract with D. C., Franklin County Coroner, Benton, Illinois:

Most of the victims were killed by the blast and fire. There were very few cases of asphyxia alone.

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Abstract of Interview with J. McC., Mine Foreman and one of first rescuers on the scene. Queries directed to condition of miners, causes of death, and rescue efforts:

1. The bodies were usually found in clusters at the ends of the rooms, where they were apparently blown by the blast. In some cases severely injured men lay next to men with minimal injuries. This was probably due to the fact that some of the men were blown to the end of the room from the entrance areas, whereas others were already working at the ends of the rooms when the blast occurred and were not thrown. The blast must have been of terrific force, since

even some equipment and machinery was dislodged from its moorings and thrown some distance.

2. The blast was probably due in part to the construction of the mine which did not allow adequate circulation of the air and elimination of the gases. Although the mine was rock dusted at the prescribed times, this did not appear to be adequate, since it was possible to find coal dust free in the rooms from day to day between the chalking or dusting. The explosion of the gas probably ignited an explosion of the dust.

3. The rescue efforts were somewhat disorganized at first, during the time that they were supposed to be under the direction of the mine company. At that time there were several rescue teams in the mine with no concerted pattern for searching for survivors or victims. In addition, the personnel at the surface did not know how many teams had gone into the mine for rescue purposes nor where they were in the mine. When the State authorities came in and directed the rescue operations, the whole routine was planned and executed well. Any operation needs direction and a boss, and this one didn't have any until the State took over.

4. There were about eight trained rescue teams from the surrounding area who cooperated in the rescue operations. The victims were removed in relays, one team working back so far and carrying the victims out to a certain point, then another team took them the rest of the way. The young fellows were warned not to look at the covered bodies. Some of the rescuers who looked at the mangled forms became ill. The rescuers in the pits wore gas masks. They were preceeded by the helmet crews who determined the safety of the various areas to be entered.

5. Most of the victims were killed instantly. There were very few instances of men dying solely from asphyxia. The nine men who were trapped with the victim who was rescued after 57 hours might have been saved if someone knew where they were and had reached them earlier. The one survivor of this group probably was situated in an air pocket. There is no other reason to account for his escape.

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2. Socio-psychological Aspects

National Opinion Research Center*

INTRODUCTION

At approximately 7:30 P. M. on Friday, December 21, 1951, an explosion occurred in the New Orient No. 2 coal mine at West Frankfort, Illinois. The explosion killed 119 men. Only five men in the immediate area of the blast survived. One of these died one and a half days later.

The following is a preliminary report on the West Frankfort mine disaster and is concerned with the social and psychological effects of the explosion. The material which follows is based upon an analysis of 18 formal interviews and 10 informal interviews obtained by members of the National Opinion Research Center's Disaster Research Team. These interviews were obtained nine days following the explosion. The interview material is further supplemented by local and national newspaper accounts.

In view of the relatively small number of interviews, the findings which are reported should be viewed as tentative and suggestive, rather than final or conclusive.

The Community Affected

The New Orient No. 2 mine, the world's largest pit coal mine, is located about three miles north of West Frankfort, Illinois. The mine covers a twelve mile area and employs about 1,100 men in two shifts. Its main elevator shaft is 535 feet below the surface. The mine is 27 years old and produces about three million tons of bituminous coal a year. The mine holds the record yield of coal mined in one eight-hour shift--15,385 tons.

The community of West Frankfort, where most of the employees of the mine live, had a total population of 11,384 in 1950. As is characteristic of many mining communities, the population has been declining in recent years. The total population has declined approximately 21 per cent since 1930 and 8 per cent since 1940. In 1940, about 90 per cent of the total population was native white. There are no Negroes in the community, and statements made by the respondents interviewed indicated strong feelings of racial antagonism. One respondent stated: "A Nigger can't stay all night in this county. He can walk the street but he has to be out of town by night, because none of the hotels will put him up." The foreign-born population is composed of small groups of Italian, English, Polish, Lithuanian, Hungarian, and Finnish persons, and they appear to have been generally accepted and integrated into the life of the community. One of the community leaders stated: "The foreign people are all Americanized. They are the better class of foreigners."

Mining is the community's major industry. In addition to the New Orient No. 2 mine, there are 6 other mines in the immediate area. One person out of

*A summary of this report was presented to the conference by Charles E. Fritz, assistant director of the N.O.R.C. Disaster Research Project.

every three gainfully employed works in the mines. Except for a small dress factory and a concrete factory, which employ a few individual workers, all the other gainfully employed are in the service industries. Only 20 per cent of the women over 14 years of age are employed, indicating that the occupational force is predominantly composed of men.

Nature of the Disaster

At 6:30 P. M. on Friday, December 21, the 218 man night shift at the New Orient No. 2 mine went to work. They were the last miners scheduled to work before Christmas.

At 7:32 P. M., approximately an hour after the night shift had entered the mine, an explosion took place. The blast occurred in a section of the mine located about one mile north and a mile east of the No. 4 shaft, which is located half way between West Frankfort and Benton, Illinois. The blast was about three miles from the main shaft.

The force of the blast was considerable. Three thousand pound coal cars were piled up in certain areas. Eight ton motors were derailed in others, and heavy mine equipment as far as two miles from the blast's center was wrecked. The explosion also caused a considerable number of rock falls throughout the area.

The blast killed miners as far as two miles apart. Most of the men probably died instantly. Death was caused in at least three ways:

1. Being burned alive by the intense heat. The created heat was so intense that small quantities of coke were formed on the face of the coal in numerous places. Many of the bodies were badly charred.

2. Being decapitated and dismembered by the force of the explosion and from flying debris. These bodies were badly mutilated. Fingerprints were needed to establish correct identity in some of these cases.

3. Inhaling carbon monoxide from the resulting combustion in the atmosphere. Some of the miners who died from carbon monoxide inhalation did not die instantly. In at least one case, a trapped group lived nearly 50 hours after the explosion. One of the five survivors was in this group. He was rescued 57½ hours after the explosion.

At the time of this report, official investigations into the cause of the explosion are still proceeding. However, a preliminary report and the general consensus of expert opinion indicated that the explosion was caused by the ignition of methane gas which had accumulated in the mine. According to a report by the director of the U. S. Bureau of Mines, the gas was probably ignited by an electrical spark from air pumping equipment, and the explosion resulted from a combination of gas and coal dust. However, cigarettes and matches found during the rescue operations were also given as a probable source.

Methane gas, which is produced by decaying vegetation, is normally found in mines. Accumulation is prevented by proper ventilation of the mine. The New Orient mine under normal conditions is reported to produce 2,137,000 cubic feet of the gas each minute. It is a highly explosive gas that has an expanding force 27 times its original capacity. Coal dust is also a normal product of the mining process and is also combustible and explosive. It especially will spread a minor explosion to distant points. It is usually controlled by dusting the mine facings with chalk.

Prior to the explosion at the New Orient mine, reports by the Federal and State mine inspectors presented a conflicting picture of safety conditions at the mine. As late as December 11, 1951, a State mine inspector described the ventilation in the mine as "good" and other conditions as "fair." However, in July, 1951, two Federal inspectors found 31 violations of the U. S. safety code, which is stricter than the State code. Most of the violations were reported as minor; but some were of a nature, their report said, to "indicate serious hazards similar to those that have caused heavy loss of life or destruction of property." The major recommendation by the Federal inspectors was that the abandoned workings be cross-ventilated.

The Frankfort mine disaster was the worst in the nation since the explosion at Mather, Pennsylvania, in 1928, killed 195. In fatalities, it ranks as the 17th worst in the Nation's history. There have been 24 mine disasters in the United States which have resulted in more than 100 deaths. Twenty of these have occurred since 1900. The Frankfort disaster was the worst in Illinois since the Cherry Mine disaster of 1909 which killed 259. The most recent big disaster in Illinois was on March 25, 1947 in Centralia, when 111 died in a similar explosion.

RESCUE AND RELIEF OPERATIONS

Rescue Teams

The rescue work in the mine was spearheaded by 10 organized, specially trained, State mine rescue teams. These State teams are composed of a mine rescue superintendent, who is a full time employee of the State of Illinois, and six men who work under him. The latter are regular miners who practice their operations and test equipment one evening each week. Each man is equipped with a large oxygen tank and pump which enables him to work in parts of a damaged mine which otherwise would be inaccessible. The sole duty of these State teams is to save lives and restore ventilation in the mine so that the volunteer workers can do their jobs.

The nearest State mine rescue team had its headquarters at Benton, Illinois, which is approximately six miles from Frankfort. The superintendent of this team was called at 7:45 P. M., a few minutes following the explosion, by mine officials. Shortly after 9:00 P. M., the team was assembled with their equipment and entered the mine. Prior to the entry of the State team, according to the statement of one mine foreman, several rescue teams, informally organized by the mine company, were sent into the mine, and their rescue efforts were somewhat sporadic and unorganized. The hasty recruitment of these teams probably resulted in some initial confusion in the rescue effort. With the entry of the State teams, however, the rescue work became efficiently organized and directed. The other State teams were called in from all over the State of Illinois.

These official teams were supplemented by volunteer teams who followed the State teams and recovered the bodies of the dead. Shortly after the explosion, several hundred miners went to the mine head or phoned the mine to volunteer their services. There were many more volunteers than could be used for the rescue work. The recovery of the bodies was delayed by the necessity of restoring fresh air courses in the explosion area by the official teams. This had to be done before the volunteers could penetrate the sections of the mine in which the blast occurred.

The rescue teams found 119 bodies and five live miners, one of whom died one and a half days later. The first body was found at 5:48 A. M., on Saturday, December 22, approximately 10 hours after the explosion. The last body was not recovered, however, until four days later, on the morning of Wednesday, December 26. Because the bodies often had to be carried a distance of four or more miles to the elevator shaft, the task of removing them was extremely difficult and time-consuming. The difficulty was increased by the large number of rock falls which blocked the passageways. However, the recovery appears to have been carried out with as much efficiency as possible under the circumstances. The victims were removed in relays, with one team of four men carrying the litters for a short distance and then turning it over to another team of four, etc.

Management of Dead and Injured

When the bodies were brought to the surface they were taken by ambulance to the Central High School gymnasium in West Frankfort, which was established as a temporary morgue. There the bodies were identified, after which they were released to the funeral directors designated by the families of the dead miners. Identity in most cases was readily established by the miner's check numbers, which are found both on the metal tags which each miner wears and on their mine safety lamp. In the case of a few bodies which were badly mutilated, identity was established by fingerprinting. This was carried out by a fingerprint expert sent from St. Louis, by the American Red Cross.

The considerable length of time between the notification of the explosion and the arrival of the first survivors and victims gave the community plenty of time to prepare for the reception of the dead and injured. Although there was no officially-designated coordinator for the relief work, the local police chief took over the job of alerting the various official agencies, establishing communication by radio between the mine and police headquarters, and controlling the traffic between the mine and the temporary morgue. Within two or three hours after notification of the explosion, the hospital, doctors, and nurses were alerted; the local National Guard ordnance company was called in to assist in the setting up of a morgue (including the collection of necessary materials and supplies), the Salvation Army set up a feeding station at the mine head to feed the rescue workers and the relatives who had congregated at the mine; the Red Cross established a canteen at the Central High School morgue, and uniformed firemen and policemen from other towns were called in or volunteered for assignment in directing traffic and aiding in the handling of the crowds at the mine and at the morgue. By the time the first bodies were brought up the next morning, nearly all the facilities needed had been prepared.

Traffic Problems

According to the police chief, the only major problem that arose in connection with the relief effort was the thousands of cars which drove into the city from out of town. An estimated 1,000 cars an hour began coming into the community on Saturday following the disaster. Many of the people who came from out of town were miners who were volunteering their services and relatives and friends of the miners. The majority, however, were probably curiosity seekers.

Although the heavy traffic on the highway between the mine and West Frankfort and in the community initially caused some delay in the arrival of the ambulances, this problem was rather quickly solved by having the State police block off a portion of the highway. Streets leading to the morgue were also blocked to traffic. A Boy Scout troop assisted the regular and volunteer police in directing traffic and keeping it moving through the community. Two-way radio communication was used to notify the police when ambulances were leaving the mine and this enabled them to clear the routes to the morgue.

Information Policies

A noteworthy feature of this disaster was the use of the local radio station in broadcasting messages to the general populace and appealing for various types of assistance. The director of the station obtained permission from the Federal Communications Commission to remain on the air 24 hours a day until all the miners were brought up and identified. All commercial programs were cancelled and the entire broadcast time was devoted to announcements and news concerning the rescue operations and appeals for special types of assistance wherever it was needed. As soon as bodies were identified at the morgue, the names of the victims were broadcast.

The use of the radio in this fashion appears to have been especially effective in controlling crowds and reducing the level of anxiety among the population. Most of the populace originally heard about the explosion about 9:30 or 10:00 P. M., usually by word of mouth communication. Initially, there was a great deal of anxiety on the part of the relatives of the miners. A considerable number of the wives and other relatives went to the mine shaft and waited for the men to be brought out. Similarly, when it was learned that a morgue had been established at the high school gymnasium, many persons began to congregate outside. According to the town officials, the crowds both at the mine and outside the morgue, were quiet and orderly. There was no general hysteria or other violent forms of expressive behavior, although there was some quiet weeping by a few women.

When the populace learned that they could obtain accurate information quickly over the local radio, the crowds at the mine and the morgue diminished considerably in size. A large proportion of the anxious relatives went home and waited and listened to their radio for further information and instructions.

Despite the absence of any overall coordination of the rescue and relief activities, there appears to have been a minimum of confusion and conflict among the various official agencies. Previous experience with similar disasters in the past was apparently the major factor in their efficient mobilization and operation.

The survivors of the dead miners, as well as the other persons interviewed, expressed satisfaction and praise of the work of the rescue crews and the official relief agencies. There appeared to be no general resentments against any aspect of the relief operations.

REACTIONS TO THE DISASTER

Orientation to Danger

The formal organizations of the community were well organized and prepared to cope with this type of disaster by virtue of previous experience with disasters. A tornado in 1925 killed 142 persons, injured several hundred, and did great property damage. The community had experienced a series of smaller mine disasters. In 1927, an explosion killed 27 men; in 1928, an accident killed 21; in 1947, an explosion killed 27; and a rock fall killed three men in 1948. There are a continuous series of deaths and injuries each year from smaller mine accidents.

The hospital staff, the mine rescue teams, the police, the Red Cross, the Salvation Army, the National Guard, and other formal agencies have had many opportunities to work out their operational procedures and are constantly on the alert for this type of disaster. The chairman of the local Red Cross chapter remarked: "We have grown up to know what disaster is in this community."

The rescue work was also considerably facilitated by the informal understanding among the miners themselves. It is part of the informal social code of the miners that they assist in rescue operations whenever a mine disaster occurs. As has already been indicated, within a brief time after the announcement of the explosion, several hundred miners either went to the mine or phoned to offer their services. There were many more volunteers for the rescue teams than could be used. They came not only from West Frankfort, but from the entire surrounding mining area.

In general, interviews with volunteer rescue workers indicated that intimate personal relationships with the trapped miners was the strongest motivating factor among the men who volunteered. Some, of course, had relatives or close friends in the mine at the time of the explosion and were particularly concerned with their safety. Others of the volunteers had themselves been saved in previous mine disasters and felt that they had a special debt to repay. Many, however, had only the general identification with the miners by virtue of their sharing of common life experiences and the knowledge that they themselves might face a similar situation in the future.

The following quotations from interviews with the volunteer rescue workers illustrate the influence of their social code and their sense of identification with other miners:

> My wife's uncle was down there and I thought I should go down and help him. I was in that old No. 8 explosion and I was very thankful that somebody came down and rescued us, and I know how it feels to be down there and you can't get out. Just the idea that someone is down there alive--any old coal miner would go down and help because you never know when you're likely to be in the same spot yourself.

It's just the natural thing to do. I guess that that's just human nature to want to help out somebody like that. And then my wife's uncle and I were very close. I couldn't stand the idea of him being down there and me not doing anything about it.

I've worked there since 1925. And I know that if I was down there that my folks would want me out. And I felt the same way towards them. I wanted to get those boys out of there as quickly as any possible way of getting them out. And that's the reason I responded as much as I did, and done what I could.

Most of the boys I knew...and when they told me and when I found out about it why naturally I wanted to get out there and see what I could do for them....There was two of the boys, especially one of them, _____, who was in at the explosion at Old Ben No. 8, in 1947. And I was one of the boys that was down and couldn't get out. They come in and found me. And he was killed in this explosion. He was at No. 8 when I was at No. 8 and he was one of the boys that help come in and found me. They come in and got me. They saved my life, by helping to get me. Naturally I wanted to do what I could because I know /mentions names of three men/ were at No. 8. I felt I could do no more. They had got me. They had nerve enough to come down and try to rescue me....and I figured I owed the same to them and that's why I went out there.

By virtue of the constant presence of danger and their previous experience with disaster, the miners, their families and the general populace have developed a set of fatalistic attitudes and rationalizations in preparation for such occurrences. Mining is generally recognized as a dangerous occupation. Although this large a disaster is not expected, explosions, gas poisoning, and cave-ins are ever-present possibilities. Most miners expect these things to happen at some time, but they don't expect them to happen to themselves. It would probably be accurate to say that they have a constant fear that they will happen and they have developed a fatalistic orientation to cope with this fear.

One miner who worked as a rescuer stated:

I guess I was afraid of the carbon dioxide or the carbon monoxide because after any explosion you always get some of this poison gas. That's the main worry any time you're down in the mine, it doesn't matter when. When you're working there's always the chance of having a rock or coal fall which is liable to get you; but this is something different; it's more dangerous and it gets more people. Of course, you know that these rock falls and that sort of accident happens all the time but I would say that a miner expects them. Even though they happen you don't expect them to happen.

Another miner referred to the miner's constant fear and the superstitions that are developed:

I think instead of saying we expect this sort of thing, I think it would be better to say that we live in almost daily fear of this

> sort of thing, because you don't dare forget it--you just can't forget it because there's always an accident happening. I think you could certainly say that we fear this sort of thing all the time. It's on everybody's mind. I know some people, some of the fellows what work on my crew, in fact, that just don't come to work some days. I don't know whether they're telling the truth or not, but they say that they just got a hunch that they shouldn't come that day, so they just don't show up. They think something might happen to them.

One miner expressed his fatalistic orientation as follows:

> To the general public it seems worse to get killed down there in that hole. If it happens out here on the street they don't think half so much about it. But I don't figure there's any difference myself. If you're going to get killed, you get killed, that's all there is to it. Regardless of where you're at. Makes little difference to you where it happens so long as it happens, you can't do anything about it.

The miner's wives and daughters share in the fatalistic attitudes of their husbands and fathers. The following are quotes from women who had close relatives killed in the explosion:

> That's your life as a coal miner's wife or daughter. You feel like these accidents are going to happen from time to time. You never know whether the next one will be yours or not. You develop a kind of--not hardness, because we love our men and our fathers--but it's more or less a feeling that that's one of the things that goes with coal mining. There's been accidents since the first coal mine and I guess there will be 'til there isn't any.

> A coal miner's wife, she gets kinda used to things like that. When you hear of a mine blowin' over, why your first reaction is wondering who got killed. You get a little stoic towards it.

> When it came your time, it came your time.....Miners will always be like that. The survivors will go down and go down again. Mining is a dangerous field.

> I know one woman who just said that she'd leave it in God's hands. There was nothing she could do about it. She hoped her husband was alive, but if God had seen fit to take his life, she couldn't complain any more than if God had seen fit to take her life. The only thing she hoped was that if anything happened, it wouldn't be prolonged painful agony. She was quite straightforward about it. At least, she impressed me that way.

The rationalizations for staying in the mines despite the realization of danger usually take the form of comparisons with other dangerous occupations. Many of the men interviewed pointed to the greater danger of such occupations as flying and driving a truck. The following quotation from one of the rescue workers was typical:

> There's a lot of fellows get killed. Look at your farmers. They get killed. Your most disastrous thing in the world is what you're doing. Look at the people that drive a truck. You take the statistics on the hard roads. You have more accidents on the hard roads than any other thing in the world. One of the most dangerous things you got is driving a truck.

Rumors

The general expectation and knowledge of the nature of mine disasters appears to account for the restricted scope of the rumors which circulated in the community following the announcement of the explosion. Unlike other disasters investigated, in which there was a great variety and proliferation in the content of the rumors, the rumors in West Frankfort were generally restricted to reports of who and how many men were killed or alive and rescued.

Since most persons had knowledge concerning the effects of an explosion in a mine, this was the only information that was needed. As one miner said:

> They just told us there was an explosion. That was enough right there. In fact, that tells the whole story. It was just a matter of how many. You know that when there's an explosion that people are going to be killed by the concussion; they're going to be killed by flying objects; they're going to be killed by poison gas afterwards; they're going to be killed by cave-ins caused by the explosions; or they're going to be cut off and trapped and suffocated. The only question is: How many?

Some of the initial rumors concerning the number killed were underestimated; others were overestimated; in some cases there were mistaken reports concerning who was killed or rescued:

> I'd heard others weren't killed when they were. And then you'd hear, oh, everywhere from 25 people killed to 200. That's the kind of thing that went around. You just didn't know who it was or how many or what had happened to them. You heard that most of the people were killed instantly, and then you heard that a lot of them were still alive.

Because of the void in information and the continued uncertainty concerning the men who remained in the mine, these rumors appeared to have circulated for at least two days following the disaster. However, the up-to-the-minute broadcasts by the local radio station appear to have reduced considerably the extent of rumor circulation. A number of persons reported that they depended almost entirely on the radio for their source of information.

Most persons who were interviewed were reticent to talk about blame for the disaster, although several of the persons interviewed expressed fairly strong feelings that the blame would be placed on the miners rather than the company. One miner said:

You hear that it was caused by a cigarette, by somebody smoking a cigarette. That's what you'll always hear. You always hear that sort of thing. The company always says that because, well, then you've broken the rules and it's not their fault if there's an explosion. It's kind of hard to prove something like that; it's kind of hard to prove it wasn't true too. The thing is they never say anything about the machinery down there that might have thrown a spark because they have cutters and motors and a lot of things which are electrical things which can throw a spark. And it seems to me that the question should be not whether somebody's smoking or whether there was a spark from a machine, but why was there gas down there and why didn't they detect it. But I can just guarantee you that that will be the story--that somebody was smoking a cigarette.

Another miner indirectly made the same point:

They'd like people to think that some guy touched it off smoking --but--there's a hundred chances something else had set it off.

Other miners, however, were more noncommittal in their remarks:

Most people have sense enough not to make any wild guesses. They'll wait for the results of the investigations. Some people will make predictions now and have to eat their words later when the report comes out. It doesn't pay to make a lot of guesses.

A thousand things could have done it. I wouldn't put the blame on any one man. I wouldn't even put the blame on any man. We'll never know what could have happened. It could have been an accident.....a fatal accident. These things happen.....they happen in coal mines.

They got guys to study stuff like that. If they don't know what started it, it would be useless for me to try to say.

Despite these noncommital statements, the investigators formed the impression that the miners were generally withholding statements concerning blame until John L. Lewis, president of the United Mine Workers, issued his statement. Lewis was in West Frankfort during the time of the field work for this study, but he had not yet issued a formal statement concerning the mine explosion. He later blamed the mine owners for the explosion, charging that the operating personnel knew that the explosive condition existed, but still permitted men to enter the mine. Later interviewing of the same respondents, therefore, would probably reveal less reticence to speak about the topic of blame, and a greater tendency to express feelings of resentment against the mine owners. Nevertheless, at the time of the investigation, the interviewers were impressed with the general absence of any overt bitterness or aggressiveness toward the mine company.

Reactions of the Survivors

The evidence concerning the reactions of the survivors in the mine who were in the immediate blast area is too meager to draw definite conclusions. Interview data from one survivor and published quotations from two others, however, indicate that they maintained fairly rational control over their behavior after the explosion. The standard procedure in case of such accidents is to find a fresh air passage and then build brattices to keep out the poisonous air. The one survivor who was found 57½ hours after the explosion made the following statement about the reactions of his group:

> We took off up the north air course and thought maybe we could get through it. We were at the 13th and 14th at the time. After we got in the air course we thought we could get to the first and second, about seven pairs of panels away. Us three fellows, when we got to the third and fourth, met another bunch coming back toward us. Gas was closing in from both sides. It was chasing us toward each other. We started to put up brattices and put up curtains so the gas would go around us. We built us a brattice out of burlap. We nailed it on props to turn out so the (bad) air could go around us.

Over 90 other miners on the night shift were outside the blast area. Since the mine covers an area of 12 miles, many of them were quite far from the explosion. Many did not even hear the explosion, and the first indication that they had of it was the failure of the electric power or telephone lines. Those fairly near the blast area heard a sound "like gun shot a long way off" or the rush of air through the passages.

