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MEDICAL ASPECTS OF FLYING MOTIVATION

A Fear-of-Flying Case Book ✓

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MEDICAL ASPECTS OF FLYING MOTIVATION
A Fear-of-Flying Case Book

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NOTE OF DEDICATION

This book is dedicated with thanks to the over 200 flyers who contributed to its formulation, with a special nod to those men who continued to fly in spite of the fact that to them each flight was a trip to the jaws of death. Theirs was the other courage, the bravery to stand and fight each day anew in a battlefield more vast and painful than the sky -- the human mind.

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INTRODUCTION

The purpose of this book is to give the flight surgeon a working knowledge of the many facets of aviation medicine in which flying motivation plays a part. Over fifty full case reports are presented to supplement the flight surgeon's own experience. The proper handling of cases from the standpoint of Air Force regulations and medical indications is discussed; and a system for categorizing patients is offered.

Interpretations of the cases are not "deep." They are aimed at a level beyond which no one should interpret with the limited amount of time for interview and investigation at the disposal of the flight surgeon.

The prerequisites for understanding this book are:

- a. A medical education.
- b. Cognizance of the part played by emotional factors in the development of anxiety.
- c. An awareness of the relationship between anxiety and somatic symptom formation.

Each group of cases is preceded by introductory comments. These are meant to serve as a guide for the reader. The reader is invited to develop his own interpretation from the material presented.

At this time I would like to thank Lieutenant Colonel John C. Mebane, USAF (MC) FS for his assistance and encouragement; and Mrs. Martha Beverly, without whose abilities and suggestions this book could not have been written.

Charles A. Sarnoff

CHARLES A. SARNOFF
Captain, USAF (MC) FS

WHY DO MEN FLY? -- There is a great source of satisfaction in flight. It has been described by one flyer in the following way.

SOLILOQUY

by Captain R. E. Worsham, USAF

When a man is sitting in his flying machine watching the whole panorama of nature unfolding beneath the vast reaches of flight, he knows an exhilaration unmatched by a thousand other experiences.

He knows most of all this thing is very right for him.....that all the frustrations and disappointments and problems that come to touch upon each one of us are meaningless during the moment of this truth.

I would do nothing else with my life than that which I have done, for in the welling emotions of flight, I have found the Great Wisdom and the Peace.

SECTION I

AIR FORCE REGULATIONS

AIR FORCE REGULATIONS AND REMOVAL FROM FLYING STATUS FOR FEAR OF FLYING

Fear of flying is not considered to be a medical illness. Flyers giving evidence of fear of flying are therefore considered to be physically qualified to fly. Refusal to fly for this reason leads to removal from flying status through administrative channels.

The final disposition of the patient varies with his status. Cadets are returned to airman status. Officers in flying training are assigned to ground duties. Rated officers are handled according to the provisions of Air Force Regulation 36-70.

Under the provisions of Air Force Regulation 36-70, the rated flyer with evidence of fear of flying, who has been declared physically fit to fly, who does not continue to fly, is suspended from flying status in accordance with paragraph 29b, Air Force Regulation 36-57. He then meets an administrative board. If the flyer has less than ten years of rated service, he is eliminated from the Air Force unless there are compelling reasons to the contrary. If the flyer has more than ten years of rated service, he may be retained or separated, depending upon the circumstances surrounding his case and his usefulness as a ground officer. Although separations under this regulation are usually honorable, the Secretary of the Air Force may direct a discharge which is other than honorable in the presence of moral or professional dereliction under the control of the individual. If fear of flying in a rated officer presents as a psychoneurosis, the flyer is given a course of treatment. At the end of this course, the patient is declared physically fit to fly. If the impairment still exists, the patient is referred to administrative channels to be handled in the same manner as any other fear of flying case.

SECTION II

ANXIETY

CHAPTER I

THE NATURE OF ANXIETY

"Fear of Flying" is a poor term. What is actually meant is anxiety associated with awareness of the risks of military aeronautics.

Anxiety is the subjective aspect of physiological changes (i.e., quickening heart and respiratory rate, cold sweat, muscle tremors, "goose pimples," visceral spasms) which occur when the body prepares itself to run from or destroy a noxious stimulus. Our primary interest is the anxiety response of flyers to flying risks.

An adequate anxiety response is necessary for survival in flight. For instance: a student pilot started an aerobatic maneuver during which he pulled five "G"s. He lost consciousness immediately. When he regained consciousness, he found himself slumped over the controls looking at the floor with the altimeter spinning down. He looked outside the aircraft and noticed that the plane was diving towards the ground. At this point the student had three alternatives:

1. He could have developed no reaction to the situation (an inadequate anxiety response) and gone on to crash from lack of reaction.
2. He could have developed an appropriate and adequate response with enough anxiety to quicken and sharpen his functioning so that he could recover control of the aircraft.
3. He could have overreacted, developing so much anxiety that he would have ejected in his panic or frozen at the stick, sending his aircraft hurtling into the ground.

The student actually had a sensation of floating and felt himself suspended in air and completely happy. His reaction to this anxiety-stimulating situation was the inadequate response. If an instructor pilot had not been with him, it would have cost the student his life. One might best summarize the need for an adequate anxiety response in flyers by saying: To remain in flying a flyer needs enough love of flying to keep him in the air as often and as long as possible. He also needs enough fear of flying to keep him flying safely.

If an awareness of the risks of flying accompanied by anxiety is so necessary for flying safety, one might well ask: "Why should the Air Force worry about it and have regulations governing it?" The answer is that as long as tension causes the pilot to fly safely, it is acceptable and encouraged. The fear of flying and anxiety which is disapproved is the overwhelming, uncomfortable anxiety -- charged awareness of flying risks which causes a flyer to withdraw from flying (directly or through the medium of subtle socially acceptable somatic symptoms). Just how severe this latter anxiety can become is illustrated by the following subjective descriptions of anxiety given by flyers:

"A knot in the stomach, a feeling of hot flashes and warmth throughout my entire body, tightening of the muscles, a lump in my throat and a constant feeling that I'm going to throw up."

"Insomnia, tension nervousness, loss of appetite, nausea, dizziness, depression, listlessness, headache, a feeling of tingling in the extremities, cramps in the calf muscles and blurring of vision."

"I noticed that my hands began to sweat, my legs crumpled under me. I saw white spots floating around before my eyes. I felt like getting up and running."

CHAPTER II

THE SOURCES OF ANXIETY

The nature of the response to the stress of flight varies from individual to individual. An understanding of the causes of these variations will be helpful to us in comprehending our cases. These causes are either realistic (i.e. primarily environmental) or derived from neurotic factors (i.e. a predisposition in the individual).

