who were positively inclined.

In

(a) Denmark

(b) Norway

(c) Rumania

the German passive air defense organization was restricted to measures designed to protect troop billets and bivouacs and installations of military importance, such as those industrial installations which were of significance for the German armament program. The air raid warning system was arranged accordingly.

Responsible for these passive air defense measures were

In (a), Denmark, Air District Command Hamburg/Passive Air Defense Section;

In (b), Norway, Air District Command Norway/Passive Air Defense Section;

In (c), Rumania, the German Air Force Mission to Rumania.

Units of the German passive air defense services were committed only in Rumania, for the purpose of protecting the oil region of Ploesti, where the 1st Passive Air Defense Brigade, comprising two motorized passive air defense regiments, was stationed.[127] The brigade also received one smoke projector

127. Appendix 15, which is a photostat copy of the report by the CG, 1st Passive Air Defense Brigade, Generalmajor Teschner--continued on p. 130.

91 battalion and one special purposes passive air defense bat-
talion to service dummy installations.[128] Furthermore, the 1st
Firefighting Police Regiment was also committed in the region,
since it was no longer required in the Maikop-Krasnodar re-
gion.

In order to provide a broader basis for damage control operations the Rumanian Passive Air Defense Regiment Marshal Antonescue was formed as a new unit. This unit was incorporated into the 1st (German) Passive Air Defense Brigade and, with support from German instructor personnel, developed into a highly capable force. The report submitted by the German Air Force Mission to Rumania dated 7 January 1942 and covering operations of the passive air defense units and the air raid warning service in the 22 June-16 October 1941 period gives full information on this subject.[129] All passive air defense units in Rumania were held in high regard in that country.

Due to efforts within the Rumanian Government to sabotage the measures ordered by Marshal Antonescu, the implementation of such measures was seriously retarded at times. This sabotage took the form of such action as the refusal to grant the funds required for the constructional part of the program

127--Continued: Under the title "Die Luftschutzbrigade I this report was published in Vol 1/1956 of "Der Zivile Luftschutz." Verlag Gasschutz und Luftschutz, Koblenz.

128. Karlsruhe Document Collection: "Einsatz der deutschen Luftschutzkraefte in Rumaenien 1941."

129. Karlsruhe Document Collection: "Die politische, wirtschaftliche und militaerische Lage in Rumaenien Maerz 1944," a study by the 8th (Military Science) Branch, Air Force General Staff, and dated 25 March 1944.

92 for the protection of refineries and bulk oil storage depots. After good experience with the protective structures financed with funds made available by some directors on their own initiative (protection against fragments, and catch basins, etc), a broader basis was provided later for such activities. It is necessary to state here, however, that some of the installations concerned evinced no interest whatever in the upkeep of such structures.

A situation plan of the oil refineries at Ploesti is included in this study.[130]

The passive air defense units committed in Rumania continued to accomplish their mission fully right up to the time when the Rumanian front collapsed. As long as the attacking enemy planes operated without radar locating devices, camouflage and smoke screening operations together with dummy installations served to insure that a high percentage of the enemy bombs landed in areas away from the oil refining works and the very large bulk oil storage depots. Even later a highly developed system of fire extinguishing helped to maintain production and storage at such a high level that production exceeded the possibilities for transportation.

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130. Appendix 16.

93 Continuous collaboration took place with Hungary, in the first place to build up an air raid warning system patterned on the German model, and secondly in the matter of methods of damage control.

In all cases, Germany made her wide experience available to the countries mentioned above inorder to do everything humanly possible to conserve their military potential and to protect valuable monuments of culture against destruction.

g. The Reich Institute of the Air Force for Passive Air Defense. The missions of centralized training, research, and development in all fields of passive air defense were responsibilities of the Reich Institute of the Air Force for Passive Air Defense.[131]

The Institute developed from the former Prussian Passive Air Defense and Air Police School, which had already conducted courses of instruction for officers of the Prussian Police on the subject of passive air defense.[132] The new Institute remained in the old premises of the former school in a former barracks in Berlin-Tempelhof, since these premises were large

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131. Von Stubenrauch: "Die Aufgaben der Reichsanstalt fuer Luftschutz," in "Sammelwerk Knipler-Hampe: "Der zivile Luftschutz," p. 267.

132. Originally the Institute was designated Police Institute for Technology and Traffic (Polizeiinstitut fuer Technik und Verkehr). Already at that time it had received the mission from the Prussian Ministry for the Interiorto draft "Interim Local Instructions for Air raid Protection of the Civilian Population (Vorlaeufige Ortsanweisung fuer den Luftschutz der Zivilbevoelkerung. See also II, c, above.

94 enough for both the training and technical missions of the new institute, which was established on 1 April 1935. Transfer of the institute to premises in Eisenbrot, in the Protectorate of Bohemia and Moravia, only became necessary at the end of 1943, due to the air threat.

THE DEPARTMENTS AND MISSIONS OF THE REICH INSTITUTE OF THE AIR FORCE FOR PASSIVE AIR DEFENSE

1. The Training (or School) Department had the mission of exploiting and applying immediately for the purpose of training all experience gathered by the Technical Sciences Department during maneuvers and later in air attacks.

Accordingly, the Training Department was required to handle all organizational, command and control, operational, and training problems, and to collaborate in the drafting of service and field manuals.

Throughout the year the Department conducted courses on the subjects of command and control, which were divided into beginner and special courses.

These courses involved a very wide circle of students, who were classed as follows:

(a) Passive Air Defense Courses for Civilian Authorities

(b) " " " " for Local Passive Air Defense Chiefs;

(c) Courses for Passive Air Defense Staff Officers for assignment to various headquarters of the Air Force;

94 and to the central and intermediate Governmental Offices;

Courses for Chiefs of Medical and Veterinary Services;

Courses for Members of the Medical Academy;

Courses for Lecturers at Universities;

Courses for Lecturers at Technical Colleges;

Courses for School Principals and Directors;

Courses for Technical Personnel of the Department of Housing and Building Inspection;

Courses for
/Chemical Personnel of the Local Passive Air Defense Control Staffs and of Research Institutes;

Courses for Senior Officials of City Administrations;

Courses for
/Passive Air Defense Specialists of the Waterways Administration and for Passive Air Defense Chiefs of the various Waterways Offices;

Courses for the Chiefs of Municipal Firefighting Services;

Courses for ~~[illegible]~~ Leading Personnel of the Technical Auxiliary Service.

b. Passive Air Defenses Courses for

Reich Board of Industries;

Factory Air Defense Chiefs;

Technical Construction Advisory and Consulting Personnel.

c. Passive Air Defense Courses for

Gas Defense Personnel;

Police Medical Officers;

95 Gas Defense Officers of the Offices of Police Administration;

Directors and Instructors at the Gas and Passive Air Defense Schools of the Technical Auxiliary Service;

d. Technical Courses

Courses for Technical Personnel of the Firefighting Services;

Courses for Chiefs of Blasting Detachments.

Already in 1935-36 classes comprised 3 000 persons, roughly, attending the various courses conducted by this Department. Later, the school program was extended considerably by the establishment of additional courses for members of the Army, the Navy, and the Air Force, in which the personnel for assignment as passive air defense staff officers, and those assigned as passive air defense chiefs in the various military billeting establishments and installations received instructions ~~xxx~~ on the missions and were informed continuously on newly acwuired experience, newly developed techniques and technology, and

133

on newly introduced methods.

In addition to the above special courses were conducted for chiefs of the passive air defense warning centers, the air raid warning detachments.

The whole training program was handled by faculty members of the Department, in addition to whom carefully selected leading persons from the Governmental Ministries, academies

95 and universities, municipalities, industry, the Technical Auxiliary Service, and other bodies were available to lecture.

A wide variety of visual aids was available, which included in particular a collection of models and illustrations 134 prepared in the Institute.

The Training Department was controlled by the Passive 135 Air Defense Instruction Company. This company consisted of teams, later of squads and platoonsfor the various specialized fields of passive air defense, such as repair services, fire-fighting services, decontamination services, veterinary services, and blasting services. All units were kept supplied with the currently most up-to-date equipment and thus could make instruction at the Institute more interesting by means of practical demonstrations.

While the Training Department had the mission of training the passive air defense officer personnel for installations and other property of the Air Force, the Passive Air Defense Instruction Company was responsible for the training of the corresponding non-commissioned officers.

The company had a total personnel strength of 82, comprising:

1 captain as company commander

3 second or first lieutenants as platoon leaders,

96 1 master sergeant (Hauptfeldwebel)

3 staff sergeants (Oberfeldwebel)

20 sergeants

40 other non-commissioned officers

14 men.

All of these personnel were specialists in the various subjects concerned.

Personnel to attend the courses, which initially lasted four and later three weeks, were drawn from the ranks plus a sprinkling of civilian personnel employed in the various Air Force installations throughout the zone of interior and in the occupied territories, in a total strength each time of 300 students.

During and after air attacks against Berlin, the Passive Air Defense Instruction Company was used repeatedly and with success in especially important firefighting, rescue, and salvage missions. When training activities became seriously hampered in 1943 by the increasing frequency and intensity of air attacks, it became necessary to transfer the company, as had

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133. See Air Field Manual LDv 410 and annexes in Karlsruhe Document Collection.

134. Specimens of illustrations and of demonstration activities in Karlsruhe Document Collection.

135. Number of trainees and photos in Karlsruhe Document Collection.

98 been the case previously with the Institute as such, away from Berlin. The company moved first to Wartenberg and later to Eisenbrod in the Protectorate of Bohemia and Moravia. At the same time the entire training program was completely rearranged and adapted for the tarining of mobile passive air defense instruction teams.[136] With an increased T/O for officer personnel, six instruction teams were organized and employed, in consonance with the situation which had developed in the meanwhile, almost exclusively within the zone of interior to train regionally concentrated passive air defense personnel in Air Force installations. Over and above this, the teams were employed during and after air attack, as specialized auxiliaries wherever they currently happened to be.

The establishment of the Passive Air Defense Instruction Company proved a sound measures in every respect. It created the possibility to pass on speedil y to the troops the latest experience in attack activities and the latest instructions, and insured a uniform application of the various regulations.

2. Technical Sciences Department, (Testing and Experimental Department). This Department was responsible for the testing, appraisal, and development of technical installations and products, including those already in existence in the

136. For more details, particularly on the technical equipment and operations of the company see "Die Luftschutzlehr-Kompanie der Luftwaffe bei der Reichsanstalt der Luftwaffe fuer Luftschutz," by Hugo Haase, Captain, former Commander of the company. Karlsruhe Document Collection.

97 field of passive air defense and those newly developed. In addition, the Department was required on its own initiative to select and investigate specific problems of passive air defense

The subjects for which the Department was responsible were grouped as follows:

PV1: Gas Defense and Decontamination;

PV 2: Fire Prevention and Firefighting, with particular emphasis on research, fire prevention precautions, development of simplified firefighting methods (for which purpose experiments were carried out in condemned buildings), fire extinguishing tactics, firefighting equipment;

PV 3: Building construction, with emphasis on planning problems; analysis and appraisal of construction materials; camouflage and blackouts;

PV 4: Signal communications and alerting, with emphasis on the development of large warning equipment and mobile supplementary equipment, their installation and operation.

PV 5: Medical matters;

PV 6: Veterinary matters;

Sales approvals.

SALES APPROVALS

In terms of Paragraph 8 of the Civilian Air Defense Act and under the procedures prescribed by Implementation Decree

98 # 4 to that Act,[137] the sale and advertising of articles of equipment and/or other means of passive air defense was subject to approval by the Reich Institute of the Air Force for Passive Air Defense.

In cases of doubt whether an article was an item of equipment or a means of passive air defense, the sale and advertisin of which was subject to approval, the Institute made the decision.

Sales approval was granted if an examination of suitable data, such as designs, descriptions, smaples or models, submitted to the Institute resulted in a positive appraisal. At the same time the article involved was given a registered number with which each item intended for sale was to be marked.[138] Approval of an item was published in the Reich and Prussian State Gazette (Reichs- und Preussischeranzeiger).

These activities of the Institute assumed considerable scopebut served to prevent the sale of unsuitable equipment and other means of passive air defense.

EXPERIMENTS

Experiments and tests which became necessary in the develo ment programs of the various fields were carried out at the

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137. See II, d, above, below.
138. Zeigermann, "Luftschutzrechtsfragen. See Appendix 3.

99 proving grounds of the Institute if space permitted.

For practical experiments in firefighting houses slated for demolition were used, with the Reich Passive Air Defense Association participating.

The Air Force proving grounds at Rechlin were used for large-scale testing projects. Later, the Institute had its own proving grounds at Ehra-Lessin for such purposes.

The activities in this field involved primarily the following:

(a) Experiments in the field of decontamination. In this field some experiments and tests were conducted at the troop training grounds at Doeberitz, the object being to develop suitable protective clothing;

(b) Technical experiments in the field of building construction in general and in the construction of air raid shelters to yield special data. Using high-frequency filming methods giving 3 000 exposures per second it was possible, for example, to determine the pressure and vacuum effects of an explosive bomb detonating above or under ground. The information gained in this way made it possible, for example, to develop the most effective system for the construction of air raid shelters and their reinforcement with constructional steel, a commodity

99 in short supply, and to conduct further experiments for continued improvement.[139]

(c) Experiments in the field of enemy bomb removal techniques and methods.[140]

3. Photographic and File Department. This Department handled the making or procurement and loan of films and slides on the subject of passive air defense, rendered support in tests carried out at the various proving grounds, and produced on a large scale the photos, drawings, and reproductions required for instructional purposes at the various training centers.

The Department had the most up-to-date technical equipment, including all modern devices, and was capable of carrying out the necessary photo-technical processes with its own facilities.

Towards the end of the war, when the great frequency of air alerts and the difficult travel and communications situation created conditions under which it was no longer possible to insure regular attendance by trainees or a regular conduct of training activities, the Institute was transferred from Berlin to Eisenbrod in the Protectorate of Bohemia and Moravia together with all personnel and equipment. All activities, including instruction, continued there until early

Footnotes 139 and 140 on page 145.

100 1945.

The Reich Institute of the Air Force for Passive Air Defense was of paramount significance for the uniform handling of all problems of passive air defense by the persons involved, and for the acquirement of technical data on a most widely varied number of subjects. The realization of this high significance, also for the future, has had the result that the present Federal Government of Western Germany as one of its first practical measures in the field of civil air defense created the Federal Institute for Civil Air Defense (Bundesanstalt fuer zivilen Luftschutz).

IV. THE SPECIFIC BRANCHES OF THE GERMAN PASSIVE AIR DEFENSE SYSTEM.

a. The Air Raid Warning Service. On the basis of information received from the Aircraft Reporting Service, the Air Raid Warning Service had the following missions:

(a) to give such timely warning to all air raid warning posts with which it had contact of an impending air attack that all preplanned passive air defense measures still necessary could be taken before the actual attack commenced;

139. See VIII, a, 5, below.
140. See VIII, e, below.

101 (b) to order sounding of the public air raid warning at the proper time and, after an attack was over, to immediately relay to the posts connected with it the report that the danger was over;

(c) at night, to order a blackout when enemy forces were on the approach.

These were the initially established missions of the air raid warning service[141]. Later these missions were expanded and adapted to current enemy attack tactics.

From the historical point of view the Air Raid Warning Service, together with the Aircraft Reporting Service, was the oldest of the newly created branches of civil air defense. The Air Service Office (Luftdienststelle) established in the old Reichwehr Ministry on 10 February 1927[142] in 1928 ordered the development of an aircraft reporting service, to which the Air Raid Warning Service was organically attached.

Personnel in the service were honorary employees and received no compensation whatever. The only exception was that they received per diem allowances and free quarters during exercises and maneuvers.

First steps were taken in Eastern Prussia in 1929 to build up the service, and it was in the Koenigsberg area, from 1-3 October 1930 that the Aircraft Reporting Service

141. Karlsruhe Document Collection: AF, Army and Navy Manual 401 (L.Dv., H.Dv, M.Dv 401): Instructions for the Air Raid Warning Service in Germany. 142. See I, above.

102 and the Air Raid Warning Service made their first public appearance in a combined military and civilian passive air defense maneuver.

In the initial stages the procurement and training of personnel were responsibilities of the various military area headquarters (WehrkreisKommandos), which in turn relied on the regular and rural police insofar as the execution of detail missions was concerned.[143]

When the new Reich Air Ministry was established in 1933 it assumed responsibility for all measures of passive air defense, and thus also for the Aircraft Reporting and the Air Raid Warning Services. For a while both of these branches were still handled organizationally by one and the same agency, Air Force Inspectorate 13. In 1934 a number of courses were held at the various air offices, which later became Air Force Area Headquarters, to give advanced instruction to personnel acting as chiefs of air observation centers and of air raid warning centers.[144]

In the meanwhile the necessity had developed for the activation of motorized aircraft reporting companies in addition to the Home Aircraft Reporting Service. Further developments finally resulted in the transfer of all aircraft reporting services to the Air Force, while the Air Raid Warning

143. Karlsruhe Document Collection: "Die Ausbildung im Flugmeldedienst," by Oberst Gustav Ewald. See Footnote 5, above
144. Karlsruhe Document Collection: "Der Flugmeldedienst," von A Giesseler, in Sammelwerk Knipfer-Hampe, Berlin 1937.

102 retained its special status.

103 1. Organization of the Air Raid Warning Service. The service was organized in a General Air Raid Warning Service, namely, the air raid warning centers, or air raid warning detachments as they were later called; and local air raid warning services cpmprising

Local air raid warning control centers

public air raid warning points

factory air raid warning points.[145]

The number and spacing of air raid warning centers depended on the density of the population, the industrial structure of a region, and the location of aircraft reporting detachments, with due consideration to local features of the communications network operated by the Posts and Telegraph Administration.

Regulations required that each general air raid warning center must be in basement premises which at least were proof against bombs fragments and debris, and would comprise a command room, a transmitting room, and the necessary supplementary space.

Personnel were recruited for the service, under the responsibility of the air district commands, by the local passive air defense chief. In the initial stages this had been a re-

145. A. Gieseler:"Der Luftschutzwarndienst." Also see footnote 144, above.

103 responsibility of the local District Presidents, from whom it had passed temporarily to the Air Force Area Headquarters.

The requirements for the establishment of an air raid warning center were stated in Paragraphs 34 and 35 of Air Field Manual L. Dv. 401. If the center was not in the same town as an aircraft reporting detachment, regulations required establishment of a local "Town Aircraft Reporting Guard" for on-the-spot air observation.

At the start there were only three different warning reports, namely,

Air Alert, with time stated
Air Raid Warning
All clear,

in addition to which orders concerning blackout were given as follows:

Immediate Blackout
Blackout order rescinded.[146]

All reports and orders were transmitted directly or through alert relay stations to the air raid warning points, which in some cases were consolidated in groups.[147]

In this field the responsibilities of the chief of a warning center, later designated warning detachment, increased steadily as the war continued. It was of paramount importance to avoid disturbing traffic and the manufacture of military com-

146. See VIII, c, below.
147. Appendix 17: Diagram of a warning network.

104 commodities as long as possible but at the same time to sound the warning early enough to insure that all necessary measures of passive air defense could be taken before the actual attack commenced. At the same time it was essential to preserve public confidence in the warning system, and the population required at least ten minutes to reach shelters, as experience had shown.