Many of them were near the main shaft and had no difficulty in getting out. Others who were closer to the blast area found their way out through a process of trial and error. One man described the activity of his mining team as follows:

> We started out then and we got to the 9th and 10th south, down to the 5th and 6th, and we couldn't get any further, the smoke had us blocked. Well, we went back to the 9th and 10th north and started brattice-snipping there..... We got it fixed so that we's have some place to go back to if we had to go back and start again. We got down to the 3rd and 4th and hit smoke there. Well, we stopped and talked there for a while about whether we should go on or go back. Finally the boss told one of us guys to take the lead and go as far as we could go, and if we couldn't make it, why turn around and go back. Well, when we got to the 1st and 2nd it got to where it had blowed bars out. We kept on going and it got so smoky you couldn't see two steps in front of you. Finally we made it to the main air course there. Well, there was six guys there and we sat down and rested awhile and got the smoke out of our lungs. Then we took the main air course and went on out through 21st west, New Main north there.

The available evidence indicates, in general, that the survivors maintained self-control and utilized their knowledge of escape routes, safety measures, etc., as effectively as possible under the circumstances. There is no evidence of hysteria or other acute emotional reactions among the survivors during the time they were in the mine.

Post-crisis Reactions

Widows of the dead miners reported many of the usual emotional and acute physiological reactions to tension and bereavement. Those reported included sleeplessness, loss of appetite, vomiting, headaches, dreaming, fainting, "numbness." Some of the rescue workers also reported a loss of appetite, nausea, headaches, and sleeplessness. Many of these reactions appeared to have been a direct result of the stifling heat in the mine, the inhalation of poisonous gases, and the smell of decaying bodies. Hence, it is difficult to determine the extent to which these reactions were the result of psychological shock or physical causes.

Attitudes toward the future on the part of the miners and their families appeared to have changed little as a result of the disaster. Again, this absence of change appears to be related to the general stoical attitude that has developed in the community. There was general agreement that the overwhelming number of miners would return to mining. The few expressions of persons who said they would quit were discounted. There was some talk about leaving the mines, but the general consensus indicated the belief that few persons would actually leave. The president of the United Mine Workers local expressed this belief as follows: "Sure, it will be a long time before we get over it. But they'll all go back. It's in their blood." He explained the stoical attitude of the miner by pointing out that "it's the only life he knows."

The reasons for returning to the mine, as expressed by the miners themselves, were threefold: (1) They have grown up as miners and, consequently, have not developed other occupational skills, (2) they have a stake in the community by virtue of the property which they own. As one miner said: "I've got my life savings tied up in this house;" (3) there are few other job opportunities in the area. These are illustrated in the following quotations:

A miner who participated in the rescue work:

> I call 'em dogs of the underworld. I'm one of 'em. I'll go back down. It's all I know. I've been in the mines since I was fifteen. If I could set timbers on top--but there ain't nothing like that on top.

A miner who had a close relative killed and participated in rescue work:

> After it's all over, it will go on as before. A few miners will quit. Most of these people who said they're going to quit the mining business won't do it. But some of them will do it on their own and maybe some of the wives will try to get them to get out. But most of those who say they're going

> to just won't do it, that's all. And some like myself, who'd like to quit but they just can't because they've got to keep their job for their children or their wife or their home; or maybe they're buying a car or something like that. No, after this is all over and things quiet down again the town will go on as usual. The widows who've got a lot of grief--they'll probably never be quite the same, but the rest of the community will just go on, just like it always has.

Another rescue worker added:

> Coal mining is all there is here. If I had anything else I could make halfway of a living out of, I wouldn't go back to them; but a fellow ain't got much choice when there ain't much else around here unless he leaves the state.

An additional reason for staying in the mines was rarely verbalized explicitly, but nevertheless was implicit in nearly all the interviews with miners--namely, the informal social code of the miners which tends to label anyone who quits out of fear a coward. The knowledge that their associates will ridicule, deride, or ostracise them for quitting without a legitimate or compelling reason appears to be a powerful factor in keeping men at work in the mines. The local police chief, who had been a miner for over 20 years before he took his present job, indicated that he had a "legitimate" excuse for leaving the mines because he had an infected lung and his doctor would not permit him to return to work underground. He implied that he was able to retain his status with his mining associates because physical incapacity is one of the few excuses which is acceptable to the miners.

SUMMARY AND CONCLUSIONS

The West Frankfort disaster provides an example of the effectiveness of a certain degree of expectancy plus organized preparation in coping with disasters. As the foregoing material illustrates, the community was well prepared both formally and informally to cope with this type of disaster. Previous disasters had provided the formal relief agencies with the opportunity to work out concrete disaster plans and operational experience in the execution of these plans.

The informal understandings among the miners and their knowledge of the appropriate action to take in the event of mine disasters was also an extremely important element in the present case. Volunteer workers needed little direction of their activity. Rescue crews were quickly assembled and placed in charge of a safety man or foreman. Once in the mine, their duties were obvious. By virtue of previous training, each miner has a rather clear conception of his role in such an event. Hence, there was very little confusion and conflict in the execution of the rescue and relief activities.

Previous experience and the constant presence of danger has also prepared the community psychologically for such events. Living with danger, they have become somewhat inured to it. There was not the complete shattering of

normal social expectations which is found in most instantaneous community disasters. The widespread expression of the fatalistic orientation to disasters which was found attests to the fact that psychological defenses had been erected to cope with the possibility of disaster. The evidence suggests that these defenses resulted in greater control of emotional reactions than is normally found in a community not so psychologically prepared.

The present case, however, is not typical of community disasters generally. It did not raise the types of problems which are usually found when disaster strikes a community. It differed in at least two major respects:

1. The mine itself is spatially removed from the community. Hence, there was no immediate or direct threat to the residents. The threat to the residents was solely in terms of their identification with the men in the mine.

2. Unlike most community disasters, there was considerable time to prepare for the reception of the injured and dead. Thus, the usual problems which arise in connection with rescue and relief activities were not present. The police chief of West Frankfort compared the present disaster with the tornado which occurred in 1925 and summarized the difference in terms of the relief work:

> A disaster in mines is different from other disasters. It's a different problem altogether from a fire or a tornado. In 1925 when that large tornado came through here, the streets were blocked. Wires were down. The electric lines were down. And you had houses on top of people. They were just crushed in right on top of people. And we didn't have ample hospital room for them. You didn't have the doctors and nurses and so forth.
>
> When you have a disaster in a mine it doesn't come all at once. The first things you have to have is a rescue squad to go in with their masks and it gives you time to prepare for the emergency. You can figure it'll give you at least 10 to 12 hours to get things ready. Whereas in a tornado it's already happened and bodies are laying there before you start. Your disaster is on top of you. Your bodies are there ready to take a hold of. But in a mine its different. But when you have a disaster in a mine, you could have 10,000 men and they would be useless to help us. Because you've got only one inlet and one outlet. And it takes time to get ventilation started and prepare for the time that you can start the work on them. And that gives you ample time to get your emergency squad and get everything ready. You see we started here at 10 o'clock at night. Well I was outside by 12 (midnight) and we were ready to receive the bodies. With a cyclone, or storm or fire you don't have this time.
>
> Another thing is with your hospitalization. If you have to set up an emergency hospital after a cyclone you'd need

> it right now because those bodies have got to be taken somewhere and they need to be taken care of as soon as they get there. That would be different too from a mine. Even those that would be rescued wouldn't all come out at one time. They would be coming out possibly a few at a time.....it would give you more time to take care of them.

The study of this type of disaster, therefore, has limited applicability in discovering the types of problems that are likely to arise in wartime community disasters. The mine explosion did not constitute a direct threat to the community or provide a crucial test of the adequacy of community facilities in the event of a direct threat. The great diversity of problems which arise when a heterogeneous community is directly affected cannot be discovered in this type of disaster.

The present disaster also did not provide sufficient material for testing how an organized group behaves when they are directly threatened. If there had been more survivors in the directly threatened area of the mine, it might have been possible to discover the effectiveness of the group organization in coping with direct threats. With only five survivors, however, there were too few persons to interview and no definitive conclusions can be drawn. Moreover, most of the five men who survived were so seriously injured that they were inaccessible for interviewing. The study of such highly organized groups as miners can be extremely valuable for testing hypotheses concerning the relationship between various types of group organization and disaster reactions. Such a study, however, requires that there be sufficient survivors to constitute an adequate sample of the group affected.

The timing of disaster investigations in relationship to the types of material that can be obtained in interviews and by observation is extremely important. In the present case, the investigators entered the community nine days following the event. This was too late to study one of the more significant problems that was present in the West Frankfort disaster--namely, the handling of tension by the residents during the period of uncertainty concerning the fate of the men in the mine. This period of tension lasted for approximately three days following the explosion. In order to study this problem effectively, it would have been necessary for the investigators to have arrived as soon as possible after the explosion, preferably within 12-24 hours. Although some problems can be studied more effectively at a later time (e.g., the nature of the formal relief work, the changes in social and personal organization, etc.), it must be recognized that the study of the processes of collective behavior which occur immediately after the event (e.g., crowd behavior, rumor, informal leadership and relief work) can best be studied by immediate investigation.

In conclusion, one especially noteworthy feature of the present disaster should be noted: namely, the twenty-four hour broadcasting by the local radio station. Interviews with the residents indicated that the accurate information furnished by the radio station was very influential in relieving their anxiety and tension and in preventing confusion. The manager of the station indicated that the station was especially careful to verify all the information before it was put over the air, and not to engage in any sensational reporting of the event. This policy of keeping the populace informed by up-to-the-minute,

accurate information, is in contrast to the broadcasting frequently encountered in other disaster situations, where unverified and sensational reporting often causes considerable anxiety and confusion. The local station was also effective as a medium for organizing various aspects of the relief work and making appeals for materials or assistance. Further study of the use of local radio stations in disasters may be helpful in making practical recommendations to stations in other communities.

C. A Series of House Explosions in Brighton, New York.

National Opinion Research Center*

INTRODUCTION

The following is a report of an investigation conducted by the National Opinion Research Center Disaster Research Team into the social-psychological effects of the series of house explosions and fires which occurred in Brighton, New York, on September 21, 1951. It is based primarily on data gathered in thirty-one tape recorded interviews with residents and officials of the area. The material gathered was further supplemented by a number of informal interviews and local newspaper accounts. The field investigation was made during September 26-29.

Nature of the Disaster

On Friday, September 21, 1951, there occurred a series of house explosions in Brighton, a residential suburb of Rochester, New York. The first of these explosions occurred at approximately 1:10 P. M., and they continued intermittently over a period of about two hours. Due to an unusual combination of circumstances only two people were killed; one person died of a heart attack while being evacuated from her home. The two people killed were a girl, aged 8, and a boy, aged 4, both members of the same family. At least 24 persons were injured in the explosions or their consequences. Of those injured, however, only five or six were residents of the area. The remainder of the injuries were sustained by firemen and policemen who were participating in the relief work and consisted mainly of gas poisoning and being overcome by smoke. The injuries suffered by the residents resulted primarily from being struck by flying debris.

In all, 16 houses were completely demolished and about 25 others were from heavily to slightly damaged. An unestimated number of other houses sustained minor damages, consisting primarily of cracked walls and ceilings. The total value of the property destroyed alone was estimated at over one [illegible]ion dollars. In addition an unestablished amount of personal property was either destroyed or damaged.

The first blast took place at Twelve Corners, a busy intersection at the center of the town's shopping district where construction work had been in progress for some days before. This initial explosion occurred in the vault containing the gas-reducing valves for the area. These valves were designed to bring the pressure of the natural gas from 30 pounds per square inch down to one-fifth of a pound per square inch at which pressure it entered the houses. The blast in the vault caused the concrete ceiling to cave in and crushed the reducing mechanism, allowing the full 30 pounds of pressure to enter directly into the houses in the area regulated by these particular valves.

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*A summary of this report was presented to the conference by Raymond L. Gorden of the N.O.R.C. Disaster Research staff.

The result was that in some cases the pilot lights and the water heater burners blew out, filling the house with gas which was ignited by another pilot or an electrical spark, thus causing an explosion. In other instances the pilot jets, water heaters and gas furnaces shot out tremendous flames, setting the house on fire. In general the demolished houses were those that exploded, whereas the damaged ones were those that caught fire. A peculiar feature of the exploding houses was that the debris landed in a rather small area. This followed from the fact that explosions occurred in the basements, thus lifting houses into the air and allowing them to settle back down into their own basements.

Following the initial blast in the vault at Twelve Corners, houses began to explode and catch fire over a relatively large area, approximately a mile long by a half mile wide. There was, however, no particular pattern, either spatially or temporally, in which the various houses blew up or caught fire. A house would catch fire in one place and then a few minutes later blocks away another one would explode. There was a slight tendency for explosions and fires to occur in some blocks more than others but even in such cases there was considerable time lag between the time when one house was affected and that of the neighboring house.

The various official agencies of the community went into operation almost immediately after the report of the first explosion. It took some time, however, before the gas main could be shut off and all the houses rendered safe in one way or another. Thus, although the last explosion occurred about two hours after the initial one, the area was not considered officially safe until three or four hours after that.

The magnitude of the disaster resulted in a considerable mobilization of the disaster and relief agencies of the surrounding area, with units and equipment coming from as far as 40 to 50 miles away.

The Community Affected

At the time of the 1950 Census, Brighton had a population of 18,036. While it is a suburb of Rochester, New York, it has its own town supervisor, police department, and volunteer fire department of three companies. Most other official and formal agencies having jurisdiction over the area, such as the Red Cross and Civil Defense, have their offices in Rochester proper.

The town is a typical suburban community, although of a rather high socio-economic status. The mean assessed valuation of homes in 1940 was $25,000 and the mean income in 1951 was roughly $10,000. Almost all the residents own their own homes.

The population in some respects is intermediate between that typically found in urban and rural centers. The degree of social solidarity, while not as high as usually found in rural areas, is higher than that of metropolitan centers. The social relationships, while more continuous and more intimate than typically exist among urbanites, are not of the same closeness generally present among rural folk.

The findings may suggest differences in rural-suburban-urban characteristics as they affect behavior in disaster situations. Any generalizations

made in this report, however, should be viewed as tentative and subject to revision in the light of further investigation in similar types of situations.

THE COURSE OF EVENTS

The Pre-crisis Situation

The afternoon of Friday, September 21, found a typically uneventful and quiet situation in the community. The overwhelming majority of the men were away at work, mostly in Rochester, and a few at scattered shops and offices at the center of Brighton. Almost all of the children were away at the school which is located 200 yards from Twelve Corners. A few children were home, however, because the Catholic schools were closed that day. In general, the population of the area that afternoon constituted a majority of the women residents and their pre-school-age children.

At the time of the first explosion many of the women were finishing, or cleaning up after, lunch. Consequently, many of them were in their kitchens. For those who lived in all-electric houses, in view of what later happened, this was not a matter of too great import. However, for those homes supplied with gas the fact that the housewife was in the kitchen was rather important. It was there the first indication that something was amiss with the gas was noticed. If the trouble had occurred at a time when many women would not have been in their kitchens, they would not have had this advance warning. Probably there would have been many more casualties. Similarly, as a number of the persons interviewed noted, if the explosions had occurred at night, when the children and men were also at home and the family was in bed, the list of dead and injured would undoubtedly have been higher.

The Crisis Period: 1. Recognition of Danger

The normal routine of activity was broken and the attention of people was focused elsewhere by a variety of occurrences. Typically, they were one or another of four kinds:

1) A noise of varying intensity was heard in the distance;

2) the gas in the kitchen was seen or heard to act in an unnatural way;

3) an unusual noise was heard in the basement;

4) neighbors came in to inquire if the householder was also having trouble with the gas.

There was considerable variation in the interpretations given to these various initial attention-getting incidents. In the first instance, the noise in the distance was generally not interpreted as indicative of any danger. As one man put it, "I didn't think anything serious of it at all. We hear a lot of blasting. We hear backfire from automobiles so I didn't make anything of it at all. I just let it go at that." Similarly, one woman stated, "I thought actually it was dynamite because they were repairing the street at Twelve Corners....I really had no emotional reaction to that." This interpretation of the noise as blasting was an almost universal one among those

Often, however, something else happened so immediately that there was quickly another interpretation. Sometimes this was occasioned by another explosion. The Civilian Defense warden of one block stated:

> When I heard the first explosion I didn't think much of it. They have been blasting up here. I didn't think much of it the first one because they have been doing all the blasting up here...and then when the second one came and it shook the house--well, then I knew there was something wrong. The first thing I thought of was a bomb, naturally....I just felt it was a bomb before I got to the front door. It didn't take me very long to get to the front door to find out what it was....I heard the women in the street running and scream and cry out and I ran out and the house over there was in flames and it was just flames from the bottom to the top...I could see--I didn't think it was a bomb because if it had been a bomb it would've been more than that one house across the street and, of course, as soon as I looked at it I figured it would have been more than that...There'd be more than one house afire if it were a bomb unless it was a direct hit...it would have flattened more than one. Then I figured the only other thing it could have been was the gas because we've had other explosions.

Those people who had trouble with the gas in their kitchen rather quickly felt some danger. One such woman stated:

> I was doing some cooking. I heard this strange noise coming out of my stove and I immediately turned off all the gas jets and the stove started to smoke so I could see there was some trouble....I did get very frightened when I had all my gas jets turned off and my stove was smoking. I got very frightened then because I knew there was something wrong....it felt as though my stove was alive.

Those who heard a noise in their basement at first did not designate it as anything particular but only as something to be investigated. Once a check was made there was little difficulty in establishing exactly where the sound was coming from and, consequently, that something was wrong with the gas. One woman stated:

> It was in the kitchen. In fact, I was talking to my milk salesman and we heard this terrific noise in the basement so he and I rushed down and found that it, by that time, was filled with gas. And it was pouring, we thought, from the meter and it was also the furnace making a noise as well as the meter.

A number of people had neighbors come or call to them to inquire if they too were having trouble with the gas. This was the first indication that they had that possibly something was amiss, but, for the most part, it caused no particular concern. In some cases, however, the behavior of the neighbor was of such a nature as to excite some interest, although the actual troubling incident was not established. One woman heard her neighbor call in a "hysterical" voice. She was unable to understand clearly what was said except that there was something wrong in the basement. Only when the neighbor came in to her

was the situation clarified.

In the cases of those people who established the fact that the gas was acting irregularly in their own homes, there was a relatively quick threat-realization. They felt or believed that there was personal danger. As one woman put it:

> As soon as I went down in the basement and heard the noise it was making I thought my house was going to blow up. I ran out. I was really scared.

Each such person believed she was the only one having trouble with the gas and, as such, the only one endangered.

On the other hand, those people whose attention was caught by the noise of an explosion did not view the situation as dangerous until they saw or heard other explosions. For those people not directly involved with gas, it was only the sight or sound of houses blowing up that initiated a sense of personal danger. The seeing or hearing of such occurrences brought the realization that it was not just a localized accident and that any house might explode. As one person stated:

> I didn't feel serious danger until the explosions commenced to repeat. Then I realized it was a serious situation. We heard the second explosion and then I thought, "Well, now, this isn't just an ordinary thing." Then I heard a third one. And then I was pretty sure it wasn't an ordinary thing.

The Crisis Period: 2. Initial Responses to Danger

Overt actions came quite fast for most persons, once they realized there was trouble with the gas. A few simply ran out of their houses; some because they were afraid there was going to be an explosion; others to ask their neighbors for help or information. In many cases, however, housewives stayed in their homes for some time, even after having found the gas acting unnaturally. Thus, for example, many people attempted to phone. Generally calls were to the gas company or to the fire department. Some called their husbands. This often occurred even when there was a realization of considerable personal danger.

In at least one case the woman was so frightened that she had great physical difficulty in trying to make the phone call. She stated:

> I looked down in the cellar and....the fumes were just terrible ....there was a terrific roar down there....then I called my husband. I was going to light a cigarette before I called my husband, and then I thought, "Gosh, no!" Fortunately I didn't ....Thank God....I had the cigarette in my mouth....After I remembered not to light that cigarette, I tried to call my husband but he wasn't in the office. I tried to leave a message with the girl but my mouth was so dry I could hardly speak. I was afraid that the house would blow up before I could get out. By the time I ran out I couldn't even shout at my neighbor who was going by in the car. I just couldn't make a sound.

Another woman noted that:

> With the sound and the rush of pressure--which I realized was a rush of pressure from the noise it made--I thought something was going to blow inside the furnace. My first reaction was that the furnace was going to blow up..... I went to the furnace door but something warned me that there might be a blast from a rush of air so, therefore, I didn't open the door. I went upstairs and called the fire department....my phone was dead. I rattled the receiver and I waited....the line was completely dead.... I realized that at any moment there might be a blast.... and my instinct told me that I should leave the house immediately and I did so. I went out the front door. I left the door open, took my daughter by the hand and my son who were all with me at the time, and ran out in the middle of the street and the house blew after me.... I'd say we ran 80 feet before the house blew up behind us.

In many cases phone calls were made because, while there was a realization of trouble, there was no feeling of very immediate danger.

> I knew that there was something wrong with my stove and I said to myself, I'm just not going to fool around. I'm going to call the gas company. I don't care if there isn't any trouble. I'm not just going to harm myself trying to fix something which I don't know anything about....When I decided to call them I didn't realize the trouble was so great.

In fact, in some instances the first realization that there was very serious trouble outside of their own house came when, upon a call to the gas company or fire department, an answer was made that they knew about the trouble and that they were doing all they could about it. Sometimes such a reply was made even before the woman had a chance to explain why she was calling.

A few of the women attempted to shut off their gas. These were rather nontypical cases, however. Few seemed to have even thought of the idea at the time. One woman who did turn it off related:

> I heard a terrific roar. I thought it was water running by the sound of it and I checked all the faucets and they were closed and I picked up the stove top and found the pilot light had been blown out and was making a terrible racket. I realized something had gone wrong....and the quickest thing I could do was to get the gas turned off, phone for help and then get out....I didn't expect it to blow up at my face or anything....it was no sudden feeling you were going to die the next minute or anything....All I knew was that I <u>had</u> to turn it off.
>
> There was no controlling it. This girl helping me clean said, "Don't touch it, call the Rochester Gas and Electric." Well,

> I knew the Rochester Gas and Electric would never get out here with the amount of gas that was pouring out of that pilot light....That was the thing in my mind. Get the gas turned off....Still it didn't seem to bother you, it didn't seem to bother you that it might blow up while I was down in the basement because no houses had blown. If I had heard them blow I wouldn't have been such a heroine and probably would have gone out of the house and not turned it off either.

This woman further added:

> I do pride myself that I know how to turn off the gas. I knew that before. We were taught that during the war. If there was a bombing we were supposed to turn off the gas and the electricity. I didn't pull the electricity this time....I was too anxious to get out of the house after stopping the gas.

Relatively soon, most people in the area were out of their houses and in the street. This was true even of those who lived in all-electric houses. For the most part they had been alerted to the fact that something was wrong by the noise of repeated explosions. As one resident of an all-electric house put it, "You hear an explosion, you want to see what it is, so you run out." Such people left their houses in an effort to establish what was happening, and not, as in the case of those directly involved with gas, because they were afraid something was going to happen to them.

One almost universal feature about leaving the house was that few stopped to pick up anything. Those people who felt endangered in any way reported that their only concern was for their personal safety and that they did not even think of saving material possessions. One woman stated that she just "flew out. I ran out of the house with absolutely nothing. No pocketbook. In fact I left my wedding ring at home." While fleeing without attempting to take anything was the typical pattern, there were exceptions. One woman snatched a pair of sunglasses as she left her home; another took a pair of shoes for her small son; several grabbed their purses. A few women did think of trying to get certain things but decided against it or only got some of them. One woman, for example, reported the thought flashed through her mind to get clothes for her children, the family securities, passports, insurance papers, and her purse. She did run upstairs for her purse. However, she stated that the worst moment of the whole experience was:

> ....when I was standing at the top of the stairs and I realized I couldn't go 17 feet one way and 5 feet the other way to get my securities. My instinct you know. My instinct was so strong, the feeling of something going to happen was so strong and I felt, I can't, I can't take the chance and go back and that was the worst feeling I had during the whole thing....that was the time....when I stood at the top of the stairs and realized--I had my purse which was a risk to get--and that I didn't have time, my instinct just told me I didn't have any more time left.

Once people were out of the house a typical pattern of behavior was to seek the company of others and congregate in a place that was thought to be safe. Many people viewed the street as a place of safety save for the possibility of being hit by flying debris. Many others, however, in talking it over among themselves, raised the possibility that the gas mains running under the streets might explode. A typical remark was to the effect that "we didn't know if the ground right under us would blow up." The small groups of people who felt such a danger tended to work their way to back lawns and yards where it was believed there were no underground gas mains. A further fact that entered into the consideration initiating such behavior was the belief that the trees and hedges would afford further protection against possible flying debris.

