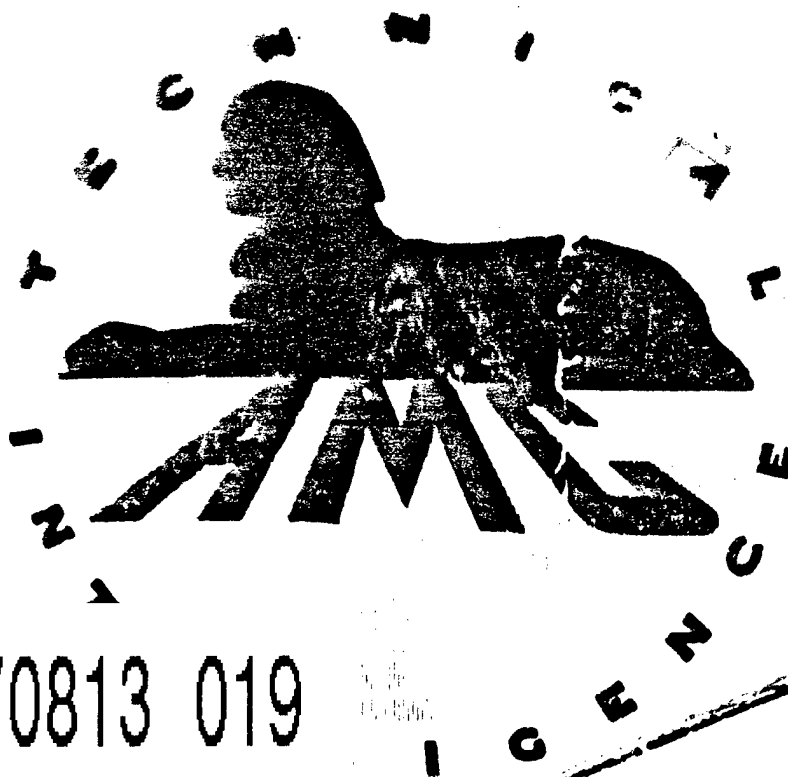


Reproduced by
AIR DOCUMENTS DIVISION



19970813 019

"DTIC USERS ONLY"

DTIC QUALITY INSPECTED

HEADQUARTERS AIR MATERIEL COMMAND
WRIGHT FIELD, DAYTON, OHIO

1047

TITLE: The Effects of Strategic Bombing on German Morale - Vol II

AUTHOR(S) : (Not known)

ORIG. AGENCY : U.S. Strategic Bombing Survey, Morale Division

PUBLISHED BY : (Same)

ATI- 12994

DIVISION (None)

ORIG. AGENCY NO. (None)

PUBLISHING AGENCY NO. (None)

DATE	DOC. CLASS.	COUNTRY	LANGUAGE	PAGES	ILLUSTRATIONS
Dec' 46	Unclass.	U.S.	English	72	tables, graphs

ABSTRACT:

The morale of city-dwellers, enslaved foreign workers, and German land armies is discussed. Captured German mail was used to provide material. Drop in morale was dependent on the proximity and amount of bombing. Day bombing had greater effect than night bombing and personal consequences such as loss of property are the most important factors in morale deterioration. Bombing demoralized land armies by inducing fear and worry about isolation and the bombing of the home front.

DISTRIBUTION: Copies of this report obtainable from CADO

DIVISION: Military Operations (24)

SECTION: Operations (7)

SUBJECT HEADINGS: Bombing, Strategic - Germany 1939-45 (16681.17); Bombing - Effect on morale (16679.28)

ATI SHEET NO.: 11-5-11

Central Air Documents Office
Wright-Patterson Air Force Base, Dayton, Ohio

AIR TEC'

INDEX

The
U.S. GOVERNMENT

IS ABSOLVED

FROM ANY LITIGATION WHICH MAY
ENSUE FROM THE CONTRACTORS IN -
FRINGING ON THE FOREIGN PATENT
RIGHTS WHICH MAY BE INVOLVED.

REEL - C

4 6 8

A.T.I.

1 2 9 9 4

THE UNITED STATES
STRATEGIC BOMBING SURVEY

ATI No. 127

THE EFFECTS
OF
STRATEGIC BOMBING
ON
GERMAN MORALE

REPORT II

ALL INFORMATION CONTAINED
HEREIN IS UNCLASSIFIED

DATE 12-1-83 BY 127

THE UNITED STATES
STRATEGIC BOMBING SURVEY

THE EFFECTS
OF
STRATEGIC BOMBING
ON
GERMAN MORALE

VOLUME II

Morale Division

Dates of Survey:
March-July, 1945

December 1946

This report was written primarily for the use of the U. S. Strategic Bombing Survey in the preparation of further reports of a more comprehensive nature. Any conclusions or opinions expressed in this report must be considered as limited to the specific material covered and as subject to further interpretation in the light of further studies conducted by the Survey.

FOREWORD

The United States Strategic Bombing Survey was established by the Secretary of War on 3 November 1944, pursuant to a directive from the late President Roosevelt.

The officers of the Survey were:

FRANKLIN D'OLIER, *Chairman.*
HENRY C. ALEXANDER, *Vice-Chairman.*
GEORGE W. BALL,
HARRY L. BOWMAN,
JOHN K. GALBRAITH,
RENSIS LIKERT,
FRANK A. MCNAMEE, JR.,
PAUL H. NITZ,
ROBERT P. RUSSELL,
FRED SEARLES, JR.,
THEODORE P. WRIGHT, *Directors.*
CHARLES C. CABOT, *Secretary.*

The Table of Organization provided for 300 civilians, 350 officers and 500 enlisted men. The Survey operated from headquarters in London and established forward headquarters and regional headquarters in Germany immediately following the advance of the Allied armies.

It made a close examination and inspection of several hundred German plants, cities and areas, amassed volumes of statistical and documentary material, including top German government documents; and conducted interviews and interrogations of thousands of Germans, including virtually all of the surviving political and military leaders. Germany was scoured for its war records which were found sometimes, but rarely in places where they ought to have been; sometimes in safe-deposit vaults, often in private houses, in barns, in caves, on one occasion in a hen house, and on two occasions in coffins. Targets in Russian-held territory were not available to the Survey.

Some two hundred detailed reports were made. During the course of its work, the Survey rendered interim reports and submitted studies and suggestions in connection with the air operations against Japan.

While the European War was going on, it was necessary, in many cases, to follow closely behind the front; otherwise, vital records might have been irretrievably lost. Survey personnel suffered several casualties, including four killed.

The Survey studied the effects of the air attack on Japan and further reports have been submitted to the Secretary of War and the Secretary of the Navy.

VOLUME II

Supplementary Studies of the Morale Effect of Strategic Bombing

TABLE OF CONTENTS

	Page
List of Tables.....	vi
List of Charts.....	vii
Chapter 1. Analysis of Background Material on Cities.....	1
Chapter 2. Analysis of Captured German Mail.....	7
Chapter 3. Foreign Worker Studies.....	15
Chapter 4. The Relation of Bombing to Suicide.....	29
Chapter 5. The Effects of Allied Air Attack on the Morale of German Land Armies.....	37
Appendix A. Validity and Reliability of Mail Studies.....	43
Appendix B. The Composition of Bombing Strata.....	46
Appendix C. Questionnaire for Foreign Workers.....	47
Appendix D. Pilot Study on French Escapees.....	52

LIST OF TABLES

Chapter 1

Number	Page
1. Relationship Between Tonnage and Behavioral Morale.....	2
2. Relationship Between Behavioral Morale and Percentage People Bombed Out.....	2
3. Utility Services and Willingness to Surrender.....	3
4. Correlations Between Willingness to Surrender and Disruption of Utilities.....	3
5. Population, Bomb Tonnage, and Unbombed Cities—by Region.....	4
6. Average Ranks of Cities in Behavior and Attitude Factors.....	4
7. Population and Bomb Tonnage in Bombed Cities—by Region.....	5
8. Average Ranks in Behavior and Attitude Factors in Bombed Cities—by Regions.....	5

Chapter 2

9. Geographical Distribution of the Sample.....	8
10. Distribution of Letters—by Date, and Sex of Writer.....	8
11. Bomb Weights for Regions and Strata.....	8
12. Effects of Bombing.....	10
13. The Relation of Proximity to Low Morale and Anxiety.....	10
14. Anxiety and Health as Related to Low Morale.....	10
15. The Relation of Closeness of Exposure to Bombing and Low Morale.....	11
16. Interrelations of Various Morale Factors.....	13

Chapter 3

17. Nationality and Regional Background of Foreign Workers.....	15
18. Educational Levels.....	16
19. Education by Age.....	16
20. Percent of Foreign Workers Subjected to Various Degrees of Bombing.....	16
21. Percentage of Evaluative Judgments by Foreign Workers.....	17
22. Relation of Initial Fear to Habituation (All Groups).....	18
23. Relation of Personal Involvement to Habituation (All Groups).....	18
24. Relation of Raid Expectation to Initial Fright and Habituation (All Groups).....	19
25. Raid Expectations as Related to Education and Black Listening.....	19
26. Male-Female Differences Among Russian DPs.....	19
27. Frequency of Raids as Related to Habituation (All Groups).....	19
28. Fear Responses of the National Groups.....	20
29. Primary Reaction to Raids.....	20
30. Per Cent Reporting Resistance Behavior.....	20
31. Effects of Raids on Resistance Movements.....	20
32. Escape and Transfer Attempts, as Related to Radio Listening and Resistance (All Groups).....	21
33. Age and Habituation as Related to Transfer and Escape (All Groups).....	21
34. Reasons for Drop in Industrial Production as a Result of Bombing.....	21
35. Per Cent of French Respondents Indicating Topics of Conversation by Germans in Shelters.....	22
36. Effects of Air Raids on German Attitudes Toward Nazi Party.....	23
37. Reasons Given for Continued German Participation in War Effort.....	23
38. Indices of Air Raid Intensity Related to Reports of German Resistance.....	23
39. Groups Involved in Air Raid Panics—according to Foreign Worker Reports.....	24
40. Groups Responsible for Pillaging, as Reported by DPs.....	24
41. Types of Bombs Reported as Most Dreaded.....	25
42. Estimates of Shelter, Relief and ARP Adequacy.....	25
43. Educational Level as Related to Observation of Black Marketing.....	27

Chapter 4

44. Large German Port Cities with High Suicide Rates Heavily Bombed in 1942 Compared with Similar Cities Lightly Bombed in 1942.....	33
--	----

LIST OF TABLES

Chapter 4—Continued

Number	Page
45. Large German Cities with Low Suicide Rates Heavily Bombed in 1942 Compared with Similar Cities Lightly Bombed in 1942.....	34
46. Large German Cities not Heavily Bombed in 1942 Compared with Similar Cities Lightly Bombed in 1942.....	34
47. Large German Cities not Heavily Bombed before 1944—Heavily Bombed in 1944 Compared with Similar Cities Lightly Bombed in 1944.....	35

Appendix A

A. Reliability of Codes Used in Mail Study I.....	44
B. Reliability of Codes Used in Mail Study II.....	45

Appendix B

C. The Composition of the Bombing Strata Used in Mail Study II.....	46
---	----

Appendix D

D. Classification of Respondents in French Escape Study.....	61
--	----

LIST OF CHARTS

Chart	Page
I. Changes in Morale with Closeness of Exposure to Bombing.....	Facing page 12
II. Variations in Suicide Rates and Bombing Conditions in German Cities.....	28

VOLUME II

CHAPTER I

ANALYSIS OF BACKGROUND MATERIAL ON CITIES

The foregoing volume has provided extensive evidence on the morale effects of bombing, evidence which has come from interviews with German civilians and from documentary sources.

Every effort has been made to test the conclusions of these studies by independent sources of information. The present chapter supplements these findings by analyzing material obtained from interrogations of local leaders and from community records in 33 of the cities which were included in the cross-sectional sample. Medical authorities, police officials, religious leaders, educational personnel, and ARP functionaries were questioned and in some cases requested to prepare memoranda on their activities. The questioning followed a

standard list of topics without any formalization of interview procedure. In this manner a background story for each of the cities¹ was obtained which, together with some material from the sample of civilians, permits an analysis of morale and behavior in relation to bombing and certain other city characteristics. The cities are also grouped by region and analyzed.

In the first four chapters of Volume I all the individuals in the sample were thrown together for analysis. In those chapters groups of individuals with certain characteristics were studied. In the present chapter the information relates to each city taken as a unit and groups of cities with certain characteristics are analyzed.

SUMMARY

1. The heavier the total tonnage of bombs dropped on a town and the larger the town, the greater the incidence of subversive activity and disruptive behavior. How much of this relationship is due to city size and how much to severity of bombing is difficult to determine.

2. The percentage of population bombed out of their homes is also correlated with disruptive and subversive behavior for the cities studied.

3. More of the people in cities which had undergone bombing were willing to surrender unconditionally than in unbombed towns.

4. The more actively religious cities had a lower war morale and were more willing to accept unconditional surrender than the communities less active from the religious point of view.

5. There is a large and significant correlation between willingness to accept surrender and the state of public utilities of a city after bombing. Transportation seems to have been the critical public utility for the morale of the civilian population. Its disruption lowered morale more than interference with the functioning of other utilities.

6. When cities are grouped into three regions, the following regional differences appear:

a. The Rhine-Ruhr-Westphalia Region, heterogeneous in population and strongly industrialized, was the region with the poorest war morale. It was most amenable to accepting unconditional surrender, and its civilians showed the most reluctance to participate in the voluntary activities available to the people of Germany through the war years. The picture for this region seems to be that of a submissive but unwilling and uncooperative partner in the Nazi adventure.

b. The North-Central Region, with its seaport cities and its formerly large Communist Party membership, presents a much more "active" picture, both from the pro- and the anti-Nazi point of view. It had the best morale of the three regions, showed a relatively large incidence of voluntary participation in war activities, and had the smallest number of people who were ready to accept unconditional surrender. On the other hand, disruptive and subversive behavior was also found in this region, particularly in the cities of Bremen, Hanover, and Hamburg.

c. The Southern Region, which is not very highly industrialized, occupies a position mid-way between the other two regions. It is less submissive than the Rhineland but not as actively anti-Nazi as the industrialized seaports of the North.

¹ Tübingen was the only sample city for which no Background Report was made, due to the dampness of key local informants.

d. The data would support the hypothesis that in a deteriorating war situation, disruptive and subversive behavior are more directly functions of sociological factors found in a large city, while morale, willingness to surrender, and voluntary participation are more closely related to personal factors, such as bombing experience, individual notions of fatalism, etc.

EFFECTS OF BOMBING ON MORALE

The background reports on the cities contained accounts of *subversive* behavior, such as underground activity and sabotage; *disruptive* behavior, including hoarding and black market activity, riots and demonstrations, looting, and crime and delinquency; and *voluntary participation* in the war effort, such as ARP activity, winter help campaigns, Red Cross work, and social welfare activities. Two attitude measures, taken from Interview Schedule B, were also used in this analysis. One was "Willingness to Accept Unconditional Surrender" and the other was the "Morale Index" (See Chapter 3, Part I, Volume I).

Each city was rated on the basis of evidence that it had much or little of the activity in question. The city was ranked "one" which had the greatest amount of behavior *undesirable from the Nazi point of view*; i.e., the most disruptive behavior, the most subversive behavior, the least voluntary participation, the most willingness to surrender, or the lowest morale. The cities were also ranked on the basis of the amount of bombing suffered and on other characteristics studied. The most bombed city was given a rank of "one." Comparisons of ranks which cities hold on these measures show whether heavy bombing is associated with undesirable behavior and light bombing or no raids with more satisfactory behavior. These relationships are expressed numerically by correlation coefficients* in the accompanying tables.

TABLE 1.—Relationship Between Tonnage and Behavioral Morale

	Rank correlation with bomb load
Subversive activity.....	0.59
Disruptive behavior.....	.44
Voluntary participation.....	.01

* If the correspondence between bombing conditions and subversive activity had been such that the city receiving most bombs showed the most subversion, etc., down to the lowest city in bomb load, which was also lowest in subversion, the correlation would be perfect, and would be expressed by the numerical coefficient of 1.00.

On the other hand, where there is no relation at all between two measures applied to the same group of cities, the correlation is said to be zero. If, for example, some cities receiving large bomb loads showed much disruption and others little, and some cities receiving light bomb loads showed much subversion and others little, the correlation would be close to zero.

Table 1 shows that there is no relation at all between bomb load and amount of voluntary participation. This may be due to the fact that many so-called voluntary activities were really not voluntary but coercive in some respects, so that people engaged in war activities regardless of their willingness to do so. In this case, even if bombing made them reluctant to cooperate, it did not stop the "voluntary" activities.

The amount of bombing is moderately related to subversive activity and to disruptive activity (correlations of 0.59 and 0.44). There is some question, however, whether this means that air raids were responsible for these manifestations of lowered morale. The heavier bomb loads were dropped in the large cities which, before bombing, were on the whole more anti-Nazi in their attitudes. Hence some of this behavior could be the result of city size as well as bomb weight. The material of Chapter 4, Part I, Volume I, has shown, however, that both Nazis and anti-Nazis were affected by bombing.

The results reported in Chapter 3, Part I, Volume I, have established the relationship between bomb tonnage and willingness to surrender. It was pointed out there, however, that morale did not fall off in proportion to the tonnage of bombs dropped and that very heavy raids yielded diminishing returns. This same effect is reflected in a moderately low coefficient of correlation between tonnage and the percentage of people willing to surrender. This correlation, when computed, is 0.37.

If the amount of bombing is measured, not by tonnage but by the percentage of people bombed out of their homes, the same results are obtained, as indicated in Table 2.

TABLE 2.—Relationship between behavioral morale and percentage of people bombed out

	Rank correlation with proportion bombed out
Disruptive behavior.....	0.56
Subversive activity.....	.44

RELIGIOUS ACTIVITY AND MORALE

The ranking of cities on religious activity was made on the basis of three criteria. (1) Did the city have active religious leadership, as indicated by the utterances of the leaders, by their refusal to close churches, etc.? (2) Was there an increase in religious activity in the city during the war and throughout the bombings? Increased church attendance and prayer meetings indicated that the civilians of the city supported or sympathized with

the religious leadership of the city. (3) Was the city heavily Catholic in its religious identification? It was assumed that the Catholic Church with its heavy stake in opposing the encroachment of the German state was centrally and powerfully organized to fight the Nazis.

Heading the list of most active cities were Muenster, Munich, and Bonn, with Karlsruhe and Luebeck at the bottom. Religious activity correlates 0.58^a with the Morale Index, as noted above, and 0.65 with willingness to accept unconditional surrender.

DISRUPTION OF PUBLIC UTILITIES AND WILLINGNESS TO SURRENDER

An analysis of the relationship between disruption of public utilities and willingness to accept unconditional surrender reveals a reliable and striking correlation.

The background reports provided adequate material on interference with gas, electric, water, and transportation service in 18 cities. From the Interview Schedule B were also available the answers to the question, "What did you think of unconditional surrender at that time?" ("At that time" referred to the point at which the respondent had come to feel that he could no longer go on with the war). This made possible a ranking of 18 bombed cities on attitudes toward unconditional surrender.

The rankings of these cities are given in Table 3.

TABLE 3.—Utility service and willingness to surrender

CITY	Surrender ranking	Transportation ranking	Gas ranking	Electric ranking	Water ranking	Utility ranking
Cologne.....	1	2	2	3	2	1
Essen.....	2	6	3	2	3	2
Bonn.....	3	1	3	18	16	8
Muenster.....	4	8	4	6	1	3
Nuremberg.....	5	4	12	4	5	4
M. Gladbeck.....	6.5	3	11	13	18	12.5
Munich.....	6.5	7	10	12	15	10.5
Ulm.....	8	9	17	1	12	9
Wuppertal.....	10	11	8	10	6	6
Wetzlar.....	11	12	16	9	7	10.5
Frankfort.....	9	13	9	16	8	14
Bremen.....	12	5	14	3	4	5
Hamburg.....	13.5	14	7	15	9	12.5
Neumeunster.....	13.5	18	13	7	14	17
Luebeck.....	15	16	18	17	17	18
Witten.....	16	10	15	11	11	15.5
Stuttgart.....	17	15	1	8	13	7
Karlsruhe.....	18	17	6	14	10	15.5

^a The correlation indicates that the greater the religious activity in a city, the greater the tendency toward low morale from the point of view of the German government. See footnote, Page 4, for interpretation of the meaning of correlation.

The extent of disruption of each one of the utility services was correlated with willingness to accept unconditional surrender. The results are shown in Table 4.

TABLE 4.—Correlations between willingness to surrender and disruption of utilities

Transportation.....	0.51
Electricity.....	.43
Gas.....	.32
Water.....	.30

The first important observation is that all the correlations are consistent with the idea that disruption of utilities increases willingness to accept unconditional surrender.

The higher degree of relationship between transportation and morale is probably due to the fact that transportation is more vital to everyday urban living than any other single utility. When transportation breaks down, people find difficulty in getting to work, in shopping for food, in reaching the drug store for medicine, etc. If electric service is knocked out, people can fall back upon substitutes for light and power. Water mains for a whole city were generally not destroyed, and relief was usually forthcoming in German towns through hydrants and water wagons.

This conclusion that disruption of utilities is important to morale is in agreement with the findings of the mail study reported in Chapter 2, Vol. II, as well as with Chapter 3, Part I, Vol. I.

REGIONAL ANALYSIS

In order to determine whether there were any regional differences in the behavior of our sample cities, the 33 German cities for which background data were available were divided into three major cultural-geographical regions. These regions and the cities which were included in each are presented below:

Region	Cities
Rhineland, Ruhr, Westphalia.....	Bonn, Bottrop, Dortmund, Essen, Kettwig, Cologne, Luderscheid, Muenchen-Gladbeck, Muenster, Wetzlar, Wuppertal, Witten.
South Germany.....	Erlangen, Frankfort, Freiburg, Karlsruhe, Kempten, Munich, Nuremberg, Speyer, Stuttgart, Ulm.
North-Central Germany.....	Bisendorf, Bremen, Detmold, Eckernfoerde, Hameln, Hanover, Kassel, Luebeck, Muenster, Neumeunster, Rietze.

Comparability of Regions with Respect to Population and Bomb-Load

In order to discover whether differences which might be found among the three regions were due to regional factors (i.e., geographical or cultural) and not to such factors as differential population, size, or severity of bombing, it is necessary that the three regions be equal with respect to the latter two variables. Table 5 presents the average population and average bomb load per city, together with the number of bombed and unbombed cities for each of the three regions.

TABLE 5.—Population, bomb loadage, and unbombed cities by region

Region	Average city population (load tons)	Average city bomb loadage (load tons)	Number cities unbombed	Number cities bombed
Rhine, Ruhr, Westphalia.....	249	13.0	2	10
South Germany.....	296	12.8	1	9
North Central Germany.....	283	10.4	5	6

From the above table it appears that there is little variation among the three regions in either average city population or average city bomb load. The greatest difference for population is found between the Rhine region and South Germany where the average city difference is 47,000. The greatest difference in bomb load is found between Central Germany and the Rhine where the difference is 2,600 tons. It should also be pointed out that no one of the three regions is first in both population and bomb load. Insofar as there are any differences, South Germany has the larger population but the Rhineland received more bombing.

While the three regions are fairly well equated with respect to the averages of the two variables of bombing experience and size of city, they are not well equated with respect to the distribution of those variables among the cities in the region. This suggests that any conclusions made on the basis of comparisons among the three regions may need to be qualified. It will be demonstrated below, however, by an analysis of bombed cities only, that there are regional differences independent of these factors of city size and bombing experience.

Behavior and Attitudinal Differences Among the Three Regions

The average rankings for the three regions with

respect to the behavioral and attitudinal measures appear in Table 6.

TABLE 6.—Average ranking¹ in behavior and attitude factors

Region	Disruptive behavior	Subversive behavior	Voluntary participation	Morale index	Survivor willingness
Rhine, Ruhr, Westphalia.....	17.4	18.0	13.1	13.5	11.5
South Germany.....	15.1	14.3	16.6	13.7	16.4
North Central Germany.....	18.4	17.0	21.6	23.5	20.5

¹ Based upon rank orders, from 1 to 21, of the cities included in this study. The city showing most disruption, most subversion, least voluntary participation, lowest Morale Index (see Chapter A, Vol. I) and most willingness to surrender, was in each case ranked first, the city showing least disruption second, etc.

From the table it appears that:

(1) North-Central Germany, on almost every measure was the "best" region from the Nazi point of view. It ranked first in four of the five measures used, and was second in the fifth measure. In other words, the North-Central Region showed the least disruptive behavior, the most voluntary participation, the best morale and had the smallest number of people who were willing to accept unconditional surrender.

(2) While the data are fairly clear as to which region was the best-behaved Nazi region, they are somewhat ambiguous as to which region was the worst-behaved Nazi region. Thus in three measures out of five (Willingness to Surrender, Morale Index, and Voluntary Participation) the Rhineland-Ruhr-Westphalia region is the worst region, and in the remaining two measures (Subversive Behavior and Disruptive Behavior) South Germany seems to be the worst. The difference between these two regions with respect to the Morale Index is negligible and probably not significant. There are, it seems, qualitative differences in these two sets of measurements. Thus the Rhine-Ruhr-Westphalia region is the worst with respect to the more passive morale factors, such as willingness to accept surrender, and refraining from participating in community and Party activities. On the other hand, the Southern region is worst with respect to the more active resistance factors, such as disruptive behavior and subversive behavior. And both are low in morale.

Analysis for Bombed Cities Only

In the following analysis only the bombed cities in each region are examined. If we discard the

umbombed cities, the three regions now comprise the following cities:

Region	Cities
Rhineland Region	Cologne, Bonn, Aachen, Dusseldorf, Essen, Muenster, Weiden, Witten, Wuppertal, Muenchen-Gladbach.
South Germany	Frankfurt, Freiburg, Karlsruhe, Kempten, Munich, Nuremberg, Speyer, Stuttgart, Ulm.
North-Central Germany	Bremen, Hamburg, Hannover, Kassel, Leubach, Neuenmuenster.

If we now examine the two factors, size of city and bomb load, we discover that the three regions are still much the same with respect to the latter but that the North-Central Region has the largest cities. Where the Rhineland sample now has an average of 293,000 population size, South Germany has 361,000 and North Central Germany has 510,000. Those inequalities, however, may serve a useful function inasmuch as they can permit us to determine the differential effects of city size and bomb load on our behavior factors. Table 7 summarizes the above data.

TABLE 7.—Population and bomb tonnage in bombed cities by region

Region	Average population (odd city)	Average bomb load (odd city)
Rhine, Ruhr, Westphalia	293	15.6
South Germany	361	14.4
North-Central Germany	510	19.1

In Table 8 are presented the average rankings for the five behavioral and attitudinal factors.

TABLE 8.—Average rankings in behavior and attitude factors for bombed cities only

Region	Disruptive behavior	Subversive behavior	Voluntary participation	Morale index	Surrender willingness
Rhine, Ruhr, Westphalia	14.8	14.6	8.7	10.4	8.4
South Germany	13.2	12.4	13.3	13.1	13.9
North-Central Germany	9.8	9.1	19.7	17.3	16.4

From the above table it appears that:

(1) North-Central Germany, just as in the previous analysis, remains the region with the highest morale, the most voluntary participation, and the smallest number of people willing to accept unconditional surrender. By omitting the unbombed cities, this region does not improve its position with respect to these three variables. However, with respect to the other two variables its position is changed. It now ranks as the region with the most disruptive behavior and with the most subversive behavior.