Reality. An encounter with a wild animal, a fire in flight and other in-flight emergencies are realistic sources of anxiety. Tension is activated in everyone by such circumstances.

Neurotic Predispositions. Specific situations sometimes have highly personalized meanings to certain individuals. Though to another person they are a source of little concern, in the individual for whom they have a special meaning they may activate anxiety with ease.

For example:

1. Flyers with life patterns in which complete and rigid control of the environment is a dominant factor are predisposed to develop tension when flying in weather. They do not trust their instruments, preferring visual contact with the ground at all costs. (See Case 35)

2. An ordinary object or event can bring on anxiety in a predisposed individual -- venipuncture and the sight of blood are good examples of such stimuli. In Case 1, we have an example of a man who becomes tense and faints in response to a specific situation and to no other.

CASE 1

Lieutenant M.L. is a 23-year-old married student pilot. He has 70 hours of flying time.

The patient was sent to the flight surgeon's office because he had fainted in a theater. He attributed the faint to the fact that the motion picture he had been watching contained a scene in which the amputation of a leg was depicted. The patient had seen this film once before; he fainted then, too. Scenes, whether in movies or in real life, in which an individual performed a surgical procedure, caused the patient to develop feelings of nausea and faintness associated with tension and a feeling that it is necessary for him to avoid seeing the mutilating procedure.

The stimulus was a specific one. The sight of blood did not cause him to have this reaction. He was an avid hunter. He had killed deer and dressed them in the field. Operations on himself did not bring on this reaction. He had a rather vivid memory of an unhappy surgical experience. His tonsils were removed when he was 4 years of age. The anaesthesia was forced upon him. (He was mummified and the anaesthetic mask was forced over his face.) This was accompanied by a feeling of anger and fear, not the nauseated feeling and faintness that he developed when observing an operative procedure being performed on someone else.

The patient's first memory of seeing an operation to which he responded with fainting occurred when he was 6 years of age. His mother had gone to the dentist and taken him with her. He was left in the waiting room. He went to the door of the room in which the dentist was working on his mother and looked in. He saw the dentist with his hands in his mother's mouth and smelled some alcohol. At that point he fainted. This episode was repeated a month later. His next faint occurred in high school when he saw a movie in which an appendectomy was illustrated. Later the patient was an onlooker at an operation for the removal of a cyst on his dog's nose. During the surgical procedure he began to feel woozy and felt he might faint. He left the room. At another time he observed his wife's father, who was a veterinarian, perform a spaying operation on a dog. After the first incision the patient left the room to avoid fainting.

If we were to substitute an aspect of the flying situation for a surgical procedure, we would then have a model of the reaction to flying stress which occurs when a flyer comes up against something in the flying situation for which he is specifically sensitized to develop anxiety. (See Cases 46 and 47)

Further investigation of idiosyncratic responses such as these reveals unconscious origins based on instinctual drives and security needs.

There are two clinical insights of practical value to the physician to be gleaned from this discussion. In the evaluation of any anxiety reaction, they should be kept in mind.

1. Patient's responses are often highly personalized.
2. No stress should be devaluated or disbelieved as a source of tension on the basis of the fact that an anxiety reaction to the stress is foreign to the physician.

SECTION III

FLYING STRESS

CHAPTER III

THE REALITY BEHIND FLYING RISKS

Through all the protestations of anxiety, worry, and tension presented by fearful flyers, one theme appears again and again -- death. The reality behind the stress which brings on anxiety associated with the risks of military aeronautics is the fact that one can be killed while flying.

A flight engineer described the following "nightmare come true" as the source of his recurring apprehension. He was flying in a B-29. Weather was bad and the pilot elected to land as quickly as possible. He selected an airfield which he had confused with another airfield with a longer runway. The plane ran right off the runway into a canyon. The sound of crumpling metal, smashing of glass and explosions all around the engineer left him dazed. There was a considerable amount of fire as he undid his safety belt and headed for the escape hatch. In order to escape, the patient had to step on the body of the pilot in the right seat. Once he got part way through the escape hatch he found that he was bound to the flaming plane by his parachute. It was too wide for the hatch. He had to climb backward into the plane and over the pilot's body to remove his parachute. Then he climbed over the pilot again in order to effect his escape. By this time the pilot's body was burning. As the patient stared at the burning pilot, he swore that he would never fly again.

CHAPTER IV

THE EVALUATION OF FLYING MOTIVATION

The possibility of an aircraft accident exists for all who fly. The attitude of the flyer towards this possibility, his manner of handling his reaction and the factors which cause him to desire to fly in spite of it, join or balance each other to produce his flying motivation. In order to evaluate flying motivation one must break the flyer's expressed attitude into its component parts.

There are four basic areas to be investigated. They are represented by the following groups of questions.

Area 1. When did you become interested in flying? How did this interest manifest itself?

Area 2. What did you expect flying to be? Did it live up to your expectations? Why do you fly? What does flying mean to you? Does it still hold the same interest it did when you started?

Area 3. What sort of flying have you done? (i.e., combat, crashes, incidents, accidents, close calls, administrative flying, a recent line assignment) What is your attitude towards your job? Where have you been stationed?

Area 4. What is your reaction to crashes, accidents and incidents?

The selection of the questions and the phrasing used should be varied to fit the patient being questioned.

AREA 1 - ORIGINS OF INTEREST

The goal of the first group of questions is to obtain insight into the flyer's identification with aviation and the reason he selected flying. In a case with overt anxiety in the flying situation, the strength of his identification as revealed by these questions may often be the key to his reason for trying to stick to his job in spite of his tension. Here may be found the source of an individual's need to continue to fly in spite of a growing fear. Here may also be found the source of a flyer's need to deny his fear to himself and to others. Typically, a desire to be a flyer beginning in childhood in a setting of a family tradition of aviation points to a stable drive and a strong identification with flying. Such a person need not necessarily

have a stronger will to fly than the college student who came into military flying fortuitously, or the airman who seeks flying training as a means for obtaining a commission. He is more likely to, however. (Other factors such as positive satisfactions derived from flying can cause an identification with flying which is comparable to that of the man who has wished to fly all his life. This leads us to the rationale of the second group of questions which has to do with the immediate satisfactions which cause the development of a strong identification with flying. We shall discuss this in a later section.)

Some typical answers to the first group of questions given by flyers who have been able to function without difficulty are presented below. (The numbers preceding the statements identify the answers of a given patient. The same number is used to identify the answers made by the same patient to questions in Areas 2 and 4.)

(1) "I've been interested in flying for as long as I can remember. As a small child I built gas and rubber band powered model airplanes."

(2) "I wasn't interested as a child. It started when I got a job as a refueler and mechanic at an airport. Also, my brother is a pilot demonstrator for Bendix."

