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# PSYCHIATRIC EXPERIENCES OF THE EIGHTH AIR FORCE

FIRST YEAR OF COMBAT  
(JULY 4, 1942 - JULY 4, 1943)



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ARMY AIR FORCES

*NOT TO BE REPUBLISHED*

*Prepared and Distributed*  
*for*  
THE AIR SURGEON  
ARMY AIR FORCES  
*by the*  
JOSIAH MACY, JR. FOUNDATION  
NEW YORK 21, N. Y.

*Distribution:*

FLIGHT SURGEONS  
ARMY AIR FORCES

AUGUST

PRINTED IN




FOREWORD

This volume is the essence of a report submitted to the Air Surgeon covering the psychiatric activities in the Eighth Air Force during the year July 1942-July 1943. This was a most critical period in the growth and development of this Air Force and the observations and conclusions of the psychiatrists who worked with the flying personnel during that time makes a most valuable and unique document in Aviation Medicine and Psychiatry. No other work of this nature which has come to our attention contains such concise, comprehensive and complete data regarding the psychological aspects of flying men and what flying specifically does to the emotional life of these men as individuals and as a group.

These are the reasons that prompted the publication of this work and it is our hope that students in the fields of Aviation Medicine and Psychiatry will find it equally valuable to them.

We again wish to express our indebtedness to the Josiah Macy, Jr. Foundation for publishing and distributing this important work.

  
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17-15-57

STATEMENT OF PURPOSE

The purpose of this survey is to report on the various aspects of psychiatry among combat flying personnel and to present certain suggestions pertaining to a psychiatric program for an Air Force, the data being based on the experience gained in the Eighth Air Force during its first year of combat.

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Part I General Background

1. Introduction:

This survey is a summary of the psychiatric experience with combat personnel in the Eighth Air Force during its first year of operational flying (July 4, 1942 to July 4, 1943). The contents deal only with flying personnel engaged in combat and do not include psychiatric data on individuals engaged in other duties with the Force. This theatre of operations

(European Theatre of Operations U. S. Army) has seen its aerial warfare conducted from fixed bases in England and by the same token, medical care of flying personnel has been in fixed hospitals and installations. Because of the fixity of the various flying fields, because of a standard method of treatment and disposition of psychiatric casualties, and because it has been possible to study these cases adequately and maintain complete records, it is felt that the data in this record represents a comprehensive picture of the type of psychiatric failure that can be expected to occur among flying personnel in a combat Air Force.

The main effort of the Eighth Air Force during the period covered by this report has been the bombardment of Germany and of the several German occupied countries by means of heavy bombers. Two types of aircraft were employed, the B17 ("Flying Fortress") and the B24 ("Lib-

erator"), the latter being present in minor numbers compared to the former. Fighter Command and Air-Ground Support Command were not operational to any great extent during the period covered by this report and thus do not make any considerable contribution to the number of cases occurring during this first operational year.

Throughout the autumn and 1942-1943 winter short penetration raids were made into the occupied countries. The numbers of heavy bombers participating in these early raids were small, and the losses were also small. In the spring of 1943 deeper penetrations were made and raids were begun against the German mainland. Such raids brought increasing losses, to the point in fact that it appeared that few crews would survive the operational tour of 25 missions. At this point combat crews were brought face to face with the stern reality of



their profession and more psychiatric casualties began to appear.

## 2. The Reaction to Combat Stress:

The stress imposed on the combat crews was of a severe order during the greater part of this year..

On a statistical basis the crews had little chance of survival and only a small proportion did survive.

These facts were known by flying personnel and were quickly learned by replacements coming into a depleted squadron. At this point, then, was applied the first real stress to newly arrived crews and it served to precipitate, in a few cases, either unmitigated fear with a request for removal from flying duties, or the same request was expressed through the mask of functional symptoms. In any event the motivating factor was fear, either expressed consciously or by means of symptoms.

The next group of cases occurred under the impact of the first few missions (usually by the fifth) and produced the same reactions expressed in the same manner. During the first five missions most crews would have encountered the harrowing experiences which were the normal events for heavy bombers operating from this Theatre. Watching close-in and constant enemy fighter attacks, flying through seemingly impenetrable walls of flak, seeing neighboring planes go down out of control and at times explode in mid-air, returning with dead or seriously wounded on board and other such experiences imposed a severe and repeated stress which demanded a high degree of personal "toughness" to tolerate.

The third group of cases occurred later in the operational tour, usually in the region of the 12-16th mission. This condition ( Operational Fatigue ) devel-

oped in fundamentally sound individuals who began to show the exhausting effects of chronic tension and anxiety, frequent briefings, real and practice missions and in whom the clinical symptoms might be said to represent about 50% fatigue and 50% emotional illness. These cases proved to have a reasonably good chance of being returned to combat duty (in contrast to the preceding types of cases) by means of a therapy which will be discussed later in this report.

The various psychiatric disorders accounted for few casualties in relation to the total strength of flying personnel. The large majority of airmen tolerated these stresses in a normal manner, reacting with fear and tension in proportion to the degree of the stress involved, but without becoming psychiatric casualties. All airmen engaged in combat experienced fear and it was a subject that they talked of freely

among themselves. There was no shame involved in admitting fear or being scared and to the airmen such an admission carried no implication of being "yellow" or a coward. The terms of "flak-happy" and "Focke-Wulf Jitters" were common parlance and came to be applied not only to the symptoms of combat stress but as a joke to explain all of the small errors and eccentricities of everyday living in sound persons.

The subjective reactions (of "normal" airmen) to the fear of combat differed widely in different personalities but few if any of the officers and men escaped some manifestations. These differences in the time at which tension is felt can be conveniently classified by their relationship to the period of combat as follows:

- a. The feeling of greatest tension in some men

occurs the night before or even at a more distant time before a mission. These men visualize and feel all of the possibilities of disaster. They see the wing on fire, or their blood spattered over the cockpit window, or their crew freezing in a dinghy in the North Sea, or drifting down in a parachute into a German field.

- b. The feeling of greatest tension in most men occurs in immediate anticipation, between briefing and take off, and perhaps again over the enemy coast. It is relieved by action. There is little visualizing here, but simply subjective tension, perhaps accompanied by some visceral response, such as "butterflies in the stomach", perhaps some slight muscular jerkiness or transient tremor, the feeling of

rapid pounding of the heart, cold sweaty extremities, or urgency of urination.

c.The most marked response in some few men takes place at the height of combat, or at a time of catastrophe. The reaction may be one referred to the psyche, in which the man does not know what he is doing for a time and cannot fix his mind on his work, or may be referred to the soma by nausea, uncontrollable tremor, diarrhea, or by vasomotor reaction resulting in partial syncope.

d.The most marked response in some men does not occur until the raid is over and they have begun to think or talk over the events which transpired. Their feelings are overwhelmed then by the contemplation of what almost happened, or by what did in fact occur, and

they continue to live through the experience with an obsessive repetition.

e. A very few men state, with what is believed to be honesty, that they feel virtually no tension at any time in relation to combat. These men separate their fear of death and disaster from its proper cause and displace it to other matters of all sorts, such as the possibility of contracting venereal diseases or appendicitis, or such as their relations with the Commanding Officer, or the welfare of their kinfolk at home or any other matter deserving some slight measure of anxiety.

f. An extremely small percentage of men feel almost no tension, for a different reason. These men are the few whose fear is almost

completely converted into aggression, sometimes against the enemy, sometimes into other fields, consciously or unconsciously (in which latter case it is abundantly evident to a trained observer).

The reactions of combat crews to immediate great danger is of interest. This is a matter on which no one can have a large basis of first hand observation, in spite of the frequency of emergency situations in aerial combat in this theatre. Combat men have reported instances in which crew members have responded ineffectively to emergencies, in a variety of ways: a co-pilot, seeing his pilot killed, put his arms over his eyes and paid no heed to the controls; a gunner, climbing out of a ditched plane, jumped into a sheet of flame on the water which was only on one side of the fuselage; a bombardier, seeing a FW 190 coming



in at the nose, dropped flat on the floor leaving his machine guns; a navigator sat staring blankly at his logbook throughout a violent flak barrage and retained no memory of the event; a radio operator babbled continuously over the interphone that his parachute was damaged by shellfire at a time when it was essential that the line be kept cleared for calling enemy attacks and coordinating defensive action; men have had panics, blank spells, violent tremors, vomiting, diarrhea; have acted inefficiently or have ceased to act at all, at the peak of danger. But these reactions were rare. They occurred in several instances in men known to be emotionally unstable.

Two sorts of extreme and immediate danger exist, that in which immediate and vigorous action is necessary, and that in which disaster is apparently inevitable but

nothing more can be done to prevent it or prepare for it, and one must simply wait. These two situations would seem essentially different, in that action relieves tension while waiting builds it up; and, from a different point of view, the necessity for action demands, in the circumstances under consideration, the clearest sort of discrimination.

One medical officer of the Psychiatric Department (Capt. D.G.W.) flew as a medical observer on a number of combat missions and on a particularly harrowing raid had the opportunity to observe at firsthand the ten men of a B-17 crew whose personalities were well-known to him in both these sorts of stress. This medical officer's observations are as follows:

"A brief exposition of the circumstances surrounding the making of these observations is necessary. The airplane, a B-17, on a mission over a distant tar-

get in enemy-occupied Europe, had most of its controls shot out by attacking planes before reaching the target, so that the ship was knocked out of formation. The pilot, however, with the exercise of great skill and strength, persisted in making an effective bomb run. Following this the lone airplane was attacked by about 100 FW 190 fighters over a period of perhaps three-quarters of an hour, during which time extraordinary damage was done to the plane and crew. Virtually all the crew were wounded, three severely, and one became anoxic as a result of the simultaneous stunning explosion of a 20 mm. cannon shell next to him, and the severance of his oxygen system. Almost all of the control cables were cut in various places, the oxygen, hydraulic, and electrical systems were knocked out, the interphone and radio systems destroyed, a small fire started in the

bomb-bay, large holes were put through both wings, holes were in two propellers, bomb-bay, fuselage and nose; the tail assembly received so many direct cannon hits that it vibrated violently and, after inspection by the flight engineer, was expected to tear off entirely at any moment. Following the cessation of fighter attack, therefore, the crew did not expect that the ship would successfully cross the channel, that a smooth ditching would be possible, or that in the event the English coast were reached an uneventful landing could be effected. In almost any eventuality attempts to take care of the severely wounded men would have strongly prejudiced the chances of survival of the rest.

Such were the circumstances. The personalities involved varied greatly. The pilot was big, easy-going, emotionally stable but unaggressive, essentially

introverted, and extremely intelligent. The co-pilot was a tightly-wound, aggressive cyclothyme, with a clear history of a previous mixed manic-depressive attack of disabling degree. The navigator was a quiet, rigid, but fundamentally well-balanced person. The bombardier was a vigorous, fast-thinking extrovert, irritable and outspoken. The radio operator does not come within the bounds of this discussion, having been unconscious or disoriented from anoxia during most of the period. The top turret gunner-engineer was an energetic, over-compensating extrovert, independent and uninhibited to the point of eccentricity. The ball turret gunner was a small, quiet and self-sufficient introvert, cool, impersonal, and emotionally tough. The right waist gunner was markedly extroverted, merry, careless of consequences, of opinion, of the past or of the future. The left

waist gunner was a rather seclusive, shy, infinitely conscientious introvert, who never drank, never smoked, never let himself go at all. The tail gunner was basically rigid, limited and simple in imagination and outlook, completely thorough and dependable.

Such, schematically, were the personalities.

The reactions of the men were remarkably alike.

During the violent combat and in the acute emergencies that arose during it they were all quietly precise on the interphone and split-second decisive in action. The tail gunner, right waist gunner, and navigator were severely wounded early in the fight, but all three kept at their duties efficiently and without cessation until the combat was over, their guns were destroyed, or, in the case of the navigator, the home station was in sight. The burden of the emergency work with controls, oxygen, wounded

men, and reparable battle damage fell on the pilot, engineer, ball turret gunner, and left waist gunner, and all four functioned with rapidity, skilful effectiveness, and with no lost motion. The burden of the decisions during, and particularly after the combat, rested essentially on the pilot, and in secondary details on the co-pilot and bombardier. The decisions were arrived at with care and with speed, were unquestioned once they had been made, and proved excellent. In the period over the channel and over England when disaster was momentarily expected, the alternative plans of action were made clearly and with no thought other than for the safety of the entire crew. All, at this period, were quiet, unobtrusively cheerful, and ready for anything.

There was at no time paralysis, panic, unclear thinking, faulty or confused judgement, or self-seeking.

ing, in any of these men.

It was striking that the emergency did not tend to increase the difference in the reaction patterns of the differing personalities; rather they came to act in much more similar fashion than usual. One could not possibly have inferred from their behavior that this one was an unstable cyclothyme and that that one was a shy quiet introspective man. They all became outwardly calm, precise in thought, and rapid in action.

This reduction of all personality types to a common reaction pattern appears to be a matter deserving contemplation. It has been observed that a somewhat parallel phenomenon exists in the development of Operational Fatigue in which men of widely differing personality types arrive at a common symptom-complex in the illness."



An important aspect of combat aviation deals with the changes in personalities and attitudes that developed in crews under the repeated and continued stress of combat during the course of the operational tour. These changes occurred in their behavior, their conscious attitudes, and their psychic orientations of a less conscious nature. While these changes were far from similar in different individuals, many of them were quite general. An attempt will be made to present an exposition of the more general evolution of most men through a tour.

On arriving at an operational station the men were first of all insecure and defensive, both consciously and unconsciously, and this was apparent in many ways. In action they were either overly self-assured, or particularly diffident, usually the former. In speech they might be either loud and continuous,

or in a few cases "mouse-quiet". They either spoke continuously of combat or avoided it completely. They either ridiculed and paid no heed to any advice by experienced men or they took in every possible word of it. They tended at first to drink more than the others. They did not accept the possibility that they would ever be afraid, and openly spoke of the older men who mentioned fear as being "flak-happy" or spiritless. It was quite easy to "spot" a new group of officers at a table in the mess or in a group in the lounge, even if one knew none of the personnel of the station.

These defensive attitudes and mechanisms began to disappear quite quickly after the men had 4 or 5 raids, and had seen and felt the real factors in the combat situation. This process was frequently conscious to a large degree, and in many cases, the men

spoke of the change in themselves, and shamefacedly deprecated their former "cocky" attitude. At about this point it was frequent for them to "overswing", and to be very conscious of their anxiety, having somatic symptoms and paying attention to them, and feeling quite hopeless about their chances of survival, sometimes in consequence, getting careless of technique, equipment, and the like.

The third stage of evolution took place at roughly the tenth raid, by which time one or more of several factors had helped effect a further change: the man had experienced fear and by now knew that he could deal with it; he found that care and skill and coolness in the pilot and crew had a real bearing upon the question of his return; he saw that his crew and his airplane could withstand catastrophe; he developed an "esprit de corps" in regard to his squadron, and was now really

part of it. He developed for the first time a sense of his responsibility to his mates, and to the formation. At this stage which continued sometimes until the end of the tour, the men were effective, careful, fighting men, quiet and cool on the ground and in the air. They attained a sort of tranquillity in spite of their anxiety. They had very little need for defensive mechanisms of any sort to deceive themselves or anyone else. They talked easily and quietly, drank little except on pass, and expended virtually all of their attention and interest on the job. When they did go on pass and overindulged they usually did so in a peculiarly deliberate way, believing overindulgence was a cathartic sort of release of feelings, which they felt to be useful. They were drained of most feelings other than those having to do with combat. No values

existed other than those meaningful in combat.

Frequently a fourth stage of evolution gradually took place by the beginning of the last 5 raids. Its components were probably to a large extent physiological, the results of continuous prolonged fatigue and fear. It consisted, in its most extensive form, of a state of insomnia, fatigability, weight loss, anorexia, indifference, restlessness, loss of concentration and interest and efficiency, marked irritability, loss of libido, and a fairly marked depression with retardation. It did not necessarily include all of these components, but perhaps only several of them; these symptoms could not be considered in the category of neurotic manifestations, in that they did not cloud the real issue from the flyer's consciousness. He had usually complete insight into their cause and mechanism. They also did not give him any "secondary gain", in that

he did not accept the release from combat that they might have afforded.

Frequently following the termination of the operational tour, the men in general had a period, not of elation and relief, but rather of continuation or even exaggeration of the symptoms mentioned above. They frequently felt let down, depressed, indifferent, restless, dissatisfied and uncertain for a period of weeks.

Fairly promptly after the termination of a tour they appeared to forget (presumably a defensive mechanism again) the reality of the internal and external stress to which they had been subjected and came to talk about combat like novices. Once again they were strangers to fear, and intolerant of it. Once again they marvelled at hearing of instances of courage that had previously been commonplace and

daily happenings in their own lives. Once again they were living in a world in which there were many and complex values.

## Part II Clinical Data

1. Flying Fatigue as used in this report, means ordinary fatigue and the physical and mental symptoms of it and does not imply that the individual is emotionally sick. Flying Fatigue is the same as the fatigue any individual would suffer if he had had insufficient sleep, rest, and relaxation, and had been exposed to the nervous strain of flying. In combat flying the following factors were found to be the important ones in producing fatigue:

a. High altitude missions.

b. Missions too close together, for example, 4 missions on consecutive days. This not only entails the fatigue of flying per se, but

early morning briefings and the actual lack of sleep which results.

- c. Insufficient sleep regardless of cause. The usual cause is apprehension or worry which precludes sleep. The next common cause is noise or confusion in the barracks the night before a mission.

Flying fatigue is a condition which can be cured readily by giving the individual two to five days of rest. It is important to diagnose this condition because, firstly, if the fatigued airman keeps on flying, he is inefficient and therefore dangerous and, secondly, if the fatigued airman continues on combat flying, he is apt to develop Operational Fatigue which is a serious condition requiring specialized treatment. The prophylaxis of Flying Fatigue and of Operational Fatigue will be discussed in a subsequent section of this



report.

## 2. Description of Cases of Psychiatric Disorder and

### Definition of Terms used:

Among flying personnel engaged in combat, by far the greatest number of psychiatric cases were anxiety states in one form or another. All other types of cases were so infrequent that they were of minor importance. Almost all cases, therefore, came under one of the following headings:

- a. Fear Reactions.
- b. Functional Symptoms Owing to Combat Flying
- c. Psychoneuroses.
- d. Operational Fatigue.

True psychoses were conspicuously infrequent and are apparently no significant problem in planning for the psychiatric service in an Air Force.

- a. Fear Reactions: This term is used to des-

cribe the individual who is so overcome by his fear that it is inadvisable or unsafe to send him on further operational missions. The usual symptoms are trembling, sweating, nausea, or a state of panic. This type of reaction also includes the individual who asks to be removed from flying duties because of fear, without showing any particularly noticeable outward symptoms. Fear reactions are transient and in response to the specific stimulus of combat and are reactions which abruptly disappear when the airman is grounded or otherwise relieved of the expectation of combat duty. These individuals uniformly have thorough insight into the cause of their difficulties, i. e. fear.

b. Functional Symptoms owing to Combat Flying:

This term is used to describe the cases resembling the neuroses of civilian life, but which are precipitated or caused by the stress of combat flying. These cases are mainly anxiety states, occurring in individuals who have little or no previous history of personality maladjustment and have been regarded as average or "normal" until they began combat flying. These conditions tend to be cumulative and do not tend to disappear rapidly after the man has been grounded, although they usually disappear within several months afterwards.

For the most part these cases fall into two groups, both fundamentally of the same etiology:

- 1) Wherein anxiety itself is the chief

complaint and somatic symptoms are minor or absent. In these cases the anxiety, difficulty in concentration, feeling of impending disaster, etc. are the main complaints.

- 2) Wherein the anxiety is absent as to its overt expression, and the somatic symptoms of the anxiety state are the chief complaints. These men may have nausea and vomiting, headache and dizziness, rapid heart and palpitation, weakness and easy fatigability or any of the myriad somatic symptoms that may be associated with an anxiety state. These are in general the cases that require close study from the physical and physiological aspects. For

the most part such patients have no real insight into the emotional etiology of their symptoms and frequently state that they want to return to combat flying as soon as they are well.

Both groups of cases mentioned (Fear Reactions, Functional Symptoms owing to Combat Flying) almost invariably occur either on the anticipation of the first combat mission or during the course of the first five combat missions.

c. Psychoneuroses: This diagnosis is reserved for the "true" neurotic of civilian life, whose condition existed before any combat experience, and which in fact usually antedated military service. The psychoneurosis is present whether or not the individual has

engaged in combat flying and, as a matter of fact, the symptoms do not seem to be greatly intensified by combat stress. These individuals are usually sent to a Hospital for return to the Zone of the Interior on medical grounds.

The classical types of psychoneuroses were seen, i.e.:

- 1) Anxiety states.
- 2) Hysteria.
- 3) Neurasthenia.
- 4) Obsessive-compulsive states.

These "true" psychoneuroses are rare and simply represent the civilian neurotic who has managed to survive the selection process and the vicissitudes of a flying career up until the time of entering combat

duty. Those cases that began in the military service, but long before starting on combat, seemed to date from some harrowing experience in flying such as a bad crash, witnessing a crash in which close friends were burned or mutilated, and so on.

d. Operational Fatigue: This term (as distinct from Flying Fatigue ) is used to describe a typical syndrome of breakdown occurring in essentially stable individuals, who by continued stress, harrowing experiences and physical fatigue develop an illness which is roughly half fatigue and half emotional illness. This entity will be described in detail in another section of this report as well as a treatment utilized specifically for this entity.

### 3. Cases of Psychological Failure:

By this term is meant the cases of (1) Fear Reaction and (2) Functional Symptoms owing to combat flying. Both groups of cases become manifest early in the operational tour (usually by the fifth combat mission). During the year's period 60 of these cases were seen in formal consultation by the Eighth Air Force Central Medical Board. A detailed analysis of these cases follows, and is typical of these cases as a whole. It is to be noted that the following statistics deal only with this type of case (Psychological Failure).