The increasing frequency of enemy penetrations and the mounting speeds of individual planes and of whole units of bombers necessitated a constant improvement of the warning services. The distances became increasingly great at which penetrating aircraft influenced the warning reports. The extent to which this applied is shown by the following table:

Speed of attacking unit	(in miles) Distance/at which Warning must be Given to allow preparations lasting 30	20	15	10	minutes
180	90	60	45	30	miles
240	120	78	60	40	miles
300	150	100	75	50	miles
360	180	120	90	60	miles
420	210	140	105	70	miles
480	240	160	120	80	miles
720	270	180	135	90	

Air alerts became increasingly frequent, and individual enemy harassing planes placed whole regions under a lasting

105 alert, which resulted in an intolerable interference with manufacturing operations.

In order to make it possible at all for the factory alert system to accomplish its mission of insuring the least possible interference with normal manufacturing operations it was essential to work out a more refined and more flexible system of warning reports coupled with modified blackout requirements adapted to each individual case, and this implied an entirely new approach to the whole subject.

In a conference at Reich Marshal Hermann Goering's Headquarters on 15 August 1940, the Commanding Generals of Air Fleets were called upon to submit their opinions on the subject of air raid warning.

At present alerts in the German interior result in worktime losses causing damage disproportionately larger than those caused by enemy bombs.

Furthermore, owing to the frequent alerts in the western areas nervous and physical fatigue are making themselves noticeable in the population.

Opposed to these factors is the danger of increased casualties if the enemy should attack a point before the

alert has been sounded.

In areas with antiaircraft artillery defenses the local

148. Karlsruhe Document Collection: "Auszug aus einer Besprechungsnotiz beim Reichmarschall Goering am 15.8.1940.

105 commanding officer of artillery forces had in the meanwhile assumed responsibility for orders to sound the public air raid warning, while responsibility for the other comprehensive warning measures remained a responsibility of the chiefs of warning detachments.

In these circumstances a decree on 22 October 1940 [149] established new principles for operations of the air raid warning services, as follows:

(1) Basically the alert was to be sounded early enough to allow at least ten minutes time before the actual attack could be presumed to commence;

(2) The alert was to be sounded whenever enemy aircraft penetrated, even if only one plane was involved; This condition, which was originally not intended, was included pursuant to a directive from Hitler which, in turn was due to psychological considerations;[150]

(3) The all-clear signal was to be sounded only after it was definitely established that the enemy aircraft had departed and only if no other penetrations were reported;

(4) At night an alert of long duration was to be given preference to a series of shorter alerts;

(5) If a temporary break in the alert nevertheless

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149 and 150. See p. 152a

106 appeared urgently desireable and the air situation permitted, the warning points on the circuit were to be kept posted by means of special air situation reports adapted to the needs of the individual installations concerned;[151]

(6) If antiaircraft artillery went into action without a warning having been sounded beforehand, the all-clear signal was to be sounded after departure of the enemy plane or planes;

(7) As a rule no warning was to be sounded in rural areas or smaller towns where no military targets or installations of the military economy/or dummy installations were situated when enemy planes were reported to have penetrated the defenses;

(8) Important factories of the armament industry, in which alerts could result in losses of output exceeding the tolerance limits, could be excluded from the general warning on detailed instructions from the appropriate air district command headquarters. Whether factories in this category, which were designated as "Exception Installations," were to be alerted later or not at all was a decision which the factory air defense chief of each such installation concerned had to make on his own responsibility;

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151. Appendix 18, p. 3 for further details on orders in implementation of the items quoted.

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149. Appendix 18: "Alarmierung 1940," Erlass R. d. L. u. Ob. d. L. (L. In I3) Nr. 2422/40 g. v. 22. 10. 1940.

150. Karlsruhe Document Collection: "Alarmierung der Zivilbevoelkerung 1940/1941 - (besonders Berlin) - Zusammenstellung der diesbezuegl. Berichte und Erlasse von Oberst a. D. Greffrath.

107 (9) The Reich Railway Administration, which had its own air raid warning service, known as the Eflu warning Service, retained the appropriate authority for its own internal operations;

(10) The advance warning, known as the "air danger" warning was to be handled flexibly and in accordance with the specific interests of the warning points on the circuit (see Item (5), above).

2. Personnel. As long as the Aircraft Reporting and the Air Raid Warning Services remained as an integrated whole, the necessary personnel were recurited and employed on a volun tary basis. Due to the absence of any basis in law, these personnel received no regular wages or salaries but were only compensated on an hourly or daily basis.

At a later stage, when the Aircraft Reporting Service had been incorporated with the military forces and the Passive Air Defense Act had in the meantime been promulgated, the terms of that act applied in the recruiting of personnel. From then on the build up of personnel for the Air Raid Warning Service made rapid progress.

Initially it was a responsibility of the various Air Force Regional Command Headquarters and later of the Air District Command Headquarters to appoint the chiefs of Air Raid Warning Centers. Persons were selected for such

107 assignments who, by reason of their known human qualities and professional characteristics, combined with an understanding for military matters, appeared qualified to develop and direct their agencies successfully, in line with existing plans, and with due regard to the at that time essential requirements of secrecy.

108 Each Chief of an Air Warning Center, and later of an Air Warning Detachment, was responsible for the selection of a deputy/and subordinate unit chiefs in line with the same principles on which he had been selected. He was also responsible for the selection of woman auxiliaries, in which field he cooperated with the local agencies of the Reich Post and Telegraph Administration, which also were responsible for the technicalities involved in the establishment of the air raid warning centers and the warning relay points.

The formal call up of all personnel was a matter dealt with by the police authorities in their capacity of "local passive air defense chiefs."

Right into the first years of the war all personnel of the Air Raid Warning Service wore their own clothing when on duty. However, the special status of the service in terms of the Passive Air Defense Act placed it in an indefinite position which resulted in friction. It therefore became necessary to put all personnel into uniform, the same as that worn

108 by personnel of the Safety and Auxiliary Service but with a different collar patch, and give them the status of military auxiliary personnel.

Rank designations in the service from then on were as follows, in each case preceded by LSW /abbreviation for the English equivalent of Air Defense Warning Service/:[152]

Male Personnel	Female Personnel
Staff Commander	Staff Commander (Female)
Chief Commander	Chief Commander (Female)
Platoon Leader, First Class	Platoon Leader, First Class (Female)
Platoon Leader, Second Class	Leader (Female)
Group Leader, First Class	Auxiliary, first Class (Female)
Group Leader, Second Class	Auxiliary, Second Class (Female)
Group Leader	Auxiliary (Female).
Private	

The personnel replacement system for the Air Raid Warning Service was now newly organized. The Passive Air defense Air Raid Warning Service Replacement and Training Battalion was activated and stationed in Boxtel, Holland. This put an end to the transition period and brought about a fundamental simplification of the replacement system. However, this arrangement applied only for male personnel; the local recruiting and replacement system was retained for female personnel. Circumstances prevented the intention to also activate a replacement battalion for female personnel.

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152. See Air Force Field Manual L. Dv. 788.

109 3. Training. Initially all personnel were trained locally by means of exercises and other arrangements, after the leading personnel had received appropriate training at the Reich Institute of the Air Force for Passive Air Defense and in courses held at the several air district command headquarters. Basically, the Air Raid Warning Service participated in all exercises and training performances in the field of passive air defense. The experience gained on such occasions was applied immediately to improve and intensify training activities.

Later, centralized training for all male personnel was a responsibility of the Passive Air Defense Air Raid Warning Replacement and Training Battalion at Boxtel in Holland. In accordance with a well considered training program the various ranks there received instructions in their various functions, which included such subjects as command, appraisal, cooperation, technological subjects, and were then assigned in accordance with their recognized aptitudes and the qualifications they had acquired. The training process was so arranged that, whenever a demonstration antiaircraft artillery command post was present as well as a demonstration aircraft reporting detachment, air raid warning trainee detachments

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153. Karlsruhe Document Collection: "Der Luftschutzwarndienst, Personal-und Ausbildungswesen," by Dr. Urban.

110 were formed to play through the most widely varying problems in accordance with actual facts.

All training premises and installations mentioned above had complete telephone and evaluating equipment.

For the training of female personnel a Passive Air Defense Womens Auxiliary Training School was established at Streitberg in Upper Frankonia. This school operated independently for some time under a Passive Air Defense Chief Commander responsible directly to the Reich Minister for Aviation and Commander in Chief of the Luftwaffe. It was in well equipped and furnished barracks and gave training in courses lasting between four and six weeks, sixty to seventy woman auxiliaries participating in each course to receive training as evaluators and telephone operators.

Carefully selected personnel were detailed from among the chiefs of the Air Raid Warning Service throughout Germany to act as instructors at the two schools mentioned above.

The courses at the school for male personnel were, in general, longer, and included military subjects insofar as this was necessary for the execution of the mission of the air raid warning detachments. (Battle fronts were approaching the German frontiers in the west).

In directing activities at the school for female personnel an important requirement was to coordinate the

110 by no means easy standards of performance with the mentality of the female trainees. In view of the wide range of age classes involved, this was not always an easy matter.

Training activities expanded to such an extent that it soon became necessary to construct additional buildings. Plans in the new construction program provided against the eventuality that it might become necessary to transfer the training and replacement battalion from Boxtel, Holland, to the German interior if the Allied invasion in the west should succeed. The necessity to increase the number of female auxiliaries employed had already resulted in the conduct of training courses also at Boxtel for woman auxiliaries, for which purpose a special battalion had been activated there early in 1940 /under a chief passive air defense leader (female).

These two training establishments were now consolidated and the whole school for woman auxiliaries was placed under a commander of the Passive Air Defense Air Raid Warning ~~XXXX~~ ~~XXXX~~ Training and Replacement Battalion.

When the enemy continued to advance in the west, the training and replacement battalion was transferred from Boxtel to Streitberg, in August-September 1944, and the two schools for female personnel were amalgamated. This made successful continuation of training possible in the subjects of air raid warning, a subject which was becoming increasingly complicated

111 In order to expedite the processing of special items of experience and to make an exchange of information between the several warning detachment chiefs possible, these officers were called from time to time for conferences by the Passive Air Defense Operations Staff of the Commander in Chief of the Air Force. The conferences lasted several days and were designed to insure uniform application of the detailed regulations, which changed frequently because of the air situation. This method proved sound in every respect.

Courses in the training and replacement battalion ceased on 31 March 1945. After discharging all female personnel, the battalion was dispatched southward, where it was captured by American forces.

In conclusion it can be stated here that training activities in the Air Raid Warning Service met all requirements, and that the selfless devotion of all concerned made it possible to execute all missions satisfactorily. In cases where alerting reports from the Aircraft Reporting Service arrived too late it was naturally not possible to give timely warning, so that the Air Raid Warning Service cannot be held responsible for warnings which were sounded too late.

4. <u>The Passive Air Defense Alerting Detachments</u>. The duties of the chief of an alerting detachment increased steadily.

112 This made it necessary for him to study in even more detail than had been the case in the past the requirements and features of ~~the~~ his warning points and to know personally the factories and factory air defense chiefs concerned.

In detail his responsibilities comprised the following:

In areas with antiaircraft artillery defenses he was required to submit timely recommendations to the local antiaircraft artillery commander concerning the timing of air rain warnings and whether the warning was to be continuous or could be interrupted.

In areas without antiaircraft artillery defenses he was required to make the above decisions on his own responsibility.

In addition it was his duty to make known by means of an appropriate signal when the approved "limited blackout" was to be replaced by a complete blackout and, correspondingly to make known by an appropriate signal when the air situation was such that the complete blackout could be eased again.

He was required to insure constant information to the important warning points of the industry and traffic installations, in particular to those factories which manufactured commodities of military importance and which continued operations during an air attack.

112 He was required to discuss the air situation with the Railway Administration Air Warning Center and, in particular, simultaneously to warn the areas involved and the rail depots in such areas.

It was necessary for him to keep the local passive air defense chief currently posted on the air situation in detail, in order to enable the chief to make the necessary preparations for the commitment of his forces. The passive air defense chief, in turn, was required to inform the chief of the warning detachment on the damage situation since the time at which the all clear signal was to be sounded in some circumstances might depend on that situation.

In order to handle his manifold missions satisfactorily, the commander of the alerting detachment had to follow the postings on the air situation map very carefully and had to compute the route of the enemy aircraft reported and their

113 current position, making due allowance for any lag in the reporting and report relaying service, so that he could take his own measures in time. For the industry this was a particularly important point. In the case of mines and iron works, for example, every minute counted during which they could allow light or not, and every minute gained during

113 intervals in the attack could be of incisive importance. For these reasons it was important to maintain contact with other nearby alerting detachments, reports from which served to round out the picture of the air situation.

The maintenance of its own air observation posts by the Air Raid Warning Service proved sound in every way. The initial designation of "town air observer" was discontinued later and replaced by the term "alerting guard" in order to avoid confusion with the aircraft reporting services. The alerting detachments at the centers of the Aircraft Reporting Service later also had their own "alerting guards."[154]

In addition to the reports received through normal channels, the mission of the alerting service necessitated other reports on such matters as the current behavior of the enemy, the number of target marking and flare bombs, explosive and incendiary bombs dropped, the presence or not of enemy planes circling over the area, and the close approach or departure of enemy planes.

Liaison officers from the alerting service were stationed at the command post of the local antiaircraft artillery and above all at the aircraft reporting center. Owing to the widely varying nature of their missions, it had been found

154. Karlsruhe Document Collection: "Ausfuehrungen ueber Arbeitsweise und Meldetechnik der LS-Warnzentralen bei der Besprechung der Sachbearbeiter fuer den LS-Warndienst am 31. 1. und 1. 2. 1941." Ob.d.L. Arb. Stab LS.

113 impracticable to have these two together in one command post, and this also appears to be inadvisable for the future. It appears best to maintain the independence of the alerting centers.[155]

Due to the increasing frequency of enemy penetrations, a special arrangement was made for the Capital of Germany, Berlin, under which it was permissible to disregard the requirement to sound the public warning when enemy planes crossed the ten-minute approach perimeter line if weather conditions and behavior of the enemy justified such action. This made it possible to avoid numerous alerts. On the other hand it created the hazard that a warning given too late owing to an unexpected change in the enemy behavior might result in heavier losses among the population unable to reach air raid shelters in time. It also became evident that the population of Berlin made less and less use of air raid shelters. Efforts to have the above special arrangement modified, and which were made in 1941 and in 1943, produced no results.[156] [157]

5. Warning Reports and Signals. With the mounting complication of the alerting and warning methods, the following concepts had developed with the appropriate warning reports or orders:

155. See Footnote 154, above.
156. Reports and teletype messages. See Footnote 150, above.
157. Karlsruhe Document Collection: "Reichsluftverteidigung, "Luftwarnung 1943-Fernschreiben vom 22. 5. 1943."

114

Air Danger. This concept remained unchanged, and, together with the time of possible attack given in minutes, was transmitted in a message to all warning points or to certain of them. The message consisted of an L (Abbreviation for "Luftgefahr"-Air Danger) followed by the time it would take for the enemy planes to reach the possible target, given in minutes.

Limited Blackout Cancelled. The signal here was a VEz (Abbreviation of Verdunkelungserleichterungen).

Air Attack Imminent. This signal was relayed to Railway Administration warning centers.

Public Air Warning. This was sounded when individual enemy planes, such as fighters or fast bombers, penetrated. The signal consisted of three siren blasts of 15 seconds duration within a space of one minute.

Acute Air Warning. This remained unchanged.

All Clear. This concept and signal also remained unchanged.

Dangerous Air Situation. Here also no changes occurred.

Preliminary All Clear. The existing signal was later changed to be the same as for Public Air Warning, above.

Final All Clear. A normal siren blast lasting one minute.

When in 1944-45 enemy bomber-fighters commenced

115 harassing traffic and the civilian population in a steadily increasing degree an additional warning signal the "Immediate Air Threat" signal was introduced. This signal was sounded when an enemy air unit was on a direct approach to the area to be warned or if an enemy fighter unit was observed at low altitudes, and consisted of two siren blasts each of eight seconds duration.

From the moment when the Public Air Warning was sounded on, the public were kept informed on the air situation by means of radio broadcasts or telephone-connected radio. Initially the messages were transmitted from the antiaircraft artillery command posts, later the mission was taken over by the Gauleiters in their capacity as Reich Defense Commissioners. The Air Force High Command introduced uniform definitions of concepts for all messages transmitted.[158]

6. The Air Raid Warning Service and Industrial Production. One essentially important mission in air raid warning was to insure that manufacturing operations could continue as long as possible, and after enemy penetrations or attacks, could be resumed as soon as possible. As previously described,

158. Karlsruhe Document Collection: "Ergaenzende Bestimmungen ueber Warnung und Alarmierung," OKL, Fuestab Ia/Arbeitsstab LS vom 27.8.1944." See also: US Strategic Bombing Survey Civilian Defense Division Final Report, pp. 31-39; also in Karlsruhe Document Collection.

116 this was accomplished by means of an alerting and warning system rendered increasingly flexible in application as time passed.

Periods when no penetrations took place were reported to the factories and other installations concerned whenever they occurred, to enable them to exploit such periods for work which could not be delayed at blast furnaces or in coke works. 159

Moderated procedures were introduced at an early stage for coal mines under which mining operations, including surface activities, had to cease only when a direct threat to the mine concerned existed. This made it possible to reduce the time losses which public warning requirements would have caused by approximately 70 percent.

The increasingly close contact developed between the defense chiefs in large factories on the one hand and the alerting and warning centers on the other hand made it possible to exploit for manufacturing operations even the shortest intervals which might occur during enemy attacks. This required special training of the factory air defense chiefs in the subject of air raid warnings. Although the decision as to whether a factory was to be excepted from the general warning or not was a responsibility of the factory director, the mission of the factory air defense chief remained to make appropriate recommendations to the director at the proper time.

116 Another measure taken to reduce the manufacturing time lost through air raid warnings was that of giving the factory air defense chiefs in large factories and in the armament industries the authority to themselves give the all-clear signal for their respective factories or other installations.

One condition upon which the above two modification was made contingent was that adequate shelters had to be available in the immediate vicinity of the places at which emergency working crews would be employed, another was that facilities had to be present for an immedaite and complete blackout whenever necessary. These two conditions applied also for the resumption of manufacturing operations when the signal "Air danger over but situation critical" was given.

On the whole factory air defense chiefs were not only authorized but required to insure continuation of operations, in order to assure that armament production programs would be met, during an alert until the warning reports received made it appear necessary for them to order all personnel to seek shelter.

In addition to the reports received from alerting detachments each factory air defense chief was permitted and even required to receive and evaluate reports from his own factory air observers.

Coke works, foundries, and all other works using visible

117 fires were permitted to continue in operation until the L 15 report was received, meaning that enemy aircraft were within fifteen minutes striking distance. The alerting detachment was required to keep them constantly posted by means of special air situation reports. To insure timely implementation of blackout orders and a timely concealment of open fires, special code words were established. Thus, the term Flut (meaning high tide) implied that unrestricted manufacturing operations could take place; Ebbe (low tide) meant that a threatening air situation required a complete blackout.