(3) "I was called to active duty with the National Guard as an infantryman. I didn't like mud and flying looked glamorous, so I applied for cadets."

(4) "My interest in aviation began when my cousin suggested we join the Air Force instead of the Army when we got to the induction station."

(6) "At 7 or 8 years of age, I decided I wanted to fly. I used to go to airports just to see pilots climbing out of airplanes. It looked so romantic. Any time I got near an airplane, I stood in awe and envy."

(7) "Flying was a boyhood dream. I built model airplanes and had an uncle who was a pilot. When the draft board got after me, I decided I'd rather be a flying officer than an enlisted man -- so I went Air Force."

(9) "I got interested in flying when I was trying to figure out how I could get to be an officer."

(11) "I've never really been interested in flying. My friends talked me into becoming rated."

(12) "I started flying in college and decided to continue in the service."

(14) "When I was 4 years old I took my first airplane ride. Since then I've wanted to fly."

(15) "Flying looked pleasant and it was a good way to get out of being an airman. It was a perfect solution if you wanted to do something unusual and get out of enlisted status."

(16) "I became interested in flying while I was a small boy. I had always wanted to fly, just to be in an airplane was all I thought about."

(18) "I've been interested in flying for as long as I can remember. I used to beg my father 'til he'd drive me to the airport. When I could go alone I did. I soloed when I was 14."

(19) "I first got interested in flying when I was 17. I flew with others but never thought of flying myself. My main interest is building design, not flying. I had to join a Reserve Officer Training Corps, so I joined the Air Force Reserve Officer Training Corps. I had two uncles who got their commissions through cadets. They teased me about ROTC. My folks really couldn't afford to send me to college. It all seemed to point in one direction, so I quit college and came to cadets. -- I'd like to serve my tour as an officer."

(21) "I got interested in flying after I saw a movie about the Eagle Squadron in World War II."

(23) "I've wanted to fly since I was a tot. When I was 9, I knew every airplane in the sky."

(24) "For as long as I can remember."

(26) "When I was 5 years old my uncle brought me to Randolph Field. Someone let me climb into the cockpit of an airplane. After that, I've thought of nothing but flying."

(27) "I've wanted to fly since I first saw a jet fly over. It has always been a challenge for me. I had an uncle in the Air Force in World War II. When he came home he gave me his jacket with all his ribbons and his Wings."

(32) "I'd rather be in the Navy, but I didn't have enough college to get into Navy flying, so I applied for the Air Force. I was about to be drafted and flying means a commission which is better than being an enlisted man, sitting around polishing latrines all day."

(35) "My father had a private plane. It took him two years, but he finally got me interested. When the time came to go into the service flying was the natural thing to do."

(39) "As a child, I was interested in flying in passing. It fascinates any kid. Only after I got into AFROTC did I get visions of flying."

(43) "When I was in the third grade, I learned what I had to do to be a pilot. Then I patterned my life with that thought in mind. I never gave up hope."

AREA 2 - SATISFACTIONS IN FLYING

The goal of the second group of questions is to obtain insight into the factors which make the patient wish to fly and determine if he derives satisfaction from flying. Particular interest is paid to gradual decrease in positive motivation with age, unusual motivations, motivations which are of a personal nature which are potentially at odds with the mission of the Air Force, and sudden changes in motivation following a specific incident.

The following is a series of quotations from answers to the second group of questions. Unless otherwise indicated, the interviewees were all successful flyers. Short historical comments are added to show how a knowledge of the patient's history (question group 3) can help in giving background and a basis for understanding the answers to the other question groups.

(1) "I enjoy flying -- on my first flight, I was thrilled to death. I have been all my life. Instrument and radio proficiency are the most interesting. (Age 38)

(2) "Flying is really satisfying. There is nothing greater than making an accurate intercept." "My wife objects to my flying in jets." (Age 25)

(3) "When I began flying, I was thrilled by it. Through the years, I've gotten older and have been faced with the need for a career more in keeping with my physical capabilities. The B-47 goes way beyond my abilities. I have no burning desire to fly. I enjoy it but it wouldn't ruin my life if I were taken off. Besides, I have flight pay insurance." (Age 39) (The patient had just been assigned to the B-47, after 10 years in an administrative post.)

(4) "I like flying. I enjoy it. It is never the same thing and I have a feeling of accomplishment; there is enjoyment in getting up there and looking around." (Age 28)

(5) "I enjoy long missions and being with my crew. I'm a little depressed to be away from them now. When I take off and I can sort of cruise along there through the air, I leave my worries behind. Flying has been my whole life. I have a private plane so I can fly on my days off." (Age 31)

(7) "I like flying 'cause it's something I do well. In addition, I have a career. In the Air Force, promotion and pay depends on being on flying status." (Age 28)

(8) "I like the flying pay." (Age 28)

(9) "I really get a kick out of flying. I like the independence that a pilot has." (The patient had been a navigator for a number of years.)

(10) "I'm in the service 'cause I love to fly. My father has a good business so I don't need the money. Maybe flying shouldn't mean so much to me. It's everything in the world. It would be like taking away something I depend on to take it away from me. I feel terrific, absolutely wonderful, while the plane is in the air. I can forget my troubles, too. I get tense on take-off. Then I wish I had more control. (Age 24) (Patient is a navigator -- often navigators will express anxiety, directly or in subtle form, during take-offs and landings. This is the time of greatest passivity for any flyer who is not a pilot. As an example of this, patient number 11 is included here.)

(11) "When I first started flying I was afraid of the aircraft. I didn't really like it. I still can't sleep on a plane. -- But I love to wear Wings -- and the prestige and money are great. I have a feeling of accomplishment. When I go home I'm a wheel. It's a real ego thing to be able to go home and tell the guys you grew up with and who are still working in factories that you are flying. Since I've been an observer in the F-89, it's a different story. Suddenly I've become part of the team and can control the airplane. I really get a thrill out of it. I love it." (Age 37) (The patient was evaluated for airsickness which occurs just before landing in the F-89)

(12) "I like flying because it is a job you can do in the daytime and then go home and forget about at night. I prefer engineering." (Age 26)

(13) "I want to fly, I love it. Behind those controls with 40 or 50 lives entrusted to you, you get a great sense of responsibility and fulfillment." (Age 24)

(15) "Flying is a little more work than I expected it to be. I like it 'cause it is an important job and 'cause you can fly all over and get to see the world." (Age 27)

(16) "I'd rather be a navigator than a pilot. It keeps you constantly busy. This makes the time go quickly. The thrill of flying is somewhat decreased for me now. Flying for money and glory is not as important to me any more. I fly because that is what I'm trained to do. It's the only job I know." (Age 35) (Patient was recently sent to B-47s.)