#### Analysis of 60 Cases

a) Rank:

Officers - 50

Gunners - 10

The discrepancy between officers and enlisted men is due to the fact that the latter were usually



disposed of in their units by removal from flying and assignment to ground duty. Such disposal did not apply to officers for whom the unit had to undertake some more definitive method of disposal.

b) Ages:

Officers - 24.8 years (range 20-30)

Gunners - 23.3 years (range 19-27)

c) Position in Plane:

Pilots and co-pilots - 28

Bombardiers - 11 (of these 4 had "washed out" of flying training)

Navigators - 11 (of these 8 had "washed out" of flying training)

Gunners - 10

From these figures it is seen that the number of pilots (two per plane in heavy bombardment) roughly equals the combined number of navigators and bombar-

diers.

d) Type of Plane:

	B-17	B-24	B-26	Fighters	Others
Pilots	11	4	4	8	1
Bombardiers	8	2	1	-	0
Navigators	6	4	1	-	0
Gunners	5	5	0	-	0
Total	30	15	6	8	1

e) Marital Status:

	Officers	Gunners	Total
Single	26	7	33
Married, no children	16	2	18
Married, with children	8	1	9

Thus slightly less than 50% of these patients were married. For combat flying personnel as a whole in the Eighth Air Force 20% were married. In general terms it seemed likely that having a wife (and especial-

ly children) added a considerable burden to the combat airman and made him face an extra handicap in adjusting himself to the chance of surviving the operational tour that obtained throughout the year under consideration. From a more or less idealistic standpoint, the question can be raised whether it might not be wise to consider barring marriage for one or two years subsequent to graduation from flying training, especially in time of war. This is admittedly a debatable step, and it is obvious that the great majority of married men carried on with their duty. However, it is impossible to assess the stress, worry (and inefficiency) that the married state might have subjected these men to. When asked about the question of what men he would like to have, a Group Commander remarked "single or recently divorced fliers."

f) Total Flying Time:

Officers - 598 hours (range 100 - 3400)

Gunners - 370 hours (range 160 - 900 )

These figures are only approximate but indicate that this early type of failure occurred in experienced airmen who had accumulated a fairly large number of total flying hours before combat flying was begun. From this the conclusion can be drawn, and it is believed to be correct, that the amount of non-combat flying that an individual has done gives no clue as to whether or not he will be able to stand up to the emotional stresses and strains of combat flying. In a general way one might guess that the more flying hours a man has, the more conservative he becomes; and the more conservative he becomes, the less well he tolerates combat flying. It can be accurately stated that the final criterion of selection for the military aviator is combat flying.

g) Number of Combat Missions (sweeps for Fighters):

	<u>Bomber officers</u>	<u>Bomber gunners</u>	<u>Fighters</u>	<u>Total</u>
0	15	0	5	20
1-5	24	6	1	31
6-10	3	3	0	6
11-15	0	1	1	2
16-20	0	0	1	1

This table gives the origin of the statement previously made that these cases of early failure occur prior to (anticipation of combat) or during the course of the first five missions. 51 of the 60 cases occurred within the first five missions. In explanation it can be said that under ordinary circumstances in this theatre of operations, an airman will encounter a harrowing combat experience some time during the course of five missions. This fact probably accounts for the failure during the first five missions in these cases.

h) Stress Experienced before Failure:

		Officers	Gunners	Total
	0	19	0	19
	/	19	6	25
	//	9	2	11
STRESS	///	3	1	4
	////	0	1	1

In this table, stress was judged subjectively in grades from zero to four plus and was based on the average for this theatre of operations. Zero stress does not imply that the individual has been exposed only to a calm peaceful existence, but means either that he has not gone on any combat missions or has not had a harrowing experience on the few missions he has gone on. However he has been exposed to the anticipation of missions and harrowing experiences, to the knowledge of the rate of losses etc. The

gunner in table (h) with four plus stress was tail gunner of a B17 when the tail was knocked off at 20,000 feet; he fell 19,000 feet in the loose tail section before he was able to frantically punch his way through the skin of the tail and get his parachute open. He then saw the remainder of the plane hit the ground and explode, killing his fellow crewmen. He went on five subsequent missions, three of which were extremely harrowing, before he "broke". The grades of stress between zero and four plus lie in relative positions between the examples given.

It will be noticed that there is an apparent discrepancy between this table and the preceding one listing number of combat missions, namely that 20 individuals in the preceding table have gone on zero missions whereas in this table only 19 are rated as zero stress. The one officer unaccounted for was

rated as two plus stress because of a plane crash he was in shortly before starting on combat operations.

In general, however, it can be said that the majority of the group failed psychologically under zero or a small amount of stress, compared with the average for this theatre of operations.

1) Predisposition to Failure:

	Officers	Gunners	Total
0	21	6	27
/	8	2	10
//	13	2	15
///	6	0	6
////	2	0	2

In this table, the amount of predisposition is judged in the manner of ordinary psychiatric evaluation of the mentally sick patient. It is a figure



made up of a composite of family history and the previous personality history of the individual himself. Zero predisposition means that no parents, grandparents, uncles, aunts or siblings have a history of psychosis or overt neurosis and that the individual himself gives no history of overt personality maladjustment. Four plus predisposition in one case listed in table (i) is based on two psychotic parents and in the other case one psychotic parent and the history of a previous manic-depressive breakdown in the patient's own history. The grades of predisposition between zero and four plus lie in relative positions between the examples given.

In general it can be stated that these cases were not individuals judged to be markedly predisposed to psychiatric breakdown by the ordinary criteria of psychiatric practice.

Plotting Stress against Predisposition the

following table results:

		PREDISPOSITION				
		0	/	//	///	////
STRESS	0	7	13	5	1	1
	/	5	4	2	0	0
	//	5	4	3	2	0
	///	1	4	0	1	0
	////	0	1	1	0	0
	/////	0	1	1	0	0

The above table demonstrates two facts already stated; namely, that these individuals failed under a small amount of stress without being particularly predisposed in the ordinary understanding of the word. The question then arises as to how the failure of these individuals can be explained. It is felt that the matter of morale, motivation and persistence entered into the picture with these men. Although it explains

little, it can be stated that these man were not highly motivated with regard to the war. These men let the instinct of self-preservation outweigh their sense of duty and by means of symptoms made a separate peace with the enemy.

j) Diagnoses:

	Officers	Gunners	Total
Fear Reactions	19	2	21
Functional Symptoms	22	6	28
Psychoneuroses	7	1	8
Psychoses	2	1	3

Part II, Section 2 gives the definition of these various diagnoses listed in table (j) which shows that the overwhelming majority developed syndromes in response to the specific stimulus of combat flying or the anticipation of it. The three cases of psychosis (two manic-depressive and one schizophrenic) were inter-

esting in that it is generally felt that these are endogenous illnesses and not conditioned by exogenous stress. From this data there is no cause to change this view. While it is true that the psychoses developed during the period of combat, in two of the cases there was heavy predisposition. The third case (Manic-Depressive Psychosis, depressed phase) was not predisposed and apparently did develop in response to fear of combat. However if psychoses are caused by severe exogenous stress, there was no real evidence of it during this year in the flying personnel of the Eighth Air Force. As stated before, the common reaction type was that of the anxiety state.

k) <u>Disposition:</u>	Officers	Gunners	Total
To Replacement Pool, grounded	29	8	37
Returned to Unit, grounded	19	0	19
Hospital, (return to Z. of I.)	3	1	4

Those individuals returned to their units represented in the main the ones the commanding officers wanted back to do ground duties. A few of them were returned for administrative action, representing the more flagrant examples of fear reactions.

The four cases sent to a hospital for boarding to the Zone of the Interior were the three psychotics and one severe psychoneurotic.

1) Siblings:

Officers - 8 were only children, 42 were not

Gunners - all had siblings (10)

m) Education (completed) :

	Officers	Gunners	Total
Grammar School	0	1	1
1-2 yrs. High School	1	2	3
High School Graduate	15	5	20
1 year College	6	0	6

2 years college	16	1	17
3 " "	4	0	4
4 " "	7	0	7
Post-grad College	2	0	2

This table indicates about what one would expect.

The officers had received more formal education than enlisted men. However it should be noted that the majority of the individuals had received more formal schooling than is probably average for the country as a whole, but this is of course one of the criteria by which they were originally selected. It is postulated that the more education one had received, the less likely he would be to endure the stress and strain of combat in that he realizes more adequately the poor possibility of survival and puts a higher price on his own value and potentialities.

The preceding analysis of 60 cases constitutes

those seen by the Central Medical Board. It was known that other cases of fear reaction and functional symptoms owing to combat stress had occurred, but had been handled locally in the Squadron or Group by administrative action and therefore had not appeared on medical records. Accordingly, at the end of the year's period a survey was made of the heavy bombardment squadrons to ascertain how many such cases had occurred. The Squadron and Group Surgeons were interviewed personally and the following questions were inquired into:

a) How many cases of Psychological Failure have you seen, severe enough to cause removal from flying or combat status, but wherein the situation was handled by local administrative action?

Results:

	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June
Officers	0	1	0	0	1	3	5	4	2	3
Enlisted Men	0	2	6	7	13	15	12	12	11	9
Total	0	3	6	7	14	18	17	16	13	12

Total Cases - 106

Officers - 19

E.M. - 87

Enlisted men most frequently seemed to exaggerate small physical complaints such as sinusitis, cold, sore ears and so on. Typical cases as given by Squadron Surgeons are as follows:

1. T/Sgt -- Has never been on an operational mission. For two months when there seemed to be a possibility of his being put on combat, he appeared every morning at sick call complaining of sinusitis. The surgeon could find no evidence of sinusitis. He was removed from



flying by administrative order and never reappeared at the dispensary. The surgeon regarded it as a straight case of fear.

2. Sgt. -- Gunner, developed nausea and vomiting before missions. No pathology was found during study at a hospital. All symptoms disappeared after he had been grounded by administrative action. He had been on five missions.

3. T/Sgt. -- Gunner, developed fainting spells at altitude on four missions. Said his "knees would sink" while at the guns. Admitted to the surgeon that "he couldn't take it any more".

Other enlisted men developed the usual anxiety states wherein anxiety itself was the outstanding symptom:

1. T/Sgt. -- Gunner, on getting into the plane for the fourth mission broke down and began to cry and shake, said that he was frightened and scared. Said that he had been lying awake nights worrying that he would never see his wife and child again. Grounded by administrative action.
2. Sgt. -- Ball turret gunner, had been on eight hard missions. Developed insomnia, loss of appetite, and tremors. He was grounded and sent to a Combat Crew Replacement Center as an instructor.
3. S/Sgt. -- Gunner. On the eighth mission his plane was badly damaged by fighters. He left his gun and sat on the floor of the plane sobbing. Grounded by administrative action.

Officers usually developed symptoms of anxiety:

1. 1st Lieutenant -- Pilot, had been on six missions. On the last of these he had a harrowing experience with flak and it seemed doubtful if the plane could get back to England. He developed marked anxiety and a tremor so bad that he had to eat with both hands in order to hold the fork. Five months later he still has such a marked tremor that he has difficulty in writing. After the last mission he was assigned to the operations office and has done no flying since.
  
2. 2nd Lieutenant -- Pilot, completed five hard missions. Began to get depressed and anxious, started brooding and walking through neighboring fields alone which was foreign to his usual personality. Has been grounded by the commanding officer.

3. 1st Lieutenant -- Navigator, completed seventeen missions. Developed insomnia, tremors, battle dreams and weight loss. The commanding officer assigned him to ground duty.

b) Do you know of any instances wherein a pilot or crew have caused the loss of a plane because they were anxious or had Flying Fatigue?

Result: Squadron Surgeons were of the opinion that perhaps four heavy bombers had been lost because of the above reasons:

1. Squadron Commander, Major. On second mission he had a mid-air collision and became so upset that he ordered everyone to jump out via parachute, but the co-pilot recognized that the plane was flying satisfactorily and countermanded the order, took over and landed the

plane. This officer was of an overly conscientious make-up and worried a good deal about his panic reaction. On his fourth mission his plane again got into trouble, dropped out of formation and was shot down. The Squadron Surgeon feels that the officer's anxiety was a large contributing factor in the loss of the plane and crew.

2. Pilot, 1st Lieutenant, used to have nausea and vomiting before a mission. He had told the medical officer that he felt there was no chance of ever getting home to see his wife. On the fifteenth mission his plane went down apparently under control. The feeling was that he landed in enemy territory, simply lacked the confidence to make the return trip to England. He was a good

flyer who admitted he was badly frightened by combat.

3. Pilot, Captain, who had symptoms of anxiety.

He had aborted three missions for insufficient cause and was taken off flying administratively for awhile. He admitted he was shaky and in fact his crew didn't want to fly with him. He was put back on flying and was lost on the ninth mission. He seemed undecided about staying in formation on this raid and three or four times he pulled out of formation and then came back to it. The final time he left the formation with the plane apparently under control. The feeling is that he landed in enemy territory without making the effort to return.

4. Pilot, 1st Lieutenant, 11 missions and had

become depressed and anxious. The squadron medical officer recommended that he be grounded but this was refused by the Commanding Officer. He had pulled out of formation on the three previous missions. He did the same thing on the last mission and was shot down. The squadron surgeon feels that the pilot's anxiety state lost this plane and crew.

c) Have there been any Court Martial proceedings for fear or refusal to fly?

Result: None.

d) Have there been any cases of unordered parachute jump due to panic?

Result: 8 cases.

1. Navigator, 4th mission, probably mistook hydraulic fluid dripping into the navigator's compartment for blood, assumed that the pilots were hit, and

parachuted down in a panic. He is now a prisoner of war.

2. Bombardier and navigator, saw hydraulic fluid running into navigator's compartment, panicked and bailed out over the target.
3. 5 enlisted men, plane on fire, apparently thought the plane was about to explode, bailed out over the North Sea. All presumably drowned.
4. Bombardier on 2nd mission, panicked and started to jump. The navigator threatened to shoot him with his pistol if he did, so he did not.

e) Have you seen any cases of true malingering?

Result: None

f) Is airsickness a problem?

Result: Airsickness was not considered to be any



problem except in one B-24 squadron in training for night operations. The Squadron Surgeon said: "It is a frequent problem now that we have started night training. Evasive action for getting out of the searchlights makes them sick. It was no problem while we were doing daylight operations".

g) Do you see any psychosomatic problems such as peptic ulcer syndrome?

Result: There were practically no such cases, only two being known of:

1. T/Sgt., gunner, developed extreme nervousness and persistent hypertension during course of 5 operational missions. Age 30. Since no previous blood pressure records were available, the status of this case is unknown.
2. Sgt., gunner, during course of 8 missions developed gastric complaints which were diag-

nosed as peptic ulcer by X-ray at a General Hospital.

h) Have you had any cases who suffered actual wounds or disease but in whom the symptoms lasted too long, that is, were used to avoid return to combat flying?

Result: The average opinion seemed to be that of a Squadron Surgeon who stated: "Just the opposite seems to be true. The men do not generally use real symptoms to evade flying. They all seem to want to get back as soon as possible".

There were a few instances mentioned as follows:

1. Bombardier, 2nd Lieutenant, bruised his chest in ditching on the return from a mission. He retained the symptoms of his chest hurting although there were no physical findings to account for it, and he refused to fly. However he was ordered back to combat duty and

successfully completed 4 missions without difficulty at the time of this writing.

2. T/Sgt., gunner, was hit in the shoulder by flak while in Africa. For the past 5 months he has had unremitting "rheumatic pain" in the shoulder although there are no objective physical findings to account for it. He has been grounded. In addition he is reported to be extremely nervous and gets out of bed at night to smoke.
3. In one squadron there are two gunners, each superficially wounded by flak on the 4th raid. Several months later they still have unexplained pain at the site of the wound for which they seem to crave attention. Both have been grounded. They stated that cold and altitude made the symptoms worse.

1) Do you see sudden sickness before missions, for example, between the briefing and take off?

Result: Cases of this sort do occur with some frequency, mainly in new crews that have come in as replacements. Few officers seem to report sick before a mission; if they report sick it tends to be after a mission apparently in the effort to avoid any suspicion of "goldbricking".

The statements of several Squadron Surgeons give a picture of this problem:

- a. "I used to see a good deal of it during the winter, usually sore ears, gastro-intestinal complaints and sinusitis, when there were no replacements coming in and morale was at rock bottom. I haven't seen much of it lately."
- b. "I see about 5 such cases a month, usually ears, sinuses, colds, and gastro-intestinal

complaints. It's almost always a minor complaint that the man knows will be cause for grounding on that mission. They don't develop the hysterical things. These various symptoms come and go and do not signify that the man is ready to quit. He has just gotten 'fed up' or is scared about that particular mission."

c. "There are one or two such cases before each mission, usually colds or nausea. Before one especially difficult raid about 15 or 20 gunners came in with sore ears."

d. "I see one or two occasionally but it's not a frequent problem. You have to be careful that you don't assume that just because a man reports sick before the mission is about to leave that he isn't really ill. I had one gunner come to me after a briefing for a difficult mission and

he was pale and sweaty and looked scared. I took his temperature and it was 103.6° and examination of his lungs showed a pneumonia."

e. "I used to see cases of functional nausea and vomiting before missions during the first few months we were on combat flying. It usually occurred among enlisted men replacements. It's no problem now."

There is one other aspect of the reaction to combat stress that can be a puzzling problem, especially with regard to the disposal of cases of psychological failure. The question is: "What is the difference between fear and cowardice, and where does one begin and the other stop?" Cowardice was considered to be a frame of mind, initiated by fear, wherein the airman either refused to fly, or in the face of enemy attack neglected his duty and attempted some self-saving measure

thereby jeopardizing the lives of fellow crew members.

The medical officer was called upon frequently to examine such an individual and express an opinion as to whether illness of physical or mental type did or did not cause such an action. If the medical officer stated that the man had an emotional illness, he was usually excused and treated as a sick individual. In such cases it was the duty of the medical officer to study the case with the viewpoint of general morale in mind and usually to state clearly that no medical condition existed and leave whatever administrative action was necessary to the discretion of the commanding officers. It is damaging to morale in general and to the status of the medical officer in particular if he excuses men on medical grounds who have failed to do their duty because of cowardice or "lack of moral fiber".

Abnormal fear, on the other hand, which did not

jeopardize the lives of others and particularly if it was felt that the man had made an honest effort to carry on in spite of it, while still not a medical problem, should not subject the individual to the drastic action that cowardice should entail. One point should be mentioned, however, from the standpoint of general morale in such a case: whatever method of disposal is decided upon, the man should not gain by his abnormal fear. Thus if a man must be removed from combat flying because of his fear of it, he should not be given easy non-combat flying duties, nor should he be assigned to a position which might permit more rapid promotion than his fellows who remain behind to do the fighting. Such situations create serious discontent among the combat crews when they learn of it.

#### 4. Operational Fatigue Cases:

##### A. Introduction:



This condition requires active therapy and is a syndrome which rest or cessation from flying duties alone will not usually cure. A treatment center was established in the Eighth Air Force, utilizing a 60 bed ward in one of the General Hospitals. The broad outline of the treatment utilized consists of a period of 3-4 days for thorough examination and study, then 2-4 days of narcosis therapy followed by a convalescent period of 3-4 days. Following this the patients are started on a program of physical reconditioning lasting 2 weeks. In actual practice this has worked out quite well, the main difficulty coming in the last two weeks. During this time, the patients, who are in good health, and normally active, energetic young males, are prone to become somewhat restless, and feel confined by the hospital routine. In an effort to relieve this, they were given special

privileges in the matter of leaving the hospital for bicycle rides, etc., and were allowed to stay out on pass later than the general run of patients in the hospital.

The first patient was started on the continuous narcosis therapy 13 March 1943 and made a good recovery. From this point on, as many as eight patients were treated simultaneously. An effort was made to treat cases for five to six days, and then have a 48 hour break, during which time the personnel doing the narcosis treatment were given a rest. The nursing involved was very exacting, and imposed considerable strain upon those concerned.

B. Description of the Operational Fatigue Syndrome:

A patient suffering from Operational Fatigue exhibits a characteristic group of symptoms. His face

is pale and drawn. He is tense, irritable, and frequently has a tremor of the fingers that may be fine, or so gross that he finds difficulty in eating, spills coffee, and so on. The irritability is especially apparent when discussing the combat situation, the patient becoming aggressive and belligerent on little provocation. He quarrels easily, frequently with close friends, and over trifles. This makes his tension and anxiety worse, and he frequently begins to avoid his fellows in an effort to avoid the quarrels.

A notable feature of the syndrome is the depression that develops. This was present in almost all the cases seen, and varied from a mild feeling of "being blue" to a fairly severe retardation. There is a definite slowing of the mental processes, to the point where about half the patients asked if

they were developing insanity. The reason given by many of the patients for seeking medical assistance was that they were afraid that further exposure to the stress of combat flying would cause a mental derangement. In a highly trained group, as represented by these patients, where instantaneous decisions and action are essential for survival, such depression and retardation of the faculties are serious symptoms, and contribute greatly to the anxiety of the patient.

The amount of anxiety varies to some extent, but is generally severe. It is composed of several parts. The initial anxiety arises from the inescapable conflict between the instinct of self-preservation, and the various factors activating the individual to continue in combat. This is seen in its purest form in the cases of Psychological Failure and approaches

the typical anxiety neurosis of civil life. In the cases of Operational Fatigue , this anxiety plays a less prominent part, although is present. Added to it are the concern about the deterioration in mental condition, described above, and the real worry over the prospect of approaching insanity.

Conversion symptoms in greater or less degree are common. These are fairly evenly divided among the various systems, with gastro-intestinal and vasomotor symptoms predominating.

Vivid dreams or nightmares are common symptoms. These dreams are centered around the combat situation, and are so intense that they wake the patient. In addition, there is usually marked difficulty in getting to sleep, and the combination of these factors produces a very irregular, broken sleep, which does not rest the patient. He awakens in the morning feel-

ing just as fatigued as when he went to bed. It is felt that the narcosis therapy, by interrupting this vicious cycle of preoccupation, both awake and asleep, with the combat situation, allows the individual to rest, and pushes the various traumatic events further into the background, so that their impact on the personality is lessened.

Since there is usually a loss of appetite, these patients tend to lose weight. Half of them show a weight loss.

C. Narcosis Therapy:

The use of various drugs for the production of long continued periods of sleep has a background of many years in civilian psychiatric practice. Narcosis or sleep therapy has been used in the treatment of the affective psychoses, principally manic-depressive disease. Its use in these illnesses has been fully

described by many authors, and it is accepted as sound therapy.

Since the Operational Fatigue syndrome resembles an early depression, it was felt that narcosis therapy might be of benefit in interrupting the constant preoccupation with the combat situation that is such a prominent feature in these cases.

The treatment itself consists in giving suitable doses of a sedative drug, producing a prolonged sleep. The drug of choice is sodium amytal. It has evolved over a number of years as the safest drug to use. Its action is rapid and of fairly long duration. It has a wide margin of safety, so that a considerable overdose can be tolerated without much difficulty, and in practice it seems to have the least effect on the vasomotor and respiratory systems of any of the barbiturates. The drug is routinely administered by

mouth, the patient being roused sufficiently for this. The initial dose of the drug is 0.2 to 0.4 grams. This is repeated in 4 to 6 hours, depending on the reaction of the individual patient. As the treatment progresses, a tolerance for the drug develops and the dosage must be increased proportionately. As high as 2.4 grams have been given at one dose. The drug is administered at bed time the evening before treatment is begun, 0.2 to 0.4 grams sufficing to give the patient a sound night's sleep. The next morning he has breakfast at 07.00 hours, and is then taken into the narcosis ward, where another dose is given. An attempt is made to keep the patient soundly asleep for 20 out of 24 hours, arranging the dosage of the drug so that he awakens at 06.00 hours and again at 17.00 hours. At these times he is bathed, and fed and he voids. No attention is



given to bowel function, as in the short period under consideration there is seldom any need for defecation. The patient is given a cathartic 24 hours before starting treatment, to empty the large intestine.

The duration of treatment for maximum benefit was a question at first. Since most of the complications, such as pneumonia, develop after about 96 hours, this was taken as the upper limit of the treatment period. In treating civilian manic-depressive patients, the usual duration is 7 to 14 days, but as the symptoms of Operational Fatigue were less severe it was felt that the full benefit of narcosis therapy would probably be obtained in 96 hours. Many patients, however, showed quite mild symptoms, and in these cases 36 to 48 hours was decided upon as an initial limit. As experience accumulated, it

was found that most cases could be placed into two groups for treatment, those with mild symptoms receiving 36 hours of narcosis, the more severe reactions receiving 72 hours. The majority of the patients progressed favorably under this therapy, but there were several instances wherein a second course of narcosis was felt advisable. Most of these were severe reactions, approaching closely a manic-depressive psychosis. The second course of treatment was beneficial in the majority of these cases.

The initial work-up of the patient consists of a complete history, including a detailed psychiatric examination, and a thorough physical examination. Since these patients were young individuals, theoretically in good health, the most important points considered in the physical examination were the heart, lungs, and the elimination of any possible foci of

infection. This last is particularly important, as one of the serious complications of narcosis therapy is the sudden lighting-up of a focus of infection into a rapidly spreading, virulent, systemic infection. One such case was seen in the group being considered, but was readily controlled by the use of sulfonamides and heat. In this regard, the teeth are especially worthy of close inspection.