(2) The possibility is suggested that since the North-Central region now consists of proportionately more large cities than either of the other two regions, and since its bomb-load is only slightly larger than that of either of the other two regions, what we have here is an effect of city size upon city behavior with bombing experience held constant. If this suggestion is valid, it appears that city size is correlated positively with voluntary participation, individual morale, or the willingness of the individual to accept unconditional surrender. In other words, the first two factors are more sensitive to urban factors, while the latter are more sensitive to other factors.

(3) The Rhine-Ruhr-Westphalia region presents the same picture in this analysis which it did in the previous analysis. In the present analysis, as in the previous one, the Rhine-Ruhr-Westphalia region is the worst behaved region according to Nazi standards, in willingness to surrender, morale index, and voluntary participation. South Germany, however, seems to change significantly. Where formerly it had been the worst behaved area in disruptive behavior and subversive behavior, it now occupies the middle position between North-Central Germany and the Rhine-Ruhr-Westphalia regions in every respect.

CHAPTER 2

ANALYSIS OF CAPTURED GERMAN MAIL¹

SUMMARY

Two separate studies of captured German civilian mail show:

1. *Morale* is lowered as bombing exposure increases. In Study I, regions in which a greater bomb weight had been dropped, definitely exhibited lower morale on a variety of measures than regions which suffered light raids. In Study II, measures of the degree of closeness of personal exposure correlate highly with loss of morale.

2. Bombing below a certain level of severity, or closeness of individual exposure, did not produce severe decrements in morale. On the other hand, increases in bombing above a certain intensity level produced only slight additional decline in morale.

3. Disruption of community life, damage to property, and other personal consequences are powerful factors in lowering morale. Such efforts should be aimed for in precision bombing if morale is to be impaired.

4. Morale attitudes are generalized to some extent. The effects of bombing on the individual can be manifold.

5. Day raiding had a greater effect on morale attitudes than night raiding, but night raiding produced much more severe emotional reactions.

6. It is suggested that a given weight of bombs, dropped in a series of raids, has no more effect on morale than the same weight dropped at one time.

METHODS AND PROCEDURES

Captured letters written by German civilians during the war have been analyzed quantitatively to determine the effects of bombing upon the will and capacity of the German civilian population to resist.

Two complementary studies were made; each on part of this material. Study I analyzed 802 letters, selected because the writers had been bombed. In Study II, 1,100 letters of both bombed and unbombed writers were analyzed.

In Study I, 14,017 letters were selected at random from all uncensored captured mail available. Letters written by front-line soldiers and those originating in non-German cities were excluded.

Competent linguists then proceeded to select all letters that made any reference to bombing. This procedure netted a total sample of 802 cases, or six percent of the total number of letters read.

The portion of each letter dealing with bombing was translated and then coded for the presence of certain measures of exposure to bombing and for evidence of certain aspects of morale. The results were then tabulated to determine the relation between the frequency of certain morale attitudes and exposure to bombing.

Study I dealt only with bombed people since the letters were selected on this basis. Every writer mentioned bombing, which not only meant that he was in a region of bombing but that the effect and impact of the bombs was close enough for the person to write of his exposure.

Many writers who did not mention bombing in their letters might also have been exposed to raids. In Study I, 86 percent of the letters, from regions where 1,000 tons or more bombs had been dropped, did not make any reference to bombing. Therefore, a new procedure was used in Study II. The influence of bombing was determined by comparing the morale of writers in cities which were known to have had different raid experiences. The readers were instructed, in Study II, to select from a random sample of captured mail all letters that made any reference to the writer's morale, good or bad. Some of these letters mentioned bombing, some did not. In this fashion 1,100 letters were selected from a random sample of 10,506 captured letters or 10 percent of the total. The determination of whether the writer had been exposed was made by reference to the raid history of the place from which he came.

The bomb history of the regions is a less sensitive measure of the writer's exposure to bombing than the individual report. Not all people living in bombed areas were personally exposed or close to bombs. Consequently, Study II provides for all cases an objective but gross measure of bombing exposure. Study I provides an individually accurate measure of bombing exposure, and in addition objective tonnage estimates are available.

Two principal measures of morale were used. The first was based chiefly on comments about discouragement, misery, and suffering on the part of

¹ These two studies were made between November 1944 and March 1945. See Appendix A for discussion of validity and reliability of this study.

the writer or on the part of the community. The second measure was based on indications of anxiety over future raids.

The procedure, apart from the selection of letters, was similar in Studies I and II. In Study II the portion of each letter dealing with morale was translated, as well as any portions dealing with bombing. The translation was then coded for certain measures of exposure to bombing, such as damage suffered, and loss of life, and for certain attitudes that evidenced in connection with raids, such as anxiety over the recurrence of raids, evidence of lowered or improved morale, etc. The sex of the writer, the date on which the letter was written, physical nearness of the writer to the bombing, and the time period elapsed from the time of bombing to the date of the letter were also coded. The bomb tonnage dropped on the section of the country in which the writer lived was also recorded.

The Sample

All results are based on these two samples of 802 and 1,100 letters, respectively. Although no claim is made that this adequately represents the entire German population, the fact that the letters originated in a great number of different localities suggests some representativeness.

Table 9 shows the percentage of the sample originating in each of certain regions of Germany.

TABLE 9.—Geographical distribution of the sample

		Percent of sample	
		Study I	Study II
1.	Saar-Moselle.....	13	19
2.	Cologne-Düsseldorf-Ruhr.....	19	16
3.	Hannover-Bremen-Hamburg.....	12	10
4.	Berlin-Northern Germany.....	10	9
5.	Central Germany.....	9	11
6.	Silesia.....	4	6
7.	Frankfurt Area.....	18	11
8.	Southern Germany.....	9	10
9.	Austria.....	4	4
10.	East Prussia and Danzig.....	1	2
11.	Czecho-Slovakia.....	1	2
12.	Western Poland.....	1	1
		100	100
	Number of cases.....	802	1,100

* Because of the small number of letters received from these regions, they were excluded from subsequent analysis.

The two samples of letters varied with respect to the time of writing. Those in Study I were written somewhat earlier in 1944 than were those

in the second study, which came chiefly from the later months of 1944 with a few from early 1945. No analysis has been made of the relation between morale change and the date of bombing. Table 10 presents the distribution of dates for the letters in the two samples.

TABLE 10.—Distribution of letters by date and sex of writer

	Percent of sample	
	Study I	Study II
1944		
January-April.....	75	1
May.....	2	1
June.....	3	1
July.....	25	2
August.....	25	14
September.....	25	24
October.....	14	19
November.....	9	20
December.....	9	1
1945		
January.....	9	7
	100	100
Sex		
Males.....	15	10
Females.....	83	90
Indeterminate.....	2	
	100	100
Number of Cases.....		
	100	1,100

* Letters dated January through April were too few to permit analysis for separate months. The letters from these months are therefore combined.

There is a wide range of bomb tonnages in the cities and regions from which the letters come, though various bomb loads are not represented in correct proportion. Bomb weights for regions used in Study I and strata for use in Study II are presented in Table 11.

TABLE 11.—Bomb weights for regions and strata

	Region	Bomb weights in tons for the regions used in Study I	Stratum	Bomb weights in tons for the strata used in Study II
1.	Saar-Moselle.....	29,014	1	72,000
2.	Cologne-Düsseldorf-Ruhr.....	230,670	2	18,800
3.	Hannover-Bremen-Hamburg.....	122,280	3	7,000
4.	Berlin-Northern Germany.....	86,461	4	2,000
5.	Central Germany.....	58,780	5	300
6.	Silesia.....	607	6	0
7.	Frankfurt Area.....	79,430	7	0
8.	Southern Germany.....	81,120		
9.	Austria.....	423		

* The cities comprising these strata are presented in Appendix B.

ANALYSIS OF RESULTS OF STUDY I

Morale Effects of Light and Heavy Bombing

The first problem is to determine whether writers show differences in morale and related phenomena, such as health and anxiety, in areas of Germany which have been subjected to different amounts of bombing. If it can be shown that low morale, poor health, and anxiety are more frequent in heavily bombed areas than in lightly bombed areas, it would tend to indicate that the bombings affected morale.

In the sample of 802 letters, 14 percent show lowered morale. A typical example of lowered morale is given by a woman writer from Bingerbrück, who says:

"We have alerts day and night and planes and the fighters are coming always. It really is a misery on the earth. If this war does not come to an end either our nerves will be ruined or else we all shall be dead. It's becoming nearly impossible to work or to even prepare lunch at noon time. On Sundays we can't go to visit the cemetery. We scarcely receive any milk deliveries at all. If we go to town for milk there is a constant alert on. People here are want to lose courage. In Mainz and Bonn they possess less courage yet. There they are in the process of moving and going away."

Four percent show sustained morale. For example, a woman from Stolberg writes:

"All you hear all day long are the sirens, the anti-aircraft guns, the sound of the motors, and the dropping of bombs; despite all that, they won't get us down. It's out of the question."

Four percent show habituation to bombing. A letter from Aachen reports:

"They are here all day but we don't even care about them any more. The population has a lot of courage and I am surprised at it as I have never known anybody who would have gone through as much."

Finally, 78 percent make no reference to their morale.

The relationship between the weight of bombs dropped in different regions of Germany during the entire war and the percentage of writers showing lowered morale is expressed by a coefficient of rank correlation of 0.48.¹

When weight of bombs dropped in each region from July to November 1944 is correlated with percentage showing low morale (92 percent), the correlation is 0.53. These correlations indicate a

¹ If the correspondence between bombing and morale had been such that the region receiving the most bombs showed the lowest morale, the region with the second heaviest bomb load, the second lowest morale, etc., down to the least bombed city which was the highest in morale, the correlation would be perfect and would be 1.00.

On the other hand, where there is no relation at all between the two measures the correlation is zero. Then, some regions receiving heavy bombing would show high morale and some low and some regions receiving light bombing would show high and some low morale.

moderate amount of association between the factors involved.

Six percent of the 802 letter writers reported that the writer's own health or the health of relatives and friends had been affected. A good example of this comes from a woman in Pelch who writes:

"I am a nervous wreck from all the excitement. It was terrible again today; the enemy planes do not stop coming. We had luck but I am completely exhausted (Fertig)."

The correlation between total bomb weight and percentage of writers evidencing disturbances in health is 0.40. When bomb weights during July-November 1944 are correlated with health disturbances, the coefficient is 0.27.

In the sample of 802 letters, 17 percent showed some type of focalized anxiety. Examples of anxiety are:

"I only hope that you keep your home, so we at least have a place to stay."

"We have put everything in the cellar."

"We sent the children away."

There is no correlation between bomb weights dropped in regions in Germany and the occurrence of focalized anxiety in these regions.

Conclusions from these correlations suggest that civilian morale and related phenomena are affected by bombing to a moderate extent.

Morale and Exposure to Bombing Effects

A more precise determinant of morale than the mere weight of bombs dropped in a region is the extent to which the individual has experienced some effect of the bombing as reported in the letter. Five measures of exposure to bombing effects were used:

1. Damage to personal property or the property of friends and relations. For instance, the following statements were indicative of damage:

"I was bombed out."

"Mrs. K's store was destroyed."

2. Damage to community property. Examples:

"The Koddive (a department store in Berlin) and the Gloria (a cinema) were destroyed."

"They bombed the hell out of us. There is nothing left to destroy here."

3. Disruption of community life, including transport, communications, utilities, occupation, etc. Examples:

"I couldn't visit you because the roads were bombed."

"We no longer receive any milk or paper deliveries."

"We had no water for a week."

"We still cannot go to work in the factory."

4. Loss of relatives and friends. Examples:

"Mr. X was killed."

"And there was nothing to be done."

5. Health of writer affected. Examples:

"My nerves give out when I think of it."

"I can't work at least today" (after a raid).

"My head is shaking as I write this."

The percentage of the sample of 802 letters which evidenced some effect of bombing is shown in Table 12.

TABLE 12.—Effects of the bombing

	Percentage of Sample (and letters)
Damage to personal property or property of friends and relatives.....	14
Damage to community property.....	34
Disruption of community life.....	14
Loss of life.....	15
Health affected.....	6
No report of any effect.....	45
Total.....	132 ^a

^a Since some individuals evidenced more than one effect in their letters, the percentages add up to more than 100 percent.

Those individuals who report none of the direct effects of bombing, despite the mention of bombing, show higher morale than those reporting some of the specified effects. This assumes that no report of effects means that no effect was experienced. Eighteen percent of those experiencing some effect of bombing show lowered morale; whereas 12 percent of those reporting no effect show lowered morale. Twenty percent of those experiencing some effect show focalized anxiety (i.e., anxiety over personal well-being, family, property, etc.) whereas 18 percent of those reporting no effect show much anxiety.

The differences between the percentages reporting and not reporting effects of bombing are sufficiently large to be statistically significant. Standard statistical procedures were employed in testing the significance of these differences.

Morale and Proximity to Bombing

The findings of this study show no clear indication that proximity to bombing in time and space

TABLE 13.—The relation of proximity (in time and space) to Low Morale and Anxiety

Proximity	Percent of group showing low morale	Percent of group showing focalized anxiety
Own town hit.....	17	25
Nearby towns hit.....	5	21
Distant places hit.....	10	18
Air alarms, no bombs.....	16	21
Continuous raids.....	19	24
Recent exposure.....	14	18
Exposure in the past.....	12	24

affects morale. It is possible that a large scale study would show this more clearly. There is a suggestion that those with their own towns hit show lower morale.

Continuous bombing of people seems to add little to the morale changes produced by recent or past raids. This may be due to habituation to continued bombing, since eight percent of those continuously raided show habituation in their morale, whereas only one percent of those raided in the past show habituation. It is also possible that such effects are obscured by the method used in the study.

Morale as a Generalized Anxide

Those writers reporting some type of anxiety show more evidence of low morale than writers with no reference to anxiety. Those writers evidencing disturbances in health show a greater increase of low morale than those writers with no disturbances in health. This suggests that there is a common general factor in all these measures.

TABLE 14.—Anxiety and health as related to low morale

Type of anxiety	Percent of groups showing low morale
General tension plus some focalized anxiety.....	35
Focalized anxiety.....	24
General tension.....	19
No report of anxiety.....	8
Disturbed health.....	38
No disturbance.....	12

Loss of Morale in Men and Women

Sixteen percent of the women show lowered morale as compared with eight percent of the men. Nine percent of the women show anxiety over their personal well-being as compared with two percent of the men. It is not likely that these differences are due to factors that have not been examined. The samples of men and women show the same geographical coverage by regions. It might be assumed that the findings could be due to the greater tendency of women to be more vocal than men, and their tendency to report such things more. However, when we compare groups of men and women, all of whom report in their letters the state of their morale, the same finding occurs, i.e., we now have men and women who are all articulate or vocal about themselves and the morale difference persists.

It is reported in Chapter 4, Part I, Volume I, that women's morale showed no consistent differences from that of men in the material from the

civilian interviews. They showed about the same loss as men and under heavy bombing slightly more women than men were unwilling to surrender. The markedly lower morale of women in the Mail Study is probably due to the fact that the morale measure is in this case based chiefly on emotional components; that, in other words, women's emotional reactions were more affected than those of men, but not their attitudes toward surrender.

THE ANALYSIS OF RESULTS OF STUDY II

The Morale Effects of Light and Heavy Bombing

The approach used in Study II was intended to determine whether writers in areas of Germany that had been subjected to different weights of bombing showed differences in morale. The procedure is the same as in Study I. If it can be shown that low morale is more evidenced in letters from heavily bombed areas than in letters from lightly bombed areas, it would tend to indicate again that bombings affect morale.

For this purpose the letters were grouped into more precise strata than the regions used in Study I. Seven geographical strata were defined, varying from zero bombing to very heavy bombing.

The findings indicated, in contrast with Study I, no correlation between bomb weight for these strata and the frequency of expressions of low morale in the letters, as evidenced on the following four measures: (1) belief in a bad outcome of the war, (2) desire for peace, (3) writer's health affected, and (4) the bad emotional impact of bombing.

This suggests three possible explanations: (a) Bombing does not affect morale. This is a contradiction of the findings of Study I. (b) The selection of letters here was different. Or (c) many writers did not mention bombing, either because they personally were not exposed or because they were not sensitive to the raids.

This suggested the use of a more precise measure of personal exposure. From the reports of bombing exposure in the letters, the writers were grouped as to the degree of personal exposure, and these groups were compared on the four morale measures listed above. The consistent finding is that the greater the personal exposure to bombing, as reported in the letters, the higher the incidence of low morale. Table 15 shows this clearly.

The greatest proportion of these comparisons of personal exposure are in the expected direction: increased closeness of exposure is associated with lowered morale. Although not all the single comparisons are statistically significant, the consistency

of trends of the differences in the comparisons tends to confirm their significance. This trend can be tested statistically. Of 23 comparisons, 16 are in the expected direction, namely, a higher incidence of low morale in the greatly exposed or personally exposed group. The likelihood that this number, 16 out of 23 comparisons, would occur in this direction by chance is only six chances in 100, which indicates a considerable degree of dependability.

TABLE 15.—The relation of closeness of exposure to bombing and low morale

Measure of closeness of exposure	Percent believe a bad outcome of war	Percent desire for peace	Percent bad emotional reaction to raids	Percent health affected
Close to bombs dropped.....	66	80	86	98
Remote from bombs.....	64	78	79	67
In a strafing or indiscriminate raid.....	63	87	82	74
In a strategic bombing.....	33	70	78	63
Personal property damaged.....	64	84	90	70
General property damage.....	52	77	85	69
Personal routine disrupted by raid.....	69	74	89	90
General utility disruption.....	60	90	89	88
Severely involved in disruption.....	73	85	98	89
Not involved in disruption.....	33	56	56	67
Friends or relatives injured or killed.....	100	-----	73	96
General injuries or deaths.....	60	-----	82	70

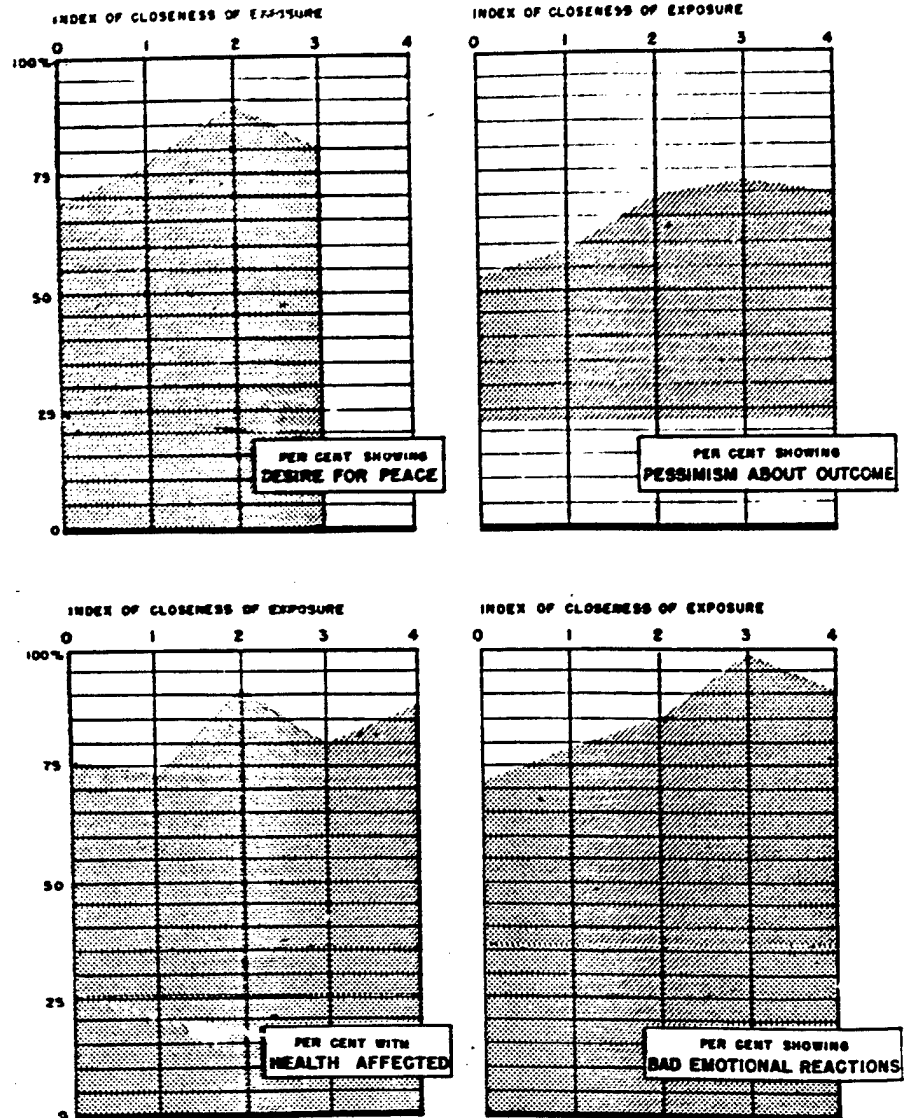
¹ Indicates statistically significant difference.

² Indicates a difference opposite in direction to that expected, according to hypothesis.

The fact that low morale is clearly related to the severity or closeness of bombing exposure can be demonstrated in another way.

An index of closeness of personal exposure of the writer was derived from the combination of the above single aspects of degree of exposure. Individuals were most exposed who (1) were close to bombs dropped, (2) were subjected to an indiscriminate raid, (3) suffered personal damage, (4) had personal routine disturbed, and (5) were personally involved in the disruption. An individual was given a score of zero if he reported on none of these factors of exposure and one point for each factor of exposure reported. Thus the scores of the writers ranged from zero to five, depending on how many of these measures of exposure to bombing the writer reported.

CHART I CHANGES IN MORALE WITH CLOSENESS OF EXPOSURE TO BOMBING



BING

When individuals having different scores on this index are compared on morale, the findings are again consistent. On three of the four measures (the measure of health affected is least reliable; see Appendix A), morale declines with increasing closeness of exposure to bombing.

Above a certain level of closeness of exposure, the decrement in morale seems to taper off as indicated in Chart I. The exact meaning of this is not clear. Possibly, with a certain amount of involvement, the individual ceases to be further affected. Perhaps, things being so bad already, he simply no longer cares and becomes apathetic; possibly the index is not sufficiently sensitive. In any case, these findings are consistent with those of the cross-sectional interview study. (See Chapter 3, Part I, Volume I.)

In short, morale is affected by bombing, but is seriously affected only as bombing produces serious personal exposure and personal disturbance. The mere fact of being in the general region of bombing has not the same serious effect as personal exposure. This is also demonstrated in the personal interviews with civilians (Chapter 3, Part I, Volume I). It is made clear there, however, that the morale of persons in bombed areas, who suffer no direct consequences of the bombing, is also depressed, though less seriously so.

The Generality of Morale

In Study I morale was shown to be a generalized attitude. Morale effects can be observed in many aspects of the individual's behavior and attitudes.

In Study II, similar evidence for generality of morale is found. The four morale measures were intercorrelated, and the finding is that those individuals who show low morale along one of the dimensions studied, show low morale in the other dimensions. The data are summarized in Table 16.

TABLE 16.—Intercorrelations of various morale factors

<i>Of Those With:</i>		<i>Percent desired peace</i>
Bad emotional reaction to raids	85	
Good emotional reactions to raids	62	
Bad outlook on outcome of war	93	
Good outlook on outcome of war	33	
<i>Of Those With:</i>		<i>Percent showed bad outlook on outcome of war</i>
Bad emotional reaction to raids	79	
Good emotional reaction to raids	5	
Health affected	72	
Health not affected	53	
<i>Of Those With:</i>		<i>Percent showed bad emotional reactions to raids</i>
Health affected	94	
Health not affected	66	

In Chapter 4, Part I, Volume I it is indicated that degree of fear is not related to willingness to surrender. It appears that this type of attitude acts differently from certain others in its relation to fear. This is a distinct limitation on the generality of morale measures.

Day Bombing as Compared with Night Bombing

A comparison was made of the morale of writers who reported day raids versus those who reported night raids. The findings are only suggestive, but they indicate that the emotional reactions to night raids are worse.

One hundred percent who reported night raids gave evidence of bad emotional reactions, whereas 83 percent of those reported day raids were classified as having had emotional reactions.

The effect of day raids on morale attitudes, however, appears to be greater. Seventy-seven percent of the writers reporting day raids had a bad outlook on the outcome of the war, whereas 55 percent reporting night raids had an equally bad outlook.

Another comparison shows the same difference. Eighty-two percent of the writers reporting day raids showed a desire for peace, whereas only 45 percent commenting on night raids mentioned this desire. People subjected to day raids also gave more frequent evidence of effects on personal health, with 75 percent of them saying their health was affected. On the other hand, 35 percent of the writers reporting night raids said their health was affected. Parallel results were obtained in Study I.

These results must be interpreted with caution. Correlated with day and night raiding are certain other features of bombing, such as the degree of damage and the extent to which the bombing was indiscriminate rather than mainly strategic. Whether the differences found are due to the intrinsic effect of daylight as compared with nighttime, or to the complex of bombing factors associated with day and night raids, cannot be established from these data.

It is suggested that the usual report of individuals as to the greater effect of night raids in lowering morale is not in conflict with these findings. Such individual reports may refer mainly to the bad emotional reactions to night raids (which is borne out in the present study), and in considering this problem individuals may not be thinking in terms of such morale attitudes as belief in the outcome of the war or desire for peace. This is consistent with the findings reported in Chapter 3, Part I, of Volume I.

CHAPTER 3

FOREIGN WORKER STUDIES

INTRODUCTION:

OBJECTIVES OF THE STUDIES

The Nazi war program brought into Germany eight million foreign workers—witnesses to the conduct of the German people during the course of the war. These witnesses were of many European nationalities. In varying degree they shared the lot of the German civilian population. They shared much of its experience of Allied bombing, since they worked in every German city and in innumerable German war factories. But while they themselves experienced bombing, they were also able to observe the German reaction with the varying degrees of objectivity with which their alien status endowed them.

During May and June 1945, more than two thousand French, Italian, and Russian displaced persons in Germany were given a questionnaire to answer anonymously.¹ This study served four objectives:

(1) It has provided the basis for analysis of many aspects of reactions of displaced persons as such. Inasmuch as these persons comprised a sizable part of the population of Germany during the last three years of the war, their reactions constitute an important element of the over-all morale reaction to the Allied bombing of Germany. Furthermore, information has been acquired on several specific subjects of interest, otherwise totally unclarified: the receptivity of the DPs² to Allied leaflet and radio propaganda; the variation among DP reactions according to nationality.

(2) Information has been obtained which serves as a check on the findings in the main cross-sectional study of German civilians. On many specific questions of German reaction to bombing, the DP reports corroborate the German civilian interview data. Such is the case, for example, with data on the reaction to day and night raids, the German system, evacuation problems, war weariness, black-listing, etc.

(3) The DP questionnaires have provided data which are totally unavailable or incomplete in Ger-

man official statistics. Concerning such activities as looting and black marketing, where the study of German sources had provided a picture of the mechanics of these operations and the manner in which they were controlled by the Nazi authorities, the DP questionnaires have provided an over-all statistical estimate of their prevalence that confirms the best available German evidence.

(4) It has suggested various cause-and-effect relationships characterizing civilian reaction to bombing, and provided hypotheses concerning the factors influencing psychological reactions to raids.