(18) "When I first started flying it was a wonderful feeling. As time has passed, the abandon and thrill has lessened. I'm now a careful flyer." (Age 37) (For about 7 years the patient has only flown his minimums.)

(19) "I like flying 'cause I can do something others can't do. I've always been a follower. I noticed that the leader was looked up to. I feel I'll get that admiration if I become a pilot. As for flying itself, it's just a job to me. If I had a choice of flying for five dollars per week or digging a ditch for ten dollars per week I'd dig the ditch. I'm not like the others. I don't get a thrill out of extra turns in a spin. I'm a safe pilot. (Age 21) (This patient was in cadets.)

(20) "I fly with a tiger attitude. Flying is a thrill, a great kick. I get a 'wild blue yonder' feeling. I prefer a Navion to a jet 'cause in a jet I'm always a little tense." (Age 34)

(21) "The plane gets me away from my troubles. All I have to do is climb into my plane and as I head skyward I'm happy. To fly is a gratifying experience when one can take off, refuel and land. Besides pay is better and one can advance more rapidly when on flying status." (Age 35)

(22) "It's hard to explain, but you get quite a feeling when you get upstairs all by yourself in an airplane."

(23) "My ambition is to fly a jet. The more danger and excitement the better I like it. I'm like a flying executive now that I've been assigned to multies. It just makes me thrill all over when I see those jets. You know, it never entered my mind that people flew multi-engine aircraft when I came into the Air Force. If I can't get into single-engine planes, I want out. When I'm in a single-engine plane, and it does what I want and I want it so -- I mean that little booger responds when I put it to her -- then I feel the tingling way like I feel when I'm looking up at them. It's just me and my buddy -- like one person -- and one other -- the Lord right next to you." (Age 20) (The patient had married 3 months prior to the interview.)

(24) "Flying does not have the same thrill it used to. It is still exciting on take-off. The rest of flying is like driving a car, but a lot safer." (Age 28) (This man finds few positive satisfactions, but needs few since he minimizes flying risks.)

(25) "When I first get into a new aircraft I have apprehension, fear and a good deal of respect for the plane. As I fly it I grow proficient and build confidence in the airplane until I can fly it with ease and a minimum of tension.

(27) "I was anxious on my first flight. Now it doesn't bother me. Flying is a time saver. I want to fly because it's a challenge. If you can fly, people admire you. It's an extra trade if you need it. Being able to fly gives a sense of accomplishment. I get no particular gratification from flying itself. The publicity, if I fail, will be awful. I've never failed before. (Age 22) (The patient was in flying training, and a nationally-known celebrity.)

(28) "I just like it. I feel good. I try to do my best. I put a little effort into it and I get a lot of satisfaction out of it."

(29) "Not everyone can fly. It's the easiest job in the Air Force. When you're flying nobody can shout at you. You are your own boss and can make your own decisions. When you fly there is beauty, too. You fly on top of those clouds and look down at all of the loveliness." (35 years of age)

(30) "I've never lost the thrill that I get from flying. I have an insatiable urge to fly now. This year, since I've been off flying, I've gone to the flight line all alone and felt so depressed as I watched others fly while I'm grounded." (Age 31) (This man was grounded for an organic illness.)

(32) "I love flying. It is a terrific thing. I mean flying trainers and jets. Multies are like driving a big machine through the sky." (Age 20)

(33) "Flying offers a career where you can do what you like to do and get paid for it. It's glorified driving and I like to drive." (Age 22)

(34) "I like being a navigator. You tell the pilot where to go. He just takes off and lands." (Age 27)

(35) "I like being a pilot. Being an observer doesn't thrill me. If I were a pilot I wouldn't be airsick. I like to take an active part in flying. When I can't see out, the vibration and motion of the plane nauseate me. I like navigation, but navigation with flying -- no. It gives me no kicks; no particular discomfort, but there is no thrill either." (This patient is a civilian pilot in navigator training.) "As a pilot it's different. It's a kind of a thrill to take up a plane and fly it through the air -- an adventure thrill. You get up in the air and see the countryside. Just to get up there by myself and be alone for a while is a very wonderful thing. Little hazards I guess are what make it exciting. I like to accomplish things not many people have accomplished." (Age 22) (This man is a successful pilot but a failure as a navigator.)

(36) "Above 40,000 feet the sky turns a real dark blue, the nicest it could be. It is disheartening to sit on the ground and see others fly." (Age 22) (This man had been grounded for an organic illness.)

(37) "When I first started I was afraid of flying. I didn't say a word because my instructor was a big bruiser and I was afraid of what he would do....When I learned how to fly I lost my fear." (Age 20)

(38) "It's something I have, know and can do. It's mine. It's just like a big sport to me. There is a lot of competition in flying. It's everything I hoped for." (Age 24)

(39) "I don't want to be a pilot for the rest of my life. The place of the pilot in aviation is soon to be deflated. Things are in a state of flux and guided missiles will replace the pilot. I wonder how many days we have left to fly." (Age 24)

(40) "It's something I can do that is different from what others can do." (Age 34)

(42) "The childish glory I expected was not there. It was work, but I enjoyed it. My wife was pregnant during training. After she had the baby, I stopped getting pink slips. In flying, there is a release, a joie de vivre. I have a feeling of freedom -- not freedom from, but freedom of -- it's a joining together of yourself with space and the deity." (Age 27)

(43) (The patient is a bombardier.) "The Air Force is my way of life. I never want to leave or have another way of life. When I was flying in combat, I didn't want friends and death didn't bother me. I love combat. I dropped bombs at anything -- kill them all, as many as you can, hospitals included....I prefer low altitude to high altitude bombing and strafing because it's personal. You see them when you shoot them and the bullets hit. You can't see that at high altitudes. I like to see what I am doing and see it hit. Flying through the debris is a personal satisfaction. As for strafing troops -- it's personal and a pleasure. After all, you're saving your own troops."

AREA 3 - FLYING EXPERIENCE

In asking the questions in the third group special interest is paid to the patient's military history and flying experiences. Recent changes in jobs, near accidents, harrowing experiences, and career ambitions which are not furthered by present assignments are factors which can impair or change motivation. Changes in motivation which have been uncovered in answer to the second group of questions can often be related to pertinent experiences during the patient's career. This will be well illustrated in the cases presented in later sections. No answers to this group are presented in this section.

AREA 4 - REACTIONS TO ACCIDENTS

In asking the fourth group of questions, we attempt to evaluate the degree to which the patient is aware of his reaction to the risks of military aeronautics and its effect on his flying proficiency. Some deny the existence of any anxiety or anxiety-causing elements in flying. Others are aware of the presence of risk and take reality-bound steps to minimize them. Still others are in constant terror. These questions must be asked with care for they strike at the core of the problem. Men vary in their awareness of risk and in their reaction to the risk. Often flyers whose keen awareness of flying risks had been balanced by strong positive satisfactions, develop a shaky adjustment to flying as their positive motivation decreases with age and their fear increases with accidents and incidents in their environment. A collation of the answers to the questions in group two and group four will reveal a large number of possible combinations.