Since the narcosis lasts at most 96 hours, complications from hypostatic pneumonia, atelectasis, and vasomotor disturbances are not a problem. Various supportive drugs were kept at hand, including coramine, metrazol and ephedrine. The most useful supportive measure, however, proved to be 100% oxygen given by a BLB mask. This is used routinely in treating falling blood pressure, and

for lightening the depth of narcosis if the patient reaches a critical level. In several cases, such as the patient with the severe infection, where it was necessary to rouse the patient rapidly, oxygen administered continuously vitiated the effects of the drug in 2 to 4 hours, the patient being awake at the end of this time. It is helpful to have a suction apparatus available, as patients frequently fill their respiratory passages with a thick mucous secretion, obstructing the airways, and causing prolonged spells of coughing. Keeping the pharynx and trachea clear also help in avoiding atelectasis from mucous plugging of the smaller bronchi. In line with this, the patient is turned every half hour, if sufficiently narcotized so that he lies quietly for long periods. This helps to avoid atelectatic phenomena, and helps to prevent constriction of the circu-

lation in the extremities.

Blood pressure, pulse and respiration readings are taken every half hour, and charted. In addition, the depth of narcosis is charted, so that the medical officer can see at a glance how many hours of sleep the patient has had.

Careful nursing care is of the utmost importance. Experience has shown that one nurse can care for a maximum of three patients at any one time. For every two patients added thereafter, an additional nurse is necessary. In addition to this, at least one, and preferably two enlisted men are also on duty. If more than one patient is being treated at a time it is imperative that at least two people be present at all times. This is especially true at the twice daily periods of awakening, when the patients are half awake, groggy, and rather impatient and unreason-

able in their demands. They may easily fall out of bed, or otherwise injure themselves.

The medical supervision of these patients consists in regulating the dosage of the drug to suit the individual patient, keeping close check on the patient's general physical condition, and administering psychotherapy where indicated, and where possible. It is imperative that the patients be visited at least once every two hours. Especially important are the visits during the periods of awakening, when the patient can be examined, and any psychotherapy desired can be employed. While the therapy is essentially not of an "uncovering" type, considerable reassurance can be given the patient during his waking moments, and an opportunity afforded to let him "talk out" the traumatic experiences that may be particularly bothersome to him. Having sympathetic nurses at hand gives the

patients a feeling of security, and relieves their anxiety considerably. Constant reassurance is an important factor.

Adequate nutrition is seldom a problem, as the patients uniformly develop a ravenous appetite, and eat two and three servings at a meal. Fluid intake is a greater problem, but about 2000 c.c. of fluid can be given in 24 hours by means of water or fruit juice each time the medication is given.

Bowel elimination has already been discussed. Little difficulty is encountered with urination, as the bladder tends to empty spontaneously when full. Several patients did require catheterization, however, which usually produced a febrile reaction, and thus the termination of the narcosis.

D. Recovery Period:

At the termination of the narcosis, the patient

is allowed to awaken naturally, unless there is some special reason for rapid recovery from the effects of the drug, such as systemic infection. During the first 24 hours the patient is groggy, unsteady on his feet, and requires constant nursing care. He has difficulty in focusing his eyes, and is usually dysarthric, appearing to be intoxicated. During the next 48 hours these symptoms disappear and by the end of 72 hours he has usually recovered fully from the effects of the drug. The patient may have difficulty in sleeping during this recovery period, and usually requires 0.4 to 0.6 grams of sodium amytal nightly for sedation. No symptoms have been seen from sudden withdrawal of the drug.

Following recovery from the narcosis, the patient is placed on a regime designed to build him up physically. He is given a high caloric diet, receives



between-meal feedings, and is encouraged to take as much physical exercise as he can tolerate. One of the main drawbacks in the rehabilitation program was lack of adequate occupation in the last two weeks of the patient's stay. Additional personnel to organize athletics and other recreational activities would have been valuable. Lately, they have been sent to the Rest Homes or on a week's sick leave. This had one drawback, in that they were not under medical supervision during this time, and missed the benefit of psychotherapy.

E. Statistical Summary of 69 Patients:

The 69 cases summarized in the following tables comprise all the combat personnel treated by narcosis therapy and discharged from the Hospital from 10 March to 31 July 1943. These patients were admitted prior to 5 July, 1943. The tables compare officers, enlisted

men, cases of Operational Fatigue and cases of Psychological Failure .

In the following statistical analysis it will be noticed that not all of the cases treated with narcosis therapy are those of Operational Fatigue . Certain cases of Psychological Failure were also treated. The reasons for this were twofold: (a) when the narcosis treatment and center were first inaugurated, there was some initial confusion as to whether or not certain cases of Psychological Failure might not benefit to the point of being able to return to combat duty and were accordingly tried on the treatment. It was soon found, however, that, as a general rule, these cases of early failure could not be returned to combat flying duties. The treatment usually caused the anxiety symptoms to disappear in such cases, but these individuals had no desire to return to combat,

symptoms or no symptoms, (b) certain cases of Psychological Failure which developed marked anxiety and other symptoms were treated in order, to put them into condition to be able to perform ground duties. Although in these cases it was recognized that they would not be able to return to flying duties, the treatment was justified in that it enabled most of these patients to continue with ground duties of one sort or another and thus their services were not completely lost.

The cases of Psychological Failure in this series (narcosis) are separate and apart from the 60 cases previously described and seen by the Central Medical Board. Although essentially the same, such cases in this series represent a more severe reaction than those occurring in the previously described series.

1. Rank:

There were 36 officers and 33 enlisted men treated. The greater ratio of officers to men than applies in the bomber crews, who were the chief source of patients, is explained on the basis of ease of disposition of enlisted men at the station, if symptoms interfering with their flying develop.

2. Age:

Officers 24.4 years (20-33 range)

Enlisted men 24.5 years (20-35 range)

3. Position in Plane:

	Operational Fatigue	Psychological Failure	Total
Pilots	11	7	18
Navigators	8	2	10 (5" washed out" of pilot training)
Bombardiers	3	5	8 (5" washed out" of pilot training)
Gunners	21	12	33
Total	43	26	69

4. Type of Plane:

	B-17	B-24	Fighters	Others
Pilot	13	1	1	3
Navigator	6	4	0	0
Bombardier	5	3	0	0
Gunners	25	8	0	0
Total	49	16	1	3

The major combat activity in European Theatre of Operations U. S. Army was carried on in B-17's.

5. Marital Status:

(In the following tables, abbreviations mean:)

OFF -- Officers

E.M. -- Enlisted Men

Tot. -- Total

Op. F. -- Operational Fatigue

Psy. F. - Psychological Failure

	OFF	E.M.	Tot.		Op. F.	Psy. F.
Married	8	6	14 (20%)	} 25%	9	5
Married - Children	3	0	3 (5%)		2	1
Single	20	23	43 (62%)	} 75%	25	18
Engaged	3	3	6 (9%)		4	2
Divorced	2	1	3 (4%)		3	0

From these figures, the additional responsibility of wife and children does not seem to predispose to Operational Fatigue, as the percentages are comparable to those for air crews in the Air Force group as a whole.

6. Total flying time:

Officers 739.3 hrs. (200-9000 range)

Enlisted men 518.4 hrs. (30-1500 range)

The majority of the men in this group have had considerable flying experience. The difference in flying time between this and the group of Psycholo-

gical Failure cases previously described is probably in combat hours for the most part.

7. Number of Operational Missions:

				Total	Op. F.	Psy. F.
	Bomber Officers	Bomber Gunners	Fighters			
0	3	1		4	0	4
1-5	9	9		18	3	15
6-10	10	9		19	12	7
11-15	6	10	1	17	17	0
16-20	3	0		3	3	0
20-	3	4	1	8	8	0

As might be expected in this group, the peak of the curve falls around 10 missions. If only the Operational Fatigue cases are considered, the peak is in the 11-15 mission group.

8. Diagnosis:

	OFF	E.M.	Total
Psychological Failure	10	9	19
Operational Fatigue	22	21	43
Psychopathic Personality	2	0	2
Psychoses	2	2	4
Others	0	1	1

The fact that there were 26 cases that were not true Operational Fatigue has been explained previously.

9. Combat Stress:

Graded from zero to four plus on the same basis as in the cases of Psychological Failure as previously described.

	OFF	E.M.	Tot.	Op. F.	Psy. F.
0	1	2	3	0	3
/	4	3	7	2	5
//	8	9	17	12	5
///	13	11	24	15	9
////	10	8	18	14	4



It is interesting to note the high incidence of stress in the group as a whole, and especially in the operational fatigue group. The men suffering severe stress and developing Psychological Failure are a sizeable percentage of the total group, roughly 20%.

10. Predisposition to Breakdown:

Graded from zero to four plus on the same basis as in the cases of Psychological Failure as previously described:

	OFF	E.M.	Tot.	Op. F.	Psy. F.
0	12	15	27	21	6
/	9	5	14	7	7
//	9	6	15	11	4
///	4	4	8	4	4
////	2	3	5	0	5

Here it is interesting to note that only a small percentage of the lightly predisposed cases

are in the Psychological Failure category, while almost all of the heavily predisposed cases fall in this group. The majority of the Operational Fatigue cases are lightly predisposed.

11. Stress Plotted Against Predisposition:

		0	/	//	///	////
PREDISPOSITION	0	1	1	10	10	5
	/	1	2	2	5	4
	//	0	1	2	8	4
	///	1	1	2	0	4
	////	0	2	1	1	1

This table emphasizes that men with little predisposition to breakdown, may finally develop severe symptoms under great stress. It is interesting to note that two men who were highly predisposed were subject to great stress before breaking down.

12. Sense of Duty:

Graded from zero to four plus estimated on a basis of the patient's own statement, and observation by the medical officer.

	OFF	E.M.	Tot.	Op. F.	Psy. F.
0	1	0	1	0	1
/	6	4	10	2	8
//	9	6	15	7	8
///	14	22	36	27	9
////	6	1	7	7	0

The striking picture in this table is the low sense of duty among the Psychological Failure group, and the high sense of duty in the other group. It is also interesting that the group as a whole has a relatively high sense of duty.

13. Fear of Flying:

This is a fear of flying itself as contrasted to anxiety arising from combat flying. The graduation

run from zero to four plus, the latter indicating extreme fear.

	OFF	E. M.	Tot.	Op. F.	Psy. F.
0	26	23	49	36	13
/	3	4	7	4	3
//	4	2	6	2	4
///	1	4	5	1	4
////	1	1	2	0	2

The majority of the men had no fear of flying as such. This was especially true in the group of Operational Fatigue cases, while the group of Psychological Failure cases showed some fear of flying itself.

14. Motivation:

Graded from zero to four plus.

By this term it has been attempted to indicate the amount of emotional and intellectual drive behind a man's desire to fly in combat. A strong motivation

would be the urge to avenge the loss of a brother,  
 or a desire to crush the Nazi grip on Europe, etc.

	OFF	E.M.	Tot.	Op. F.	Psy. F.
0	4	1	5	2	3
/	8	11	19	5	14
//	14	15	29	23	6
///	8	8	16	13	3
////	0	0	0	0	0

There is a striking difference in the strength  
 of motive in the two groups of cases, with the  
 Psychological Failure cases being only slightly  
 motivated.

15. Pride:

By this is meant the general attitude of the man  
 towards himself, his fellows, his squadron, plane, etc.  
 It comes closer to meaning the "esprit de corps" than  
 any of the other headings.

	OFF	E.M.	Tot.	Op. F.	Psy. F.
	0 1	0	1	0	1
/	5	2	7	1	6
//	8	12	20	12	8
///	15	14	29	21	8
////	8	4	12	8	4

As these statistics demonstrate, the majority of these men had a high feeling of pride in their fellows, equipment and self. This assurance is of great importance in enabling the men to face the daily reality of the combat situation.

16. Aggressiveness:

Graded from zero to four plus.

This term is self-explanatory. However, the aggression may be released in a number of ways, the most important from a military standpoint, beings its direction against the enemy.

	OFF	E.M.	Tot.	Op. F.	Psy. F.
	0 1	0	1	0	1
	/ 4	6	10	3	7
	// 5	14	19	13	6
	/// 20	8	28	20	8
	//// 6	5	11	8	3

This table would indicate that the group is an aggressive one, and again that the men who have borne up longest under the strain are the more aggressive members of the group. It is interesting to note that the officers tend to be more aggressive than the enlisted men, explaining perhaps, their acquisition of higher rank, better education, etc. that being commissioned implies.

17. Emotional Stability:

Graded from unstable to four plus (extremely stable).

By this term is meant the man's own stability as judged from his past history and present examination.

	OFF	E.M.	Tot.	Op. F.	Psy F.
Unstable	6	5	11	1	10
/	8	4	12	7	5
//	9	10	19	13	6
///	11	12	23	18	5
////	3	1	4	4	0

The majority of these men are relatively stable individuals. It is interesting that the majority of the unstable men are in the Psychological Failure group.

The next group of tables are compiled from the various symptoms encountered in this group of cases. The first three tables are classed under the general heading of subjective symptoms.



18. Battle Dreams:

Graded from zero to four plus.

	OFF	E.M.	Tot.	Op. F.	Psy. F.
0	15	11	26	12	14
/	7	2	9	7	2
//	2	5	7	4	3
///	7	7	14	10	4
////	6	7	13	10	3

63% of all the patients had dreams vivid enough to be remembered, invariably of a frightening, nightmarish type, and in almost all of the cases were connected with the combat situation, that is, crashes, burning planes, etc.

19. Anxiety:

Graded from zero to four plus.

	OFF	E.M.	Tot.	Op. F.	Psy. F.
	0 1	5	6	4	2
/	4	1	5	4	1
//	8	6	14	9	5
///	16	14	30	20	10
////	7	7	14	6	8

The majority of these men experienced considerable anxiety, as might be expected from the fact that they have developed symptoms severe enough to warrant treatment. Proportionately, there is more anxiety among the Psychological Failure cases, for similar amounts of stress, than in the Operational Fatigue cases, as the two comparison tables, on next page, demonstrate.

Operational Fatigue

		STRESS				
		0	/	//	///	////
ANXIETY	0	0	0	4	0	0
	/	0	0	2	1	1
	//	0	1	4	3	1
	///	0	1	2	11	6
	////	0	0	0	1	5

Psychological Failure

		STRESS				
		0	/	//	///	////
ANXIETY	0	1	1	0	0	0
	/	1	0	0	0	0
	//	0	0	3	1	1
	///	1	3	2	4	0
	////	0	1	1	3	3

20 Conversion Symptoms:

Graded from zero to four plus.

	OFF	E.M.	Tot.	Op. F.	Psy. F.
0	25	17	42	28	14
/	0	2	2	1	1
//	7	4	11	4	7
///	4	9	13	9	4
////	0	1	1	1	0

30% of the group showed conversion symptoms in some form. It is interesting to note that the enlisted men tend to have a higher proportion of conversion symptoms, and more severe symptoms than the officers, and also that a greater percentage of the Psychological Failure cases showed conversion symptoms than did the true exhaustion cases.

The following table gives the frequency of the three types of conversion symptoms seen, with their

severity

	Gastro-intestinal	Vasomotor	Respiratory
/	2	0	0
//	4	7	1
///	6	6	4
////	1	0	0

The following group of symptoms are classed under the heading of objective symptoms, and are the symptoms most evident in the clinical picture when the man presents himself on initial examination.

21. Tremor:

Graded from zero to four plus.

	OFF	E.M.	Tot.	Op. F.	Psy. F.
0	9	5	14	8	6
/	7	8	15	8	7
//	15	13	28	16	12
///	3	5	8	7	1
////	2	2	4	4	0

22. Irritability:

Graded from zero to four plus.

	OFF	E.M.	Tot.	Op. F.	Psy. F.
	0 2	1	3	1	2
	/ 4	5	9	3	6
	// 9	8	17	10	7
	/// 15	17	32	22	10
	//// 6	2	8	7	1

The majority of the men show rather marked irritability, with the Operational Fatigue cases being more irritable.

23. Tension:

Graded from zero to four plus.

	OFF	E.M.	Tot.	Op. F.	Psy. F.
	0 1	1	2	0	2
	/ 1	5	6	5	1
	// 4	7	11	4	7
	/// 25	16	41	26	15
	//// 5	4	9	8	1

The considerable tension these men are under is demonstrated by this table. There is little difference between the cases of Operational Fatigue and Psychological Failure .

24. Insomnia:

Graded from zero to four plus.

	OFF	E.M.	Tot.	Op. F.	Psy. F.
0	6	8	14	9	5
/	1	3	4	2	2
//	8	4	12	5	7
///	15	17	32	23	9
////	6	1	7	4	3

Sleeplessness is a considerable problem in these men, as this table shows. The insomnia adds to the purely physical fatigue, and helps perpetuate the vicious cycle.

25. Anorexia:

Graded from zero to four plus.

	OFF	E.M.	Tot.	Op. F.	Psy. F.
0	16	15	31	18	13
/	4	2	6	4	2
//	8	7	15	8	7
///	8	8	16	12	4
////	0	1	1	1	0

About half the cases show anorexia of some degree, with the more marked cases occurring in the Operational Fatigue group.

26. Weight Loss:

In pounds.

	OFF	E.M.	Tot.	Op. F.	Psy. F.
0	20	16	36	21	15
1-5	7	1	8	5	3
6-10	3	9	12	8	4
11-15	2	6	8	6	2
16-20	2	1	3	3	0
21+	2	0	2	0	2



About half the cases showed weight loss.

27. Psychomotor Activity:

	OFF	E.M.	Tot.	Op. F.	Psy. F.
Normal	1	5	6	4	2
Depressed	33	28	61	38	23
Hyperactive	2	0	2	1	1

These patients were almost uniformly depressed, with no real difference between any of the groups.

In summarizing these symptoms, we find little difference in most cases between officers and enlisted men, and only slight difference between the true Operational Fatigue cases and the Psychological Failure cases. The main differential points are in the amount of stress and strain to which the individual has been subjected before he develops incapacitating symptoms, and the predisposition of the individual, as judged by an accurate history.

F. Results:

1. Number and kind of cases treated in Hospital:

Operational Fatigue	43 - 62%
Psychological Failure	26 - 38%
Total	69 - 100%

2. Operational Fatigue:

All treated by narcosis.

	Returned to combat flying	Returned to ground duty	Total
Recovered	70% (30)	12% (5)	82% (35)
Improved	7% (3)	7% (3)	14% (6)
Unimproved	0% (0)	4% (2)	4% (2)

3. Psychological Failure:

All but 3 cases were treated with narcosis.

	Returned to combat flying	Returned to ground duty	Total
Recovered	19% (5)	39% (10)	58% (15)
Improved	0% (0)	22% (6)	22% (6)
Unimproved	0% (0)	20% (5)	20% (5)

"Combat flying" duty indicates those men actually returning to combat flying as shown by follow-up studies in August 1943.

The term "recovered" indicates "clinical medical recovery", that is, loss of the symptoms present on admission, and return to normal physical and mental condition. It does not necessarily mean return to combat flying duty.

The term 'improved' indicates some degree of recovery from the symptoms, but persistence of symptoms in greater or less degree.

G. Disposal of Cases of Types Discussed:

1. Psychological Failure:

As a general rule these cases can not be returned to combat flying. An individual who develops difficulty under a small amount of stress will do so again under a small amount of stress, and it is funda-

mentally unwise to attempt to return these individuals to combat even though the individual states that he desires to do so. Almost all these cases are capable of ground duty, and those showing the more severe types of reaction can be made fit for ground duty by means of narcosis treatment.

From an administrative standpoint there remains the question of what should be done with these cases in view of the fact that they are incapable of performing their duties because of fear or the symptoms of it. In the Eighth Air Force officers so diagnosed are now reclassified without reassignment and when they appear before the Theatre Reclassification Board, it is understood that officers are given the opportunity to resign for the good of the service, or not choosing to do this, are discharged without honor.

Enlisted personnel are handled by the Group and are generally reduced to grade of private, removed from flying status and assigned to basic duty.

2. Psychoneuroses:

These cases are generally transferred to a General Hospital as unfit for either air or ground duty, with the view to their separation from the service on medical grounds.

3. Operational Fatigue:

These cases are treated by means of narcosis and a general rehabilitation program as described. As previously stated approximately 70% are returned to combat flying. The remaining 30% are also returned to their units (if capable of doing ground duty, which is the usual case) where they are relieved of all duties involving flying. As a rule these cases of "Operational fatigue, not recovered", are taken up

by the Combat Crew Replacement Centers as instructors.

Part III Study on Successful Members of Air Crew

For purposes of comparison with clinical data, a psychiatric study of 150 heavy bombardment combat flyers who had completed the combat tour was done. At the time of this study, these airmen were at a Replacement Pool awaiting transportation to the Zone of Interior. This study was done by Captain David G. Wright, M. C.

1. This study had three major purposes:

(1) To determine the manner and extent to which the stresses of combat flying affect psychologically the men who have successfully completed the operational tour.

(2) To ascertain the backgrounds, histories, and personality characteristics of the successful men,

for comparison with those of the men who do not withstand the stresses of combat.

(3) To discover any existing relationships between personality characteristics and the effects of stress.

2. The group upon whom the study was made consisted of 150 flyers, 63 officers (42% of the total) and 87 enlisted men (58%), all of whom had completed operational tours (of at least 25 raids) in heavy bombardment planes of the Eighth Air Force. All B-17 crew members (75% of the total) had flown all of their raids out of England, while most of the B-24 crew members (25% of the total) had flown out of North Africa to bomb enemy-occupied Europe.

3. The procedure followed was that of explaining to each man the purpose of the study; that it was no part of his record and purely voluntary as

far as he was concerned; then conducting a psychiatric history-taking, which consumed from one to three hours.

In virtually every case the men were initially interested in the study or quickly became so. Their cooperation was good. Therefore, it is believed that the body of data collected is valid.

It should be kept in mind in evaluating the results of this study, and in comparing them with information obtained during selection or training of air crews that many of the men stated that they had never admitted many points in their histories to medical officers before. They stated that they certainly did not tell the Flight Surgeon that they had wet the bed at night, or that their fathers drank a quart of whiskey each day, because they knew those things would weigh against them, and they wanted to



fly.

The evaluation of the basic personality types of these men was materially aided by close association with them on the station, and by former acquaintance with a number of them at their operational fields.

4. An exposition of the results of the study and comments upon them follows. It must be remembered, in the perusal of these figures that inclusion in the categories below is necessarily arrived at by the judgement of the examiner, not on the basis of measurable data, and that any correlations and conclusions drawn from this study must be regarded only as working hypotheses.

Several of the categories in which the cases are classified need no special explanation, and unless the men deliberately gave false information, are

based on factual material, free from the necessity of interpretation. Inclusion, however, in the other categories was necessarily determined by the judgement of the examiner. An attempt to clarify and define as far as possible the bases of these judgements follows.

In the category "Predisposition - Family" are included those with the presence or absence of factors either in the heredity or the early family environment which would be regarded as predisposing a child to instability in his emotional life. In this study a man is considered 'predisposed' because of family factors if:

(1) There is a history of obvious psychosis in the parents or grandparents.

(2) One or more of the parents is neurotic, alcoholic or nervously unstable.

(3) The home has been broken by separation of the parents when the flyer was a child.

(4) The home life was consistently unhappy from any other cause.