If an alerting detachment assumed from available reports that a penetration by enemy aircraft was not to be expected within the next twelve minutes he would give a message worded Flut bis...Uhr (High tide until.....hours). The time in this message could be extended if the air situation permitted. The Ebbe (low tide) message could state a time requirement or merely the word "immediately."[160]

The refined alerting and warning procedure outlined above made great demands on the evaluating personnel and on alert detachment commanders. Besides following up developments in the situation with great precision and making advance calculations,

159. Karlsruhe Document Collection: "Luftschutzwarndienst und Erzeugung 1939-1945," by Major Erich Stein. For more details see the appendix quoted above, pp. 3-4.
160. See appendix quoted in Footnote 159, pp. 16-19

118 the commander had to be thoroughly conversant with the manufacturing circumstances of the large factories and other installations within his area in order to be able to give the air situation reports on time to the very minute, and with meticulous exactitude.

The whole procedure functioned excellently and proved sound in every respect.

That this air raid warning system no longer functioned in the period immediately preceding the end of the war because communications between the factories and other installations and the alerting centers were destroyed, so that other communication channels had to be established in the immediate vicinity of the works concerned cannot be held against the alerting and warning system. All that this fact can do is to raise the question whether wire communications are practicable or whether it would not have been more advisable to adapt to radio communications from the very start, with receiving instruments functioning independently from public electricity supplies.[161]

7. Technology in the Air Raid Warning Service.[162]

SIGNAL COMMUNICATIONS

In order to be able to transmit alerting reports speedily

161. See Footnote 287, below ("Erfahrungen des WerkLuftschutzes im 2. Weltkrieg," by Dr. Wende, p. 63).
162. Karlsruhe Document Collection: "Fernmeldetechnik und Alarmierungsmittel," by Lt. Col. Schultze-Rhonhof in Knipfer-Hampe, "Der zivile Luftschutz, p. 335.

118 and at the required time to the numerous warning points, it was necessary to have a signal communications network as independent of outside agencies and as secure against interruption as possible.

The existing networks of the police service, governmental and other authorities, and the economy were closely centralized, whereas decentralization was a requirement for reasons of secure operations.

For financial reasons if for no other the thought of developing a telephone system specifically for the air raid warning service could not be entertained. This also applied to any thought of supplementary radio equipment.

The only possibility, therefore, was to make use of the existing systems and adapt them as far as possible to the needs of the air raid warning services.

Modern telephone systems receive their electricity supplies from a central battery. This system had disadvantages for an air raid warning service, as follows:

(1) If the central battery failed, the whole network ceased to function;

(2) The central battery required chargingand therefore was dependent on the high-voltage network;

(3) Systems relying on a central battery were particularly sensitive to any damage in the wires.

119 The local battery system received its operating electricity from accumulators distributed among the various points of use. As long as the local battery system remained in operation it was to be preferred to the other system for passive air defense purposes.

For financial reasons it was in general not possible to switch over from the central-battery system to a local battery syatem. The only remaining thing to do was improve the operating security of the system so far as was possible, and for this reason

(1) to instal the batteries where they were secure against fragmentation damage;

(2) to hold engine-driven battery chargers and replacement batteries available against an emergency.

The telephone dialing system was impracticable in passive air defense operations. It was essential to differentiate between urgent and unimportant calls, and when necessary to break contact in order to receive more important urgent calls. This was only possible with personnel at a switchboard. Therefore, only manually operated switchboards could be used.

120

ALERTING AND WARNING MEDIA

Preparations for the "Acute Air Warning" and "All Clear" signals were the most important technical task of the Air Raid Warning Service.

120 In the case of the most important passive air defense localitiesthe Reich Air Ministry determined the alerting and warning system and the equipment to be used. The large warning installations were the result of very detailed considerations and lengthy experiments.

No alerting and warning system in existence can give completely satisfactory results. The most important requirements in a warning system are as follows:

Speedy warning;

Effectiveness of the warning media used;

Security of the method adopted;

Low cost.

Speedy functioning of the system was regarded as the most important requirement. It was essential to insure that the "Acute Air Warning" would be sounded ten minutes before the enemy planes could arrive. Within these ten minutes traffic was do be brought to a halt, and roads, rail depots, department stores, and large office buildings had to be cleared of people.

The second requirement was that the warning media used must be effective. When sounded, the warning had to penetrate above road noises, into back yards and ito the homes of the working or sleeping population, and into factories with their many diversified noises. This could only be achieved by

120 means of a system which would produce a maximum volume of sound clearly audible at all points through the massed use of the warning instrument decided upon; by means of a sound of long duration; by means of characteristic unvarying signals which would be unmistakable and to which the ear would become so attuned that even less loud signals would be heard.

121 The third requirement in order of importance was the security of the media used and of the whole warning system; its safety against enemy attack and against technical failures or failures due to flaws in the material used. A network of numerous sirens distributed throughout the passive air defense locality and operated by wireless would have provided a relatively high degree of safety against bombs.

The standard large air raid warning installation adopted in Germany comprised

(a) The warning instrument itself, a siren with switch;

(b) The remote control installation.

The Siren was a model approved by the Reich Air Ministry and was of the air blast, electrically operated, type. It used a current of 5 KW, and could produce three different sounds:

For acute air warning, a high-pitched whining tone with a four-second rise and fall period between a tonal pitch of 200 and 400 Hz.;

For the all-clear signal, a high-pitched long sound

121 with a tonal pitch of 400 Hz;

For the final all clear signal, a low pitched tone of around 150 Hz.

The decision on the pitch of the sounds was a result of very careful experiments. The necessity to distinguish the warning from the sounds of street traffic required a high pitched tone with a frequency of 400 Hz. A particularly characteristic feature of the sound was the rise and fall in the high tone, the "howl" sound, which was the reason why this sound was adopted for the acute air warning signal.

A characteristic exterior feature of the siren was its cover with a deep downward slope, which served not only to protect the siren against weather but also to insure a effective reflection of the sound waves.

A special apparatus, with one switch for the high tone and one for the low tone, was required. The "howling" tone was produced by switching the high tone on and off in two-second intervals. The effective sound range in unfavorable conditions with narrow streets, high buildings, and enclosed yards was between 220 and 330 yards, in areas less densely built up 550 yards and more.

The quick effectiveness of the warning signal was produced by switching all sirens on simultaneously from a central point. In those installations with remote control, a number

122 of different systems were in use. namely,

(1) through specially laid wires;

(2) through wires rented from the Post and Telegraph Administration, and part of the general telephone system, for the purpose;

(3) through special frequency channels on normally used subscriber wires of the postal telephone network;

(4) through special frequency on wires of the fire alarm network;

(5) through the high-voltage network;

(6) by radio signal;

(7) by means of sound waves.

Ad (1), above: The construction of a special wire network was a very expensive project. On the other hand the control centers in such a system could be kept technically very simple. The wires could be controlled by a closed circuit current, and the release could be operated by the same source of power. Owing to the high costs involved the system was introduced only in small passive air defense localities.

Ad (2), above: In the case of controls through telephone lines rented from the Post and Telegraph Administration the technical installations were also very simple. On the other other hand the continuing costs for rental were so high that this method could only be taken into consideration in

122 exceptional cases.

Ad (3) and (4), above: Under systems (3) and (4) the signal was released by means of impulses carried by special frequencies and using the normal wires of the telephone system. The systems required special central installations to produce and control the superposed frequency current, with sub-stations required in large towns.

The producing and control center comprised

Batteries for operation of the frequency producer and dynamos to charge the batteries;

Generators to produce the required frequencies;

Timing relays for the automatic timing of the siren.

The signal was released by means of a press-button switch at the air raid warning center or at the local passive air defense chief. All that had to be done was to briefly press down the button marked "Actue Air Warning (Fliegeralarm)" Proper timing of the intermittent switch to produce the rise and fall in the siren tone and to regulate the overall duration of the signal was handled automatically by the time relays. The switch apparatus at each individual siren was operated by control instruments (frequency relays) which were part of the siren equipment.

Ad (5), above: The possibility to release the signal through electric impulses sent over high-voltage lines had the

123 important advantage over the systems already discussed, that it disposed of the additional danger to the installation as such which were an accompanying factor in the use of a widely ramified network.

Ad (6), above: Radio release of the siren signal had the advantage that it dispensed with the necessity for an extensive wire network highly sensitive to interferences. However, experiments showed that the advantage of low sensitivity to interferences was balanced by a number of significant disadvantages, such as

Sensitivity of the amplifiers required in every siren and consequent difficulties in servicing while the siren was in continuous use;

The possibility of interference by intentional or unintentional jamming radio waves.

The decisive factors against the use of radio to release the alarm signals, however, were the small range of wavebands which could be used during the war and the basic reluctance to operate radio transmitters at allwhile enemy air units were on the approach.

Ad (7), above: In an accoustic remote control signal release signal, only one siren, the master siren, is switched on directly from the operating center. The sound waves from the master siren strike suitable receiving and amplifier apparatus installe

124 in the surrounding sirens and set them in operation. Special filters mounted in front of the secondary sirens served to prevent false alerts bdue to outside noises but also slowed down the reaction of the secondary sirens, which consequently only commenced operating after a loss of between 12 and 15 seconds.

In the opening passages of the present chapter mention was made that speedy operation was the most important requirement for a good warning system. This requirement was met in an ideal form by the centralized control of the standard large warning siren system. At the moment the order was given, the warning could be sounded throughout the entire passive air defense locality concerned.

The requirement stated as second in order of importance was "effectiveness of the warning media used." In respect to characteristic features, the possibility of recognition, and the possibility to memorize, no other signal could have surpassed the wail of the siren for effectiveness.

To insure that the entire population would be warned by the signals given through the large warning installation it was necessary for everybody, without exception, to be able to hear the signal, and this depended on

the closeness with which the sirens were spaced;
the proper selection of points to mount the sirens;
the duration of the warning signal sounded.

124 No ideal solution was found for the requirement that a warning system should be interference proof. The very fact that the sirens were exposed year in and year out to influences of the weatherrepresented a hazard, which was reduced however by suitable measures, such as careful maintenance servicing. The Reich Minister for Aviation and Commander in Chief of the Air Force / Air Force Inspectorate 13, in a decree dated 18 February 1939, Reference L. In. 13 2 c # 195/39 had issued regulations on the maintenance servicing of standard type large warning installations. 163

A more serious hazard during the war was that of reliance on the high-voltage network. This hazard was so serious that each passive air defense locality had to take into consideration the possibility that its entire warning system might fail after an air attack and for this reason had to prepare emergency measures in advance against this contingency.

In Category I Passive Air Defense localities mobile sirens were maintained for emergency use if the regular warning system should fail. However, the disadvantage of mobile sirens was the fact that whenever the standard equipment did fail as a result of an air attack the vehicle carrying the mobile siren was unable to travel the debris blocked streets.

125 The other important media of sound warning which could have been used were as follows:

(a) other types of sirens,

(b) horns,

(c) bells, buzzers, whistles,

(d) gongs,

(e) detonators, signal guns,

(f) trumpets and similar instruments.

The term siren as used under (a) above includes all those sirens not authorized in Germany for use as air raid warning media. Any of them would have been suitable for such use, but it was necessary to preclude any possibility of the sound being mistaken, for example for a factory or ship's siren.

Horns, or hooters, did not carry as far as the sound of sirens, and the sound was not specific enough. Furthermore, the danger existed that they could be mistaken for motorcar horns.

Bells, buzzers, and whistles were suitable only as a supplementary warning within a factory defense system. For use as a public warning media they could hardly be taken into consideration.

Owing to the short range of their sound penetration gongs and similar instruments were suitable, generally speaking, only for inside use in houses.

125 Detonators fired into the air by pistol or by mortars to explode over the locality to be warned undoubtedly would have been very effective, but their flash at night would have betrayed the location of the locality warned. The detonation of very loud firecrackers (Kanonenschlaege) would have avoided the flash disadvantage, but would not have been as clearly audible and therefore would have had to be more closely spaced.

Trumpet and bugle signals were not loud enough

The operation of auxiliary sound warning media was a problem of organization. One possibility was to mount them permanently and operate them by sound waves from one point to the next. Another possibility was for a central point to dispatch them, either hand carried or on motor vehicles. The deciding factor here was which method was better adapted to local conditions.

The public requested frequently that the warning should be given by radio broadcast. This was not possible since all people did not have a receiver permanently tuned in. Furthermore, the operations of a broadcasting station would have enabled the enemy to find their targets more easily. On the other hand the telephone connected radio system was used from the outset to give warnings.

Optical warning media had the disadvantage that those to be warned had to be in a position where they could see

126 the signals. Colored light signals were used in many cases with good results in very noisy installations. Optical signals in the form of air raid warning flags and balloons were used in the case of the railway, along the Autobahn superhighway, at the entrances to built up areas, and on waterways.

In some cases in World War II the catastrophal scope of damage done made it impossible to warn the public. Here, the sound of gunfire from the antiaircraft batteries served as a signal that new enemy air units were approaching. The signals used in such cases were as follows:

Public Air Raid Warning: 3 rounds at intervals of 13 seconds.

Acute Air Raid Warning : 5 rounds at intervals of 5 seconds.

6. Experience. The organization of the passive air defense air raid warning services proved satisfactory. Uniformity of structure was insured by the fact that the Reich Minister for Aviation and Commander in Chief of the Air Force assumed responsibility for all expenditures.

In future, however, it will be possible to have a reduced number of alerting detachments. In view of the high speed of modern aircraft, and particularly in view of the speed of rockets if these shouls be used, the alerting margin, which means the time which the population will have between the

127 time of alert and the arrival of the attacking aircraft or of the rocket propelled missiles to seek shelter will become shorter than it was in the past, so that it will be necessary to establish larger warning areas than was the case formerly.

Signal communications, which in the past relied almost exclusively on telephone communications through collective switchboards must be greatly improved in the future. "A new method must be so developed that, in spite of high speed in operations, it will insure the greatest measure of safety against interference or other failures."[164] Radio channels to the important warning points are essential if the warning service is to retain any semblance of importance.

The four warning signals used /in Germany/ proved satisfactory and should therefore be retained in the future. Within Germany there were approximately 11 000 air raid warning sirens. It will be necessary to have increased numbers in large traffic areas, so that the siren signals will be able to penetrate through the/considerably increased volume of noise from traffic.

The impact of alerting reports and acute public air raid warning, some of which were not followed by actual attacks, on public life is evident from the figures given below, which apply to the Cologne area and have been compiled by the Statistical Office of that city:[165]

164 Oberst Dr. Frey: "Der Luftschutzwarndienst" in "Grundfragen des zivilen Luftschutzes," Heft 1/1955. Verlag Gasschutz und Luftschutz, Koblenz.

165. See page 186.

Public Air Raid Warnings

In 1942	23
1943	124
1944	712
1945	230
Total	1 089

Acute Air Raid Warnings		Actual Air Attacks	
In 1939	2	In 1939	0
1940	151	1940	40
1941	123	1941	60
1942	139	1942	20
1943	209	1943	39
1944	357	1944	88
1945	141	1945	15
Total	1 122	Total	262

Average Duration of Alerts, in Minutes

	Per Alert Without Attack	Per Alert Followed by Actual Attack
In 1940	66	120
1941	54	146
1942	53	126
1943	43	83
1944	45	67

129 It will be noticed that the average duration per alert decreased considerably as the war continued. This is due not alone to the introduction of the "Public Air Raid Warning" in 1942, but also to the increasing precision of warning operations with the object of reducing interference with public life to the smallest possible minimum.

129 The total duration of all alerts, given in days (of 24 hours), hours, and minutes was a follows:

	Time under Alert Without Attack			Time under Alert With Actual Attack		
	Days	Hours	Minutes	Days	Hours	Minutes
1939	-	1	54	-	-	-
1940	6	22	17	3	8	19
1941	4	14	2	6	1	45
1942	5	2	42	2	17	58
1943	6	5	45	2	6	31
1944	11	-	43	4	2	16
1945	5	7	35	1	3	7

The above compilation reveals the vast amount of time lost by industry and traffic, quite apart from the mental strain to which the population was subjected.

It is interesting to note here the results achieved by excluding certain industrial and other installations from the general warning and by introduction of the more flexible warning methods and their continuing refinement as expressed by the duration of the alerts to which industries were subject.

As early as in July 1944 Regional Chapter Northwest of the Iron Producing and Processing Category--Duesseldorf, of the Board of Industries prepared a compilation of the time spent under general local alerts and under factory alerts.

165. "Koeln im Luftkrieg 1939-1945," Statistische Mitteilungen der Stadt Koeln. 9. Jahrgang 1954, Heft 2.

129 The compilation covers the period of January to May 1944, inclusive, for 70 "exception" installations in the Rhine-Westphalia and Siegerland industrial regions. According to the

130 compilation, factories were under alert for the following percentages of the general public air raid duration:

In January	46.7	percent
February	38.2	"
March	36.1	"
April	27.7	"
May	28.9	"

The success of the new measures was evident, and as the new methods became more familiar success increased quite considerably until the overwhelming superiority of the enemy rendered all further efforts futile.

In order to obtain first hand information on the air situation and thereby reduce the reporting lag to a bare minimum large factory air defense groups in some cases had on their own initiative established direct contact with antiaircraft artillery groups, fighter divisions, or other headquarters of the Air Force, from which they received continuous current reports on the air situation.

In the future the problem of the passive air defense air raid warning services will in an increased measure be one of reducing the time lag between the aircraft locating-fixing-map locating porcesses and the actual reporting. to an absolute minimum.

130 The recommendation made by industrial circles that "there should be no agency between the headquarters posting the situation map by information from the first analysis of reports and the warning points of a factory or other industrial instal-
167 "
lation..... appears too sweeping a change. It would involve discontinuation of the air raid warning centers, the responsibilities of which, as has been stated previously, the aircraft reporting detachments could not take over in addition to their other duties. Here, however, is a field for technological developments. Thus, one solution which presents itself to the mind would be to use radar and relay by means of television the current situation map to the most important warning stations. However, the question of costs would play a role here, and the danger would also exist that the attacking enemy forces might intercept such television messages.

b. The Safety and Auxiliary Service, Category I, later Redesignated as Passive Air Defense Police. The mission of the Passive Air Defense Police comprised the following specialized services:

168
Firefighting;

169
Repair services;

166. From "Praktische Erfahrungen fuer den Industrieluftschutz aus dem letzten Krieg;" Major Erich Stein, Teil II, p. 13. In Karlsruhe Document Collection.
167. "Erfahrungen im Werkluftschutz, Gedanken zum Luftschutzwarndienst," (Author unknown), in "Ziviler Luftschutz," Heft 4/1955. Verlag Gasschutz und Luftschutz, Koblenz.
168, 169, see page 189.

130 Decontamination services (Gas defense);[170]

Medical services;[171]

Veterinary services;[172]

Salvage services;[173]

in addition to the following

Air observation and reporting[174]

Traffic directing and guide services.[175]

Initially also part of the Passive Air Defense Police, the public utility services were later separated.

The nature and missions of the individual specialized services involved will be dealt with in the chapters which follow later.