Other small groups congregated on front lawns, especially in front of all-electric houses. A number of women living in such houses, in fact, invited their neighbors to stand in front of the houses. It was the belief of these women and of those who accepted the offer that it was a spatial position of relative safety.

Still other people milled around in the middle of the street. In the beginning, at least, some women ran up and down the street calling to their neighbors to leave their homes and not to go back into them. Other women hurried up and down the street going from one small group to another in quest of information. Some mothers were busied trying to comfort their children.

There was a certain amount of hysterical behavior. It took the form of people (mostly women) crying and yelling incoherently, running in a random fashion, shouting that the world had come to an end, pacing up and down, wringing their hands, etc. A number of cases were reported where people became disturbed and overtly acted in such a manner that someone had to take care of them. One such instance was a young man who had just married one of the girls in the community. According to an eyewitness, he "just ran up and down wild-eyed wringing his hands and crying like a big baby. It was an awful way for a man to act in the situation." Another case was that of an old man with heart trouble who got so excited that he said he was afraid he was going to have a heart attack; the woman who was taking care of him pointed out that he was calm when she could keep him apart from people but when others came around and talked about the situation he became very excited.

As people milled around, a considerable number of rumors began to circulate. Among the most prominent were that the school had blown up, that buildings in the business section had exploded, that dozens of people were killed, that there was fire in the gas mains and all the houses in Brighton would burn, and that half of Brighton had blown up. Sometimes the stories were quite specific--e.g., that the Howard Johnson restaurant and another place called the Chateau, both located at Twelve Corners, had exploded. As new people came up to the scattered small groups in the streets, such stories were passed on.

Generally speaking, once people left their homes and saw what was going on in terms of exploding houses around them, they never went back in. Most of them did not desire to reenter their houses. As one woman said:

> There wasn't a thing in my house that I wanted to come back for. Nothing, not even my purse. Nothing. Nothing that I longed for. Nothing that I wished, "Oh! had I gotten that." I came back for nothing.

The Crisis Period: 3. The Development of Plansof Action

Those that did re-enter their houses gave two main reasons for doing so. They were: 1) to get car keys, and 2) to try to shut off their own gas or assist others in doing so. There were also scattered individual reasons for re-entering the house. Two women did so in order to get the baby which they had left behind when they rushed outside to see what the explosion was about; at least one person did so in order to answer the telephone which was ringing.

Some women appealed to the few men around to come and turn off the gas in their house. One such woman stated:

> I went up to the man and said, "I'm afraid that's the gas." This man said, "Yes, our pilot lights are acting very queer." And I said to this man, "Are you turning off the meters? I don't know how to turn it off and anyway I'm just home from the hospital and I'm not supposed to be doing anything or even climbing stairs." So he ran over here with me and turned off my gas meter.

This woman, although she admittedly was very frightened, re-entered her house because, as she expressed it, "I thought that if he was willing to risk his life to save my house, the least I could do was to go with him to show where the meter was." There are indications that other women acted similarly because of the same reason.

The necessity of getting car keys, however, seems to have been the main reason why most people re-entered their houses. A number of cars were either parked at the curb or in the supposedly safe garage, but, since almost everyone had fled without taking anything with them, no one had the keys. Whenever a small group decided to leave the area, someone would dash inside the house, grab the keys and come right out again. One woman did mention that she grabbed her purse with the keys in it and while running out "flipped off" the radio. Nearly everyone, however, reported that they thought of nothing but the car keys.

Some of the few men that were in the area not only re-entered their own houses but went into the houses of others to turn off the gas in them. For the most part, these men knew very little about gas and seemingly took such action because of the requests of the women. As one man put it:

> I should say I felt the worst about it when the whole thing started, because it's a situation with which I'm not acquainted ....I don't know very much about gas. I didn't know its nature and how to handle it and nothing of the kind. A lot of women all over the neighborhood running to you and asking your assistance. Can't serve them all at once. If there were more men at home perhaps they could have done something too. But they all knew that I was home. I'm here all the time, and they came to

> see what I could do for them. I think it's about the most tense situation right there. Of course I knew what was going on. I saw the explosions, the fire and I heard one after another going off....(the firemen arrived) and when I saw them I felt rather re--I could relax. For I was the only man around here. There was no other men around here that could actually do something....When these men appeared, well I sort of relaxed and thought, "Brother, I'm glad you're here." Before any of them arrived I just felt I was the big thing and had to do it all.

After shutting off the gas in four houses this man reported he did not go into any more. A nearby house had exploded while he was in one cellar, and--

> After this explosion I thought it'd be fool-hardy for me to go into any more homes and perhaps be sent to Kingdom Come for no earthly reason than to save a house. And that was the last one I went into....Of course you can't feel altogether brave and say I'm a hero and all that sort of thing and go do a thing like that, because you can go down in the cellar and you don't know if you'll come back up again. This house over here, the lady wanted me to go across, but it got so tense that I decided I wouldn't go anymore and I'm going to stay outside.

Another man, unusual in that he had much experience with gas equipment, also turned off the gas in a number of houses. He, however, did it on his own initiative without being asked. He reported:

> I heard this hissing sound down in the basement. I went down and tried to turn off the pilot light but I could see right away by the terrific pressure that something was radically wrong and I would have to turn off the gas at the meter. I came back upstairs just in time to hear M_____'s house explode. I ran out and saw it going up in smoke....I realized that my house was still in danger even if my gas was turned off because if the one next door exploded it might get mine on fire so I ran over next door and turned off the gas. I kept on the run until I had turned off eight houses around mine; then I began to feel better and relax a bit....then I realized that I was a damn fool. I had taken my life in my hands going down in all those basements.

This was, however, a very unusual case. Those men who turned off the gas valves in houses other than their own did so, for the most part, because the women in the street asked them to do so.

Some people left the area as soon as possible after they had come to look upon the situation as dangerous. The people who left the area very soon after their perception of the danger did so on their own initiative without anyone from outside their immediate group or block area telling them to do so. They left because they felt the area in general to be an unsafe place with houses exploding all around them. There seemed to be no pattern to the explosions which would enable one to tell where it was safe and where it was not. As one woman stated:

> We didn't know where to stand because one house exploded on one side and then the other side....You didn't know whether it was a safe place or not....I thought we'd better get to some open place. The best thing I thought was to get out of the neighborhood.

Most residents, however, did not leave the area, even after initial realization of the danger. For the most part, people left when they were told to do so by someone from outside their immediate group or block area, even though the persons giving these instructions were apparently not acting in official capacities. For example, in the hardest hit street in the whole area most of the people did not leave immediately. The first blast there occurred at 1:30 P. M. and it was a few minutes after 2:00 P. M. before the last residents had left. During this time eight houses on that block had either exploded or caught fire. One of the women who stayed around noted that "we were just waiting, just hoping and praying the fire engines would come." Soon after the neighbors had gathered in the street she had suggested leaving but they could not agree on a safe place to go, so they stayed on. Only when a man, a stranger to the group who had walked by, said they should leave or they would be hemmed in by trucks, did they go. The first fire engine came down the street as the last car was going up the block and away.

Those who left the area usually did so in groups, putting as many people in a car as it would hold. Most commonly they would gather up their closest neighbors, but cases were reported of picking up mere acquaintances. There were incidents too where preference was given to elderly people, sick persons, and mothers with small children with them.

Those who left the area scattered in all directions. Nearly everyone went or was driven to the homes of relatives. The small group of women who had husbands working in the immediate vicinity went to them. Those who had no husbands nearby generally went to some immediate relative--e.g., a mother, sister or mother-in-law. A few went to their husbands in Rochester. Some went to the school in quest of their children. As one mother said, "Suddenly I thought about what happened to the school and I got very nervous....once I got up the corner I forgot completely about these explosions....and all I worried about was the school." Another woman whose husband was out of town went to her church for, "You just turn there naturally when you're in trouble." Practically everyone, however, went to some family member.

Some of the people who remained in the area did so because they felt that there was no danger either to themselves or to their homes. Thus, only a few residents left the street that was between the two hardest hit blocks in the whole area. The residents of that street had been forewarned by many explosions on either side of them. In a short time, two men had managed to shut off the gas valves in all the houses on the street before any blast occurred there. The residents felt safe because of this and because they also knew that there were a number of all-electric houses in the block.

Other people stayed in the area because they were so busy during what they considered the worst part of the disaster that they did not think of leaving. One woman who stayed noted that she was kept busy in shutting off the gas valve in her house, calling the fire department, helping her neighbor whose house was afire, and later giving the firemen water. She stated the police finally asked everyone to get out of that particular block

but--

> I wasn't so afraid then. The emergency was more or less over before they--the worst of it seemed to be over before they had mustered enough men and with authority and so on around to tell you to get out of the area....you had lived through the worst of it then....you felt the ground was a little more safe to walk on then. That was when the people got there who told you to get out. If they had been right there to say "everybody out" you probably would have run then. It seemed as if the peak was off when they told us to go.

She added:

> It seemed as if this is the place you wanted to be. Just to walk down Monroe Avenue had no point.

Some other people stayed in the area because they were afraid their husbands would return and not be able to find them. Still others thought they should stay to prevent looting. This was especially true by the time all the houses were open and a multitude of disaster and relief workers were operating throughout the area. Finally, some people said they started to leave but after going several blocks, only to see another house explode, decided that it was just as safe at home.

The Crisis Period: 4. Fear and Helplessness

The people in the danger area during the disaster subjectively experienced a wide variety of reactions. The most prominent feelings seemed to have been those of fear and helplessness. These feelings were especially compounded by the general state of confusion that existed.

Particularly at the beginning, immediately after the general nature of the danger was established, there was a great fear in regard to one's own personal safety. In some cases once people had left their houses, they felt less endangered. For many, however, the continuing uncertainty of the situation prevented any great lessening of fear. One woman remarked that "You just don't think much of anything save that you're all right for the time being and you just don't know how long you will be." Another stated that "I felt as if I were standing in the middle of a popcorn machine. Everything was popping up around me and we didn't know where to go."

Mothers' fears were intimately bound up with fear for the safety of their children. This was true even for the children that were at the school, the fate of whom was unknown to the mothers. Part of this concern seems to have arisen as the people milled or stood around in the streets and talked about what might have happened to the school.

After running out of the house, some mothers worried about the fact that the babies that they brought with them were not fully dressed. In one case a woman ran back into her home to get a blanket for her sick child. In another instance a mother smelled the gas and reported that:

> I was afraid, especially for the baby, since they're affected so much quicker than grown-ups. I was so afraid that the baby would pass out from the gas---I was very worried about the baby being affected before we would be affected by it.

This worry about the effects of gas, however, was a very exceptional case. The major fear was of explosion, that the very ground on which one was standing would suddenly blow up. A secondary fear was of flying debris.

Those people who felt a sense of responsibility for others often stated that they were aided in trying to remain calm by this fact. One woman reported she was quite afraid and even trembling as she drove a car out of the area but she kept self control because:

> I had other people with me. I had to get that car out of here and out of this area after I filled it with these other people because their lives were then in my hands, in some measure, and it was up to me to get out of here as quickly as I could.

Another woman also reported that she did not break down. She stated:

> I might have if I hadn't the baby there, but having him there I was trying not to let him see that I was frightened. I didn't want him to know that his mother--I wanted to keep as calm as I could so he wouldn't get frightened. I think that's one of the things that kept me steady because I didn't want him upset.

There appeared to be very little concern over material destruction until after the crisis was over and there seemed to be no further threat of bodily harm, either to oneself or family members. As one woman put it:

> I was just so glad that I had gotten away from my house that I just didn't care about anything. Material things just didn't matter. I was so glad to find that the school was all right and my little girl was safe that nothing else really mattered....I knew my husband wasn't around....so I didn't have to worry about him....Nothing meant anything to me because I knew I could replace the things if my house had gone.

However, some people mentioned the fact that while they did not think of the monetary loss that they might be undergoing, they did fear they might be losing certain things which had sentimental value for them. One woman stated she worried over the possible loss of certain inexpensive but irreplaceable items which she had accumulated through the years and which had great meaning for her. In general, though, concern over any material possessions came only after a fair degree of personal safety was felt and only after all family members had been accounted for.

Accompanying the fear was a great sense of helplessness. One woman reported that as she stood in the middle of the street and watched houses

exploding and burning all around here she "felt so helpless, just kinda of all alone as if nobody was ever coming." Others reported that at the time they had a sense of "incapability," of being "so small," of "inadequacy" and the like.

The rather random pattern of exploding houses was seen as a main factor in contributing to the feeling of helplessness, for what was going to happen next was impossible to forecast. Several people noted that if they could have figured out some pattern of the explosions they would not have felt so helpless:

> We just didn't know what was going to happen next. We couldn't make any sense to the pattern of the explosions. Maybe if we had known the path of the gas mains we would know which house was going next so that we could get out of the way, but as it was, we just did not know when the ground would blow up under our feet.

Another factor which contributed to a sense of helplessness was a realization of the magnitude of the disaster, that it was just not a localized incident. One woman reported she felt helpless when "we realized that the situation was more or less out of our hands and we couldn't do anything but just wait." The extent of the disaster was something that was only appreciated relatively slowly and brought with it a sense of helplessness.

Another important factor contributing to a sense of helplessness was the nature of the disaster itself. Many women commented on the fact that they did not know anything about gas. As one said:

> We were just a bunch of helpless women; we didn't know any of the mysteries of engineering, so we couldn't do anything except stand and wait for our house to blow up and hope that we didn't get hit by any of the pieces.

Still another factor that contributed to a sense of helplessness was the fact that almost all the men were away at work. A somewhat typical comment was "We just had this awful helpless feeling until the men came back." Still another was: "....if only there had been some men around to help us."

For most persons the worst part of the experience appears to have been the sight of the houses blowing up, especially near the beginning of the crisis. One woman stated it was:

> The first ten or fifteen minutes when....that house was on fire and you'd look down that street and see a house just disintegrate in front of you and you'd look sideways and see another one down there go and then you'd hear a noise and see the black smoke.

Some other women, on the other hand, reported in the words of one of them that, "The worst thing about the whole experience was the feeling of utter helplessness."

The Crisis Period: 5. The Beginning of the End

Two general events marked the end of the crisis period for most people: One was when they felt sure that there would be no more explosions; the other was when families were united or when people felt some assurance that all members were safe--that each one knew the whereabouts of every other one.

The subjective feeling that the immediate crisis, at least, was over depended on what the people saw going on around them. One of the most reassuring events was when the employees of the gas company came to each house and checked that the gas was turned off. This action was interpreted as denoting the fact that there would be no more explosions. As one person stated:

> We had been told earlier that the gas had been turned off, but that didn't help much because there were more explosions after that. But when the men from the gas company actually went down into your basement to check to see that everything was all right you really began to feel that they knew what they were talking about and that you could begin to relax a little bit.

The other general event marking the end of the immediate crisis period occurred when family members began to communicate and re-unite with one another. As one woman put it, "When my husband got back from the office I was so glad to see him that I lost that helpless and lost feeling that had covered me." Similarly, another woman said, "The worst was over for me when I heard that all the children were safe and my husband came home." Still another woman said, "My boy is in high school and the teacher let him come home. He had been worried terribly because he had seen all the smoke coming from the house next to ours and was coming to see if I was safe. We both felt much better when we were together."

Getting in contact with all immediate family members was also one of the first actions on the part of people who left the area. Generally the women phoned their husbands to tell them about the disaster and inform them where they had gone and could be found. For mothers with children in the school, another primary concern was getting in touch with the school to let the child know where they were and to ascertain what was being done with the children.

People experienced considerable difficulty in getting calls through as everyone tried to phone at the same time. The Brighton exchange reported a record 180,000 calls for the day. The most numerous were between 1:45 P. M. and 3:45 P. M.

Outside the immediate disaster area there were two large groups who were very deeply involved psychologically. One consisted of the 2,300 children who were in school at the time of the explosions. The other group was composed of the working husbands and fathers of the families in the general Brighton area.

The children who were in the school were physically close to the scene of the first explosion in the vault at Twelve Corners. They were immediately

evacuated, however, by a routine fire drill and moved to a portion of the athletic field hundreds of feet from the school building and the street. Many, especially those in classrooms facing away from Twelve Corners, accepted it as a usual fire drill. Only after some time did they hear explosions and see black smoke rising in an increasing number of places near their own homes. This evidently led to some anxieties, but the teachers were able to maintain almost complete order. As one second grade teacher reported:

> They were all perfect little angels. They stayed together and didn't stray away while I read them stories and we played games. They did ask me about their homes and I assured them that if anything would happen they would be told about it and that everything was perfectly all right at the time....I think that the most unusual thing about their reactions was that they all stayed so close to me ....they just clung like grapes in a bunch. One girl had a very anxious look on her face which stayed all afternoon. When her parents finally came after her you could just see her face relax.

In most cases, the children were kept at the school until someone, usually a parent, came to pick them up. Such people coming to claim children, however, seemed to have added to the anxiety of the other children by giving them unfounded information concerning the number of persons killed or injured. They also passed on false information on what particular houses had exploded.

Many of the teachers, themselves residents of Brighton, also were deeply involved psychologically. The fact that they had to take care of the children, however, seemed to have had a steadying effect. As one young second-grade teacher put it:

> I'm afraid that this doesn't sound very good but as I look back on it my first concern was with taking care of the children....I knew there were explosions near my house and that my mother was home but I realized that my job was with these kids and I was proud that I was able to keep them under control....that was a big question in my mind since I just started teaching last September. I thought there is no use worrying about home because whatever will happen will happen and I already have a job to do.

The men who were away working in Rochester appeared to have found out about the disaster in many different ways. Typically, the first report heard was very vague and grossly exaggerated. Many of the men attempted to reach their families by telephone but most could not get through because of the volume of calls or because no one answered at the house they called. Failing to get through by phone, many of these men began to drive back to Brighton. Others did not even attempt to phone but immediately upon hearing the first disaster report, started for their homes. Some returned to the area while the explosions were still occurring. In at least one case, a man who returned was responsible for turning off all the gas valves in his particular block. Most, however, found themselves tied up in the traffic jam which quickly ensued, as they, disaster and relief units from Rochester, and mere curiosity seekers

all converged on the normally heavy traffic road that leads into the center of Brighton.

In many cases, even when the men eventually reached the edge of Brighton, road blocks had been thrown up and they were not allowed to enter the town. There is also some indication that the people manning the barricades gave out either vague or exaggerated information on what was going on in the area. Despite all this, a number of men took to the back roads and were able to work their way into the disaster area.

Probably typical of the experience of many men who were in Rochester, is the following description of how one man came to learn of the disaster and what he did. According to his wife, this man, a physician living in the area, was at his office when:

> A patient said to him, "What are you doing here? Don't you know that all of Brighton is blowing up?" He left the patient on the X-ray table, told his receptionist to dismiss the rest of the patients and tried to call a cab. There were none available, so he saw someone he knew who had an office across from his and he asked him if he would take him to Brighton. He said he would. About this time another man just came back from lunch and hadn't heard about it yet and my husband said, "Hop in, let's go see what the trouble is." When they got to Brighton there was a road block to keep people out of the area. My husband asked him what had happened and the man said, "I don't know, but something terrible has happened. I'm just here to direct the traffic." My husband, who never gets very excited, started running from where he could park the car and after running for about three blocks he met one of our neighbors who said that our house hadn't blown up and that I was all right.

Many of the rumors which circulated appeared to have been at the periphery of the disaster area. Several people who left affected blocks reported they ran into rumors only when they got out of the area. One woman who had remained on the worst hit street for over a half hour after the first explosion related that when she got out to the main thoroughfare where the road blocks were:

> Everyone seemed to have a different version of what was happening....the mothers were especially worried about the school children because they had heard the school had blown up.... there were all kinds of rumors. Some of them we doubted. They sounded very fantastic....some were saying we had been bombed. Others were saying it was an atom bomb, which we could see definitely wasn't so because there was one here and one there and you could hear the other explosions. And then they were saying it was just the homes with gas heat in it and others were saying that it was the possibility it was oil burners and then too, there were a few rumors about sabotage which we just discounted entirely. And then there were all sorts of different rumors going on about the number of people killed. At one time we heard there were seven killed and quite a few injured and then another time after that we heard there were

four killed. It was awfully hard to know what to believe. There were so many conflicting stories.

The Post-Crisis Period

The majority of the people who had left the area returned to their homes that night. In the case of some of those who returned that night, only one member of the family, almost always the husband, stayed there to sleep. The rest of the family, for the most part, stayed with relatives. Some stayed away as long as four days, although in most of these instances someone in the family came back into the area to check and lock up the house and to pick up some personal belongings.

Especially on the part of the women, there was a great deal of reluctance to come back into the area immediately. Many felt an apprehension that "it might start all over again." The assurance of the authorities that the area was completely safe and that nothing could occur again was not completely accepted. Several women noted that before the disaster presumably everything had been arranged with regard to the gas so nothing could go wrong. But "it did, and in matters like this, how can one really know everything is all right now?" A number of women reported that what they were told about the safety of the area did not rid them of the strong feeling: "Any minute it might start again." One woman further said, "I felt no sense of security that night--there was the constant moving of equipment, electric drills going all night and there was that quivering feeling inside of you wondering, "Could there be another?".

Practically everyone interviewed reported various acute physiological reactions lasting for periods of several hours to more than a week following the disaster. One of the most widespread reactions was nausea. As one woman reported it:

> The next morning I probably was more shaky than even the night before....I had a trembling feeling inside of me and I was very nauseated....I was so sick to my stomach the next morning that I didn't eat anything until towards night.

Another very common reaction was reported by one woman as follows:

> I'll tell you just the way I felt--just as if somebody kicked me right in the stomach and I just couldn't straighten out and I had terrific pains in my stomach for two nights.

Most of the persons interviewed reported an inability to get much sleep. One person, who stated she was not able to sleep for three nights, added:

> You'd close your eyes and see a house blowing up in front of you. You could see it every time you closed your eyes. There's another gone. That kinda pulled you up and you'd be awake for a long time, doze off and then hear fire sirens.

Similarly there were reports of experiences of unusual nightmares.

> My son was shouting in his sleep. I couldn't tell what he was saying at the time but he said that he was dreaming that something was pushing down on him and he was trying to get away from it, and then when he tries to get away he runs into chairs and he just shouted out in the middle of the night.

Still other reactions reported were vomiting, hysterical crying, loss of appetite, headaches, inability to concentrate, feelings of weakness, or exhaustion, pains in the abdomen, and chills. These reactions were reported not only by those people most directly involved in the disaster (i.e., those whose homes were destroyed or damaged), but also by individuals who were only minimally affected. Likewise, people who lived on blocks where nothing had occurred reported the same reactions as those from streets where the destruction had been heaviest.

Children's overt reactions, as reported by their parents, appeared to follow adult patterns. There were some indications, however, that they did not last so long. Little difference was reported between the children who were in school and those of younger age who were at home during the disaster.

One of the most persistent emotional effects was a very high degree of nervousness, a tendency to jump or start at the slightest noise. There was an especial hypersensitivity to any sudden noise which could in any way be taken as indicative of a possible explosion. As one woman stated:

> Every time a door slams or you hear an unusual sound you jump and you look. You wanna know what's going on. Every little noise you hear you jump.

Another woman said:

> On Monday I was dressing to go out for dinner when I dropped my belt buckle and I got so scared that I almost jumped through the ceiling. My nerves were just ragged.

Similarly there was a strong sense of apprehensiveness that the same thing could happen again. Several women reported a very strong sense of uneasiness every time they had to cook something on their gas stoves. Others stated that they felt an impulse to check that everything was normal. As one put it:

> I would listen to hear if I could hear any unusual noises and....I would go down to the basement each night before I went to bed and twice during the night to see if I could find any accumulation of gas.

Other women reported that they felt much easier out of doors and some noted that they occasionally found themselves out of the house without any conscious awareness they had wanted to go outside. One woman noted:

> I feel much better out of doors. You find yourself--and I'm not afraid now, not too much afraid--you find yourself breathing much freer if you're standing out in the backyard someplace.

Many people reported that one of the important factors which accounted for the persistence of their own emotional reactions was the sight of the wrecked houses. One woman stated she remained upset and could not put the disaster out of her mind:

> You're never left alone long enough to forget it, especially with the shell across the street staring you in the face every time you get up in the morning and go to bed at night. I think as soon as they could possibly get this thing settled and get some of these things torn down....and filled in--if you can erase the scars you know--that'll help--if they would just get that mess out of there and the sightseers would stop going around.

Similarly another person said:

> As I look out of my front window every morning and I see all that destruction it brings the picture back to my mind so clearly....I can't wait till they rebuild. Once they rebuild we forget....especially once they clean up everything.

Still another woman related:

> When I look outside it upsets me. To see all that damage....When you go out now you are heartsick. I think you wouldn't feel any better until all this is leveled off....after it's cleared off it'll be a little better.