Three terms used above demand further definition: "Alcoholism" is here used when the flyer stated that the parent used alcohol to such an extent that it was doing him harm. "Nervousness" also is here used when the flyer himself implied that the condition in the parent was an emotional instability sufficient to distort his own or others' way of living in some manner. "Unhappy home" also is used in accordance with the flyer's own statement. To attempt a more precise use of these terms would be unjustified and useless, when one is making a second-hand evaluation on information from already prejudiced witnesses. We are, in these cases, dealing with words that are

semantically inefficient, in that they mean different things to different persons. The writer cannot examine the parents and classify them in his own terms, and he therefore must use the approximation afforded by the probably widely differing conceptions of the various fliers.

In the category of "Predisposition - Self" are included those showing the presence or absence of factors in the reaction patterns throughout life which would presumably predispose the flyer to ineffective reaction to combat. Such factors would include:

(1) Childhood somnambulism, marked pavor nocturnus, nocturnal enuresis, or temper tantrums.

(2) Excessive timidity and fears as a child.

(3) Continued poor health or puniness as

a child or adolescent.

(4) Fear of physical danger as evidenced by failure to participate in tough or "blood" sports.

(5) Asocial acts.

(6) Failure of stability as evidenced by frequent change of work.

(7) The presence of prepsychotic traits such as marked mood swings, seclusiveness, schizoid characteristics, and extreme rigidity and narrowness of outlook.

(8) The presence of psychoneurotic traits of all types - hysteria, free-floating anxiety, neurasthenia, or obsessive-compulsive traits.

(9) An unsatisfactory sexual adjustment.

This category (Predisposition - Self) fortunately is less difficult for the examiner to fill validly,

since virtually always an ineffective reaction pattern repeats itself in not just one but in many of the aspects of the individual's life.

It also is a category free of at least one set of variables, in that the examiner here forms his own consistent interpretation, rather than having to accept the varied interpretations of the flyers. The sub-category of "Unsatisfactory Sexual Adjustment" is certainly one in which the notation may frequently be invalid; the circumstances of the examination were such that the point could not be thoroughly determined and only such cases in whom the situation seemed quite clear were included as "unsatisfactory". An instance called "unsatisfactory", for example, was a man who had indulged in sexual relations only once in his life, and had not enjoyed it, being able to think of nothing

but the horrible possibilities of venereal disease.

The category "Flying Stress" is meant to show the severity of emotional trauma related to combat suffered by the flyer during his operational tour. It is well understood that similar stress situations can and do have entirely different impact values on different personalities at different times. Except, however, in very special cases, stress situations are graded in this study into three sub-categories, depending upon their closeness to the flyer. In the first sub-category the stress experienced was most present and real, and not at all questionable; the stress here consisted in being wounded, bailing out, ditching, or crashing. In the second sub-category the stress was somewhat less close, consisting of his ship suffering severe battle-damage, or being alone and entirely lost in navigation; or of fellow

crew men being wounded. In the third sub-category the stress was of the sort that could be considered less close and more intellectual, consisting of excessive losses in the squadron, frequent shifting into strange crews, and frequent assignment to the presumed most dangerous positions in the formation.

The category "Development of Symptoms" has quite obvious meaning, but the grading within it demands some exposition. The first point to be noted is that all of the men experienced subjective tension in relation to a raid, and that virtually all experienced subjective anxiety during the tour. These feelings, through experience and on theoretical grounds as well, can be considered entirely appropriate and in no way abnormal. They are not included in "Development of Symptoms". The most frequent symptoms are developed in all three interlocking



fields of the psyche, the soma, and behaviour, and include sleep loss, anorexia, weight loss, somatic symptoms of anxiety such as nausea, diarrhea, palpitation, frequency of micturition, tremors, faintness, and so on, abnormal irritability and impatience, loss of interest and of concentration, loss of efficiency, depression, seclusiveness, and change in alcohol habits. The grading of those symptoms was done on the basis of the severity and number of symptoms developed; that is to say, on the extent to which they changed or limited the way of living. In this grading two sorts of symptoms were given much greater weight than the others; namely, the loss of ability to concentrate, and the loss of efficiency at the job. It was felt that from the point of view of the intactness of the personality as well as from the point of view of the Army Air Forces, those two are by far the

most important symptoms.

5. Factors relating to predisposition and emotional unadaptability:

Age:

Sixty-three per cent of the men were under 24 years of age; four<sup>o</sup> per cent were over 30 years.

Marital Status:

Seventy-nine per cent of the men were single, and only one had been divorced or separated. It is evident that the group in general is young and without major responsibilities.

Predisposition - Family:

Forty-eight per cent had factors in their family stock or history which would tend to predispose them to emotional instability. Six per cent had psychosis in the family, 35% had alcoholism or nervousness of major degree in the parents, 16% a home broken by

early death of a parent, 11% a home broken by divorce, and 15% a home described as definitely unhappy. The figures suggest that some instability in the family or the home is not inconsistent with success in enduring combat stress.

Predisposition - Self:

Fifty-seven per cent had factors in their own lives or reaction patterns predisposing to emotional unadaptability. Twenty-nine per cent showed themselves to have definite or equivocal psychoneurotic tendencies, exclusive of combat reactions. Forty-three per cent had had somnambulism, temper tantrums, or nocturnal enuresis in childhood. Thirty-four per cent had been timid and shy in childhood. Only seven per cent had ever had a major illness since early childhood, and only 7% had experienced prolonged poor health, weakness, or "puniness" in youth. None

of them had any significant episodes or patterns of asocial behaviour. Thirty-three per cent had never participated much in, or enjoyed, the "tough" or "blood" sports. Fifteen per cent had probably not attained a satisfactory sexual adjustment. Thirty-one per cent had not worked while going to school; 18% had not stuck to fixed jobs, but had changed with frequency; forty-one per cent had no hobbies of any sort.

The figures continue to suggest that a large number of these men could be considered less than optimally stable personalities. They are not, however, asocial. They are unusually vigorous, aggressive, persistent, and healthy in body.

Basic Personality Characteristics:

The normal range of personalities is as yet not sufficiently well understood to even have an accepted or fitting vocabulary to use in describing

its variables. For classification purposes only three terms have been used for such description: extroverted, introverted, and the "rigid personality". It is quite well understood that the first two are too limited and schematic to be very useful, and that the third may seem to deal with a different frame of reference. Theoretically, however, it would appear that there are three ways for a personality to deal with a somewhat inimical world of reality - to go out into it, to turn one's back on it, or to try to take it into oneself and hold it all. Like any other enemy, one can fight it, run from it, or take it prisoner; and this is what these terms are meant to imply in the broadest sense. It is, perhaps, significant that the three major psychoses are rooted in these three different personality types.

Secondly, any of these general strategies in conducting the war of living can be pursued with varying amounts of vigor or energy, with varying amounts of persistence, and in varying directions.

Thirdly, (and this appears sufficiently evident not to demand a complex justification) the instinctual and environmental pressures and demands are such that conflict and confusion are inherent in whatever strategy of living is pursued. The pressures are frequently contradictory. It follows that men vary in their effectiveness in resolving the conflicts, inside and outside themselves, particularly the conflicts involving fear, hate, and love. They vary therefore in their stability, and in the behaviour that results; and if they vary a good deal from the usual, they are termed abnormal, psychotic, neurotic, and so on.

We have, then, three sets of basic ways in which

men differ:

(1) In their pattern of approach to reality .

(2) In the energy, persistence, and direction that they use in the pattern.

(3) In the stability of effectiveness with which they are able to follow out the patterns.

These sets of variables, in addition to being basic are quite comprehensive and seem also to be almost independent of each other. That is to say, as extrovert can have great energy or little, and in either case can be stable or unstable, and so on.

An analysis of these men would indicate that extroversion with great energy and with stability is the optimal combination for success. It would further appear that of the factors in the three sets of variables, the most essential ingredient is not

in the pattern followed, nor in the stability, nor in the persistence or direction, but in the energy with which the business of living is conducted.

Fifty-one per cent of the men appeared basically extroverted, twenty-nine percent introverted, and twenty per cent "rigid".

There appeared to be some positive correlation between predisposing family factors and predisposing factors in the individual himself, which would be expected.

The extroverts in general were less predisposed both in regard to family and to self. The introverts were more predisposed in regards family and markedly more so as regards self. Those in the "rigid" group were most strongly predisposed in their own life patterns.



6. Factors Relating to Stress:

It has been considered generally true, from observation and study of those men who have broken down under combat stress, that closeness to the individual of a traumatic event is a large factor in determining its effect on the personality. That is, if he himself were hit by a 20 mm. shell he would be more deeply affected than if he saw the man next to him hit, which would be worse than having someone hit in another part of the same ship, which would be worse than hearing of someone hit in his squadron, and so on, to the point where it would mean essentially nothing to him to hear of someone being hit in a B-17 over Munda.

Thirty-five per cent of the men had been wounded, had bailed-out, ditched, or crashed - events very close to them. One man had been wounded on four separate raids during one tour. Eighty per cent had been in

ships which were severely damaged, or in which crew were wounded, or which were badly lost in navigation on return from raids. Sixty-one per cent had been in squadrons suffering great losses, or had had to change crews with alarming frequency, or often had ridden the most dangerous positions in the formation. It is clearly apparent that most of the men endured severe and close combat stress during their tours.

The length of time during which they were on combat varied from 4 to 13 months - forty per cent, representing original crews, had been on combat for 9-10 months, and another group of thirty-two per cent, (mostly replacement crews), had been on combat 6-7 months.

In regard to rest, seventy-six per cent had periods of at least 5 days off at some time during the tour. Fifty-nine per cent felt they had had enough 48 hour passes. Thirty per cent spent the long rest period

in the Rest Homes. One officer only in this group had undergone narcosis therapy.

7. Development of Symptoms:

All of the men - one hundred per cent - experienced some subjective tension in relation to combat. The great majority experienced their worst tension in immediate anticipation of danger, then in this order of frequency: distantly anticipatory (night before); during period of greatest danger; and after the raid, in a ruminative or obsessive fashion.

Ninety-four per cent of the men experienced subjective anxiety at some time during the tour. The majority - about half the men - felt this most acutely and continuously toward the end of the tour, regardless of the difficulty of the raids. A large percentage felt it for several raids after particularly traumatic missions, and a few felt it most for

the first few missions, until they knew more or less what could be expected.

Twenty-nine per cent experienced a feeling of personal hate toward the enemy.

Ninety-five per cent of the men developed definite symptoms of operational fatigue, thirty-four per cent suffering severely.

Thirty-nine per cent had insomnia.

Thirty-five per cent lost weight, one man losing at least 30 pounds.

Thirty-nine per cent had somatic symptoms of anxiety (of the sort outlined above).

Seventy-one per cent developed definite irritability, abnormal for them.

Twenty-two per cent admitted losing some efficiency at their jobs, or developing inability to concentrate on the jobs.

Thirty-seven per cent became definitely depressed and despondent for fairly long periods.

Twenty-one per cent became seclusive at times, usually a distinct change from their usual behaviour.

Forty-five per cent increased their alcoholic intake markedly during the tour.

The intimate and interdependent relationships between the emotions of fear and anger, between insecurity and aggression, are seen fairly clearly by psychiatrists in civilian practice in shifting psychoneurotic manifestations. In such cases the fear is usually a symbolic fear, and frequently is far from being conscious; the expressions of aggression likewise are frequently symbolic, and very frequently unconscious. It is of great interest to observe the relationships of these two emotions in combat air crews, where constant fear is "real", appropriate, and

for the most part entirely conscious. Here an attempt will be made not to untangle intricate mental mechanisms and distinguish causes and effect, but simply to point out that in these combat crew men aggressive feelings and acts occurred with great frequency, and in a wide variety of forms, and that the combat flyers are usually entirely aware of the aggressiveness.

As regards the direction in which aggression can spread, schematically one can hit back at that which threatens one, one can hit at other people, at inanimate things or at oneself. (Such variations in direction taken by an emotion being termed variously "projection", "dissociation", and "introjection" and so on.)

As to the data, some twenty-nine per cent of successful combat men state with feeling that they

have a personal hatred against the enemy, that they want to kill the men in the enemy fighters -- not always, but at least when they are in the air. More than seventy per cent of the successful combat men state that they develop irritability and quick flaming anger at their crew-mates, in a way entirely foreign to their usual feelings and actions, as their operational tours progress. Appropriately, they state that this occurs most frequently in periods of relative inactivity, when there is little active outlet for their feelings. The monthly dances held at operational groups have been marked by numbers of violent fights. On one occasion two squadron commanders, quite close friends, riding back to the post after an evening of moderate drinking, amicably and deliberately decided they "needed a fight", and, without any quarrel of any sort, got out of the car

and fought violently until one broke a metacarpal bone, after which they amicably climbed back in the car and drove home. In some barracks it was not infrequent for the men to put out the lights with a burst from a "tommy-gun" or to attempt to shoot one's initials in the wall with a pistol; one of the men involved stated that he just felt like smashing something. Several of the men have reported that they have seduced women, in quantity, not for sexual satisfaction, but for the sake of subduing and conquering their defences. The enlisted men's barracks are the scenes of consistent and fairly brutal attacks on the equanimity of new crews coming into them. The old combat men described to the new men the appearance of a man's brains scattered about a plane by the action of a 20 mm. shell; they rummage through the new man's belongings, demanding this cap



or that pair of goggles, to be collected when the new man is shot down; when he goes to his first briefing they call out "shut the door, you don't think you're coming back, do you?" They appear to get a much more than usual enjoyment in "seeing them squirm". The critiques held after a raid are sometimes marked by the most violent and outspoken re-priminations, in open meeting, of someone else's judgement and technique.

In a fairly large number of the men, thirty-seven per cent, episodic depressions occur, frequently with major self-accusatory content (which may perhaps be validly considered "aggression turned against oneself"). This most frequently occurs near the end of a tour, when the flyer may feel, sometimes with justification, that his efficiency has fallen off, and that he constitutes a danger to the rest of the

crew and formation. Self-accusation is frequent after outbursts of hair-trigger irritability that have lashed one's crew-mates for inconsequential or non-existent mistakes.

It seems probable that the well-known independent attitude of flyers toward ground discipline, minor regulations, saluting, uniform clothing, and like conventions, is to some extent an unconscious aggression, a rebellion against whatever restriction happens to be placed upon them. Several men of combat crews have specifically stated that they found they went about breaking regulations simply for the sake of breaking them and having a chance to make a superior officer appear a little ridiculous in attempting to enforce the rules.

A final point seems worthy of mention, - the matter of language. Shakespeare mentions with great piquancy

the "strange oaths" of fighting men, but does not sufficiently describe the way in which they are strange. The old obscenities used continuously by combat flyers, and the newly coined expressions of this theatre (some of them amazingly graphic) are both almost entirely based on excretory products and transactions. The flyers quite frequently remark on this continuous use themselves and jokingly express anxiety as to where and when they will forget themselves in language after their return home. It is possible that certain colleagues might make much of this matter, asserting that the continuous use of obscenity is symbolic of pouring out filth on everyone; that such a procedure is clearly an act of aggression, and represents a regression to a childish method of expressing anger and accomplishing revenge.

It has long been postulated, with considerable

uncontrolled evidence, that uncertainty and inaction intensify anxiety and its concomitant symptoms, and that certainty and action dispel anxiety. Successful combat men were questioned on these matters. In the large majority of cases the men found by experience that they would much rather go on raids than wait for them; that they felt a much greater presence of unrelieved tension if they were briefed for a mission but did not go, than if they did go; and many of them refused to go on leaves which they knew they would enjoy and which they knew they needed, in order not to have the uncertainty prolonged.

By all odds the majority of the men felt their greatest tension before the combat, and most acutely at times when they were over enemy territory and knew they should be attacked, but as yet were not. Virtual-  
ly all stated that they were relieved of tension by

actual combat, no matter how dangerous or difficult  
it was; as soon as they could be busy in the fight  
they felt well. The few who were not relieved of  
tension by action were largely men who either had  
no guns to shoot, or who had such a marked visceral  
response to anxiety as to be almost disabled.

This point was sufficiently marked to evidence  
itself in feelings of relief actually brought on by  
catastrophe. That is, a number of the men who had  
to bail out or ditch, or were wounded, stated that  
they felt much better in combat afterwards, because  
then they knew what the worst or almost the worst  
that could happen was like, and in consequence had  
nothing more about which they need worry.

8. Symptoms Correlated with Other Factors:

In regard to basic personality type, relatively  
fewer extroverts had severe symptoms, and no intro-

verts were asymptomatic. Other than this no unequivocal differential relationship of personality to symptom-severity is apparent.

In regard to type of symptoms developed, the extroverts developed more conscious aggression against the enemy, and less somatic symptoms, depression, and seclusiveness than the average for the group.

The introverts developed less aggression against the enemy, (depersonalizing the situation), and more insomnia, more loss of efficiency and concentrating power, more depression and seclusiveness than the average of the group.

The "rigid personalities" developed less conscious anxiety, less loss of efficiency and concentration, and a great deal more somatic symptoms than the average for the group.

There is a slight relative preponderance of officers in the group with severe symptoms.

There is a slight relative preponderance of men in the age group above 25 among those who suffered severe symptoms. None over 30, however, had severe symptoms, nor did they stay asymptomatic.

There was a very slight relative preponderance of single men among those who developed severe symptoms.

There was a relative preponderance of men with a family background predisposing to instability in the group developing severe symptoms. However, two of the seven men who were asymptomatic were predisposed in family background, one severely so.

There was a relative preponderance of men with heavy predisposition in their own lives in the severe-symptom group. This was not marked. Three of the

seven asymptomatic men were predisposed to instability.

In short, it would seem indicated that while the stigmata of predisposition to instability are of some weight in determining the manner in which combat stress is endured, that weight is not much.

The family and individual predisposition as related to symptomatology breaks down as follows:

Of the total of 51 men who had severe symptoms, 17 had psychoneurotic tendencies unrelated to combat, 4 had a family history of psychosis; 20 had alcoholism or nervousness in the parents; 9 had an unhappy or broken home; 23 had somnambulism, nocturnal enuresis, or temper tantrums in childhood; 4 had long periods of poor health in youth; 19 had never gone in for tough sports; 12 had probably not made satisfactory sexual adjustment; 15 had not done outside work while going through school.



The least equivocal positive correlation between severe symptoms and any of the above factors is that between severe symptoms and unsatisfactory sexual adjustment. It was found that more men with unsatisfactory sexual adjustment developed severe symptoms than developed mild ones, which is not the case for any other of the above factors. Psychoneurosis in the individual, psychosis and alcoholism and nervousness in the family are next in order in correlating in a positive way with the development of severe symptoms.

There did not seem to be any relative preponderance of severe flying stress in the group with severe symptoms. Four of the seven men who were asymptomatic had been wounded, or had crashed, or bailed out or ditched.

9. Differences between Officers and Enlisted Men:

The data has been broken down so that any differ-

entials between officers and enlisted men would become apparent.

Age:

There is a greater spread in the age group in the enlisted men, with heavier percentages in both the youngest and oldest age distributions. This probably simply reflects the more uniform selection of the officers.

Marital Status:

A much larger proportion of the officers are married, ninety-two per cent of the enlisted men being single.

Basic Personality Type:

In the officers the three personality types have an almost equal distribution. Thirty-one per cent (three times the percentage in enlisted men) are "rigid". There is a marked preponderance in the en-

listed men of extroversion, fifty-nine per cent.

Predisposition:

There are no very marked differences in family predisposition in the two groups, but a slight preponderance of mild "predisposition - self" exists in the officers.

Flying Stress:

The severity of flying stress was quite definitely greater in the group of officers.

Development of Symptoms:

The severity of the symptoms developed was greater in the group of officers. In regards to type of symptom, the officers developed less personal aggression toward the enemy, and considerably more insomnia and loss of efficiency and power of concentration. The officers developed less increase in alcoholic intake. These differentials perhaps reflect the more responsible

and intellectual jobs held by the officers.

Historical Background:

The group of officers had a greater percentage of alcoholism and nervousness in the parents, less participation in "tough" sports, more interests and hobbies, and a definitely higher percentage of either clear cut or equivocal psychoneurosis exclusive of combat reactions.

10. Social Environment:

Eleven per cent of the men stated they experienced real poverty in youth.

Forty-seven per cent had some college training; another thirty-three per cent had finished high school. Seventeen per cent had not finished high school, and three per cent had only been to grammar school.

They seem to come from quite large families, forty per cent having four or more siblings, and only seven

per cent being only children.

Their fathers' position included virtually all strata of society and economic security. Thirty-one per cent were in the class of skilled labor, and about fourteen per cent in each group were merchants, professional men, farmers, and property and capital owners. Only three per cent were unskilled laborers.

As for the men themselves, thirty-one per cent worked at some skilled labor, seventeen per cent at unskilled labor, fifteen per cent at office work, nine per cent were professional men, and smaller percentages were in farming, saleswork, and mercantile businesses of their own.

It would appear that both the men and their fathers had work of a more responsible and intellectual nature than the average or mean level of men's work in the United States.

A survey of the sections of the country from which they come shows twenty-seven per cent from the Middle West, eighteen per cent from the Middle Atlantic States, sixteen per cent from the South, eleven per cent from Texas, and considerably less percentages from other sections of the country.

SUMMARY AND CONCLUSIONS:

1. The historical data of this study is more accurate than that which it is possible to gather in selection examinations.

2. The successful heavy bombardment combat flyers in this theater tend to be young and without major responsibilities.

3. Their family histories show emotional instability in nearly half the cases.

4. Their life patterns show emotional instability in half the cases, with psychoneurotic tendencies

in nearly a third of the cases.

5. Their life patterns are not marked by asocial acts.

6. Their life patterns are characterized by vigor, persistence, and physical health.

7. Fifty one per cent were extroverted, 29% introverted, 20% "rigid personalities."

8. Most of the men had experienced severe and close combat stress.

9. All experienced subjective tension, worst in most cases in immediate anticipation, and 94% subjective anxiety in relation to combat, worst, in most cases, toward the end of the tour.

10. Less than one third felt a personal hate toward the enemy.

11. Ninety-five per cent developed definite symptoms of operational fatigue and more than one

third suffered severely.

12. Twenty-two per cent admitted losing some efficiency at their jobs, or developing inability to concentrate on their jobs.

13. Aggressive acts of all sorts are a frequent concomitant of combat stress.

14. In virtually all cases tension was relieved by the action of combat.

15. The three basic personality types, (extroverts, introverts, and "rigid personalities") developed symptoms consistent with what would have been predicted in their respective sorts of personalities.

16. The stigmata of emotional instability are of slight weight in determining the way in which combat stress is endured.

17. There was no positive correlation between severity of symptoms developed and severity of combat



stress.

18. In comparison with the total group, relatively more officers were "rigid", and more enlisted men were extroverts.

19. More officers than enlisted men developed severe symptoms, had stigmata of family psychoneurosis, and of psychoneurosis in their own lives.

20. The men came from large families, at all levels of social and economic security, but in general, from the higher levels.

#### Part IV Psychiatric Prophylaxis in Combat Flying

Prevention of the various psychiatric disorders that arise in combat airmen is an important aspect of the Medical Department and of Commanding Officers of an Air Force. The following discussion is entirely limited to those functions which were practical, or would have been practical could they have been used,

in the Eighth Air Force, during the year under consideration. Because the types of cases more or less divided into two groups (a) the early fear and functional reactions and (b) operational fatigue, they will be discussed separately.

I. Fear Reactions and Functional Symptoms in Relation to Combat Flying:

These terms are defined in a previous section of the report. Briefly, they refer to the individuals who failed psychologically early in their combat experience and usually by the time of the fifth operational mission without having suffered an unusual amount of stress as judged by the average for this Theatre.