Clothing and equipment, including special equipment, for the Passive Air Defense Police (and formerly for the Safety and Auxiliary Service, Category I) were supplied by the Reich Minister for Aviation and Commander in Chief of the Air Force. Clothing matters were governed by the terms of Air Force Field Manual L. Dv. 788: "Regulations Concerning Service Clothing for the Safety and Auxiliary Service, Category I, and for the Passive Air Defense Air Raid Warning Service" (Vorschrift ueber die Dienstbekleidung fuer den Sicherheits und Hilfsdienst I. Ordnung und den Luftschutzwarndienst)[176]

168. See IV, b, below. 169. See IV, b, 2, below.
170. See IV, b, 3, below. 171. See IV, b, 4, below.
172. See IV, b, 5, below. 173. See IV, f, 6, below.
174. See III, c, 5, below. 175. Ibid.

132 According to the field manual the several air district commands were responsible for clothing administration, whereas their delivering agents were the local passive air defense chiefs.

The following ranks, with appropriate insignia, existed in the service: Passive Air Defense Private; Section Leader; Squad leader; Chief Group Leader, Staff Group Leader; Platoon Leader; Chief Platoon Leader; Company Commander; Battalion Commander; Special Missions Battalion Commander. Medical, dental, and veterinary personnel were graded accordingly.

The new designation of Passive Air Defense Police (Luftschutzpolizei) in place of the former designation of Safety and Auxiliary Service, Category I,[177] was decided upon in 1942, when the motorized battalions of the service were transferred to and incorporated with the Air Force as passive air defense troops, while all other elements of the service were placed under the Reich Commander in Chief of the SS and Chief of German Police. This new arrangement did not affect the missions of the Air District Commands in the matter of directing passive air defense, nor did it in any way restrict their authority to issue directives to and to control the intermediate organs,

176. Excerpt from Air Force Field Manual L. Dv. 788, in Karlsruhe Document Collection. An original copy of the manual is in the possession of the Bundesverband der deutschen Industrie.

177. See III, c, 4, above.

132 namely, the commanders of regular police as established in terms of Special Annex X to the Mobilization Plan (Air Force).

In the matter of administration also the new measure did not represent a clear cut solution, which would have been impracticable anyhow, since the supply of clothing, and equipment, remained a responsibility of the Air Force. That the dual controls thus established would lead to difficulties was clearly obvious.

In preparations against the eventuality of mobilization, main emphasis had been on local damage control, with only a specified percentage of the forces to be held available for outside commitments. As enemy offensive activities increased, however, the importance of mobile operations by passive air defense became a factor of paramount importance, so that a reorganization became unavoidable in 1942.

In large cities the question of where to station the passive air defense forces will always remain a problem. Certain units as a rule will have to remain within the threatened area, or very near by, for immediate action when necessary. Standby units and all reserves, however, should be stationed in areas not so seriously threatened. The mission of the command will then be to move these forces into damage areas in time.

In spite of all losses incurred, and although under

133 a strain far exceeding the normal limits of tolerance, the Passive Air Defense forces in selfless devotion to their duty achieved almost superhuman achievements in the last few months of the war.

1. The Firefighting Services. Several fire catastrophes had shown already during peacetime that local firefighting services were not able without considerable reinforcements from outside to keep very large fires from spreading.

In the organization of the Safety and Auxiliary Service (later Passive Air Defense Police) it was therefore not only essential to reinforce the existing firefighting forces but also at the same time to establish new ones.

Since it was to be expected that numerous fires would occur separately, firefighting units had to be stationed at numerous points throughout city areas, so that they could bring under control, if necessary, local fires which could not be handled by the means of self protection or the extended self or individual protection system alone. Under such an arrangement, the main body of the reinforced firefighting forces could be committed against really large fires.[178]

For the above reasons each passive air defense precinct was assigned at least one firefighting and rescue and salvage detachment as a local unit for immediate action. This

178. "Der Feuerloeschdienst," by Ministerialrat Dipl. Ing. Lindner, im Sammelwerk Knipfer-Hampe: "Der zivile Luftschutz," p. 164. Karlsruhe Document Collection.

134 detachment comprised 1 leader and 8 men, some of them regular fighter fighting personnel, the others appropriately trained auxiliaries. (Light firefighting group with hand-carried fire extinquishers).

The reinforced regular units of the local firefighting organizations were integrated with the Safety and Auxiliary Service as standby forces. The supplementary personnel required were recruited in terms of the Passive Air Defense Act.

The overall size of the firefighting forces was determined by the Tables of Organization and Equipment established by the Reich Minister for Aviation and Commander in Chief of the Air Force in agreement with the Reich Minister for the Interior.

In some of the larger cities integration of the firefighting services with the Safety and Auxiliary Service encountered difficulties. This was the case in cities where the whole area had to be subdivided into passive air defense sectors, because this measure, which was necessary for control purposes in the event of air warfare, represented a departure from peacetime practices of always having the firefighting forces under centralized control. However, solutions were found in all cases without any necessity to move the various units out of the premises to which they were organically bound.

135 From the very outset it was necessary to hold available adequately strong firefighting forces for commitment in areas outside of the home area. In the past fire fighting had been a responsibility of the local communities, and no centralized procurement agency or standardization of firefighting equipment had existed. In this field the Reich Minister for Aviation and Commander in Chief of the Air Force found himself face to face with an urgent problem, since off post employment of fire fighting equipment was impossible or at least very complicated and coupled with an intolerable waste of time if the hydrants, the pipes, the hoses, and other couplings varied in type and size. The Reich Minister for Aviation and Commander in Chief of the Air Force agreed to take over this responsibility because the Reich Minister for the Interior at that time did not yet have the establishments necessary for the purpose.

The important requirement was not only to introduce tables requiring standard sizes, but at the same time to take measures which would insure a speedy development of coupling devices, and the development and proving of new models of firefighting apparatus of various effectiveness.[179]

The first instructions concerning the organization of

179. Karlsruhe Document Collection: "Die Technik des Brandschutzes im zivilen Luftschutz 1933-1945," by Regierungsdirektor Hans Stellte, 1955.

135 the firefighting services as an element of passive air defense were embodied in Section VII of the "Temporary Local Instructions for Air Defense of the Civilian Population" (Vorlaufige Ortsanweisung fuer den Luftschutz der Zivilbevoelkerung).[180]

The process of build up commenced at the bottom and worked upward. The first step was the organization, equipment, and training of individual building firefighting teamsand of community passive air defense groups for self defense. The "Directives for the Organization of Firefighting Services in Passive Air Defense Localities" (Richtlinien fuer den Aufbau des Feuerloesch-wesens in Luftschutzorten), issued as Annex I to the Section VII mentioned above, dealt with the standby units (Firefighting) and rescue and salvage units of the passive air defense precinct as well as the standby forces (units of the local fire fighting forces) and established their requirements in equipment.

All of the forces listed just above were brought up to strength through the assignment of supplementary personnel in the case of a call up of the Passive Air Defense Services, and organized for operations sections (half-platoons), platoons, companies (Bereitschaften), and battalions.

The Reich Minister for Aviation and Commander in Chief of the Air Force/Air Force Inspectorate 13, procured the necessary supplies and delivered them to the several passive air defense

180. See II, c, above.

136 localities in order to be able to issue to the units supplementary equipment in the form of such items as Types LF-15 and LF-25 heavy and light firefighting machines as well as other special equipment such as hose-carrying trucks, swivel ladders, etc.

Hand in hand with the above measures went the development and proving of new types of practicable fire extinguishers. The Reich Institute of the Air Force for Passive Air Defense shared the responsibility in these activities. Units of the Berlin regular firefighting forces were used for the purpose in agreement with the Reich and Prussian Minister for the Interior. Large-scale trial trips were organized to test the suitability of the various types.

For firefighting operations in large damage areas it was essential to develop and test firefighting tactics which differed from those employed during peacetime. On the basis of experience thus gained the Reich Minister for Aviation and Commander in Chief of the Air Force issued his directive concerning "Operations of Firefighting Units to Extinguish Large Fires" (Einsatz von Feuerloescheinheiten zur Gross-brandbekaempfung), dated 24 April 1943.[181]

The directive established basic rules for the operable

181. Appendix 19 (photostat copy).

strength and development of firefighting units to be employed in major firefighting action, and presented examples which served to illustrate what was said.

The following new concepts were established:

Main Firefighting Line. This was the line at which strong forces were to be committed against fires which had already taken a firm hold, the object being to do everything possible to prevent the fire spreading beyond this line.

Fire Area Section. This was that section of an areal fire which was assigned to one specific firefighting unit for independent firefighting action.

Special fire extinguishing tactics were also tried out for individual protection, in which the effectiveness was tried out of the special passive air defense type hand pumps. For this purpose fires were started in the attics of houses condemned to be torn down.

These tests revealed that a very small firefighting team, such as a building firefighting team, could prevent a fire in an attic from spreading to other floors of the building if the proper methods were employed at the right time. On such occasion the Reich Institute of the Air Force for Passive Air Defense produced instruction films which proved highly useful in the training of individual protection trainees.

In firefighting operations the following experience

137 was gathered:

In the case of an attack with incendiary bombs the number of firefighting units moved in to an area can never be too big if success is to be achieved in efforts to prevent the development of large area fires.

The proper commitment of these frequently widely varying types of units and their firm control during operations placed a severe strain not only on the local passive air defense chief and his sector chiefs, but also on the chiefs of the units concerned. The major points which had to be taken into consideration here were the location of water supply points, the inaccessibility of certain road routes which were blocked

138 by fallen debris, and the timely recognition of areas for main effort.

For the above reasons continuous training is essential in the subject of controlling and directing large firefighting forces. In computing the size of the forces to be committed due regard must also be given to the necessity to pull the units committed out of action at the proper time for a rest period. After a force has accomplished its main mission it must be pulled out as soon as possible for new assignments, while fire extinguishing forces moved in, for example from rural areas, can remain behind to completely extinguish what remains of the fires.

138 The measures taken to provide for the contingency that it might be necessary to pump water from long distance, and which took the form of the storage of large reserves of hoses, the provision of mobile motor pumps as relay pump stations, etc., proved very sound.

In the last year of the war, and in a few cases even before that it was not always possible to prevent the spread of large fires. In numerous cases large numbers of separate fires spread to become one large fire with such speed that the chiefs of the units committed against them often found an entirely different situation when they arrived on the scene than that described to them in their detailed orders. In such cases practically every fire chief was forced to decide and act on his own initiative.

That it is possible even in the case of a large area fire, almost in the center of an ocean of flames, to halt the fire temporarily, is proved by the operations of a firefighting battalion during a large-scale air attack against Wuppertal-Barmen in May 1943.

A large air raid shelter, in which more than one hundred persons were trapped by debris, was becoming steadily more and more enveloped by the spreading flames. The repair and rescue and salvage teams committed on the spot were themselves directly threatened by the fire.

138 In this desperate situation a firefighting unit which was rushed in succeeded in halting the fire, which had been sweeping in from all sides, for longer than an hour. To make matters even more complicated than they already were, the water pipelines in the neighborhood had

139 been damaged so that water had to be pumped from the Wupper River, which flowed through the city, for which purpose a hoseline had to be laid. Since the houses on either side of the street leading down to the river were also beginning to burn, it was necessary to keep down the fire all along the water route as well as in the vicinity of the damaged shelter until the inmates could be rescued. Working in a perimeter, with a narrow outlet to the river, the firefighting battalion actually succeeded in holding back the holocaust until the debris was removed and the imprisoned persons rescued.[182]

Against such contingencies plans provided for the establishment of what was called a water lane. Firemen were stationed in couples at short intervals along and on either side of the lane with steel waterpipes. The mission was to provide a dense shower of water over the lane under the protection of which the rescue teams could move in to their work and save the trapped persons.

182. Karlsruhe Document Collection: "Erfahrungen bei den Luftwangriffen im Rheinisch-Westfaelischen Industriegebiet, by Major Adolf Schmidle, 1955, p. 69.

139. Technical journals devoted much space to discussions on the subject of what could be done against large area fires and fire storms if there was no way of preventing their development. Two characteristic articles published on the subject are the following:

(1) A well illustrated article under the title "Area Fires and Fire Storms" (Flaechenbraende und Feuerstuerme)[183] written on the basis of practical experience and illustrating the difficult problems involved.

(2) A book reviewed by the former German Inspector General of Firefighting Affairs (Generalinspekteur des Feuerloeschwesens)[184] and which appeared in the USA under the title "Fire and the Air War",[185] which presents a comprehensive evaluation of the observations made and the experience gained by all parties in air warfare.

In operations to put out oil fires special missions developed for the firefighting services.

Oil farms usually take up a large area; the individual tanks forming the oil farm as a rule are relatively closely spaced, a fact which complicates the approach to the fires by firefighting units. This circumstance had to be taken into consideration already during the planning stages for protective construction. Oil fires were attacked with

184. "Feuer unf Luftkrieg," by Hans Rumpfin the journal "Brandschutz," Verlag W.Kohlhammer GmbH, Stuttgart, Vol. 3, 15 March 1956.

140 water and foam (Totogen). Burning or endangered oil tanks were cooled by water and at the same time foam was pumped in to extinguish flames. With a little practice and some experience the firefighting teams committed in such missions were always successful, so that fires of this type presented no major problems. The important point was to pump in liberal quantities of foam of a thick consistence and evenly distributed through the existing pipe system or by a special top feed. In this way it was possible for the foam to form a closed film very quickly and smother the fire.

If bomb fragments knocked holes in the tanks, wooden pegs, kept available on the spot, were used to plug them.

It became evident in operations of this type that experienced and practised firefighting crews were especially eager to participate in action against oil fires, and this applied particularly to the motorized passive air defense battalions. They preferred this type of action to action against large fires in town areas.[186]

Success or failure in any firefighting operation depends upon the supply of water. The existing system of water supply pipes will as a rule fail entirely or in parts during or after large-scale air attacks. Wherever this is possible it is

185. Horatio Bond: "Fire and Air War," Boston 60, Barrymarch Street 262.
186. See V, below.

141 therefore essential to drill as many wells to subsoil water level as possible.

Experience showed that the units must be equipped with wireless communication facilities, since otherwise intolerable delays occur, the consequences of which would necessarily be particularly fateful in the case of the firefighting services. In addition the units must have field telephone equipment.

As a rule firefighting units to reach their assigned operating area will have to travel through streets blocked by debris, and will also find it necessary to clear debris for the purpose of laying their hoselines. To assign units of the repairs branch for this purpose would lead to a dissipation of these forces and also would result in undue loss of time. It is therefore sound practice to integrate a repair group with each standby firefighting force.

During operations firefighting forces were subjected to colossal stress and strain. The reflected heat was practically unbearable. The fire storms which always accompany a large area fire made it almost impossible for people to remain on their feet.[187] Because of the dense smoke, steam, and continuous showers of burning material it was impossible to operate without protection for the eyes. Although it was known that 3 to 4 hours in action

187. For a description of a "Firestorm" see "Der Hochrote Hahn" by Hans Rumpf, Verlag E. S. Mittler u. Sohn, Darmstadt, 1952, p. 107.

142 under such conditions strained personnel to the point of exhaustion, it was impossible to relieve them because there were simply no other forces available.[188]

The performances achieved by the German firefighting forces are beyond praise. Seventyfive percent of all damage done by air attacks was due to fire. It was the incendiary bomb which destroyed the German cities and towns. The performances of the firefighting forces, achieved at the cost of grievous losses in human life and at the cost of sheerly superhuman effort are a matter of history. Details on the subject will be found in "Der Rote Hahn," the work by Hand Rumpf referred to in Footnote 187, above. One major cause for the mounting losses were the delayed fuze bombs used. As an example it can be stated that the firefighting forces lost up to 20 dead and 50 badly injured in every large-scale attack against Berlin.

Property losses assumed alarming proportions. During one daytime air attack alone, on 6 February 1945, 21 000 meters of hose were lost.[189]

In the last year of the war the requirement to release personnel and materiel for military service served to still further weaken the firefighting forces, but this still did nothing to change the morale and devotion to duty up to the

188. Footnote 182, above.
189. Footnote 187, above.

142 bitter end. Even in practically hopeless situations, fire chiefs, their assistants, and the rank and file fulfilled their duty to the utmost extreme.

143 2. The Repair and Salvage Services.[190] Not only the experience gained in World War I but also peacetime experience, in the case of the collapse of large buildings or other structures, had shown that in serious disasters of this kind it was impossible for untrained rescue teams equipped exclusively with shovels and picaxes to rescue in time any persons who might be trapped by falling debris. Before rescue operations proper can commence it is as a rule necessary to carry out extensive and difficult clearance and safety work.

The above circumstances were taken into consideration in the provisions contained in Section X of the Temporary Instructions for Air Defense of the Civilian Population[191] for the organization of the Repair and Salvage Services. The missions assigned to the service were as follows:

Salvage and rescue;

Removal of traffic obstacles;

Precautions against possible collapse of structures;

Repair of important traffic and communication lines;

Construction of temporary shelters;

Removal of unexploded bombs.[192]

190. "Der Instandsetzungsdienst," by Erich Hampe, in Knipfer-Hampe: "Der zivile Luftschutz."

191. See II, c, above. 192. VIII, e, below.

143 In the execution of these missions it was necessary to distinguish between preplanned operations, which required a precise determination of the work to be done and which would require a considerable time; and immediate action, where speed of execution was the all important factor, as in the case of the rescue of buried persons, the temporary support of structures which might otherwise collapse, and so forth.

The work which the Repair and Salvage Service was called upon to perform ".....can be carried out properly only by technically qualified personnel. At the same time, however, they are of so specific a nature and so diversified, that it would be hard to find persons in a normal professional life who would have all the knowledge and skill required. The destruction which total warfare brings upon the homeland is so unprecedented that there is no walk of life from which personnel could be drawn who would be familiar with similar circumstances and could therefore be employed successfully without any further preparation."[193]

For the above reasons it was necessary to have some technically capable agency which would concern itself continuously and in detail with special missions of this type, and which would be able to test out continuously in practice the theories developed in study.

193. Footnote 190, above.

144 This agency was found in the Technical Auxiliary Service, which rendered excellent and helpful services in innumerable technical missions.

In order to be able to cope with its new mission, the Technical Auxiliary Service first had to rearrange its whole organization. This new branch of the Passive Air Defense Services was controlled at the highest level by Control of Passive Air Defense Services in the Reich Technical Auxiliary Service Office, and by specialists attached to the various staffs at the level of the various federal states and of the several localities.

The organization and training of the Repair and Salvage Service as part of the local Safety and Auxiliary Service was a responsibility of the Chief of Repair and Salvage Services attached to the staff of the local chief of passive air defense concerned. The service was organized in

Repair and salvage detachments comprising each two teams totalling 1/24;

Blasting teams in a strength of 1/4;

Repair and manitenance pools.

Numerical strengths were determined by the tables of organization established for Passive Air Defense Localities, Category I. The terms of the Civil Air Defense Act governed the recruiting of personnel .

145 Standards required that personnel must be perfectly fit, both mentally and physically, must have practical and technical qualifications, and must accept service exclusively in the Repair and Salvage Service.