For instance:

There are men with weak motivation and well controlled risk anxiety. These may be expected to defect most easily when the going gets rough. (See Case 8)

There are men with great fear, who as a result of their strong motivation and through the aegis of their predisposing personality, find no sign of the fear in their conscious awareness. These are predisposed to the formation of somatization symptoms. (See Cases 30-36)

There are men with great fear and strong motivation who continue to fly as long as they can and try to control their fear. Such men, in situations in which they must be depended upon, often are aided by their strong capacity for identification in meeting the challenge. (See Case 27)

Some typical answers to the fourth group of questions given by successful pilots follow.

(1) Accidents are part of the game. I always wonder what human factor caused it. I try to learn and profit from each accident."

(2) "I feel it better not happen to me and I try to improve myself by planning."

(3) "There is no more risk in flying than in any other human activity; provided the human element is discarded. Cautiousness is to be recommended."

(4) "When I hear of a plane crash, I get a little depressed." (Although this patient was aware of the fact that crashes bothered him, he suppressed this material sufficiently so that it never became clearly defined enough so that he could put it into words. As long as he kept his mind off of it, he was all right.)

(6) "I don't think of accidents happening to myself, I just feel sorry for the people involved. During the war, when I saw my friends shot down, I would get 'shook up' and feel a sense of loss, but also gratitude that I hadn't been killed."

(9) "People get killed every place. As far as I'm concerned, the most dangerous part of the flight is the trip to and from the airport."

(10) "Crashes? You get used to them, I guess (spoken with a meek smile). You've got to talk about crashes without feeling if you want to be part of the group. That's what I learned in cadets." (This patient's strong positive motivation overrides his fear. See (10)'s answer in Area 2 above.)

(11) "I never worry about crashes. I'm lucky -- knock on wood."

(12) "Mechanical incidents are seldom.....A lot depends on the man who flies the airplane. Flying doesn't have to be hazardous if one knows his job."

(13) "I think to myself that the pilot did something wrong and try to avoid it when I fly. There is no emotional reaction."

(14) (At one time while working mobile control this patient saw four accidents in a period of two weeks each involving a friend. He completely dissociated himself from any feeling as he made his remark.) "I felt good that it was someone else and not me."

(15) "If you have to go, a crash is as good as any. It is less risk than driving on a crowded highway. My approach is strictly impersonal."

(16) "As long as I have confidence in a pilot I never consider the possibility of crashing. If I don't get along with the pilot I try not to fly with him again." (The patient is a navigator.)

(17) "If it's a good friend, I'm sad to hear it, but I'm not overly reactive."

(18) "I have no reaction to crashes." (As the patient says this he lights the only cigarette that he smoked during the interview.)

(19) "Accidents could happen to anyone. I'm indifferent. Most accidents are due to childishness at the stick."

(21) "I have no tension while flying except while in combat. (Patient smiles as he describes his combat experience.) If I'm not flying the plane, I usually fall asleep."

(24) "I have difficulty identifying myself with having such things happen and so have no need for a reaction."

(25) "I get all anxious and choked up. I learn from each accident so it won't happen to me."

(26) "I can't describe how I feel. (The patient moves about as though in much discomfort.) But, I still want to fly."

(28) "You can also get hit in the head with a golf ball."

(29) "I used to be carefree when I flew. Then once while I was a passenger, I was in a crash. Since then I have been very conservative and somewhat tense when someone else is flying. You know, there's a lot of difference between when you are a pilot and a passenger."

(30) "It's tough! I get hazard pay 'cause it's more dangerous than travelling by car."

(31) "Tense when they're going on but lots of fun to joke about when they're all over."

(32) "People overrate the dangers of flying."

(33) "If you worry about such things, it wouldn't pay to go out in the street."

(34) "I get shook up at first, but gradually I forget and return to my old attitudes."

(35) "If the Lord wants to take my life and it's time to go to Heaven, I'm content. I accept it."

(38) "It's one of those things."

(39) "There are lots of crashes. It's something you can't ignore. I've been afraid twice. Both times occurred when the situation was beyond my control. After each time, I soon forgot my worries."

(41) "I'm afraid of jets -- but multies are different. I never have a feeling of hazards. I have enough confidence in the plane to be able to handle any emergency. I eat it up."

(42) "I don't get tense until after the event has happened. Then I forget it quickly."

(43) "I've been afraid only twice -- once when the flack was too thick and once when I had to sit with a navigator for a few hours as he died slowly from shrapnel which went through his genitals into his guts. I didn't get over the second one for a long time."

A perusal of the answers quoted above reveals striking variations in flyers' awareness of flying risks. The sources of these variations are many.

1. Reality factors can increase awareness by increasing the risk (i.e., poor maintenance).

2. Reality factors can decrease awareness by either decreasing the risk (i.e., new safety features) or offering reality compensations (i.e., hazard pay).

3. The neurotic idiosyncracies of each flyer tend to give a highly personal twist to the flyer's response to flying risks.

People will fly without the impact they might ordinarily derive from the dangers of flying when pride in their "Wings" and their outfit, or "a thrill found nowhere else," accompanies flight. On the other hand, a routine flight can become sheer terror to a flyer who has need to be in control at all times, when weather closes in, the horizon is lost and the instruments are considered less trustworthy than the eye.

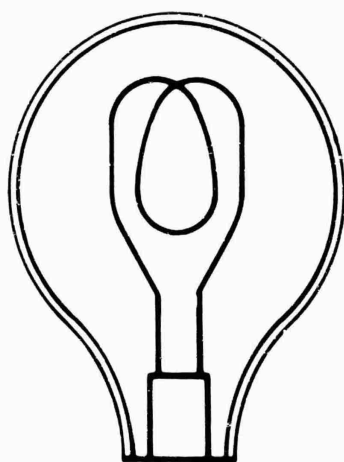
Flying risks can be ignored on a conscious level by a flyer who unconsciously denies their existence.

Many other factors which increase or decrease the awareness of the risks of military aeronautics can be discovered easily through conversations with flyers.

FOR CONVENIENCE IN ORGANIZING THE FACTORS WHICH CONTRIBUTE GREATLY TO MODIFICATIONS OF FLYING MOTIVATION, AND FOR EASE IN RELATING THEM TO OTHER ELEMENTS IN THE TOTAL PICTURE OF PSYCHOLOGICAL RESPONSES TO FLYING STRESS, LET US USE A SIMPLE DIAGRAMMATIC APPROACH.