There seems to be no apparent method of preventing this type of Psychological Failure except by eliminating susceptible personnel through some pro-

cess of selection. It is recognized that there is no method of selection now in use which can pick those men who will show these ready fear reactions when they encounter combat flying. In discussions with Group and Squadron surgeons it became apparent that even the intimate knowledge they had of flying personnel in the original Squadrons and Groups that came to England did not help much in predicting those men who would subsequently crumple when the time came for combat. These medical officers frequently remarked that they were surprised by the men who did become psychiatric casualties and were equally surprised that certain individuals whom they had suspected would not stand up to combat, did so with apparent ease. If these observations are correct, and it is believed that they are, it again emphasizes the point that the final criterion of selection for a military

aviator is combat flying. It seems doubtful if the natural stresses of flying training and peace time flying or if any artificial set of tests can be relied upon to eliminate the men who will have insufficient emotional tolerance to combat flying.

If such is the case, the question arises as to what methods of selection could be utilized to make this prediction an accurate one. In view of the fact that the great majority of these cases occur within the first five combat missions, the most obvious method of selection would be to train candidates for air crew as gunners and send them on five combat missions. If they stood up to this trial emotionally, then they could start the specialized training for air crew. If they showed signs of fear or developed functional symptoms, they could be rejected. Such a method has obvious and important

disadvantages such as transporting large groups of individuals to a combat theatre for selection and then returning them to the Zone of the Interior for training.

Another method, less accurate but more practical, would be to have each candidate make five parachute jumps, the last one to be a delayed drop. It is not known what correlation there might be between fear of parachute jumps and fear of combat flying, but it is probable that those men who are prone to show abnormal fear reactions and to become easily perplexed by problems of self-preservation would be uncovered by this method.

In summary, it is felt that these cases of Psychological Failure are a problem in initial selection and that they cannot be detected by the methods of selection now in use. It is improbable that any method of psychiatric prophylaxis could ward off this

early type of failure, unless there were some method of instilling an exceptional feeling of morale and the "will to fight" in these men.

## II. Operational Fatigue:

The syndrome of Operational Fatigue has been described elsewhere in this report. It is a syndrome occurring in fundamentally sound individuals who, by reason of prolonged combat tension, harrowing experiences, and physical fatigue, have exceeded their tolerance to withstand the stress of combat flying. The method of treating these cases, once they have developed, has also been described.

The prevention of Operational Fatigue can be accomplished from a practical standpoint and has largely to do with the amount of rest and relaxation the air crews are given during the operational tour of duty.

Experience gained during the first year of combat flying in the Eighth Air Force has shown many items that merit consideration by medical Officers and commanding officers in dealing with the problem of Operational Fatigue , Flying Fatigue and staleness in general. These items will be taken up separately.

1. Briefings:

Many airmen find that their most apprehensive hours are those before the mission leaves, and from the prophylactic standpoint the dogmatic statement can be made that the time between the crews' learning of an impending mission and the take-off should be the absolute minimum that is essential for full military preparation. This applies with particular force to learning of a mission the day before it is to leave. Commanding officers and others who must know of the missions

well in advance should make an honest effort to keep the knowledge of the mission away from the crews, particularly the day before. There will always be some men who will be unable to sleep knowing that a mission is to be flown the following day, and as a result they fly that mission tired, worried and in an inefficient manner. If it should occur that missions are flown on consecutive days for 3 or 4 days, and the crews know of the missions in advance, these same men will be in poor condition indeed and the way is paved for a breakdown in the form of operational fatigue.

The time between the briefing and the take-off should be kept to a minimum in order to avoid apprehension building up to a critical level. After the briefing it will be seen (in heavy bombardment) that there is activity and preparation on the part of



air crews that completely occupy them for several hours, and in the midst of this busyness that the crews have little time to ruminate on the mission to come. If, however, after all the preparations are made and the crews are "ready to go" there still remains a two hour delay of doing nothing but waiting for take-off time to come, individuals again have too much time to think of the prospects immediately ahead of them. This is particularly true if at the briefing they have learned that the target is a difficult one and that they are to expect heavy flak and fighter opposition. This two hour waiting period might have been spent sleeping later to better advantage.

It is recognized that it may be out of the question to avoid telling the crews that a mission is to be flown on the following day, but if the military circumstances permit, it is suggested that this information be kept

from them.

2. Cancelled Missions:

As stated above, the most apprehensive period is apt to be that of waiting for the mission to take-off. In bad climates there may be occasions when the planes and crews are ready and waiting to go or are actually in the air before it is decided that the weather precludes a mission that day. Or the take-off time may be delayed from 0800 to 1000 hours and then to 1200 hours etc. and then the mission "scrubbed" completely. This causes crews at least 4 hours of "sweating it out" and adds to their apprehension by showing them that the weather is questionable at best.

It is an important prophylactic measure to cancel no more missions than is absolutely necessary.

3. Leave and Passes:

It is obvious and of extreme importance that combat flying personnel have sufficient time away from the flying field. The following program represents approximately the amount of operational time and the amount of free time that should be allowed the crews, with particular reference to heavy bombardment:

10-15 hours of operational flying in any one week.

24 hours leave weekly.

48 hours leave at the end of two weeks.

7 days leave at the end of 6 weeks.

This amount of rest should be given, and unless military exigencies are extreme, a man away on pass or leave under this schedule should not be called back to the field to go on a combat mission.

If at all possible, a schedule of passes and

leave should be made out well in advance for air crews so that they will know the days they will be away from the station. This gives them the opportunity to make arrangements well ahead of time, and thus to enjoy their time off to a greater degree.

It is believed that approximately at the midway point in the operational tour, members of air crews should automatically be given a week, or two weeks' stay at a Rest Home where their activities can be fitted into an organized scheme and that the amount of rest they get is assured. The purpose of sending them to the Rest Home at this point is that if the men are left to their own devices, they are apt to drift rather aimlessly for a week in one of the larger cities (Eighth Air Force experience) and not get the rest they need, and as a matter of fact may return more fatigued than when they left. It was also the

experience in the Eighth Air Force that combat crewmen tended to become bored by a week's leave in a strange city and returned to the station before the leave was up. A few members of air crew may mildly object to being ordered to a Rest Home, feeling either that they would rather remain and get in more missions or that they would rather plan their own leaves. This problem came up when the Rest Homes were first established in the Eighth Air Force. However, if the Rest Homes are well run, well equipped, and do not have a military atmosphere, the airmen will quickly recognize their value and will so advertise them to their fellows.

In the Rest Homes the military atmosphere should be kept to a minimum. Civilian clothes should be furnished, and men should be allowed to get up in the morning at whatever time pleases them and breakfast should be served accordingly. Equipment for sports

and games should be available but the men should not be pushed into these activities, if for example, they would rather sit and read or sleep. It will be found that it takes the man fresh from combat about 2 or 3 days to lose his tension and relax, and that for the remainder of the week or 10 days he enjoys himself, will usually spontaneously enter into sports, skeet shooting etc. with the others. The food should be better both in quality and preparation than the men can get on their own stations, the beds should be good, and there should be adequate bathing facilities. They may appear to be small points but they are the aspects of a Rest Home that the men seemed to appreciate the most.

In summary, on the question of rest and leaves, a program of passes should be set up, the men to know in advance when they can get away, and these dates

should be held inviolate except under military emergencies. Rest Home facilities should be available for air crews arriving at the midway point in the operational tour of duty, or at any other times they may obtain leave and elect to go to the Rest Home.

#### 4. Sleep and Sleeping Facilities:

That the ordinary amount of natural sleep is a requirement of everyone, combat crews included, is obvious and needs no explanation in its relationship to fatigue, efficiency and so on. On the average operational station, the facilities for obtaining this amount of sleep by combat crews are often no easy matter and deserve consideration.

The night before a mission is the time that combat crews need a good night's rest. Yet surprisingly enough it is often difficult to obtain. Most men live in barracks accommodating 20-25 men in a

large room. Officers are usually a little better off, but not necessarily. The night before a mission finds the barracks, often as not, in a state of mild confusion hardly conducive to sleeping. Along side of one man trying to sleep might be a poker game being played on the next bed, heavy smoking going on behind the closed and blacked-out windows, and other forms of diversion such as men pooling and dividing their belongings, the spoils to be claimed by those who survived the next day's raid. A certain percentage of men, too worried to get to sleep the night before a mission, prefer to stay up all night, or the part of the night before briefing time, the preference being to stay awake than to face a night of tossing and turning in a darkened room. Liquor is sometimes utilized as a self-administered sedative, whereas other men are known to take the opposite approach of



drinking large quantities of coffee to insure staying awake. This latter phenomenon is noticed usually in those men who suffer from disturbing battle dreams and nightmares.

By and large, then, the sleeping facilities usually leave something to be desired. Loss of sleep from these factors is over and above the fatigue of flying, early briefings and long oxygen missions.

The solution to this problem is not a simple one. A possibility is for the Commanding Officer to order everyone in bed 7 or 8 hours before the time of being called for an early morning briefing, and that the lights shall be turned out at a specified time. Such a system might afford darkness and relative quiet for those wishing to sleep but would involve policing, punishment for infringements, and other aspects which would not prove popular with the combat crews. A better

method would be to provide some degree of quiet and darkness for those men who wish to sleep. This could best be accomplished by partitions in the barracks or by having smaller rooms holding only two or three people. People of like tastes with regard to sleeping habits would pair off under such circumstances, and those few who prefer to stay up all night could do so without disturbing others. It is recognized that such provisions cannot always be made because of the military situation, but if at all possible it is recommended that the Commanding Officer furnish his air crews with this degree of privacy.

A further advantage of smaller rooms over the open barracks is that battle losses are not quite as noticeable. Airmen frequently complain that they are disturbed by going to bed at night in a barracks in which half the beds are empty whereas previously they

had all been occupied.

5. Number of Missions:

Members of combat crews are anxious to know how many missions or how many operational hours constitute the tour of combat duty, and what will happen to them when they have finished the operational tour. This data gives them a mark at which to shoot and a yardstick by which to measure the distance they have to cover. There has been some discussion as to whether it might not be better to leave the tour of duty elastic and allow the various unit Commanding Officers to determine the operational tour. This is felt to be a fundamentally unwise procedure because it will mean that one Commanding Officer may relieve his men before another, and such a state of affairs will be a detrimental factor in morale. It is suggested on medical grounds that the Commanding General determine the length of the opera-

tional tour by whatever measure he feels to be sound (whether in number of missions, number of operational flying hours, etc.), announce it in writing to the aircrews, and hold to it unless military necessity requires a revision. If such a change becomes necessary, it will aid morale greatly if the Commanding General announces the reason why a revision is required.

The length of the operational tour obviously will vary from theatre to theatre, and from command to command. In formulating the length of any given tour, it is suggested on medical grounds that the Commanding General base his decisions on one point above all others; namely, that, other things being equal, the number of missions a man can do and still have a reasonable chance of surviving the operational tour.

## 6. Frequency of Missions:

In the Eighth Air Force during its first year, the frequency of heavy bombardment was largely governed by the weather and as a rule the missions did not follow each other with any regularity, the average being roughly one every five days. This frequency was less than the air crews could have maintained with peak efficiency. There was one period of a week, however, that deserves mention in that the weather allowed 6 heavy bombardment missions in 7 days and 6 long hard missions were flown. At the end of this period a canvass was made of squadron surgeons to determine the effects of this frequency on combat airmen. The Squadron Surgeons almost unanimously found their crews to be suffering from flying fatigue at the end of this period and were of the opinion that air crews should not go on missions more often than 2 consecutive days without allowing a day's rest, and

that no more than two such sets of missions be flown without allowing a rest period of 2 to 3 days. As to rapidity of recovery from this type of flying fatigue, squadron surgeons found that their air crews had lost the symptoms of fatigue in 48 to 72 hours after the last of these 6 missions in the week's period. No special treatment was employed.

7. Results of Missions:

Combat crews rarely have an opportunity to witness the results of their bombing and thus to see for themselves what they accomplish. The satisfaction they get from their risks and danger is an intellectual realization that they have aided in the defeat of the enemy. The crews are shown the pictures their own planes obtain at the time of the raid, but, as a rule, these pictures show the target area covered with smoke and dust and what is actually done is

shrouded. However photo reconnaissance planes attempt to get follow-up pictures (and usually succeed), but by and large the air crews have no access to these pictures or the interpretation of them.

It is believed that as a distinct aid to morale and therefore as a prophylaxis against fatigue and loss of the will to continue, that, when the Intelligence Section has completely summarized a raid, they hold a meeting for the combat crews, show the "before-during-and-after" pictures, briefly summarize what was accomplished, and most importantly point out how the bombing damage can be interpreted as effecting the total war situation. It is felt that crews would be intensely interested in such a procedure, and that they should know what the entire mission accomplished, not only their Group. It is probably not generally realized how restricted and provincial the viewpoint

of airmen becomes after being on a station for a few months, and what a small general grasp of the total war situation they have. Such a summary on the part of the Intelligence Section would be favorably received and it is held that it would bear fruit in better morale, and personal satisfaction.

8. Treatment for Terrifying Experiences:

Not infrequently there will be seen acute emotional reactions in members of crews after a particularly terrifying or harrowing experience in the air such as crashes, fires, seriously wounded or dead on board, exposure after ditching (crash landing at sea) and so on. Experience shows that the onset of a fear reaction or of Operational Fatigue often dates from one such terrifying experience, and as a matter of fact such an experience may condition a man to react in a neurotic manner to flying itself, combat or non-



combat. As an example can be given two men, one an officer and one a gunner, who survived an explosion in the air. They both found themselves being thrown through the air along with pieces of their B-17. Happening to be wearing their parachutes, they were saved, but thereafter developed a fear of flying itself which precluded return to flying duty of any type.

Out of such severe and less severe experiences is born a fear which the average individual cannot shake off. Experience has shown that it is often possible to "abort" these neurotic-like reactions if immediately after the experience, for example a bad crash with fire, the individual is put to sleep under medical care for a period of 12 to 24 hours. Sodium Amytal by mouth is the drug of choice for this procedure. It will be found that this amount of sleep re-

moves the necessity for the man making an immediate adjustment to his recent experience, gets him over his immediate fear symptoms, and removes him in space of time from the accident or experience. It is apparently much easier to adjust to a terrifying experience with the attitude "it happened two days ago" than to have to immediately face the situation with all its recent memories and impressions.

In line with experiences of this sort, it is worthy of mention that in case of a crash or accident on the station wherein airmen have been killed or mutilated, it is well to make every effort to keep other flying personnel away from the scene and thus prevent them from witnessing events that can be upsetting even to the medical officer. The same statement applies to fellow airmen witnessing the removal of dead or seriously wounded from bombers returning from missions. In

the excitement surrounding such incidents, such points are apt to be forgotten.

9. Miscellaneous:

There are numerous other items which aid in the prophylaxis of Operational Fatigue and Flying Fatigue. Adequate teaching of air crews in the use of oxygen equipment, in the use of flying clothing to prevent excessive exposure to cold, furnishing crews with a palatable and nourishing diet, seeing that there is food on board for long flights (for example in anti-submarine patrol etc.), and any other comforts that can be furnished in flight are items worth considering. Last but not least the barracks or billets of air crews should be as good as the military situation can furnish and allow, so that the men have a reasonably comfortable, attractive and healthy place in which to live and sleep.

In summary, the entire question of prophylaxis directed against Flying Fatigue and Operational Fatigue merits the close scrutiny and thought of every medical officer and every commanding officer. The efficiency and proficiency of combat airmen can be measured to a considerable degree by the extent fatigue and exhaustion are prevented and morale maintained. Conversely, tired and fatigued crews will show inefficiency in their flying, and in the small margins that obtain in combat flying, the inefficiency of fatigue can well make the difference as to whether or not the plane returns from the mission.

Part V Organization of Psychiatry in an Air Force

Based on the experience gained in the Eighth Air Force during its first year of operations, it is possible to suggest an effective organization for the handling of the various phases of psychiatry in a com-

bat Air Force. In planning such an organization the following elements should be considered:

1. Psychiatric Indoctrination Course.
2. Chief Psychiatric Consultant and Assistants.
3. A Treatment and Disposition Center.
4. Rest Homes.
5. Combined Central Medical and Administrative Board.
6. Administrative Plan for Disposal.

1. Psychiatric Indoctrination Course:

Such a course offers the possibility of indoctrinating newly arrived medical officers in the psychiatric conditions that are being encountered in the Theatre, in the various methods of prevention and treatment, and in the channels that exist for the ready disposal of emotionally sick individuals. In planning the psychiatric program for an Air Force,

a decision must be made as to whether there will be a number of Field Psychiatrists , probably one to each combat wing, or whether Squadron and Group Surgeons will be utilized for the psychiatric program as they are in the other aspects of medical care. It is believed to be a better arrangement for Squadron and Group Surgeons to receive specific psychiatric instruction in such a course than to attempt to utilize a fairly large number of Field Psychiatrists . Squadron and Group Surgeons are in close touch with their flying personnel, and with a small amount of training, are in a better position to evaluate their airmen than the Field Psychiatrist would be. Further it is doubtful if a sufficient number of trained psychiatrists would be available in an Air Force to utilize a number doing full time consultation in the field.

2. Chief Consultant in Psychiatry and Assistants:

The Chief Consultant in Psychiatry for the Air Force should do the teaching of the Psychiatric Indoctrination Course. Acting in this capacity he will have the opportunity to indoctrinate medical officers in the type of psychiatric cases that are developing in the Theatre of Operations and can teach the various treatments and methods of prophylaxis that have been adopted by the Surgeon and Commanding General of the Air Force. Further, such a course gives the Chief Consultant in Psychiatry the opportunity to tell the medical officers the exact means of disposal of psychiatric cases, how and where they should be sent, the type of records that are to be kept on such patients and so on, and to build up a better working liaison between headquarters and the field.

In addition to his teaching duties, the Chief Consultant should so plan his affairs that at least

one quarter of his time is spent in the field visiting the various operational Groups and Squadrons. Only by this method can he hope to keep his finger on the pulse of the Air Force and keep himself up to date. He must also plan on spending time making acquaintance with the psychiatrists in the General Hospitals to which any flying personnel may be sent, and any other ground force medical installations which may be receiving flying personnel. It cannot be emphasized too strongly that a good measure of the success of the Chief Consultant in Psychiatry will depend on his making and keeping contacts with the medical officers of the Air Force and with the medical officers of any ground installations that serve the Air Force. He will find that he will be called on frequently for consultation by the medical officers of the Air Force and, also, if his relations have been



founded satisfactorily, by the psychiatrists of the ground force medical installations when they are called upon to deal with flying personnel, and especially when there is a decision involved with regard to flying status. It is apparent that the Chief Consultant in Psychiatry should be a graduate of the School of Aviation Medicine, Randolph Field, and be a Flight Surgeon.

The Chief Psychiatric Consultant to the Air Force should work in close contact with the Chief Consultant in Psychiatry for the entire Theatre of Operations if there is such a Consultant.

To be able to use his time to best advantage the Chief Consultant in Psychiatry will need approximately 5 assistant Psychiatrists for a large Air Force. The Chief Consultant should avoid becoming "saddled" with the study or care of individual patients if at all

possible, and he should be free to travel throughout the Air Force. Of the 5 assistant psychiatrists, two will be needed at the treatment center (to be described), and two to study and evaluate Central Medical-Administrative Board Cases (to be described). The last assistant should be kept "free-floating" to work with the Chief Consultant to aid in teaching, to see patients in consultation on the airfields when necessary, and to be assigned to any special project or research work that is required. The assistant psychiatrists should be rotated in their duties every 3 or 4 months so that their outlook does not become restricted and they should visit operational airfields at intervals so that they have a sound knowledge of field conditions.

The Chief Consultant or one of the assistants should be a member of the Central Medical-Administrative Board, discussed subsequently.

It is recommended that the Chief Consultant in Psychiatry be a medical officer with fairly extensive teaching experience and that he be a diplomat of the American Board of Psychiatry. Although desirable, these qualifications are not necessary for the assistant psychiatrists. The assistants should have had two years formal psychiatric training at a minimum. For all the psychiatrists in an Air Force, it is important that individuals be chosen who have a firm medical background and a common sense attitude toward psychiatry and its place in the medical specialties. It is believed that a psychiatrist who tries to look at the psychiatric problems of an Air Force with a too theoretical viewpoint will not fit into the environment of an Air Force. The Chief Consultant and his assistants will probably find that they are at first accepted with some caution and reserve. It will be up to them as indivi-

duals to establish themselves and the psychiatric program. These statements apply particularly to the relations with commanding officers of tactical units and flying personnel in general.

The primary interests of the psychiatrists should be directed into channels of normal personality make-up and their attitude should be, "What can be done to maintain the stable man in an emotionally healthy state?" and, secondly, "How can the emotionally sick individual best be treated or disposed of?" It is worthy of pointing out that the medical officers in general, and the psychiatrists in particular of an Air Force engaged in combat have a rare opportunity of watching normal young individuals being exposed to far greater stress than the average individual is ever called on to face in a life time. The prime duty of the psychiatrists lies in seeking

ways of maintaining that normality .

The Chief Consultant and his assistants should be assigned to the Headquarters of the Air Force, and not to the various Commands.

3. Treatment and Disposition Center:

There should be a Treatment and Disposition Center to which emotionally sick individuals can be quickly sent from the various squadrons for study, treatment if indicated, and for recommendations for disposition. In a large Air Force a 100 bed Station Hospital could comfortably handle all the Psychiatric needs. To staff this hospital, the Table of Organization for the usual 100 bed Station Hospital (T/O 8-560) would require revision and addition. Added to the professional staff should be the two psychiatric assistants as previously mentioned, an internist, and an ENT specialist; all should be Flight Surgeons if possible. Instead of

10 nurses as authorized in T/O 8-560 there should be 20, the additional nurses being required for narcosis therapy. It would be advisable to utilize nurses who have had special psychiatric training. The ranks of the various members of the professional staff should be increased to conform with their specialized attainments.

This staff is thus a specialized one but the work they will be called on to do is of a highly specialized nature. A decompression chamber should be available at the Station Hospital. The chamber will be found valuable in evaluating the various "altitude complaints" that are a common problem in airmen flying combat at high altitudes. The pressure chamber serves a useful purpose in determining the validity of such complaints and aids in the differential diagnosis between real altitude symptoms and

symptoms that are psychogenic in origin. Other specialists could be added to the Station Hospital as the needs of the particular Theatre demanded.

To this Station Hospital should be sent all cases of psychiatric interest which occur under combat for sorting out, all cases whose flying status is in question because of vague somatic complaints, and those who have symptoms relating to flying. This Station Hospital should not be called upon to study and treat the ordinary run of physical diseases and injuries. It should be retained as a specialized hospital dealing only with the specific problems of aviation medicine and psychiatry. It is felt that such a Station Hospital fills a real need, and will serve as the medical focus for the Air Force.

Arrangements should be made so that the Squadron Surgeon can quickly and easily transfer his patients

to this hospital. Air evacuation would be highly desirable. Having a quick method of removal of patients from the squadron applies particularly to the psychiatric cases ( Operational Fatigue , etc.) whose continued presence in the squadron is apt to have a deleterious effect on the morale of well flying personnel.

To this hospital, then, should be admitted the various psychiatric syndromes and the other cases as mentioned. A section of the hospital should be devoted to the narcosis therapy of the Operational Fatigue cases and the remainder of the plant to the study of other cases. Located at this hospital or within easy reach of it should be the Central Medical-Administrative Board to dispose of those cases who show "lack of moral fiber", flying inaptitude or inefficiency and other cases who cannot be returned to



flying status for non-medical reasons. The function of this Board will be discussed subsequently.