There was some expression of grief over the two children who had been killed. However, this appeared to have been expressed so as to be in conformity with community expectations rather than because of a real emotional experience. The exception to this was in two families whose children had played with those that had been killed, and those that knew the affected family personally. One such neighbor said:

> I was over watching them hunt for the M_____ children who had been trapped in the basement of the house when it exploded. I stayed there until they brought up the body of the little boy....that was too much for me, so I left. I was becoming ill. The kids had just been over to our house the day before....I still keep thinking about those two poor innocent children. It could just as easily have been mine.

A considerable number of people reported feelings of gratitude over the numerous offers of aid they had received after the disaster. This was

especially true of offers of assistance made to them by their friends rather than by the formal agencies of the community. The latter offers were more or less expected. In almost all cases, no aid of any kind was needed but there was a great deal of appreciation simply over the fact that offers had been made. As some people said it was at such times, "that you get to know who your friends really are." There was the added feeling that if one was really in need of assistance there were people that could be turned to for help.

Some resentment was expressed against those people who had become hysterical and had to have others take care of them. Speaking of a hysterical person, one woman said:

> What good was that doing? She was just tying up two or three more people to take her out of the territory that could have been doing something for somebody else if she had only shut up and let them go about their business.

Similarly, a man said about those who got hysterical that "it's up to them to do their part and not look for sympathy."

There was also some resentment against the sightseers which flocked to the area. One woman said:

> We're still a little overwrought and to see these sightseers just gawking in at every house just irks you a little bit--you know, it's the people you love and you just don't want them just Exhibit A.

Another woman said:

> All that traffic gives you a weird feeling and all. The most disgusting part about it all is the people coming with their cameras, taking pictures and gawking.

Still other people referred to the sightseers as "vultures" and "snoopers."

Outside of this the only other expressed general feeling of hostility was towards the gas company. A few people felt that they were to blame for the disaster and that they should take the responsibility. Most people interviewed, however, tended to blame no one in particular. There is some indication, however, that this was more an outward expression of "letting bygones be bygones" than genuine feelings on the matter.

Besides the above post-crisis affective reactions there appears to have been several other lasting post-crisis effects. For example, almost everyone seems to have learned how to turn off the utilities in their homes. Many householders even bought wrenches so as to be sure they could make all the shut-offs that would be necessary. Some people, however, expressed their feelings that despite their knowledge they doubted they would be able to apply it. As one woman put it:

> Now I know where to turn off the gas, electricity, the furnace and the water. Ready for anything now....I don't know if I'd have the courage to go down there and turn it off or not. I don't think I would 'til the baby was out of the house and then I wouldn't come back in.

There was also a strong reaction against the further use of gas in the house. A number of women expressed their intention to have the gas replaced by electricity. Several women, in fact, had already made the change-over in their homes.

Several people noted that, to their own surprise, they stood up fairly well under the ordeal. Consequently, they felt much surer of themselves in case anything of a similar nature might arise. One woman who remained quite calm during the emergency noted:

> Then, too, I think if we ever were bombed I don't think I would be quite as nervous and panic-stricken as I thought I would have been before. Because I wasn't-- I think I was fairly calm, maybe I wasn't; but Friday I thought I was fairly calm and I think it would be the same reaction if we were bombed.

RELIEF ACTIVITIES

Organizational Action

There was a considerable mobilization of formal and semi-formal disaster and relief agencies from the areas surrounding Brighton. Some units came from as far as 55 miles away and there was one unaccepted offer of aid from the city of Buffalo, even further removed. There was also considerable volunteered as well as requested help.

Over 500 regular police officers came to the disaster area. These included the men from the local Brighton force, reserves from Rochester, deputies from the sheriff's office, state troopers, and volunteers from the local forces in ten surrounding communities. There was no overall plan covering their recruitment or direction but all worked under the general direction of the Brighton police chief.

The local police first heard of the disaster around 1:10 P. M., when they were notified that there had been an accident at Twelve Corners. A radio car responded to the call and, upon arrival, immediately established that there was trouble with gas. While the patrolman was putting in a radio call for assistance, the first house a few blocks away exploded. Very soon at police headquarters a flood of calls began to come in, reporting explosions and fires, asking for help, and requesting information. Realizing from the volume of calls the seriousness of the situation, the police chief at headquarters began to put through calls for non-local men and equipment.

Considerable fire equipment was also mobilized, some units coming from as far away as an hour's drive. In addition to Brighton's own three companies, there were 32 companies from Rochester and approximately 30 fire companies of volunteers from surrounding communities. These fire departments

all operated under a Mutual Aid plan--a pre-established agreement which provides that each helps the other in case of fires of major proportion. At the beginning there was considerable confusion in dispatching the various non-local fire companies as they arrived in Brighton. One local volunteer fireman reported he was told "go and find yourself a fire; there are plenty of them." Only after a considerable length of time was a central headquarters set up in one of the local firehouses and operations directed from there.

The Rochester Red Cross had an arrangement with the fire department to be notified of disasters in the Rochester area. However, it was never officially told about the explosions in Brighton. The first news the Red Cross had regarding the explosions was a report that was heard over the radio. Two men were sent out to investigate. They called back and alerted the unit. One trailer and nine station wagons were sent into the area with a field headquarters being established at the Brighton Town Hall at about 2:30 P. M.

Over 4,000 sandwiches and a large quantity of coffee and fruit were distributed. In addition, Howard Johnson's restaurant was taken over and its facilities were used all night to feed the relief workers. A canteen truck was also sent to the school and about 100 children--all that were left by 5:00 P. M.--were fed. First aid stations were also set up, but, because of the relatively few casualties they had little to do. Back at the Rochester Red Cross headquarters, 350 requests for minor assistance and approximately 440 phone calls for information were received and processed. Arrangements were also made that night for some of the people who asked for shelter to be sent to hotels. However, there were no problems of mass feeding, housing or evacuation. Red Cross officials complained that when the Civilian Defense organization was called out, they lost many of their key people who belonged to both organizations.

The police made requests for Civilian Defense workers over the regular commercial radio stations. Upon arrival in the area, the Civilian Defense workers were used to patrol streets, guard damaged properties and to direct traffic at street intersections. Many of them stayed on duty all night. Sampson Air Force Base, 55 miles distant, sent in 30 military police. These were dispatched on the initiative of the base commander. This initial contingent was later augmented by another truckload of 56 M.P.s. Working under the general direction of the local police chief, they were assigned regular police duties.

A number of other agencies brought varying types of equipment into the area. The gas and electric company had its emergency trucks out checking on valves and main lines. They turned off the master gas main into the area at about 2:09 P. M. The telephone company had its workers set up two telephone poles with phones outside police headquarters. The Civil Air Patrol brought in cars equipped with two-way radios. The Brighton Highway Department sent men and equipment to set upsnow fences around the wrecked and damaged houses and to build road blockades. In addition, a number of other organizations such as the Salvation Army, ladies auxiliaries, veterans organizations, church groups, and civic organizations of various kinds aided in the relief activities.

Information Policies

From Rochester a sound truck was requested. It took an hour, however, before it arrived. When it did, the chief himself used it to go through the area telling the people to stay out of their houses and not to re-enter under any circumstance, to stay away from sewer projects, and not to worry about the children in the school because they were safe. It should be noted, however, that a considerable number of the residents who were interviewed reported they never heard any sound truck while they were in the area; others said they could not make out what was being broadcast since the truck did not go up their blocks. Prior to the arrival of the sound truck, some police prowl cars evidently did go into the area. They told people to get out of their homes. However, some people reported that such announcements as the continual yelling of "This is an emergency, this is an emergency" and the rather uninformative remark to go "find safe places to stand," left them in a very confused state. The constant wailing of sirens was also reported as being quite disturbing.

Police communications in a short time were handicapped by the fact that all electric power in the area was cut off. This left police headquarters without any electricity and unable to use the radio in the building. The State police brought a portable electric plant truck from Batavia, New York, 35 miles distant, but it took two hours to arrive. The power itself was shut off until around 6:30 that evening.

The radio, television and newspapers provided information to the residents of the larger community. Frequent news flashes and "on-the-spot" reports while explosions were still occurring were broadcast over the six radio and one TV stations in the Rochester area. Early broadcasts appeared to have been inaccurate and exaggerated. The male residents of the area, who had heard the first reports while in Rochester, said the broadcasts were contradictory and sensational. Residents who had left the area and were listening to the radio at their place of haven reported that incorrect reports on the number of casualties were announced and that the number and location of the houses that had been destroyed were also incorrectly given. One woman reported that:

> I wasn't even going to call my husband, his being in Syracuse, and I couldn't tell him anything about the house....Then we began hearing the reports over the radio and it sounded so bad. They told us one time 12, 13, 14 houses on this street were gone and I thought certainly our house is gone so I thought I had better call him....if he heard he'd be worried and not know where to find me.

Some of the inaccuracy of the reports that went over the air seems attributable to the procedures used in gathering information. One respondent stated that a radio newsman came to her during the early stages of the crisis. He asked if he could go into her house and use the phone, since she had an all-electric house. She said he could and went in with him. Then, according to the respondent,

> He called the station and said, "This is Tom. Are you ready Joe. O. K....Ladies and gentlemen you are about to hear an on-the-spot report of an eyewitness who lives across the street from the M____'s house which has just blown up." Then he turned and handed the receiver to me. I was never so surprised in my life.

Sometimes the information that came over the radio conflicted with what the listeners were experiencing. One resident of the area who, rather non-typically, was able to get to a radio, said she heard a broadcast saying the gas had been turned off and the danger would soon be over.

> Yet I found this quite difficult to believe because I heard a number of explosions after that time. I think they were on the other side of Monroe Avenue.

Several people reported that, after they had left their threatened homes and had gone to the homes of nearby relatives, they had heard over the radio that an area of two miles from the disaster should be evacuated. This report caused some women to pack and move further out. Yet no official evacuation order was ever given and none was ever broadcast. So far as can be ascertained, an evacuation order was merely mentioned as a possibility, but because it came over the radio it was accepted as an official instruction.

Inaccurate reports also went out to the nation at large. About an hour and a half after the disaster, hundreds of calls started to come in to the police. They came from such distant places as California, Florida, Ohio, South Carolina, and Alaska. Most of the callers were badly misinformed in regard to the extent of the disaster and the number of casualties, believing it was much worse than it was. Most queries were in regard to who had been killed and injured and what homes had been destroyed. The police were able to give this information to most callers, for even while explosions were still occurring one man had been detailed to make a survey of the area and to draw up a master list of casualties and homes destroyed. The listing evidently was not complete, however, for even the next day press reports still contained misinformation in regard to location of the houses that had been affected.

The relief workers themselves appeared to have been responsible for some of the inaccurate information and rumors that circulated, especially in the period immediately following the disaster. One such rumor was that homes were being looted. One woman stated that she was told of the looting by a policeman who told her to stay by the house and watch the back doors. Another woman stated that the police told her father to stay by his house that night to protect it from professional looters who would be around. According to the police chief's own statement, however, not a single case of looting was reported. There was a tendency for people to accept any information passed on by officials as completely authentic. One man stated:

> I got most of my information from the policemen....I took their word for it. I thought if anybody knew the policemen would.

In general, relief activities were marked by a lack of coordination. There was no central disaster headquarters and most organizations worked independently of one another. At times, this led to considerable duplication of effort. A number of people reported, for example, that as many as seven individuals came into their house to be sure that the gas was turned off. Similarly, the lack of coordination led to the dissemination of conflicting information. Some people who had left the area were told they should return to their homes and then, when they got to the edge of the area, the guards at the roadblocks told them it was not yet safe and would not let them in.

Efficiency of Rescue Operations

After the disaster, the residents of the area almost unanimously praised the activities of the relief organizations. A typical expression was that "they did a wonderful job and did everything that could be done." Several people who left the area remarked that the firemen must have done a particularly good job because when they fled they did not think anything was going to save their homes. Others remarked that it was a reassuring sight after the disaster to see that the streets were heavily patrolled. As one woman said:

> If you could sleep, that helped a little bit--to know that all those homes were being protected.

Many people were impressed by the large turnout of relief units and equipment and the fact that much of it came from a considerable distance. Several people noted that they had not realized before how well the area was prepared to handle a disaster. One woman noted:

> It has opened my eyes to one thing--that Rochester is much more alert than I thought it would be because I didn't realize they had the organization and control and all the help that they had.

Few seemed to understand that the mobilization of equipment and organizations had stripped the region around of almost any protection and this for only a relatively focalized disaster. Only one man was overheard remarking that, "If there was that much confusion and fear when only two people were killed and where they were swamped with all kinds of equipment and services, what would they possibly do if an atom bomb struck and ten thousand times that many people were killed and injured and all the services and equipment were destroyed."

SOME GENERAL INTERPRETATIONS

The preceding sections of this report have given a somewhat detailed descriptive account of the social and psychological reactions of the population to the disaster. In this section an attempt will be made to present some of the more general, analytical findings of the study and to interpret them within a framework that may permit comparison with other disaster events.

1. So far as the affected people were concerned, two of the outstanding features of the Brighton disaster were: (a) a strong sense of being endangered, and (b) an inability to chart a subjectively-satisfying course of action during the crisis. The residents of the community felt themselves threatened but, for the most part, were unable to perceive a satisfactory mode of coping with the threat. A great many of the reactions of the persons during the crisis period can be understood in terms of one or the other of these two features.

a. People in the disaster-struck area had a strong sense of personal or bodily danger. Many of the women in the area were immediately and directly confronted with the threat of bodily harm and their immediate behavior was oriented almost completely in terms of self-preservation. The complete preoccupation with self-survival usually lasted for only a relatively short time (e.g., until they had escaped from their houses and joined other neighbors in the street). Because of the continuation of the threat, however, the concern over self-protection remained fairly strong during the whole period of the crisis.

This orientation in terms of personal survival and protection often led to the abandonment of a number of the social norms which usually guided these persons' behavior--e.g., the concern for persons other than primary group members, and the concern over material goods. The behavior patterns of the persons in the immediately threatened area generally followed the following sequence:

(1) Action oriented in terms of self-preservation or protection

(2) Action oriented in terms of immediate family group members (e.g., children)

(3) Action oriented in terms of other primary group relationships (other kinship members, close friends in the neighborhood, etc.)

(4) Action oriented in terms of material goods or possessions

(5) Action oriented in terms of secondary group relationships (e.g., other members of the community, formal organizational roles).

The lack of concern over material possessions was a particularly characteristic feature of the behavior of the residents during the crisis period.

One of the general principles which may be derived from a study of this and other disaster situations is that any perceived threat to an object closely identified with or incorporated into the self or personality will be felt as a threat to the self. Psychological or ego-involvement does not necessarily correspond with physical or spatial involvement in disasters. For a number of residents of Brighton, the danger was not seen so much as a threat to bodily harm as a threat to persons closely identified with one's self. Thus, the husbands and fathers of persons in Brighton, felt endangered when they heard of the disaster, even though they were physically and spatially removed from the scene of the disaster. They were very strongly involved psychologically because of their close identification with their family and other primary group members who were in the danger area.

b. A second crucial feature of the present disaster was the inability on the part of the residents to arrive at a self-satisfying course of action to be taken during the crisis. The disaster constituted a violation of certain basic social expectations. It shattered a number of the relatively stable norms which enable individuals consciously or unconsciously to direct their behavior. It is ordinarily taken for granted, for example, that the ground on which one walks will not erupt or that homes will not suddenly explode. Such normal assumptions, in the present case, were to a considerable degree shattered. People were confronted not only with a dangerous situation but also a situation in which many of their usual expectations no longer applied. Houses were exploding all around them and the ground itself was thought to be unsafe. There was the need for re-defining or restructuring the situation so that they could mobilize their action to reduce or cope with the threat.

In this case, however, the difficulties in arriving at a satisfactory definition of the situation were especially compounded because of the unpredictability of the explosions. The affected people could discern no patterns to the explosions; they seemed completely random and haphazard. In order to direct his actions, an individual must have certain stable reference points; he must, with a fair degree of accuracy, be able to predict what will occur to the object toward which he is directing his behavior. In Brighton, the seeming irregularity and random character of the explosions prevented any such predictions and hence most persons experienced feelings of great uncertainty and helplessness.

> In many disasters, and in all to some extent, there is a breakdown in the predictability of what other human beings in the situation will do. This appears to be more frequently characteristic of disaster situations than the breakdown in the predictability of physical objects. One of the peculiar features of the Brighton disaster, however, was the great instability and erratic action of the physical objects. Material substance began to behave in a totally unexpected way. Moreover, because of a lack of pattern, there seemed to be no way of forecasting how they would behave in the very immediate future. The irregularity of the explosions greatly contributed to the inability of the populace to define the situation clearly. For most of the affected people, the situation was never more than partially defined. It was defined to the extent that the situation was seen as dangerous, but not to the extent that a course of action which was deemed completely appropriate ever emerged. The uncertainty and confusion remained a problem for almost the entire duration of the crisis.

2. Most explosive disasters are of the instantaneous type--i.e., they occur immediately, without warning, and contain the elements of surprise and shock. Because they occur unexpectedly, the populace is unable to erect adequate physical, psychological or social defenses. The Brighton disaster was unexpected. The residents of the area had no prior indication that the normal routine of life on an ordinary weekday afternoon was going to be disrupted. The disaster taken as a whole, however, was not of the instantaneous type. In most peacetime explosion-like disasters there is one instantaneous blast. The social and psychological adjustment, therefore, is basically oriented to a danger that is already past. In Brighton, on the other hand, with its series of explosions extending over a two-hour period, the danger was defined in terms of future happenings. Hence, it required social and psychological adjustment to a future danger, rather than a danger already past. In this sense, the Brighton disaster more closely paralleled the type of experience that a community might face during wartime (e.g., aerial bombardment) than is true of most peacetime instantaneous disasters.

Although the disaster was not a purely instantaneous disaster, neither could it be classified as a progressive type of disaster, as is typified by most flood situations. In progressive disasters, the community and individuals usually have considerable forewarning. There is a gradual buildup of the threat; the danger exists in the future, and there is the possibility of minimizing the destructive and disorganizing force of the disaster because persons are able to erect at least some physical, social and psychological defenses in preparation for the crisis.

The Brighton disaster actually represented a combination of both the instantaneous and the progressive type of disaster; it combined some elements of each basic type. As in the case of a progressive type of disaster, the threat appeared primarily in the future; but, as has already been indicated, the disaster was of such a nature that it prevented any

satisfactory adjustive behavior on the part of the affected individuals. The residents were able to do little in the way of erecting subjectively-satisfying defenses against the crisis. Furthermore, as in the case of an instantaneous type of disaster, the precipitating event occurred without warning and was completely unexpected; hence, it maximized the elements of surprise and shock. Generally speaking, therefore, even though the threat was continually in the future because of the time span involved, the social-psychological consequences were more comparable to those that follow upon an instantaneous type of disaster.

3. Under conditions of stress, there is a tendency for perception and attention to be narrowed and focalized--with each person defining the situation almost solely in terms of the objects which are immediately perceivable. This tendency can be noted in the initial reactions of the persons in the disaster-struck area of Brighton. Each person tended to interpret the nature and extent of the crisis in terms of his immediate surroundings. "It was my gas in my house," was a typical expression of this tendency. The mass exodus from the houses was, for the most part, a result of the convergence of individually-formulated definitions of the situation. Many people in their houses at the moment of impact defined the situation as dangerous and, acting on their fear impulse, left their homes. It was only after these individual escape actions had been taken that most persons realized that the event was more than just a localized accident confined to their own homes. Once outside, such persons came to realize that their escape action had not relieved the danger; rather, they found themselves confronted with a further and more extensive danger situation. Houses were exploding all around them and the eruption of the very ground on which they stood presented itself as a definite possibility. As has been pointed out, the mode of coping with this further threat was not immediately clear; hence, the situation produced feelings of great fear, uncertainty, and helplessness.

4. As is generally true under such circumstances, individuals began to interact with one another. Although their initial escape actions from their homes were, for the most part, the result of individual effort, the later reactions can only be understood in terms of the collective behavior that occurred when persons came into contact with others in the disaster-struck area. When their own individual efforts (e.g., running from their house) failed to bring about the desired goal of safety, most people turned to others for support and assistance. This is quite typical of crisis situations. With the occurrence of an exciting or dangerous event and the breakdown of the usual social expectations, elementary collective behavior tends to emerge; when the established or expected ways of acting are disrupted, persons consciously or unconsciously seek guidance from others. Thus, in Brighton, the residents of the various houses began to converge and congregate in the streets. As they milled around, crowd-like behavior began to take form. Under conditions of stress and danger people become highly sensitized to the actions of others. Each person's behavior became the reference points which partially mobilized the actions of every other person.

At least three different types of collective behavior emerged out of the numerous, but separate, small milling groups scattered in the streets and lawns throughout the affected area.

a. By far the most common activity that emerged out of the interaction of members of milling groups was a type of withdrawal behavior. As people talked over the event among themselves they would decide that some particular location, such as a backyard or the lawn in front of an all-electric house, was a position of relative safety. On the basis of the group consensus they would then move to those places. Even for most people who acted in this manner, however, the situation remained somewhat uncertain and unsatisfactory, for there remained the feeling that another course of action might possibly be more appropriate.

b. Some people gave vent to their fearful and helpless feelings in expressive, almost hysteria-like actions. As they milled, the collective excitement was intensified and the reinforced "not knowing what to do" feeling was vented in unrestrained physical movements. Such people wanted to act in some way, but they were unable to mobilize their action to deal directly with the threat. They defined the situation as dangerous, but they were not able to arrive at an individual or collective definition regarding the course of action that should be followed. The evidence suggests that this expressive type of crowd behavior occurred in only a few isolated instances and apparently lasted for only a brief time.

c. Other small groups which milled in the streets collectively defined the situation as highly threatening and something which required escape action or flight. They came to feel that they might be trapped by what was going on around them. Out of the interaction of such excited people, panic flight sometimes followed. Such collective panic, however, were quite rare as compared with the initial mass or individual panics which followed upon the individual discoveries that one's own house might momentarily explode while one was still in it. As is indicated in paragraph 4 a. above, by far the most common result of the interaction in the small milling groups was a sort of planned withdrawal to areas which were collectively defined as less dangerous.

Although people engaged in crowd-like behavior, it is to be noted that all critical judgment was not lost. People talked over the merits of moving from one place to another. They discussed the advisability of fleeing from the area altogether. There was a tendency to respond rather quickly to some suggestion of action on the part of others, but, on the whole, people remained somewhat discriminating--taking into consideration various aspects of

the situation as they saw them. From the point of view of personal safety, the only objectively maladaptive behavior was the reentering of the houses. In most cases this was done in order to obtain car keys which the resident had left behind. But for the people who engaged in such an action, it was an adaptive, rational response, for it was felt that by obtaining the car keys they would be able to drive out of the area and thus remove themselves from further danger more quickly.

While there was much confusion and considerable social disorganization, there was nothing approaching a complete breakdown of the whole social structure of the community or the neighborhoods. Similarily, there were only a few cases of rather complete personal disorganization. Only in some extreme cases of hysteria-like behavior was there activity of an almost wholly uncontrolled nature. The evidence indicates that this behavior, for the most part, was short-lived; it tended to be present only during the height of the crisis period.

5. As people milled they circulated rumors. This was true not only of those people who were in the scattered small groups in the immediate disaster-struck area; rumors were also circulated by those people milling in the crowds that had quickly gathered at peripheral points--particularly at the road blocks that barred entrance into the disaster area.

The initial rumors that circulated in the immediate disaster area seemed to be about objects outside the area itself, particularly with what had happened to the school and the children. As the mothers observed the houses exploding and catching fire around them, they became concerned that the nearby school might also have been affected. They talked over the possibility but, lacking any definite information, they grasped at anything anyone said in regard to the school. On the other hand, there appeared to be few rumors about the cause or the nature of the explosions themselves. People had rather quickly established that gas was the cause of the explosions which they heard and witnessed. They had no need to speculate for they thought that they had the facts, as they actually did.

At the peripheral points, on the other hand, the rumors were about what had happened or was happening in the area. Persons who were at the periphery were concerned with the causes of the explosions and with the number of casualties that had occurred. The breakdown of routine communications into and out of the area left a void in the information being sought by kinfolk who were strongly involved psychologically with those still in the danger area. Rumors were the only primary source of information available to them at the time. Moreover, the initial reports which most of these people had heard from others or from radio reports were of such a vague nature as to allow almost any interpretation; or, they were so sensational and anxiety-arousing as to lead to attempts to ascertain more details.

Unfortunately, the officials or relief workers who were manning the roadblocks either could supply no information or merely passed on some confused or vague statements which lent credence to the already circulating rumors. The very prestige of such official workers, in part at least, probably accounts for the continued circulation of some false reports. When persons in an official position--persons who supposedly know the objective facts of a situation--seemingly support what the rumors are asserting, interested and concerned persons tend to accept the rumors as true.