All the major conclusions of the Morale Division cross-sectional study have been substantiated by the DP data, and there are no significant discrepancies in German and DP reactions to bombing not clearly explainable by overt differences in national background or the slave-labor circumstances in which the DPs experienced bombing.

TABLE 17.—Nationality and regional background of DP respondents

Group	Place of origin	Percentage	Total number
Italian	North Italy	43	436
	Central Italy	34	
	South Italy	23	
		100	
French	North East France	23	801
	Paris Region	21	
	South West	18	
	North West	16	
	South East	16	
	Belgium	6	
	Colonial France		
		100	
Russian	Ukraine	43	998
	Great Russia	28	
	White Russia	9	
	Southern Russian Tartars	8	
	Siberia and Tartars	7	
	Miscellaneous (Georgia, Turkomen, Armenia, Daigstan, etc.)	5	
		100	
			2,235

¹ See Appendix C for a copy of the Questionnaire. See Appendix D for report of Pilot Study on French Escapees.

² Throughout this chapter the abbreviation "DPs" is used to refer to displaced persons.

METHODS OF OBTAINING DATA

The information upon which this report is based was collected during the months of May and June, 1945. The DPs involved were located in camps throughout the American, British and French zones of occupation. Paper and pencil questionnaires were handled by interviewers fluent in the language of the specific group of DPs with whom they were in contact. The nationality and regional backgrounds of the DPs in the sample are shown in Table 17.

Age, Education, Marital Status

The three groups were fairly similar in age. The median ages were French 29 years, Italian, 28, and Russians, 24.

The three groups were somewhat similar in educational level, insofar as any comparison can be made among the three different educational systems. Only two degrees of education were discriminated; the percentages of each group falling into these two educational levels are:

TABLE 18.—Educational levels

	French	Italian	Russian
Primary education only.....	Percent 69	Percent 60	Percent 60
Beyond primary.....	31	40	40
	100	100	100

Educational level and age were negatively correlated to some degree; fewer of the younger groups had only primary education. The percentage of those having primary training only were as follows:

TABLE 19.—Primary education by age

	Percent
DPs 30 years or younger.....	61
DPs 31 years or older.....	71

An interesting difference appears when a similar analysis is made for the three groups separately: 45 percent of the younger and only 29 percent of the older Russians had gone beyond primary school. The difference of 16 percent is statistically significant. For the French, the difference between the two corresponding age groups is 7 percent and for the Italians, 5 percent.

The three groups were also fairly similar with respect to marital status. The respective proportions of those unmarried were: 58 percent of the French, 62 percent of the Italians, and 57 percent of the Russians.

Sex

In one important variable, sex, there was a difference between the Russian and the other two groups.

The percentage of males in the three sample groups were: French, 97; Italians, 92; and Russians, 69. In some of the analyses, especially with respect to fear reactions to bombing, the Russian males and the Russian females will be treated separately. But throughout the analyses made here, this difference among the groups should be kept in mind.

Bombing Experience

The German cities in which the DPs worked have been divided into four major categories, on the basis of total bomb tonnage received.

Table 20 indicates the percentage of respondents who reported having worked in one or another of these categories for the major part of their stay in Germany.

TABLE 20.—Percent of DP groups subjected to various degrees of bombing

Average bomb tonnage in thousands	French	Italian	Russian
31.....	Percent 67	Percent 72	Percent 59
10.....	6	10	10
4.....	17	6	22
0.4.....	10	12	9
	100	100	100

The distribution of the three groups of respondents was generally similar, with a few more Italians than French or Russians reporting that they came from the most heavily bombed areas. This checks to some degree with the answers to the question: "How many raids did you experience?" The Italians reported a median number of 45, the French came next with 28, and the Russians reported 18. It is doubtful, however, that the figures given by the Italians can be accepted at face value. The data for this doubt will be presented in several places throughout this report.

The respondents were also asked to report on any personal injury they may have suffered from the air raids: nine percent of the French, 10 percent of the Italians, and 16 percent of the Russians reported that they themselves had been harmed in a raid.

It may well be that, although the Russians reported having experienced the least number of raids, they suffered the most injury. This could be accounted for by the fact that the Russians were least favored in the provision of shelters for the DPs, while the French were most favored. Thus, in answering the question whether they were allowed access to the shelters on the same terms with the Germans, 95 percent of the Russians, 94 percent

of the Italians and 62 percent of the French reported that they were not permitted such access. Seventy-four percent of French, 74 percent of Italians, and 72 percent of Russians report lodgings or personal possessions destroyed by raids. Seventy-three percent of French, 72 percent of Italians, and 74 percent of Russians report friends hurt or killed. The fact that the Italians reported no greater damage or casualty figures than either the Russians or the French, suggests that their estimate of having been through almost twice as many raids as the other groups is probably a bit inflated.

VALIDITY OF ANSWERS

Systematic Bias of the Russians

Throughout the questionnaire there were a number of opportunities for the respondents to pass judgment on the German people, their morale, their character, their organizational efficiency, bravery, etc. A comparison of the three groups with respect to such judgments might give some insight into any systematic bias any one of the three groups might have. Should such a tendency be established, it might be useful in interpreting the data secured from the biased group.

The following table lists all the "evaluative" statements possible in the questionnaire, and the percentage of each group which subscribed to the

statement. The statements are, for the most part, given in a negative form, i.e., reflecting unfavorably on the Germans.

In 12 of the above 13 statements more Russians passed negative judgments on the Germans than did either the French or the Italians. While a few of the differences are small, the consistency of the differences suggests a definite bias on the part of the Russians. This consistent bias leads to many apparently inconsistent judgments. Thus, more Russians reported observing anti-Nazi resistance among the Germans (probably because "anti-government resistance" is something no good citizen should be involved in), and at the same time more Russians than Italians or French reported that as bombing went on the Germans became more dependent on the Nazis (probably because "being a Nazi" was also bad).

The fact that more Russians than French or Italians reported that evacuations were voluntary might be explained by the Russian notion that evacuation was a "cowardly" escape reaction, and therefore to be ascribed to the Germans, who evacuated voluntarily without being forced to do so. When the respondents were given an opportunity to attribute the determined German resistance until the very end of the war to the German "character," the Russians declined to do so to a greater extent than either of the two other groups. There is only one statement (regarding pillaging) where the Russians did better by the Germans than did the other two groups. Here it would be interesting to speculate on a possible difference in the point of view of the three groups. The Russians, for instance, reported that pillaging was restricted to the foreigners (41 percent so reported), whereas only 24 percent of both the French and Italians held to that opinion. There is some reason to believe that the Russians themselves engaged in more pillaging than either of the other groups, and the Russians may very well have regarded such pillaging as "righteous retribution" and a virtue, and therefore not to be ascribed to the Germans.

No systematic bias is observable among the other two groups; i.e., the differences between the French and Italians are not consistently in one direction. Thus, out of the 13 statements, in five the Italians passed a harsher judgment on the Germans than did the French, agreed with the French in two, and are easier on the Germans in six.

Differences in Accuracy of Reports

Some of the respondents were in a better position to report on certain specific questions than others.

TABLE 21.—Percentage of evaluative judgments by DP groups

Item Number		Russians	Italians	French
		Percent	Percent	Percent
17	Production was diminished because of absenteeism.....	60	31	40
17	Production was diminished because of low morale.....	64	47	32
18	AA defense measures were bad	73	58	54
21	Germans alone guilty of panic.	82	70	72
22	Germans alone guilty of pillaging.....	37	62	43
24	Evacuations not voluntary....	70	83	83
24	Evacuations badly organized....	86	79	72
24	Evacuees did not get along well with hosts.....	91	66	73
25	As bombing progressed, Germans became more dependent on NSDAP.....	24	17	4
28	German character responsible for resistance.....	20	52	26
31	German civilians engaged in anti-Nazi resistance.....	57	16	35
27	Before the invasion Germans believed war lost.....	84	73	71
26	Germans sometimes lost all desire to continue with war....	82	70	76

This fact must be remembered throughout this analysis, and on a *priori* grounds more weight given to some respondents than to others. Thus, for example, it is reasonable to expect that the French would be in a better position to report on the radio-listening habits of the Germans, or the personal reaction of the Germans to the evacuation of members of their families, etc., than would either the Italians or the Russians, because the French were more accepted by the Germans as fellow-creatures than were either the Russians or the Italians.

Similarly, the French probably were in a better position to report on the distribution of Allied leaflets addressed to foreign workers, because they could more easily distinguish between a leaflet written in French and in German than could the Russians, to whom both types of leaflets would appear pretty much the same, a Latin-script tongue.

Again, the more educated and literate person was probably in a better position to report on such subjects as the operations of the "black market" than the less educated worker.

Throughout the analysis an attempt will be made to call attention to this differential validity.

REACTION OF DPs TO BOMBING

The most useful question in determining the over-all reaction of DPs to bombing was, "With the continuation of the air raids, were you more and more frightened, or did you become habituated?"

Most of the DPs did become habituated to the air raids according to their own reports. There is a significant difference between the Italian and Franco-Russian group (65 percent of the Italians reported that they became habituated, while 72 percent of the French and 72 percent of the Russians so reported. (For further discussions of this difference, see "Note on the Difference in Fear Reaction between the Italian and Franco-Russian groups.") In any case, over half of each group reported habituation.

In determining the factors which were associated with or responsible for habituation, it appears that the following were the most important (listed in order of importance).

Fright Reaction to First Raid

The importance of the reaction to the first raid in determining whether the individual would habituate or not seems to be primary. Those who showed the most fear at the first raid, showed the least habituation. Whether "fright reactions to first raid" and "continued fear" were both reflections of some generalized fear pattern, or whether the

former "caused" the latter is not clear from the data.

TABLE 22.—*Relation of initial fear to habituation (all groups)*

Fright at first raid	Habituated	
	Percent	Percent
None at all.....	90	19
A little.....	71	29
Much.....	52	49

About 70 percent of the total DP group reported habituation to air raids. Greater habituation has been found among DPs than among German civilians. The explanation of the difference derives from the following factors:

(1) There were more women among the German civilian population than among the DPs. Since women habituated less readily than men, the German civilians might be expected to become habituated in lesser degree than the DPs.

(2) The Germans were more exposed to "personal involvement" in the raids than were the DPs since they had more relatives and more valuable possessions to be lost through bombing.

(3) Bombing increasingly betokened liberation to the DPs and defeat to the Germans.

Personal Involvement in Raids

For the DPs personal involvement seems to have been strictly limited to injury to oneself. Destruction of possessions or injury and death of friends do not seem to have been factors of importance in determining "personal involvement" for the DPs.

Of the DPs not injured, 72 percent reported habituation in contrast to 56 percent of those injured. Other indices of "personal involvement" do not seem to be correlated with habituation.

TABLE 23.—*Relation of personal involvement to habituation (All groups)*

Personal involvement	Reporting habituation (Percent)
	Percent
Injured in raid and possessions lost....	56
Not injured in raid and possessions lost	72
Injured in raids and friends hurt or killed.....	56
Not injured in raids and friends hurt or killed.....	72

Mental Preparation for First Raid

Those who expected the first raid tended to react with less fright than did those who were surprised. They also tended to become more habituated to continued bombing.

Whether mental preparation was an independent factor contributing to eventual habituation is not clear, since mental preparation not only correlates with habituation, but it also correlates with fright at the first raid. Mental preparation might be considered as one factor which determines the fear

reaction to the first raid, which in turn determines habituation.

TABLE 24.—*Relation of raid expectation to initial fright and habituation (All groups)*

Fright at first raid	Expected		Surprised
	Percent	Percent	
Not at all.....	31	15	
A little.....	42	32	
Much.....	27	53	
	100	100	
Became habituated.....	78	59	
Continued to fear.....	22	41	
	100	100	

There is some indication that mental preparation is itself in turn determined by the educational level of the subject, and by his information. Thus, those respondents with better education tended to be mentally prepared for the raids to a greater extent than those who were less educated, and those who listened to the Allied radio tended to be mentally prepared to a greater extent than those who did not listen.

TABLE 25.—*Raid expectation as related to education and black listening (All groups)*

	Expected first raid		Surprised
	Percent	Percent	
Primary education only.....	63	60	
Beyond primary.....	37	31	
	100	100	
Listened to Allied radio.....	43	35	
Did not listen.....	57	65	
	100	100	

Black listening is not correlated with education, so that both those factors may be considered as relatively independent. Thus 39 percent of those with primary education only and 40 percent of those with more than primary education listened to allied radio.

The only group which had sufficient women to permit any statistical analysis on the basis of sex was the Russian group.

In other words, fewer women than men tended to become habituated. This was partially a result of the women's greater tendency to react with fear to the first raid, but the data clearly indicate that

sex difference in itself was an important factor in the habituation frequency.

TABLE 26.—*Male-Female differences among Russian DPs*

Reaction to raids	Russian	
	Percent	Percent
No fright at first raid.....	22	39
A little fright at first raid.....	22	27
Much fright at first raid.....	56	35
	100	100
Habituated to later raids.....	64	92
Did not habituate.....	32	19
	100	100

Variety of Bombing Experience

The only information available on variety of bombing experience was whether or not the respondents had been strafed. More strictly speaking, therefore, this factor should be called "strafing experience." Specifically, a smaller percentage of the DPs who had experienced strafing became habituated than of those who had not: 68 percent of those subjected to some strafing report habituation, as compared with 75 percent of those not experiencing strafing.

Age

Age seems to have been correlated to a very minor degree with habituation. Thus men of 30 years and younger tended to report more habituation than men of 31 years and older (73 percent of the former and 67 percent of the latter).

On the negative side it appears that neither frequency of raids nor adequacy of shelters was correlated with habituation.

TABLE 27.—*Frequency of raids as related to habituation (All groups)*

Approximate frequency of raids	Reporting habituation (Percent)
5.....	68
20.....	73
73.....	73

There is a possibility, of course, that frequency may have an effect on habituation up to a certain point, after which a plateau is reached where raids have no discernible effect. However, even if this explanation is taken as the interpretation of the above figures, the data show that the effect of frequency is small.

Adequacy of anti-aircraft is not related to habituation; 35 percent of both the habituated and the non-habituated report "good" anti-aircraft protection.

ITALIAN FEAR REACTION CONTRASTED WITH THOSE OF OTHER GROUPS

To the question, "Did the first raid frighten you a little, much or not at all?", the three groups answered as shown in Table 28.

TABLE 28.—*Fear response of the National groups*
(In Percentage)

	French	French	Russians	Russian (Total)
Not at all frightened	15	22	33	34
Frightened a little	40	30	25	27
Frightened much	45	28	42	35
	100	100	100	100
Continued to fear raids	35	28	28	18
Became habituated to raids	65	72	72	82
	100	100	100	100

Because the Russian sample included women and, as has been shown, women showed a greater fear reaction to the first raid than did men, both the over-all and the male responses are given for the Russians.

On the question, "With the continuance of the raids, did you become more frightened or did you become used to them?", again the Italians showed greater fear patterns than did either the French or Russians.

On the question, "During the raids did you think that the raids would speed up your liberation, or were you uneasy because your life was in danger?" the Italians showed the most contradictory reaction, as shown in Table 29.

TABLE 29.—*Primary reaction to raids*
(In Percentage)

	Italians	French	Russians
Saw liberation—value of raids	77	90	91
Uneasy about own danger	2	2	3
Thought of both things	21	8	6
	100	100	100

RESISTANCE BEHAVIOR

Observation of Resistance

The three groups differed widely on the question whether foreign workers engaged in any resistance behavior; 86 percent of the Russians, 56 percent of the Frenchmen and 34 percent of the Italians said that they had observed resistance activity among the foreign workers. Participation in resistance

behavior correlates fairly well with the "political consciousness" of the three groups, but it would seem that the Russian figure is a bit high. The only resistance behavior measures available to this study were (a) attempts to escape, (b) attempts to get transferred out of industrial zones (although there is some reason to doubt that this is a measure of resistance behavior, as will be seen from further analysis), and (c) unauthorized absences. The correlations among the three groups for the above "resistance indices" appear in Table 30.

TABLE 30.—*Percent reporting resistance behavior*
(In Percentage)

	Reporting escape attempts	Reporting transfer attempts	Mean number unauthorized days
Russians	44	52	28.1
French	35	39	0.0
Italians	37	53	4.5

The data tell an interesting story regarding the effect of air raids on resistance. Even the Russians, who seem to have been the most enthusiastic about the Allied air raids and about resistance movements, did not all believe that air raids produced more resistance movements. This is shown in Table 31. On the whole, however, the DPs were of the opinion that the air raids increased resistance movements among the foreign workers.

TABLE 31.—*Effects of raids on resistance movements*
(In Percentage)

	French	Italians	Russians
Believing raids decreased resistance	24	5	12
Believing raids had no effect	22	19	6
Believing raids increased resistance	54	76	82
	100	100	100

As might be expected, the younger men "saw" more resistance than did the older men. Of the men 30 and younger, 70 percent reported seeing resistance, and of the men 31 and older, 60 percent reported seeing resistance.

Allied Propaganda

Among the French 71 percent, among the Italians 34 percent, and of the Russians 15 percent said that they listened to Allied radio programs. While the absolute values of these percentages may be inflated, the rank order among the three groups is what might be expected, inasmuch as most of the programs were designed for the French and Italians

rather than for the Russians, and since the French probably had easier access to radios than did the Russians.

The Allied radio was apparently a more effective medium in teaching the French than were literature and leaflets. Only 38 percent of the French reported seeing any leaflets addressed to the foreign worker, compared to 71 percent listening to Allied radio. For the Italian and Russian worker, however, it seems that the leaflets were very much more effective: 75 percent of the Italians and 69 percent of the Russians reported seeing leaflets addressed to the foreign workers. There does not seem to be a ready reason why the Italians and the Russians should have seen more Allied leaflets than the Frenchmen. One explanation is plausible, however. It may very well be that the Italian and Russian could not discriminate between a leaflet written in French and a leaflet written in German. As to actually seeing either a German or foreign-worker leaflet, the percentage differences become much smaller: 87 percent of the French, 99 percent of the Italians and 93 percent of the Russians reported having seen one or more Allied leaflets.

Escape and Transfer Attempts

There are some interesting relationships between the percentage of DPs who were exposed to Allied propaganda and their resistance behavior, as shown in Table 32.

TABLE 32.—*Escape and transfer attempts, as related to radio listening and resistance (All groups)*
(In Percentage)

	Reporting escape attempts	Transfer attempts
Neither listened to radio nor saw resistance activity.....	33	37
Radio alone.....	31	38
Saw resistance activity.....	39	51
Both.....	47	53

Seeing resistance activity was more effective in inducing escape behavior than listening to the Allied radio. There is, of course, the more likely alternative explanation that both seeing resistance activity and escape attempts were reflections of something more basic, such as personal contact with anti-German leaders or groups.

Table 33 shows that age and habituation to air raids are related to escape attempts and transfer to non-industrial zone attempts.

TABLE 33.—*Age and habituation as related to transfer and escape (All groups)*
(In Percentage)

	Reporting escape attempts	Transfer attempts
Men 20 and younger.....	41	50
Men 31 and older.....	31	47
Habituated group.....	36	43
Non-habituated group.....	43	55

As might have been expected, the younger men attempted to escape from Germany more frequently than the older. The difference, however, is much smaller for attempts to transfer to a non-industrial zone. The suggestion is made that "escape attempts" might be considered as more genuine resistance behavior than "attempts to get transferred to non-industrial zones." As will be shown, the latter form of behavior was more a reaction to downright fear than to the desire to resist.

The non-habituated group made more escape attempts than did the habituated group. But the difference in "escape attempts" (seven percent) between these two groups was substantially less than the difference in "transfer" attempts (12 percent).

PRODUCTION, ABSENTEEISM, AND RELATED FACTORS

Altogether, 79 percent of the French, 81 percent of the Italians and 82 percent of the Russians reported that the place where they worked was damaged by bombing. This pays a rather high tribute to the accuracy and effectiveness of the Allied air raids. No reliable information was obtained from this source on the duration of shut-downs on account of bombing.

Among those reporting air raid damage to their plants, 40 percent reported that in consequence of such damage their place of work was partially shut down, and 60 percent reported complete shut-down. All three groups were of the almost

TABLE 34.—*Reasons for drop in industrial production as a result of bombing*
(In Percentage)

Reasons stated	French	Italian	Russian
Lack of raw materials.....	73	92	70
Lowered morale.....	52	47	64
Absenteeism.....	40	31	60
Lack of sleep of workers.....	38	33	54
Other reasons.....	27	12	26

(Multiple answers allowed; percentages add to more than 100.)

unanimous opinion that air raids did interfere with production, even when plants were not in fact hit; 90 percent of the French, 98 percent of the Italians, and 96 percent of the Russians were in accord in this opinion. When asked for the reasons for this drop in production, the three groups again agreed fairly well.

The French and Russians ranked their reasons in the same order; the Italians showed one inversion. There seems to have been no doubt in the minds of the DPs that the lack of raw materials was the most important single factor. It is significant that a relatively high percentage of DPs mentioned absenteeism as a factor. There is no way of knowing whether the DPs referred to their own absenteeism or to that of the Germans. It is probable that they were thinking of both. The high frequency in "lack of sleep" should also be noted.

All three groups reported that some of their normal working time was taken up with clearance work after a raid. Sixty-one percent of the French, 86 percent of the Italians and 87 percent of the Russians reported to that effect. There was a remarkable agreement on the total number of days spent at such clearance work. The median number of days spent in this work were: 18.9 days by the French, 18.3 by Italians, 17.5 by Russians. This agreement on the number of days spent and the disagreement on whether or not they spent any time at all, is easily understood if it is assumed, first, that the less skilled workers were assigned the cleaning-up jobs, and secondly that the Russians and Italians were, on the whole, less skilled than the French. Considering the samples for each group as representative, it can then be concluded that the French DPs spent a median of about 11 days in clearance work (18.9 x 61 percent); the Italian DPs about 15 days, and the Russians also about 15 days.

The data concerning authorized and unauthorized absences on account of raids appear at first glance to lack any validity whatsoever. The Russians, who presumably had no opportunity to engage in any unauthorized behavior, and the Italians, who were also strictly controlled, reported a median of 8.5 days during 1944, while the French, who were in the best position to get away with time off, reported a median of zero days (60 percent of the French reported no unauthorized days off.)

Much the same story holds for the authorized days off due to bombing. The Russians reported a median of 3.9 days off during 1944, the Italians, a median of 5.6 days off, and the French, again, zero days-off.

MORALE AND BEHAVIOR OF GERMAN CIVILIANS

About 11 questions permitted the respondents to give their judgments about the morale and "will to resist" of the German civilian population. An analysis of these data indicates that, in the opinion of the DPs, Allied air attacks lowered the morale of the German, decreased his will to resist, induced absenteeism from work, encouraged criticism of the Nazi Party, and even resulted in resistance behavior on the part of the German civilian. After drawing this dark picture of German morale, the DPs agreed that the major reason for the German people's continued support of the war was Nazi police control.

Lowered Morale

As was indicated in the section on "Production and Absenteeism," all three groups of DPs listed lowered morale as second only to lack of raw materials among the reasons for decreased production on the German home front: 52 percent of the French, 47 percent of the Italians and 64 percent of the Russians mentioned low morale.

A question was designed to elicit a report on what the Germans talked about in the shelters while a raid was in progress and it was hoped that this might be of value in helping to determine the effect of bombing on morale. Unfortunately, however, since only about 38 percent of the French, and even fewer of the Italians and Russians (6 and 7 percent), were permitted to use German civilian shelters, few respondents could answer this question. Only the French data can provide sufficient cases for this analysis. Their replies are listed in Table 35.

TABLE 35.—Percent of French respondents indicating topics of conversation by Germans in shelters

	Percent
Desire for peace.....	60
Gossip about losses.....	31
Criticism of Party.....	25
Desire for reprisal.....	23
Criticism of defense measures.....	18

(Percentages total more than 100 percent, since multiple answers were permitted.)

It will be seen from this table that the only topic mentioned by more than half the group was desire for peace. Desire for reprisals received less than 25 percent of the votes, and ranks second from last in the group. War weariness was the most obvious characteristic of German shelter conversation. Most of the DPs, for example, asserted that even

before the Normandy invasion the Germans with whom they were friendly said that, as a result of bombing, the Germans felt that they could not continue with the war. Seventy-one percent of the French, 75 percent of the Italians, and 85 percent of the Russians so reported.

Correlated with this war weariness was the feeling of the Germans that the war was lost. The DPs stated that the Germans confided this anxiety to them. Seventy-one percent of the French, 75 percent of the Italians and 84 percent of the Russians so reported.

Another indication of the war weariness of the Germans as a consequence of bombings is the answers of the DPs to the question, "Did the bombings have an effect on the attitude of the Germans towards the Nazi Party?" Table 36 presents the data.

TABLE 36.—Effects of air raids on German attitudes toward Nazi Party

	French	Italian	Russian
Blame Party for starting the war	63	37	56
Blame Party for inadequate protection	22	27	20
Attitude did not change	17	23	16
Became more dependent on Party	4	17	24
Other reactions	7	11	3

(Percentages total to more than 100 percent; multiple answers permitted.)

All DPs agreed that the most noticeable German attitude-reaction to bombing was castigation of the Party for starting the war. Less than 20 percent of all the respondents reported that bombing did not change the attitude of the Germans toward the Party. Further, it is clear that the change which did take place was in the direction of criticism of the Nazis. Only 4 percent of the French, 17 percent of the Italians and 24 percent of the Russians reported that bombing knit the Party and the people closer together. No breakdown could be found which showed any differences among the respondents, except for the nationality group difference. Those with primary school education, those with more education, those under 30, those over 30, those with little bombing experience, those with much bombing experience, those who believed the shelters good, those who believed them bad—all give the same results for the above attitude changes.

In describing the reasons for the German's continued participation in the war effort, the most popular explanation among all the DPs was simply

that the Nazi police and control system had been too much for the Germans. The reasons listed in answering the question appear in Table 37.

TABLE 37. Reasons given for continued German participation in war effort

	French	Italian	Russian
Police control	79	57	41
Nazi education	37	41	45
Fear of Allied victory	33	40	35
German character	20	54	20
Other	4	3	0

(Percentages total more than 100 percent; some multiple answers were permitted.)

Both the Russians and the French chose the Nazi Party (either its open police control methods or its propaganda) as the main explanation of the German's persistent support of the war. Only 20-25 percent specified the German character. The Italians give much more weight to character. But in any event it is clear that the DPs believed that Nazi police controls kept the Germans in line. This clearly checks with the dominant reason stated by most interrogated German civilians for their continued participation.

Despite the fact that the DPs listed the police controls as the most effective reason for the continued docility of the German people, they also reported that the Germans did engage in resistance movements against the government.

Either the Russians let their enthusiasm for resistance movements run away with them or else this is another case where the Russians have an opportunity to ascribe "misbehavior" to the Germans. Over half of the Russians (57 percent) reported that they saw resistance activity among the Germans; 35 percent of the French and 16 percent of the Italians reported similarly. While the Russian report may seem a bit inflated, it is safe to conclude that the notion that no German resistance took place is incorrect.

There seems to be a correlation between intensity of raids and resistance. There are two indirect indices of intensity of raids: (1) injury to the re-

TABLE 38.—Indices of air raid intensity related to reports of German resistance

	Reporting German resistance (Percentage)
3 days off granted	36
13 days off granted	43
Above 42 days off granted	45
Respondent injured in raids	51
Respondent not injured in raids	41

spondents, and (2) number of authorized days off granted to the respondent because of bombing. Assuming these as valid indices of intensity of raids, the figures emerge as shown in Table 38.