4. Rest Homes:

In a combat Air Force it will be found necessary to furnish Rest Home types of establishments for flying personnel who have not broken down psychiatrically but due to the continued strain and fatigue of operational flying need a rest and a change of scene. This period of rest in the average case should be of about a week or two weeks' duration and should fall in the middle of the operational tour of duty. It will be noticed that airmen begin to go stale around this period. Even in England with the Air Force located amidst civilized surroundings and with large cities available for diversion, it was found necessary to have Rest Homes where members of the combat crews could be sent for a week's relaxation and rest. While

combat airmen did utilize the cities for passes and leave, yet they derived more benefit from the atmosphere of the Rest Home where all arrangements were taken care of for them and where they were organized recreational facilities available. In a Rest Home in any theatre of operations there should be available good beds, good food, and good bathing facilities. The military atmosphere should largely be eliminated. In the European Theatre of Operations U. S. Army the Red Cross furnished civilian clothes for the officers and men to wear while at the Rest Homes. This was of help in fostering a general atmosphere of "getting away from it all".

The number of Rest Home beds that will be needed for an Air Force depends on the number of flying personnel engaged in combat, severity of the missions, military exigencies allowing flying personnel to be off duty

at any given time, and other factors which make it difficult to state arbitrarily how many Rest Home beds should be planned on in any particular Theatre of Operations. In the Eighth Air Force during the first year two Rest Homes were available, one for officers and one for enlisted men. Each housed 25 individuals. These facilities were definitely inadequate in quantity although they were exceptionally good in quality. Five or six times this number of Rest Home beds would have been desirable.

The Rest Homes can be utilized for Operational Fatigue patients, treated at the Treatment Center, and then sent to one of the Homes for a week or ten days' convalescence before returning to flying duty.

5. Central Medical-Administrative Board:

A reasonably large problem that arises in a combat Air Force is how to quickly dispose of airmen

who develop a crippling fear of combat flying, functional symptoms due to combat flying and other non-physical syndromes that make it impossible for the individual to continue operational flying. It is important that these men be gotten out of their units since their attitude can well have the effect of infecting others.

The best method of disposition (although it is recognized that no such Board is authorized under existing regulations) would be to establish a combined Central Medical Board and Central Administrative Board. The former should be composed of three medical officers as was the Eighth Air Force Central Medical Board. The latter should be composed of 2 to 3 flying personnel, preferably officers with extensive flying and combat experience. This combined Board should be given the authority to remove personnel from flying status, to board medical cases back to

the Zone of the Interior and to reclassify "lack of moral fiber" cases.

To such a combined Board, preferably located in close proximity to the Treatment Center previously described, the Squadrons and Groups should send all cases of non-physical failure. These individuals should be studied, if indicated, by the facilities of the Treatment Center so that the Board would be sure of its position on medical grounds in any given case. Thus to such a Board could be sent, for example, a pilot who was having landing accidents, a bombardier who stated that he was afraid to continue with combat, a navigator who was having trouble with aero-otitis, and a gunner who was vomiting on combat missions. Such a Board could deal with such cases with finality. The Board should be close enough to the individual's unit to obtain statements and opinions from the unit

commander and surgeon. It would offer the possibility of quickly removing such a case from the unit, and would take the burden of dealing with such cases from the unit which has as its prime duty the fighting of a war. Further, one such Central Board insures a uniform treatment and disposal of all individuals in the Air Force. It will be found that if such disposal is left to the individual units, that the disposition will vary widely and, for example, given an airman who develops fear of combat, one unit may initiate reclassification proceedings causing the ultimate resignation of the officer for the good of the Service, whereas another unit may re-assign the individual to a relatively safe non-combat flying duty. Such a situation is bound to have an adverse effect on general morale, and is the reason why one Board should make the decisions for the sake of uniformity.

6. Administrative Plan for Disposal:

In the absence of a combined Board as previously described, the best method for disposal of cases comes up for consideration. The present scheme of disposal of cases in the Eighth Air Force utilizing AR 605-230 (Reclassification), has certain advantages and also some disadvantages. It is good in that it utilizes existing army procedures which are well known and understood and it has the advantage (as well as the disadvantage) that the individual is being judged by his own unit and by people who know him intimately, and who have first hand knowledge of the amount of stress to which he has been subjected.

The disadvantages of the method are as follows:

1. Disposal is not apt to be uniform in the various units in similar types of cases.
2. The individual must be kept in his unit until

some disposal is worked out. Thus an infected man may infect others and in any event the attention of the Station becomes focussed on the situation.

3. Administrative time is taken up from unit commanders, etc. in getting rid of a misfit when that time might be spent in conducting more important military affairs.

It is important for future Air Forces and for future wars that there be some administrative policy worked out with regard to the cases of fear of combat and Psychological Failure in general that have been described in the body of this report. Such an administrative policy should be uniform for all Air Forces, should exist prior to the beginning of combat, and should be carefully worked out from both administrative and medical viewpoints. An aspect of these cases that should be considered is their relation to line of duty and



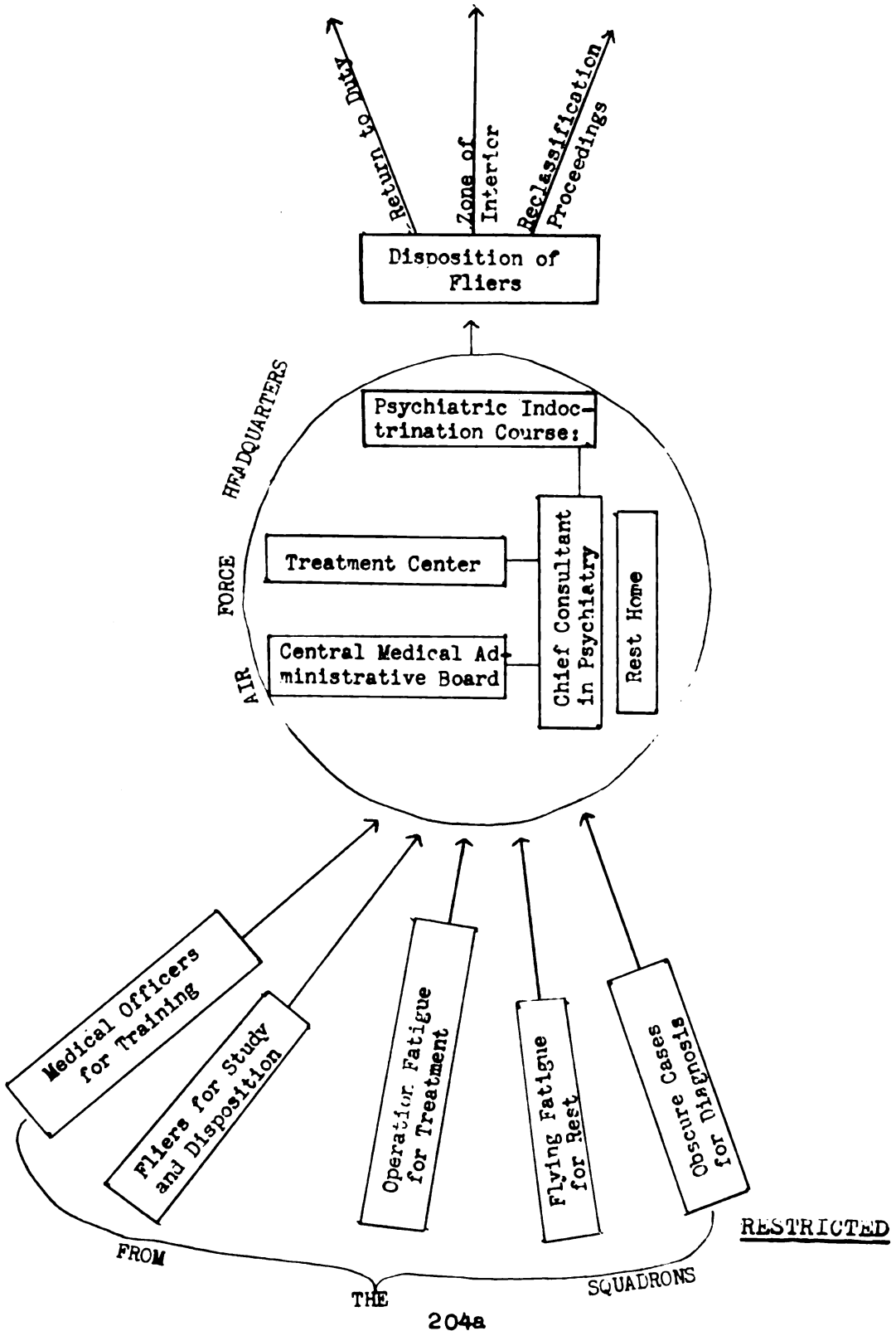
thus to post-war compensation.

It is thought that the psychiatric organization of an Air Force as described is fundamentally sound and will net the best results utilizing a minimum number of psychiatrically trained medical officers.\*

By way of conclusion, it is believed that an Air Force requires a medical center to study the problems peculiar to an Air Force, to uniformly evaluate medical problems in relation to flying status, and to carry on essential research of a practical type. One of the functions of such a medical center is to study, treat, maintain records, and make recommendations in the cases of psychiatric disorders and Psychological Failure .

\* See diagram, page 204a

DIAGRAM OF PSYCHIATRIC ORGANIZATION



Part VI Summary, Conclusions, Recommendations

I. Summary:

1. A background of the experiences of the Eighth Air Force with regard to type of combat, the various stresses of combat, and the individual's reaction to these stresses has been given.

2. The types of psychiatric failure have been described and the cases encountered have been analysed. The treatment, disposition and prognosis of the various types have been discussed.

3. A treatment for Operational Fatigue which returned 70% of the patients to combat flying has been described.

4. The prophylaxis of Psychological Failure and Operational Fatigue has been detailed.

5. A suggested plan of organization for a psychiatric program in an Air Force has been given.

6. A psychiatric study of 150 airmen who successfully completed the combat tour in heavy bombardment is included.

7. Illustrative cases of the various types have been included.

## II. Conclusions:

1. Among flying personnel engaged in combat aviation the majority of cases will be fear reactions and functional symptoms due to the stress of combat. These are essentially anxiety states which develop during the course of the first 5 missions (in heavy bombardment). It is probable that the majority of these individuals could be eliminated by more accurate methods of selection which expose the individual to actual fear, and follow-up during training and phases.

2. The next most frequent group of cases will be that of Operational Fatigue . By means of narcosis

therapy and a general rehabilitation program approximately three-quarters of these cases can be returned to combat duty.

3. Psychoses and true psychoneuroses are infrequent conditions among combat personnel.

4. The rate of psychiatric failure is approximately the same in officers and enlisted men engaged in aerial combat.

5. There is need in an Air Force for a special psychiatric organization to handle psychiatric cases.

6. There is a need for a more specific administrative policy with regard to the disposition of flying personnel who develop Psychological Failure .

### III. Recommendations:

1. That in the organization of the Headquarters of an Air Force, a table of organization for a section on Psychiatry be established as part of a Medical Center.

The personnel required have been discussed in the body of the report.

2. That a more specific administrative policy with regard to the handling of cases of Psychological Failure be established which applies uniformly to all Air Forces.

3. That a Central Medical-Administrative Board be authorized for Air Forces.

4. That a Station Hospital for psychiatric cases be authorized for an Air Force.

5. That a Medical Center, one of whose functions is the teaching of psychiatry and psychiatric procedures, be authorized for an Air Force.

6. That the Psychiatrists to an Air Force be kept acquainted with developments in psychiatry in the other Theatres of War and in the Zone of the Interior.

PART VII APPENDIX

ILLUSTRATIVE CASES

I. FEAR REACTIONS

2nd Lt., Navigator

1. History from Officer:

Chief Complaint:

Fear of flying.

His Present Illness:

The officer has been on 4 operational missions on a B-17F as navigator. The first was a short successful mission lasting 3½ hours. He felt as usual on return. No difficulties were encountered on the mission. On the second mission he was flying in the lead ship and after dropping the bombs, the plane was hit by flak in the nose and number 1 and 3 engines were hit. One of the officers was hit in the shoulder and neck and bailed out at once. The patient says that he was tempted



to bail out after him but stayed in the ship because it was flying straight. He was "shocked and stunned" and his hands trembled, and he sat in his seat "stupefied". After 3 or 4 minutes he picked up his log book and resumed his navigation. The return trip took  $1\frac{1}{2}$  hours and the landing was uneventful.

He states that about 5 minutes after his own ship was hit on this mission, he saw another Fortress go down in flames. This was the first plane that he had ever seen go down in this manner.

About a week after this mission, he developed a "sense of dread" which gradually increased. He could not get "peace of mind". Thoughts of his next mission terrified him and he had "sick feelings" in his stomach. The dread of being scheduled for a mission caused him to go drinking in that partial intoxication relieved the anxiety and made him feel capable of doing operational

flying.

The next mission caused him to have a "tremendous sense of dread". The trip was called back after 1 hour and 10 minutes. A few days later there was an abortive mission during which he felt like a "mechanical man". After landing he became preoccupied with thoughts of cracking up and he became sensitive to all noises associated with flying (sound of motors etc.). He began looking for excuses to avoid flights, such as poor weather etc. He would awake in the mornings with a feeling of terror. A week later he reported to his Flight Surgeon and told him that he "had lost his nerve", and was grounded by the Flight Surgeon. All of his symptoms have disappeared since being grounded, and he feels able to do ground duty.

Past Medical History:

In January 1939 while wrestling, his head

struck the floor and he was unconscious for about a minute and was dazed for 4 or 5 minutes, for example couldn't remember his locker number. A few hours later he vomited and was diagnosed as concussion in the school hospital. Then splitting headaches developed for several days and one week after the injury he lost consciousness for 16 hours. A trephine was performed (right temporal decompression). Following the operation the "left leg was completely paralyzed", so a left temporal decompression was done. After this operation the right eye "turned in". This eye symptom cleared up after 2 or 3 weeks. Occasionally now his "left eye turns in" and he sees double. This occurs about every 3 to 4 months. The patient states that this symptom (diplopia) had occurred before the head injury.

Measles, Mumps, and Whooping Cough, in childhood.

T & A as a child. Pleurisy age 24. V. D. denied.

Social History:

Age 26, single, born in Oregon, July 23, 1916.

His early birth and development were apparently normal.

He completed 2½ years of college. Interested in accounting, he worked his way through school as a telegraph operator and did odd jobs while in college.

In school he was not interested in clubs, social activities or athletics and says that he is not very "socially minded". He tends to be reserved and diagnoses himself as "introverted". He is interested in psychology and has read Freud and others because he realized that he had a deficiency in the "matter of mixing". He feels that this occurred because he was an only child. He also feels that his mother did not show him sufficient affection. States that he was disappointed in a love affair in 1940 which "broke him up" for about 3 weeks.

Military History:

The patient had been in the National Guard for the 2 years prior to the war and entered the army as a private, and was promoted to a corporal. He requested flying training because he wanted to be an officer and to get away from the "rugged" life in the infantry. He did not qualify for solo flying and washed out because of lack of confidence in himself . He qualified as a navigator July 1942. He has had 200 hours in the air. He arrived in England October 1942 and has had 35 hours in the air in this theatre. No history of anoxia, bends, or blackout or other aeronautical disorders.

Family History:

Maternal grandfather died 79 of senility. Maternal grandmother died young, cause unknown. Paternal grandfather died age 55, cause unknown.

Father age 58. Has high blood pressure. Is

a foreman in a steel company. No nervous breakdowns.

mother age 52. Has stomach disorder since birth of patient. No nervous breakdowns.

No siblings.

2. Psychiatric Examination:

The officer gives his history as detailed. He readily admits that he is afraid to go on any more combat missions, but volunteers for ground duty. When asked if there is anything else the matter with him except fear, he answers in the negative. He states that he has never been interested in flying, but applied for flying training to get out of the infantry and to get a commission. He states that he realized his application would not be accepted if he gave the history of his head injury and the subsequent decompression operations, so he lied about it on his original '64' examination. He states that he realizes he could be court martialled

for this falsification. When asked if he did not realize that he would eventually get into combat flying if he applied for air crew training, he states that he did it taking a chance that he would not be sent on combat duty. When asked what he thought would happen to him when he asked to be grounded because he was afraid, he said that he thought he would be put on a ground job.

The officer does not show any particular neurotic symptoms and no psychotic symptoms. He is a case of fear in the face of operational flying. He states that he would be all right if assigned to ground duty. He feels that his failure is not entirely his fault because the "medical corps should have tests which can eliminate those of us who can't stand up to operational flying". It was pointed out to him that he would not have been in the air force if he had not falsified his medical history. He states however that he was very

anxious to get out of the infantry and be commissioned.

3. Impression:

Fear Reaction.

4. Disposition:

Because of the head injury history which disqualified him for flying duties, the officer was removed from flying status, and transferred to a Replacement Pool for assignment to ground duty.

Captain, Pilot, B17

1. History from Officer:

Chief Complaint:

"Scared to death"

His present illness:

The officer states that he never had any particular emotional trouble until the time came for his first combat mission. On being alerted for this mission, he states that he became scared and frightened,



began to tremble, felt like running away to hide, and states that he realized the entire trouble was due to a fear of being killed. Prior to his being alerted for his first mission, he had witnessed heavy losses at his station and this made him realize that "there is no future in this game". He reported to the Squadron Commander that he was afraid to go on the mission, who sent him to the Flight Surgeon. He was then sent to the Central Medical Board for evaluation.

Past Medical History:

Usual diseases of childhood.

Scarlet fever, age 7, no sequellae.

Venereal disease denied.

Social History:

Born in California, age 32. Upon graduation from high school he entered the U.S.N. for 3 years. In the Navy he unofficially learned to fly and finished

this enlistment as an aviation machinist's mate. On leaving the Navy (age 21) he bought a plane and for the next 8 years did barnstorming. In 1940 he joined the R.C.A.F. as an instructor (being too old to apply for the U.S.A.A.F.) and was sent to Canada. In 1942 he transferred to the U.S.A.A.F. as a Captain after having done 21 months of instructing. He arrived in European Theatre of Operations U. S. Army 6 months later as first pilot of a B17. He has 2300 hours official time.

He states that he "has always loved flying" and that he has never been apprehensive about it.

He was married in 1940, taught his wife to fly, and states that her attitude toward his doing combat flying is satisfactory. No children.

Moderate social drinker.

The officer has participated in sports such

as tennis and baseball. He swims but does not dive. He has done some hunting, but never boxed or played football. He states that he has always been somewhat timid and tended to avoid fights during his childhood. He has always been a conservative flyer, never does any "buzzing" etc.

Family History:

Grandparents unknown to patient.

Father divorced mother (patient age 4) and officer knows nothing about him. He believes the reason for the divorce was the fact that his mother had a "nervous breakdown".

Mother age 52. At age 35 had a "nervous breakdown" lasting 3 months during which time she was in bed and had to be tube fed, apparently refusing to eat. She has always been nervous and the officer believes she may have had "smaller" nervous breakdowns during her

life. The mother remarried when the officer was 17 years old.

Siblings: One sister, age 28, who is nervous and excitable but has never had an overt breakdown. She is married without children.

No other family history of insanity or nervous breakdown .

2. Psychiatric Examination:

The patient frankly gave the above history. He showed no objective symptoms of anxiety and was outwardly calm and poised although he said he felt "pent up" inside. He stated that in view of the losses in heavy bombardment he was afraid to go on any missions. He stated that he realized this might be considered as a court martial offence, but that he could not force himself to go on a combat mission and was ready to accept any consequences. There were no psychotic or

neurotic symptoms present.

3. Impression:

Fear Reaction. It is interesting to note this officer's extensive pre-combat flying experience. He has a poor family background and may be considered as a "predisposed" individual. His own past history shows a certain degree of physical timidity.

4. Disposition:

This officer was returned to his unit by the Central Medical Board as fit for full flying duties. Reclassification proceedings were initiated by the unit and it is understood that the officer resigned his commission for the good of the service when he met the Theatre Reclassification Board.

2nd Lieutenant, Pilot, B-17

1. History from Officer:

Chief Complaint:

"Fear of combat flying"

His Present Illness:

The officer passed through all the stages of flying training without difficulty or apprehension. He states that he liked to fly and had no fear of it whatsoever. On entering transitional training he got along well, although he had some mild apprehension on first taking a B-17 to altitude, fearing that he would stall it. However this fear soon passed as he became used to the plane. Toward the end of transitional training he states that he became somewhat alarmed about combat, having heard of the rate of losses in certain theatres of operation. He states that for this reason he requested transfer to a non-combat type of flying but this request was refused. On the trip to European Theatre of Operations U. S. Army, he flew as co-pilot across the Atlantic without undue apprehension.

On arrival in European Theatre of Operations

U. S. Army and with the approach of combat drawing closer, he again developed fear and apprehension and felt like staying by himself. He decided that he would try several missions to see how they were, and did go on two missions. On the first he was frightened when the first pilot flew the plane in tight formation. Looking into the open bomb bays of the element above his plane frightened him and he thought they were about to be hit by the bombs. He excitedly jerked the controls from the pilot, threw them out of formation to the point that the pilot had to join onto another Group. The first pilot apparently overlooked this act as being symptomatic of the patient's first raid and explained to him that survival depended on flying a tight formation. It was ten days before the next mission and the patient did too much drinking in this in-

terval. On the second raid he again became frightened of the tight formation, the enemy fighters and all in all was a handicap instead of a help in flying the plane, although on this raid his plane encountered very little difficulty. After this raid he went to the Flight Surgeon and told him he was too frightened to go on any more missions, and accordingly was sent to the Central Medical Board for evaluation.

Past Medical History:

Usual childhood diseases.

Social History:

Born in Illinois. Age 21. He had an average boyhood, won his letter in high school football and states that he was not particularly timid. He liked people and having fun, and because he liked people, states that he obtained a job in a soda fountain during high school so that he "could talk to everyone". He



was a member of the National Guard and went on active duty in January 1941. He became a sergeant in 6 months and because he had always been interested in learning to fly, applied for flying training.

Family History:

Grandparents living and in good health.

Father age 44, living and well. Is a foreman in a large construction company.

Mother age 40, living and well.

No siblings.

2. Psychiatric Examination: The officer is a pleasant, normal appearing person. He is intelligent, friendly, and cooperative and makes no attempt at face-saving rationalizations to explain his failure due to fear. He is somewhat tense and restless but explains this as being due to the fact that he is uncertain as to what may happen to him as a result of his failure.

He states that his thoughts are constantly occupied with the possibilities of personal disaster that can occur in combat flying. There are no psychotic or neurotic symptoms present.

This officer has apparently had a normal background and childhood and cannot be considered as being "predisposed".

3. Impression:

Fear Reaction.

4. Disposition:

This officer was returned to his unit by the Central Medical Board as fit for full flying duties. Reclassification proceedings were initiated by the unit and it is understood that the officer resigned his commission for the good of the service when he met the Theatre Reclassification Board.

## II. FUNCTIONAL SYMPTOMS

### DUE TO COMBAT STRESS

1st Lieutenant, Navigator, B-24

#### 1. History from Officer:

##### Chief Complaint:

"Apprehension"

##### His Present Illness:

The patient states that he felt perfectly well and was not bothered by any "nervous" symptoms until October 15, 1942. On this day he was navigator aboard a B-24 doing a practice mission and the plane became hopelessly lost. As navigator he had no idea where the ship was, and states that he didn't know on which side of England he was. The weather was foggy and closed in. They sighted a ship on the water and flashed to it that they were going to ditch, and to stand by to pick them up. Just as they were preparing to crash land in the

water, two Air-Sea Rescue Spitfires appeared in answer to their previous radio calls and led them into a landing. This experience shook his faith in his navigational ability and left him with constant worries about flying, especially in difficult weather. He developed cold sweats when he flew subsequently and was afraid to go unless the weather was clear. He had difficulty in sleeping because of worries about flying and had several dreams about crashing into the sea. Flying in fog or in haze he becomes jittery and deliberately avoids looking out the plane's windows so that he will not see the surrounding weather. He has had to get up several times each night to urinate since the episode of October 15, 1942. He has had periods when his heart pounded hard and he not infrequently takes his pulse to check on his heart rate. There have been occasional periods when he has become short of

breath for no apparent reason.