In the present case, there are three possible reasons why officials and relief workers passed on misinformation about what was happening in the area: (1) They were being pressed by worried citizens for precise and specific information which they did not have; as people in authority they might have felt that they should know and that their status and prestige would have been lowered if they appeared not to have the requested information. (2) Some of the official workers probably communicated false reports which they had acquired from others and which they accepted as true. (3) Finally, it would appear that some misinformation, especially about the danger in the area, was intentionally communicated to discourage the inquiring person from entering the area.

IMPLICATIONS FOR DISASTER PLANNING

An analysis of the foregoing data suggests a number of implications bearing on the problems of disaster preparedness or planning. The following recommendations have grown out of analysis of the problems presented by the Brighton disaster. These recommendations should be viewed as tentative and subject to revision, qualification or extension on the basis of further investigation.

1. This disaster re-emphasizes the need for a specific pre-rehearsed course of action to be taken immediately after the impact of a disaster. Education of the populace in the form of general admonitions concerning the course of action to be taken in the event of a disaster is ineffectual. These admonitions are often recalled after the disaster event; but they usually prove of little value during the event, since they presuppose the existence of the power of critical judgment--and it is precisely this power which is most likely to be lost or reduced in a situation of extreme stress. An example in the present case is the Civilian Defense warden who failed to comply with any of the instructions which she had learned in a recent course. In order to be incorporated into automatic, habitual responses, the desired type of behavior must be repeatedly rehearsed and drilled. The orderly evacuation of the school and the calm reaction of the children who thought it was simply another fire drill well exemplifies the value of such training for times of disaster.

2. If people are supposed to be able to handle the utilities in their homes during a disaster, three factors need to be taken into account. (1) They must have knowledge of the location of all the shut-off valves and switches. (2) They must have at hand the equipment, such as wrenches, which would be necessary to make the shut-offs. (3) They must have some experience in making shut-offs, because shortness of time is frequently a factor and a person cannot stop to read instructions. The absence of any one of these factors--knowledge, equipment or experience, as the

evidence from Brighton indicates--may negate the efforts of the most willing persons. Individuals must be taught where the shut-offs are in their homes, they must be given or made to get the appropriate equipment, and they must be told to practice what they might have to do until it has become a semi-automatic process.

3. In training people to meet disasters, it would seem wise to take into consideration the varying sex distribution of a given community at various times during the day. The disaster struck Brighton when almost no men were present; the population was overwhelmingly female. Such a daytime sex distribution, while generally to be found in almost any residential area, is especially typical of a suburb. It thus would seem necessary to train more than the male members of a family in such things as how to turn off the utilities, or how to fight a chemically-ignited fire. Only the women, as was the case at Brighton, might be present and directly available to deal with the immediate aspects of a disaster.

4. In this disaster those people who felt some responsibility for others tended to remain calm and, in general, maintained a high degree of self-control. This was true whether the person was playing a somewhat formal role (e.g., the school teachers with reference to their pupils) or a somewhat more informal social role (e.g., the mothers with respect to their children). If people can be trained to feel they are responsible for others, that it is their job to see to it that others are taken care of, there will be less personal disorganization and fear-provoked behavior. It would seem particularly pertinent that formal leaders (e.g., air raid wardens) be especially impressed with the fact that they have a responsibility, that others will be depending on them. A core of such people, because of the fact that they have greater self-control, would probably be able to provide some leadership and thus lessen the degree of social disorganization that usually follows a disaster.

5. What happened at Brighton again emphasizes the need for certain disaster equipment, and having it available close at hand. One of the foremost needs during this disaster, as attested to by remarks of both officials and area residents, was for portable loudspeakers and sound-trucks. During the whole crisis period, apparently only a few sound-trucks or loudspeaker systems could be mustered and used. Yet in almost any disaster of any magnitude such equipment is vital for the rapid dissemination of information, the control of crowds, and the direction of relief work.

Furthermore, at Brighton, police communications were crippled by the fact that the electric power in the area was shut off and it took several hours before an electric generating truck could be located and brought to the scene. This difficulty was partly circumvented by the use of two-way radio cars, but there were not enough of them and there lapsed some time before others could be brought in from outside communities and agencies. At the moment of greatest need, part of the communication system failed and valuable time was wasted in getting substitute means.

In the light of this, the equipping of disaster agencies with portable power and communication units would seem advisable. Because of the costs involved, rather than equipping each local community, it may be advisable to locate the units at a mutually-shared, central storing point in each region. However, such points should be located so that each local community could get whatever equipment it needed--be it a generator truck or portable loudspeakers--within a period of one hour or less.

6. This disaster was marked by considerable confusion in the mobilization and use of disaster and relief units. Save for a Mutual Aid Plan among the regional fire departments (which partially broke down because of a lack of a directing headquarters), there existed no overall plan by which the various organizations could coordinate their activities. Most agencies simply functioned independently of one another. There was no central disaster headquarters and no unit or official had general control over disaster operations.

To prevent the occurrence of the type of confusion that prevailed at Brighton, it would appear useful to have a master plan. The plan should be specific and detailed. It should specify who should have overall control of the emergency mobilization of men and equipment. It should designate who would be responsible for setting up a central disaster headquarters and what authority the designated unit or official would have. Probably such a plan could be set up so as to utilize already existing limited and partial arrangements and informal understandings that are to be frequently found among the official and semi-official agencies of most communities.

The master plan should also take into account the fact that a major disaster will strip protection from communities for miles around. The Brighton disaster utilized all the organized and semi-organized disaster and relief services of the entire community and a major part of those of other communities within a 40-mile radius. A master plan should take into account the possibility of simultaneous disasters and the necessity of not denuding any large areas of all protective services.

The master plan should also take cognizance of the problem of dual or even multiple membership of persons in official relief organizations. Such multiple membership may prove a severe handicap in mobilizing the relief agencies for a disaster. When the Civilian Defense organization at Brighton was called out at the same time that the Red Cross was proceeding to alert its units, the latter organization lost important key members to the former organization. They could not function as efficiently with the loss of such members. Either individuals have to be prevented from joining organizations which may come to operate at the same time or, as would seem more appropriate, individuals should not be allowed to hold important posts concurrently in two such organizations. If a disaster unit is to function efficiently, it must have all of its key members. Perhaps for people with dual or multiple membership a priority system could be set up. Depending on the nature and extent of the disaster, organization members could be told to work with one organization or another. This, however, would not be applicable in a disaster of major magnitude, where all the relief services have to

be utilized to their fullest extent.

8. At Brighton, as is typical of most large disasters, the telephone lines soon became jammed because of the volume of calls made. The mobilization of relief units was partially hindered by this fact. It would seem imperative immediately upon the realization of a disaster that certain lines be designated purely for official use. Top priority should especially be assigned calls being made for assistance to non-local areas. While no harm can come from admonishing people beforehand not to use the phones during an emergency period, the evidence demonstrates that this normally has little effect. The concern of people for one another is so great that they will try to communicate with one another. Any attempt to block completely such attempts to contact one another would probably be psychologically much more harmful than useful.

Relatively soon after the news of a disaster gets out to the larger community or the nation at larger, there is usually a flood of calls into the community. This was the case at Brighton. Callers contacted a multitude of agencies in an attempt to get information about residents of the area. It would seem worthwhile, if it were possible, to channel all such calls to one central point. At that location there should be a master list containing such information as callers are usually interested in--e.g., the names of those killed or injured, or where certain people can be reached. Such a procedure would save many organizations considerable time and effort which could be expended more efficiently in dealing with the immediate local situation.

9. There is a tendency at a time of disaster to place great reliance upon radio broadcasts. Officials conceive of it as a channel for getting information to people and the public, in turn, likewise think of it as a source of knowledge about what is occurring and what they should do. There are several dangers inherent in this, as the evidence from Brighton attests.

The people immediately affected by the disaster often cannot be reached by radio. The power in the area might be cut off, or the people might have no access to a radio receiver. They must be reached in other ways. The use of sound trucks has already been suggested (see paragraph 5 above). The possibility of using sound-equipped helicopters might be investigated. They have the extra advantage that they would not be hindered from entering an area because of wreckage-strewn roads or collapsed bridges.

There is a tendency for people to accept as official anything that is broadcast over the radio during a time of disaster. At Brighton isolated and completely unofficial remarks on the radio about an evacuation possibly becoming a necessity were taken, in a number of instances, as a direct official order to leave the area. This would seem to indicate the necessity of getting the cooperation of radio stations during a disaster and having them limit what they transmit. It would seem

especially important that a distinction be made between official announcements and news reports or commentary.

10. Disasters frequently cause traffic problems and traffic congestion. At Brighton the men coming from Rochester blocked the main road. It would appear to be of some importance to keep main traffic routes free for the movement of disaster units. This can be done through the use of roadblocks. However, the roadblocks should be established a considerable distance from the edge of the disaster area. This would prevent an amassing of men and vehicles at the edge of the affected area where they could more easily hinder the operation of relief units. Furthermore, the people manning the road blocks should be given instructions to direct people who are seeking information about their families to a central information point. This central point of information should itself be located away from the main arteries leading into the disaster area.

11. A considerable amount of the rumor circulation at Brighton, especially at the peripheral area, seems attributable to the activity of officials. It seems imperative that police officials, relief workers, and other authorities who work in disaster-struck areas should be instructed that under no circumstances are they to pass on any information they deem might be purely rumors. By having officials refrain from repeating them the spread of rumors can be minimized. Individual officials can also help check rumors by making plain to the carrier of a rumor the implication of his talk and by questioning and insisting upon verification and proof. A rumor stopped at any point can be of great significance in cutting short its network-like spread.

12. There was much duplication of effort at Brighton in the process of checking on homes to be sure that the gas valves were turned off. Each relief worker had nothing to indicate to him that someone had already been in a house and had made it secure. This would seem to suggest that if houses have to be checked for some purpose, the workers who engage in such activities should be supplied with tags or stickers which they could use to indicate when a particular house has been inspected. By so marking the buildings that have been inspected, another worker could tell at a glance whether or not there is further work to do.

13. At Brighton a sense of psychological security and the feeling that the crisis was at an end came about when families were reunited or when each member knew that every other one in the family was safe. It would appear imperative that families be reunited or be placed in contact with one another as soon as possible. If people are evacuated from an area and brought to a particular collection point, this would not be too difficult, for everyone interested could be referred there.

If a disaster occurs while the children are away at school, it is of considerable importance that the mothers be notified as soon as possible of the fate of the school. The evidence gathered at Brighton seems to indicate that the primary concern of the women was for the

children who were attending the schools, and that this was largely responsible for many of the rumors that circulated in the immediate disaster area. Once it was established that family members were safe, there was a considerable diminution of anxiety.

14. The authorities need to give strong and frequent reassurance to the residents of an evacuated area that it is safe to re-enter. In this disaster, many residents were reluctant and afraid to go back into the area and, even when they returned to their homes, they still remained uneasy and apprehensive that the danger from future gas explosions was not over. Official announcements about the safety of the area were apparently not convincing. They were not repeated often enough and they were not as forceful as they should have been.

In connection with this need for reassurance, mention might be made of the popular conception of radioactivity following upon an atomic bombing. If people are forced to leave their homes and their area because of such a bombing, many of them will need considerable assurance that the home and area will be safe to re-enter. Such assurance, however, might not be enough; there should be widespread dissemination of accurate information beforehand about the limitations to the danger from radioactivity.

It would also seem wise to inform people that acute physiological reactions are normal reactions after any major subjection to stress. Here, again, popular conceptions of radioactivity and of biological warfare might lead to completely unwarranted interpretations of to-be-expected symptoms after a stressful experience. The realization that what is being experienced is not unusual will aid in preventing the arousal of totally unjustified anxieties.

15. Many people at Brighton attributed part of their sustained emotional reactions to the sight of the destroyed and damaged houses. They were continually reminded of what had happened and the fearful experiences they had undergone during the disaster. This suggests that as soon as possible after the disaster as much of the wreckage and debris as possible should be removed. If the damage cannot be immediately erased, at least some effort should be made to clean up as much of the debris as possible.

16. One of the few objects of resentment at Brighton was the sightseers who came into the area. They further disturbed the already overwrought residents. In view of this fact, it would appear to be advisable to bar such curiosity seekers from an area that has undergone a disaster. This would probably necessitate the maintenance of roadblocks. However, it is doubtful that they would need to be maintained for long because interest drops off rather sharply after a relatively short time, especially if the disaster is no longer in the news.

D. An Airplane Crash in Flagler, Colorado

National Opinion Research Center*

INTRODUCTION

At approximately 2:40 P. M. on September 15, 1951, a stunting airplane crashed into a crowd of spectators at an airshow in the small community of Flagler, Colorado. The crash killed 20 persons--including 13 children and seven adults (three women and four men)--and injured approximately 30 others. Most of the victims were killed instantly or died within a few hours after the accident. The pilot of the airplane was among those who were killed. A Civil Aeronautics Board report on the accident, released three and one-half months later, blamed "pilot error" for the accident.**

The following report is concerned with the social and psychological effects of the airplane crash on the residents of the community. Three members of the National Opinion Research Center's Disaster Research Team arrived in the community three days following the crash and conducted interviews with the residents during the five succeeding days. During this time, a total of 42 tape-recorded interviews, averaging approximately two hours in length, were obtained. The respondents who were interviewed included persons with all degrees of involvement in the disaster --e.g., persons who were seriously injured, persons who lost family members, spectators who had relatives in the crash area, spectators who had friends in the crash area, and outsiders who witnessed the event and had minimal identification with the community residents. In addition, a special effort was made to interview persons who took a leadership role or who were in a position to give special information concerning the relief work and the behavior of the populace.

The material which follows is based upon an analysis of the interview data, the reports of the team members who conducted the investigation, and extensive newspaper accounts. The findings incorporated in this report should be viewed as tentative and subject to revision, qualification or extension on the basis of a more complete and thorough analysis of the interview protocols.

The Community Affected

Flagler is a small, isolated farming community, located in the southeastern part of Colorado, near the Kansas-Colorado boundary. In 1950, the total population was 793 persons. At the time of the crash, the population of the city was approximately 850. Inclusion of the persons living on surrounding farms would bring the total population to about 2,000. The nearest large city is Denver, which is located about 120 miles east of Flagler.

Agriculture and stock raising are the principal industries of the area. The town itself is a collection and distribution center for wheat and barley crops produced in the area and for the cattle and sheep which are sent to market.

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*A summary of this report was presented to the conference by Charles E. Fritz, Assistant Director of the N.O.R.C. Disaster Research Project.

**Associated Press news release, January 3, 1952.

Since 1939 or 1940 the community has become quite prosperous, sharing in the general agricultural boom of the war and postwar years.

Most of the people who live in the community are employed in the service industries or are retired farmers and businessmen. The businesses include several dry goods stores, an implement store, a hardware store, a drugstore, a building and construction agency, a restaurant, a bank, a small movie theater, a newspaper, a Chevrolet and Ford auto agency, and a tavern. Unusual for a town of this size is a small, but fairly well-equipped hospital of 12 beds. It is staffed by the two physicians in the community and three regularly-employed nurses.

The population is composed predominantly of old-generation, Protestant, whites. There are no Negroes or other racial minorities in the community. The religious composition of the community is overwhelmingly Protestant. There are three Protestant churches and their membership roughly follows the socio-economic distinctions made in the community. The Congregationalist church contains most of the higher income families and most of the formal leaders of the community. There is a German Lutheran Church which has a mixed congregation, but is predominantly composed of middle class persons, and a Baptist Church composed of lower middle and some lower class families. There is a small Roman Catholic mission church composed of about 20 families, which is administered by a priest who lives in another town about 30 miles away. The Catholic Church is mainly comprised of lower income families in the community.

Although socio-economic distinctions are made in the community, there appear to be no real class cleavages. The people are bound together closely by kinship and friendship ties. Nearly everybody in the community knows all the other residents, and they generally refer to one another by their first names. There are no addresses on any of the houses, but the investigators found that nearly all the residents could direct them to nearly every family in the town.

Unlike many small rural communities, Flagler has a large number of young adults (persons in the age group 21-35 years). The prosperity of the community has apparently influenced many of the young men to stay in the community and take over their fathers' jobs. A considerable number of others have returned to the community after getting professional training or working in other cities. Most of the professional people (e.g., a lawyer, a doctor, several nurses, and school teachers, and a dentist) grew up in the community and returned after getting their training. Similarly, many of the businesses in the community are operated by young men who have taken them over from their fathers.

The young people have taken an active role in politics and in the informal life of the community. The mayor and several members of the town council are in their early thirties. A large American Legion Hall has been built recently, and the Legion organization is composed predominantly of World War II veterans. The local Lions Club also contains a high proportion of young men.

The general picture that the town presents is that of a small, western community with many primary group relationships and a strong sense of community identity. It has an extremely active group of young adults who play an energetic role in the formal and informal life of the community.

There is only one group which is almost completely outside the life of the community. This is a group of about 10 seismograph crew members and their families who live in trailers at the edge of town. Employed by an oil company to prospect for oil in the area, they had been in the community about eight weeks at the time of the crash. Prior to the disaster, their only contact with members of the community was in the restaurant and stores in the town. Although they wished to be accepted, they were largely outside the social life of the community.

THE COURSE OF EVENTS

The Pre-Crisis Period

The airshow at which the plane crash occurred was one of the events scheduled during "Flagler Day,"--a sort of harvest festival which is held annually to celebrate the harvest of the fall crops. In marked contrast to later events, gay festivities preceded the air show. The first item on the day's program was a breakfast at the American Legion hall for 150 guests. Next came a kite contest at the high school football field, with about 50 children participating. Afterwards, there was a parade of floats and horseback riders. At noontime, there was a community barbecue, with a large crowd attending. This was held in a small park located near the business district, and the crowd lingered in the park after the barbecue, visiting with friends and waiting for the time for the air show, which was scheduled at the local airport for 2:00 P. M. The air show was to have been followed by a baseball game later in the afternoon and a dance in the evening.

In previous years, the main event for "Flagler Day" had been a rodeo. This year, however, a number of the younger members of the community urged that the air show be substituted, and arrangements were made to hire the Rocky Mountain Air Shows to stage the event. The Rocky Mountain Air Shows was composed of a group of part-time flyers, many of them ex-Army flyers and Civil Air Patrol members, who gave the shows in order to make extra money for themselves. They had previously staged 11 similar shows at fairs in communities throughout Colorado. The Flagler Lions Club sponsored the air show and the town council approved it. Some local flyers were scheduled to participate in the air show.

The show was held at the local airport, which is located about a mile from the edge of the community. The airport is normally used primarily by crop-dusting planes (the airport manager runs a crop-dusting service) and also by a number of flying enthusiasts. It has grass runways, a small corrugated metal hangar, an adjoining office, and a gas pump.

By 2:00 P. M., when the air show was scheduled to start, about 1,500-2,000 persons had arrived. Nearly everyone from Flagler and many other persons from the surrounding farms and small towns had come. Five hundred or more cars were parked four rows deep on both sides of the hangars and on the road leading to the airport. Many of the people were sitting or standing in front of the first row of cars; others were sitting on the roofs, hoods, and fenders of their cars to get a better view.

The show was a little late in getting started. According to a Denver newspaper reporter, who was present at the time of the crash, the crowd was a little

impatient, but good natured. A number of the people were honking the horns of their autos to indicate their impatience.

A loudspeaker-equipped truck had been set up next to the hangar, and the announcer, a local airman who had been an Air Force flight instructor during World War II, was giving a stalling type of speech about the events that were to take place. The first event was to be a sail plane (glider) exhibition; and the second was to be a mock dive-bombing attack on a shack which was rigged up in the center of the field. The seismograph crew members had fitted a charge of dynamite in the shack, and, when the plane dived over it, they were to set off the charge. The head of the air show, a colonel in the Civil Air Patrol, had received word from Denver that one of the planes which was to take part in the air show had an oil leak and that it would be delayed briefly. This was the plane that later crashed into the crowd. It was piloted by Air Force lieutenant who served as a photo instructor at Lowry Air Base in Denver, who flew for the air show in his spare time.

About 2:15 P. M., the sail plane exhibition took place. The towing airplane cut the sail plane loose over the field, and it glided around over the airfield for about 20 minutes before it landed on the field. The crowd was apparently impressed and pleased with this exhibition. After it landed, a number of the men and boys went out to inspect the sail plane more closely.

The Crisis Period: 1. Impact of the Disaster

At this moment, the plane which was scheduled to arrive from Denver approached the field. The announcer reported that he saw the plane at that time but thought it was a transit ship not scheduled for the air show. It flew some distance past the airport and then made a turn and headed southeast directly toward the crowd. It came in at an altitude of approximately 150-200 feet and as it flew over the center of the field, it started to do a barrel roll. However, it never completed the roll. It fell out of the roll, one wingtip struck the ground about 20 or 30 feet in front of the crowd, and the airplane crashed into the crowd and the parked cars.

Witnesses compared the effect of the crash to that of a scythe. It demolished the cars in the front rows, including the town's only ambulance, and cut a swath through the people standing in the immediate pathway. Wreckage, oil and gasoline from the plane were scattered over a 150 yard area. The plane, however, did not explode or burn. Later investigation revealed that when the plane disintegrated the gas tank was thrown clear of the wreckage and, hence, there was a minimum of explosive material in the immediate crash area. However this fact was not known at the moment of the crash.

Most of the persons in the direct path of the plane were killed almost instantly. Their bodies were badly mangled; arms and legs were cut off, and some had their faces and skulls completely mashed. Parts of bodies and blood were scattered over a considerable distance. Injuries resulted primarily from being struck by flying debris from the disintegrating airplane.

The Crisis Period: 2. Immediate Responses

Nearly all eyes in the crowd were focused on the plane as it began its stunt and started in the direction of the crowd. However, there were only a few seconds in which most persons had some forewarning of the crash. In this brief period some people took such reflexive actions as ducking behind cars, falling to the ground, or starting to run.

An elderly man said:

> Suddenly we saw the plane. It was coming right at me. I didn't start to think; I started running to the west. (What made you run, do you suppose?)* Oh, I just seen the plane coming for me. I didn't start to think; I just thought to get out of the way. And you know you didn't have time to think, or say anything; it was seconds and it was over.

A woman, who works as a cook at the local hospital, said:

> As the plane swooped down toward the runway, I wondered what it was going to do. Then it started turning toward the side and went crashing through the rows of parked cars. As I saw that it was crashing I ran, while fragments of the wing fell behind me. Then it was all over and when I turned around, there in front of the cars parked by the ambulance were four persons lying on the ground, two of whom I knew were gone; but I did not recognize any of them. Then as I stood there, still in a daze, a man came running by with a little girl in his arms.

A man whose wife, a son, and daughter were killed, recalled:

> God, it was awful! I saw this plane coming. I hollered, "Mama, duck!" I dived between two cars. There was an awful roar, and then this loud crash. I got up, looked around. Mama wasn't there. I couldn't see the children either.

A woman sitting in a car said that she reached for the door handle in order to get out and run, but her friend was in the way. The next thing she knew the plane had hit.

The first reaction after the crash of the plane was a shock or stun reaction and a brief period of complete silence. For a period of a few seconds, the entire crowd was immobilized, all action was suspended. Following this, a loud moan arose from the crowd, followed by anguished screams, shouts and cries. Then persons began to converge on the disaster scene--first slowly, and then more quickly.

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*The words in parentheses are the interviewer's remarks.

A man who taught in the local high school said:

> I saw a cloud of dust and debris fill the air as the plane crashed into a segment of the crowd and automobiles forming the first row of spectators. A brief moment of silence followed and then the cries of the injured and the screaming of others in the crowd could be heard as I rushed on down to the scene.

The announcer at the sound truck described the immediate reactions as follows:

> Everything was quiet then for just a small amount of time. (How long?) A matter, say, of two or three seconds. It was just a hush, everything was quiet, then people began to move toward the accident. It seemed first that they were beginning to move slowly and then, when they realized what took place, why they began to run.

A Denver newspaper reporter, who was standing on the airfield about 400 feet from the crowd, gave the following description:

> It was 2:40 or 2:45 P. M. My view at this point was obscured by the corner of the hangar. All of a sudden I heard a plane very low over my head and saw the plane taking a northeast direction doing a barrel roll and emitting a faint wisp of smoke. At the moment, I thought I must be confused--thinking that this was the plane that was to do the bombing. Then I realized immediately that the other plane that was scheduled to do the bombing had not yet taken off. I heard a faint noise; I thought that they had done a poor fake of bombing the crowd. Immediately following, however, I heard a chilling sound--a kind of moan--then, many voices, little cries, but little talk; and I began to run in that direction. People on the south side of the hangar also ran to the scene. There was a great deal of movement toward that direction.

A woman said:

> It seemed like for a second or two there was perfect quiet, then everyone jumped out of their cars and screamed.