There is one caution, however. The above two indices may not mean that the more severe raids induced more resistance on the part of the German civilian, but rather that the injured DP did more wishful thinking about German resistance. The present data do not permit a choice to be made between these two possibilities.

Another measure of the morale and disaffection of the German civilian on the behavior level is black-listening to Allied radio, prior to the invasion. The DPs were asked to estimate the number of Germans who had been engaged in black-listening. The median estimate given by the French was 33 percent, by the Italians 22 percent, and by the Russians 23 percent. Because the French were probably in a better position to observe the listening habits of the Germans, the French figure may be accepted as closer to the truth than either the Russian or Italian. As might be expected, these figures are lower than those obtained from the interviews with German civilians, 50 percent of whom reported that they had listened to Allied broadcasts (see Chapter 4, Part II, Volume II).

Another measure of the morale of the German people is civilian panic and pillaging during or after bombing. According to the DPs, panics were common; 68 percent of the French, 82 percent of the Italian and 93 percent of the Russians reported having witnessed panics during air raids, and stated that for the most part they were of German rather than foreign-worker origin.

TABLE 39.—Groups involved in air raid panics, according to DP reports
(In Percentages)

	French	Italian	Russian
Panic was among Germans.....	72	70	82
Panic among foreigners.....	6	8	6
Panic among both.....	22	22	12
	100	100	100

These panics were apparently serious; 81 percent of the French witnesses, 82 percent of the Italian, and 92 percent of the Russian reported panic-deaths; 89 percent, 88 percent and 92 percent reported panic-injuries.

The incidence of the panics does not seem to have been related to the frequency of raids (only the

French data can be used here, since the French are the only group providing a sufficient number of cases in the "saw no panic" category to permit a breakdown). Those experiencing many raids do not report panics more frequently than do those experiencing few raids.

There is some indication that the reports on panics were not altogether determined by wishful thinking on the part of the DPs. Those DPs who had been the most frightened did not tend to report having seen more panics, or more dead and injured. Thus, of the French who became habituated to the raids, 67 percent reported having seen panics, and of the French not habituated, 68 percent so reported.

Pillaging, on the other hand, was not as common as panic behavior. Both the Italians and the French agreed on this. Only 26 percent of the French and 27 percent of the Italians reported having witnessed pillaging. Only among the Russians did more than 50 percent report this type of behavior. The majority of the DPs of all groups did not ascribe pillaging to German civilians.

TABLE 40.—Groups responsible for pillaging as reported by DPs
(In Percentages)

	French	Italian	Russian
Pillaging was restricted to the Germans.....	48	62	37
Pillaging was restricted to the foreign workers.....	24	28	41
Pillaging was participated in by both groups.....	28	12	22
	100	100	100

The Russians were the only group which ascribed the first rank in pillaging to the foreign worker. (See "Validity of Answers," above.)

Just as in the case of panics, so in pillaging, frequency of raids does not seem to have been an important factor; 35 percent of the most frequently raided respondents, 39 percent of the less frequently, and 38 percent of the least frequently reported pillaging.

TYPES OF AIR RAIDS

Regular and Irregular

There was some disagreement among the three groups as to whether regular or irregular tempo of air raids caused the greater fear. The French were evenly divided in this opinion, 50 percent answering "regular" and 50 percent "irregular." The Italians leaned toward greater fear of the irregular tempo (55 percent as against 45 percent). The Russians

on the other hand overwhelmingly specified the irregular as more fearful (71 percent to 29 percent). Thus, in all three groups the unexpected irregular raids were considered more fear-evoking than the expected regular raids. The difference between the French and Russian opinion may be due to the fact that the French had better access to adequate shelters and, therefore, were in a better position to get out of danger no matter when it occurred, whereas the Russians generally had only limited access to shelters and were doubly exposed to unexpected raids.

Night versus Day Raids

All three groups agreed that night raids were worse than day raids; 77 percent of the French, 87 percent of the Russians and 97 percent of the Italians subscribed to this opinion. The fact that all three groups considered night raids the worse is not due to the differences in intensity of day and night raids, but is attributable to the day-night factor itself. (See discussion of day and night raids, Chapter 3, Part I, Volume I and in Chapter 2, this volume.)

Type of Bomb

There was general agreement as to which types of bombs had the greatest morale effect. The three groups ranked them as shown in Table 41.

TABLE 41.—Types of bombs reported as most dreaded
(1 indicates most dreaded, 5 least dreaded)

	French	Italian	Russian
Air mines.....	1	1	2
Large bombs.....	3	2	1
Phosphorous.....	2	3	3
Delayed action.....	4	4	4
Incendiary.....	5	5	5

It is interesting to note that "incendiary" bombs were mentioned last by all three groups. The incendiary bomb destroyed property, and thus did not much worry the DPs.

Strafing

It was reported by 48 percent of the French, 46 percent of the Italians and 79 percent of the Russians that they had experienced strafing. The reason for the discrepancy between the Franco-Italian group and the Russians is not readily apparent, unless it is assumed that the Russians, as the least favored nation in respect to shelter access, were still in the streets when the strafing aircraft arrived. However, from the absolute percentages noted above, it is apparent that all three groups irregularly experienced strafing.

Those who were strafed, however, split on the question whether strafing was worse than bombing, with a slight tendency to indicate greater fear of bombing; 40 percent of the French, 52 percent of the Italians and 44 percent of the Russians specified strafing as worse. (For a further discussion of strafing, see "Reaction of DPs to Bombing," above.)

Alerts without Raids

All three groups agreed that air raid alerts in themselves had a morale effect upon the people. The agreement is striking: French, 89 percent; Italian, 86 percent; Russian, 89 percent. There is some indication that this question was answered "projectively." That is, while the question inquired as to the effect on "people," the respondents tended to reply in terms of the effect on themselves. Thus, more of those who did not become habituated tended to report that alerts were effective than did those who became habituated (67 percent of the former group and 60 percent of the latter).

Accepting this as a "projective" answer, it must be concluded that alerts alone generally had a morale effect, which was greatest, however, on those who were not yet habituated to raids.

ADEQUACY OF AIR RAID PRECAUTIONS

Alerts

The three groups agreed that the alert system was good; even the Russians almost gave the Germans a majority vote on that—the nearest the Russians ever came to doing so; 64 percent of the French, 71 percent of the Italians and 50 percent of the Russians praised the alert system. However, all three groups believed that the rest of the ARP system was "poor and inadequate," as shown in Table 42.

TABLE 42. Estimates of shelter, relief and ARP adequacy
(In Percentage)

	French	Italian	Russian
Shelters poor.....	62	65	76
Relief poor.....	56	72	83
ARP poor.....	76	66	83

Shelters for the DPs

The DPs were not permitted access to the shelters in the same way as the Germans. Even the French were discriminated against, although not to the same extent as the Italians and Russians. It was reported by 62 percent of the French, 94 percent

of the Italians and 95 percent of the Russians that they were not permitted to enter the shelters on the same terms with the Germans.

EVACUATION

The first of the questions dealing with evacuation attempted to filter out those respondents who had not observed any evacuation; 718 French (89 percent of total), 397 Italians (91 percent), and 907 Russians (90 percent) answered this question. Of these, 88 percent, 94 percent, and 94 percent, respectively, stated that they had observed evacuation. These high percentages corroborate the broad scale of evacuations in Germany.

The French and Italians agreed that most of the evacuation was "forced." Thus 24 percent of the French and 26 percent of the Italians said that all the evacuations with which they were familiar were of this character, while 59 percent of the French and 57 percent of the Italians reported that they had witnessed both voluntary and forced evacuation. Only 17 percent of the French and 17 percent of the Italians reported that all the evacuations were "voluntary." The Russians, on the other hand, told a different story. Only 22 percent stated that all of the evacuations were forced, 48 percent reported both types, and 30 percent reported only voluntary evacuations. This last percentage is significantly different from the corresponding percentages for the other two DP groups. However, as is indicated elsewhere, there is reason to believe that the Russians in reporting on the German people tended to be far more critical than either the French or Italians. The hypothesis is suggested there that the Russians regarded voluntary evacuation as cowardly, and were therefore more prone to report voluntary evacuations than either of the other two groups. It is therefore safe to assume that the French and Italian figures are more accurate than the Russian figures, on this point.

All three groups agreed that evacuations were badly organized; 72 percent of the French, 79 percent of the Italians and 86 percent of the Russians expressed this opinion.

In indicating how the Germans reacted to the evacuation of members of their families, 35 percent of the French, and 30 percent of the Italians reported that those who stayed at home were adversely affected, while 80 percent of the Russians so stated. Again the Russians had an opportunity to say that the Germans did not react "properly." On the other hand, 28 percent of the French, 15 percent of the Italians and 13 percent of the Rus-

sians reported that those who remained at home were happy in the knowledge that their families were safe. The rest reported either that the effect was mixed (French, 8 percent; Italian 18 percent; Russian 7 percent), or that there was no observable effect (French, 29 percent, Italian, 18 percent, Russian, none).

The French were in the best position of the three DP groups to observe and pass judgment on the personal reactions of the German civilians. The French figures on this question are therefore probably more reliable than either of the other two groups.

All three groups agreed that the evacuees did not get along well with their hosts; 78 percent of the French, 66 percent of the Italians and 91 percent of the Russians subscribed to that statement.

BLACK MARKET ACTIVITIES

Majorities of all three groups agreed that the air raids increased black-market activity in Germany in the following percentages: French 60 percent; Italians 89 percent; and Russians 63 percent.

Only among the Russians was there a sizable group which believed that the raids decreased black-market activity. The percentages were: French 5; Italians zero; and Russians, 30.

Only among the French was there a sizable group which believed that the air raids had no effect on the black-market; 35 percent of the French so reported, as compared with 11 percent of the Italians and 7 percent of the Russians.

When all national groups are combined, the results show that 68 percent believed raids increased black markets; 14 percent believed they decreased these dealings, and 18 percent said there was no effect.

The question of whether the black-market activity was increased or decreased was not a simple question capable of being answered by any and every DP. In the first place, the DP must have been in a position to observe the black-market, and of the three groups there is *a priori* reason to believe that the French group was the most favored in this respect. In the second place, it is assumed that the more educated and sophisticated reporter was in a better position to make a valid judgment than the relatively uneducated. As a check on these assumptions a breakdown was made in terms of education, with the results as shown in Table 43. Apparently, education does seem to have made some difference in these judgments, though the differences are not great.

TABLE 43.—Educational level as related to observation of black marketing
(In Percentages)

	Primary or heading only	Revised primary
Increased black market	70	65
Decreased	15	14
No effect	15	21
	100	100

An examination of the effect of education in each of the national groups was made. The interesting observation seems to be that the French results are sensitive to an educational breakdown, while the Russians and Italian results do not change at

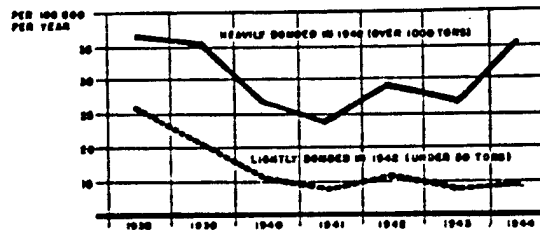
all when broken down according to education.

The suggested explanation is that neither the Italians nor the Russians were in any position to make observations on the activities of the black market in Germany. Only the French were in any position to do so. Since valid observation of black market activities is correlated with education, differences between the more and less educated respondents might be expected among those who did have an opportunity to observe the black market, and no differences might be expected among those who did not have such an opportunity. From all these considerations it is suggested that the reports of the "educated" French respondents are probably the most valid.

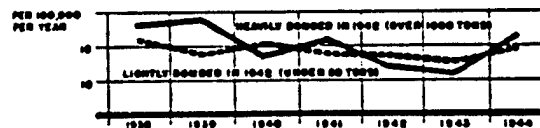
CHART II

VARIATIONS IN SUICIDE RATES AND BOMBING CONDITIONS IN GERMAN CITIES

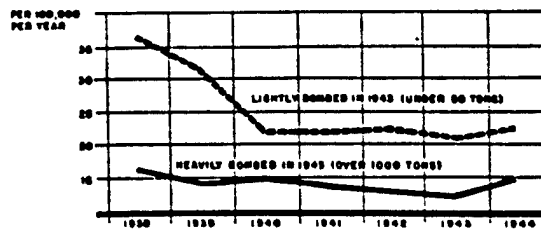
PORT CITIES WITH HIGH SUICIDE RATES



LARGE CITIES WITH LOW SUICIDE RATES



LARGE CITIES NOT BOMBED BEFORE 1943



LARGE CITIES NOT BOMBED BEFORE 1944

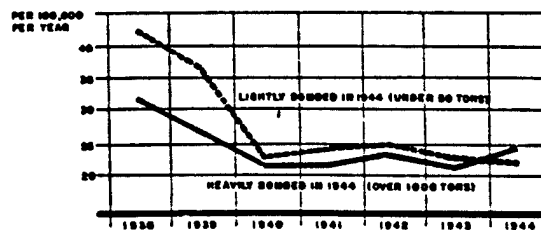


CHART - 2

CHAPTER 4

THE RELATION OF BOMBING TO SUICIDES

LOW WARTIME SUICIDE RATES

In the past the suicide rate of nations has invariably decreased during war time.¹ If the morale of a nation is high, there is generally "no time during war to indulge in personal or imaginary worries,"² and persons who in peace time might commit suicide "come out of their shells" and become part of the thrilling enterprise of inflicting defeat upon the enemy or defending the homeland. In the first World War the suicide rates of neutral European nations as well as warring nations decreased. This fact, along with the observed decrease in suicide, in times of revolution, indicates the importance of inter-group conflict in drawing the individual's attention away from his own personal problems. As indicated later in this report, instability and change in peace time create a situation leading to high suicide rates, but when countries are involved in war or revolution the influence of "having a cause," "taking sides" as a part of a group enterprise and the consequent development of high morale, or forming an *esprit de corps* offsets the individualizing aspects of such chaotic times. This will be important in explaining the influence of bombing German cities. If the bombing could destroy this tendency of the group to take the individual away from his own small realm of worries, and counteract the lift he gets from being an enthusiastic member of the group enterprise of war, the suicide rate should increase and morale should decrease.

EXPECTED EFFECTS OF WAR ON CERTAIN TYPES OF SUICIDE

Of the three types of suicide which Durkheim³ described in his classical study only one, suicide *altruiste*, might be expected to increase in wars as

they have been fought in the past. Only this type might indicate high group morale. In this type of suicide, which has become rarer in modern times, the individual is so submerged in the group that his interest in his *possessions* and even in his own life are secondary. This leads to placing a low evaluation on life which may be coupled to a social mandate to suicide. Suicide *altruiste* is common in armies and highly regimented societies. The Japanese commits *kara-kiri* when his honor is impugned and in this action, perhaps to a lesser extent than in the Indian custom of *suttee*, there is a direct mandate to suicide. The Nazis in Germany also tried to establish this type of reaction to defeat as a manifestation of high morale. Group values were to be placed above the individual's own life.

Most suicides committed in Germany cannot be classified as *altruiste*. The wave which swept over Germany after the Potsdam agreement was announced would almost all have been classified by Durkheim as *suicide anonique*.⁴ Suicide *anonique* occurs when there are sudden changes in group values and in the equilibrium of social life which disrupts social bonds. The increase in suicides which characterizes both depressions and periods of prosperity is due in large measure to suicide *anonique*. When Dublin and Bunzel⁵ in their monograph explain why people take their own lives by saying, "What tries men's souls is the prospect of being deprived of the accustomed comforts, friends and surroundings and of accepting in their place conditions that are decidedly inferior," they are describing the basic elements in suicide *anonique*.

Egoistic suicide, Durkheim's third type, like suicide *anonique*, is a form which might be increased by defeat at war, or helplessness brought about by bombing. *Egoistic suicide* is high where group bonds are weak or where the individual is "on his own." Protestants commit suicide more frequently than Catholics in all countries because, on the positive side, Catholicism relieves the individual from certain strains by offering him a means of appeal to authority and of resignation to his lot and, on the negative side, by not "forcing him to be free" and brave⁶ in the face of adversity as does the Protestant faith. Moreover, advanced educa-

¹ Germany's 1919 rate of 15.3 suicides per 100,000 inhabitants was the lowest rate ever recorded for the country. Data for the United States show that rates decreased in both the Civil and World Wars. In 1909 the rate per 100,000 for the nation was 14.3 after which it dropped to 10.2 in 1943. The 1913 rate in the United States was 16.2 after which it dropped to 11.5 in 1919. It did not rise again until 1927. Data for other countries indicate that wars are associated with decreasing suicide rates.

² Dublin, Louis I. and Bunzel, Paula. *To Be or Not to Be—A Study of Suicide*, New York: Harrison Smith and Robert Haas, 1933, p. 110.

³ Durkheim, Emile, *Le Suicide*, Paris: F. Alcan, 1907, New Edition 1960.

⁴ *Time Magazine*, Vol. LVI, August 29, 1945, p. 42.

⁵ Dublin, Louis I. and Bunzel, Paula, *op. cit.* p. 101.

⁶ This is an expression of Rousseau used by Parsons in explaining Durkheim's types of suicide. Parsons, Talcott, *The Structure of Social Action*, New York: McGraw-Hill Book Company, 1937, p. 323.

tion may have the influence of "freeing" one from authoritarian beliefs and educated persons are more apt to try to control their destinities and less apt to resign themselves to the imaginary powers of a supreme being or to group influences. Thus the suicide rates of educated persons, who according to Durkheim often commit egoistic suicide, are higher than those of uneducated persons.

The larger the family, the less the chance the parents will commit suicide, and married persons are much less apt to commit suicide than single persons. Persons without family ties are apt to commit egoistic suicide. Thus the breaking of family ties by the evacuation of children and segments of families from bombed cities might be expected to result in either suicide of the egoistic or anomic types. In general, low morale should be associated with these two types of suicide.

HIGH SUICIDE RATE OF THE MIDDLE CLASSES

After studying the data on economic and social status in relation to suicide rates the author came to the conclusion that suicide in the middle classes may typically combine the three forms of Durkheim. Why do the professional and business classes have such high rates in normal times? The professions impose terrific pressure on the individual to improve his competency and to "get up" in the world in accordance with high standards set by the profession. Of the free professions only the clergy have low rates. The professional man like the business man is driven to "get up" or admit he is a failure, in which case he might commit a sort of altruistic suicide without the usual ceremony. The drive and the social bond-tearing mobility of present day society become so great that interest in any but the closest relatives may be lost. This prevents the formation of bonds which Durkheim would call "preventers" of egoistic suicide. If the professional or business man works in a bureaucracy where, although his heart and soul are in his work, his family and neighborhood ties are inconsequential to that post, a non-familistic adjustment develops and egoistic suicide may be high. Thus egoistic suicide is increased by the fact that modern governmental, business, and industrial organizations stress individual performance and competence; family connections are subordinated in the resulting high mobility as individuals attempt to find their places in the occupational and professional structure.

Moreover, in Western culture there is a characteristic value orientation which may partially ex-

plain the high rates of suicide among business and professional men. The rationalistic orientation of these groups in our society (and this holds for English and German society) do not permit one to blame fate or chance for one's success or failure. Individual responsibility is a basic orientation which makes it difficult for individuals to resign themselves to adversities. In general, this is confirmed by the position of Miner as described in his statement that the professionals and those of independent means, being "two groups most affected by the individualistic and rationalistic movement, have high suicide rates, while farmers and other outdoor manual laborers, groups generally conservative in their habits of thought, show low rates. It is, therefore, quite probable that decrease in group spirit is a factor in the increase in suicide rates."⁷

When an acute depression or sudden period of prosperity descends upon the cultures of countries so basically similar as those of the United States, Germany, and England, many suicides may be expected in addition to the two other types mentioned.⁸

HIGH SUICIDE RATES IN GERMANY AND JAPAN

Germany⁹ and Japan have very high suicide rates. In Germany the number of suicides for the country per 100,000 inhabitants in 1930 was 27.3 as compared with 15.6 for the United States. Among the Japanese it was 19.3 for 1921-1925. Czechoslovakia, Austria, and Switzerland, all heavily populated with Germans, have high rates. The Irish Free State and Spain have low rates, only 2.8 per 100,000 in 1930 for the former and 3.5 for the latter. Protestant Ireland has the slightly higher figure of 4.9.

Particularly significant for our study is Miner's observation that "in the center of Europe from the Northeast of France to the eastern borders of Germany a suicidigenous area exists where suicide reaches the maximum of its intensity and around which it takes a decreasing ratio to the limits of the northern and southern states."¹⁰

⁷ Miner, John Rice, "Suicide and Its Relation to Climate and Other Factors," *The American Journal of Hygiene*, Monographs series No. 2, 1922, p. 11.

⁸ For suicides from 1910-1931 for 10 large cities in the United States, Dublin and Bunzel, op. cit. found that the business index and the suicide rates were related as expressed by the correlation coefficients 0.47 and 0.55. The better the economic conditions the lower the rates. The lower figures are based upon units of deviation. The higher figure is based upon annual data. It must be emphasized that Durkheim found that suicide is no function of poverty because the poorest people often have the lowest rates and suicides increase in periods of great prosperity.

⁹ In the United States the German born population has the highest rate and in 1910 the State of Pennsylvania reported the amazing rate of 80 suicides per 100,000 for German born males. Dublin and Bunzel, op. cit.

¹⁰ Miner, John Rice, op. cit., p. 15.

Regional Differences in German Suicides

There are great variations even in Germany, with Saxony and Prussia having the highest suicide rates. Heavy industrial and Catholic areas have low rates. Port cities and others, where business, clerical, and professional people have importance and mobility is high, show high rates. In 1939 among the original German cities having over 100,000 inhabitants, Berlin reported a suicide rate of 42.1 per 100,000 and Hamburg a rate of 41.6; the city having the lowest rates was Bochum with 10.5. Since rates of large cities are remarkably constant through the years, the great variation to be noted in Chart II must be reckoned with in any interpretation of the influence of bombing on these rates.

German Statistics on Wartime Suicides

The number of suicides and total population for the cities of Germany of 100,000 or more are reported weekly in the *Reichsgesundheitsblatt*, by the National Health Agency. Rates are available for all weeks up to the last part of 1944.¹¹ These figures include only the German civil population who live in and have established their residences in the cities reporting. Foreign workers are not included.

Any study of the effects of bombing on suicide rates in Germany is fraught with grave difficulties. The rates are calculated on population data about which too little is known. Thus although males and aged persons are much more prone to commit suicide, we do not have exact figures which can be used to standardize suicide data with regard to sex and age. Once the groups in the armed forces are eliminated, it is assumed that evacuation to avoid bombing removed more women and children than other groups. If this assumption is correct, evacuation should increase the suicide rates. On the other hand, evacuation of the aged, particularly the aged men, should have decreased the rates. Another difficulty with the data is the fact that after November 1942¹² Jewish suicides are omitted from the weekly reports. It is known that even before the Nazi persecutions the Jews of recent years had relatively high rates.¹³ What the shuffling of various religious groups did to the rates is unknown. Also it is claimed that persons who were persons

non gentia to the Nazis were often eliminated and reported as suicides.

ANALYSIS OF THE RELATION BETWEEN BOMBING EXPERIENCE SUICIDE RATES

Since the population data of the cities studied do not indicate the influence of bombing in terms of evacuation and mortality on the age and sex structure of the 56 German cities of over 100,000 population in 1938, the following procedures were used. Since the rates for bombed and unbombed cities were relatively the same, a sort of negative hypothesis was drawn. It was assumed that if bombing was not associated with increased rates, when the known facts about the population would lead the investigator to the conclusion that it should increase, bombing *per se* did not increase the suicide rate. It is dubious that the data at hand are sufficient to prove that bombing depressed the suicide rates.

In so far as possible, cities with similar suicide rates and very different bombing experiences were compared. Since the cities had been sampled in the cross-section Interview Study of Morale on the basis of food ration cards, the age-sex composition as of May 1945 could be estimated. These data, taken together with detailed studies carried on during June and July in the various cities, proved that bombing and evacuation increased the proportion of adults and males. Since older people and males are more likely to commit suicide than younger people and females, we should assume that if after a city is bombed the crude suicide rates remain the same, the standardized rate would be lower. There seems no reason for assuming that the proportion of Jews and Catholics would be changed on account of bombing, and we have no knowledge of factors which would make for fewer persons who would be potential suicides remaining in the bombed cities. Of course, there is the possibility (in line with the above reasoning concerning the value orientation of groups prone to commit suicide) that those who were more individualistic, secularized, or rationalistic might take matters in their own hands and leave the bombed cities. However, movement was not free and we have no proof that this happened to a great extent.

In Table 44 and 45 and Chart II the suicide rates of cities which received heavy bombings and had similar suicide rates in 1938 and 1939 are compared with those that received light or no bombings in 1942. By modern standards no German cities were heavily bombed in 1941. The cities classified

¹¹ Rates for 1944 have been estimated as follows: The published figures were available up to November. November and December rates were calculated on the basis of the experience for 1941 and 1943. The proportion of all suicides committed in 1941 and 1943 which were committed in November and December of these years was used as a basis for projecting the rates of 1944.

¹² Information from Dr. H. Rall, Head of the Statistical Office of Hesse. The earlier rates of Jews as indicated by Durkheim were lower than Protestants and Catholics, but in later years, even before the Nazis came to power, the Jewish rate had exceeded the other two groups in many parts of Germany.

as low suicide rate cities are those with less than 20 suicides per 100,000 population per year for 1938 and 1939. Those classified as high suicide rate cities are those with more than 25 suicides per 100,000 per year for 1938 and 1939. Heavily bombed cities are those which received more than 1,000 tons of bombs in a given year. Lightly bombed cities are those which received less than 50 tons of bombs in a given year. When Tables 44 and 45 and Chart II are taken together, there seems to be no definite proof that bombing increases the suicide rate immediately. Among heavily bombed port cities there is a slight rise in 1942, but the lightly bombed cities with high suicide rates also registered a slight rise in 1942. Population fell rapidly after the 1942 bombings of Hamburg, Bremen, and Kiel. The increase in the number of suicides in 1942 in these cities is greater than for any of the other groups.

Since most of Germany's heavy industrial areas had lower suicide rates than other areas because of the presence of both unskilled workers and Catholics, most of the areas which were heavily bombed in 1942 and 1943, with the exception of the port cities, analyzed in Table 44, have low rates. There was, therefore, no homogeneous group of unbombed and bombed cities for the year 1943. These low suicide rate cities were included in Table 45 and Figure II as unbombed cities of low rates in 1942. When the high rate cities which were not bombed in 1943 or previously are compared with these low rate cities which were heavily bombed in 1943, bombing does not seem to decrease the spread between the rates in the two groups as it would if it were increasing the rates of the bombed cities. According to reasoning explained above, it may be concluded that 1943 bombing did not increase the rates in 1943.

Those cities unbombed or lightly bombed at the beginning of 1944 all had relatively high suicide rates in 1938 and 1939. When those which were heavily bombed in 1944 were compared with those which were lightly bombed during the same year, there is no great spread in the rates for the previous years (Figure II and Table 47). The rates of both the heavily and lightly bombed cities increase slightly. If the National Health Agency, which furnished the suicide and population statistics, had not been bombed out the cumulative effect of the bombings could have been studied in 1945 data.