LET US REPRESENT THE REALITY OF FLYING STRESS BY A LIGHT BULB.

THIS LIGHT BULB GIVES OUT A CONSTANT AMOUNT OF LIGHT. ITS COUNTERPART IS THE REALISTIC FACT THAT THERE IS SOME RISK TO LIFE AND LIMB WHILE FLYING. (FIGURE 1)



=

FLYING RISK

FIGURE 1

**NOW LET US CONSIDER THE MEDIUM FOR PERCEPTION
OF THIS RISK TO BE A LIGHT SENSITIVE PLATE.
(FIGURE 2)**

**LIGHT SENSITIVE PLATES VARY IN THEIR RESPONSE
TO LIGHT JUST AS HUMANS VARY IN THEIR RESPONSE
TO STRESS. -- THE HUMAN RESPONSE IS IN THE FORM
OF ANXIETY, GREAT IN RESPONSE TO LITTLE THINGS
IN SOME PEOPLE -- JUST THE OPPOSITE IN OTHERS.**

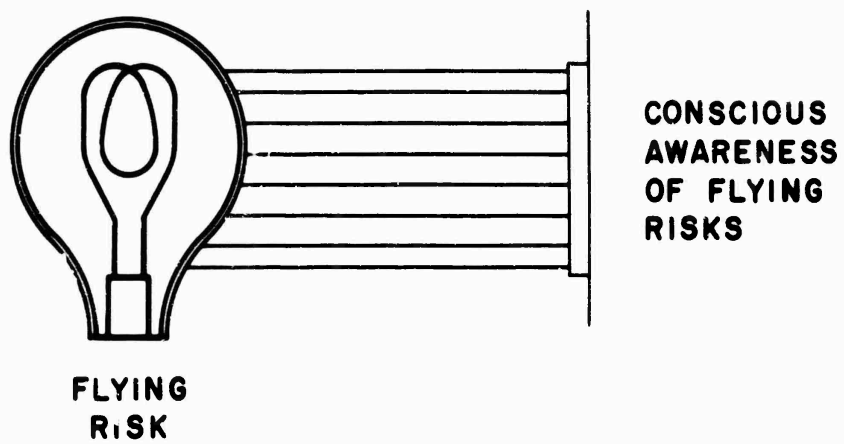


FIGURE 2

FINALLY, LET US REPRESENT THE VARIABILITY IN THE AMOUNT OF STRESS (LIGHT) COMING TO THE CONSCIOUS AWARENESS (SENSITIVE PLATE) BY AN IRIS DIAPHRAGM PLACED BETWEEN THE LIGHT SOURCE/STRESS AND THE PLATE/CONSCIOUS AWARENESS. POSITIVE MOTIVATIONAL FACTORS WILL TEND TO DECREASE THE IRIS OPENING. NEGATIVE MOTIVATIONAL FACTORS WILL TEND TO INCREASE THE IRIS OPENING. (FIGURE 3)

LET US TAKE FIGURE 3 AS AN AVERAGE CONFIGURATION FOR A FLYER WITH HEALTHY MOTIVATION.

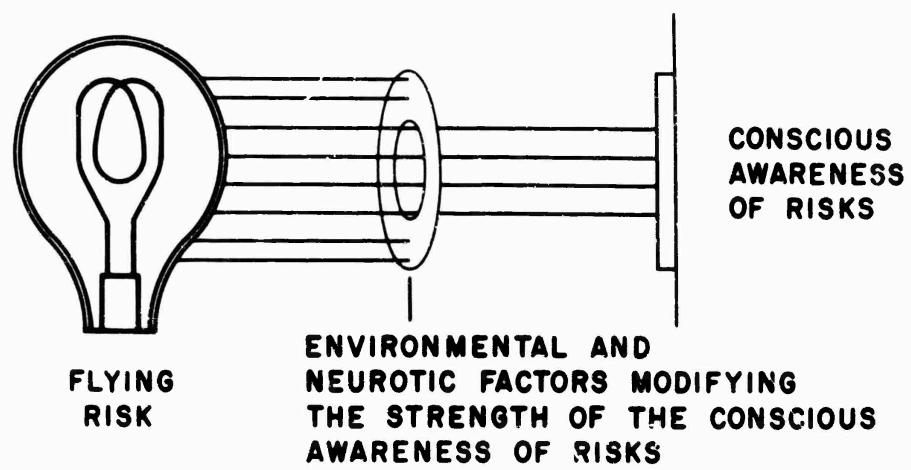


FIGURE 3

SUCH REALITY FACTORS AS PAY, GOOD MAINTENANCE, SAFETY DEVICES AND A FINE SQUADRON SAFETY RECORD WILL CAUSE OUR DIAGRAM TO LOOK LIKE FIGURE 4.

NEUROTIC PREDISPOSITION FACTORS SUCH AS "EMOTIONAL SATISFACTIONS AND THRILLS FROM FLYING" AND THE "GLAMOUR" OF THE AIR FORCE WILL ALSO DECREASE THE AMOUNT OF AWARENESS OF FLYING RISKS OR COMPENSATE FOR FACTORS WHICH MIGHT CAUSE AN INCREASE IN AWARENESS.

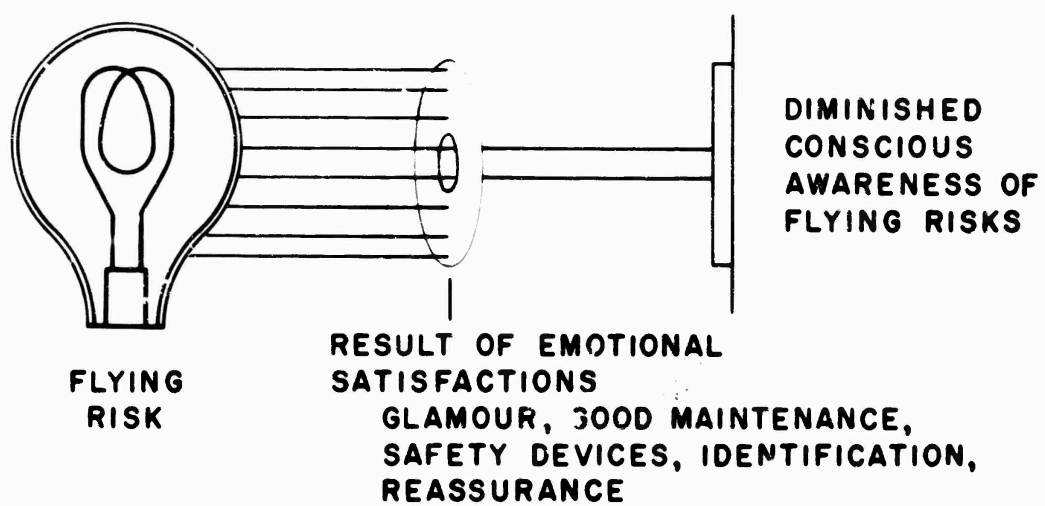


FIGURE 4

THE REALISTIC FACTORS WHICH WILL TEND TO NEGATE THE POSITIVE MOTIVATION (POOR MAINTENANCE, RECENT CRASHES, FAMILY DISAGREEMENTS AND DISAPPROVALS OF FLYING), WILL CAUSE OUR DIAGRAM TO ASSUME THE CONFIGURATION OF FIGURE 5.