Although a number of news reports described the behavior of the crowd as panic, there was no panic after the crash. Rather, there was a convergence toward the scene of the crash by highly emotionally involved relatives and friends. There was some short-lived panic among the people in the direct path of the plane just before it crashed, but the behavior which followed the crash was not flight behavior but movement toward the crash area.

The action of the crowd can best be described as expressive behavior. The screams and the convergence of the crowd on the disaster site was expressive of the great emotional anxiety which people had over the fate of the persons in the area. Many of the families had become separated during the air show and were scattered throughout the field. Hence, when the crash occurred many

did not know where their relatives were. In the first few minutes following the crash there was a great deal of confusion, excitement, and milling about on the part of persons frantically searching for their spouses, children, other relatives, and friends.

A few women were reported to have become somewhat hysterical when they discovered members of their family dead or injured. In general, however, the people who discovered dead or injured were more "dazed" or "shocked" than hysterical. The following personal accounts present a more detailed picture of the crowd behavior:

The announcer at the sound truck gave the following description:

> Well, the crowd did run, or quite a few did run into the area, but it wasn't a panic-stricken crowd; it was simply a run that indicated anxiety. It evidently indicated that the person had some friend or relative in that area; and he wanted to get down there and see if that friend or relative was hurt.

The Denver newspaper reporter gave the following account:

> When I got there and saw the scene, it looked like what had happened had the effect of a scythe. Cars in the front row were demolished. There was confusion among the crowd, but the noise factor was very little. Some people appeared stunned--they were standing or moving aimlessly; no one was weeping; there were a few hysterical cries--animal-like. (Would you tell me a little more about those reactions?) I'd say that the people were stunned. They were just looking at the dead; speaking only occasionally. (What were they saying?) You would hear remarks like, "My father is dead." Others were saying something like: "Is your little boy hurt?", and the reply, "He's dead." There was some interspersed moaning. It was definitely a shock reaction. The milling about was not as disorganized as you might think. They were not motivated except to find friends or loved ones. They were going some place--trying to find relatives or friends. For the most part people were just looking, saying very little. Within a 15 minute period, weeping became general. Friends were standing; the bereaved kneeling over their injured or dead. That was a typical pattern.

The local mortician recalled the behavior of a mail carrier whose wife was killed:

> He had picked up his wife and saw that she was beyond all hope, and he laid her down and kneeled there looking up at me. He just had a blank look on his face--sort of a question mark. He seemed to say, "What do I do now?" I said, "R_____, come do this." He wanted someone to tell him what to do. I have known him for a long time, and I know that ordinarily he would have been able to do something without directions, but his wife was killed. But since he

> knew it, and knew that nothing could be done, he just wanted to know what he should do. I'll never forget the look in his face when he saw nothing could be done for his wife. So when I told him to help, he did.

A woman described the actions of a man who had found his daughter seriously injured:

> One man picked up a little girl; she was cut, and died in a few minutes. Oh, he was just crying; he looked terrible. He said, "My little girl's dead."

The evidence suggests that interest in the safety of others tended to follow this pattern: Mothers were concerned first with their children, then their husbands; husbands were first concerned with their wives, then their children. After locating their spouses or children, husbands and wives were next concerned with close relatives, then with intimate friends and neighbors; and finally with more casual acquaintances or persons whom they did not know.

An indication of the strong primary group relationships of the community was the almost complete ignoring of the pilot's body. The pilot, a resident of Denver, was unknown in the community. At the time of the crash, the pilot was catapulted from the plane and thrown into an open space between two rows of cars. Later examination showed that he had no outward signs of injury, and it is possible that he may have lived for a brief time after the accident. Despite the fact that his body was in plain sight, he was completely ignored until all the other injured and dead had been removed from the field. Many respondents in the immediate area reported that they did not remember seeing the body. Although a few persons reported that they saw the body of the pilot, apparently no one made any examination to determine whether he was dead or alive, until his body was picked up an hour or more after the crash.

The Crisis Period: 3. The Emergence of Informal Leadership and Organization

Despite the initial confusion and social disorganization, informal organization emerged quickly. The immediate lead in organizing the rescue and relief work at the airfield came from the announcer at the sound truck. Within seconds after the crash, he was issuing commands and announcements to the crowd over the loudspeaker. He indicated that his initial reaction was to drop the microphone and run over to the crash area, but the fact that he had the microphone in his hand probably prevented him. As he recalled, the first thing that he said over the loudspeaker was for the crowd not to enter the crash area. When he saw that this had nc effect in controlling the anxious rush of the crowd, he called on the men in the area to organize and keep people out. He also kept announcing that people should not smoke in the area and that persons in the vicinity of the crash should not attempt to start their cars. At the same time, the announcer kept calling for doctors and nurses and persons who were skilled in first aid to go to the disaster scene.

For the first minute or two after the crash, his announcements apparently were ineffective in controlling the crowd. He said that he realized shortly that no one could have stopped the anxious rush of relatives into the area.

By repetition of the same announcement, however, persons who were only curious began moving out of the area. In the following quotation, the announcer gives a detailed account of the reactions to his announcements and evaluates the effectiveness of the loudspeaker:

> After a short interval /after the crash/, people began to walk and then run toward the scene of the accident. Shortly after it took place, I began to ask people not to move into the immediate area. (How long was this after the crash?) Maybe five or six seconds. Shortly after that I asked the men in the area to take it upon themselves to keep people out of the area. By that time I couldn't see into the crowd very well; I could see the backs of the crowd, but I couldn't see the area itself. I did have a glimpse of some bodies on the ground, but the crowd closed in and I could no longer see. I was looking for some vantage point to climb to in order to view the scene better, because I could have given better orders.
>
> I was amazed at how well the crowd did respond. At first there was practically no response to what I said over the speakers. It was just for a short time--maybe a matter of a minute or two. I kept repeating the same things, and gradually it began to sink in. I saw people back out of the area. I kept telling them to come to the hangar if they had no business in that vicinity--if they couldn't render any assistance; if they weren't skilled in first aid; if they weren't a nurse or a doctor--to come to the hangar; to move out of the area; if they couldn't give any assistance and wanted to help out the victims to please move out of the area. I just kept saying those things; and "no smoking," and "don't start your automobiles if you are in the vicinity of the accident."
>
> It didn't dawn on me until as much as four or five minutes later that the fact that after the initial shock there those who ~~had~~ friends or relatives in the area would go down there regardless of what anyone said. It would make no difference if the President himself had been standing up there at the public address system, if it had been General Eisenhower or General Marshall, if it had been a policeman--it could have been anyone. If they knew that they had a child or close friend or close relative, he was going down regardless of what anyone said. The people I was addressing were those who were going down to the area out of curiosity to see what happened.
>
> The public address system is a great help in a case like that. For example, a little later on they wanted to get some of the injured to town. A fellow came up and said: "We need some pickups /trucks/ down there." So I immediately asked: "Anyone with pickups report to the accident area." And a couple of fellows standing nearby--there were two cars in the way blocking the lane which they could use to get through--and I asked these two fellows to have those cars moved so we could get the pickups through there. And they really responded. I couldn't guess the number of pickups, but we had far more pickups

than were required. We had enough pickups there to carry 100 people, and in just a short time. They just poured through there. That showed the value of the PA system.

The effectiveness of the announcements over the loudspeaker was verified by a number of respondents. Numerous persons reported that they did what they were told to do by the announcer. Some stated that they did not remember hearing the loudspeaker, yet they acted in accordance with the commands and announcements. That the loudspeaker played a part in preventing a possible fire was indicated by one respondent who said he was going to light a cigarette but stopped because the announcer warned against it. A Catholic priest who took a leadership role in the immediate relief work indicated that the announcements were effective in guiding his own behavior.

In general, the persons who tended to act first with reference to administering aid and assistance to others were people whose social roles or special skills fitted them for the types of problems which arose. These "disaster role persons" included the announcer himself, who was a flyer during World War II and had experienced many airplane crashes. By virtue of his knowledge of aviation, he was able to anticipate the crash some seconds before it happened, and he was well aware of the danger of explosion or fire. Hence, he was already partially prepared to act by the time the plane had crashed. The Catholic priest, by virtue of his training and indoctrination, was similarly prepared to act in such a situation. He moved quickly to the scene, started administering last rites to the Catholics, gave aid and comfort to the injured and bereaved, and gave instructions to others. A doctor, the head of the local hospital, immediately left the area to get his medical kit, but the injured began arriving at the hospital before he could leave, so he started organizing medical aid at the hospital. Similarly, several nurses who were at the airport went to the crash area immediately to assist the injured. A telephone operator, who was watching the air show from her home in Flagler, went to the telephone exchange immediately and started calling all the surrounding communities to ask for doctors, ambulances, nurses, and medical supplies. The local mortician, whose wife and child were seriously injured when the plane struck the ambulance on which they were sitting, checked the condition of his wife and child and then began to direct the removal of the injured and dead.

It should be noted, however, that these "disaster role persons" acted in a leadership capacity only when they knew they had no close kin involved or after they had assured themselves of the relative safety of their own family members. The announcer, the priest, the doctor, the nurses, and the telephone operator already knew that their own immediate family group members were not in the accident area or quickly ascertained this after the accident. The mortician, on the other hand, experienced a strong conflict between his role as husband and father and his role as mortician. After the crash occurred, he went to the ambulance where his wife and child had been sitting. He discovered his small daughter first and thought she was dead [he later discovered that she was badly injured], so he then looked for his wife and found her on the ground seriously injured. He asked another man to go to the mortuary to get the hearse and, while he was waiting for the hearse to return, he examined his wife. He decided that if she remained quiet she would not need attention for about two or three hours. His wife told him that she would be all right and that he should try to help the other people. He then tried to

calm a number of the children whom he found in the area and assisted some of the injured. When the hearse arrived, he took his wife and child to the mortuary and then made four or five more trips to pick up other persons who were injured or dead.

The realization that other people expected him to play his role as mortician and his feelings of duty to his wife and child posed a dilemma at first, which he resolved initially in favor of attention to his wife and child. When he was assured that they were given the necessary care, he was able to assume his role in the community:

> I was in a dilemma at first because I knew people would expect a lot of me. It isn't like in the city where they wouldn't know you. But everyone here knows me. At first I went to see my wife and child before trying to help others. When I found my daughter, she seemed to be dead, so I left her and found my wife. She was conscious, and I knew she was injured internally. But she talked to me, and I told her to lay still. I knew she could take care of herself and would be okay for a couple of hours maybe.
>
> Since there was nothing I could do for my wife, and I thought my little girl was gone, I tried to keep myself busy. And people figured I'd help in any situation that comes up even though it isn't death. In a small town like this, people expect the undertaker to be human and do all kinds of good deeds. For example, there's a little crippled girl in town here and I stop by and take her for a ride to show people I'm not a cold-blooded undertaker, but interested in the living.

However, the conflict between his concern for wife and child and his feeling of duty as a mortician continued at the mortuary. He describes this conflict and the effect of the tension in the following quotation from the interview:

> It was hard on me to work with my attention divided between the hospital, the mortuary, and my family. I would go up and look at my wife and child in the operating room, and then down to the morgue, and then over to the hospital, and then back to the mortuary. First I would go upstairs and look at my family and then downstairs to the morgue. (How were you feeling at this time?) It didn't get me until about 4:45 /afternoon of the same day/ when they were giving my wife and child plasma. I was over at the hospital, and I broke down completely. (Broke down?) Yes, I was crying and sobbing from nervous tension. A woman walked up to me around behind the hospital and said: "You can't do this now, you've got a lot to do yet." This lasted until 5:15. Then I was all right and could work again until the plane /i.e., the medical rescue plane from Denver/ came. And then we all went /i.e., himself, his wife, and child/ to Denver on the plane. We had three embalmers

> working here so they didn't need me. We arrived at the hospital in Denver at 6:30. I was in Denver until midnight when they were given hypos and plasma, and there was nothing I could do about it. So I came back here about 3:00 A. M. Sunday.....I knew that everything had been done for my wife and child.

Although the initial leadership was undertaken by persons whose usual social roles fitted them for the disaster, there was also a great deal of spontaneous assistance from other persons in the crowd. Much of the relief work was carried out by persons who saw certain small acts which they could perform; and they performed these on their own initiative, without direction. Thus, many persons who had blankets in their cars pulled them out and covered the dead and injured, and tried to comfort the injured and the bereaved; a number of men went to the announcer at the sound truck and volunteered information or suggested certain announcements; men in the area of the crash started roping off the area and pulling out cars which were blocking the paths of others; several men went to the highway junction and directed traffic to and from the airport.

The great amount of spontaneous mutual aid was due in large part to the high degree of social solidarity and close personal identification of the people. Almost everyone knew each other, and it was primarily a matter of helping one's relatives, friends, and neighbors. Moreover, despite some degree of social differentiation in normal times, the basic value structure of the community emphasized the norm of neighborliness and mutual aid in times of need. The assistance offered after the crash was essentially an intensification of the pre-existing sense of social solidarity and community identity. The norms which ordinarily operated to differentiate one group from another [e.g., religion and socio-economic status] were quickly abandoned in favor of mutual support. This was demonstrated in the indiscriminate use of private property after the crash. People participating in the transportation of the injured and dead, took pickup trucks and autos, regardless of their ownership. Property rights seemed to be of little importance. As an older man said: "You just took any car you could get hold of and just started drivin'."

The spontaneous organization for relief was continued long after the crowd dispersed from the airfield. A group of women set up a canteen in a garage across the street from the hospital and served food and coffee to the bereaved and to the persons participating in the rescue and relief work. Food was prepared and brought to the canteen by housewives in the community. When it became known that the hospital needed additional blankets, the housewives responded immediately. As one woman said:

> They called for blankets, and I don't think it was but ten minutes they had so many they didn't know where to put them all. Someone came out of the hospital and said they needed them. By the time I got there, they didn't need them anymore, they were piled so high.

A local high school teacher took it upon himself to compile a list of the dead and injured. Within one and a half hours after the crash, he had an accurate list posted in the newspaper office just one door from the hospital.

Four or five retired nurses volunteered their services to the hospital, as did a medical student who was visiting his family in the community. Many persons volunteered to donate blood, but it was not needed.

Voluntary assistance to the families struck by the disaster continued for days and probably weeks afterwards. When the investigators left the community over a week after the event had occurred, neighbors and friends were still performing the household and farm duties for persons who had family members killed or injured. During the same time a relief fund had been started and over $3,000 had been collected, most of it donated by members of the community.

Quick action by the telephone operator resulted in the mobilization of considerable outside aid which arrived soon after the crash. Ambulances from nearby towns arrived within half an hour after the crash and were used to remove the last of the injured and dead. Seven outside doctors and five nurses came into town to assist at the hospital. Some of these had volunteered their help after hearing an announcement over the radio. All of them brought blood plasma and medical supplies with them, although the supply at the local hospital proved to be adequate.

Three Air Force medical rescue airplanes, with a staff composed of a doctor, nurses and medical technicians, were flown in from Lowry Field, Denver. Their medical staffs assisted at the hospital for several hours and later flew two of the seriously injured persons to Denver for admission to Denver hospitals.

Three embalmers from other communities helped the mortician prepare the bodies for burial. A newspaper editor from an adjoining town helped the local editor put out a special edition of "The Flagler News." A number of organizations and individuals living outside the community made contributions to the relief fund.

The Post-Crisis Period: 1. Emotional Reactions

Following the air crash and for several days afterwards, the community had what might be termed a "collective stun" reaction. The emotional impact of the disaster, which most of the inhabitants had directly witnessed, and the high degree of emotional identification of the inhabitants left almost the entire community in a somewhat dazed and confused condition.

Immediately following the disaster, after the announcer had asked all persons not immediately concerned with rescue work to leave the field, the residents milled outside the hospital or drove their cars and trucks aimlessly through the town. Some people not directly affected tried to work off their tensions by immersing themselves in routine tasks. One man reported that he immediately went home and washed his new car, which had been spattered with oil from the airplane. Most persons, however, reported that they were unable to do their usual work efficiently. Their routines were upset and they were mentally preoccupied with the event. Many persons reported a feeling of unreality--that they were still unable to realize that the event had happened.

There were a number of other indices of this collective stun and mental confusion. The telephone operator reported that persons in the two

days following the event seemed to forget more telephone numbers than usual. Sometimes they would pick up the phone and say they had forgot who they were going to call. The night following the accident, virtually none of the respondents interviewed were able to sleep. Most reported that the imagery of the plane coming toward them or the sight of the mangled bodies kept recurring.

The wife of the local doctor reported that nearly everybody that she met seemed dazed and confused. She said that several clerks in the stores kept making mistakes and that people would come into the store and forget what they wanted. One of her neighbors reported that she went into the grocery store and ordered $5.00 worth of groceries; when she returned home, however, she found that she had not gotten anything she needed.

The Post-Crisis Period: 2. Physiological and Psychosomatic Reactions

Every person interviewed--from those who were themselves injured and had members of their family killed to those who were only minimally involved--suffered some type of acute physiological or psychosomatic reactions. Inability to sleep and loss of appetite were the most common reactions. Many others, however, complained of headaches, nausea, vomiting, chills, and general nervousness.

The head of the local hospital said that he had treated about a dozen persons for various psychosomatic symptoms. He reported that among these inability to sleep and loss of appetite were most common, followed by nausea, vomiting, headaches, and diarrhea. One man was admitted to the hospital for treatment of a re-activated coronary difficulty. The physician pointed out, however, that the psychosomatic reactions were much more widespread than these 12 cases indicated, because residents were voluntarily staying away from the hospital so that the more seriously injured persons could be adequately treated.

One mother who was interviewed had lost a child and remembered vividly the picture of her six year old girl with her arm torn away and part of her head cut off. She exhibited extreme psychosomatic symptoms. For about three days after the crash she "could hardly breathe" and felt an extreme "tightness" in her chest. She could eat very little, and when she was able to fall asleep, she would awaken shortly with a start and scream. She would either dream or lie awake and relive the occurrence, seeing vividly her dismembered child. On the third day, she reported, she sat up suddenly and exclaimed that she had seen a vision in which her child was in heaven and in Jesus' arms. From that point on the extreme psychosomatic symptoms disappeared and she was able to eat and sleep more and help care for the family. However, she was still in a very listless and nervous state on the fifth day /she cried freely during the interview/, and she was still occasionally reliving the experience.

The priest who took a lead in the initial relief work reported that he had lost seven pounds in weight during the time he was assisting at the air field and he also complained of neurodermatitis--saying that his skin was extremely dry and his hair was falling out. He also reported being unusually thirsty.

Two members of the seismograph crew who were interviewed reported chills and general nervousness. One had developed a muscular spasm in his back which he attributed to his experience at the air show.

Many of these symptoms were still present five or six days following the accident, although most of the acute physiological symptoms like nausea and vomiting had disappeared by that time. Up to a week afterwards, however, many persons were having recurrent catastrophic dreams, sleeplessness, and general nervousness.

The Post-Crisis Period: 3. Rumors and the Assessment of Blame

Although there was an exchange of information as to the particular people who were dead or injured, there were very few rumors among the crowd who witnessed the crash. The immediate cause of the accident was clearly perceivable, so the rumors which circulated were mainly concerned with who was killed or injured. Moreover, the announcement of casualties over the loudspeaker and the prompt posting of casualty lists in town appear to have kept down the scope of rumor circulation with regard to these subjects.

Later rumors were mainly concerned with the condition of various persons affected by the disaster and the reasons for the crash. In general, the pilot was blamed for the crash, but the respondents voiced little vehemence against him. Statements in which they voiced the opinion that he was to blame were usually tempered with statements which excused him. Many people pointed out that he could not have crashed intentionally and that he may have had a heart attack or the plane may have had some type of mechanical failure. Some people expressed sorrow for his wife and children. The following statement by a woman was somewhat typical of the statements concerning the pilot:

> I think it's his fault. I don't think he did it intentionally, because he was killed. He came in late and wanted to start with a bang. But he was a married man with two children.

A husband and wife who had their daughter killed in the crash showed great hostility toward the town leaders. The pilot was exonerated, but the town leaders were blamed for bringing in the air show. The husband said that for three days after his child was killed his wife was in such a state of shock that he thought she was going to die. He said that he felt that if she did die, he was going to kill someone among the town leaders. However, this was the only case of strong feelings of aggression that was encountered.

A number of older people who were interviewed expressed some resentment towards the younger people in the community. In one case reference was made to "those Legion boys who brought in the show." Some people resented airplanes in general.

At the time of the field investigation, however, there was no general consensus on who was responsible for the crash. People were still actively talking about the reasons for the crash, but had not arrived at a general definition concerning blame. Later investigation might have shown a greater tendency for focalization of blame.

The Post-Crisis Period: 4. Attitudes toward Relief Effort

Nearly everyone who was interviewed praised the way the rescue and relief work was carried out. They felt that everything was done that could have been done to help those who had suffered in the disaster. Most people were reticent to single out individuals or groups who were especially helpful, saying that everybody "pulled together" and acted like one "big family." Most persons felt that the community was drawn closer together by virtue of the mutual support and common suffering /nearly every family in the community had some relative or close friend killed or injured in the crash/.

The disaster also appears to have resulted in a partial breakdown in the usual social isolation of the community. A number of persons remarked that previous to the crash they had felt that the community was completely self-sufficient and independent, having no need for outside aid. As a result of the quick response and large amount of aid furnished or offered by outside agencies, however, they reported a feeling of greater interdependence with other areas.

The Post-Crisis Period: 5. Changes in Status of Individuals and Groups

Despite the general reticence to single out specific individuals or groups for praise, it was clear that a number of individuals and groups had achieved a new status in the eyes of the community. Particularly striking was the general rise in the status of the Catholics in the community. Prior to the crash, the Catholics--a minority within the community--had been held in fairly low esteem. By virtue of the fact that the Catholic priest was one of the first and most active leaders in the relief work and also because of the exemplary behavior of several Catholic families who suffered the greatest loss in the disaster, there appeared to be a general rise in the status of the Catholics. A number of persons referred to this new attitude toward the Catholic priest, and the priest himself was conscious of his new status, indicating that he had received praise from many of the townspeople for his role in the disaster. The Sunday following the crash, a Protestant presented himself to the priest for conversion to Catholicism--a fact which appears to be related to the changed status of the Catholics.

The mortician and the newspaper editor also appeared to have risen in status as a result of their action in the disaster. Both were fairly recent residents in the community and, according to several respondents, were still not fully accepted by the older residents. The long hours of work which they spent in behalf of other residents, however, appears to have gained them full acceptance and high esteem in the community. Other persons who received considerable praise were the announcer, the head of the local hospital, and his wife /a registered nurse/.

There is some evidence to suggest that certain groups, such as the Lions Club and the American Legion, declined in status as a result of the disaster--particularly in the eyes of the older inhabitants. This appeared to be related to the fact that the younger members of the community, many of whom were members of these groups, urged the air show on the community. Several older respondents referred to the younger people as "always having a good time," and "getting away from God," and "those Legion boys who are always

running things." There was little open expression of hostility toward these groups; references to them were nearly always veiled and indirect.

Similarly, although there were no direct references to the mayor, there was some evidence to suggest a decline in his status in the community. Following the crash he apparently failed to take a leadership role, or act effectively on his own initiative. It was only after the announcer asked the mayor to deputize a number of men to help block off the crash area that he began to take any action at the airfield. In an interview he expressed guilt feelings that he did not perform as effectively as he should. He probably feared that his status and power in the community would decline as a result.

The Post-Crisis Period: 6. Other Individual and Collective Effects

A number of persons had conversion experiences or reported that they felt that they had strengthened their religious faith as a result of the experience. A father who had one child killed while his wife and two other children, who were standing together, escaped, said that although he had been an atheist he now believed in God. In a number of cases, narrow escapes were attributed to "God." Religious belief appears to have helped many of the people to weather deep personal losses. Among persons who had family members killed, frequent reference was made to the "will of God," and immortality.

As might be expected, the attitude toward air shows was very unfavorable, and a number of persons had developed a fear of airplanes in general. It was the general consensus that there would never be another air show in Flagler, and many persons expressed the belief that there would be no more "Flagler Day" celebrations in future years. Others discounted this, however, and said they felt that once the immediate grief had been overcome people would want to continue holding the annual event.

One of the results of the disaster transcended the community and will affect all future air shows. After an investigation of the Flagler crash, the Civil Aeronautics Board issued an order banning acrobatics in air shows throughout the United States.

SUMMARY AND CONCLUSIONS

The Flagler disaster offered an excellent opportunity to study the effects of an instantaneous disaster on a small, relatively homogeneous community, characterized by a high degree of social solidarity. Because of the small size of the community it was possible to sample a large proportion of the inhabitants and obtain a fairly adequate overall view of the reactions of the entire community. The material obtained in this study may help provide a base of comparison for the study of the reactions of a larger, more complex, and heterogeneous community. If valid and significant findings concerning the nature of human reactions in disasters are to be obtained, such comparisons must be made.