During the war it was found that a different method was necessary for the removal of enemy bombs. The enemy use of bombs with delayed action fuzes of a mechanical or chemical nature made it essential to employ only highly specialized personnel for their removal. At a later stage, for example, Air Force blasting teams were dispatched from case to case by the air district commands. By means of a continuous supply of instruction sheets the personnel in these teams were kept currently posted on the appearance of new types of bombs. In order to reduce the possibilities of losses, the blasting teams of the Repair and Salvage Service from then on were only called in to assist these specialized teams.

The repair and salvage teams and detachments were equipped[194] with light, medium, and heavy types of tools and instruments.[195]

Each Repair and Salvage pool contained supplementary equipment for two or three repair and salvage teams and for the highly specialized teams, besides such equipment as cutting tools, ventillators, compressed-air-driven chisels,

194. Generalmajor Kuckein: "Technische Fragen des Instandsetzungsdienstes," in Knipfer-Hampe: "Der zivile Luftschutz," p. 194.

195. See Footnote 13, above; Chapter X, below; Appendixes 1

145 cranes, and so forth. According to the size of the passive air defense localities[196], the repair and salvage pools were classified as large or small.

After the Safety and Auxiliary Service was taken over by the Passive Air Defense Police in 1942, the mobile units of the repair and salvage service were redesignated. From then on the forces of the service were organized in companies (Bereitschaften). Each such company had 3 platoons of 3 groups. In large passive air defense localities the companies were consolidated to form battalions.

Training in the Repair and Salvage Service was governed by Air Force Field Manual L. Dv. 752, Part 3: Training in Repair and Maintenance Srevices (Ausbildung im Instandsetzungsdienst)[197]. Particularly interesting sections of this part of the field manual are as follows:

Pamphlet b: Building Construction; Supporting and Reinforcing;

Pamphlet c: Blasting;

Pamphlet d: Removal of Debris and Rescue of Persons Buried under debris.

The last of these, issued in 1944, was a crystallization of all experience hitherto gained in the field. In its 114 paragraphs and 27 illustrations it gives detailed instructions

196. See Footnote 13, above; Chapter X; Appendixes 2 and 3.
197. Air Field Manual 752/3b, 3c, and 3d, in Karlsruhe Document Collection.

146 on the best methods for the quick rescue of persons trapped by debris under the most widely varying circumstances. In addition it contains valuable instructions in the subjects of tactics, the use of equipment, and first aid for persons buried alive and then rescued.

Operations of the Repair and Salvage Service were governed by the following principles:

Immediately after the command posts of the local air defense command received the first reports on damaged points, units went into action, frequently while the air attack was still continuing. It is needless to mention that support was first sent to points where the lives or health of humans

147 were endangered, and this was the case when persons were buried alive.

The primary mission of the Repair and Salvage Service in such cases was to dispatch its salvage teams to rescue endangered persons.

After the rescue teams arrived at their assigned point the ground was first quickly reconnoitered, so that the leader could determine the best spot at which to begin his rescue work. Then all work and all machinery was silenced in order to determine by listening whether the persons trapped were still alive. If sounds could be heard of the trapped persons knocking, this was a valuable aid in the rescue work, since

147 it provided indications as to where the buried persons were located and thus greatly facilitated the proper employment of the rescue personnel at the right points.

Owing to the importance of these knocking signals, all official and civilian agencies were instructed time and again to take every opportunity to remind the population that anyone who, as the result of air attacks, became trapped in any shelter or any other premises, should give regular knocking signals.

In the first years of the war personnel of the repair and salvage services had to rely on their powers of hearing alone when carrying out listening tests, although the experience gained had already resulted in certain tactics employed in the selection of the most likely listening points.

It is true that arrows were marked on all buildings showing the locality of shelters, but this measure provided only incomplete support in efforts to find buried persons speedily, since the inmates of a shelter very often moved out into other basement and cellar premises. For this reason the repair and salvage teams were equipped with highly sensitive sound detectors, which made it easier to detect knocking signals, locate even very indistinct sound, and draw the logical conclusions from such sounds.

148 On the basis of such experience, the following order was issued:

The Repair and Salvage Service has the primary mission of rescuing persons buried under debris, its units will be used for rubble clearance operations only in exceptional circumstances. If persons are reported trapped by debris the Repaid and Salvage Service will be sent into accelerated action. Any time lost might mean death to the persons trapped. In any such cases a responsible leader will be appointed who will direct all measures taken.

The reports available are unanimous in their opinion on the results obtained with sound detectors, namely that these were good. Thus, it is repeated frequently that without sound detectors to assist in establishing the precise locality of persons buried under debris, rescues in many cases would have been impossible. Without anything to guide them in their efforts the rescue teams would have spent days in clearing away rubble before they could commence actual rescue operations.

Another great help in rescue operations, both during daylight and at night, was found in the use of searchlights.

It is only natural that the successful accomplishments of the Repair and Salvage Service were not always achieved without losses. In some cases losses were incurred while

148 units were preparing to move out on a mission, coming under attack by enemy planes using bombs and weapons fire. Other deaths and injuries were incurred during operations and were due to such causes as the detonation of delayed fuze bombs, falling debris, the effects of excessive heat in air raid shelters, or burns.

The rescue operations involved many other duties, such as the supporting or removal of adjacent ruins which seemed in danger of imminent collapse; hours of battle against the major obstacle in the way of all rescue work, namely rubble, vast quantities had to be moved; the cutting of iron girders which hampered operations, and the blasting and removal of broken walls, the remnants of which were in the way.

Some of the major obstacles hampering rescue operations were as follows: the smoke and steam developed by fires; dust and intolerable heat; dripping water which was boiling hot and came from the water used to extinguish the flames; breathing difficulties due to the fumes from burned ruins; and darkness.

The physical demands made on personnel in the Repair and Salvage Service were enormous, and personal courage was a primary condition of success in operations.

While still a part of the Safety and Auxiliary Service, and later as an element of the Passive Air Defense Police,

149 the units of the Repair and Salvage Service accomplished their missions; in localities which came under frequent and heavy attack this was done in untiring activities frequently exceeding what could have been considered their capabilities.

The following experience was gained in repair and salvage operations:

Great importance was attached to recovering all persons buried by debris, even if the circumstances were such that it could be assumed with certainty that they were no longer alive. Cases are on record of persons being rescued alive, and being kept alive, after having been buried for as long as six days.

"The circumstance that all persons buried under debris were recovered up to the autumn of 1944 served to prevent rumours that living persons were still under the ruins after rescue operations had ceased.

"This circumstance did much to avoid panic among the civilian population.

"It was known to the public in general that experience proved that rescue operations commenced immediately persons were reported trapped under ruins, and that these operations continued until such persons were recovered alive or dead.

"Rubble clearance operations in the Ruhr region in the

150 1945-1950 period proved the falsity of a few rumors that

150 persons trapped by debris during the war were still under the rubble. Another such case was that of the rubble clearance operations in a large area of Dortmund in 1950."

"From the autumn of 1944 on, however, the forces available were no longer adequate to maintain the established practices in rescue operations. From then on rescue work was done only where it was assumed that persons underground were still alive and continued only so long as it was humanly possible to expect that life lasted."[198]

The enemy use of bombs with time fuzes hampered the operations of the passive air defense forces considerably. Since it was impossible to determine whether a bomb discovered was a normal dud or one with a time fuze, valuable time was often lost in damage control action. The blasting teams maintained by the several air district commands were by no means adequate to handle the mission of removing or exploding the numerous unexploded bombs found. For this reason units of the Repair and Salvage Service were again used for such purposes, for example at points where persons had to be rescued from buried cellars or other shelters. This employment of these teams was unavoidable in spite of the fact that for them the danger was graver than for the more highly specialized teams of the air district commands.

198. "Erfahrungen bei den Luftangriffen im zweiten Weltkrieg im Rheinisch-Westfaelischen Industriegebiet," by Major Adolf Schmidle, 1955, p. 70. Karlsruhe Document Collection.

150 Experience during the war seems to indicate a necessity to organize the blasting services on a broader basisand to integrate blasting teams with the passive air defense units.

Since firefighting units on their approach route to a fire, and while laying their hoselines, as a rule have to remove obstacles it is advisable to give each firefighting company a repair and salvage group.

In contrast with the firefighting units, the repair and salvage teams will as a rule remain longer at the scene of a fire, since their activities take up much more time, even if they are supported by auxiliary detachments from the military. For this reason the ratio of repair and salvage forces to firefighting forces must be considerably improved. Furthermore it will be advisable to assign the squads a squad of light firefighting forces because it usually becomes necessary during their work to extinguish fires still left smoldering in the ruins or to cool off the ruins in order to create tolerable working conditions.

During the war the necessity arose to employ mechanical excavators to clear the approaches to major damage areas. This had to be done because every hour counted if the efforts to rescue those burind under the ruins were to succeed. According to the requirements of mobilization preparations, equipment of this type was only to be registered, so that

151 it could be called in whenever necessary, as authorized in terms of the Law Concerning the Requisitioning of Property and/or Services for Defense Purposes (Reichsleistungsgesetz). Experience showed, however, that this arrangement was not adequate. Frequently as much as twenty-four hours passed before an excavator thus requisitioned commenced operating. In the Rhine-Westphalian industrial region the Commander of Regular Police therefore established an Excavator Company (Baggerbereitschaft), which was equipped with four excavators specially purchased for the purpose and manned by specially selected personnel from the repair and salvage service. More of these companies were then established and stationed in the vicinity of large cities, from where they were employed at major damage points.

In the light of experience it would seem best to have a personnel strength of ninety in each such company, which should have two excavators carried on low-built trucks, plus an ambulance vehicle.[199]

152 3. The Decontamination Service (Gas Defense). In World War I the two opposing sides used a total of approximately 125 000 tons of chemical agents. Theoretically, this amount would have sufficed to completely exterminate the entire population of the world five times over.[200]

200. Dr. Mielenz: "Der chemische Krieg," in "Schriftenreihe Ueber zivilen Luftschutz," Vol. 1, 1953.

199. See Footnote 198 and IV, g, below.

152 It can therefore be understood that in building up the civilian or passive air defense system particular importance was attached to the decontamination service. The possibility had to be taken into account that chemical means of warfare would be used as a weapon of the first order, and that they would also be used to reduce the capabilities of the armament industries.

Furthermore, it was known that while Germany's armament program had been restricted by the Treaty of Versailles, the other powers had made great expenditures to develop their chemical arms. As was confirmed by later events, this was particularly so in the case of Czecho-Slovakia, where the German forces captured all-terrain vehicles equipped ~~with~~ as tankers to spray chemicals of the persistent type. Because of their universal usability, which was proved in various tests, the Reich Minister for Aviation and Commander in Chief of the Air Force ordered the use of these vehicles in passive air defense missions, assigning them as smoke-acid carriers to a passive air defense smoke-screening battalion. The appropriate tests were carried out by the Reich Institute of the Air Force for Passive Air Defense.

The important point now appeared to be the development of a well considered system of gas defense able to cope with the types of chemical agents used in World War I and the

152 tactics and methods known from that time as well as the new and still unknown types of gases and newly developed tactics and methods of gas warfare.

The first and most important requirement in gas defense was quick detection of the type of gas used, so that appropriate countermeasures could be taken. The only possible choice to head this branch of the service was a trained chemist, who was assigned to the staff of the local air defense chief in each case. The decontamination service itself was organized in mobile and stationary elements. The mobile branch included gas detector and decontamination teams while the stationary branch contained the research stations to determine the nature of chemical agents, the decontamination equipment pools, and installations for the decontamination of contaminated objects.

The mission of the gas detector personnel was to determine after each air attack, and in special cases even while the attack was still continuing, whether and where gas had been used and the type of such gas. They were equipped with complete protective clothing and all necessary instruments, and as a rule each gas detector was accompanied by an assistant.

Each research station had a dispensary and a laboratory,

153 plus the necessary chemical equipment and reagents, and was staffed with qualified chemical personnel, so that it was possible to determine the nature of any gas within fifteen minutes after arrival of a sample.

The actual work of decontamination was done by decontamination teams of personnel specially trained and equipped for the purpose.

At the end of each decontamination operations the personnel engaged in these activities were to first give their clothing and instruments and vehicles a preliminary cleaning on the spot and then proceed to the decontamination equipment pool. There all clothing and equipment was to be thoroughly decontaminated and prepared for the next operation.

154 All objects showing traces of persistent chemical agents, and which could not be thoroughly cleansed on the spot, had to be brought in for thorough decontamination in the decontamination installations, which in most cases were controlled by a properly qualified chemist.

In each air defense locality a program of thorough theoretical and practical problems and exercised also insured intensive training. Personnel in the other branches of passive air defense , such as the Safety and Auxiliary Service (later redesignated Passive Air Defense Police) also were familiarized to the necessary degree with the requirements

155 of the decontamination service.

Personal equipment of personnel in the decontamination branch included heavy type and light type protective clothing. A special development program had to be instituted to adapt the gas defense equipment already introduced in the military forces for use in passive air defense. Avove all consideration had to be given to the fact that as a rule the personnel employed in the decontamination services would come from older age classes, who would be physically incapable of working for hours while wearing the heavier types of gas defense clothing. The standard army type gas mask and breathing element were taken over for use by personnel of the decontamination services, while a special gas mask, known as the Volksgasmaske was developed for the general public. Each decontamination team[201] contained 1 chief and sixteen men.

Initially, provisions existed to furnish supplementary motor vehicles for the movement of personnel and equipment, but at the same time work started on the development of special type vehicles adapted to the operational methods of the service.

Tests were first carried out with a special type

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201. Later organized in decontamination platoons of each 2 squads.

155 decontamination car and flat trailer,[202] which was replaced in 1941 by a decontamination equipmentcar with decontaminator trailer, Model 1941,[203] an improvement over the old model. Each squad was to have a special car for transportation of the personnel. The new vehicles were supplied first to the mobile units, meaning the motorized passive air defense battalions, and later also to the passive air defense police forces.

The Reich Minister for Aviation and Commander in Chief of the Air Force issued the necessary regulations to insure uniform maintenance standards for gas defense equipment in the several passive air defense localities.[204]

Army Field Manual H. Dv. 395/11 (the equivalent of L. Dv. 95/11a), issued by the Supreme Military Command (Ober-Kommando der Wehrmacht) in agreement with the three branches of the military establishment,[205] was made applicable to the gas detection service.

The gas detection methods employed were governed by Air Force Field Manual L. Dv. 772 "Gas Defense Services in Passive Air Defense" (Gasabwehrdienst im Luftschutz) and its individual parts, as follows:

202. Ausruestungs- und Beladeplan fuer Entgiftungskraftwagen mit Troganhaengern (EGKW 7), L. Dv. 783/5.
203. L.Dv. 783/6 "Ausruestungs- und Beladeplan fuer Entgiftungsgeraetewagen mit Entgiftungsgeraeteanhaenger Bauart 1941."
204. L.Dv. 782 "Vorschrift fuer das Lagern und die Pflege des Gasabwehrgeraetes des Sicherheits- und Hilfsdienstes Teil I: Lagern und Pflege von Gasmasken." This manual

Continued on p. 223.

156 L. Dv. 772/1: Operations in Sub and Main Gas Research Stations (Die Arbeiten in der Kampfstoff und HauptKampfstoffuntersuchungsstelle)[206]

L. Dv. 772/2: Materiel Decontamination Installations (Die Sachentgiftungsanstalt).[207]

L. Dv. 772/3: Basic Rules for Meteriel and Equipment Decontamination (Die Sachentgiftungsmittel).[208]

L. Dv. 772/4: Decontamination Equipment Pools (Der Entgiftungspark).[209]

The examination of persons under suspicion of having become contaminated was subject to the terms of Air Force Field Manual L. Dv. 96, issued by the Supreme Military Command under the same circumstances as those previously described.[211]

The examination of food supplies and animal feeds suspected of having been contaminated was handled in accordance with the requirements of Air Force Field Manual L. Dv. 771.[210]

The personal equipment of each member of the decontamination services consisted of a one or two piece gas defense suit, with rubber gloves and boots, for skin protection, and the type S gas mask.

The missions for which the decontamination teams were intended presupposed a wide variety of equipment, including

204--Continued. was also applicable for factory air defense units, and a copy will be found in the present Bundesverband der deutschen Industrie.

205. L. Dv. 95/2 "GasSchutzdienst aller Waffen," Vol IIa, "Die GasErkennungsmittel", 15 September 1943.

206. Karlsruhe Document Collection.

156 such items as brooms, spades, shovels, rakes, wagons and hand sprays for the spraying of chlorcalcium composites, hand sprays for chemical solutions , hydrant couplings plus metal pipes and hoses. In addition gas detector personnel had a gas detector field pack containing reactors to determine the nature of chemicals detected and yellow flags to mark off contaminated areas. In some cases a special powder was used to mark such areas.

If volatile chemical warfare agents were detected all that was necessary in practice was to remove them if they had become lodged in residential blocks, in narrow streets, in squares, or in closed premises. In contrast, action against persistant chemicals was far more complicated. It was here that one could really speak of decontamination work, since these liquid gases, such as yellow cross or mustard and Lewisite gases, are relatively resistant to water.

It was extremely difficult to establish a generally valid formula for destruction of gases, since such action depended on a number of surrounding circumstances. Thus, the methods for the decontamination of tar-surfaced roads differed from those for soil or grass surfaces. Temperatures and wind

207. Karlsruhe Document Collection. 208. Ibid.
209. Ibid.
210. L. Dv. 771 "Die biologische Pruefung von Kampfstoffverdaechtigen oder entgifteten Lebens- und Futtermitteln in Veterinaer-Untersuchungsstellen des Sicherheits- und Hilfsdienstes." Copy in Karlsruhe Document Collection.
211. L. Dv. 96 and H. Dv. 396, and M. Dv. 318 "Kampfstoffver-letzungen" vom I. I. 1943. Karlsruhe Document Collection.

157 conditions also influenced the necessary decontamination operations.

From what has been said above it is clear that decontamination activities had to be subject to observation of precisely established operational principles. The decontamination teams had to arrange their movements so that they would approach a possible decontaminated area from upwind. Depend-on the current and local circumstances the personnel had to be so distributed that they could achieve the best results within the shortest possible space of time. In view of the adequate and detailed training given to all personnel, it should have been possible in all cases to achieve, under a capable chief directing the operations, a complete decontamination of any area.

In particularly difficult cases regulations provided for responsibility to be assumed by the appropriate passive air defense chemical officer for the decontamination action. 212

158 Because of the increasingly acute shortage of personnel, the Supreme Military Command in 1944 approved the employment of prisoners of war as auxiliary personnel within decontamination platoons and squads subject to the following conditions:

(1) Prisoners of war were not to be exposed to graver danger than the German personnel involved;

(2) They were to be furnished adequately safe pro-

158 protective clothing;

(5) Operations /employing prisoner of war personnel/ were not to be carried out during periods of air alert or while combat action of any type was in progress.[213]

In practice, however, the authority given under this measure to use prisoner of war personnel was hardly ever applied.

The "Volks" Gas Mask for Use by the General Public.

In contrast with regulations requiring use of the standard army gas mask in units of the passive air defense (Safety and Auxiliary Service, Factory Air Defense, Individual Protection), a special type of gas mask, known as the "Volks" gas mask was developed for issue to the general public.