SUMMARY

Since the cross-section study and close personal contact with the German population in May, June,

and July in 1945 convinced most investigators of the survey that the bombing of the German cities had a tremendous influence in decreasing the average German's morale in the sense of decreasing his desire to continue the war, the question must be posed: Why did not the bombings increase Germany's suicides? Aside from the possibility that many persons who were potential suicides went to rural villages where they may later have committed suicide, there are no doubt a good many reasons for this. It is now obvious that the German defeat, in which bombing played an important role, is directly related to a great increase in the present suicide rate. To many with whom the author talked there appeared no other adjustment available.¹⁴ This appraisal of the situation is only a recent one because no one knew whether the terms as related to individual interests would be better or worse. However, it must be recognized that, terrible as the bombings were, they created a certain amount of community spirit in addition to increasing the desire to give up. While bombing made people willing to sacrifice certain loyalties to the national group, or at least, its temporary leadership, the reverse could and did often happen "under fire" in the narrower and more concrete groups in neighborhoods and communities. However, it must not be overlooked that once the intensity of bombing went beyond certain bearable limits, the individual tended to be thrown back upon himself and his problems, once naked survival became the only issue.

Another element to be considered is the excitement and frequently the fear involved in the bombings. There is reason to believe that the act of suicide, especially Durkheim's egoistic suicide involves considerable contemplative action. During the years of bombing there was a tenseness and a frequency of emotional excitement which were not in harmony with brooding. Many made their stays in the bunkers social occasions, and after each bombing each person whose property was untouched

¹⁴ Dr. Hjalmar L. Dunn, Chief of the Division of Vital Statistics, Bureau of the Census, U. S. Department of Commerce, after studying the figures and tables presented in this report remarked that outside was only one of the many situations which individuals may meet to whom accustomed with what seems to them an impossible situation. He maintained that instances of forced conflict were comparable to the adjustments persons make in case of bombing or defeat. The conflicts in the later case would be based upon the discrepancy between what one was accustomed to and that one must have for a decent existence and what one actually has. He began as follows: "If we are introverts by nature, we might be able to keep such conflicting thoughts into separate compartments of our mind, lock them in a secure, and then, forgetting the prisoners in the dungeon cells, live pleasantly in the luxury of a forced peace. Or, if we are of those who can sustain their own and feel salvation's peace descended upon us, we might be able to pass the problems to the sturdy shoulders of another—or to the listening ear of a benevolent God, and then avoid the conflict. If neither of these two pathways of escape is open, we must face our problem honestly and squarely with an unclouded mind. Adjustment! No other way is open. That is, except suicide, which is nature's solution." From "Human Relations as a Public Health Problem." Paper delivered before Western Branch, American Public Health Association at Denver, June 24, 1944.

ed had the opportunity and felt the obligation to help others. Those who were bombed out had many fellow commiserators.

With the end of the war the futility of life on any level has struck many. This is particularly true of the returning soldier who is now possibly the highest potential suicide. Many returned to destroyed homes and dead families. Uncertainly prevailed. No one knew how far the feared Russians would come, and rumors were rampant about starvation and freezing in the coming winter. The excitement of war was gone. Every man had to try to work out his existence, and as a result of the war and the bombings, the great middle class, among whom the suicide rate is high at all times, have lost almost everything except their dread of

falling into the proletarian class. To a realistic German who tries to envision his future welfare within the peace terms and administrative system brought by defeat, there is ample ground for discouragement. The fear of Russia among the middle classes and the widespread belief that she will not allow a non-Russianized Germany to rise, is depressing. The peace terms proved one common post-war rumor to be false; namely, that the United States and England would fight Russia. With administrative mechanisms separating Germany into zones which are in some respects to be self-contained and most of which do not produce enough food, few can see anything but economic chaos.

TABLE 44.—Large German port cities with high suicide rates^a heavily bombed^b in 1942 compared with similar cities lightly^c bombed in 1942 (See Chart II).

City	Suicide rates per 100,000							Bomb loads (U. S. tons)			
	1938	1939	1940	1941	1942	1943	1944	1942	1943	1944	1945
Hamburg.....	40.6	41.6	28.4	25.5	31.5	30.4	35.7	2,278	11,215	14,052	13,558
Bremen.....	24.2	23.8	25.8	18.0	22.4	19.4	34.6	5,013	6,852	7,209	7,108
Kiel.....	37.8	27.0	26.5	28.5	24.7	22.1	28.1	1,033	3,288	11,969	9,934
Total.....	37.7	37.4	27.7	24.5	29.0	27.3	34.2	8,324	21,355	33,250	30,597

LIGHTLY BOMBED											
Koenigsberg.....	30.1	20.6	15.4	16.2	17.7	16.5	19.1	.....	.....	1,047	.....
Stettin.....	20.9	18.2	16.3	12.2	14.6	10.1	8.14	.....	950	4,968	.....
Total.....	26.0	19.6	15.9	14.2	16.1	13.3	14.3	.....	950	6,015	.....

^a Average annual number of suicides for 1938 and 1939 per 100,000 were over 25.

^b Received over 1,000 tons of bombs including high explosive and incendiary.

^c Received none or less than 50 tons of bombs. Loads for cities receiving less than 50 tons were arbitrarily counted as zero.

TABLE 45.—Large German cities with low suicide rates^a heavily bombed in 1942 compared with similar cities lightly^b bombed in 1942
(See Chart II)

City	Suicide rates per 100,000								Bomb loads (U. S. tons)			
	1938	1939	1940	1941	1942	1943	1944	1942	1943	1944	1945	
Cologne.....	17.2	21.5	14.0	17.6	15.3	10.8	19.1	2,817	8,054	25,908	7,514	
Essen.....	17.6	14.1	13.0	13.1	7.04	7.96	17.0	5,027	9,072	19,095	7,641	
Duisburg.....	18.3	19.3	14.0	14.6	8.35	11.4	15.4	2,230	8,716	22,082		
Duesseldorf.....	19.7	18.0	14.9	16.5	13.5	12.5	13.1	2,221	7,885	9,366	961	
Total.....	18.1	19.4	13.9	15.4	11.6	10.5	16.2	12,345	34,327	76,811	16,156	
LIGHTLY BOMBED												
Wuppertal.....	21.4	17.0	17.5	20.7	15.5	9.47	19.5		4,080	855	2,058	
Gelsenkirchen.....	12.4	9.41	9.94	8.83	11.0	9.71	11.5		3,850	14,261	6,444	
Bochum.....	15.0	10.5	13.6	10.7	9.42	10.2	16.0		2,754	5,948		
Hagen.....	11.1	15.3	16.3	14.7	14.7	16.6	22.3		1,288	2,106	1,573	
Solingen.....	19.7	19.6	19.7	12.0	11.8	15.3	15.2		1,490	2,265	176	
Muelheim.....	14.8	11.7	18.0	16.2	8.21	18.2	9.62		1,540			
Muenchen-Gladbach.....	17.2	14.1	7.87	6.3	15.2	9.83	7.77		2,635	4,212	800	
Total.....	16.6	13.7	14.4	13.3	12.3	11.9	13.3		17,907	29,687	11,451	

^a Average annual number of suicides for 1938 and 1939 per 100,000 were under 20.

^b Received over 1,000 tons of bombs including high explosive and incendiary.

^c Received none or less than 50 tons of bombs. Loads for cities receiving less than 50 tons were arbitrarily counted as zero.

TABLE 46.—Large German cities^a not heavily bombed before 1943 which were heavily^b bombed in 1943 compared with similar cities lightly^c bombed in 1943 (See Chart II)

City	Suicide rates per 100,000								Bomb loads (U. S. tons)			
	1938	1939	1940	1941	1942	1943	1944	1943	1943	1944	1945	
Wuppertal.....	21.4	17.0	17.5	20.7	15.5	9.47	19.5		4,080	855	2,058	
Gelsenkirchen.....	12.4	9.41	9.94	8.83	11.0	9.71	11.5		3,850	14,261	6,444	
Bochum.....	15.0	10.5	13.6	10.7	9.42	10.2	16.0		2,754	5,948		
Hagen.....	11.1	15.3	16.3	14.7	14.7	16.6	22.3		1,288	2,106	1,573	
Solingen.....	19.7	19.6	19.7	12.0	11.8	15.3	15.2		1,490	2,265	176	
Muelheim.....	14.8	11.7	18.0	16.2	8.21	18.2	9.62		1,540			
Muenchen-Gladbach.....	17.2	14.1	7.87	6.3	15.2	9.83	7.77		2,635	4,212	800	
Total.....	16.6	13.7	14.4	13.3	12.3	11.9	13.3		17,907	29,687	11,451	
LIGHTLY BOMBED												
Weermuende.....			27.9	12.5	17.0	15.3	18.8			1,415		
Bielefeld.....	27.8	29.9	25.0	30.2	16.9	15.3	29.9			2,175	2,281	
Wuerzburg.....	25.2	27.5	15.6	16.0	24.5	19.2	18.6				1,340	
Wiesbaden.....	33.3	28.1	16.4	15.6	39.2	29.8	20.4				2,532	
Braunschweig.....	37.9	32.5	26.1	21.0	20.6	21.6	19.0			870		
Karlsruhe.....	23.2	26.9	17.0	32.6	17.2	22.2	15.9			16,134	1,585	
Dresden.....	42.5	32.8	14.5	16.4	11.8	7.42	12.1			5,455	4,472	
Chemnitz.....	48.6	43.8	33.5	34.5	36.2	42.1	32.3			124	6,342	
Plauen.....	46.7	57.7	40.5	37.7	45.7	32.7	41.3			176	5,732	
Koenigsberg.....	30.1	20.6	15.4	16.2	17.7	16.5	19.1			100	2,922	
Dresden.....	29.3	30.6	31.4	22.8	23.5	24.2	25.0			1,047		
Halle.....	35.4	33.0	19.2	23.1	35.8	26.5	28.6			927	1,212	
Magdeburg.....	32.3	32.6	26.3	25.8	24.1	22.8	33.2			247	2,057	
Potsdam.....		26.3	16.7	16.0	20.5	16.2	14.2			6,182	7,116	
Totals.....	36.8	32.2	22.0	22.1	23.1	21.1	22.4			34,907	37,591	

^a Bombed cities have rates which in 1938 and 1939 were under 20 and unbombed cities have rates which were over 25 suicides per 100,000 inhabitants. There were insufficient cities for similar comparisons of cities with similar suicide rates with different bombing experience for 1943.

^b Received over 1,000 tons of bombs including high explosive and incendiary.

^c Received none or less than 50 tons of bombs. Loads for cities receiving less than 50 tons were arbitrarily counted as zero.

TABLE 47.—Large German cities^a not heavily bombed before 1944—heavily bombed^b in 1944 compared with similar cities lightly bombed^c in 1944 (See Chart II)

City	Fatality rates per 100,000							Bomb loads (U. S. tons)			
	1938	1939	1940	1941	1942	1943	1944	1942	1943	1944	1945
Wewernünde.....	.....	.....	27.9	12.5	17.0	15.3	18.8	.....	.....	1,415	.....
Bielefeld.....	27.8	29.9	25.0	30.2	16.9	15.3	29.9	.....	.....	2,175	2,281
Wiesbaden.....	33.3	25.1	16.4	15.6	39.2	29.5	20.4	.....	.....	870	2,532
Karlsruhe.....	23.2	26.9	17.0	32.6	17.2	22.2	15.9	.....	.....	5,455	4,472
Koenigsberg.....	30.1	20.6	15.4	16.2	17.7	16.5	19.1	.....	.....	1,047	.....
Dresden.....	39.3	30.6	31.4	22.8	23.5	24.2	25.0	.....	.....	927	1,212
Magdeburg.....	32.3	32.6	26.3	25.8	24.1	22.8	33.2	.....	.....	6,182	7,116
Totals.....	30.7	27.4	21.5	20.7	22.1	20.4	22.8	.....	.....	18,071	17,613

LIGHTLY BOMBED											
Wuerzburg.....	25.2	27.5	15.6	16.0	24.5	19.2	18.6	.....	.....	.....	1,340
Dresden.....	42.5	32.8	14.5	16.4	11.8	7.42	12.1	.....	.....	124	6,342
Chemnitz.....	48.6	43.8	33.8	34.5	36.2	42.1	32.3	.....	.....	176	5,732
Plauen.....	46.8	57.7	40.5	37.7	45.7	32.7	41.3	.....	.....	100	2,922
Halle.....	36.4	33.0	19.2	23.1	35.8	26.5	28.6	.....	.....	247	2,057
Potsdam.....	.....	26.3	16.7	16.0	20.5	16.2	14.2	.....	.....	55	.....
Totals.....	42.1	36.3	22.0	23.7	24.4	21.7	22.5	.....	.....	702	18,393

^a Average annual fatalities for 1938 and 1939 per 100,000 were over 35.

^b Received over 1,000 tons of bombs including high explosive and incendiary.

^c Received none or less than 50 tons of bombs. Loads for cities receiving less than 50 tons were arbitrarily rounded to 0.

CHAPTER 5

THE EFFECTS OF ALLIED AIR ATTACK ON THE MORALE OF THE GERMAN LAND ARMIES¹

INTRODUCTION

It has seemed desirable to append to the civilian morale study a memorandum summarizing the effects of air attack upon the morale of the German land armies. The original intention was to present a definitive statement of the effect of air attack upon the morale of German troops. This statement was to have been based upon a systematic examination of all pertinent research studies in the files of the Allied intelligence agencies. Examination of the intelligence files showed, however, that no systematic scientific research had been done.

The intelligence files contain substantial numbers of interviews with prisoners of war, but unfortunately these interviews are essentially of an anecdotal rather than scientific character. No quantitative analysis of this material is possible, because its character does not permit analysis. The interrogations did not represent a properly selected sample of a clearly defined population. Moreover, the same interviewing techniques and questions were not used for all persons. Uniform procedures in interviewing are necessary for any systematic and accurate analysis. Consequently, all that can be done at this time is to present a summary of all the various kinds of morale effects that air attack produced upon the German army, as reported by Allied intelligence. No final appraisal of these effects will be attempted. They are of great variety, and will be presented topically. Pertinent supplementary references to the problem have also been drawn from top-level U. S. Strategic Bombing Survey interviews.

The problem of the morale of the German Air Force in relation to Allied air attacks is qualified by so many factors absent from the situation of the German land armies, and is in so many respects unique, that it cannot be contained within the framework of this report.

SUMMARY

The ranking of Allied air attacks among the factors that affected the morale of the German land

¹ Other aspects of the effects of bombing on German Armies are considered in the report of the Division of Military Analysis of the United States Strategic Bombing Survey.

armies is a moot and largely technical question. There is no general agreement among German army chiefs on this subject. Field Marshal Keitel, when asked which Allied weapon he would consider the most effective in impairing the morale of troops, stated that, "Without any doubt it was the superior air force . . . from the very beginning of its superiority until the time when it could not be stopped at all . . ." Similarly, Major General von Gersdorff (Chief of Staff, 7th Army, late July 1944) was of the opinion that in the case of close-support air-operations, "The main result of the large-scale bomber formations at the time of the Normandy campaign was the tremendous effect on German troop morale. Actual loss of life and material was not as significant."

Field Marshal von Rundstedt, on the other hand, in listing nine effects of air activity, relegated the morale effect of air attack to ninth place. He was of the opinion that the morale effect was of relatively little importance.

Nonetheless, it is abundantly clear that the Allied air attack contributed greatly to the lowering of the morale of the German land armies. Air attack in its many varieties presented the most significant military morale problem—the distinguishing military morale problem—of the Second World War. Troop demoralization has been an ever-present and important phenomenon of all warfare. It was one of the military achievements of Allied air attack in the course of the Second World War that it not only intensified the primary, previously standard causes of troop demoralization, i.e., the horror of battle, the superiority of the enemy, and the weakening of the home front, but that it precipitated an entirely new series of potentially demoralizing elements—isolation of the battlefield and instability of supply, subjection of the home front to continuous attack, etc. It affected the life of the German soldier in the areas of staff work, intelligence (revealing his position through aerial reconnaissance), training, and supply. In all of these it was a demoralizing or potentially demoralizing force. Only in limited instances does it appear to have strengthened enemy troop morale.

In the following analysis the military and morale results of air attack are inevitably and inseparably intermingled. These varied details of air attack are presented solely with reference to their morale connotations. The illustrations are selected to show the great variety of effects that are reported to have occurred.

EFFECTS OF BOMBING ON THE BATTLEFIELD

Fear and Insecurity

Foremost among the morale effects produced by air attacks on the battlefield is the element of fear and insecurity which has been widely observed in this war.

Colonel General Jodl reported that, "The troops from the forward lines to the rear echelons always 'griped' about enemy air attacks . . . the question always arose, 'Where is our air force?'" Under the circumstances it became necessary for Nazi political commissars (Fuehrungs-Offiziere) attached to the front-line troops to attempt explanations for the absence of the German Air Force; they simply proceeded to guarantee the arrival of new and better weapons in the near future. Prisoners of war asserted that they usually slept through such "orientation" sessions.

Lieutenant General Bayerlein, Commanding General of a crack Panzer division, similarly brought out that the presence of fighter-bombers in the air had in all cases a demoralizing effect on ground troops and gave them a feeling of inferiority.

The normal and predictable battle fear of unseasoned troops was heightened by the possibility and actuality of air attack. Thus it is reported that experienced German tank crews "had great difficulty in preventing new men from bailing out when our aircraft attacked. Large numbers of undamaged tanks have often been found abandoned at points where air attacks had taken place."

The visual impression itself was of no small importance as an element of demoralization. Special admiration is expressed, in the diary of a prisoner of war, for the perfect flying order of the fighter-bombers. The very sight of Allied aircraft formations became symbolic of our superiority. One intelligence report of interrogations records "the impression of overwhelming strength given to troops who were not under direct attack but saw the huge procession of attacking aircraft overhead."

Inevitably, the constant circling of aircraft over the battlefield engendered a feeling of apprehension in the German troops who could never be sure whether they were the next target or not. Evi-

dently the fighter-bomber, both because of its frequency over the battlefield and its terrifying sound effects, was, of all aircraft, the most effective in destroying morale. Certain stretches of road, which had become known as "highways of death," were henceforth carefully avoided by personnel and vehicles in daytime.

The prevailing mood of insecurity, enhanced, of course, by the mounting supply and replacement difficulties which the Nazis' military leadership experienced in the final stages, is reflected in an order issued by Field Marshal Model in the early winter of 1945:

"The experiences of the last few days show that the enemy does not employ his fighter-bombers from 1700-1900 hours. If we use the time from 1700-1900 hours to our greatest advantage, we should be able to solve our supply problem . . ."

A prisoner of war reports that even after dark our aircraft continued as a disturbing factor:

"Night reconnaissance was unpleasant for the troops . . . they felt that they had been seen . . . Positions were often changed after night reconnaissance."

Both the use of smoke shells to pinpoint Nazi positions for subsequent investigation and attack, and the unexpected attack by fighter-bombers were intensely feared, the latter because it afforded less time to take cover. According to Lieutenant General Bayerlein the P-38, on the other hand, was especially unpleasant for the troops "because of its almost noiseless approach."

New methods of air warfare were even more apt to disrupt morale. The appearance of the rocket shell is a case in point. One interrogation, in which about a hundred prisoners of war were questioned about rocket attacks, revealed that,

"Except for a few anti-aircraft gunners, all who had been attacked by rockets expressed dread of this weapon . . . It is an unknown quantity, except to anti-aircraft gunners. Exaggerated tales of its terrors have circulated among German troops . . ."

What was true of rockets applied doubly to airborne landings. After the airborne landings of 24 March 1945, during the crossing of the Rhine, prisoners of war reported that "amazement and fear" were experienced at the sight of the landing actions:

"While many expressed dislike and fear of our fighter-bombers, they did not seem especially impressed by them on the day in question . . . In many previous battles the very presence of a flight of Typhoons in the neighborhood had a considerable effect upon the enemy, but there are several reasons for thinking that on this occasion it was not very great . . . The sight of descending gliders loaded with airborne troops would probably exercise the minds of gunners far more than the threat of rocket attack, great though their fear of such attack is known to be . . ."

It is quite clear that in this situation the most novel battle experience, the glider landings, outweighed earlier ones to which the troops had become at least partially inured.

The combination and coordination of older battle devices and the new airborne weapons should be regarded as another characteristic element in this arsenal of demoralization. Thus it is repeatedly reported that the already overwhelming intensity of Allied artillery fire was greatly strengthened in effect by simultaneous or coordinated air-artillery bombardments. On the occasion of the infantry assault on Boulogne, on 17 September 1944, which was preceded by a heavy air bombardment, prisoners of war reported that the large quantity of supporting artillery fire, timed to follow immediately the bombing attack, prevented their quick recovery from the effects of the bombing. In another case, where artillery and air force had been so coordinated that artillery fire did not cease during the air attack, "... many prisoners of war literally did not know what hit them." Confusion and bewilderment heightened the general sense of insecurity engendered by any intensive use of firepower.

Effects on Staff Morale and Troop Discipline

In the aftermath of intensive Allied air attacks, the normal channels of command frequently disintegrated or were thrown into confusion. Naturally the efficiency of communications was progressively impaired. Attacks on staff command posts and the death of commanding-officers often made a deep impression on the troops. Consequently, as prisoner interrogations have shown, the trips of commanding officers were often postponed or abandoned.

Under such circumstances conflicts of judgment were no longer sufficiently ironed out within the staff echelons. Higher headquarters ordered day movements during the battle of Normandy, against the wish of Panzer Lt. General Bayerlein. On another occasion, a day march was ordered by one headquarters and forbidden by another. Or, again, orders were issued, "presumably by Goering," that all Allied aircraft be engaged with small arms. This order was generally disobeyed unless the aircraft was reported at sufficient altitude by anti-aircraft artillery. In early January 1945, a paratroop unit received orders to employ small arms against all low-flying planes. Machine guns were to be placed on a wall, a tree branch, or even another man's shoulder. Although courts-martial were threatened in cases of non-compliance, actual defense of this type was excep-

tional. The men insisted on taking cover, often directly disobeying their non-commissioned officers.

Similar examples could be multiplied. When German soldiers had begun to complain that they would soon be told "to fight fighter-bombers with pocket knives," it is small wonder that orders to attack aircraft with manifestly inferior weapons and from exposed positions were increasingly disregarded. That this type of demoralization had begun to spread also among the officers is suggested by the statement of a captured officer that "staff personnel in motor trucks avoided fighter planes in cowardly fashion."

The discipline of transport personnel itself was generally affected. Air attack upset drivers and caused further confusion miles from the scene of bombing. Drivers of only slightly damaged vehicles became panicky and disregarded traffic rules; traffic jams would set off bitter arguments all along the route. Such breakdowns might occur the more easily in view of the relative inferiority of normal German as compared with American traffic discipline.

In this situation, as has been revealed in prisoner interrogations, Allied propaganda found fruitful soil. Airborne leaflets were widely read among German troops. They had a twofold effect on soldier morale. They undermined confidence in command by offering the men an alternative and often conflicting source of news and information. Ultimately, they stimulated desertion, the complete breakdown of military discipline.

ISOLATION OF THE BATTLEFIELD BY AIR POWER

It is clear that the disruption of transportation and communication to the battle zone by air power had a special bearing on the development of anxiety and insecurity among the troops.

Movement of supply, for instance, over exposed routes had by necessity become restricted to night hours. They ultimately caused such haste and congestion that day movement had again to be resumed, with psychological results which are not hard to reconstruct.

Night-time movement of supply had made for insecurity in supply, and this burden resulted in loss of sleep to all concerned. Flares dropped at night by intruder aircraft further slowed movement, and broke the sleep of those not engaged in supply work. In the latter stages the issue of supply by day was forbidden in all military units. This ruling, which was ruthlessly enforced, of course, ran violently counter to prejudice and cus-

tion and thus constituted an additional irritant at a time when morale was adversely affected by many other factors.

The delay of reinforcements, caused by the problem of rolling stock, roads and motor vehicles, possibly coupled with direct attack from the air, provided the most important strain. There was a dual morale effect on the troops themselves, attacked or immobilized by the threat of air attack, and upon those awaiting their arrival. Many examples could be cited of such delay. The 410th (Poles) Artillery Corps, for example, which was found in Czechoslovakia and Bavaria late in 1944, suffered considerable losses through fighter-bomber action when it was en route to commitment in the vicinity of Muenchen-Gladbach. This was late in December. Only one battalion could be restored from the remnants of the units; the others moved to a temporary base to be re-formed and were not ready for commitment until about 20 February 1945. Similarly, after an air raid on Siegburg, a troop transport to the front was cancelled. For two days the unit was employed in rescue and repair work, being drafted into an improvised rescue formation of 2,000 soldiers and civilians. The fact that the maximum effectiveness of our air power coincided with the period of the Nazis' progressive military decline was bound in all such cases to place an especially severe additional strain on troop morale.

The same was true of the delay, diminution, and destruction of supply to front-line troops. Available intelligence reports provide us with innumerable examples of the interruption or destruction of badly-needed, badly-wanted supplies. It is clearly established from the bulk of prisoner interrogations, that the short and long-term expectations of supply of every type, including food, were frustrated on every front on which Allied air attack was operative against transportation dumps and depots behind the German lines.

General Manteuffel, for instance, attributed the failure of the Ardennes offensive to the disruption of rear echelon supplies and the subsequent lack of fuel. It is clear that such stoppages were especially significant for motorized troops; the extent of consequent demoralization can only be guessed from General Thomale's report that the maneuverability of larger units in the West was ultimately reduced to practically zero.

What the difficulties were is apparent when we learn that after an ammunition dump had been destroyed by air attack, an order restricting fire (Schussverbot) had to be issued to troops after they had received firing schedules. (12th Army Group,

Target Intelligence, G-2 Air, 11 March 1945).

That the destruction of motorized equipment and fuel shortages increased the use of horse-drawn vehicles in the German army, should also be noted. Numerous reports, which could well be substantiated by earlier American experience, have stressed its extreme vulnerability to air attack, with the resultant discouragement of the personnel.

An interesting example of a temporary but tactically most significant isolation of the battlefield by aerial bombing occurred in the course of an Eighth Air Force operation against Metz on 9 November 1944, which was undertaken in support of ground troops. A report indicates that the target fortifications were not physically much affected. Yet:

"Very sporadic fire was received from target forts and (it was believed) that bombing was very effective in neutralizing the personnel of the fortifications, mainly because of the demoralization. The confusion of the ranks of the enemy is indicated by the statement of prisoners that the air bombardment and artillery preparation created great confusion among the enemy at first, and quick exploitation prevented him from reorganizing . . . The morale of our own troops was increased in the same way that the morale of enemy troops was reduced; aerial bombardment is an excellent morale stimulant for the side supported."

In this case, then, the fortifications which were to support the enemy units were temporarily, but decisively, isolated from the enemy on the battlefield due to the morale effects of bombing.

A somewhat parallel development occurred, also in the course of Eighth Air Force operations, near St. Lo on 25 July 1944. While the bombing in this case was believed to have caused only slight enemy casualties,

"The main effect of our air bombing was the demoralization of enemy troops due to shock, confusion resulting from smoke and dust, and disruption because of uncertainty of enemy troops as to conditions existing behind their lines after bombing."