NEUROTIC FACTORS CAN ALSO CAUSE AN INCREASE IN FLYING ANXIETY, FOR EXAMPLE A FEAR OF MUTILATION STEMMING FROM EARLIEST CHILDHOOD. MOST FLYERS ARE ABLE TO REPRESS THIS REACTION. WHEN DEFENSES (DENIAL, SUPPRESSION, REPRESSION) AGAINST THIS RESPONSE ARE BROKEN THROUGH BY EVENTS WHICH REACTIVATE OLD FEARS, THERE IS A MARKED INCREASE IN THE AWARENESS OF FLYING RISKS AND THE ANXIETY RESPONSES TO THEM (SEE CASES 15 AND 17).

THE SUGGESTION OF THE BRITISH AUTHOR, BATCHELOR, THAT A HISTORY OF AVOIDANCE OF CONTACT SPORTS REFLECTS POOR POTENTIAL FOR SUCCESS AS A PILOT PROBABLY HAS ITS ROOTS IN THIS RESPONSE TO THREAT. THE VERY FACTORS WHICH CAUSED A SHYING AWAY FROM BODY CONTACT CAUSE A TENDENCY TO STAY CLEAR OF THE THREATENING ASPECTS OF FLIGHT.

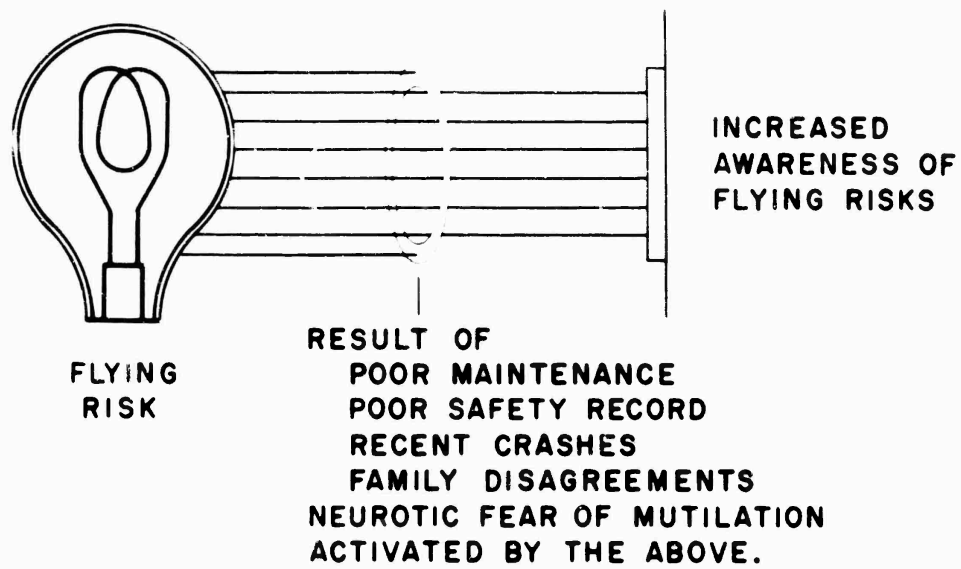


FIGURE 3

SECTION IV

REACTIONS TO FLYING STRESS

We have discussed anxiety in flying and the factors which increase and decrease it. This section will be devoted to the way that flyers handle anxiety once it has become strong enough to influence flying motivation.

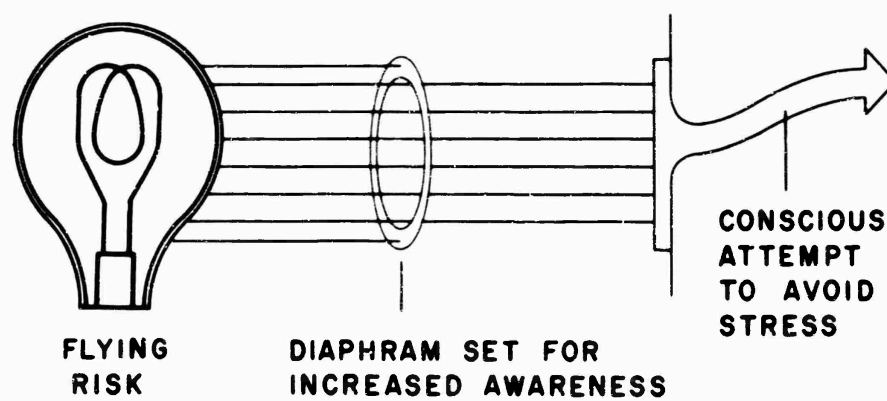


FIGURE 6

PART 1: THE BASIC ANXIETY HANDLING MECHANISMS DIRECTED TOWARD RESOLUTION OF FLYING STRESS

CHAPTER V

CONSCIOUS MECHANISMS

The following are a series of cases in which flying was uncomfortable and a conscious attempt was made to diminish the stress.

A glance at our diagram (figure 6) will show that we can illustrate this with an arrow which stands for conscious responses to stress.

It is natural for an individual to try to go from a position of stress to a position of calm, just as one seeks the shade on a hot day. Depending upon what the conscience will allow, moves are made in the direction of decreasing the amount of stress while incurring a minimum of stresses from other areas of the environment.

The stresses which counter any anxiety driven impulse to withdraw from the stresses of flying without an attempt at salvaging one's flying career are such things as fear of public opinion, pride, a picture of oneself in which failure has no place, strong identification with the group, positive satisfactions derived from flying and the contents of Air Force Regulation 36-70.

MANIPULATION OF THE ENVIRONMENT

In the following case, the patient attempted to avoid loss of prestige by using subtle manipulation of the environment to avoid contact with that aspect of flying he most feared. Note that his moves were all conscious. His choice of maneuvers to avoid anxiety was selected in preference to a more open manipulation which would have caused an even more anxiety provoking (for him) situation involving loss of self respect and the respect of his fellows.

CASE 2

Lieutenant R.B. is a 24-year-old pilot with 300 hours of flying time, primarily in jet aircraft.