Very comprehensive experiments and tests were necessary under direction by the research agencies of the Reich Air Ministry in cooperation with the Army Ordnance Office and large industrial concerns producing rubber articles and gas filter elements to develop a cheap gas mask which would provide adequate protection for civilians, men, women, and children, against the danger of inhaling poisoned air.

On the basis of experience gathered with the types of gas masks in use in the industry and in the military forces, numerous recommendations were submitted and examined for

213. Karlsruhe Document Collection: "Erlass OKL-Arbeitsstab LS vom 25.8.1944 betr. Einsatz von Kriegsgefangenen beim Gasabwehrdienst."

159

a model suitable for the general public before a model made of pure rubber without any percale lining was adopted for the purpose. The model adopted was to be fitted over the back of the head and was produced in three sizes for adults plus one size for children.

In principle, the gas mask for the general public was developed along the same basic rules observed in development of the standard type in use by the military forces. It had a two-way breathing system controlled by appropriate valves for the intake and exhaling of air. However, the exhaling valve was a new type, consisted of pure rubber, and was placed just below the goggles level with the bridge of the nose. The goggles were made of shatterproof glass with a gelatine line inside to prevent dimming from the exhaled moist air. The glass was mounted in the mask by means of spring-type rings.

Insulation was insured by the surfaces in contact with the head and face extending from the chin, the cheeks, and extending to the forehead. No cases of leakage were detected. Breathing was through a filter mounted in a mouth-piece. The filter was placed in this mouth-piece which served simultaneously as the air intake valve.

The filter element used was of the same structure as those used in the standard military types and consisted of

159 separate layers to arrest poisons in the air taken in by the action of breathing.

In order to insure that people would always have their gas masks ready to hand, special pouches were developed and made of cotton or similar materials and strong paper, in addition to metal containers, any of which permitted easy carrying of the gas mask.

160 Industrial installations and public offices maintained reserve stores of the Volks type of gas masks, which were always available in a case of emergency. Official measures were introduced to insure by means of inspection that the reserve stocks were properly stored and treated.

GAS PROOF ROOMS, DOORS, AND WINDOWS.

Since the Volks gas mask only provided protection against the intake of poisoned air, but no protection against skin injuries through gas vapors or liquid gases, gas-proof rooms were indispensable for persons exposed to the dangers of gas attacks and who did not have the necessary protective equipment. Since poisonous combustion gases also develop during air attacks due to the detonation of explosive and incendiary bombs, even when no chemical warfare agents are used, the creation of gas-proof rooms was one of the most urgents requirements of passive air defense.

160 Apart from the requirement for sturdy construction, the major requirements for such gas-proof rooms were absolute security against the infiltration of poison gases or vapors and the assurance of adequate oxygen supplies for breathing. Extensive experiments and tests had to be carried out before enough experience could be gathered to provide the necessary basis for the construction of highly perfected large scale installations with air conditioning and heating facilities besides smaller shelters provisionally conditioned against gas.

The problem of insulation developed in respect to all apertures, such as windows and doorways. It was found that windows could be insulated on the inside by means of specially prepared rubber tubing, insofar as thick paper did not provide adequate protection. It was also found useful to pile up rubble, coke, or cinders in front of windows, and top the heaps off with sand. Such heaps served as a filter and arrested poisons which might be present in the permeating air.

Gastight doors were manufactured by numerous firms and the quality was so good that, in cases where such doors have
161 been properly handled, they are still gas proof to this very day, twelve years after the end of World War II. The practice of providing double gas-proof doors in an anteroom created a gas trap, so that the shelter could actually be considered as

161 absolutely gas proof.

Consideration had to be given to the possibility that persons might have to remain in gas-proof chambers for a considerable time, because of current conditions of gas menace. The problem of oxygen supplies for breathing therefore had to be cleared up. In large shelters with an air space of roughly 706.2 cubic feet (20 cubic meters) per person, and provided that the shelters were properly insulated it was possible to dispense with any requirements of air conditioning for quite a number of hours at a time.

In the case of shelters designed for use by large numbers of persons, however, the inclusion of air conditioning installations was an inescapable necessity. Since fresh air was pumped under pressure through filters into such shelters, the conditions within the shelters were above atmospheric pressure, which prevented any possibility of poisoned air penetrating from outside through any leaks which might exist. Slide valves were provided in gas proof rooms to permit the exit of pressure air. The whole air system was installed for electricity drive, but could also be operated manually. Besides the ventillation system just described, some shelters were still in existence with a circulatory ventillation system. These shelters were also gas-proofed. In

161 this system the air was purified periddically by being passed through an alkaline filterwhich removed the carbon gas from the exhaled air. At the same time the oxygen content was restored from a high pressure steel oxygen container. For short periods provisionally gas-proofed shelters were adequate, without any installations for regeneration of the air supply.

162 TESTS CONDUCTED UNDER SIMULATED ACTUAL WARTIME CONDITIONS TO IMPROVE DECONTAMINATION METHODS

Because of the importance of measures to destroy chemical agents if the enemy should employ them against the German homeland, numerous tests were carried out under conditions as closely approximating those which would exist in war as possible. For this purpose large scale contamination operations were carried out with real poison gases. This created conditions which could be encountered in actual warfare, no matter whether it was a matter of open spaces, industrial installations, roads, or food producing or handling plants being contaminated.

Because actual poison gas was being used, the personnel participating in such tests were compelled to carry out their decontamination activities in the terrain while wearing their complete kit of protective clothing. The results obtained were checked by means of chemical analysis and biological tests, and it is impossible to deny that methods were found to counter

162 the hazards even of so sinister a means of warfare as gas.

SPecially prepared textiles and types of paper were tried out as expedients. These tests proved that all articles of clothing impregnated against air, such as trench coats, rain coats, and other impregnated coats could be used as temporary protection against gas, and that even ordinary blnkets covered by several coats of paper could be recommended as protection for smort duration.

The operations to remove the chemicals used in the tests from the road and from the terrain were so thoroughly successful that the areas could be declared open to normal traffic immediately after, at which stage test personnel were required to enter the areas or the building concerned without protective clothing. Hardly a single case became known of any of these test personnel suffering any harm from these tests.

The series of tests carried out included the contamination and decontamination, by various methods, of foodstuffs, including large quantities of grain, and coffee sprayed with yellow cross gas. After appropriate treatment, these foodstuffs were

163 found completely fit for human consumption again. In other tests foods and luxury items were first wrapped with material impervious to mustard gas and then sprayed. Although subjected for a lengthy time to the effects of the mustard gas, the articles when unwrapped were found to be completely fit for con-

163 consumption.

In a similar manner articles of clothing were sprayed with mustard gas and then decontaminated. The decontamination methods employed here, namely, simple washing and extraction systems, confirmed the suitability of the courses adopted. In ceaseless series of tests the absolute proof was forthcoming thatif the protective regulations for personnel were properly observed, clothing contaminated by chemical agents was rendered completely clean and harmless by treatment in the special apparatus provided for the purpose,and could then be worn again by any personnel.

The decontamination branch as such did not have to go into action at all during the war; because no gases were used. For this reason the units were employed at other missions as part of the Safety and Auxiliary Service and later of the Passive Air Defense Police. Worthyof mention is the employment of such units in operations to recover the bodies of persons killed in the Rhine-Westphalia industrial region. During the heavy attack against Barmen in May 1943 hundreds of people were burned alive in cellars and air raid shelters unwilling and in many cases unable to escape from what they had considered would be a safe refuge. The recovery of these corpses, in which decomposition set in at an abnormally early stage, was complicated by the hazards of ptomaine poisoning. For this

163 reason all decontamination units from all cities in the Ruhr region were called in for action, and were employed daily at a strnegth of 800 personnel.[214]

4. The Passive Air Defense Medical Service. The passive air defense medical service had the mission of providing first aid support to persons injured by air attack or harmed by gas, and to insure that they received proper medical treatment as speedily as possible.

Proper preparations were to be made in advance to insure proper care and adequate treatment for the civilian population.

The passive air defense medical service was an element of the Safety and Auxiliary Service, later of the Passive Air Defense Police, and as such was under control by the local passive air defense chief.

The necessary directives and instructions for the establishment of the service were issued by the Reich Minister for Aviation and Commander in Chief of the Air Force.[215] Implementation of these directives and instructions was a responsibility of the various offices of the Department of Interior Administration.

Personnel in the service were organized as follows:

(1) Chief Passive Air Defense Service Medical Officer, to which post the chief of the local health office was appointed whenever possible.

164 (2) Passive air defense medical officers of the various passive air defense sectors, of the stationary and of the mobile medical units.

(3) Male and female auxiliary personnel.

Medical personnel were registered in cooperation with the local military district recruiting offices. Auxiliary personnel, whenever possible members of the Red Cross Organization, were recruited by the local passive air defense chie under the authority vested in him by the Passive Air Defense Act.[216]

The medical personnel employed in the passive air defense medical services received specialized training at the Reich Institute of the Air Force for Passive Air Defense,[217] and in 165 turn were responsible for the training of all auxiliary personnel in the service.

The Stationary Passive Air Defense Medical Service comprised:

(1) First Aid stations.
(2) Hospitals which were not evacuated.
(3) Subsidiary hospitals.
(4) A central hospital space registry.
(5) Medical stores depots.

Ad (1), above: The first aid stations were specifically nothing but receiving stations. Nevertheless, they had to be

214. Schmidle: "Erfahrungen bei den Luftangriffen im Rheinisch-Westfaelischen Industriegebiet," pp. 72-73. Karlsruhe Document Collection.

165 well equipped and had to have the necessary facilities and personnel to treat gas injuries. Plans provided for each such first aid station to be staffed by 2 to 4 medical officers, 7 to 10 female assistants, and 2 messengers.

The premises in which first aid stations were located were required at least to be fragmentation, gas, and debris proofed.[218] Generally speaking these requirements were met, but experience showed that reinforced protection was needed in order to reduce the losses incurred. Each passive air defense precinct had one first aid station, and practical experience showed that this was adequate, even in badly stricken areas. In fact, experience in the western territories goes to show that the number of such stations could be reduced by between 25 and 50 percent.[219]

The internal layout of the stations, prescribed by the Reich Minister for Aviation and Commander in Chief of the Air Force was found satisfactory in every respect.

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215. "Vorlaufige Ortsanweisung fuer den Luftschutz der Zivilbevoelkerung, Abschnitt VIII: Luftschutzsanitaetsdienst." In Air Force Field Manual L. Dv. 787; not available at writing. Published by the Reich Minister for Aviation and Commander in Chief of the Air Force in 1936 and probably among the captured German documents held in USA.
216. See II, d, above.
217. See III, g, above.
218. L. Dv. 792, "Richtlinien fuer die Planung und Durchfuehrung der baulichen Massnahmen bei Luftschutzrettungsstellen fuer den Sicherheits- und Hilfsdienst, III. Teil, Heft 2." In Karlsruhe Document Collection.
219. "Erfahrungen bei den Luftangriffen im zweiten WeltKrieg im Rheinisch-Westfaelischen Industriegebiet," by Major Adolf Schmidle, 1955. In Karlsruhe Document Collection.

166 Ad [2], above: The equipment of the first aid stations with medical and other expendable supplies was regulated by Air Force Field Manual L. Dv. 787.[220]

In this field supplementary measures, above all very close cooperation with the military authorities responsible for the installation of reserve hospitals, became necessary.

Ad [3], above: Subsidiary hospitals were installed chiefly in areas less exposed to the threat of air attack, and whenever possible in the premises of recreation homes, sanatoriums, schools, and so forth.

Ad [4], above: The Central Hospital Space Registry had to be kept posted currently on the number of persons in hospitals within the passive air defense locality concerned, and was responsible for a proper distribution of patients in accordance with the spaces available and in accordance with the type of injury or ailment of the patients concerned.

Ad [5], above: The precautionary measure of establishing medical supply depots under trained apothecaries proved a very sound measure.

The Mobile Passive Air Defense Medical Service, as part of the Safety and Auxiliary Service was organized in

(1) Passive Air Defense Medical Teams.

(2) Passive Air Defense medical battalions.

(3) Passive Air Defense Ambulance battalions.

220. L. Dv. 787, "Anweisung fuer den Satz Arznei- und Verbandmittel fuer LS-Rettungsstellen mit Packordnung." Copy available at Bundesverband der deutschen Industrie, Cologne

166 Each passive air defense precinct had one passive air defense medical team or one chief and eight men plus one driver. Each passive air defense sector, in turn, had one passive air defense medical battalion headed by a medical officer and containing three medical teams. The number and size of passive air defense ambulance battalions, which were controlled by the local passive air defense chief, varied in the several passive air defense localities, and were dispatched by the chief passive air defense medical officer as the situation required. As a rule the motor pool consisted of supplementary motor vehicles provisionally adapted for the purposes intended.

After the Safety and Auxiliary Service was taken over by the Passive Air Defense Police, the whole medical service was reorganized in medical companies (Sanitaetsbereitschaften) of each three 3-squad platoons.

The treatment of gas-injured patients was governed by the requirements of Air Force Field Manual L. Dv. 96.[221]

In addition to directing the passive air defense medical services as such, the chief passive air defense medical officer had other responsibilities,[222] for example in the fields of health and food police controls. Furthermore, it was his duty to keep himself currently informed on the status of the passive air defense medical facilities in the factory air de-

221. L. Dv. 96: "Kampfstoffverletzungen."
222. See also "Der Luftschutzsanitaetsdienst" by Vespermann, MD, in "Sammelwerk Knipfer Kamper:" "Der zivile Luftschutz." Karlsruhe Document Collection.

167 defense systems, and in the individual and extended individual air defense organizations, and to insure that all measures were uniformly applied.

One of his special missions developed in connection with preparations for passive air defense in hospitals. To protect the lives of patients and attending personnel, it was essential to insure that adequate shelters were available for both patients and personnel, and that essential operations could continue even under air attack. This necessitated evacuation, transfer,[223] and constructional measures.[224]

The passive air defense medical services met all requirements in the performance of their missions. Even under the most difficult conditions the personnel, most of whom were at an advanced age, achieved excellent and outstanding performances.

5. The Passive Air Defense Veterinary Service.[225] Over and above the scope of the individual passive air defense organizations, the passive air defense veterinary services had to insure adequate protection and adequate veterinary services for indispensable and irreplacable animals, and to

223. "Luftschutzmassenahmen in Krankenanstalten," Reich Minister for Aviation and CINC of the Air Force-L.In. 14, 12.6.42 in Textsammlung "Luftschutzrecht," by Barsow-Fokken. Karlsruhe Document Collection.
224. See VIII, a, 7, below.
225. See "Der Luftschutzveterinaerdienst," by Professor Dr. C. E. Richters, in Knipfer Hampe: "Der zivile Luftschutz."

168 carry out the decontamination of animals if this should become necessary.

Similarly to the passive air defense medical services, the veterinary services also were a part of the Safety and Auxiliary Service, and later of the Passive Air Defense Police, and were assigned under the local passive air defense chief.

The necessary directives and instructions for the build up of the services were issued by the Reich Minister for Aviation and Commander in Chief of the Air Force in agreement with the Reich Minister for the Interior. Implementation of these directives and instructions was a responsibility of the offices of the Department of Internal Administration.[226]

The Stationary Passive Air Defense Veterinary Service comprised:

(1) Animal first aid stations (animal clinics)
(2) Central animal hospitals.
(3) Veterinary examination points.
(4) Veterinary supply depots.

The Mobile Passive Air Defense Veterinary Service comprised:

(1) Veterinary teams.
(2) Animal transport teams.

The service was headed by the local chief veterinarian.

226. "Vorlaeufige Ortsanweisung fuer den Luftschutz der Zivilbevoelkerung, Abschnitt XII: Luftschutzveterinaerdienst," published by the Reich Minister for Aviation and CINC of the Air Force in 1935. Probably among captured German records in USA.

169 The recruiting of personnel by the local air defense chief was regulated by the terms of the Passive Air Defense Act.[227]

In most of the areas which came under attack the animal population in the meanwhile had decreased considerably, so that the passive air defense veterinary service did not attain the importance expected. Where the service was required, however, it fulfilled all expectations in the performance of its missions.[228] Air Force Field Manual L. Dv 771 contained passages dealing specifically with passive air defense for animals, with particular emphasis on zoos.

If any suspicion existed that feeds of any kind had become contaminated, they were examined and analyzed in the appropriate veterinarian research stations in accordance with the principles established in Air Force Field Manual L. Dv. 771.[229]

c. Individual (or Self) Air Defense By the Civilian Population.

1. Origins. Because of experience in western Germany in World War I responsible circles were convinced that, in the event of war, the official measures introduced for protection of the civilian population against air attack would

227. See II, d, above.
228. "Luftschutz Iuer Tiere," by Major Hans Worringen, 1955, in Karlsruhe Document Collection.
229. L. Dv. 771 "Die Biologische Pruefung von Kampfstoffverseuchten oder entgifteten Lebens- und Futtermitteln in Veterinaer-Untersuchungsstellen des Sicherheits- und Hilfsdienstes.

169 under no circumstances be adequate. It was realized at an early stage that it was essential to develop a self defense system supported organizationally by the entire nation.[230]

Practical results evolved only after a special Air Service Section had been established in the Reichswehr Ministry on 10 February 1927, and had been assigned among other missions responsibility for the field of Home Air Defense.

The activities of the Home Air Defense Organization were to comprise the following:

(1) Enlightenment of the general public on the subject of the terrible possibilities of future air warfare in the light of the views of foreign powers which were becoming known on the subject of air warfare.

(2) To devise and implement protective measures for the defenseless civilian population against the hazards of air warfare, which under certain circumstances might include the use of gas against the homeland and in particular against home industries.

Even if this arrangement had produced the direct result that the Reich Government on its part decided to take immediate action in the field of home defense, the consideration which had to be shown for the political views of some members of the

230. See I, above.

170 Cabinet make it unlikely that the introduction of a civilian air defense system, which probably would have entailed financial burdens, would have received full Government approval and equally unlikely that the Reichstag (the German Parliament) would have approved the necessary funds.

The important point therefore was to first convince the widest possible circles of the population of the necessity of a civilian air defense system.

All credit is due to a few members of the Antiaircraft Artillery Society (Flakverein), established in 1920, for the solution of the problem of giving the German Nation a passive air defense system. These men had World War I experience on the subject of civilian air defense and had already impressed responsible circles with the idea.

After many obstacles had been overcome, the German Civilian Air Defense Association (Deutsche Luftschutz)e. V.) was established under Reich Minister for Traffic and Communications Krohne in the spring of 1927 with approval from Foreign Minister Stresemann.

The reasons given by the German Government at the time for the necessity of civilian air defense reveal a proper realization that the protective measures involved would be of a nature involving the civilian authorities exclusively, and that these measures could only become effective if the entire Nation was alive to the realization that in the event of air attacks

171 everything would hinge primarily on self defense.

However, any system of self defense could only produce resultsif the general public were familiarized with the implementation of protective measures by means of previous training.

In a Cabinet meeting on 3 November 1927 responsibility for all matters of civilian air defense was assigned to the Reich Minister for the Interior. It was decided that the Civilian Air Defense Association should participatein these activities and that a program should be established defining the separate areas of responsibility of the governmental authorities on the one hand and of the association on the other.