EFFECTS OF THE BOMBING OF THE HOME FRONT

There is sufficient evidence to suggest that the air raids on the home front had an appreciable impact upon troop morale. Field Marshal von Rundstedt's staff might contend that the heavy attacks on German cities were, from a military point of view, the least harmful weapon in the Allied arsenal. There was far less doubt with regard to the morale consequences. Rundstedt's Chief of Staff, General Westphal, was sure that the demoralizing effect on troops in the occupied countries and in the field was severe. In an interview with General

Goldbeck, a ranking officer in the German Medical Corps, it was specifically stated on this point:

"Soldiers and officers worried so much about the safety of their families that by the fall of 1943 the German Government discontinued publication of the individual towns which had been struck by bombs."

News from Home

On 27 December 1944 a broadcast by the official news service for German troops was intercepted which emphasized merely the physical obstacles in the way of satisfactory soldier mail distribution:

"Communications between homeland and the front are sometimes very difficult, and after an air attack on his home town the soldier sometimes has to wait for weeks before he learns that his family is safe."

Significantly, however, at the same time, a measure had been taken which was hardly designed to facilitate such communications; instructions had been issued that telegraph offices were only to accept telegrams informing members of the armed forces of home bomb damage if they had been passed by Party authorities. This is direct testimony of the concern of the Nazi home authorities with the effect of aerial warfare on troop morale. Like some other Party control measures it doubtless further enhanced anxiety and the predisposition to credit and circulate rumors.

We have concrete evidence of the character of this German civilian-to-soldier mail. A total of 6 percent of 15,000 of such captured letters analyzed by the Morale Division contained references to the bombing of German cities. Of a smaller regional sample, 16 percent of the civilian-to-soldier letters from the more heavily bombed interior areas (e.g. Berlin-Northern Germany) referred to the effects of strategic bombing. From them the German soldiers learned details of the sufferings on the German home front. A predominant percentage of these letters, moreover, conveyed an impression of lowered civilian morale. The hideous panorama of the German cities falling into ruin under continued bombing was presented to the soldiers in the most lurid or poignant terms.¹

Furthermore, soldiers returning from home leave or otherwise arriving from the interior brought to the front lines vivid tales of the condition of their homeland. Letter from a German soldier to his mother, written in mid-1942, clearly illustrates this source of demoralization:

"... I have talked with comrades who returned from leave in Cologne. They told me that one-third of the city is a pile of ruins, that there is much anguish and misery ... it is no

¹ The Captured Mail Study in Chapter 2 of this volume contains illustrative citations on this point.

use for us to destroy the Russians here, while the English destroy our homes ... " (from the records of the Security Service regional headquarters in Dortmund).

Confronted with such experiences, the German soldier could have two distinctly opposed reactions: (1) the feeling that, with his home and possessions and possibly his family utterly lost, he had no longer any cause to fight, or (2) the feeling that, since all was lost and there was nothing to return to, he should fight the hated enemy to the death, in revenge or despair.

The restrictive counter-measures on the part of the authorities which have been cited in Chapter 7, Part II, Volume I suggest that the possibilities of demoralization weighed more heavily in the thinking of the German authorities, although unquestionably instances of revived and invigorated battle morale did occur.

Furloughs in the Zone of the Interior

What inroads mail and personal reports from home had made into soldier morale were further deepened by personal experience on the spot. As strategic bombing of the German homeland increased in scope and intensity, German soldiers found it more and more difficult to repair homewards for a much needed rest from the frontline existence. The following account of a prisoner of war is richly suggestive:

"... I left Dueren by train 2 December 1944 ... difficult journey, experienced air attacks ... found out that my mother and sister left Saarbruecken three days before, after having lived in a cellar for some time after their house had been bombed ... My dear wife had taken refuge with her brother in Neustadt ... I went by bicycle to Niedermodan (near Darmstadt) to see my sister and find out where my dear mother was ... No one in Saarbruecken, neither city nor Party officials, had been able to tell me ... I had to go to Darmstadt to apply to the local commander for extension of my furlough ... was granted two additional days ... was about to leave Darmstadt when the air raid alarm sounded ... the raid lasted 45 minutes ... When it was over, the city was a sea of flames and smoke ..."

CONCLUSION

While our materials do not yield sufficient quantitative data for the formulation of final conclusions on the effects of air attack upon troop morale, they have provided a general listing of the principal types of military-morale disruption caused by Allied air attack.

a. Air attack on the battlefield itself was found to be a chronic cause of fear, discouragement and confusion, and a potentially serious disrupter of discipline. It is apparent that the terrifying sound and sight of aircraft, as well as the frequency of its

appearance, were significant factors in their impressiveness.

b. Air power when employed against lines of communication and transportation plays a vital role not only in producing the more obvious military isolation of the battlefield, but intensifies feelings of anxiety and frustration, especially in the

case of an enemy who was defending himself ultimately with rapidly dwindling means.

c. The repercussions of the heavy aerial bombardment of the homeland, relayed through mail, furlough reports and personal experiences, were a significant contributory factor in further lessening troop morale.

APPENDIX A

VALIDITY AND RELIABILITY OF MAIL STUDIES

THE VALIDITY OF THE REPORTS OF BOMBING IN LETTERS

It may be thought that writers would tend to fabricate or suppress certain information because of censorship or other reasons. There is no evidence of any kind of formal censorship in any one of the thousands of letters that have been used. No letter bore a censorship mark nor were there any deletions by a censor. A great many letters were still unopened at the time this Division received them and many of them bore no postmark.

However, some form of self-censorship may be assumed to have existed. For instance, a mother writing to her son at the front may have tended to minimize damage caused by bombing at home, or she may have suppressed her anxiety over future raids in order not to upset the recipient of the letter. It is also probable that some writers withheld information because of fear of possible reprisal, or through a genuine desire not to spread news of raids, since such news would impair the morale of others.

On the other hand, there were those people who tended to over-dramatize and over-emphasize bombing and its effects. It is plausible that some, in order to identify themselves more fully with the war effort, tended to exaggerate their sufferings in order to convince others that they, like the soldier, were making sacrifices for the war.

However, despite all these possibilities, the results establish the fact that the letters used were not affected by self-censorship or exaggeration in any significant way. What is actually measured is the relative situation in each region.

Total bomb weights dropped in each area of Germany were compiled from the beginning of the war to 31 November 1944. Since the letters in the sample covered only the period from July to November 1944, separate compilation was made for these months. These bomb weights were then correlated against various factors as shown below:

<i>Increase in bomb weight is associated with increased references to bombing</i>	<i>Correlation</i>
Correlation between total bomb weights dropped in areas of Germany, and proportion of letters that mention bombing.....	.62

¹ See Table C, Appendix B.

	<i>Correlation</i>
Correlation between the bomb weights dropped in areas of Germany, during July-November 1944 and the proportion of letters that mention bombing.....	.59
<i>Increase in bomb weight is associated with increased report of damage</i>	
Correlation between the total bomb weights dropped in areas of Germany and the proportion of letters that mention damage.....	.58
Correlation between the bomb weight dropped in areas of Germany during July-November and the proportion of letters that mention damage.....	.43
<i>Increase in bomb weight is associated with increased reference to a writer's own town being hit</i>	
Correlation between the total bomb weight dropped in areas of Germany and the proportion of letters that mention the writer's own town was hit.....	.71
Correlation between the bomb weight dropped in areas of Germany during July-November 1944 and the proportion of letters that mention the writer's own town hit.....	.50
<i>Increase in bomb weight is associated with increased loss of life</i>	
Correlation between the total weight of bombs dropped in areas of Germany and the proportion of letters that mention loss of life.....	.28
Correlation between the bomb weight dropped in areas of Germany during July-November and the proportion of letters that mention loss of life.....	.54

The correlations reported above for Study I are sufficiently high to indicate that increased bomb weights dropped in areas are related to increased mention of the varied effects of raids. In other words, writers tend to report experiences that correspond to the amount of bombing the town actually experienced.

Parallel measures of the validity of the bombing reports in letters can be demonstrated for Study II. The correlation between percentage of letters in the sample reporting bombing and the bomb weight dropped by bombing strata is not possible, since the letters were not selected in terms of references to bombing. Thus no measure of the number of times bombing was mentioned is available for each stratum. But, if we use as a basis for correlations with bomb weight the nature of reports about bombing, calculating the percentage of given types of reports in terms of the total of those letters referring to bombing, it is possible to demonstrate the

validity of the reports. As bomb weight increases in a given bombing stratum, more writers from that stratum mention being greatly affected. (See Appendix B for description of bombing strata.)

<i>Increased bomb weight is associated with increased reference to being close to bombs dropped</i>	
Correlation between the total bomb weights dropped in bombing strata of Germany and the proportion of letters mentioning being close to bombs dropped	.59
<i>Increased bomb weight is associated with increased report of personal damage suffered</i>	
Correlation between the total bomb weights dropped in bombing strata of Germany and the proportion of letters mentioning personal damage	.59
<i>Increased bomb weight is associated with increased report of personal routine being affected</i>	
Correlation between the total bomb weights dropped in bombing strata of Germany and the proportion of letters mentioning personal routine being affected	.32

Again, in Study II, the findings are that those writers who report being exposed to bombing tend to give the relative truth of their raid experiences.

THE RELIABILITY OF THE CODING

By reliability is meant the consistency with which the letter material is coded into given categories. Thus, two independent workers (or coders) agreeing on the classification of letter contents would suggest that the technique of measurement used in this study was reliable. Similarly, the same individual recoding letters after a lapse of time in the same fashion as initially would demonstrate the reliability of the coding. In these analyses, high reliability indicates that confidence may be placed in both the method of coding and the ability of the coders to interpret letters in a uniform manner.

The reliability of the quantitative coding was determined for the two studies. In Study I two coders categorized all the letters independently. The high level of agreement obtained by this procedure (as indicated by the per cent of agreements out of the total) indicates that letters can be successfully coded and that the reliability of the procedure of coding is, in general, satisfactory. A description of the technique used and results obtained is presented below.

In Study II, two measures of reliability were used: (1) Each of four coders re-coded a sample of his own material after a lapse of one month. The average amount of agreement for the four coders on repeat trials is presented below. (2) Parallel

with Study I, an independent coder coded a sample of the work of the other three coders. The average amount of agreement of this individual coder with the other three coders is also presented.

In general, for practically all measures, the results show that the letter contents were coded with sufficient reliability to justify analysis.

The reliability of the coding was determined by the use of Arrington's formula. When two independent coders record two different codes for a given letter this constitutes two disagreements. Agreements are therefore weighted double to equate the two. Agreements and disagreements between coders were computed for each category in the table and the coefficient of agreement is determined by the use of the formula:

$$\frac{2X(\text{Agreements})}{(\text{Disagreements}) + 2X(\text{Agreements})}$$

Perfect reliability is indicated by a coefficient of 1.00, and a completely random relation by a coefficient of 0.00.

TABLE A.—Reliability of codes used in Study I

Writers relation to bombing	Coefficient of agreement
Own town hit	.78
Nearby towns hit	.71
Distant places only	.63
Air alarms and planes overhead	.79
<i>Effect of bombing</i>	
Damage to property	.92
Disruption of community life	.70
Loss of life—relatives and friends	.86
Loss of life—others	.94
Health affected—writer and relatives or close friends	.63
<i>Anxiety over future raids</i>	
Focalized anxiety	.64
General tension	.69
<i>Morale</i>	
Lowered—personal and community	.67
Improved—personal and community	.69
Habituated—personal and community	.59
<i>Solution wished for</i>	
Peace in general	.74
Victory for Germany	.67
No way out—hopeless situation	.44
<i>Reference to enemy air force</i>	
Objective mention	.91
Absorptive mention	.97
<i>Times between raid and letter</i>	
Recent	.86
Remote	.77
Continuous	.81

TABLE B.—Average reliability of the codes used in Study II

Measure	Coefficient of agreement		Measure	Coefficient of Agreement	
	Self-coding	Independent coders		Self-coding	Independent coders
General classification of the letter ...	.87	.72	Physical effect of raid (disruption) ...	.70	.74
Physical closeness to bombs dropped.	.64	.62	Involvement in disruption ...	.79	.85
Type and frequency of attack (day vs. night) ...	.79	.74	Loss of life ...	.81	.94
Type of attack (general area or precision) ...	.85	.91	Health affected ...	.75	.94
Physical effect of raid (damage) ...	.78	.68	Emotional impact of bombing ...	.73	.78
			Attitude toward outcome of war ...	.81	.79
			Desire for peace ...	.79	.78

¹ The same coder re-coded a sample of his interview notes after an interval of one month. The agreement between his two sets of codes was computed as if the two sets were made by two independent coders.

THE COMPOSITION OF THE BOMBING STRATA USED IN STUDY II

Stratum	Rank Percentage and No.	Stratum 1	Rank (Percentage and No.)	Stratum 5	Rank (Percentage and No.)
Berlin.....	72	Wülfelschaven.....	4	Brandenburg.....	6
		Saarbrücken.....	9	Wanne-Eickel.....	9
		Dortmund.....	9	Wuppertal.....	4
		Gelsenkirchen.....	4	Pf. ribben.....	2
		Stettin.....	4	Wittenberg.....	2
Stratum 2	Rank (percentage and No.)	Aachen.....	7	Frankfurt.....	4
Bremen.....	19	Leipzig.....	9	Stargard.....	5
Frankfurt-on-Main.....	22	Chemnitz.....	7	Hamburg.....	3
Essen.....	20	Cologne.....	6	Recklinghausen.....	4
Hamburg.....	21	Düsseldorf.....	6	Innsbruck.....	3
Stuttgart.....	21	Karlsruhe.....	4	Saarbrücken.....	7
Munich.....	19	Magdeburg.....	6	Halle.....	3
Cologne.....	18	Merseburg.....	6	Darmstadt.....	2
Mannheim-Lotharshafen.....	20	Vienna.....	5	Wetzlar.....	1
Düsseldorf.....	13			Chemnitz.....	2
Darmstadt.....	13	Mean.....	7.0	Zwickau.....	4
Braunschweig.....	14			Unna.....	2
Karl.....	14			Essen.....	1
Mean.....	18.5	Stratum 4	Rank (percentage and No.)	Friedberg.....	1
		Worms.....	1.5	Dresden.....	1
		Hagen.....	1.2	Gera.....	1
		Siegen.....	1.5	Rad-Hamburg.....	1
		Trar.....	1.1	W. rns.....	1
		Ulm.....	1.2	Aachenburg.....	1
		Kassel.....	1.2	Siegen.....	1
		Lin.....	1.1	Speyer.....	1
		Krefeld.....	3	Mean.....	1
		Mann.....	4		
		Duren.....	1.1	Stratum 6	
		Darmstadt.....	2	All Western unbombed cities.....	1
		Wuppertal.....	4		
		Nurem.....	3		
		Levetzen.....	2	Stratum 7	
Mean.....			2.0	All Eastern unbombed cities.....	1

46

APPENDIX C

QUESTIONNAIRE FOR FOREIGN WORKERS

Questionnaire for French Workers

(Italian)

(Russian)

Age

Married

or

Single

Sex

Home in France

(Russia)

(Italy)

city

department

*to answer the following questions
please mark an X in the proper square*

1. What schooling have you had

primary

()

secondary

()

2. In what way did you work in Germany?

Drafted laborer

()

Substitute for prisoner

()

Transformed prisoner

()

Volunteer

()

Political deportee

()

War Prisoner

()

3. In what cities did you work?

..... from to Employment.....

city

date

date

..... from to Employment.....

city

date

date

..... from to Employment.....

city

date

date

4. How many raids did you experience in Germany?

Please give us the dates of the heaviest bombardments.

..... city date

..... city date

..... city date

5. Were you ever wounded during a raid?

Yes ()

No ()

Were your lodgings damaged?

Yes ()

No ()

Were your possessions lost?

Yes ()

No ()

Were any of your friends wounded?

Yes ()

No ()

Were any of them killed?

Yes ()

No ()

6. Did the first raid surprise you?

Yes ()

No ()

or

Did you expect to be bombarded?

Yes ()

No ()

7. Did the first raid frighten you
 a little ()
 or a great deal ()
 or not at all ()
8. As the raids continued, were you more and more frightened ()
 or
 did you become used to them? ()
9. During the raids, were you glad to see the Germans getting it ()
 or
 sorry to see German civilians in danger ()
10. During the raids, did you think of the fact that they might hasten your liberation ()
 or
 did you resent that your own life was endangered ()
11. What was, in your opinion, the object of the allied raids?
 To destroy German industry ()
 To kill German civilians ()
 To demoralize the German people ()
 To destroy German culture ()
 Revenge for the bombings of London ()
 Punishment for having started the war ()
12. Did you think that the bombings were more severe than military necessity dictated?
 Yes ()
 No ()
13. What kind of raid upset people the most?
 (a) raid day after day ()
 or
 unexpected raids ()
 (b) raids by night ()
 or
 raids by day ()
14. What kind of bombs was the most feared?
 Phosphorus ()
 Incendiary ()
 Liquid air ()
 Delayed action ()
 Blockbusters ()
15. Were you ever machine-gunned by the allied planes?
 Yes ()
 No ()
- If yes, did it frighten you more than the bombings?
 Yes ()
 No ()
16. Did alerts, even without bombing, also upset people?
 Yes ()
 No ()

17. Was the plant where you worked ever damaged by bombs?

Yes ()
No ()

If yes, please give the following information:

(a)
..... plant city
.....
Give the number of days closed Put T for totally closed,
P for partially closed
b. repeat of above
c. repeat of above

17b. Even if your plant was not hit, did the big raids lower the production?

Yes ()
No ()

For how many days, on an average was the production affected?

By what percentage of the production?

17c. If the production was lowered, what were the reason for the lowering?

Absences of personnel ()
Cutoff of raw materials ()
Slowdown because of lack of sleep ()
Slowdown because of lowered morale ()
Other reasons ()

17d. Did you ever spend working hours cleaning up after a raid?

Yes ()
No ()

If so, how many days?days

17e. During the year 1944, how many days did you miss from work solely because of the raids?days

How many of these days absence were authorized?days

How many were unauthorized?days

18. What did you think of the German anti-raid defense measures?

Alarm system () good () bad
Shelters () good () bad
Rescue system () good () bad
Anti-aircraft () good () bad

19. Could you go into the shelters just as the Germans could?

Yes () No ()

20. What did people talk about in the shelters?

Wish for reprisals ()
Criticism of defense measures ()
Criticism of Nazi Party ()
Rumors about losses ()
Wish for peace ()
Other subjects

21. Did you ever witness a panic during a raid? Yes () No ()

Were there any killed? Yes () No ()

Were there any wounded? Yes () No ()

Did the panic start among the Germans ()

or
Among the foreigners? ()

22. Before the invasion of Germany by the Allies, did you witness any looting during a raid? Yes () No ()
Were the looters Germans () or were they foreigners ()

23. Was the black market affected by the raids? Increased ()
Diminished ()
Unchanged ()

24. Did you witness the evacuation of German civilians? Yes () No ()
Were these evacuations voluntary () or forced () or both ()
Where these evacuations well organized () or badly organized ()
Did the evacuation of their families affect the Germans who remained?
They were glad to know them in safety ()
Disturbed to be separated from them ()
Not affected ()

If you were in a region where evacuees were received, how did they get along with their hosts?

Well () Badly ()

25. Did the bombings have any effect on the attitude of the German people toward the Nazi Party?

They blamed it for having begun the war ()
They blamed it for not having protected the cities ()
They became still more dependent on the party ()
Their attitude remains unchanged ()

26. Before the invasion of Germany by the Allies, did any of the Germans that you knew come to the point, as a result of the bombings, to think that they could not continue the war?

Yes ()
No ()

Please give a brief explanation.
.....

27. Before the invasion of Germany by the Allies, did any of the Germans confide in you that they feared that Germany was going to lose the war?

Yes ()
No ()

28. Why have the Germans continued their efforts to the very end, in spite of the raids?

Character of the German people ()
Their education by the Nazi Party ()
Governmental controls (police, S. S., etc.) ()
Fear of what an Allied victory would bring them ()
Other reasons ()

29. Have you ever read any leaflets dropped by airplane?

Yes ()
No ()

Where they written especially for foreigners ()
Were they destined for Germans ()

30. Did you listen to Allied radio?

Yes ()

No ()

What period did you start to listen?

Was there a program that you preferred?

Before the invasion, what percentage of Germans do you think listened to the foreign radio?

31. Did you observe resistance movements among the Germans?

Yes ()

No ()

Among foreigners? Yes ()

No ()

Were resistance activities affected by the raids?

Increased ()

Decreased ()

Unchanged ()

32. Following raids did you ever try to escape from Germany?

Yes ()

No ()

Did you try to move to a non-industrial zone?

Yes ()

No ()

APPENDIX D

PILOT STUDY ON FRENCH ESCAPEES¹

A preliminary pilot survey was conducted in Paris to ascertain what French workers, who had returned from Germany, thought about the effect of Allied strategic bombing on German civilian morale.

A classification of 37 respondents according to their occupation and geographical location while in Germany will be found in Table D attached to this report.

There are several advantages and several drawbacks in the interrogation of such French sources of information on German civilian morale. It is found that:

(1) With few exceptions the French interviewed were cooperative and informative to the extent of their ability.

(2) As imported French labor played an increasingly important role in German industry, French workmen increasingly shared the standard experiences of the German civilian factory worker.

(3) Some of the drafted French laborers interviewed, being in fact FFI agents, were during their servitude in Germany primarily interested in the problem of undermining the morale of German workers, and were therefore unusually sensitive to its fluctuations under the impact of Allied bombing.

(4) Other French workers having voluntarily enrolled for employment in Germany, frequently had an opportunity of associating on intimate terms with the civilian population.

(5) French workers often became the repository of confidential grumbings which German workers were afraid to entrust to each other (a French worker who repeated such confidences could without difficulty be denounced as an agent provocateur).

On the other hand, it was found that:

(1) The returned French, in some cases physically depleted by their experiences, tended to interpret the reactions of the German civilian population in the light of their own personal sufferings.

(2) The accuracy of their description of German reactions has variously been affected by the lapse of time and by subsequent impressions and ideas

overlaid upon those with which they returned from Germany.

(3) The language barrier in many cases rendered inexact their understanding of German propaganda techniques and popular expressions of opinion.

The opinions and reporting of facts by the 37 respondents appear, in any case, to have been sufficiently consistent to warrant some observations on the effect of Allied bombing on German civilian morale. These tentative generalizations may suggest some hitherto not fully considered aspects of the German civilian morale problem. At best they provide an indication of preliminary conclusions which were substantiated for the most part by the more complete studies of German sources.

The interviews have also thrown some light on various aspects of Nazi post-raid propaganda and morale-maintaining techniques, the activities of the German ARP, labour control in German factories following Allied bombings, and post-raid evacuation conditions.

The French respondents agreed without exception that Allied strategic bombing had a demoralizing and disruptive effect upon German civilian life. Without exception they attested to the hardship and suffering which it imposed. They described widespread destruction of industrial and residential areas, widespread post-raid evacuations throughout Germany, and an over-all dislocation of civilian living conditions. In short, they substantiated the generally preconceived notions of the havoc that Allied strategic bombing caused in Germany. They attested to the following results:

(1) Allied bombing caused a deterioration of the German civilian's enthusiasm for the war effort.

(2) It created dissatisfaction with the Nazi government, and a minor degree of actual disaffection.

(3) It contributed to the growing feeling among German civilians that the war was lost.

(4) It rendered ineffective certain aspects of German home-consumption propaganda, especially factual news reporting.

(5) At times it caused dislocation of civilian life beyond the control of the German ARP.

(6) It badly frightened the German civilian population; phosphorus bombs had a notably de-

¹ This study was made in November and December, 1944. It is of importance to note the extent to which it anticipated the findings of the later studies of the effects of bombing.

moralizing effect; in frequently bombed metropolitan areas the civilian population lived in fearful anticipation of renewed raids.

(7) It adversely affected the capacity for work of the German civilian, owing to nervousness and fatigue. It was the cause of some absenteeism in German industry.

(8) The post-raid evacuations were on an increasing scale a source of permanent discomfort and lowered morale among German civilians.

After affirming all of the above results of Allied bombing, the majority of the respondents made the following major qualifications, in which lie the burden of this report:

(1) Rigid and terrorizing police control of the laboring population provides the basic explanation of the maintenance of the German civilian war effort through 1943 and 1944 regardless of the deterrents imposed by bombing. It prevented what might have become post-raid absenteeism on so large a scale as to endanger German industrial production. The actions of German civilians in the wake of Allied raids were not dictated primarily by a rise or fall in morale, but by fear of police reprisal. The fear of punishment by the controlling authorities (absentees were treated on the same basis as military deserters) was greater than the fear of suffering continued Allied bombing. Without ultra-rigid police control the German civilian war effort would have foundered, regardless of the sustaining effect of skillful propaganda techniques (instilling fear and hatred of the enemy, confidence in revenge through the agency of secret weapons, and persistent hope for eventual victory), of generally efficient ARP emergency operation, and of the large scale distribution of supplementary rations.

(2) As a demoralizing factor Allied strategic bombing appears to rank second to the dismal spectacle of retreats and losses on the Russian front since Stalingrad. Nazi propaganda made the German population acutely aware of the necessity of winning the war, and desperately afraid of a Russian victory (as a reminder the German civilians constantly saw in their midst, enslaved and brutalized Russian workers). The fear, then, of eventual Russian reprisal was also greater than the fear of continued bombing.

(3) The ever-increasing introduction on a gigantic scale of imported foreign labor into German factories for the purpose of releasing every able-bodied German male for military service rendered the working population in German industry atypical of the normal civilian laboring class. Those Germans who remained in German industry were either older

men, women, or children of both sexes. While the precise percentage of foreign labor in German factories was not ascertained, there are indications that in all but the most secret plants it frequently exceeded 50 percent (many respondents reported working in large factories employing 80 percent foreign slave-labor). The study of the effect of Allied bombing on the morale of factory workers in Germany must therefore seriously take into account the fact that these factory workers by no means constituted a normal indigenous civilian group.

In view of the fact that the survey was limited to 37 respondents, and that among these respondents some, although highly informative in answering certain queries contained in the lengthy verbal questionnaire, were unable to answer others (for example, had observed the effects of one intense raid, but had seen nothing of evacuation conditions), the answers to each question are not presented below with an eye to statistical exactitude but rather with the intention of indicating the predominating opinions, the variety of responses, and such isolated details as may be of interest in the further study of the German civilian morale.

ATTITUDE TOWARD WAR EFFORT

Do you think that Allied bombing has had an effect on the German civilian's attitude towards the war effort?

The majority opinion specified in answering this question that Allied bombing had a more pronounced effect upon older civilians,¹ especially those old enough to have experienced the last war, than upon the younger and Nazified section of the population, whose attitude was largely unaffected. This was explained by the respondents on the grounds that, more important even than the extensive suffering it has imposed, the ever-increasing scale of Allied air attacks indicated to the older Germans the distinct possibility of losing the war; two respondents reported that as early as 1942 (Dortmund, Hanover) Allied raids into Germany portended to middle-aged civilians the eventual course of military events (*après tout, les vieux—ils connaissent un peu la vie*).

In answering this general question, however, the respondents almost without exception volunteered and emphasized the opinion that it was not the "attitude" towards the war effort that really counted in Germany, but the simple fact that the terror reign of the Nazi police prevented the manifestation

¹ The survey of German civilians did not confirm the greater effect of bombing on old people. See Chapter 4, Part I, Volume I.

and fruition of wide-spread demoralization and kept the civilian population relentlessly at work.