About November 30, 1942, he developed severe anxiety about going on a practice bombing raid when he discovered that the weather was going to be poor and that they would have to fly through a cold front. He almost refused to go and told the Commanding Officer that he did not believe that the trip should be made in view of the weather. He was drenched in sweat by the time of take-off, and had the 'shakes'. Just after leaving the ground a fire developed in one of the turrets but was extinguished without much difficulty. The patient says that he was scared to death throughout this entire trip. On the way back home he apparently was not concentrating on his navigation and the plane again became lost although this time they were able to obtain a radio fix without much difficulty.

After this episode the patient's symptoms

became worse. He lost all confidence in his own ability and became distressed that he might be responsible, through some navigational error, for the deaths of the other men in his plane. After thinking the whole thing through he went to the Commanding Officer and told him that he was afraid to fly any more. He was then sent to the Central Medical Board for study.

Flying History:

The patient volunteered for flying training May 31, 1941. He states that he has always been interested in aviation and gives this as his reason for applying. He "washed out" in primary training and began navigator's training, graduating December 3, 1941. After that he did various jobs including flying coastal patrol O.T.U., and in June 1942, navigated the first USAAF bomber to England. He has been on a

special assignment dedicated to operations in bad weather since being in England. He has had approximately 500 hours in military aircraft.

Past Medical History:

Measles, mumps, chickenpox, whooping cough, grippe as a child.

T & A age 8. Appendectomy age 19.

Accidents - nothing serious.

Social History:

Born in Atlanta, Georgia, May 12, 1915. He has one brother a year younger than himself. His family's income was only moderate and he helped work his own way through high school and college. He graduated from college in 1938, specializing in the manufacture of woolens and cottons. After graduation he "bummed around" for a few months and then held a job for three years as assistant superintendent in a woolen mill.

He left this job to join the AAF. He was married in February 1942. His wife is not pregnant. He states that she has a good attitude towards flying and does not oppose it directly or indirectly. On the other hand, his father and mother, especially the latter, did oppose a flying career. He does not feel that this fact has contributed to his present difficulty.

He is a social drinker, but has done less drinking than usual since October 15 1942, because it seemed to make his symptoms worse.

Family History:

No family history of insanity, nervous breakdown or suicide. The maternal grandfather was a drunkard and was accidentally drowned while fishing. His father, age 52, is a R.R. engineer.

2. Psychiatric Examination:

The patient is cooperative and intelligent and



tells the above story with feeling and with some sense of embarrassment at being afflicted with nervous symptoms . He has good insight into the fact that his trouble lies in the emotional sphere, but says he cannot understand why one experience should have so unnerved him when he has done so much flying and has gone on many flights involving difficult navigation. He states that he can think of no reason why he should suddenly become neurotic when he has never felt this way before, in fact always used to feel cocksure of himself and his ability to do navigating.

He describes himself as always being on the conscientious side and rather meticulous about everything he did. However, he does not feel that these characteristics were carried to the extreme where they interfered with his daily routine.

There are no psychotic symptoms present.

3. Impression:

Functional symptoms due to combat stress.

This officer's unit was due to start on operational flying shortly before he developed crippling symptoms and was a unit dedicated to "hit and run" bombing in bad weather conditions. It was felt that the anticipation of this type of combat largely accounted for the officer's symptoms.

4. Disposal:

The officer was returned to his unit by the Central Medical Board as physically fit for full flying duties. The Squadron Surgeon reported several months later that the officer had been returned to the Zone of the Interior to do instructing. The other officers of the unit are reported to have resented this hotly because in their opinion he was being rewarded for being afraid. (Report of Squadron

Surgeon.)

T/Sgt., Radio gunner-engineer, B-17

1. History from Enlisted Man:

Chief Complaint:

Irregular breathing, feeling of constriction in the chest, feeling of heart beating all through him, numbness of the finger tips.

His Present Illness:

Patient reported the above symptoms first to the surgeon at the Combat Crew Replacement Center, the day before he was to be sent to a combat station, saying that he had had them off and on for about two weeks. The day after he arrived at his operational station he came to the surgeon twice, and complained so vigorously of these symptoms that he was admitted to sick quarters. He states that excitement and exertion bring on the feelings, and that when they occur he must sit down or

lie down and relax. He scouts the idea that there could be any connection between the symptoms and the imminence of combat.

Past Medical History:

At age 12 he had an illness called "rheumatism" by the physician, after which he had subjective numbness of left arm and both legs - "as if they were dead". He remembers no inflamed or swollen joints. Was told to take it easy for some time thereafter.

No serious illnesses or operations.

Denies venereal disease.

Drinks very little.

Unmarried but got engaged just before leaving the United States.

Social History:

Born in Minnesota, age 23. States he had some temper tantrums as a child. Finished high school and

was an average student except in history, in which he won a medal for the best grades. Worked as a clerk, then as an automobile mechanic, and planned to become an expert mechanic before the war.

In sports was fairly active but did no boxing, but some wrestling. He did a fair amount of hunting, but fishing bored him.

States he is a fairly social person and gets on well with people and dislikes being alone.

Admits no present conflicts of any sort.

Family History:

Father died in 60's, cause unknown, but his hands were blue and numb for some time, and he was a "nervous man". Was a painter.

Mother living. Some years ago had a lung punctured in an accident, and since that time has had difficulty in breathing.

Siblings, 2, one "nervous".

A large number of half-siblings - both father and mother had previous marriages, and children by these marriages.

Flying History:

Inducted by Selective Service in February 1942.

Did not choose the Air Corps, but was classified so that he ended up in it. Has been on flying status for 7 months and has about 200 hours total flying time.

Classified as Technical Sergeant, as engineer. Flew to ETO in a B-17, in February 1943, and attended Combat Crew Replacement Center, until day before his admission to the sick quarters. No operational missions, no crashes, no other traumatic experiences.

2. Psychiatric Examination:

Patient describes his symptoms with a "belle indifference", and yet with insistence of their importance.

He seems to have no conception of the possibility of their relationship to situational anxiety. He spends most of the time in the hospital curled up in bed with the covers high around his neck, not reading, or speaking much to others. He has some tremors about the mouth and sweating hands and feet, but no other objective evidence of anxiety. No psychotic manifestations were seen.

3. Impression:

Functional symptoms due to combat stress (anticipation of combat).

4. Disposition:

Was returned to unit by Central Medical Board as fit for full flying duties. Reduced to grade of private, removed from flying status and assigned to basic duty by the unit.

The following 2 records represent cases of functional symptoms which developed after an unusually terrifying experience. In this type of case the individual appears to become conditioned to react in a neurotic-like fashion under the impact of this one terrifying experience. Under similar circumstances it is probable that the average individual would be conditioned to react in a neurotic manner. This particular type of case does not necessarily imply fear or cowardice on the part of the individual.

T/Sgt., Tail Gunner, B-17

1. History from Enlisted Man:

Chief Complaint:

Fear of Flying.

His Present Illness:

The patient is a tail gunner on a B-17. On



October 2, 1942 they were flying on a practice mission at 26,000 feet and the waist gunner passed out because of anoxia. The pilot put the ship into a vertical dive and tried to pull out at approximately 20,000 feet. The cables snapped, the right wing and engines pulled off, and the plane caught on fire. The bomb bay doors flew off and apparently one of them hurtled backwards and sliced off the tail section at the region of the tail gunner's escape hatch. The patient in the tail section went hurtling down end over end. The patient tried to smash his way out through the glass and failed and then kicked his way through the skin of the ship and wiggled through but his shoulders became wedged. He must have been blown clear at about 1000 feet and had time to get his parachute open before hitting the ground. He was unharmed. The only other survivor, a gunner, parachuted down nearby but was injured. The plane had

crashed about 100 yards away from where the patient had landed (in the midst of a British anti-aircraft battery) and was burning. The patient and several British soldiers ran over to the burning fuselage and tried to pull one of the men out through the waist window but it was apparent that he was crushed and dead. Because of the fire they backed away and shortly after the plane exploded and burning gasoline created a large fire. The patient then went back and called the Commanding Officer to report the accident. The accident occurred at dusk and it was about 1900 hours before he could get the telephone call through. He went to bed at a nearby British Station and almost all night lay sweating, shaking, tense and restless. The following morning he felt "jittery" and "ill at ease", and went out to the wreck with the Commanding Officer and the medical officer. There he saw the

charred bodies of the other 8 men who were in the plane. For the following 2 days he couldn't eat. Since the accident he has felt tense, anxious and restless. He sleeps poorly and has frequently recurring dreams of plane crashes. He has difficulty in getting thoughts of crashes off his mind and little things remind him of it. He develops anxiety on getting into the forward section of a B-17 because it reminds him of the terrible experience his fellow crew members must have gone through before the crash killed them. Whistling and whining noises startle him because they remind him of the wind whistling through the jagged tail section as it fell from the wreck. Small enclosed spaces also produce a certain amount of anxiety. The nights when he is alone are his worst time. He feels better in the day when he can talk to other people and have their company. He

has developed severe anxiety attacks on riding in planes since the accident and says he sits listening to the creaking of the plane waiting for the tail section to break off again.

In spite of these symptoms he has flown on 5 operational missions since the accident. In two of these he went through further terrifying experiences in seeing his plane badly hit by flak and on one of these occasions it had to come home on 2 motors with a badly torn wing and lacerated fuselage. On this mission flak blew pieces of canvas over his head (acting as waist gunner) and into his mouth and wrapped some control wires around his neck. This occurred over the target and he states he was so frightened that he almost bailed out without orders.

He states that he did not report these symptoms to the medical officer but went on forcing him-

self to fly, when several days ago he was instructed to report to the Central Medical Board. He stated that he does not wish to be regarded as "yellow" or a "quitter" but now that the thing has come to a head, he states that he never wants to get into an airplane again.

It might be added that on one of the missions a F.W. 190 appeared 50 feet behind his tail turret and the patient saw his tracer bullets enter where the oxygen bottles are located. There was a flash of flame and the German spun down out of control. This increased the patient's anxiety because he felt in a way that he had been responsible for causing another man to go through an experience like he had gone through.

Previous Flying History:

The patient served an enlistment (1935-1937)

and for 2 years of it was stationed in Hawaii. Although with ground troops he hung around the air field and put in about 500 hours as a passenger. He re-enlisted November 25, 1942 and applied for flying training but couldn't pass the mathematics examination. He instructed in gunnery school and in June 1942 was assigned to a bomb group. He flew over to England, arriving September 6, 1942. In all he has had about 900 hours in the air. Prior to the accident he states that he never had any fear of flying. He had had no previous crashes, forced landings or parachute jumps.

Past Medical History:

Mumps - childhood

Pneumonia aged 7 and 15

Operations - none

Accidents - none serious

Venereal disease denied.

Social History:

Age 26, born in New York, one of 14 children and the next to the youngest; 5 of these children died in infancy. He has 2 brothers in the navy and one who has been in the army for 14 years. The other siblings are sisters.

The patient was first married in 1937 (age 21) and divorced in 1940 because of incompatibility. He remarried in 1941. Since the accident he has received a letter from his wife saying that she is pregnant. The patient states that his wife and mother are unaware of the fact that he has done any operational flying, and that he has never told them that he is a regular member of a combat crew. They apparently think he flies now and then as a passenger as he did in Hawaii.

The patient finished 2 years of high school

and has knocked around in various odd jobs, but has been independent financially since age 16. In the army he learned sheet metal work, and between his two enlistments worked in aircraft factories.

He drinks nothing now and has not for several months because he and his pilot (killed in the crash) had made a deal "to go on the wagon".

Family History:

Father living age 74. Has been employed for 40 years by one firm as a lead burner. Apparently a steady, hard worker.

Mother living age 70. Inclined to be somewhat nervous and patient thinks she may have had a nervous breakdown at one time.

No history of insanity, alcoholism or suicide in the family.



## 2. Psychiatric Examination:

The patient tells the story and describes the symptoms mentioned in the history. He has good insight into the fact that he is emotionally upset and says that the symptoms are beyond his control. He is afraid he will be thought of as a "quitter" and as "yellow" for being taken off flying but says that he does not believe he can go up in a plane again. He seems sincere and straight forward and is very cooperative. He would like to do gunnery instructing without any flying being involved.

In telling the story the patient had a noticeable tremor of the hands and several times seemed on the verge of tears when talking of his comrades killed in the crash. There were no psychotic symptoms present.

## 3. Impression:

This is a case of functional symptoms (anxiety state) occurring in a person of sound moral fiber and

without neurotic predisposition. It is probably a case of conditioning imposed by an exceptionally harrowing experience. In any event, the end result is about the same, and it is unlikely that any form of therapy can return this patient to combat flying.

4. Disposal:

Central Medical Board recommended relief from all duties involving flying and assignment in grade to ground duties.

2nd Lieutenant, Navigator, B-17

1. History from Officer:

Chief Complaint:

Fear of flying.

His Present Illness:

The patient made six combat missions without difficulty, and was not particularly upset by combat flying, although two of the six missions were very

difficult, the plane being badly damaged, and crash-landing each time. On his seventh mission, while the ship was still gaining altitude over England, the No. 4 engine caught on fire. The patient put on his 'chute, and was starting toward the exit door when the engine burned off the ship, throwing it into a spin. He was pinned to the floor by the spin, and although he had the door off, and his hand over the edge, he was unable to pull himself to the door. The plane then exploded. He lost consciousness and woke up falling through air. He opened his 'chute, and passed out again, awakening on the ground. He had a badly wrenched knee and ankle, and had hurt his back, so was hospitalized for 16 days. During this time he was rather tense, nervous, and slept poorly. He was one of four men to survive the explosion, and kept thinking about the men who had been killed. On his return to his field he tried several

times to go on practice missions, but has been so nervous seeing and hearing the motors, that he has been unable to get into another plane. At the present time he feels he cannot possibly fly.

Past Medical History:

Born in Wyoming. Age 22. Appendectomy at 17, no other serious illness.

Social History:

Went through high school and one year of college. He then went to art school for 2½ years, studying commercial art. He paints fairly well in oils and water colors. He left school to enlist in the Army. He is single, but engaged.

Military History:

Enlisted as an Aviation Cadet in March 1942. Started pilot training, but was "washed out" in primary school for incompetence. He was never anxious to be

a pilot, and was not disturbed by his failure. He then went to Navigator school, graduating in January 1943, without difficulty. He went immediately into B-17's flying to the ETO in June 1943. He has been on six completed missions and two abortions. His total flying time is 445 hours.

Family History:

All grandparents are dead. Father died at 50 of heart disease. Mother is living and well at 50. 3 siblings, all living and well. No family history of psychiatric disease.

2. Psychiatric Examination:

The patient has a normal background, being inclined to the more cultural pursuits, such as art, music and literature. He paints well, plays the violin. He has no history of any neurotic or psychotic manifestations, and until the accident described, he was

adjusting well to the strain of combat flying. He is now apprehensive and tremulous, shows obvious anxiety when planes pass over the hospital and the nurses have noticed that he shows a "startle reaction in response to sudden noises. He is having difficulty in sleeping and on one occasion in the hospital woke up screaming. He has asked that he try ground duty and that he not be returned to the Zone of the Interior on medical grounds. He believes that after several months of ground duty he may be able to return to combat flying.

3. Disposal:

Sent to Replacement Pool for ground duty.

He was relieved of all duties involving flying on the recommendation of the Central Medical Board.

### III. PSYCHONEUROSIS

#### 1st Lieutenant, Pilot, B-17

#### 1. History from Officer:

##### Chief Complaint:

Weakness and difficulty in concentration.

##### His Present Illness:

Began flying training 1940 and graduated 1941. During basic training he suffered a 3 week period of relative loss of appetite, but outside of this episode had no other trouble and did not become airsick. By early June 1942 he had about 500 hours on a B-17 as pilot, and it was at this date that he began to develop symptoms. He began to feel excessively tired, couldn't eat, and had frequent bouts of nausea, several bites of food would cause him to gag, and he became so exhausted that even walking was an effort. 12 to 14 hours sleep each

night would leave him still exhausted when he woke up. His lips "were quivery" and his "insides trembled all the time". He lost his interest in flying and began to dread flying. He developed difficulty in concentration and felt that his memory was failing him. In July he was sent to a Hospital and was kept at bed rest for 45 days. While there he was given insulin shots to speed up his metabolism and increase his appetite". He was discharged with an NP diagnosis and 6 days later was sent to Fort Dix for overseas service. The 45 days rest in the hospital did not benefit his symptoms. He arrived in England October 18, 1942 and the great fatigue and lassitude have persisted. Since leaving the hospital he has had frequent 15 minute periods, as often as 5 or 6 times a day, wherein he would develop gross tremors and sweat profusely. He states there was no anxiety connected with these attacks.



He has been grounded since his hospitalization and in fact has not been in the air since that time.

The patient has not been involved in any serious crashes or narrow escapes.

Past Medical History:

Measles and whooping cough as a child

Pneumonia age 9

Tonsillectomy age 5

Appendectomy age 15

Accidents - states he was knocked out twice in boxing, age 10 and 13

Venereal disease denied.

There have been no other previous breakdowns of any sort, although he describes himself as always having been somewhat nervous and high strung.

Social History:

Age 28, born in Ohio. 2 years of college. Father and mother were divorced when patient was 5. The reason for the divorce was cruelty on the part of the husband. The patient never really knew his father, and after the divorce went to live with his maternal grandparents. He has one brother, 4 years his junior. The mother remarried when the patient was 15 but he still remained with the grandparents.

The patient has been moderately interested in athletics and as hobbies likes billiards and ping pong. He doesn't care for hunting or fishing "I'm too chicken-hearted to kill anything".

Patient was married October 30, 1941, and his wife became pregnant in June 1942. This was not a planned pregnancy. His wife is living with her parents at the present time.

The patient had had 40 hours C.A.A. train-

ing before starting flying training. He states that he entered pilot training because he has always been interested in flying.

In the past year he has done very little drinking. Before that he used to do moderate social drinking.

Family History:

Is negative for nervous breakdown, insanity, alcoholism, and suicide. He describes his mother as nervous and high strung, rather easily excitable.

2. Psychiatric Examination:

The patient says that he has difficulty in deciding whether his illness is due to physical or emotional reasons, but favors the latter. He says that his attitude toward flying changed after getting married and especially after his wife's pregnancy. He feels that he lacks confidence in his ability to fly

and also thinks much more about the chances one has to take in flying. He says that he does not have the strength to fly big ships at the present time, but feels that he would rather remain grounded than fly smaller planes.

The patient is rather nervous, appears frail, has fluttering of the eyelids when he talks. He denies any considerable anxiety as such. No psychotic symptoms elicited.

3. Impression:

Psychoneurosis, neurasthenia.

4. Disposition:

Transferred to a General Hospital with the view to the officer's return to the Zone of Interior on medical grounds.

2nd Lieutenant, Navigator, B-17

1. History from Officer:

Chief Complaint:

"Sex Conflict"

His Present Illness:

The patient states that he has always had strange feelings and moods which made him feel that he is not like other people. He has never seemed able to derive much satisfaction from anything, has never seemed able to "get close" to people and has always had the feeling that other people have not wanted him around or were merely tolerating his presence. For the past ten years he has had frequent periods of despondency in which he feels that nothing is worth-while and at times has thought of suicide although has not made any attempts. These periods last five or six days and then disappear, although at all times he feels inadequate and not wanted. During adolescence, but also at the present

time to a lesser degree, there have been marked feelings of unreality in which he felt that the world did not exist, that he did not exist, etc. Constant wondering about the purpose of life, the plan of life, etc. have also bothered him. He says he seems to derive pleasure out of hurting people or being sarcastic with them, especially his mother. This follows the usual feelings on his own part that people do not like him. He has frequently, in the past and in the present, had thoughts that he could not get out of his head, for example he counts 1-2-3 over in his mind as he reads the words in a book, often feels compelled to turn the light switch off and on three times before he goes to bed and so on.

As he got older, he found that his sexual desires seemed inadequate and he more or less had to force himself to "neck with girls" etc. because he

thought he ought to. At the present time, and this is his chief complaint, he feels that he should be having sexual relations because he hears the other flying officers talking so much about it, but on the occasions when he has tried, he has been impotent. This has disturbed him a good deal and he developed the feeling that girls do not like to associate with him.

Several years ago he went with one girl two years. Throughout he had the feeling that she did not like him, although she told him she did. The affair was on the verge of breaking up after two years, in any event, and in trying to prove to her that he was brave and courageous, he applied for flying training. However, relations between them broke off and because of this, he feels he lost interest in flying and "washed out". Seven months later he began navigator's training and soon after this the girl got married. This hit him

hard because he always had in the back of his mind the thought that the girl would accept him if he were a flyer.

This patient's entire history is that of life-long emotional maladjustment.

Family History:

Father was born in Mass., of Russian Jewish extraction; is in the wholesale wine business. He is jolly and good natured, although the patient never felt very close to him. No history of nervous breakdown.

Father's parents and collaterals were apparently healthy both physically and mentally.

Mother is of Russian Jewish extraction, was born in New York. She is nervous, given to frequent hysterics, has marked mood swings and all in all is a very unstable person according to the patient's description. The patient has always been closer to



the mother than to the father.

The mother has one sister who is described as extremely nervous and poorly balanced.

The patient says that as far back as he can remember there were frequent quarrels between the parents, and his childhood was unhappy because of it. The situation between the parents culminated in a divorce when the patient was fourteen. The mother remarried four years later. During this four years, the patient and his mother, now in straightened financial circumstances, took turns living with various relatives. A good part of the time was spent at the home of the sister who is nervous and unstable. This sister's husband was "shell-shocked" during the last war, and the patient feels he is somewhat "crazy". It was apparently a very poor environment for the boy to live in.

Relation of Symptoms to Flying:

The patient states that the periods of depression, the feeling of unreality, and the obsessive compulsive symptoms bear no relation to flying. If he happens to be in a period of depression when he has to do flying and navigating, he feels that his accuracy suffers because he has difficulty in concentrating, and on several occasions he has had to ask other members of the air crew to help him out with the navigating at these times. He says that he realizes that his inaccuracy might jeopardize the lives of the other crew members. He says he has no fear of operational flying (he has been on three operational missions) because he so frequently looks at death as a solution for his personality problems.

2. Impression:

This is a case of psychoneurosis, mixed type,

which has been of almost life-long duration. These symptoms existed long before he entered the military service and apparently have not been made any better or any worse by military flying.

3. Disposition:

Transferred to a General Hospital for Boarding to Zone of Interior on medical grounds.

#### IV. OPERATIONAL FATIGUE

1st Lieutenant, Pilot, B-17

1. History from Officer:

Chief Complaint:

"Nervous"

His Present Illness:

This officer has been in the European Theatre of Operations U. S. Army since 28 March 1943, coming over as a replacement crew. He has made 16 missions, the first on 16 April 1943 over Lorient, this one being quite "rough" in that two motors were shot out and they had some difficulty in getting home. No one was injured in his ship. He had more than the usual number of hours when he arrived in this theatre and felt quite capable of combat. Bremen was the next raid on 17 April 1943 and many hits were scored on his ship but not one was hurt. He made missions over the usual rough spots,

Bremen twice, Kiel twice, St. Nazaire, and Wilhelmshaven.