One of the most significant features in the reactions of persons at Flagler was the strong kinship bonds and close personal relationships of the population. This proved to be both a disorganizing factor and an organizing

factor in the behavior of the persons affected. Initially, as illustrated by the emotional anxiety and convergence of the crowd on the disaster scene, it proved to be a disorganizing element. Although only a few persons were directly affected, almost the entire population experienced the shock by virtue of their interrelationship and strong sense of identification with the persons immediately involved. The great amount of confusion, excitement, and initial social disorganization can be accounted for primarily on the basis of the strong emotional involvement of the crowd.

To some extent, this strong identification also proved personally disorganizing to the persons participating in the relief work. The physician in charge of the local hospital, for example, said that he was not able to work as efficiently as some of the outside doctors because of his intimate personal acquaintance with most of the victims and their families. Similarly, many other persons were psychologically incapacitated by the shock of seeing close relatives and friends killed instantly before their eyes.

However, the strong sense of solidarity and interrelationship also proved to be an organizing factor in the behavior of persons, since they felt responsible for the care and welfare of others. Almost immediately following the crash, spontaneous organization arose among the crowd and this voluntary aid continued long afterwards. By the time outside aid arrived in the community (the first ambulance from another community arrived approximately 20 minutes after the crash), this organization for rescue and relief was already well under way. The community had no formal disaster relief plans or agencies; yet most of the problems which arose were coped with by effective improvisation and informal organization. Without the strong pre-existing informal understandings and interrelationships, such effective organization would not have been possible.

A crucial element in the development of this informal organization was the presence of a loudspeaker system. The public address system was of great importance in directing the crowd, restoring order, and in organizing the relief activities. In most disasters there is a breakdown in the channels and technical facilities for communication. In the present case, however, the technical facilities for communication remained intact. This case, therefore, provides something of a crucial test of the effectiveness of a loudspeaker system immediately following a disaster. In this period persons are highly suggestible to commands. The announcer at the air show utilized this suggestibility in a very effective fashion. The confusion and social disorganization present immediately following the crash would undoubtedly have been prolonged for a considerably longer period if there had been no means of communicating directly and forcibly to the crowd.

The present disaster also demonstrated the efficacy of having persons who are well-trained and organized to act under conditions of disaster. The evidence indicates that those persons whose experience had prepared them to act under such conditions were able to regain self-control and organize their behavior more quickly and more effectively than persons not so prepared.

The evidence also suggests, however, that even those persons whose social roles prepare them for disasters will act in terms of the wider community only if they are assured of the relative safety of objects with which they are highly identified or ego-involved. As in the case of the mortician

in Flagler, if they feel that their family or other highly cherished objects are threatened, their first actions are likely to be oriented toward these objects rather than persons or objects toward which they are more abstractly related. In terms of concrete disaster plans, this suggests that persons who have minimal identification with the community in which they are working are likely to be most effective as disaster control personnel. A corps of well-trained, organized, and experienced disaster control or relief personnel who move in quickly from outside the community are likely to be more efficient than a similarly trained corps who have strong emotional attachments in the community.

In addition to the strong emotional identification of the persons involved, four features of the present disaster appear to account for the intensive psychological shock which most persons experienced:

1. The unexpected nature of the disaster. The crash was completely unexpected and unanticipated. It occurred so rapidly that persons were not able to prepare themselves either physically or psychologically. Hence, persons were caught completely defenseless.

2. The types of persons killed. Out of the total of 20 killed, 13 were children, and three were women. Many of the men who had seen combat and a great deal of bloodshed during World War I and II reported that this disaster affected them much more deeply than any of their war experiences, primarily because of the unexpected nature of the crash and the fact that so many "helpless" children and women were involved.

3. The nature of the deaths and injuries. Many persons reported that one of the most shocking things was the sight of so many mangled and dismembered bodies. The sight of a child's foot with a sock and shoe on it, the battered faces of some of the victims, and similar sights kept recurring in the imagery of most persons who witnessed the event and appeared to be responsible for many of the severe emotional and physiological disorders which followed the crash.

4. The extent of deaths and injuries. The extensiveness of the shock and bereavement reactions can be accounted for primarily on the basis of the proportion of persons who were killed and injured and the nature of the social relationships. Over two per cent of the total population of Flagler was killed and over five per cent were either killed or injured. With the close kinship and friendship relations in the community, this meant that nearly every person had either a relative or a close friend killed or injured in the disaster.

IX. DISCUSSION, Final Session

Some Unresolved Problems in Disaster Research

Dr. Marrazzi: I think perhaps the most economical way to use our time in this discussion period is to go over the listed topics, and, if you will allow me, I am going to ask Dr. Star, who actually drew up this list, for a short statement on each topic for discussion.

Dr. Star: Yesterday and today we have been indicating what some of the problems that present themselves are. I do not think we have a final position on what ought to be the criteria for the selection of incidents for study; but hearing these reports, I still get the feeling that something like Brighton presented a greater number of the kinds of problems we wanted to study, and presented them with greater intensity than any of these other incidents. Brighton has exactly the abstract qualifications that we have been talking about as criteria for selecting a disaster. Some of it was instantaneous, but the threat continued. It was not anticipated. There was no prior planning of a specific sort, and very little of a general sort. It was man-made. These seemed to us to be a more natural situation, in which the kind of disasters you get in war could be studied. I do not want to monopolize the discussion. I think we have said enough in the various sessions to indicate why we think this, and I would rather hear the opinions of other people than my own.

Dr. Marrazzi: Did you say "continued threat," not anticipated? That is all clear. Now you said also "man-made." Do you want to explain why you want it to be man-made?

Dr. Star: Because war disasters are man-made. It is as simple as that. They are not natural phenomena that happen because a river rises or a volcano flows over.

Dr. Marrazzi: Is that the most instructive however? A natural one might simulate a war condition more closely than some of the man-made ones.

Dr. Powell: What difference would it make to behavior, to restoring normal functioning, if you could blame an enemy or just had to blame the river?

Dr. Star: We think it makes a great deal of difference to the social solidarity and morale, for instance, if divisive elements develop in the community because one segment of the community is to blame for the predicament of the other. From the literature, at least, in Germany there was a tendency to place the blame for American air attacks on the government, and this became a considerable factor in morale. It's quite true that the scale of rescue operations in a natural disaster much more often approaches that in a war disaster than some of these instances we've covered. On the other hand, the initial reactions and the early period when it's crucial to

get things started in no way resemble, in a natural disaster, what you might anticipate in case of war. In the mine disaster, for instance, there was so much organization ahead of time, and in areas that are used to floods.

Dr. Powell: What about the length of time after which it is still feasible to find something out? The city of Gainesville was blown off the map about ten years ago, for example, and the people are back living there now. It would have been very instructive to have been there.

Dr. Star: You have heard us say over and over again that we can't tell how long this lasted or certain things don't emerge that early. There is obviously something to be said for later studies, too. If your focus of attention is on what happened immediately, from the standpoint of how people respond and how relief and rescue got organized, and how social controls emerged, we feel if you wait very long it gets very cold, there is a great deal of overlay on people's recollections, and it is practically impossible to separate what they read in the paper from what they really remember. For the first study of any situation, I do not think we want the interviewing to get much beyond two weeks after the episode. It may be very advisable, ultimately, to include re-studies of the kind I understand was done in Texas City by another group who went in years later. I would rather see the base of what you get in an immediate study in comparison with the re-study, than simply the re-study.

Dr. Hughes: In talking of criteria for the selection of disasters, you are thinking here of the kind of disaster, but there is also the question of the kind of community and the class of people involved, and how they are coordinated. Don't you think you want that in somewhere? For instance, the Atlanta one is certainly a race, caste, lower class thing, in which middle class people are trying to handle over the basis of suspicion and so on, and Brighton is almost a one-class community--of the class that is the most used to serving sandwiches in disasters and so on. You have quite a lot of social structure differences here.

Dr. Star: We do not doubt that these factors condition response. If you want to cover everything you could think of an experimental design in which every type of social grouping was subjected to every type of disaster. But this is a very opportunistic field. When you begin to select, I think you have to begin by selecting the kind of disasters you want to study and then take any kind of community in which that kind of disaster happens, and hope that ultimately you will get some range.

Mr. Hart: This might be a community organization, or community structure, of such a type that that alone would repay some study even though the disaster to it was----

Dr. Star: We should make it clear that the problem of doubt as to whether to go in is purely a practical and financial matter. Given unlimited funds and staff, this is no reason for not covering all of these. All of these add something to our understanding and have one little feature different from something else. The whole problem of choice rests on the fact that we can't cover all.

Mr. Hart: This might not be a "little feature." This might be an aspect of the overall study on which we were short of data.

Dr. Star: I am merely supplementing your remarks by saying that the problem choice arises only because of financial limitations.

Dr. Hughes: If it is merely an immediate choice, I withdraw, but, if you are thinking of research designed in the long run, you have to think about different classes of people, different kinds of communities.

Dr. Star: I think that was actually included in our statement in regard to disasters.

Dr. Marrazzi: Let me interpose that, in the plan at present, the choices made by NORC are made in consultation with the Army Chemical Center.

Mr. Roth: I would like to point out one other factor which I believe would come under criteria for selecting disasters for study, something that I mentioned yesterday, and that would be consideration of area, scope. Especially with modern warfare as it is, and considering the fact that if and when we ever do get hit, it is not going to be an isolated community, but it is going to be a series of communities, plus the fact that after Community 1 does get hit, there is a possibility that Community 2 down the line will be hit, even though other communities all over the country may be hit.

That is the reason I would like to suggest that the study of a flood, such as we are witnessing today, would be a very fine parallel because the river communities all the way up and down the line will have a certain amount of preparation, analogous to cities, which would be in the path of a series of bombers, let us say, will have warning, so this question of preparedness will be a very important factor as well in disaster to those communities later on.

Dr. Star: I would have a number of comments to make on this. First of all, the period of warning for floods is much longer than for a bombing. Secondly, I think this is a problem where the NRC committee can give guidance. Our contract is strictly with the Army Chemical Center, and we have given first priority to explosive and chemical types of agents which is the only justification for Army Chemical Center's being in the field. To give preference to floods I think would be a violation of protocol.

Mr. Roth: I am not saying it should be a preference to floods, but I am wondering why floods were excluded.

Dr. Star: Moreover, the kind of study you envision, with a series of communities, and tracing the flood as it spreads, is a very ambitious, complicated, lengthy undertaking. It would approach the scope of what we call a full-scale study, and there again you are up against a financial problem.

Mr. Fritz: We have chosen those instantaneous types of disaster because they raise the problem of initial collective behavior, which you do not usually get in a flood. If you are interested in the more formal relief aspects and the preparation and reaction of the population in view of long range preparation and forewarning, that is a different problem. You do not get the initial crowd behavior and rumor, as you do in the case of the instantaneous type of disaster.

Dr. Star: We are not interested in one to the exclusion of the other. We are obviously interested in both and NRC will obviously have to be interested in all aspects of the field; but we do represent one specialized contract in the area.

Dr. Marrazzi: As far as the contract is concerned, I think the implications of Mr. Roth's statement are that since this is to become a national disaster study with various groups that perhaps that type might be more appropriate for another one of the organizations.

Col. Wood: I would like to direct our thoughts which will influence this choice of incidents to investigate to the end, or aim or goal, and think backwards from there. The end point or goal that we are all seeking here--I believe this is also true of Civil Defense--is to come up with improved plans which will make us, as a nation, more ready to accept or receive disaster with the minimum impact. I think the first question we ought to ask ourselves is, is this the kind of investigation that will assist us in coming out with a sounder plan than we now find in this community?

In order to do that it is obvious that one of the biggest shortcomings in our knowledge lies in the behavior of the American people in the face of disaster. We are getting this here, bit by bit, from these investigations. So I think it should add some knowledge, first of all on how people are going to behave in this disaster and what does it do to negate well laid plans, or to disrupt the community in effective effort to withstand and recover from this thing, and is there anything we can learn from it that will influence people's behavior in a better direction.

The second point, in building this new plan, I think is to discover what are the resources of the community. What have they ready to deal with this, and did it work? Which was at fault? Where did the shortcomings lie, and what can be done to recommend to this community an improvement, or to other communities, to better withstand disaster?

I think, lastly, we have to determine, of course, precisely, exactly what the impact was. Is it one like the tornado which made all the casualties come at once? Or is it one which built up gradually, where it doesn't impose much of a load? They are obviously all different and add something to our knowledge. But I think we have to continually assess where we are shortest in our knowledge. What is it that we do not know about yet, and will this fill it in with the answer?

Dr. Marrazzi: Would you go along, Colonel, if we were to add to that, that the concurrent factor would have to be to teach ourselves to study these things?

Col. Wood: Quite. We are still developing methods.

Dr. Marrazzi: In some cases the selection may be made on that basis.

Col. Wood: For example, psychiatry in depth--there is nothing more fascinating, I think. I love to listen to it too. But I think there is a possibility of overdoing it unless it contributes to an understanding of the behavior, the patterned behavior of Americans in disaster. If it contributes to that, it will lead to sounder planning. If it doesn't, if it goes beyond that, then perhaps we are overdoing it a bit in that direction.

Dr. Marrazzi: I think, as we discussed once before, our personal opinion is that what we might hope for from studies in depth is the manner of coping with the situation.

Col. Wood: It certainly should be studied deep enough to get that.

Dr. Powell: I would like to confuse the situation further by saying that I think one of the criteria for selection might be the presence in the area of resource people who could be involved, as the Atlanta people are involved, so they would continue then as persons who knew what was being looked for, had had some share in looking for it, and might remain as nuclear people.

That is, say explosions happen in two different cities. My impulse would be to investigate the one nearer to the University or other professional agency where there were individuals who could be drawn into the study, and after that would always feel that they were part of this organization. You do not always get that, but after all we are not altogether without such agencies in a good many of our states and cities.

Mr. Hart: That is a little more relevant to your kind of study than to our kind.

Dr. Powell: Yes, because you are dealing with a team that can be a hit-and-run team.

Mr. Hart: Then your resources are better deployed around the country.

Dr. Powell: The study in depth probably leads to more longitudinal, continuous work.

Dr. Star: I think this is a valuable suggestion for organizing further teams. To have resource people available would be invaluable. Of course, you know, and I won't quibble about it, that you do not ever get these two explosions at once, nor have this decision to make.

Dr. Marrazzi: We have hopefully thrown in two classifications, and hope to get comments on them. That is: Can we classify them from the point of view of desirability of study and to major and minor, with the idea that it would be practical perhaps to study several minor, but one major disaster a year, assuming that they will occur?

Dr. Star: We are set up to study six or eight minor incidents a year, and to study one major one when it occurs. In a year and a half it has not occurred yet.

Dr. Marrazzi: Then, how do we define major and minor?

Mr. Fritz: I think it would be well to give our explicit definition. We work on the basic assumption that we want to find those incidents which most closely parallel wartime disaster. Therefore--and this would apply either to the major or the minor field trips--the disaster should be fairly extensive in scope. We like to get fairly extensive sort of disasters. Secondly, the threat is community wide if possible. We would like to have a heterogeneous population involved. We do not want just one group. We like to have men, women and children, all ages, religious groups, etc. We give preference to man-made disasters, because in these we are more likely to get the aggressions and resentments emerging that may be a problem in wartime. We give preference to instantaneous types of disaster because they raise the immediate problems of control, leadership and so on. We like to have a disaster with minimal forewarning. We want to have some with maximal forewarning, just for the sake of comparison. Minimal preparation for the disaster is another thing we would like to have, because it raises more problems. You have probably gotten the notion also that we would like to get a wide range of personal involvements in this disaster from those killed, injured, bodily endangered, those not themselves bodily endangered, but have other objects personally threatened; and some who have neither of these things, but are still in the community. This is the ideal, as far as we are concerned.

Dr. Spiegel: I just wondered about the length of time of the threat. I do not know whether you expressed that or not. That keeps coming back to my mind because that is one of the chief elements in the war situation as far as I know, this indefinite extension of the threat, so that everybody involved cannot get relieved of the stress of the situation, because they do not know when it is going to come to an end. They do not know when it is going to begin again.

Mr. Fritz: That is why the Brighton situation was good, you see.

Dr. Star: We would like to get there while the disaster is still going on, so that we'd have, not retrospective reports, but immediate observation on these things. The only way you can do this is to have one that continues over some period of time.

Dr. Hughes: Would it be useful to have somebody make a classification of disasters? We can't decide here what anybody is going to have to do, but if we make a good classification. Suppose we have such a classification and circulate it, then we are immediately at Dr. Fenton's point of the integration of these research programs, because then it is a question of who is going to do what. If you set up these kinds of disasters, as a kind of table with a lot of boxes in it, then you are doing one kind and somebody else does theirs.

Dr. Star: I think you have to recognize that every disaster has its pros and cons. I have not seen one yet, which I could say

it is really 100 per cent no, but I could say 82 per cent no, maybe. But there is not one I have seen that I could say 100 per cent yes to, that is, for a full-scale study. We all recognize that there are things to be gained from any disaster study, and is just a matter of division of labor, and who spends money for what, avoiding duplication and coordinating the program so the findings gear with one another, and lend themselves to an enlarging picture.

Dr. Freeman: I did just want to bring up the consideration of the complexity of the organization of the community and the involvement of its various segments as perhaps being of particular interest as an ideal, where in some situations you are limited by the fact that only people were killed, and that is all. In other cases, only communications were disrupted.

Dr. Star: That is what we are talking about, in the wide range of reactions--the scope of the disaster, the area of the disaster, all kinds of people involved in it.

Dr. Marrazzi: How about the question of credentials, Dr. Star?

Dr. Star: I think again this is a matter for you to talk to us, not us talk to you. We told you about what we know yesterday: That it helps a great deal to be equipped with credentials that will impress the key people in the community and get us quick cooperation, and, occasionally, the kind of credentials which we can even show to a respondent who has doubts about who we are and whether we are respectable and whether he should talk to us. The problems there are many. I think it should be a highly placed government official who signs this letter; but exactly which agency would lead to the least bias, I am not sure.

I do not think we could ever explain an Army signature to a letter about civil defense problems. And I do not think a Civil Defense signature is necessarily the right one, because the tendency will be to assume that since we work for Civil Defense, we are part of Civil Defense, and you do not say nasty things in people's faces, and so on. I'm inclined to think that one of the vaguer agencies like National Resources Planning or something like that would be best.

Dr. Fenton: I am wondering if the National Research Council is well enough known throughout the land at the local level to have any status with local mayors?

Dr. Star: No.

Mr. Roth: The Housing and Home Agency is the one that is charged now with dealing with civilian problems.

Dr. Star: That identifies us with a group that will be subjected to criticism to some extent. We've found over and over again that once you identify the interviewer, as, say Jewish or Negro, you tone down criticism of that group. So we would rather have an agency that does not create an image of who it is and who it belongs to.

Dr. Marrazzi: Do you feel that one credential will solve it? Wouldn't you have to analyze the situation in each case and try, as for instance in Dr. Powell's case, to find a connection that will give you that entree?

Dr. Powell: I had to have one there. The administrator demanded credentials from the Army.

Dr. Star: This is just to give our project auspices. Then we use our own personal approach, personal letters, personal contacts, in which we can say we are working for this high prestige organization, which of course you want to assist.

Dr. Fenton: In the event of a disaster caused by enemy action I suppose the ultimate authority responsible would be the Army, would it not?

Col. Wood: I am not at all sure about that, but I am certain they would be called upon to assist.

Dr. Star: In that event, we would not be at all reluctant to have the actual contracting agency as the source of these letters. It is only in the current research that we have the problem.

Mr. Hart: How about the Security and Resources Board? That has an excellent name.

Dr. Star: The stationery will be familiar. It is a nice sounding name. It is familiar enough. We would rather it were not too familiar, as long as it is official, because then people do not hook it up with any given job and feel that they have to go easy when they talk about this. Resources and Security is a very good phrase.

Dr. Marrazzi: Aren't we operating on the basis of pulling out the hypothetical letter? Here is one they have been using, and we can get reactions to it. What have you been using, and what difficulties has it offered?

Mr. Fritz: We are using a letter on National Opinion Research Center letterhead, stating that this study is being sponsored by an agency of the Federal government, and carrying the notion that it has obvious implications for civilian defense planning, and we enlist any cooperation they can give us.

Dr. Star: I would say there are two things wrong with it. First of all, it does not identify the government agency. The trouble in Flagler arose entirely because we refused to name the agency. The key man said, "Unless we find out specifically what this government agency is, we are going to chase your interviewers out of town." That is how hot it was.

First, by not naming the agency, and second, referring to the goals of civilian defense, the tendency is to assume that the agency is Civil Defense,

which identifies the interviewer with Civil Defense, and they say nicer things because of that. We do not know that it does this, but we know that in other research that identifying the interviewer leads to a nicer treatment of that topic, in the interview, so we would rather have something unbiased so we can be reassured that when Civilian Defense is being praised it is without being polite. When there is criticism we would get it.

Dr. Gayer: The Committee on Disaster Research through the National Research Council is perfect in that case.

Dr. Star: You don't know respondents, then. They never heard of the National Research Council. The most important thing is the official government stationery.

Mr. Fritz: I would like to suggest an experimental approach. Frankly, I would like to try the National Research Council letter and see how well it does.

Dr. Gayer: You can put on that "A Special Committee on Disaster Research" and say that this is under joint sponsorship of the Department of Defense, Federal Civil Defense and all others who are participating.

Mr. Hart: My views are exactly coinciding with Dr. Star's and Mr. Fritz'. We do not know the answer, but we just want to get some kind of credentials that seem offhand to have the best chance of working, and then we will just have to try them out. I think the suggestion made here sounds pretty good. When this organization is functioning, and if the letterhead could indicate these things, you get the government agencies in there and I think that probably would work.

The Civil Defense thinking is bad for the reason I gave to Mr. Roth a moment ago, that they do have local organizations, and when you are asking leaders, officials and even mine-run respondents about how these people behaved, what they did, and so on, you get a little reluctance, if they feel some criticism. I think this is an excellent suggestion.

Dr. Star: Can I just say, finally, I think there is a lot of evidence in the field that the government-sponsored surveys of any kind get a greater degree of cooperation and a higher percentage of sample completion, let us say for instance, as over against any private sponsorship that you can use.

Dr. Hughes: What does it do to the individual interview? It might theoretically improve the sample and deteriorate the interview.

Dr. Star: When we are able to say that we are able to conduct this survey for the U. S. Public Health Service, for instance, that we probably cut down our refusal rate without changing the interview. It depends, in part, of course, on the subject of the study and on what agency is named.

Dr. Gayer: Have you identified yourself locally as representing the Department of Defense or Department of the Army?

Dr. Star: No. Our reason for this is we think it would shed more confusion than clarification, when we come into an essentially civilian situation and say we are studying this for the Department of Defense. We would feel uncomfortable trying to explain this to a layman, so we would prefer a more neutral sponsor.

Mr. Hart: Our project is not classified, so we have not refrained for that reason. Talking about it this way seems to make it a major issue. It is not. It is a matter of convenience and facilitation, but it is not a matter of major importance. However, this fact should be taken into account. In ordinary survey work refusal rates are going up, particularly when you get into a question concerning public policy, partially because of McCarthyism and things of that character. Also, as Dr. Star pointed out, there is not any private agency that comes close to approaching the government agencies, like the Bureau of the Census, in getting answers from all the people that are in their sample. We had unlimited call-backs on one study here in Chicago, and even then we never came close to the "failure rate" of the Census in getting this information. Government auspices just do work, that is all, and it is a matter of finding some rubric under which these field workers can travel that works best and breaks down this resistance.

Dr. Star: I'm glad you got that fact before the conference. We can obviously carry on this research without any letter except our own, except that this makes it a little easier and a little quicker.

Dr. Fenton: Can we summarize it by saying that this matter of a letter of credentials could be one of the first items on the agenda of the coming committee of the National Research Council, to consider the appropriate letter and how it should be phrased.

Dr. Marrazzi: Yes.

Dr. Gayer: Would not that be conditioned a good deal by your decision on how to set up or sponsor the actual operating control?

Dr. Fenton: I hesitate to make a statement because I am here as an observer only, and in no way empowered to commit the Research Council. I would comment to this extent, the Research Council is an advisory group which is set up to help the government on problems on which it requests advice. From what Dr. Powell said a moment ago, and from the course of this discussion, it seems fairly clear to me that there is a need to mobilize resource people in several areas of the country so that they can get on the scene quickly, because that seems to be a factor in the study of these disasters; also people who can establish rapport locally, because they know the regional officials and how to operate with them, and are known by them. I do think we are going to have to devote some attention to the mobilizing of either professional or volunteer teams in different parts of the country.