A respondent who had arrived in Gruenberg (Silesia) from Berlin in August 1944, remarked that in this unbombed area the morale was far higher than in Berlin, that the Heil Hitler salute was still much in vogue, and that there was still an almost unaffected confidence in German victory.

There was mention in three interviews of a permanent "live for the moment" attitude among those civilians who had lost their homes once, or more than once. It was frequently remarked, moreover, that in the despairing moments which followed immediately after a heavy raid many German civilians evinced a desperate desire for the prompt termination of the war at any cost. The majority of the respondents stressed, on the other hand, that after the passage of a few days a reasonable stability of conduct was re-established, although shock and fatigue left some vestiges of apathy in frequently bombed areas.

ATTITUDE TOWARD NAZIS AND NAZI MEASURES

Did Allied air raids affect the attitude of German civilians towards the Nazi Party?

Here, again, a distinction was made by the respondents between the attitude of the older and younger civilians. Allied bombings did not shake the younger civilians' faith and confidence in the Nazi Party. This was emphasized by respondents returning from Friedrichshafen and Nuremberg as late as the last week of November 1944.

The majority of the French, however, testified to having personally received the disgruntled confidences of Germans by whose side they worked, or with whom they were intimate. (It is of course possible that many Germans, foreseeing eventual German defeat, were anxious through such intimacies to establish themselves as anti-Nazi in the eyes of foreign laborers.) The respondents stressed that when individually isolated, the Germans expressed considerable dissatisfaction with the hardships and sufferings of civilian life under current conditions, and that they were critical of the Nazi Party, even of Hitler; but that in the presence of even one other German such dissatisfaction was never expressed because of the all-pervading fear of betrayal. One respondent remarked that the very fact that Germans were afraid to express their true opinions, criticisms, and fears freely among each other in itself imposed a restriction on the spread of panic among large masses.

A respondent who had experienced the three large-scale Munich day raids of 12, 13, and 16 July 1944, reported that on the third day there appeared on the ruins pictures of Hitler, captioned, "This is Your Achievement"; but he felt that this attitude represented at the time only a minority, the masses being primarily enraged with the Allies for the destruction of the city.

A singular but probably not significant form of post-raid anti-Nazi feeling was mentioned in three interviews. It not infrequently happened that industrial targets escaped damage and working-class residential areas were badly hit. This gave rise to limited talk among workers (specified in the interviews as communist-inspired) of an international capitalist collusion (including Nazi industrialists) designed to spare certain factory installations at the expense of the working class.

What measures were taken by the Nazi Government to maintain civilian morale?

Regardless of its ultimate dependence on police force for control of the civilian war effort, the Nazi government took very definite measures for the maintenance of civilian morale in the wake of Allied bombings. About half of the respondents stressed Nazi propaganda techniques as the most effective; the other half stressed the large-scale issue of supplementary rations.

Several post-raid propaganda techniques were mentioned. The arrival of high-powered Nazi speakers shortly after a raid, coinciding with the distribution of special rations, apparently gave to the population the feeling that it was being looked after in its distress. Several respondents emphasized the success under these circumstances of inspirational addresses by important Party orators. In the event of the destruction of the local press in a city, arrangements were made for the printing and despatch of special newspaper editions from neighbouring cities, with such announcements as were of particular interest to the bombed city—e.g., the forthcoming distribution of special rations, praise of the heroism of its inhabitants.

For a long time substantial supplementary rations were issued after every important raid; a depletion of stocks decreased the quantity, quality, and frequency of these rations (in Berlin, for example, after March 1944). These rations variously included meat, bread ("whiter than that which we now receive in France," one respondent woefully remarked), schnapps, wine, and tobacco. The distribution was made to all civilians in a bombed locality, including foreign workers. After

the heavy November-December 1943 night raids on Berlin, and after the 4 December 1943 raid on Leipzig, these supplementary rations were very satisfactorily supplemented by the special Christmas distribution. While the efficacy of such rations in maintaining the morale of civilians whose homes were destroyed may be questioned, some respondents believed that it was precisely under such conditions that these rations achieved their maximum effect; the German civilian's state of mind was often reduced following severe bombing to that of a front-line soldier, and in these very circumstances he was particularly responsive to the issue of rations. Two respondents mentioned the pertinent, if somewhat bitter, remark current in Berlin in early 1944: "Let us have another good raid soon; it will at least bring us some special rations."

The efficiency of post-raid emergency housing, decorations issued to workers for extra work accomplished, the maintenance of music-hall and movie-houses at maximum operation (Berlin, 1944) were also mentioned.

What was the Nazi propaganda line to counter Allied raids?

About half of the respondents believed that Goebbels was increasingly regarded as a liar, and that the factual (news) aspect of home-consumption propaganda was largely discounted by the German civilians. The lack of confidence in domestic news and the desire for more accurate information concerning the course of military events was witnessed by the frantic efforts of many civilians to get hold of leaflets dropped during Allied bombings; a very striking story of the risks incurred to obtain these leaflets was told by a respondent who witnessed the 19 July 1944 day raid on Augsburg.

On the other hand, three-quarters of the respondents emphasized that the emotional type of post-raid propaganda—that founded upon the motifs of revenge, of fear, and of promise of eventual victory regardless of obstacles—still had a profound effect upon the German civilian population. They mentioned the following propaganda lines in relation to Allied bombing:

(a) The promise of secret weapons; this technique had an important morale-sustaining effect long before the appearance of the V-1 rocket; a respondent who had been in Berlin during the first days of the V-1 reported that Berliners joyfully regarded it as the long-awaited guarantor of victory (and as a promise of the diminution of Allied raids). The respondents stressed the fact that the German people clutched at any promise whatever.

(b) Hate propaganda against the "terrorists"; respondents were generally agreed that this type of propaganda, having acquired much fertile subject matter since increase in the scope and intensity of raids, achieved considerable success.

(c) Stress on the terrors of the Bolshevik peril should Germany lose the war.

(d) Claims of counter-blows in the war, for example, the sinking of an Allied convoy. This type of propaganda was considered especially effective, inasmuch as German civilians viewed their sufferings in extremely close connection with the course of the war and were reconciled to them only in the hope of eventual victory; after an Allied raid any news that portended victory was effective propaganda.

(e) Promises of the reconstruction of German cities after victory, with better homes and better living conditions than before.

Did the news of Allied raids spread rapidly through the country?

It is difficult to deduce from the respondents' answers to this question just how much of an effort was made by the Nazi government to prevent the spread of rumors from a bombed city. There is evidence that an attempt was made at times to impede contact between post-raid evacuees and the inhabitants of other cities.

A large number of evacuees from Berlin passed through Leipzig in November 1943, and during passage were mostly confined in the railway station, and were hidden from the view of the Leipzig population by fencing specially erected for the purpose.

In Chemnitz (1944) evacuees were confined, virtually imprisoned, in the environs of the city, and were allowed no contact with the Chemnitzers.

During a night bombing of Kassel the inhabitants of Waltershausen (55 miles away) were forced to enter the air raid shelters and were thus prevented from watching the spectacle of the raid.

A respondent (Augsburg) reported that in the immediate aftermath of a raid no one in the bombed city was allowed to visit neighbouring cities without a special permit; if rumours concerning the results of the raid spread in a city visited by those holding such special permits, investigation was conducted and punitive action taken.

For 48 hours after a severe raid no one was allowed to enter a bombed city.

On the other hand, it is clear that news of raids nonetheless spread very rapidly throughout the country. The progress of the flight of Allied

bombers was at all times announced over the radio. Immediately after a raid inhabitants of a bombed city were allowed to send through the mails a ten-word red-bordered postcard (Lebenszeichen) to their friends and relatives elsewhere in the country. When factory workers were evacuated for employment in other cities, they inevitably came into contact with the workers in their new location; some evacuees carried with them and exhibited clandestine photos of the bomb damage in the cities from which they came. News of the raids was constantly being spread, with great exaggeration, by chains of FFI agents in German factories and cities.

It was significantly stressed by many of the respondents that the news of bombings of cities other than their own did not profoundly disturb German civilians. This appears to have been true not only of raids on distant cities, but even of raids on remote areas of the cities in which they themselves lived; during the initial bombing of Berlin, owing to the very great size of the city, Berliners were not much affected or worried by what occurred in districts other than their own. There is as well some evidence that inhabitants of one area were maliciously satisfied when certain other cities were bombed. One respondent reported that there was considerable gratification among the long-bombed workers of the Ruhr when Berlin was at last heavily attacked. Another related that there had appeared in the Berlin press criticism of the conduct of the Hamburg civilians during the raids of July 1943, attributing to them partial responsibility for the failure to prevent the spread of fire throughout the city; during the heavy attacks on Berlin, November-December 1943, there was considerable forthright satisfaction in Hamburg. (A parallel may be noticed in the rejoicing of the Neapolitan population when the previously immune and disliked Romans were finally bombed in 1943).

More significant is the following remark by one German-speaking correspondent. To engender anticipatory fear elsewhere, a raid or series of raids on a given city must be of annihilating intensity, so that the inhabitants of other cities know when their turn comes, the game is up. When raids cause only partial destruction, civilians elsewhere tend to feel that they will in their turn survive. Only after the second consecutive day raid on Munich in July 1943 did the population in panic begin to express the realization that they themselves were suffering the fate of Hamburg. One respondent also mentioned the not infrequent use among German civilians of the phrase, "to be Coventryed," indicating the existence of anticipatory

fear primarily in connection with raids tokening total annihilation.

How did the ARP operate?

In combating the results of all but the heaviest-scale raids the German ARP operated, in the unanimous opinion of respondents with great over-all efficiency. If a German worker's home was destroyed by a raid during his working hours, on arriving in his section of the city, he found ARP personnel prepared to direct him immediately to new lodgings. In some cities the ARP provided civilians with anticipatory notification of emergency billets in the event of the destruction of their homes. The respondents laid great stress upon the fact that the ARP undertook the clearance of air raid debris as soon as possible after a raid. For this purpose it employed large Todt organization gangs, largely composed of enslaved Polish and Russian laborers (men and women). The ARP habitually requisitioned for clearance work any civilian who was idling in the streets after a raid; civilians were sometimes requisitioned in the streets although they were on their way to or from work, and were subsequently given certificates to justify their absence; in the event of the complete destruction of a factory, all its employees were often immediately turned over to the ARP for the emergency. Since as early as the spring of 1943 the Berlin ARP "requested" French volunteers for ARP duties in the factories in which they were employed; these French workers performed such duties under the leadership of German foremen, and were peremptorily shot if disobedient to orders.

The operation of communal kitchens and emergency canteens was apparently extremely efficient. The food provided by these kitchens was described as very satisfactory; they operated without red tape; they were equipped to function on a large scale—communal kitchens operated in Hamburg for almost a month after the bombings of July 1943.

According to several respondents, there were grumblings against certain ARP procedures. Debris-clearance in badly devastated areas was frequently restricted to opening streets for traffic, without the disinterment of bodies from destroyed buildings; this, on occasion, necessitated the abandonment of living victims in the ruins, to the displeasure of the civilian population. Inasmuch as the German ARP was a Nazi organization, it attempted upon occasion to save Nazi-owned property, while neglecting that of non-Nazi Germans. A respondent reported that in the chaos which followed the heavy bombing of Hamburg in July 1943,

the ARP distinctly failed to fulfill its duties; its personnel concentrated primarily on saving their own lives and property.

It was emphasized by several respondents, however, that the occasional collapse of the ARP in a very heavily bombed city did not by any means indicate the disintegration of all controls. In such events the ARP (including communal kitchens) and police of adjacent cities were immediately rushed to the affected area (e.g. from Bremen and Berlin to Hamburg, from Augsburg and Nuremberg to Munich), formed a cordon around it, and proceeded to re-establish order within. In this manner it was possible to retain the immediate chaotic effects of a heavy raid within a very limited area surrounding a stricken city.

Did the people have confidence in the air-raid shelters?

The majority of the respondents agreed that the average underground air raid shelter was not an efficacious or confidence-sustaining protection against heavy caliber bombs. Respondents referred, however, to the existence of and increasing construction of very large shelters of the Blockhaus type, accommodating five to six thousand people. These shelters, described as partly above ground, were topped by six to 10 feet of reinforced cement; within them the deafening noise of bombing and anti-aircraft fire was considerably muted; they were equipped with emergency air-provision systems; they contained special rooms reserved, for example, for pregnant women (a respondent mentioned that such special rooms were purchasable by wealthy Party members). These shelters were equipped with multi-decker cots; civilians in frequently bombed cities slept confidently in them every night, bringing with them such of their possessions as they could carry in two valises.

A respondent who had escaped from Germany in November 1944, mentioned that in Munich many small workshops were located underground; and that civilians felt more secure from bombing while at work underground than while living in their free hours above the ground in jerry-built barracks.

Did you observe any signs of lawlessness after Allied raids? Any looting? Do you think that the hours immediately after an air raid are a favorable time for rebellion?

Respondents stated that during the initial period of Allied air attacks lawlessness and looting on the part of German civilians (or foreign workers) was so promptly and unequivocally dealt with by immediate death sentence that there was in Ger-

many no appreciable degree of pillage in the wake of Allied raids. The immediate and irrevocable death sentence was applied to the theft of any item, however insignificant.

During and after a raid SS troops patrolled the streets in vehicles and on foot. They were thus in a position to disperse any unauthorized gatherings as the population emerged from the shelters.

Civilians were in most cities required to enter air raid shelters during an attack. This was in itself an opening wedge for police control of any suspected rebellious demonstration; a respondent related that in Pforzheim (August 1944), expecting some such difficulty, the police sounded the air raid siren; the civilian population entered the shelters; on emerging they found SS machine-guns mounted in the streets.

There were, however, reasons of a more basic nature that made the hours immediately after bombing unfavorable for rebellious activity. Respondents stressed, in the first place, the obstacles to conspiracy among German civilians. The SS and Gestapo infiltrated stool pigeons into German factories on a very large scale—a German worker never knew whether the worker on the next bench was a police agent or not. Two respondents used the same phrase to describe this state of affairs: "For every man working there are two men standing behind him to see that he does work." It was mentioned by two respondents recently returned (from Friedrichshafen, November, 1944, from Berlin, October 1944) that although many SS men were sent to the fronts, they were effectively replaced by young fanatics of 15 and 16 years of age whose control of the civilian population was as ruthless as that of their predecessors. There were also in the factories large numbers of German workers who had been released from concentration camps for the purpose of employment in German industry; these men lived in constant fear of committing any fault which might return them to such camps. The German civilian population was, in the opinion of most of the respondents, too browbeaten and afraid of reprisal to revolt under any but the most favorable circumstances.

The immediate aftermath of a raid did not, according to the respondents, provide such favorable circumstances. First of all, the local police were generally in dominating control of the streets during and after a raid; in the event of a raid so devastating that they lost this control, they were promptly reinforced by police units from adjacent cities. Secondly, immediately after bombing, civilians were primarily occupied with saving their lives and,

if possible, with the very important problem of saving their property (which was generally irreplaceable). That there were lynchings of Allied fliers shortly after raids does not contradict these conclusions. It was far easier to lynch a handful of Allied fliers than to rebel against an all-powerful government.

One respondent gave what he believed to be the recipe for successful rebellion in a German city after Allied bombing. First, carefully prearranged planning with the organized French underground (several respondents mentioned that many German civilians looked to this quarter for leadership in revolt against the government); then, unremitting aerial attack for at least 36 consecutive hours; finally, coordinated aid from Allied parachutists dropped during the raid. In the opinion of this imaginative and intelligent respondent, such a procedure might have succeeded in initiating a successful local revolt.

ATTITUDE TOWARD ALLIES

What did German civilians say about the Allies after the raids?

The employment of area bombing, and the inevitable inaccuracies of "precision" bombing by large formations of aircraft, provided fertile soil for the "terrorist" and "air gangster" propaganda line. It was the belief of the majority of the respondents that the German civilian population was far more embittered against the Allies for the destruction of German cities than against the Nazi government which was unable to prevent such a state of affairs. One respondent remarked that among the more informed German civilians there was some recognition of Allied raids as reprisals for the German bombing of English cities (the use of the phrase "to be Koventrisiert" indicates an understanding of the nature of the Luftwaffe bombing), but that among the working people as a whole the Allied "terror attacks" provoked a profound hatred. This hatred was augmented, as another respondent remarked, by the feeling of powerless rage against an enemy who ruled the German sky in full daylight, and was capitalized upon by revenge and secret-weapon propaganda.

Respondents who had been (individually) in Ludwigshafen (1943), Munich (1944) and Nuremberg (1944) reported that in the days following Allied raids foreign workers were reviled and occasionally attacked by German civilians; they were scapegoats for the feeling of hatred against the enemy ("You too are responsible," was the attitude of civilians).

Two respondents reported that in the Ruhr and Rhineland areas which were occupied by the Allies after the last war, the effectiveness of the "terrorist" propaganda line was somewhat diminished by the recollection of the older inhabitants that the British and Americans were not the "gangsters" that the Nazi propagandist claimed them to be. It was also mentioned that the hatred propaganda was somewhat less effective among the non-Nazi than among the Nazis, and likewise less effective among the older civilians than among the young. But the majority opinion agreed that Allied bombing has definitely provoked a feeling of hatred among the German civilian population as a whole.

There was, on the other hand, no evidence in the respondents' replies that the hatred caused by Allied bombings had at any time in itself a stimulating effect on the German civilian population, such as would increase the determination to continue the war; the intense and cumulative suffering entailed principally demoralized the people without in itself exciting their will to fight; none of the respondents who had been in Germany in 1942 felt that even the early lighter raids had had a morale-boosting effect.

KINDS OF RAIDS

How do you think the German civilians feel about day raids as opposed to night raids?

Almost without exception the respondents specified that the night raids were the more feared; this appears to have been due principally to the greater panic and chaos that ensued at night, regardless of the frequent illumination of a bombed city by large fires.

One respondent remarked that the day raids were more demoralizing because of the fact that they vividly symbolized the enemy's strength and ability to rule the sky over the heart of Germany in full daylight.

Did German civilians consider any particular type bomb most dangerous?

The respondents, with five exceptions, were of the opinion that phosphorus and light incendiary bombs were the source of greater demoralization. They referred specifically to the resultant widespread and frequently uncontrollable property damage, rather than to the fear of personal injury. The demoralizing spectacle (sometimes lasting several days after a heavy raid) of innumerable and often inextinguishable fires destroying irreplaceable property was stressed in the majority of

the interviews. Although heavy demolition bombs killed a far greater number of civilians, and both at the time of impact and during the collapse of building-walls caused more intense fear, the fact that their action was immediate appears to explain why their over-all demoralizing effect was not regarded as equally great. Two respondents suggested that this may also have resulted from the fact that a civilian under frequent bombing often resigns himself to the possibilities of being killed in the course of the next raid, but in the event of his survival is dismayed to see everything he possesses in the world irretrievably destroyed by fire.

Four respondents believed that the shock and terror caused by the impact of demolition bombs was the greater demoralizer; one respondent specified whistle-bombs.

POST-RAID LABOR CONDITIONS

If the raids caused apathy among German workers, how long after a raid did they remain apathetic?

None of the respondents testified to having at any time observed post-raid illegal absenteeism on any noticeable scale. It was predominantly emphasized in the interviews that regardless of how German workers felt after a raid, they were obliged to continue unremittently at their jobs, at the risk of severe punishment should they absent themselves. There appear to have been two exceptions to this rule. If a worker's home was damaged or destroyed, he was variously granted from one to seven days for the purpose of making necessary repairs or salvaging his property and reestablishing himself elsewhere in the city. There were also instances (Hamburg, 28 July 1943, Munich 16 July 1944) where the over-all destruction caused by bombing brought all productive labor to a halt for a time. In Hamburg this appears to have been the case for over two weeks (with the exception of one unaffected section of the city). After the 16 July 1944 raid on Munich all productive factory work was abandoned for four days; on the fifth day large billboards announced that on the fifth day absence from work would constitute unauthorized absenteeism.

After a raid of non-saturation intensity, factory labor was maintained uninterruptedly at the highest level possible, regardless of difficulty and inconvenience. Impaired rail transportation for commuting workers was immediately supplemented by the use of vehicles (everything in the countryside was at the disposal of the authorities). Every effort was made to keep up "work as usual." A

respondent (Berlin) reported that after the partial destruction of a small plant in which he was employed, German and foreign workers, men and women, continued at their benches under an almost open sky in midwinter, in bad weather, while the repair work was in progress. Respondents stressed that repair work on partially damaged factory installations was undertaken immediately; when no attempt was made to repair or rebuild because of total destruction, the workers were immediately assigned to work elsewhere; no worker in Germany, native or foreign, was at any time allowed to be idle. One respondent remarked that the German worker was caught up in an irresistible machine, which set his pace. Another commented on the satiating repetition of the word "Arbeit" (work) in German factories; "Arbeit," he remarked, has long been the god of the German worker, for whom liberty is something laughable and intense discipline is an ideal; on such fertile ground Goebbels has long found a natural reception for the preaching of work for the Fatherland, and it has rendered intelligible his propaganda pleas, after the worst raids, for even more and more work to achieve final victory. Behind him stands the police.

If during the six a.m.—six p.m. factory shift, (shifts were variously reported as from 10 to 12 hours), a raid occurred which did not touch the factory but hit the workers' residential area, workers were nonetheless required to stick at their benches until six p.m.; only then were they able to investigate the condition of their homes. During the hours between the raid and the time they were released, they were in a hyper excited condition, and the quantity of the work accomplished was perceptibly affected. On the other hand, by the time they arrived home they were somewhat calmed by the passage of several hours, and were better prepared to contemplate the results of the raid.

In the immediate aftermath of a raid, a worker was allowed to claim two days uncertified absence on the basis of injuries received; on the third day he was required to request official medical authorization for absence. Medical officers were reported by the respondents to be exceedingly strict; it was believed that they issued medical excuses on the basis of an allowance indicated to them by the local labor authorities; the medical authorities were possibly even more rigorous with German workers than with foreigners.

In the event of an unauthorized absence, the factory director (Nazi) immediately informed the police, and within a few hours a search for the absentee was initiated. For a first offense, a German

worker received a heavy fine (200-300 marks), which he could generally ill afford; a second offense brought commitment to a concentration camp.

Absenteeism was also curtailed by the fact that factory directors were not obliged to re-employ any absentees; they received from the foreign labor supply replacements for such German workers as absented themselves. By the same token, the arrival of drafted foreign labor in Germany for a long time released large numbers of German factory workers for the Russian front, and made certain the dispatch of anyone noticeably dissatisfied or inefficient.

Many respondents reported that as the tempo of Allied raids penetrating deep into Germany increased, much working time was lost by the constant entry of factory personnel into air raid shelters. To counter this, in some factories, the alarm was given only when enemy aircraft were almost overhead (Mannheim, 1944; Berlin 1944; Munich 1944); instances were cited in which bombs were being released before workers were permitted to leave their benches (Berlin 1944); it was related that in Hamburg (1944) factory doors were locked to prevent workers from leaving before the designated moment.

The respondents concurred that after heavy bombings the bearing of German civilians was frequently marked by a seriously apathetic attitude (*aplati*). Three respondents described this state of mind as dominated by a *laissez-aller* spirit. The duration of this apathy after a heavy raid was generally designated as from "three to four days" to "a week or so." During this period the civilians were subject to extreme nervousness; they were apt to show panic when air raid alarms were sounded.

It was stressed in several interviews that this apathetic condition is a compound of the shock caused by the raids and by the very important factor of cumulative fatigue. The constant fatigue engendered by continual air alerts, added to the long working hours of the German factory employee, resulted in some areas in what two respondents described as a state of permanent partial apathy.

EVACUEES

What was life like for German evacuees who had lost their homes and possessions?

Respondents who had been in a position to observe the living conditions of German evacuees in 1943 testified that, although they were unquestionably depressed by their experiences, life was rendered tolerable for them by the satisfactory accom-

modations, which were then still available. These evacuees were described as feeling somewhat superior to those whose cities and homes had not been bombed; they had first priority on the purchase of supplies and clothing; they were generally billeted in reasonable comfort in private homes. As the number of evacuees increased greatly, the quantity of billets available to them correspondingly decreased, with corresponding dissatisfaction. Evacuees were still frequently assigned to private homes, but it became necessary to requisition movie houses and government buildings for dormitory purposes in various evacuation areas (Walterhausen, Sankt-hofen, Singen). The German evacuee, especially the factory employee, was being increasingly reduced to the status of a foreign worker, and was often billeted in large jerry-built barrack camps near factories. He slept on cots, and generally led a comfortless life (Gruenberg, August 1944).

What was the effect on German civilians of being separated from their families by evacuation?

Respondents distinctly minimized the effect of the disruption of the German family under Allied bombing. This they explained principally on the grounds that the German family had already been profoundly disrupted by the influence of the Nazi government. Children had frequently been absent from their homes since an early age. They were inculcated with greater loyalty to the Nazi Party than to their families; the entire family structure frequently disintegrated through fear of betrayal. Every member of the German family, whether civilian or military, was a "soldier"—the dispersal and sufferings of a family were viewed in this light. Mourning dress was not worn in Germany; German women were described as wearing for a few days a minute mourning ribbon. Respondents referred in a tone, almost of disbelief, to the rapidity with which the dead were forgotten in large cities after heavy Allied raids; they did not believe that such a state of mind could be induced in Latin countries.

It was also pointed out that a worker employed on a 10 or 12 hour day, eating his meals in factory canteens, had far less need of family life than under normal conditions; and that evacuated workers, being far from their homes and indifferent to the life of the cities in which they were working, were not hostile to the prospect even of working overtime, for which they received extra and welcome pay.²

² The impression of indifference to family ties given here is not borne out by the reports of civilian distress at separation of families by evacuation of children, reported in Chapter 5, Part II, Volume I.

W
I
vie
soc
lon
cou
urb
for
Fur
wer
mot
A
194
mat
pro
cris
dun
sch
in t
ever
ase
rees
T
loca
erty
ed,
a la
evac
His
owir
men
mon

Tabl
Forei

I
I
I

Age:
2
2

EFFECTS OF BOMBING ON CLASSES

Were the upper classes more or less affected by the raids than were the lower classes?

It was clearly brought out in several of the interviews that the upper middle class did not suffer social or economic disintegration as a result of bombings; wealthier families had the recourse of a country home in the event of the destruction of urban residences (the wealthier families of Munich, for example, withdrew to their homes in the Tyrol). Furthermore, possessing Party connections, they were frequently able to recoup their air raid losses more fully and rapidly than the less privileged.

A respondent who had experienced the 27 July 1943 raid on Hamburg reported that for approximately two weeks after the raids all unbombed property, all unbombed private homes, were indiscriminately shared by the homeless; that there was during this period a genuine spirit of Kameradschaft; and that all classes lived on the same plane in their common suffering. It is indicated, however, that before long, class differences were reasserted, and that the wealthier bourgeoisie rapidly reestablished their position.

The fate of the lower middle class, of the small local merchant was difficult. For him lost property was irreplaceable; when his shop was destroyed, he was without appeal and was mobilized into a labor pool without delay. Frequently he was evacuated for factory work in some other city. His position became increasingly untenable, since owing to the vast extent of destruction the placement and collection of bomb-damage claims became more and more difficult.