In all of these raids he feels that he has borne up quite well. Until a few weeks ago he had been sleeping and eating well. The 15th mission over Paris was quite harrowing, for he had two engines shot out and had to turn around and come home because of this. They were not bothered at all by fighters on the way home, luckily, for they were out of formation and could not have defended themselves. This raid was about 1 July 1943. After this raid he was sent to the Rest Home for one week and felt much better on returning to the field.

About one week ago he went on another mission which aborted and was forced to return because of weather and their inability to join the squadron. He made no missions until Saturday, 24 July, 1943

over Norway. This required a seven hour flight over water. They had overcast<sup>weather</sup>/most of the way but over the target the sky was clear. They were the first ship over the target and had little flak but when they left the target they were attacked by fighters while his co-pilot was flying. They shot down one plane coming in head-on which narrowly missed crashing into them. They also shot down another plane. One shell hit the navigator and wounded him so badly that the bombardier had to hold his head for five hours on the way back to keep him from bleeding to death. He witnessed this procedure on the return trip. Another 20 mm. shell hit the hydraulic system and another shell hit the tail and blew it to pieces. A gasoline tank was hit and gasoline sprayed out and covered the ball turret so much that the gunner could not see the enemy fighters coming in after him. The

No. 4 motor was hit and knocked out of commission. It vibrated so badly that it was felt that the ship would shake to pieces. They worried all of the way home about ditching and upon landing it took almost superhuman effort to land the plane for one tire was flat, the flaps were out of order, and the brakes did not work. He managed to get the plane on the ground safely. After this he felt very weak and almost collapsed on the field.

He went to the Squadron Surgeon who gave him some medicine for sleeping and then advised that he be sent to the hospital.

Past Medical History:

Usual childhood diseases. No operations, broken bones or bad accidents.

Family History:

Father living in Massachusetts, 56, well.

Mother 52, well, seems stable. Brothers, one 29, in army at present. Sisters, three, all married and well. No illnesses in aunts or uncles that he knows of. Grandparents, all dead of unknown causes. No cancer, diabetes, tuberculosis, mental illnesses or alcoholism in family.

Social History:

Born in Maine. Age 25. Went to Junior College in California for two years. Played football, baseball and was on the track team. He likes to hunt and fish and has fairly all around interests. He went to University of California for two years and then got interested in flying. He has been married since 28 March 1942 to a girl he knew for 2½ years. He smokes occasionally and drinks occasionally but never either to excess.



### Flying History:

He applied for flying in the fall of 1940 and was sent back to school for some more courses. He was called to active duty June 1941 and then volunteered to go into pursuit training. He finished this in February 1942. He was then ordered to Boise, Idaho and flew B-24's and B-17's in practice and in checking out other pilots. He left the States in March 1943, flying the southern route. He arrived at European Theatre of Operations U. S. Army in March 1943 and since then has made 16 missions. He has more time than anyone else in his group (1400 hours, total flying time) and has about 100 hours of combat time.

### 2. Psychiatric Examination:

This officer has had an average childhood free of any psychoneurotic traits. He has had a better than average education. His appearance and manner is quite in contrast with the way he describes himself.

He does not admit any difficulty in sleeping, says he is not tired, but feels that he would like to continue in combat. He is listless, lacks spontaneity, has difficulty concentrating and is preoccupied. The injury to his navigator is foremost in his mind, and he repeatedly mentions the fact that it is a shame and an incomprehensible situation. He looks physically tired, drawn, and puzzled. He does not feel that he needs any sort of treatment; just wants to get away by himself.

3. Impression:

Operational fatigue.

4. Treatment:

The patient received 45 hours of sodium amytal narcosis and was much improved by it. He was then sent to a Rest Home for a week's convalescence. At the end of this time he was regarded as Operational Fatigue ,

recovered" and was returned to his unit with the intention that he be returned to a combat status.

5. Follow-up:

The patient returned to full flying duty, and is performing satisfactorily at present, leading his squadron, and having two more missions to complete his tour.

Sergeant, Waist Gunner, B-17

1. History from Enlisted Man:

Chief Complaint:

"Nervous, tired".

His Present Illness:

The patient has been feeling tired for some time, and has been getting progressively more irritable and jumpy . This has been very noticeable in the air, and has affected his gunnery. He is very quarrelsome and has been drinking heavily lately in an effort to

forget his troubles. He is sleeping poorly, and does not feel rested on awakening. His appetite is very poor, and he has lost 12 lbs. in the past month. He dreams a great deal, reliving various battle situations. He frequently gets up at night and walks around for a while in an effort to tire himself out so that he can get some sleep. He has had several very difficult raids, the climax coming on his last mission when his other waist gunner was killed by a shell exploding between them. He was scratched by several fragments, but was not seriously injured. He was willing to keep on flying however, but when his group was taken off operations, decided to see if something could not be done about his symptoms, so reported to his Surgeon. He froze his toes, and left index finger on a raid six weeks ago. They have not bothered him since. He bites his nails continually, and they are pared away to the quick.

Past Medical History:

Tonsillectomy at age 7. Appendectomy at age 20. No other serious illness.

Social History:

Age 23. He has lived most of his life in Maryland, and went through high school. He loves to be out of doors and hunts and fishes most of the time. He was active in athletics in school. He has always been popular, and likes to dance and have a good time. This is in direct contrast to his present state of mind, where he cannot enjoy himself no matter what he tries to do. He worked in a hosiery mill for 6 months after leaving school, and then enlisted in the Army.

Military History:

Enlisted in the Air Corps in November 1940. He had flown in civil life, and hoped to get a chance

to fly in the Army, although he did not have sufficient education to meet the requirements for pilot training at that time. He was classified as a clerk, however, and worked in Supply for a year, before getting a chance to volunteer as a gunner. He finally got in as a gunner, graduating in February 1942. He flew in B-17's until June, when he volunteered for oversea duty. He has made 15 missions, and has a total time of 350 hours, 80 of them being combat time. He has been on several very difficult missions, and has seen a number of ships shot down. He has two enemy planes to his credit.

Family History:

He has no knowledge of his paternal grandparents. Father is living at 45. He has been separated from patient's mother since patient was 6, and he knows very little about him. Maternal grandfather is

living and well at 58. Maternal grandmother is living and well at 57. They are farmers, and are steady, calm people. Mother is living and well at 42. She is calm and even tempered, and has successfully supported the family for years. Patient is an only child. He is not married or engaged, but does have a girl waiting for him at home.

2. Psychiatric Examination:

The patient is a rather immature, nervous individual, who shows marked evidence of fatigue and strain. He is extremely restless, and becomes very emotional while talking about his experiences. He says he has always been somewhat nervous, but never as bad as this. He is mildly depressed and irritable.

3. Impression:

Operational Fatigue.

4. Treatment:

The patient had received 24 hours of sodium amytal narcosis therapy when he developed a rapidly spreading infection of an index finger. The narcosis was terminated and the infection was treated. For the following 2 weeks he remained tense and anxious and had battle dreams. He was then treated with 72 hours of narcosis therapy and was much improved, and expressed a desire to return to combat flying.

5. Follow-up:

The patient returned to full flying duty, and completed his 25 missions. He was somewhat nervous at times, but performed capably throughout, and was returned to the Zone of Interior upon completion of the tour of duty.

S/Sgt., Tail Gunner, B-17

1. History from Enlisted Man:

Chief Complaint:



"Nausea and vomiting of several weeks'

duration"

His Present Illness:

The patient first noticed symptoms of anxiety and nervousness immediately after an accident at his field. He was flying in an A-20, towing a target. They had a very short tow cable, and he was in the rear of the ship, trying to get out as much line as possible, when a burst of 50 cal. bullets from one of the other ships hit his plane. One slug went through the fuselage about 20 inches from his head. Another hit the pilot, shattering his shoulder. The pilot slumped over the controls, putting the plane into a vertical dive. The patient was knocked down by the sudden gyrations of the plane, but was able to crawl forward and help the engineer right the ship. The pilot then landed the ship using his chin and

left hand. The patient was perfectly calm in the air, but immediately after landing became very upset, started to perspire profusely, and developed a severe tremor. He was rather dazed, and was worried for fear he had been the cause of the accident, through not letting the target out far enough. He has made several combat missions since then, but has been very apprehensive, and has had marked gastro-intestinal symptoms. These consist of severe nausea, with occasional vomiting. He began to vomit after every meal, and finally was sent to a Hospital, where a GI series was entirely negative. After a week in the hospital, he was returned to his organization for duty. He slept very poorly while in the hospital, had many dreams of combat, and of other frightening things. He was not rested by a night's sleep, and felt tired on awakening. His appetite has been very poor, and he

has lost about 8 lbs. in the last six weeks. He is extremely irritable, and worries a great deal over trifles. He was given a three day pass after leaving the hospital, but was so nervous and tense that he could not enjoy it. Because of the persistent symptoms, he was admitted for narcosis treatment.

Past Medical History:

For a period of about 2 years, from age 8 to 10, he had fainting spells when excited or under stress. These disappeared, and have never returned. At age 18 he developed a peptic ulcer, proven by X-ray. He was treated for about 10 months, and the symptoms cleared up completely. He was working at a new job at the time, and was under considerable stress. He is worried for fear his present symptoms may be another ulcer developing. Broken nose at age 6. Frequent aerotitis.

Social History:

Age 23. Born in Alabama. Went through the eighth grade in school, and then went to a trade school for two years, studying mechanics. He was eighteen when he finished school, and went directly to work in a garage. His ulcer developed at this time, but was never severe enough to prevent him from working. After a year at this job, he worked for an Oil Company, and later drove a bus. He was doing this when he was drafted.

Military History:

Drafted in February 1942. He asked for the Air Corps, and was assigned to armament school. He tried to volunteer as a gunner, but was turned down as his I.Q. was too low. He finished armament school in May 1942. He flew in the tow ship most of the time, and worked in the armament shop in between. Came to

the ETO by boat in September 1942, and in November finally got on combat status as a gunner. He has been flying in the tow ship between missions, and feels this has added to the strain of 15 combat missions. He has a total of 850 hours flying time. He has been through 65 briefings for the 15 missions. His ship has been damaged several times, but no one was seriously injured, and he has never been in any crashes.

Family History:

Paternal grandfather died at 70 of cerebral hemorrhage. He was always a cripple, and never worked. Paternal grandmother is living and well at 70. She is a calm stable person. Maternal grandfather died in his 20's of unknown cause. Maternal grandmother is living at 65. She is partially paralyzed as the result of a stroke three years ago. Father is living

and well at 50. He is a carpenter, and is a steady, even tempered person. Mother is living at 47. She has had pellagra, and developed a psychosis while ill with this, five years ago. She is now fully recovered, but has always been nervous and difficult to get along with. He relates some of his difficulties with his mother to the development of the ulcer symptoms. She does not know he is flying. He worries about her, and has not seen her since entering the army. Seven siblings, all living and well. He is not married or engaged, and has no particular ties at home.

## 2. Psychiatric Examination:

A rather placid appearing individual who is depressed and tense. He feels that he is not thinking clearly, and is worried for fear he may be losing his mind. He has a marked tremor. He is well oriented, but definitely retarded in speech and cerebation. He has

been drinking heavily lately in an effort to relieve his symptoms, but this did not help.

3. Impression:

Operational Fatigue, with conversion symptoms referable to the gastro-intestinal tract.

4. Treatment:

The patient was first studied for evidence of organic disease of the gastro-intestinal tract. All examinations, including a GI series, were within normal limits. He was treated with 72 hours of narcosis. This caused his symptoms to disappear but he doubted if he would be able to return to a combat status because of his fear of it. He was returned to his unit as "Operational Fatigue, not recovered".

5. Follow-up:

After three weeks at his base, doing ground duties in the armament shop, the patient asked to be

returned to a combat status, and has since completed his 25 missions, being in good physical and mental condition at the end of the tour of duty.

2nd Lieutenant, Bombardier, B-17

1. History from Officer:

Chief Complaint:

"Jittery and depressed"

His Present Illness:

The officer has been on 19 operational missions from European Theatre of Operations U.S. Army. On the second raid his plane was badly damaged. He states that the plastex nose was riddled in sieve-like fashion by an aerial bomb which filled the nose with smoke and cut him on the hands. The hydraulics on the plane were also shot out. On getting back to base he felt shaky and nervous and that night couldn't sleep for thinking about what he had been through. On



this raid he first saw a Fortress go down.

The next raid was Emden where they encountered heavy flak, had several holes shot in the wings, and he saw a B-17 receive a direct hit, disintegrate, and go down in pieces without any parachutes opening up. On the return he was again shaky, nervous and couldn't sleep.

Two days later he went on another raid to Germany, and developed oxygen trouble which scared him. It was a rough raid, his plane was damaged to the point of being unserviceable for future raids.

Several days later on a raid to France he saw the plane in which his Squadron Commander was pilot, receive severe fighter attack, do an uncontrolled loop and collide with two other B-17's and spin down. His own plane received some flak hits. On return to base he felt nervous and shaky but says

he avoided going to the doctor because he didn't want to give up.

On the next raid to Bremen, heavy flak was encountered and many fighters met them on the way home, and he saw their wing plane spin in and crash into the sea. His best friend was aboard.

The Kiel raid was his worst. His gun was frozen and he sat helplessly watching repeated fighter attack and heavy flak. The plane in which there was a General was on his wing and he saw it crippled and spin down through the clouds over the target. No one got out that he saw. In rather quick succession on his plane the tail gunner passed out from anoxia, all but 2 guns froze, the No. 2 engine was hit and caught fire and the plane on the other wing was hit, went out of control and side-slipped directly underneath them so close that the pilot of his plane had

to pull up sharply to avoid a crash. This plane then crashed into the B-17 on their opposite side; they had to do evasive action to miss the pieces of B-17's that were flying in the air. He saw the ball turret knocked off and go down "like an apple" with the gunner still inside. He saw another man jump with a burning parachute and fall "like a hunk of lead". Shortly after another neighboring ship did a loop and spun in. He saw another lose its wings and the fuselage go down end over end, no parachutes being seen. He saw another snap-roll and one wing came off. His own plane was badly damaged and had to be salvaged after this raid. On coming in to land after this raid, the plane ground looped in landing. This raid was a disastrous one for his Group. Ten out of nineteen planes failed to return, the remainder were well shot up, and several including his own were wrecked on landing, the General was missing,

and everyone was stunned by what had happened. The patient felt pent-up and restless during the interrogation, and after it began crying and weeping. That night in the barracks he broke down again while the clothes of his missing room-mates were being packed up. He tried drinking to relieve his anxiety but it didn't help much. That night he had his first battle dreams, couldn't sleep because of vivid nightmares of crashing and falling and one time woke up sweating profusely and was told that he had been screaming and yelling in his sleep. This raid marked the onset of a severe nervous state and by now throughout the day and night he was tense, anxious, tired, depressed, things seemed unreal, and he had difficulty in concentrating.

A few days later while going to a mission (abortive) he broke down and cried in the truck taking him to the plane and vomited up his breakfast. He

states that he did not report his trouble because he felt that he should have enough guts to continue.

He was upset by replacement crews that came in after the Kiel raid and said it depressed him to see all the new officers in his friends' beds.

On the next raid, he went to Bremen and they couldn't find the target. Eleven ships got separated from the main mass, his among them, and they encountered heavy flak. On the return they got down to 12,000 feet over the German coast to bomb a convoy, but he got rattled, forgot to throw on the switch, with the result that all of his bombs hung up. This raid, and his bombing failure in it, made him worse. His concentration was gone, he became vague, had dizzy spells and headaches, was jittery, became very irritable, depressed. "I couldn't get a hold of myself".

On his last raid (to France) he "went to pieces", couldn't concentrate and felt muddled trying to adjust his bomb sight. Acting as lead bombardier he "just let the bombs go" and missed the target by  $6\frac{1}{2}$  miles. He saw some blow up farmhouses which distressed him. Attacked by fighters, he shot his gun without aiming. His symptoms got worse and he had neadaches and dizzy spells.

On return to the field he felt he was incapable of acting as bombardier. He told his pilot who tried to reassure him by taking him on practice missions to do practice bombing runs. This did not help any. He made so many foolish mistakes and felt so distressed inside himself that he consulted his Squadron Flight Surgeon who sent him to the Central Medical Board.

Past Medical History:

Usual diseases of childhood.

Scarlet fever, age 6, no sequellae.

V.D. denied.

Operations:

T & A as a child.

Submucous resection, age 8.

Pilonidal cyst, 1937, 1939.

Accidents:

Broke left ankle playing football, age 16.

"Knocked out" several times for short periods playing football in high school. No sequellae.

Social History:

Age 26. Born in Mass. He had 2 years of college and then worked on a newspaper as a reporter from 1939 up until the time of starting cadet training December 1941. He soloed in 8 hours but "washed out" after 25 hours in primary training because he was

"tense on the stick" especially in doing landings.

He then went into bombardier training and received his commission, October 1942.

He was raised in an upper middle class family.

His hobbies have always been athletics especially football which he enjoyed and played on high school and college teams as guard and fullback. He also played ice-hockey and baseball. He learned to swim and to dive. He never did any hunting because of a dislike or fear of firearms.

He has done some drinking since being on combat in the attempt to sleep, did little before that time. Single and not engaged.

Family History:

Grandparents all were stable people and died of natural causes.

Father age 64. Is a lawyer. He is success-



ful, calm but is inclined to be a worrier.

Mother age 42. Tends to be high strung and excitable.

Siblings: 1 brother age 24, teaching school. Is obese and of calm, phlegmatic temperament.

1 sister age 21, in nurse's training, calm and stable. No brothers and sisters dead.

No family history of nervous breakdown, suicide or insanity.

## 2. Psychiatric Examination:

The patient was obviously tense and anxious, had trouble in talking without his voice wavering, seemed vague, abstract, and preoccupied. His hands trembled to the point where he had difficulty in lighting a cigarette with ease. His shirt was wet under the armpits and he fidgeted in the chair. He stated, almost apologetically, that he is restless,

feels distressed and depressed and that he is afraid to go to sleep because of nightmares of combat. He felt that he is "washed up" as far as flying is concerned and will have to do ground duty only. He did not want to go back to his station because there were too many reminders that distressed him.

He stated that all his life he has been tense, high strung and nervous. He said he got more than average anxiety before a football game. He got mad too fast as a youngster and was irritable and had many school boy fights. He has always inclined toward the moody, is depressed by disappointment and at other times moody for no apparent reason. As an adolescent he was somewhat shy and compensated for it in athletic prowess. He tended to worry over trifles, and was somewhat overly conscientious. A fear of suffocation has persisted since childhood and throughout his flying

career he has kept his oxygen regulator tuned up to "emergency". This in turn blew oxygen out around his eyes and chin and further worried him that the mask was leaking.

3. Impression:

Operational fatigue.

4. Treatment:

The patient was given 96 hours of narcosis therapy and then sent to a Rest Home for a week's stay. At the conclusion of this period the patient was still anxious, moderately depressed and tremulous. It was apparent that he was not well and accordingly was discharged with the diagnosis of "Operational fatigue, not recovered". His symptoms were severe enough to make it impractical to try the officer on any type of military duty.

5. Disposition:

Returned to the Zone of the Interior on  
medical grounds.

2nd Lieutenant, Pilot, B-17

1. History from Officer:

Chief Complaint:

"Cannot sleep"

His Present Illness:

This officer arrived in the ETO in May 1943  
and has completed 18 missions. His first mission  
went to St. Nazaire where the flak was very heavy  
and he saw three B-17's go down. The next mission's  
target was Wilhelmshaven and the third Bremen; every  
ship in his group was hit by flak at Bremen but no  
ships were lost and no fighters were encountered. On  
these trips he acted as co-pilot. Subsequent raids  
were carried to Huls, Hamburg, Paris, on all of which  
fighter opposition numbered in the hundreds. At St.

Nazaire three bursts of flak hit his ship directly and one killed the navigator. The next raid to Paris was relatively easy. On the way home from an abortive trip to Hanover, his group was attacked by Hermann Goering's "Yellow Noses". Though no ships were lost, the squadron was severely shot up. The group performed such brilliant evasive action that the leader received the Silver Star. After this mission he commenced to worry seriously about missions, to sleep poorly. The last two raids were directed against Hanover and Kassel, again flak and fighter opposition were heavy, but he cannot clearly recollect details of this raid. For the past 3 weeks he has been sleeping about an hour or two a night even with the assistance of sleeping pills. On the night before a raid, he dreams of lines of "fighters coming in", and vivid bursts of flak. On the last few missions, he states he has seen fighters

that actually were not there. He has been feeling more and more tired, and took benzedrene before the last two raids. He was grounded when he asked for more benzedrene, slept for 18 hours, was then sent to the Hospital for narcosis treatment. He now feels very tired, ready for a rest, has no immediate interest in the war, but is anxious to return to combat when he is better.

Past Medical History:

Chicken pox, measles, whooping cough. No other serious diseases. No operations. No injuries.

Family History:

Father 51 years, civil engineer, living and well. Mother 51 years, well. Brother 13 years, well. Sister 21 years, well. The family is closely knit and get along well together. Grandparents - paternal ones living and well, maternal ones died in old age, one of

Angina Pectoris.

No family history of psychiatric illness.

Social History:

Age 24. Born in Washington, D. C. He graduated from the University of North Carolina. He then worked in the reference room of New York Public Library for three months, earning \$120.00 monthly. Though he enjoyed the work, he now believes that if he had the chance to continue in the army as a pilot after the war he would do so. He was married in October 1942 two months after receiving his wings - his wife is an old friend from his home town and he is very happy with her. He mixes easily, makes friends readily.

He started smoking at 20 years; he used to consume a package daily, now uses  $1\frac{1}{2}$  packages. He drinks in moderation; he has never been drunk. He

likes to read, to see plays, to fly, to play tennis.

Flying Record:

He was drafted on September 10, 1941. He acted as a typist at a Reception Center, but applied within a week for Air Cadet Training, which he started on 18 December 1941. He received his pilot wings in August 1942. He then received four engine training in B-17's at high and low altitude, and then came to the European Theatre of Operations U. S. Army.

18 missions, 110 hours of combat, 800 hours of total flying time.

2. Psychiatric Examination:

The officer is tense, tired and preoccupied with ideas of fighter opposition. His stream of talk is profuse once started, although he is somewhat retarded and depressed at present. The content of his thought is almost entirely concerned with combat and



is so fixed that he cannot rid himself of visions of fighter planes during combat, but he realizes that these are illusions. He is excessively tired and believes he could sleep for a week. Fear of combat doesn't concern him. He is decisive in saying he wants to return to combat as soon as he's well. His sense of obligation to his crew is intense; sometimes he feels inadequate to meeting the emergencies that may turn up in combat despite his realization that he is well trained and the confidence that he's a good pilot. This feeling troubles him when he recalls that he, as a pilot, is responsible for the other members of his crew. His past history shows that he comes of stable parents, that he has been an intelligent, stable individual in the past.

3. Impression:

Operational Fatigue.

4. Treatment:

The patient received 72 hours of narcosis therapy, was much improved, and spent the following week at a Rest Home. At the conclusion of this time, he said he felt completely well, was grateful for the treatment he had received, and asked to go back on a combat status. He was returned to his unit as "Operational Fatigue, recovered".

5. Follow-up:

The officer has completed 6 more combat missions since leaving the hospital and stated that he feels well except for "sweating out" his last (25th) mission which will complete the operational tour of duty.

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