The Civilian Air Defense Association was to devote itself exclusively to the task of enlightening the public on the need for civilian air defense measures, namely, self defense or individual defense, and was to receive no financial fund from the Government.

As time passed the Civilian Air Defense Association repeatedly found itself in opposition to the various Governmental offices, so that the official attitude towards the association once again became negative. In a conference with the Reich Minister for the Interior on 3 May 1928, at which the Reich Defense Minister was also present, the Chairman of the association was informed that the Civilian Air Defense Association was considered an undesireable organization and was to bedeactivated.

171 It was December 1930 before any change occurred in the views of the Reich Ministry for the Interior.

In the summer of 1931 a new organization was established as the German Civilian Air Defense League (Deutsche Luftschutz-Liga). In the course of practical work friction developed between the Association and the League because of their varying ties in other directions, and it was soon realized that the best solution would be a fusion of the two organizations. This

172 fusion took place in early 1932 and the overall organization was designated the German Civilian Air Defense Union (Deutscher Luftschutzverband e.V.)

In a propaganda pamphlet the new organization stated its fields of endeavor, which included the following:

Civilian air defense to some extent is a mission of the authorities, to some extent a mission of self defense by the population, with the provision that the population needs instruction on possible ways to protect itself.

The public must know how to act appropriately, must take timely steps to prepare protective shelters, must familiarize itself with the hazards of gas, and must provide for installations with which a fire guard, which should be organized in each individual building, can put out small fires through immediate action.

172 Education of the public in such measures of self protection is the mission of the German Civil Air Defense Union.

Even after their fusion the combined two organizations failed to develop instructive and propagandizing activities which could have reached wide circles of the Nation, in fact they even failed to establish any really effective organization at all.

In the eastern territories of Germany the idea of civilian air defense initially was well received, and this was particularly the case after occupation of the Westerplatte, near Danzig, by Poland brought the possibility of air attacks into clear aspect. Responsible circles asked themselves the acute question of how the public was to be made aware of the dangers of air attack and of the necessity for counteraction.

Under these auspices Gerhard Rossbach, who had formerly commanded one of the German volunteer corps in the eastern territories after World War I, on his own initiative created Passive Air Defense Detachment Ekkehard, the first unit of its kind. The detachment was activated on 20 April 1932 with silent consent by the responsible Government authorities and was properly registered in the roster of clubs and unions.

After a brief period of preparation the detachment proceeded from town to town and at each stopover conducted demonstration courses in passive air defense in Government

173 offices, schools, and before the general public. Later, six such detachments were organized.

After establishment of the Reich Passive Air Defense Society in 1933 the Ekkehard detachments were incorporated with this society, initially as an independent unit.

After two years of work, on 1 April 1934, the Ekkehard detachments were deactivated and their members were taken over by the Reich Passive Air Defense Society as professional instructors in the field of passive air defense. The merit of these detachments was that they had been the first to carry the ideas of passive air defense and self protection to the general public and thus had prepared the way for development of a system of self protection.[231]

The above reveals that when the National Socialists took over the Government of Germany on 30 January 1933 a very small and narrow foundation existed for development in the field of self protection against air attack.

Upon establishment of the Reich Passive Air Defense Society on 29 April 1933 the Reich Minister for Aviation issued an appeal to the German Nation.[232]

Within a short space of time the new Passive Air Defense Society created a firmly integrated organization of 15 State level groups and by 1937 already had 2 500 local groups, 65 000 local agencies under development, 3 400 passive air

173 defense schools with 24 000 instructors, practically all of them employed on an honorary basis, and approximately 12 million registered members.

174 At the outbreak of World War II the Society already had mo more than 21 State level groups; upward of 1 500 00 officials, both male and female; and 22 000 000 registered members.

A continuous and comprehensive program of enlightenment for the German public in general was essential for the creation of the conditions which would make the build up of a German system of self protection possible. For this reason the Reich Passive Air Defense Society immediately after its establishment commenced a gigantic propaganda campaign to stress the necessity and the nature of self protection. The results achieved became evident in the rapidly growing number of officials, agencies, and registered members.

2. The Organization and Missions of the Reich Passive Air Defense Society. It was clear that the Reich Passive Air Defense Society could only accomplish its highly important missions if it adapted its organizational setup from the outset to the specific nature of its missions. 233

231. Mackle: "Die Luftschutztruppe EKKehard e.V. 1932-1934." Karlsruhe Document Collection.
232. "Aufruf bei der Gruendung des Reichsluftschutzbundes." Karlsruhe Document Collection.
233. "Die Grundfragen des Selbstschutzes," by Generalleutnant von Roques, President of the Passive Air Defense Society, in Knipfer-Hampe: "Der zivile Luftschutz," p. 245, and "Organisation und Aufgaben des Reichsluftschutzbundes," by Generalmajor Nishoff, p. 251.

175 A legal basis was provided by the Decree Concerning the Reich Passive Air Defense Society (Verordnung ueber den Reichs luftschutzbund) promulgated in Official Gazette I, p. 784 (Reichs Gesetzblatt I, p. 784) of 14 May 1940.[234]

The original wording of the rules of the Society[235] were amended in the final version dated 28 June 1940 by the VI Modifying Decree Concerning the Passive Air Defense Act of 5 November 1941.[236]

The foundations for the organization of a self protection system had already been established in Section V of the Temporary Local Instructions under the title Civilian Self Protection (Selbstschutz der ZivilBevoelKerung),[237] which contained instructions concerning organizational and technical preparations, concerning the behavior of the public in response to the various warning reports and the various stages of alert while on public streets or within buildings. Annexes contained instructions for building air wardens and for passive air defense communities, as well as bulletins for the family and for the house community.

An organizational chart for local self protection is included with this study as an appendix.[238]

234. "Die AufKlaerung der BevoelKerung," by Passive Air Defense Group Chief Teetzmann, Ibid, p. 258.
235. Karlsruhe Document Collection.
236. Karlsruhe Document Collection.
237. See II, c, above.
238. Appendix 21.

175 The basic element in the system of self protection was the individual house. Each house was the real field of activities by the Reich Passive Air Defense Society, the field on which it had to concentrate its efforts. For t
this element a building air warden and the necessary self defense personnel were appointed.

The lowest agency in the Reich Passive Air Defense Society was the block, which comprised a number of houses.

The next higher level was the sub-group, which had the mission of insuring that all work in the field of passive air defense was handled uniformly within the blocks, and of supervising the block wardens in their work.

The next level was the precinct group, and it was only at this level that it began to become evident that the organization of the Reich Passive Air Defense Society was an important member in the whole system of civilian air defense. The precinct group chief was the medium of contact between the self protection elements and the authorities, since his physical area of responsibility coincided with that of the passive air defense precinct.

The local group, as the next level, had a greater measure of independence, which had to be adapted to suit local circumstances. The local group was the local representative of the and thereby of the self protection system
Reich Passive Air Defense Society/in relations with the public

176 and with the authorities.

Since the number of local groups within each State level group was too large, so that some local groups were widely separated, and thus could not be properly supervised and advised by the State groups, the district groups were constituted as an intermediate level. These were treated as field agencies of the State groups and therefore had no administrative organs of their own.

Initially the whole of Germany was subdivided into 15 State groups, which had the mission of supervising their assigned sub-agencies in all matters of internal routine, budgeting and finances.

The whole Reich Passive Air Defense Society was headed by a presiding board, which in turn was headed by a president, who was supported by a vice president serving simultaneously as a chief of staff.

Without regard for the originally established legal position of the Reich Passive Air Defense Society, the Presiding Board was considered and treated as subordinate to the Reich Air Ministry.

The close-range target in passive air defense propaganda was to create in the public a feeling of willingness to receive training in passive air defense and to accept appointments in the self protection system.

177 Lacking properly directed enlightenmentcomprising the entire field of passive air defense activities, and without appropriate propaganda primarily of an educational nature, the technical and manual training of the forces involved, their equipment, and the innumerable practical measures taken in the field of passive air defense would have lacked the moral basis on which alone it could have been established usefully and with any permanency.

The term passive air defense propaganda as used here does not imply any effort to recruit members and personnel for the self protection system. Its purpose was to turn passive air defense into a genuine popular movement. The media and occasions exploited primarily for this purpose were as follows:

The Press;
Literature;
Placards;
Films and slides;
Radio;
Exhibits;
Enlightenment and propaganda meetings and other functions;
Dedication ceremonies;
Demonstrations;
Propaganda activities in other organizations;
Appeals to authoritative persons;
Passive air defense exercises;
House to house canvassing activities, etc.

178 In addition to the other media of enlightenment and propaganda exploited, the Reich Passive Air Defense Society published a big illustrated periodical, "Die Sirene." The passive air defense picture service a German Passive Air Defense Calender (Deutscher Luftschutz Kalender) published annually also served to afford the public a factual insight into the nature and activities of passive air defense. The growing conviction of the Nation of the necessity and soundness of the preparations for passive air defense created the necessary basis for its establishment by law and for its organizational development.

In Schools, in the press, and in radio broadcasts the Reich Passive Air Defense Society developed a lively program of propaganda for the idea of passive air defense. In addition to its own publications in this field, the Society furthermore participated in publications by other agencies whenever it considered that such publications could serve its own ends. Thus, the Society participated in the compilation of a pamphlet published by the Reich Office for National Education (Reichsamt ~~XXXX~~ Deutsches Volksbildungswerk) under the title "What Shall I DO in an Emergency?" (Waastue ich im Ernstfall?)[239].

The Reich Minister for Aviation and Commander in Chief of the Air Force kept the Reich Passive Air Defense Society

239. Copy in Karlsruhe Document Collection.

178 currently informed on all new information in the field of passive air defense and insured immediate application of the information thus becoming available in its training institutions and periodicals and instructional books. One example of the careful and generally intelligible nature of such activities is a publication by A. Teetzmann "Passive Air Defense Guide for All" (Der Luftschutzratgeber fuer Alle), which was put out by the publishing house maintained by the Reich Passive Air Defense Society.[240]

The individual State level groups of the Society also

179 published instructional material, as in the case of State Group Eastern Prussia. The "Basic Rules of Passive Air Defense (Luftschutzfibel) compiled by that group in 1939 was published in the same year by Verlag Offene Worte, Berlin.[241]

The Hitler Youth Movement found a wide field for activities in the self protection system. Initially, members were employed only as messengers, but as manpower shortages became increasingly grave the youths played an important role in firefighting operations. As the Central Office of the Movement put it: "The requirements of internal home defense make it necessary that German youth in its entirety must be prepared for participation in passive air defense."[242]

241. A volume of 152 pages in the WeltKriegsBuecherei, Stuttgart, Index # 67964.
242. From "Luftschutz in der Hitlerjugend," published by Reichs-Jugendfuehrung, Berlin, 1 March 1942. Karlsruhe Document Collection.
243. See IV, d, below.

179 In the individual elements of the self protection system a trained and an untrained part were inevidence. The trained part included what was really the self-protection force consisting of such persons as air raid wardens, building fire guards, male and female auxiliaries, etc. All that was required from the rest of the population was that they should act in accordance with passive air defense needs in such matters as the clearance of rubble, blackout measures, movement into air raid shelters, the construction of shelters, etc.

The measures of the self protection or individual air defense system applied to the entire population. Measures of the extended self protection or extended individual air defense system applied to such institutions as theaters, movie theaters banks, department stores, churches, and so forth, for which the general measures of self protection were not adequate. The borderline between self protection and extended self protection was very fluid, and a decision could be taken to change it from cases to case. In obtaining personnel for the self protection system, it was a standing rule to use the inhabitants of each building concerned.

Paragraph 2 of the First Decree in Implementation states under Iteam 3 as follows:

3. Self protection activities are a responsibility of the civilian population, the organization of such

180 activities and the training of self protection personnel will be carried out by the Reich Passive Air Defense Society.

In all other matters of self protection the Passive Air Defense Society acted only in an advisory capacity, except when other decisions were made in special cases. In relations with authorities of the Reich, the National Socialist Party and its various organizations, of the various States, of municipalities and municipal unions, and other legal corporations, the responsibility of the Society was restricted to that of advising the head of the authority concerned and training the self protection personnel. Even such activities the Society carried out only if requested to do so by the agency in question. The execution of all self protection measures in such offices and other agencies was supervised by the regular police authorities.

According to the above the implementation of self protection activities was a responsibility of those whom the system comprised, namely house owners, the inhabitants or tenants of houses, and so forth. In contrast, the training and organization of self protection personnel was a responsibility of the Passive Air Defense Society.

Training was given by means of special meetings or exercises. Otherwise, the activities of the Society were

180 restricted to the furnishing of advice in measures of self protection, equipment of self protection personnel, procurement of equipment for self protection, and black out measures.

When a state of passive air defense was declared, personnel in the self protection system came under the local passive air defense chief. Up to 1 April 1940 the Reich Passive Air Defense Society remained a properly registered society Even before that date its character as a public corporation had been evident from its special status. This was expressed in such circumstances as the fact that its president was appointed, and could be dismissed by the Reich Minister for Aviation and Commander in Chief of the Air Force, who also approved and dismissed the State level group chiefs, the fact that no member meetings were called, that its officials were placed on an equal footing with Government officials in matters of salary taxes, that its officials had the status of Government officials in matters involving the penal code, and so forth.

The Decree concerning the Reich Passive Air Defense Society dated 14 May 1940 declared the Society a public corporation. 244 Prior to promulgation of the Eighth Modifying Decree to the Passive Air Defense Act, mandatory passive air defense service was enforced through call up of the individuals concerned by the appropriate police authorities.

In order to make self protection more effective, it

to introduce a simplified system
181 became necessary in 1942/ to call up all persons fit for pas-
sive air defense service in areas seriously exposed to air
attacks for participation in ~~xxxsimplifiedxformxof~~ self protec-
tion. The provisions of a decree issued by the Reich Minister
245
for Aviation and Commander in Chief of the Air Force met this
requirement by authorizing local passive air defense chiefs
to call up the population for self protection activities by
means of orders published in the normal manner whenever the
current air situation and local conditions made this appear
necessary and advisable. A specimen form was drawn up of the
wording in which the orders were to be published and at the
same time it was determined which classes of the population
were to be exempted from the call up. The air district com-
mands were to decide in which localities use was to be made of
the authority thus granted.

The only category still called up by the police authorities were leading personnel in the self protection system, such as the chiefs of self protection precincts, and air wardens. These in turn organized their forces in units and directed their operations. Their instructions thus were binding for all persons residing within their areas of authority or within their respective communities.

In cases of imminent danger, however, leading personnel of the self protection system, police officials, and officials

182 of the Reich Passive Air Defense Society were also authorized outside of their own specific areas to call on all persons found in the vicinity of a damage point for assistance, if they were not otherwise already engaged in damage control or similar activities, and assign and employ them in passive air defense work.

246

The construction of shelters in already existing buildings was on a voluntary basis. In order to make headway it was necessary to appeal urgently to those concerned, and to make it clear to them that the funds required for the construction of a shelter were a necessary expenditure and a small sacrifice to make in exchange for personal safety. The next step was to take measures to clear all attics of unnecessary encumbrances in order to reduce the hazards of fire.

Another new mission developed with introduction of the

247

Volks gas mask, since the Reich Passive Air Defense Society was called upon to explain the necessity for the mask to the public, to issue the properly fitting masks to applicants, and to give instructions on how the mask was to be handled and treated.

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244. Karlsruhe Document Collection: "Kriegsschaeden des Reichsluftschutzbundes," v. 5.II.1942, Erlass Nr. I66."
245 Karlsruhe Document Collection: "Heranziehung der Bevoelkerung zum Selbstschutz (RdErl. d.R.d.L. u. OB. d. L. Nr 10634/42 (L. In. I3 2 II b vom 5.6.1942).
246. See VIII, a, 5, below.
247. See IV, b, 3, above.

183 3. Training. The most urgent mission was that of train ing the self protection forces. Whereas training had initiall been received on a voluntary basis, the First Decree in Imple- mentation of the Passive Air Defense Act made it mandatory by law for every German citizen to undergo passive air de- fense training.

In deciding on methods of instruction to be used by the Reich Passive Air Defense Society the determining factor was t the realization that the methods and ways and means of train- ing in the subjects of passive air defense would have to be fundamentally different from those normally used in teaching activities. Participants in any one of the courses included old and young people, manual and white collar workers, all of whom were to be prepared for their functions within the system. An additional factor was that only a relatively short space of time was available for training and that both instructors and pupils could only participate in the evening hours, outside of their normal professional duties.

The training establishment of the Reich Passive Air Defense Society had four types of passive air defense schools:

(1) The passive air defense schools at the precinct or local community level;

(2) The passive air defense schools of the local groups;

(3) The passive air defense schools at the State

183 group level;

(4) The Reich Passive Air Defense School of the Presiding Board of the Reich Passive Air Defense Society.

184 The precinct schools gave training to the rank and file of self protection personnel. As a rule one such school was established for each 10-30 000 inhabitants. The courses lasted between 10 and 12 hours and were directed towards imparting general basic training , which was uniform for all personnel in the self protection system. The object was to instruct personnel on the nature of the threat of air warfare and on ways and means to counter the dangers of such warfare. The courses included practical training exercises, and among other items provided for treatment of the following subjects:

(a) The air threat to Germany;

(b) The necessity for passive air defense;

(c) Military passive air defense;

(d) Missions and organization of civilian passive air defense;

(e) Behavior of the civilian population during air attack;

(f) Theoretical and practical introduction to the subject of fire prevention;

(g) The effects of chemical means of warfare on the human organism;

(h) Untrained auxiliaries and their activities;

(i) Basic principles of shelter construction.

184 Following the initial phase of general basic instruction, practical exercises were conducted in the various houses. This insured that each person participating in the self protection program became familiarized with the circumstances of the house in which he or she lived or worked and would therefore be able to take prompt action in an emergency.

Technical training for such personnel as building air wardens and their deputies, building fire wardens, female assistants and messengers as a rule followed immediately after the basic training and the house exercises, and was given almost exclusively in practical exercises. This technical training was a highly important part of the whole program of passive
185 air defense training.

At the main passive air defense schools training was given to block wardens, sub-group chiefs, chiefs and instructor personnel of the passive air defense schools, propaganda chiefs, advisors on the subject of the construction of shelters, and all other personnel of the agencies controlled by the local group concerned.

Each of the initial 15 State groups of the Reich Passive Air Defense Society had a State passive air defense school. The mission of these schools was to train Society officials from the level of precinct leaders upwards. It was here that the chiefs and instructor personnel of the main passive air

185 defense schools also received their technical training.

The mission of the Reich Passive Air Defense School, which was under immediate control by the Presiding Council, was primarily to give training to the higher level officials of the Reich Passive Air Defense Society.

The Presiding Council also controlled two motorized passive air defense instructor detachments of each one chief and sixteen men. These detachments were used to overcome training difficulties where such existed, particularly in rural areas. The detachments were also used in the preparation and execution of passive air defense exercises within the scope of large-scale passive air defense field exercises.[248]

When the first actual air attacks commenced the first real practical experience was gained and compiled for use, and resulted in various modifications in the training procedures.

The increasing frequency of daytime attacks created new problems and gave rise to new missions for the self protection forces. Owing to absences at work, the number of persons within the individual houses during daylight was usually inadequate for effective action. Solutions had to be found which would insure adequate strengths also during daylight.