It is obvious that volunteer teams, at least it is obvious to me, that volunteer teams cannot have the competence or the experience of an organization which has the overall group. So I would think that we are also going to have

to have the help and advice of the research organizations which are deeply committed to disaster study research already. I should think that it would be valuable if we could make some arrangement whereby the teams that have the overall national view could work in conjunction with local teams. That is, the local teams could get on the disaster scene early and commence work, and then the teams from the National Opinion Research Center, or the group at Michigan, or wherever they may be, could move in on an assignment, perhaps arriving a day or so later, and give the benefit of their experience in diagnosing the local situation for the local team, which has already established rapport.

We are already giving some consideration to who will be the social scientists in various parts of the country, university centers and elsewhere, who have the kind of rapport that seems necessary. I would like some suggestions from the group here.

Mr. Hart: I think the research organizations that are already at work and have had some experience have a great interest in this whole matter of the institution and coordination of these teams in various parts of the country, and some experience that might be very relevant. As far as we are concerned, certainly, we have no desire to exercise any control over this, but I just wondered if it would not be wise for the NRC, in considering the plans before they have been approved and the implementation of them begins, to have representation from the groups that are actually in the field to sit down with your people and talk through the whole problem.

I think your group might pick up some things that you do not pick up aside from firsthand field experience. That, as far as I know, would mean the Maryland, the East River group, and the Illinois group and our group-- I don't know, maybe there are others. I think that that might be worth consideration by the Council as to getting some kind of representation from these groups that are already working in helping to formulate this program. How do you feel about that, Dr. Powell?

Dr. Powell: It seems to me so. Roughly, my experience would suggest that the best way to build an organization is to work from people who are involved and get further people involved. It is those who are involved, rather than those who, on paper, look like good bets, that you are going to be able to count on. If we continue the involvement of the half dozen groups that are now interested in the field and each time they work out, if they can succeed in involving somebody else, it will grow.

Dr. Star: I would like to make two related observations. One is that all along in our own work in NORC we have felt the handicap of laboring in a vacuum. We hear rumors in the field that somebody was doing something, aside from the Army Chemical Center contracts, where we are kept better informed. We'd hear that something was going on in Oklahoma, and something else was going on at Rice Institute. And there was never any good means for finding out what somebody else was doing, or sitting down with them and discussing the problem and getting the kind of research aid that you get from talking with colleagues working on similar problems. I would certainly hope that NRC would take on the job of seeing that the right people get the right information and cutting through this problem of everything being so classified and so difficult to get from one agency to another.

The other thing that worries me is the kind of coordination of a research team that we faced on a much smaller scale, when we left it up to our own staff members to decide where they were going in Chicago. Some incidents didn't get covered at all, other incidents, everybody converged and fell all over each other. It seems to me much the same sort of problem. Ultimately I would imagine there would be some specialized teams, like physiological and pharmacological investigations in certain situations, depth psychiatric observations, our type of broader observation. Certain situations require the presence of all these teams, but these teams acting in concert and not independently getting in each other's way. Other situations require keeping some of the teams out, so that another team can work efficiently. Especially, if there is not some control about who goes where when, and who works with whom, it can turn into the same kind of obstruction we find because of the presence of all these non-research groups conducting their investigations, and it just stands in the way of the work.

Dr. Marrazzi: It runs through my mind that Col. Wood, who has had a lot to do with initiating these programs, has perhaps the most overall view and perhaps he would not mind repeating and adding to some of the comments that he made at the beginning of the conference.

Col. Wood: Certainly from the start it has been our idea that one of the principal functions of the NRC, if they take this on--and I have every reason to believe and hope that they will--is this business of coordination; that they will set up a core of the program themselves in the form of these field teams, and a central committee, and a central administrative office; but that they would as rapidly as they can identify find out about all of the other groups doing similar research, that they would invite, try to persuade, their sponsors and the agencies conducting the work to come in and coordinate their teams and their programs in a centralized fashion in the Council.

This will necessarily represent some rearrangement of former ways of doing things, because they give up a certain amount of independence and separate identity if they are willing to coordinate. I think the compensations for it are certainly equally as great. For example, let's say that the NORC was willing, and their sponsors, the Chemical Corps, were willing, then they come into this organization, for example, willing to undertake anything which the committee, or in their absence from session the administrative office, decides is the type of investigation that should be undertaken. The decision is now gone for this particular event from the NORC staff, and it is essentially decided by the Council, in a coordinated fashion. In other words, they will decide that perhaps the local team in the state of Arkansas and the NORC are the people who should get in there and do this investigation.

I hope that the NORC would be willing to coordinate in that fashion. That does not mean they cannot undertake separate investigations, of course. But it does mean a willingness on their part to undertake such investigations as should be done in a coordinated fashion. When the reports come in, they will go to the sponsoring organization, as usual. In addition to that, they would, by this coordination and identification with the NRC, be willing and their sponsors be willing that they also report to the NRC. NRC in turn would report to all of the sponsoring agencies which are engaged in this work cooperatively.

Furthermore, when the committee meets to discuss the findings, to map further plans, all of the organizations concerned in the program would be represented there, and, if not a member of the committee, then an invited participant and guest. In that way we would hope to bring about a rather continuous, at least quarterly, exchange of information. Not only an exchange of information, but a quarterly planning of further steps--where do we go from here? It would also give them an opportunity to participate in decisions which are made, at least to be heard with respect to the significance and meaning of findings, with respect to recommendations which should be passed on to the sponsoring agencies, etc. In other words, it would be done in a coordinated manner by all concerned in coordinated research, by all concerned in disaster studies.

I believe, frankly, that such broad coverage will give us a very much sounder basis than if it is done piecemeal. That essentially is the essence of it. I might illustrate it by one example. It is not, for example, the present view of NORC, necessarily, to investigate such a thing as a tornado, and perhaps very little from some standpoints could be gained from such an investigation. But from the standpoint of a sudden medical load and a breakdown of medical facilities and rescue efforts, it might be an ideal sort of a thing to investigate, and purely from that basis it might be recommended that such a study be undertaken.

Mr. Hart: I am glad you said "present," because our limited resources would certainly be one reason why we would not do it.

Col. Wood: I understand. You are picking and choosing now because of limited resources. It would have to be understood that these agencies which are coordinated, and when the division of labor is brought about, that the NRC will also recommend to the sponsoring agencies adequate support so that they can play their role in this coordinated job. I think that is the essence of my thinking on it.

Mr. Hart: We are not complaining about the support the Army Chemical Center is giving us, but we are compelled to trim our expectations, ambitions, to fit it into what we have and what the Army Chemical Center has.

Dr. Marrazzi: How do the civil defense representatives feel about this? It seems to me that this is an appropriate time for them to make comments.

Dr. Gayer: Speaking for FCDA, as I think came out in the record yesterday, we jointly made this proposal to the National Research Council, and have supported it wholeheartedly, and have deliberately refrained from sponsoring to this point any direct research without this overall coordination mechanism being set up. This has been for two reasons: A desire to have it done that way, and lack of funds for doing it any other way. We certainly hope that we can continue this cooperative effort to get an overall mechanism established; and the contractor we have has taken some interest in this work and is in full agreement that it should be done that way.

Dr. Chapman: Speaking for Project East River, I don't think we have any official thinking about this particular problem. Personally, I would tend to agree with what Dr. Gayer says. The object is to get the research done by the agencies interested in this. It ought to be as highly professionally done as possible because I don't think anything else is going to be useful. It would seem to me that the job of the National Research Council, and what we all hope the committee will undertake, would be to mount research in this area without waste of duplication, and with a maximum of professional competence to do that research, where you have a very tremendous area to cover, not only geographical area, but also the area of other aspects of disasters than those with which you people are primarily concerned; technical and medical questions, and technical organizational questions, and so on. I would hope that ultimately under the NRC the whole very well integrated research program in this area would evolve, and that seems to me to be possible only when one takes all the best professional effort that is not thoroughly committed elsewhere and put it under one well-directed program.

Dr. Kalser: Considering the overall picture, from both the medical, clinical, and sociological, psychological aspects, I think our experience in one project would be of note in setting up of your teams, if you have a team consisting of all the various elements, clinical, psychological, psychiatric, all concentrated close together so that they can consult with one another, a lot can be gained. We participated in several projects with the National Opinion Research Center here, and it is a great help in that, on-the-spot, things come up where we as primarily medical men have benefited from the advice in handling the situation--how to get data--from somebody who has had experience in methods of sampling and methods of getting adequate data; and the ultimate, to me, seems to me can be reached when you have these various individuals representing various fields working close together in the same geographic location, because we certainly got a lot more material and a lot more value out of our data than we ever could have gotten without having the advice of the National Opinion Research Center.

Col. Wood: I am certainly happy to hear you say that because I have had from the start very serious misgivings as to how adequate any of our medical people are going to be in making an investigation of this kind. They simply have not done this sort of thing before. They don't think in these terms and they don't know very well how to go about it. They have to feel their way along and they are going to need a great deal of guidance, I am sure.

Dr. Fenton: If I might speak a moment to Dr. Chapman's point: The thinking currently in the Research Council about the composition of the disaster committee reflects a very real interest in keeping the approach multi-disciplinary. And I think that the committee will comprise people from various competences that are represented in the Council. Also the fact that they have assigned responsibility, momentarily at least, to the Division of Anthropology and Psychology indicates a realization that the problems focus in the behavioral sciences. The actual composition of the committee will rest largely with the determination of policy by the Academy and Council Board. As I understand it, in my brief stay there, committees are made up of responsible scientists, who are recommended by divisions, and usually persons who are not

already committed to contracts. When members of committees accept contracts, they automatically go off the committee to asume an advisory role. It is also patent that a committee which is not involved cannot operate effectively without the advise of the persons who are already deeply involved in this research. So, at least, I shall recommend that we provide some mechanism whereby the corps of personnel that is already committed to research on these problems is represented and heard.

And then the actual mechanisms of setting up a director of research and a research staff, if one seems advisable, in Washington. I think most of those problems will get ironed out in the course of the first few meetings of the committee and a structure will emerge from there.

Dr. Marrazzi: I would like to address a specific question to you, Dr. Star. The civil defense agencies are in existence or about to be in existence. How could they be of help in the actual conduct of the study?

Dr. Star: Well, you are asking me to speak pretty much off-the-cuff. Certainly they could form a nucbus for a reporting service that would give us a better picture than we now get from the newspapers and radio and so on, of what is going on in that community and whether it is really worth a small-sized investigation, a big-sized one, or none at all; whether it needs psychiatric kinds of approaches, or other kinds. They wouldn't decide this question, themselves, but the kind of information they could furnish would bear on it.

As far as actually carrying out the research is concerned, I have to admit I am not familiar with the personnel that make up the local civilian defense organizations, and the kinds of talent they have, but I would have to take my stand with Dr. Chapman, that this has to be highly professionally done. If these people are amateurs without research training, I would not want to recruit them as research people to carry out this work.

Dr. Gayer: They will be the same people who are responsible for the conduct of emergency operations in the community, and are very much involved. I think they would be rather subjective in their reports about that particular thing.

I wanted to make another observation about the reports that you have given us this afternoon and this morning on actual disaster studies. I feel that our end goal is to be able to draw from such studies useful information which will aid us in the operational planning and give us advice and guidance in setting up civil defense operations. For that purpose, we are most interested in how the individual services function and how does the total organization function. I believe that we need to document in much more detail what actually happened with the fire service in Brighton. You probably have that data in much more detail.

Dr. Star: May I saw two things. First of all, what you have heard here are really very brief summaries of the full report, which will shortly be appearing. And secondly, even these full reports, as I tried to indicate yesterday, do not get everything out of the data that might be gotten.

Dr. Chapman: Shouldn't it be added too that I am not quite sure that the interests of the Chemical Center and Civil Defense are exactly the same in this respect. You are not quite as much concerned with community organizational affairs as you are with human behavior in the population. This is one way in which this kind of study could be amplified to serve better the uses of the Civil Defense.

Dr. Star: I think we define our mission to include the functioning of the social organization of the community under the disaster. But even defined that way, I am not sure we would get down to the minutia of who told whom what to do when, that you might want from the administrative standpoint. We would certainly try to get in the large picture of how these agencies dovetailed, how rapidly they mobilized, what they did, and whether the people thought they did enough or did not do enough. That is definitely a part of our objectives--their evaluation of the relief and rescue work; but I am not sure it would supply you with quite the exact information on this you want in order to take administrative steps with reference to this civilian defense organization. I am not sure we would want to get into that, because that puts us in the role of an official investigating body which, instead of protecting the anonymity of respondents, is actually making available material that may lead to the punishment of those respondents.

Dr. Powell: Following up something that Dr. Freeman was thinking about, if somebody in a key position did not issue some important order, would it be appropriate to find out why--not in the investigative and punitive sense, but in terms of understanding what kinds of people are normally put into what look like leadership control positions because of their outstanding behavior, who under stress fall apart in this sort of way and don't give the crucial order?

Dr. Gayer: Going back to the gas turn-off in Brighton, I don't think you could say they acted badly or poorly or at the wrong time until you had a very thorough investigation of what the technical situation was, about where the pipes were and the valves, and how long it takes to turn it off and so on. It takes a particular type of person with a background of knowledge to go into that sort of thing.

Dr. Star: And they had an official investigation to determine just these things, where the engineers were testifying on these matters. It certainly would not be our function. We can tell you what the community thought about whether it took too long or not, and that does fall within our province, just as the community's opinion of whether or not the community leaders failed to do their job belongs in our scope; and even the leaders' defenses and justifications of their actions belong in our scope. But the actual question of what these leaders should have done seems to me to be an interpretation of the data which we sometimes make but which really goes beyond the research function.

Dr. Gayer: I don't see how you can make a differentiation between community responsibility for medical services and their responsibility for utilities services.

Dr. Marrazzi: May I interrupt and make clear what may already be obvious. In simplest terms the interests of the Army Chemical Center are in understanding what happens, and perhaps the stress on that distinguishes it from other studies; but it is equally interested to know what to do, and how to do it.

Dr. Star: Perhaps I failed to make myself clear. We would never attempt to evaluate from a medically professional standpoint the adequacy of medical services. We can tell you that in the community eyes this was adequately done or not adequately done. We are dealing with social psychology, not medicine. We are dealing with that, and perhaps we may throw in an opinion that people were unjustified in their judgment; but that goes beyond research, and represents our interpretations of the data.

Mr. Roth: I am wondering whether it would not be possible to investigate a closer relationship between research teams and civil defense workers, seeking out those people who, if not already professionally qualified, could be upgraded or trained to meet these professional qualifications. That assumes, of course, that there are such people currently attached or who would be attached to the civil defense team or services. It would seem to me to be a very fruitful kind of liaison, and lead to mutual benefits.

Dr. Chapman: Referring to what was mentioned before, there would be a little difficulty in using these civil defense workers because of two facts: 1. He has not usually been chosen for civil defense work for any reason that would make him a particularly good interviewer or social scientist. But even more importantly, if you get the real kind of disaster, you know, if it finally came, these are the people who are going to have other duties.

Mr. Roth: Yes, I realize that point. I wasn't thinking of the man who was going to be doing the work. But would it not be possible, or at least couldn't it be thought about, to have assigned or have a position or positions created within the civil defense framework of this type, so that they can be observers, attached to civil defense organizations, who can do the kind of observation that is required for civil defense research and for your need as well?

Mr. Hart: That is certainly the thing that Miss Star mentioned, this early reporting. I think civil defense might be very, very useful if they had the right kind of person.

Dr. Gayer: This certainly is possible. And in the major cities now, the provisions already are in the recommendations that the Federal agency is making to the states and cities, that they have associated with the director an advisory council, which is to be multi-disciplinary, with the various services and areas concerned represented in this advisory council. And one of these people could very well be this type of person who could in some way be trained. I think in most cases he would need a certain amount of training and orientation as to what he is going to do. However, I don't know how, between now and the time the big attack comes, we could get those people spotted around in enough places so that they would coincide with where natural disasters occur.

Mr. Roth: My point is that civil defense, if it is going to succeed in this country, must evaluate its effort. It must evaluate it through research of man-made disasters, and natural disasters which are now occurring, such as we have been talking about and listening to for these last two days. And when the big blow comes, it must evaluate its efforts in that time of emergency. It would seem to me a waste of manpower--a very short commodity--to duplicate these studies if the interests do coincide. That remains to be seen.

Dr. Star: I think in general--I don't presume to tell civilian defense what to do, but I think, in general, other groups interested in evaluation have found the kind of evaluation they get much more useful when they retain disinterested outsiders than when they try to incorporate it within their own structure.

Mr. Hart: If I may say one more word on this, commenting on Dr. Gayer's remarks, if such an effort were made by civilian defense, I think civilian defense, itself, should try to get the best possible methods set up whereby those people who are going to take this responsibility in the advisory council, and perhaps do this reporting that Dr. Star was talking about, might get somewhat the kind of education into the research objectives, methods and so on, that they would have gotten had they sat through this conference. That is going to be a difficult thing because I don't think they will read and understand written protocols. It is going to take something more than that. If Col. Wood here could visit all of them and talk to them for an hour I think they would get a good grasp of it. But I think that would be a very necessary part of the regimen of preparation for such a person attached to the civil defense organization.

Dr. Star: There is one further suggestion that occurs to me, and that is that our data often give a picture of what actually was done by civilian defense. Sometimes, perhaps, we don't analyze them as thoroughly as we could, because that isn't our primary objective, but those data could be made available. Then if you had a kind of visiting expert from central headquarters who went out and evaluated what could have been done, you would have a better basis for interpreting the data we do turn up. That calls for a different kind of person than our research team.

We thought in these meetings that we were being very frank in exposing yesterday all of our problems and shortcomings to you, and by the time we got to this afternoon all of you, all of you would be contributing fine solutions to our problems, and some of them have been solved, and I am happy. We have one on the agenda, on "problems connected with the analysis of data we collect," or, as you would say, "content analysis."

Dr. Powell: We were finding it extremely difficult even in such a simple area as determining the content of what we taught professionally, for us, in psychiatry. We spent all year trying to decide how to analyze that content. And among the myriad alternative ways of factoring it out for use, it seems to me that one of the main growing, guiding activities, which will continually reflect back and help to steer all of our research activities, will be the growth of an agreed way of doing the content analysis on what has been found. At first one goes in with a bushelbasket and gets every-

thing. Do some things gradually emerge as more important than others?

Dr. Star: What would you propose that we agree upon for the dimensions of this content analysis?

Dr. Powell: Well, if one out of the comparatively small number of us here as compared with the number we hope we can see involved in this in another year or so, if one factor seemed to all of us important enough to trace through our different materials, it might be interesting to see if it was there; some one little concrete detail.

Mr. Fritz: I think one thing that might be helpful in connection with this is coordination. I would like to know more about what you are doing. It may be in your reports for example. I have certainly found in some of the other research reports that we are beginning to emerge with certain findings which seem to have some definitive quality to them. I am sure if we exchange reports that gradually out of our own studies we would start seeing certain areas where we are getting agreement. Then we might want to agree to study this thing a little more specifically. I think this is all tied up in one big problem.

Mr. Hart: We have been very pleased, incidentally--with the good spirit and cooperation that there has been among these three units. Dr. Kalser mentioned his appreciation of the help he got from Dr. Star. Correspondingly, we got a lot out of that cooperation, and it has been good fun to work with the University of Illinois on these projects, and Dr. Star mentioned the help we got in setting up our whole interview regimen from Dr. Finesinger, and the group there. In fact, Dr. Star spend a day there sitting in on some of their seminars and interview training sessions. And what Mr. Fritz is proposing here is that we simply go a little further than we have gone. I think that is a good sign from the standpoint of the National Research Council. I think people can work together, in other words, notwithstanding these disciplinary differences between them; and it has been pretty well demonstrated.

Col. Wood: I have become convinced in my two days here that not only is the work Mr. Hart, Dr. Star and Mr. Fritz are doing extremely worthwhile and effective and quite informative, but I think it should be given a greater opportunity to have more of that completeness which they desire and to provide the means for getting the substantive part from it by way of analysis and the arrival at conclusions. And I for one intend to support in every way that I can the provision of an opportunity for them to do this. Now, how successful I will be I cannot promise; but I do promise I will try.

Dr. Marrazzi: I have in mind that it might be of help in that respect, if the conference would want to consider several recommendations; one of which might be the striving toward a permanent trained staff. Another, to start on the content or substantive analysis of the data, to make it possible to do so. And the third, which has already been mentioned several times, to set upwide-spread disaster reporting systems.

Col. Wood: I commented on the first two, I believe, last night, rather briefly, that I deplore the tremendous amount of time that Dr. Star and Mr. Fritz and others must spend on training and retraining and retraining the new staff every year. It seems to me not a very economical expenditure of their valuable time. I would like to see gradually developed, at least in part, a more permanent type of staff of field investigators who in the time that they are not investigating could also be trained to perform other functions; I think particularly in such terms as the analysis of the data, of putting it on IBM cards, and of the preparation of reports. I believe that certainly a fair number of full time field investigators--that is people who are ready to go into the field at a moment's notice, as the present part-time staff is, but who instead of being students in the remainder of their time, could be effective full-time workers on important parts of the work, which is now either not being done at all, or is being done to a lesser degree than appears profitable. I believe that this may be possible. Of course, I think their own judgment in it is controlling. It might be possible by interesting some of the students that they bring up via the part-time route to come on after graduation as full-time employees, and continue in this work, at least as a temporary career. This would offer them an opportunity of having these people as investigators for perhaps a year or even more, and it will give them a good opportunity to judge the competence of the individuals, and how well they fit into this kind of work. It might lead eventually to the selection and building of a very adequate staff. This may also have to be supplemented with some part-time investigators. It is largely, I think, first and foremost a matter of funding the program. Obviously it is going to cost more money to have employees full-time and to bring them up to this graduate status, to offer them adequate inducement to continuing this as a career, and actually to enlarge the scope of their program very substantially.

Dr. Marrazzi: Mr. Hart, I am proposing these as actual recommendations. Do you want to modify them or add to them in any way?

Mr. Hart: I think not. They didn't originate with us. I think they originated with Col. Wood, and I think it is far better for them to retain that status. I am frank to say that we have discussed them among ourselves, and have wished for this sort of thing, but it is very encouraging for us to have that kind of real expression of judgment as to what we have been able to do. We all strongly approve of it, and I don't think we have any suggestions to add to this recommendation.

Dr. Fenton: May I say something before I go? Dr. Marrazzi, I want to thank you personally for an opportunity to be here, and Mr. Hart for his hospitality, because I think you have given me a better grasp of the job I have to do than almost anything else I could have done. I do want to say that I am tremendously impressed with the kind and quality of the field work that has been done by people from the National Opinion Research Center, and all of us who have faced analogous problems in the social sciences in the field situations realize the difficulties that are involved in that kind of investigation; and I think the people, the investigators, should be commended for their honesty and willingness to have their protocols exposed to criticism. I thought as I heard some of the interviews that I should blush to think of some of my own interviewing techniques exposed to psychiatrists and others. It was an extremely rewarding experience to me.

Mr. Hart: All of you know, perhaps, that this conference was held at the instance of the Army Chemical Center, and they issued the official invitations, so that I am free to speak. In the first place, I wanted to say that the Center appreciates very greatly the opportunity that we have had to sit down here and talk with representatives of other projects and with the rest of you about some of the problems that have been bothering us for a long time. And I know from side conversations that I have had with Dr. Star and Mr. Fritz and Mr. Gorden and others, during the conference, that I am speaking for them when I say that we have gotten a tremendous amount of benefit from it. I just wanted, before anybody got away, to say, "Thank you" to all of you for your willingness to put aside other chores, of which I know all of you have many, and to come down here and sit with us during two really pretty strenuous days of conversation.

APPENDIX

Attendance at Conference on Field Studies of Reactions to Disasters

Dr. Herbert Blumer, Department of Sociology, University of Chicago

Dr. Dwight C. Chapman, Project East River, Associated Universities, Inc.

Dr. William N. Fenton, National Research Council

Dr. Gustav Freeman, Medical Division, Army Chemical Center

Mr. Charles E. Fritz, National Opinion Research Center

Dr. H. Kenneth Gayer, Federal Civil Defense Administration

Mr. Raymond L. Gorden, National Opinion Research Center

Mr. Clyde W. Hart, National Opinion Research Center

Dr. Everett C. Hughes, Department of Sociology, University of Chicago

Dr. Martin H. Kalser, Department of Clinical Science, University of Illinois College of Medicine

Dr. Amadeo S. Marrazzi, Medical Division, Army Chemical Center

Dr. John W. Powell, Department of Psychiatry, University of Maryland School of Medicine

Mr. Sidney Roth, Project East River, Associated Universities, Inc.

Dr. John P. Spiegel, Institute of Psychosomatic Medicine, Michael Reese Hospital

Dr. Shirley A. Star, National Opinion Research Center

Col. John R. Wood, M. C., Research and Development Board, Office of the Surgeon General, Department of Defense.