TABLE D.—Classification of respondents in French escapee study

Foreign worker classification:

Military prisoners escaped after imprisonment into civilian labor.....	9
Escaped drafted laborers (including 4 FFI agents).....	17
Drafted laborers returned to France on German-granted leave.....	10
Drafted laborers invalidated home because of industrial accident.....	1

Age:	
20-25 years.....	10
25-30 years.....	7

30-35 years.....	10
35-40 years.....	2
40-45 years.....	5
45-50 years.....	1
Over 50 years.....	2

Experienced Allied strategic bombing in or near the following cities:

Augsburg.....	1
Berlin.....	14
Dortmund.....	1
Friedrichshafen.....	1
Hamburg.....	2
Hanover.....	3
Leipzig.....	1
Ludwigshafen.....	2
Mannheim.....	1
Munich.....	3
Nuremberg.....	1
Oberhausen (Essen).....	1
Pforzheim.....	1
Witten (Dortmund).....	1

Witnessed post-raid evacuations (but not Allied bombings) in or near the following locales:

Chemnitz.....	1
Krems (Austria).....	1
Rasthofen.....	1
Singen.....	1
Waltershausen.....	1

How employed:

Agricultural machinery factory.....	1
Aircraft factory.....	2
Bicycle factory.....	1
Chemical factory.....	1
Cinema-operator for French workers.....	1
Civil engineer.....	1
Garage employee.....	1
Gas works.....	1
Hairdresser.....	1
Jockey.....	1
Munitions factory.....	1
Precision-tool factory.....	1
Radio factory.....	1
Reichsbahn employee.....	1
Rubber factory.....	1
Submarine-parts factory.....	1
Synthetic-food plant.....	1
Tank-parts factory.....	1
Telephone factory.....	1
Warehouse employee.....	1
Unascertained.....	11

German-speaking:

Fluent (including 1 Alsatian, 1 Luxemburger).....	5
Elementary.....	8
Not at all.....	24

UNITED STATES STRATEGIC BOMBING SURVEY

LIST OF REPORTS

The following is a bibliography of reports resulting from the Survey's studies of the European and Pacific wars. Certain of these reports may be purchased from the Superintendent of Documents at the Government Printing Office, Washington, D. C. Permission to examine the remaining reports may be had by writing to the Headquarters of the Survey at Gravelly Point, Washington 25, D. C.

European War

OFFICE OF THE CHAIRMAN

- 1 The United States Strategic Bombing Survey: Summary Report (European War)
- 2 The United States Strategic Bombing Survey: Overall Report (European War)
- 3 The Effects of Strategic Bombing on the German War Economy

AIRCRAFT DIVISION

(By Division and Branch)

- 4 Aircraft Division Industry Report
- 5 Inspection Visits to Various Targets (Special Report)

Airframes Branch

- 6 Junkers Aircraft and Aero Engine Works, Dessau, Germany
- 7 Erla Maschinenwerke G m b H, Heiterblick, Germany
- 8 A T G Maschinenbau, G m b H, Leipzig (Mockau), Germany
- 9 Gothaer Waggonfabrik, A G, Gotha, Germany
- 10 Focke Wulf Aircraft Plant, Bremen, Germany
- 11 Messerschmitt A G, Augsburg, Germany
 - Over-all Report
 - Part A
 - Part B
 - Appendices I, II, III
- 12 Dornier Works, Friedrichshafen & Munich, Germany
- 13 Gerhard Fieseler Werke G m b H, Kassel, Germany
- 14 Wiener Neustädter Flugzeugwerke, Wiener Neustadt, Austria

Aero Engines Branch

- 15 Bussing NAG Flugmotorenwerke G m b H, Brunswick, Germany
- 16 Mittel-Deutsche Motorenwerke G m b H, Taucha, Germany
- 17 Bavarian Motor Works Inc, Eisenach & Durrerhof, Germany
- 18 Bayerische Motorenwerke A G (BMW), Munich, Germany
- 19 Henschel Flugmotorenwerke, Kassel, Germany

Light Metal Branch

- 20 Light Metals Industry of Germany
 - Part I, Aluminum
 - Part II, Magnesium
- 21 Vereinigte Deutsche Metallwerke, Hildesheim, Germany
- 22 Metallgesellschaft G m b H, Leipzig, Germany

- 23 Aluminiumwerke G m b H, Plant No. 2, Bitterfeld, Germany
- 24 Gebrüder Gültini G m b H, Ludwigshafen, Germany
- 25 Luftschiffbau Zeppelin G m b H, Friedrichshafen on Bodensee, Germany
- 26 Wieland Werke A G, Ulm, Germany
- 27 Rudolph Rautenbach Leichtmetallgesellschaften, Solingen, Germany
- 28 Lippewerke Vereinigte Aluminiumwerke A G, Lünen, Germany
- 29 Vereinigte Deutsche Metallwerke, Heddernheim, Germany
- 30 Dürener Metallwerke A G, Düren Wittenau-Berlin & Werra, Germany

AREA STUDIES DIVISION

- 31 Area Studies Division Report
- 32 A Detailed Study of the Effects of Area Bombing on Hamburg
- 33 A Detailed Study of the Effects of Area Bombing on Wuppertal
- 34 A Detailed Study of the Effects of Area Bombing on Düsseldorf
- 35 A Detailed Study of the Effects of Area Bombing on Solingen
- 36 A Detailed Study of the Effects of Area Bombing on Remscheid
- 37 A Detailed Study of the Effects of Area Bombing on Darmstadt
- 38 A Detailed Study of the Effects of Area Bombing on Lubeck
- 39 A Brief Study of the Effects of Area Bombing on Berlin, Augsburg, Bochum, Leipzig, Hagen, Dortmund, Oberhausen, Schweinfurt, and Bremen

CIVILIAN DEFENSE DIVISION

- 40 Civilian Defense Division—Final Report
- 41 Cologne Field Report
- 42 Bonn Field Report
- 43 Hanover Field Report
- 44 Hamburg Field Report—Vol I, Text; Vol II, Exhibits
- 45 Bad Odesheide Field Report
- 46 Augsburg Field Report
- 47 Reception Areas in Bavaria, Germany

EQUIPMENT DIVISION

Electrical Branch

- 48 German Electrical Equipment Industry Report
- 49 Brown Boveri et Cie, Mannheim Kalertal, Germany

Optical and Precision Instrument Branch

- 50 Optical and Precision Instrument Industry Report

Abrasives Branch

- 51 The German Abrasive Industry
- 52 Mayer and Schmidt, Offenbach on Main, Germany

Anti-Friction Branch

- 53 The German Anti-Friction Bearings Industry

Machine Tools Branch

- 54 Machine Tools & Machinery as Capital Equipment
- 55 Machine Tool Industry in Germany
- 56 Herman Kolb Co, Cologne, Germany
- 57 Collet and Engelhard, Offenbach, Germany
- 58 Naxos Union, Frankfurt on Main, Germany

MILITARY ANALYSIS DIVISION

- 59 The Defeat of the German Air Force
- 60 V-Weapons (Crawlers) Campaign
- 61 Air Force Rate of Operation
- 62 Weather Factors in Combat Bombardment Operations in the European Theatre
- 63 Bombing Accuracy, USAAF Heavy and Medium Bombers in the ETO
- 64 Description of RAF Bombing
- 64a The Impact of the Allied Air Effort on German Logistics

MORALE DIVISION

- 64b The Effects of Strategic Bombing on German Morale (Vol I and Vol II)

Medical Branch

- 65 The Effect of Bombing on Health and Medical Care in Germany

MUNITIONS DIVISION

Heavy Industry Branch

- 66 The Coking Industry Report on Germany
- 67 Coking Plant Report No. 1, Sections A, B, C, & D
- 68 Gutehoffnungshutte, Oberhausen, Germany
- 69 Friedrich-Alfred Huette, Rheinhausen, Germany
- 70 Neunkirchen Eisenwerke A G, Neunkirchen, Germany
- 71 Reichswerke Hermann Goering A G, Hallendorf, Germany
- 72 August Thyssen Huette A G, Hamborn, Germany
- 73 Friedrich Krupp A G, Borbeck Plant, Essen, Germany
- 74 Dortmund Hoerder Huetteverein, A G, Dortmund, Germany
- 75 Hoesch A G, Dortmund, Germany
- 76 Bochumer Verein fuer Guetstahlfabrikation A G, Bochum, Germany

Motor Vehicles and Tanks Branch

- 77 German Motor Vehicles Industry Report
- 78 Tank Industry Report
- 79 Daimler Benz A G, Unterturkheim, Germany
- 80 Renault Motor Vehicles Plant, Billancourt, Paris
- 81 Adam Opel, Rueselsheim, Germany
- 82 Daimler Benz-Gaggenau Works, Gaggenau, Germany
- 83 Maschinenfabrik Augsburg-Nurnberg, Nurnberg, Germany
- 84 Auto Union A G, Chemnitz and Zwickau, Germany
- 85 Henschel & Sohn, Kassel, Germany
- 86 Maybach Motor Works, Friedrichshafen, Germany
- 87 Voigtlander, Maschinenfabrik A G, Plauen, Germany
- 88 Volkswagenwerke, Fallersleben, Germany
- 89 Bussing NAG, Brunswick, Germany
- 90 Muehlenbau Industrie A G (Mig) Brunswick, Germany
- 91 Friedrich Krupp Grusonwerke, Magdeburg, Germany

Submarine Branch

- 92 German Submarine Industry Report
- 93 Maschinenfabrik Augsburg-Nurnberg A G, Augsburg, Germany
- 94 Blohm and Voess Shipyards, Hamburg, Germany
- 95 Deutsche Werke A G, Kiel, Germany
- 96 Deutsche Schiff und Maschinenbau, Bremen, Germany
- 97 Friedrich Krupp Germaniawerft, Kiel, Germany
- 98 Howaldtswerke A G, Hamburg, Germany
- 99 Submarine Assembly Shelter, Farge, Germany
- 100 Bremer Vulkan, Vegesack, Germany

Ordnance Branch

- 101 Ordnance Industry Report
- 102 Friedrich Krupp Grusonwerke A G Magdeburg, Germany
- 103 Bochumer Verein fuer Guetstahlfabrikation A G, Bochum, Germany
- 104 Henschel & Sohn, Kassel, Germany
- 105 Rheinmetall-Borsig, Dusseldorf, Germany
- 106 Hermann Goering Werke, Braunschweig, Hallendorf, Germany
- 107 Hannoverische Maschinenbau, Hannover, Germany
- 108 Guetstahlfabrik Friedrich Krupp, Essen, Germany

OIL DIVISION

- 109 Oil Division, Final Report
- 110 Oil Division, Final Report, Appendix
- 111 Powder, Explosives, Special Rockets and Jet Propellants, War Gases and Smoke Acid (Ministerial Report #1)
- 112 Underground and Dispersal Plants in Greater Germany
- 113 The German Oil Industry, Ministerial Report Team 78
- 114 Ministerial Report on Chemicals

Oil Branch

- 115 Ammoniakwerke Merseburg G m b H, Leuna, Germany—2 Appendices
- 116 Braunkohle Benz A G, Zeitz and Böhlen, Germany
- 117 Wintershall A G, Lutzendorf, Germany
- 117 Ludwigshafen-Hypso Works of I G Farbenindustrie A G, Ludwigshafen, Germany
- 118 Ruhwed Hydrogenation Plant, Bottrop-Roy, Germany, Vol I, Vol II
- 119 Rhennan Oesag Mineraloelwerke A G, Harburg Refinery, Hamburg, Germany
- 120 Rhennan Oesag Mineraloelwerke A G, Graslbrook Refinery, Hamburg, Germany
- 121 Rhennan Oesag Mineraloelwerke A G, Wilhelmshafen Refinery, Hamburg, Germany
- 122 Gewerkschaft Victor, Castrop-Rauxel, Germany, Vol I & Vol II
- 123 Europäische Tanklager und Transport A G, Hamburg, Germany
- 124 Eban Asphalt Werke A G, Harburg Refinery, Hamburg, Germany
- 125 Meerbeck Rheinpreussen Synthetic Oil Plant—Vol I & Vol II

Rubber Branch

- 126 Deutsche Dunlop Gummi Co., Hanau on Main, Germany
- 127 Continental Gummiwerke, Hanover, Germany
- 128 Huls Synthetic Rubber Plant
- 129 Ministerial Report on German Rubber Industry

Propellants Branch

- 130 Elektrochemiewerke, Munich, Germany
- 131 Schoenbeck Explosive Plant, Lignite Sprengstoff Werke G m b H, Bad Salzen, Germany
- 132 Plants of Dynamit A G, Vormit, Alfred Nobel & Co, Troisdorf, Clausthal, Drunzel and Dinsberg, Germany
- 133 Deutsche Sprengchemie G m b H, Kraiburg, Germany

OVER-ALL ECONOMIC EFFECTS DIVISION

- 134 Over-All Economic Effects Division Report
- Gross National Product Special papers
- Kriegsberichte which together
- German Govt Works comprise the
- Food and Agriculture above report
- 134a Industrial Sales Output and Productivity

PHYSICAL DAMAGE DIVISION

- 134b Physical Damage Division Report (ETU)
- 135 Villacoublay Airframe, Paris, France
- 136 Railroad Repair Yards, Malines, Belgium
- 137 Railroad Repair Yards, Louvain, Belgium
- 138 Railroad Repair Yards, Hasselt, Belgium
- 139 Railroad Repair Yards, Namur, Belgium
- 140 Submarine Pens, Brest, France
- 141 Powder Plant, Angoulême, France
- 142 Powder Plant, Bergerac, France
- 143 Coking Plants, Montigny & Lège, Belgium
- 144 Fort St. Blaise Verdun Group, Metz, France
- 145 Gnome et Rhône, Langue, France
- 146 Michelin Tire Factory, Clermont-Ferrand, France
- 147 Gnome et Rhône Aero Engine Factory, Le Mans, France
- 148 Kugelfischer Bearing Ball Plant, Ebelach, Germany
- 149 Louis Breguet Aircraft Plant, Toulouse, France
- 150 S. N. C. A. S. E. Aircraft Plant, Toulouse, France
- 151 A. L. A. Aircraft Plant, Toulouse, France
- 152 V Weapons in London
- 153 City Area of Knifeld
- 154 Public Air Raid Shelters in Germany
- 155 Gelsenberg Thermal Electric Power Station, Knapack, Germany
- 156 Brauweiler Transformer & Switching Station, Brauweiler, Germany
- 157 Storage Depot, Nahbollenbach, Germany
- 158 Railway and Road Bridge, Bad Munster, Germany
- 159 Railway Bridge, Eller, Germany
- 160 Gustloff-Werke Weimar, Weimar, Germany
- 161 Henrich & Sohn G m b H, Kassel, Germany
- 162 Area Survey at Pyramiden, Germany
- 163 Hanomag, Hanover, Germany
- 164 M A N Werke Augsburg, Augsburg, Germany
- 165 Friedrich Krupp A G, Essen, Germany
- 166 Erla Maschinenwerke, G m b H, Heisterblick, Germany
- 167 A T G Maschinenbau G m b H, Mookau, Germany
- 168 Erla Maschinenwerke G m b H, Mookau, Germany
- 169 Bayerische Motorenwerke, Duererhof, Germany
- 170 Mittel-Deutsche Motorenwerke G m b H, Taucha, Germany
- 171 Submarine Pens Deutsche-Werft, Hamburg, Germany
- 172 Multi-Storey Structures, Hamburg, Germany
- 173 Continental Gummiwerke, Hanover, Germany
- 174 Kassel Marshalling Yards, Kassel, Germany
- 175 Ammunitionswerke, Merseburg-Leuna, Germany
- 176 Brown Boveri & Cie, Mannheim, Käfertal, Germany

- 177 Adam Opel A G, Rüsselsheim, Germany
- 178 Daimler-Benz A G, Unterturkheim, Germany
- 179 Valentin Submarine Assembly, Farge, Germany
- 180 Volkswagenwerke, Fallersleben, Germany
- 181 Railway Viaduct at Bielefeld, Germany
- 182 Ship Yards Howaldt-Werke, Hamburg, Germany
- 183 Blohm and Voos Shipyard, Hamburg, Germany
- 184 Daimler-Benz A G, Mannheim, Germany
- 185 Synthetic Oil Plant, Meerbeck-Hamburg, Germany
- 186 Gewerkschaft Victor, Castro-Poppel, Germany
- 187 Klockner Humboldt Deutz, Ulm, Germany
- 188 Ruhrol Hydrogenation Plant, Bottrop-Roy, Germany
- 189 Neukirchen Eisenwerke A G, Neukirchen, Germany
- 190 Railway Viaduct at Alent ecken, Germany
- 191 Railway Viaduct at Arnoldsburg, Germany
- 192 Deuring-Nering Refineries, Mueburg, Germany
- 193 Fire Raids on German Cities
- 194 I G Farbenindustrie, Ludwigshafen, Germany, Vol I & Vol II
- 195 Roundhouse in Marshalling Yard, Ulm, Germany
- 196 I G Farbenindustrie, Leverkusen, Germany
- 197 Chemische-Werke, Hoebe, Germany
- 198 Gremberg Marshalling Yard, Gremberg, Germany
- 199 Locomotive Shops and Bridges at Hamm, Germany

TRANSPORTATION DIVISION

- 200 The Effects of Strategic Bombing on German Transportation
- 201 Rail Operations Over the Brenner Pass
- 202 Effects of Bombing on Railroad Installations in Regensburg, Nurnberg and Munich Divisions
- 203 German Locomotive Industry During the War
- 204 German Military Railroad Traffic

UTILITIES DIVISION

- 205 German Electric Utilities Industry Report
- 206 1 to 10 in Vol I "Utilities Division Plant Reports"
- 207 11 to 20 in Vol II "Utilities Division Plant Reports"
- 208 21 Rheinische-Westfälische Elektrizitätswerk A G

Pacific War

OFFICE OF THE CHAIRMAN

- 1 Summary Report Pacific War
- 2 Japan's Struggle to End the War
- 3 The Effects of Atomic Bombs on Hiroshima and Nagasaki

CIVILIAN STUDIES

Civilian Defense Division

- 4 Field Report Covering Air Raid Protection and Allied Subjects, Tokyo, Japan
- 5 Field Report Covering Air Raid Protection and Allied Subjects, Nagasaki, Japan
- 6 Field Report Covering Air Raid Protection and Allied Subjects, Kyoto, Japan
- 7 Field Report Covering Air Raid Protection and Allied Subjects, Kobe, Japan
- 8 Field Report Covering Air Raid Protection and Allied Subjects, Osaka, Japan
- 9 Field Report Covering Air Raid Protection and Allied Subjects, Hiroshima, Japan—No. 1
- 10 Summary Report Covering Air Raid Protection and Allied Subjects in Japan

- 11 Final Report Covering Air Raid Protection and Allied Subjects in Japan

Medical Division

- 12 The Effect of Bombing on Health and Medical Services in Japan
13 The Effects of Atomic Bombs on Health and Medical Services in Hiroshima and Nagasaki

Morale Division

- 14 The Effects of Strategic Bombing on Japanese Morale

ECONOMIC STUDIES

Aircraft Division

- 15 The Japanese Aircraft Industry
16 Mitsubishi Heavy Industries, Ltd.
Corporation Report No. I
(Mitsubishi Jukogyo KK)
(Aircrafts & Engines)
17 Nakajima Aircraft Company, Ltd.
Corporation Report No. II
(Nakajima Hikoki KK)
(Aircrafts & Engines)
18 Kawasaki Aircraft Company
Corporation Report No. III
(Kawasaki Kokuki Kabushiki Kaisha)
(Aircrafts)
19 Kawasaki Aircraft Industries Company, Inc.
Corporation Report No. IV
(Kawasaki Kokuki Kogyo Kabushiki Kaisha)
(Aircrafts & Engines)
20 Aichi Aircraft Company
Corporation Report No. V
(Aichi Kokuki KK)
(Aircrafts & Engines)
21 Sumitomo Metal Industries, Propeller Division
Corporation Report No. VI
(Sumitomo Kinzoku Kogyo KK, Puropora Seisasho)
(Propellers)
22 Hitachi Aircraft Company
Corporation Report No. VII
(Hitachi Kokuki KK)
(Aircrafts & Engines)
23 Japan International Air Industries, Ltd.
Corporation Report No. VIII
(Nippon Kokusai Koku Kogyo KK)
(Aircrafts)
24 Japan Musical Instrument Manufacturing Company
Corporation Report No. IX
(Nippon Gakki Seiso KK)
(Propellers)
25 Tachikawa Aircraft Company
Corporation Report No. X
(Tachikawa Hikoki KK)
(Aircrafts)
26 Fuji Airplane Company
Corporation Report No. XI
(Fuji Hikoki KK)
(Aircrafts)
27 Showa Airplane Company
Corporation Report No. XII
(Showa Hikoki Kogyo KK)
(Aircrafts)

- 28 Ishikawajima Aircraft Industries Company, Ltd.

Corporation Report No. XIII

(Ishikawajima Koku Kogyo Kabushiki Kaisha)
(Engines)

- 29 Nippon Airplane Company

Corporation Report No. XIV

(Nippon Hikoki KK)
(Aircrafts)

- 30 Kyushu Airplane Company

Corporation Report No. XV

(Kyushu Hikoki KK)
(Aircrafts)

- 31 Shoda Engineering Company

Corporation Report No. XVI

(Shoda Heisakujo)
(Components)

- 32 Mitaka Aircraft Industries

Corporation Report No. XVII

(Mitaka Koku Kogyo Kabushiki Kaisha)
(Components)

- 33 Nissan Automobile Company

Corporation Report No. XVIII

(Nissan Jidosha KK)
(Engines)

- 34 Army Air Arsenal & Navy Air Depots

Corporation Report No. XIX

(Aircrafts and Engines)

- 35 Japan Aircraft Underground

Report No. XX

Basic Materials Division

- 36 Coal and Metals in Japan's War Economy

Capital Goods, Equipment and Construction Division

- 37 The Japanese Construction Industry

- 38 Japanese Electrical Equipment

- 39 The Japanese Machine Building Industry

Electric Power Division

- 40 The Electric Power Industry of Japan

- 41 The Electric Power Industry of Japan (Plant Reports)

Manpower, Food and Civilian Supplies Division

- 42 The Japanese Wartime Standard of Living and Utilization of Manpower

Military Supplies Division

- 43 Japanese War Production Industries

- 44 Japanese Naval Ordnance

- 45 Japanese Army Ordnance

- 46 Japanese Naval Shipbuilding

- 47 Japanese Motor Vehicle Industry

- 48 Japanese Merchant Shipbuilding

Oil and Chemical Division

- 49 Chemicals in Japan's War

- 50 Chemicals in Japan's War—Appendix

- 51 Oil in Japan's War

- 52 Oil in Japan's War—Appendix

Over-all Economic Effects Division

- 53 The Effects of Strategic Bombing on Japan's War Economy (Including Appendix A: U. S. Economic Intelligence on Japan—Analysis and Comparison; Appendix B: Gross National Product on Japan and Its Components; Appendix C: Statistical Sources)

Transportation Division

- 54 The War Against Japanese Transportation, 1941-1945

Urban Areas Division

- 55 Effects of Air Attack on Japanese Urban Economy (Summary Report)
56 Effects of Air Attack on Urban Complex Tokyo-Kawasaki-Yokohama
57 Effects of Air Attack on the City of Nagoya
58 Effects of Air Attack on Osaka-Kobe-Kyoto
59 Effects of Air Attack on the City of Nagasaki
60 Effects of Air Attack on the City of Hiroshima

MILITARY STUDIES

Military Analysis Division

- 61 Air Forces Allied with the United States in the War Against Japan
62 Japanese Air Power
63 Japanese Air Weapons and Tactics
64 The Effects of Air Action on Japanese Ground Army Logistics
65 Employment of Forces Under the Southwest Pacific Command
66 The Strategic Air Operations of Very Heavy Bombardment in the War Against Japan (Twentieth Air Force)
67 Air Operations in China, Burma, India—World War II
68 The Air Transport Command in the War Against Japan
69 The Thirteenth Air Force in the War Against Japan
70 The Seventh and Eleventh Air Forces in the War Against Japan
71 The Fifth Air Force in the War Against Japan

Naval Analysis Division

- 72 The Interrogations of Japanese Officials (Vols I and II)
73 Campaigns of the Pacific War
74 The Reduction of Wake Island
75 The Allied Campaign Against Rabaul
76 The American Campaign Against Wotje, Makinap, Mille, and Jaluit (Vols I, II and III)
77 The Reduction of Truk
78 The Offensive Mine Laying Campaign Against Japan
79 Report of Ships Bombardment Survey Party—Foreword, Introduction, Conclusions, and General Summary
80 Report of Ships Bombardment Survey Party (Enclosure A), Kamaishi Area
81 Report of Ships Bombardment Survey Party (Enclosure B), Hamamatsu Area
82 Report of Ships Bombardment Survey Party (Enclosure C), Hitachi Area
83 Report of Ships Bombardment Survey Party (Enclosure D), Hakodate Area

- 84 Report of Ships Bombardment Survey Party (Enclosure E), Muroran Area
85 Report of Ships Bombardment Survey Party (Enclosure F), Shimizu Area
86 Report of Ships Bombardment Survey Party (Enclosures G and H), Shimonoseki and Nojima-Saki Areas
87 Report of Ships Bombardment Survey Party (Enclosure I), Comments and Data on Effectiveness of Ammunition
88 Report of Ships Bombardment Survey Party (Enclosure J), Comments and Data on Accuracy of Firing
89 Reports of Ships Bombardment Survey Party (Enclosure K), Effects of Surface Bombardments on Japanese War Potential

Physical Damage Division

- 90 Effect of the incendiary Bomb Attacks on Japan (a Report on Eight Cities)
91 The Effects of the Ten Thousand Pound Bomb on Japanese Targets (a Report on Nine Incidents)
92 Effects of the Atomic Bomb on Hiroshima, Japan
93 Effects of the Atomic Bomb on Nagasaki, Japan
94 Effects of the Four Thousand Pound Bomb on Japanese Targets (a Report on Five Incidents)
95 Effects of Two Thousand, One Thousand, and Five Hundred Pound Bombs on Japanese Targets (a Report on Eight Incidents)
96 A Report on Physical Damage in Japan (Summary Report)

G-2 Division

- 97 Japanese Military and Naval Intelligence
98 Evaluation of Photographic Intelligence in the Japanese Homeland, Part I, *Comprehensive Report*
99 Evaluation of Photographic Intelligence in the Japanese Homeland, Part II, *Airfields*
100 Evaluation of Photographic Intelligence in the Japanese Homeland, Part III, *Computed Bomb Plotting*
101 Evaluation of Photographic Intelligence in the Japanese Homeland, Part IV, *Urban Area Analysis*
102 Evaluation of Photographic Intelligence in the Japanese Homeland, Part V, *Camouflage*
103 Evaluation of Photographic Intelligence in the Japanese Homeland, Part VI, *Shipping*
104 Evaluation of Photographic Intelligence in the Japanese Homeland, Part VII, *Electronics*
105 Evaluation of Photographic Intelligence in the Japanese Homeland, Part VIII, *Beach Intelligence*
106 Evaluation of Photographic Intelligence in the Japanese Homeland, Part IX, *Artillery*
107 Evaluation of Photographic Intelligence in the Japanese Homeland, Part X, *Roads and Railroads*
108 Evaluation of Photographic Intelligence in the Japanese Homeland, Part XI, *Industrial Analysis*

☆ U. S. Government Printing Office: 1948—222222

REF - C

4 6 8

A.T.I.

1 2 9 9 4