248. See IV, c, 1, above.

185 The lessons learned from the large-scale attacks which followed in the later years of the war also created continuously new and varified problems for training. The technical abilities of the self protection forces provided the necessary conditions for operations and proper action, but this alone could not guarantee success. In addition to this, the object in training had to be to educate the population to become an real fighting force in self protection. It was not only fire-fighting action but also the ability to wait patiently at ones assigned post, the ability to remain calm in difficult situations, and to put into effect properly the measures learned which required aggressive courage.

In order to make training as realistic as possible, to insure attendance by all persons requiring training in a simple manner which would cause them as little loss of time as possible, the training measures developed in the last years of warfare were adapted to realistic conditions in every respect in the light of actual experience gained in the meanwhile, namely in the following points:

(1) Main emphasis in training for the entire population was now placed on exercises held in houses or yards;

(2) Firefighting instruction was now given in practical exercises based on a training program approved by the Reich Minister for Aviation and developed from actual

186 wartime experience for the training of individual building firefighting teams. The training was supplemented by practical demonstrations with new types of incendiaries used by the enemy.

(3) Air wardens required diversified training in accordance with a special training program adapted to their control missions, and approved by the Reich Ministe for Aviation for use in the Passive Air Defense Schools.

(4) The female assistants continued to receive their technical training in cooperation with the German Red Cross Organization, with main emphasis on experience gained in the war.

(5) The chiefs of self protection precincts and of self protection teams were given detailed instruction in command missions and problems and in measures adapted to their local conditions. Their training was rounded off by passive air defense exercises in their self protection areas under instructions from the local passive air defense chief.

The instructions given in houses were accompanied by instructions given in shelters. Since experience in large-scale attacks had shown that the air defense shelters were still the safest places, problems were treated here which could confront anyone in actual life. Such problems included

The assignment of firefighting teams;

The locality of main gas and water shut off valves;

Guidance to water taps, water reserve supplies, and hydrants; the exploitation of protective cover;

The organization of bucket lines;

187

Fitting of gas masks and how to become accustomed to wearing them;

Explanation of precautions against smoke, steam, and excessive heat;

The use of damp cloth to protect the face and respiratory organs against dust, steam, and heat;

The movement of injured persons through breaches in walls, through passages, and stairwells;

Instructions to untrained nurses on how to wash a patient's eyes, etc.

Firefighting action was unmistakably the primary activity in practice, and therefore had to be given treatment commensurate with its significance in the exercises conducted in houses. Admittedly, a real fire was lacking in these drills, but the whole surrounding circumstances were [illegible] those in which instructions could best given on how to act in an emergency.

Self-protection personnel also had to receive training and instructions on how to act in the event of a large area fire. Here they were required to assist the trained firemen, had to be shown the best methods to prevent sparks from flying and starting new fires, and had to be instructed on measures to be taken when evacuating rooms or houses threatened by fire.

A valuable addition to the actual firefighting instructions and training were the demonstrations of the types of incendiary bombs used by the enemy. These demonstrations did much

188 to lessen the fear of the population and to enlighten people on the proper action to be taken against incendiary bombs.

4. The Direction of Self Protection Activities. As the intensity of air attacks increased it became increasingly clear that the relatively loose controls exercised in the past, in which everything was left to the air wardens with their air defense communities, were no longer adequate. The reasons for this varied. Recruiting for the military services had produced the result that the personnel available for self protection activities decreased steadily. In many cases self defense communities in this way had lost the last active men they had had.

On the other hand the increasingly heavy attacks resulted in bigger and more frequent damage, so that damage control action called for swift and comprehensive measures if it was to be successful, and very frequently all efforts failed because of the lack of adequate self protection personnel.

Realizing this position, the Reich Minister for Aviation and Commander in Chief of the Air Force on 12 August 1942 issued a decree[249] requiring firmer control and firmer direction of the self protection personnel. The firmer control was designed to create conditions for the consolidation of a number of self protection communities to form a complete self protection area.

249. Rd.Erl.-L.In.13/2 I Ba.Nr. 2083/42 in Textausgabe "Luftschutzrechts," in der Fassung vom 31. August 1943, p. 374. In Karlsruhe Document Collection.

189 In the matter of selecting chiefs for such self protection areas the principle was established that the sole factors to be taken into consideration were the necessary familiarity with passive air defense requirements and the quality of leadership. The local passive air defense chiefs were responsible for the appointment of self protection area chiefs.

To supervise and maintain passive air defense discipline was a mission of the persons in charge of passive air defense activities, and in many cases the mere issue of orders was not sufficient for this purpose. In the self protection system in particular the cardinal feature of a good leader was the ability to manage without having to give orders, to exert pressure, or to threaten. The following qualities were required here:

(a) An unchallengable personality with a forceful will, tact, perspicuity, an understanding of human nature, calm, resolute, and unwavering action.

(b) A good background knowledge of passive air defense.

(c) The ability to serve as a model in action and devotion to duty.

(d) Self assurance, willingness to accept responsibilities, good fellowship.

As later large-scale attacks soon showed, the establishment of self-protection areas was not enough. The

189 necessity soon became evident to use personnel from the various self protection communities for the purpose of forming what were called self protection teams (Selbstschutztrupps) which could support adjacent communities or areas.

The mission of such teams was, in cooperation with the various self protection communities, to take action anywhere within their areas where support was needed. This included uninhabited houses and also factories and similar installations in which no personnel were present after working hours.

190 The organization of these self protection teams was a responsibility of the local passive air defense chief, and the team leaders were selected exclusively on the basis of their qualifications.[250]

A decree issued on 31 May 1943 finally established and clarified the chain of command in the system of local self protection.[251] The decree established that the "Chief of the Self-Protection Area" was to control all air wardens and all self protection personnel, including the self protection teams, within his area.

Special measures had to be taken for the supervision necessary by the "Chief of the Self Protection Area," to insure that the houses, residential blocks, and whole town districts under his control were in a proper state for passive air defense. This was particularly difficult because the

250. See page 169, below.

190 increasing scale of destruction, the loss of self protection personnel through enemy action or because they were transferred out together with their employing factories, and similar factors resulted in a steady decline in the personnel strengths available for passive air defense duties, and considerably weakened the forces available for fire prevention and fire fighting activities.[252]

Women were now employed in large and steadily growing numbers in passive air defense. With great energy, idealism, and devotion they did their part in the firefighting service within their own homes and the houses in which those homes were located, and much of the damage prevented was due to them.

5. Experience.

The living space saved from destruction, by means of the successful fire prevention and firefighting action of the self protection forces, is still sufficient for millions of people. However, it will be threatened time and again by renewed attacks. The necessity to preserve it therefore steadily becomes greater. For the duration of the war the success achieved in self protection therefore needs to be increased.[253]

In the uninitiated, the sight of whole town districts

252. "Selbstschutz-Aufbau," RdErl. R.d.L.u.Ob.d.L. (L.In.15/2/I Ba) Nr. 1114/43. See Footnote 249, above.

191 and whole streets of houses destroyed initially must give rise to the thought that all funds and efforts expended for passive air defense were useless. However, it would be impossible for such a person to imagine the scope the damage would have assumed if the self protection personnel had not done their duty, nor could he imagine how much greater was the percentage of the population who owed their health and their very lives to proper air defense action.

A person, on the other hand, who wandered through the streets with open eyes and an attentive mind, would have noticed time and again that individual houses were still standing almost undamaged among the ruins, that in some cases the roofs and even the top floors of buildings had been destroyed but the rest preserved, and he would have noticed how even large area fires had been fought to a halt. This indubitably was due in many cases to self protection activities.

The firm morale of the population, even after the heaviest of terrorization attacks, which has been the object of admiration, most certainly was due in no small measure to the fact that the masses of the population were imbued with the idea and the nature of self protection. The morale of the civilian

252. "Ueberwachung der Luftschutzbereitschaft durch Fuehrer im Selbstschutz," RdErl. R.d.L.u.Ob.d.L. - L.In. 13/2 11 D b 6980/43 v. 21.5.43. See Footnote 249, above.

253. From "Grossluftangriffe" in "Schriftenreihe des Reichsluftschutzbundes, Heft 4, Verlag Erwin Mueller, Berlin and Vienna, 1944. "Erfahrungen und Lehren fuer die Brandbekaempfung durch den Selbstschutz," in Karlsruhe Document Collection.

191 population
/was put to the most severe trial by the massed and frequently repeated attacks, and it is not surprising that signs of resignation became evident occasionally. However, the very fact that it was possible, in cases where determined men and women went into action, to save houses from destruction, to prevent the spread of fires or when they had spread to at least bring them under control, and the fact that this was done even in the case of the heaviest attacks imaginable, all this serves to confirm the necessity and justification of self protection activities.

The widely held opinion that self protection activities became completely ineffective after the commencement of the large scale attacks can be refuted completely by experience to the contrary.

In foreign literature the theory is expounded nowadays that "The fireguards of the Self Protection System are the worst Enemy of the Incendiary Bomb."[254] It is to be assumed that in the future the mission of self protection will be found along the fringes of area fires, in individual fires, and in action to prevent harmful results from flying sparks and from the reflected heat of large fires.

At this point the successful results achieved by the numerou

254. See Footnote 253, above.

192 women employed in the self protection system deserve special mention.

Women and girls took the place of men wherever they were able, maintained order and quiet during attacks, in self-understood performance of duty took advantage of intervals between waves of bombers to climb out onto roofs or into attics and throw out incendiary bombs which might be found, and dressed in training dress balanced themselves with begrimed faces on the burning timbers of roofs doing their best to extinguish fires. 255

At the end of the war the ratio of women to men in the passive air defense services was ~~at xx~~ two-thirds to one-third. No records and no charts speak of their performances because in those terrible nights noone had a thought for statistics or such matters.

Taking into consideration, however, that in comparison with the awful damage done in our bombed out ruins of cities, the total losses among civilians due to air attacks was not quite one percent, the question as to the usefulness and soundness of a system of self protection as part of passive air defense definitely can be answered in the affirmative.

In order to place the scope and the magnitude of the performances achieved it is only necessary to ask the

193 question: What would have happened if our civilian population had been completely unprepared, uninstructed on the proper action and proper behavior, and without provisionally adapted air shelters, and had then had to suffer under the annihilating air attacks?

It is thus a misconception to adduce our ruins of cities as evidence against the usefullnes of self protection in passive air defense.

In our disaster areas the civilian population in self protection had only one possibility, that of saving their lives in cellar shelters secured against the possibility of collapse. There was no longer any possibility to prevent large-scale damage or even to keep such damage within limits. In many cases it was self protection which prevented large-area fires, or prevented their further spreading, but such incidents were not registered, just as no record was kept of the innumerable instances of civilian self protection damage control action in which bomb damage and/or individual fires were brought under control.[256]

There is no call for a stereotype application of rigid organizational patterns in small localities. Where there are

255. See Footnote 253, above. See also II, d, above.
255. " " 187, above. See also "Der Bruchrote Hahn," p. 117
256. "Zur Psychologie des Luftschutzes," by German Federal Minister for the Interior in "Ziviler Luftschutz", 1953, Vol. 6, p. 136.

194 no bunkers or tunnels, the population in small localities will, for the greater part, stay in shelters within their homes during air alerts, so that any lack of organized self protection personnel will not be so evident. In such places the soundest solution would be to establish passive air defense communities, with the missions of self protection teams, from the outset.

The equipment of self protection personnel with the special type passive air defense hand pump proved a sound measure and contributed in innumerable cases towards success in efforts to extinguish fires. On the other hand it would seem advisable to equip each self protection team with an engine-powered pump with a capactiy of between 50 and 60 gallons and the necessary pipes to connect up with hydrants. Particularly good results were obtained with those self protection teams which consisted of 6-8 men on duty after working hours and after they came off their working shifts.

Each self protection team during air alerts sought shelter in the best constructed shatter and rubble proof air raid shelter in the neighborhood. From there the men went out to check the houses during intervals in the bombing. In many cases people handed their keys to the team, since in many cases at least one member of the team lived in each of the houses under the team's protection.

194 In order to enable the individual teams to render each other support when necessary, the shelters in which each team stayed during air alerts was marked with its number in white paint. Teams of this type rendered excellent services both during and after air attacks, including major air attacks.[257]

In September 1944 the Reich Passive Air Defense Society was assigned under the National Socialist Party.[258] This new arrangement was designed to give the self protection system new impetus, but it was already too late. One unexpected repercussion of this measure was that the Allies after Germany's capitulation considered activity in the Reich Passive Air Defense Society as a political offense, and that the large number of loyal and devoted leaders and assistants in the self protection system suffered considerable disadvantages as a result of their willingness to render help.

d. The Extended Individual Air Defense or Self Protection System. The first regulations applicable to the "Extended Self Protection System" were promulgated in Section V, Part 2, of the Temporary Local Instructions for Air Defense of the Civilian Population, 1935.[259]

The instruction contained there, besides going into general

257. See Footnote 90 (Schmidle), above.
258. See III, a, 3; III, a, b, above.
259. See II, c, above.

275 problems, dealt with the development of the extended self protection system (passive and active membership, the maintenance of law and order, small factory firefighting teams, medical teams, telephone operators and messengers, special missions teams, proper reaction to the various stages of alert and warning, and the most appropriate equipment).

When summed up, the requirements of Air Force Field Manual L. Dv. 755 applied to all offices and installations declared as belonging within the system of extended self protection. 260

Compiled more or less on the pattern of Section V, mentioned above, Air Force Field Manual L. Dv. 75 gives very detailed instructions for the organization of the whole system, 196 the organization of personnel, training, behavior in the most varied types of missions, and equipment.

In the case of some small factories and other installations their very specific features necessitated special regulations besides the basic requirements stated in Air Force Field Manual L. Dv. 755.

Passive Air Defense in prisons was regulated by Air Force Field Manual L. Dv. 755/1. 261 Safe custody of the prisoners had to remain insured, so that they could not be brought to air raid shelters used by the general public. Here, the organization of self protection units also needed special

196 regulations.

Passive air defense in schools, colleges, and universities (Air Force Field Manual L. Dv. 755/2)[262] presented other types of problems. With the increasing frequency of air attacks the necessity arose to disperse the whole school system, to introduce a system of class shifts, to transfer whole schools out of endangered areas, to conduct an expanded program of activities to send children to rural areas, to regulate the behavior of children when the warning order "Air Danger" was given, and to establish rules for the organization of self protection teams with proper regard for the age of the pupils concerned.

In order not to leave all works of culture exposed to total destruction Air Force Field Manual L. Dv. 755/6[263] established rules for "Passive Air Defense in Museums, Libraries, Archives, and Other Cultural Institutions." Initially, works of art were grouped in three categories, classified according to their significance from the point of view of art history and/or their irreplacability. In selecting localities to which to evacuate such works of art the main point was decentralization.

260. L. Dv. 755: Excerpts in Karlsruhe Document Collection.
261. L. Dv. 755/2; "Luftschutz in Schulen und Hochschulen;" also "Luftschutz in Schulen im 2. Weltkrieg," by Major Woerringen. Both in Karlsruhe Document Collection.
263. "Luftschutz in Museen, Buecherein, Archiven, und aehnlichen Kulturanstalten," by Major Worringen; Ibid.

197 Isolated buildingssuch as cloisters and castles in unendangered areas were best suited for the purpose. Otherwise, the most important requirement was to provide fragmentation proof protection, as required by the appropriate regulations.[264]

The works thus moved to safe places in addition to specific works of culture and art included also important archives, among them archives on the economy, as well as card indexes of the administration and from industrial concerns.

Special arrangements also had to be made for passive air defense in churches. Since the number of persons directly employed in churches was too small as a rule for the organization of effective self protection, it was necessary to assign members of the congregation who resided in the vicinity as supplementary passive air defense personnel.[265]

Slaughter houses and cattle yards, cold storage houses, and wholesale meat markets as a rule fell within the category of extended self protection, the exception being particularly large establishments of this type, which were to be handled under the factory defense system. All establishments of the types just listed were in a special class, since the number of employees as a rule was too small in comparison with the size of the establishments involved. Another point to be taken

264. See VIII, a, 6, below.
265. "Luftschutz in Kirchen," by Major Worringen.

197 into consideration was that establishments of this type on cer-
frequented
tain days were/by persons numbering a multiple of the employees.

For the above reasons the Reich Minister for Aviation and Commander in Chief of the Air Force established special rules regulating the personnel and technical problems involved in
266
such establishments. In establishing these rules considera-tion also had to be given to the prevention or secondary hazards, for example those which escaping ammoniac vapors could create. Furthermore, all measures prescribed had to be devised to maintain these vitally important installations in operation at capacities as close as possible to their maximum.

Experience proved that it was possible to maintain meat and meat product supplies to the population throughout the war, although supplies had to be severely curtailed toward the end of the war because of the lack of imports.

e. The Factory Defense System.

(1) Origins. World War I experience had shown that air attacks could disrupt wartime industrial production in a steadily increasing degree. In view of the striking range of aircraft at the time, however, the German Army High Command had considered that attacks would be directed only against factories located in the western territories of Germany. The first air attacks in World War I took place in 1915 and struck the

266. Hans Worringen: "Luftschutzmassnahmen in Schlacht- und Viehhoefen, pp." Karlsruhe Document Collection.

198 German industry at a time when it was still very inadequately prepared. In was only on 8 October 1915 that the War Ministry issued its "Directives for Factory Self Defense against Air Attacks (Richtlinien fuer den Eigenschutz von Fabrikanlagen gegen Angriffe aus der Luft)." New directives issued in 1916 prescribed measures to be taken by the individual factories on their own responsibility, and contained provisions which were farreaching for those times.

Nothing whatever was done in the field of factory defense in the years immediately after 1918, the end of World War I.

When the Reich Ministry for the Interior in 1930 attempted to put into effect the idea of "Passive Air Defense" within the scope of the Paris Aviation Agreement of 1926, it relied on the support of the police administrations and also called upon the Reich Union of German Industries (Reichsverband der deutschen Industrie).

In the years following World War I German industrialists in the several fields and categories had combined to form employer unions, as was the case in the metal, chemical, and textile industries. The Reich Union of German Industries approached the managers of these unions with the request to familiarize personnel in the various installations with the requirements of industrial air defense as understood at that time.

199 In most cases factory installations showed no interest in the idea of air defense, which was due particularly to the fact that the question of funding had not been clarified and to the necessity for the management to give consideration to the morale of factory personnel.

Apart from the above attempts, work on the theoretical development of the necessary organization continued and investigations were carried out to determine which factories and other installations had to be taken into consideration because of the nature of their products and because of their degree of vulnerability to air attack.

Groups were established within the various employer unions to handle the problems of industrial air defense and were designated as "Industrial Air Defense Agencies (Vertrauensstellen fuer den industriellen Luftschutz)."

For reasons of State policy, the employer unions were deactivated in 1933 and the period immediately thereafter, and the Reich Union of German Industries was redesignated as the Reich Board of Industries (Reichsgruppe Industrie). The former Industrial Air Defense Agencies at the same time were redesignated Factory Air Defense Regional Agencies (Werkluftschutz-Bereichsvertrauensstellen). One such agency was formed in each province of Prussia and in each of the confederate