The patient was afraid of flying in jet aircraft. Flying had never been his primary goal. He had entered the Air Force through a college AFROTC unit, as an expedient in order to allow him to finish college. In spite of this he showed excellent potential during his primary training. Once, when his aircraft had a fuel leak, he was able to bring it back to the base in spite of the fumes. On landing, the aircraft burst into flames. He remained calm during the fire and

retained presence of mind in escaping from the aircraft. This accident in no way interfered with his functioning in T-28 training.

His skill and spirit were reflected in his choice of future assignments. He had been given the choice of training in multi-engine or jet aircraft and he selected jet aircraft. Soon, however, his fine motivation was to come to an end. During T-33 training, he noticed that the enjoyable qualities of flying began to disappear. He began to "fall behind the aircraft." He developed tension and more anxiety than he had ever felt before. He began getting up in the morning shaking. He couldn't eat breakfast because his stomach seemed all knotted up. This anorexia led to a 10-pound weight loss. He was at perfect ease when flying dual. When flying solo he became quite tense. He recognized that this was a fear of jet aircraft since flying in reciprocating engine aircraft did not bring on this tension. More than once he considered self initiated elimination but decided that this was counter to his picture of himself as one who always succeeds. Instead he decided to bear up under the stress of the anxiety he felt and began to work as hard as he could to get high marks so that he would be able to choose his next assignment. When the chance to select assignments came up he chose a C-47 unit performing mission support for an Air Defense Command group. When he arrived at the unit he was told that the C-47 support group had been disbanded and that he would have to check out in the F-86D. It was at this point that he wrote the following letter to his commander:

"SUBJECT: Request for Reclassification

"TO: Commander

"1. I request that I be reassigned to a unit possessing conventional aircraft for the following reasons:

a. Knowing well my limitations and capabilities as a pilot I do not feel that I can safely and effectively cope with high performance aircraft.

b. During basic training I realized that I could neither mentally nor physically stay ahead of jet aircraft and as a result was constantly tense and uneasy both at home and on the flight line. This uneasiness manifested itself at home to the degree that my wife openly disapproved of my flying jet aircraft which in turn made it even more difficult to obtain the spirit of acceptance a fighter pilot must have. I was determined however to complete the program and in full accord with my instructor's recommendation chose a multi-engine assignment only to find when I arrived here that I was to be checked out in the F-86D. Again we found ourselves in an undesirable and uncomfortable situation. During my basic training I did not receive the tiger treatment and I am therefore totally unprepared to accept the tiger spirit now.

"2. I feel completely qualified and am eager to fly conventional aircraft. I enjoy flying and am certain that I could become a valuable

pilot in MATS. Both my wife and I have accepted the Air Force and have enjoyed it when we felt we fitted in and were doing a good job. Our future plans are of course dependent upon how happy we are in our work and how well we fit into it."

After this letter was received, a flying evaluation board was called. In preparation for this, he was sent to the School of Aviation Medicine for aeromedical evaluation.

The patient's tension and fear dominated the psychiatric interview. He could not state specifically what it was that he feared in flying. He felt that if an emergency were to have occurred he would not have known what to do. He said, "The F-86D is a very fast plane and it will kill you if it gets ahead of you and your ability to control it." He developed a general feeling of nervousness and apprehension every time he thought of this possibility. Although he had tended to worry about little things he had never before developed anxiety to the point that it interfered with his functioning. Even the anxiety and fear that he had while flying in jet aircraft were not sufficient to keep him from obtaining one of the highest grades in his flying training class.

Removal from flying status had calmed him. The tension and uneasiness that had been manifested at home diminished. He became easier to get along with and put on 10 pounds. He was less tense although still somewhat depressed over the possibility that he might lose his Wings and commission.

During the patient's early life he found difficulty in developing any close rapport with his parents. His father was a stable man who had a difficult time supporting the family during the depression years and could spend little of his time at home. The mother was an unstable individual whose attitudes changed frequently and whose answers were never very direct. The patient learned to work out his problems by himself.

His academic achievements up to the end of high school were outstanding. He was quite popular and took part in many extracurricular activities during this period of time. In contrast, when he went to college he was dismayed to find that he could barely handle his school work. He withdrew into himself and became rather introverted. At one time he expressed a desire to quit college and join the Navy. He was dissuaded from this by his parents. As his personality took a more introverted course, he switched from a business administration course to a course in psychology and began reading such authors as Proust and James Joyce. He began to develop depressions. When the depressions became too bad, he started drinking. The depressions were accompanied by severe feelings of loneliness. In his senior year in college he married an outward-going, extroverted young woman who has helped him to an excellent adjustment. Since the marriage feelings of loneliness and depressive periods have completely disappeared. He retained his seclusive pattern, however. This introverted personality pattern did not help him to mix easily with his fellow

flyers and form strong feelings of fellowship and identification. Such a flyer cannot expect much sympathy from a board made up of "tigers."

The patient had attempted to extricate himself from the anxiety causing situation by manipulating the environment in an attempt to obtain an assignment to the sort of aircraft which he felt he could handle. Only when there was no other way out did he reveal his fear.

REJECTING AIRCRAFT AND ABORTING MISSIONS

In Case 3, the patient was far more distraught than Case 2. His approach to his problem was therefore less well organized. When his fear became overwhelming he rejected aircraft for minor maintenance problems and aborted missions while in flight.

CASE 3

Lieutenant Y.K. is a 26-year-old pilot with 1000 hours of flying time, 600 hours as an observer and 400 hours as a pilot. He flies jet interceptors with the Air Defense Command.

During a 1-year period the patient has aborted one out of three missions. He relates this behavior to apprehension which he develops because he sometimes has feelings of vertigo while flying in weather. He describes this as a realization that, although the instruments are straight and level, he feels that the plane is flying in a right bank. When he looks out, it seems to him that the wings are tipped. This occurs only when he cannot see the horizon.

He had discussed this "vertigo" with other pilots and found that many of them develop similar sensations. In weather they flew on their instruments. He admitted that his reaction to vertigo produced greater tension and anxiety in him than in his fellow pilots. The apprehension that he had felt got to the point that he had been refusing aircraft before take-off on days when the weather was bad. He would look over the airplane and if he found anything wrong with it at all, refuse to fly it. At times he would say there were hydraulic leaks or that the tread on the tires was too thin. These aborts were all on routine missions. The patient commented, "I assumed what the Hell. I'd stay on the ground as far as taking up jets in weather is concerned." If the mission were a scramble, he always took off to search for marauding aircraft.

The patient's apprehension over being killed in weather is exaggerated by factors in his personal life. He married approximately 18 months before he was sent to the School of Aviation Medicine. His wife had been married when she was 15 year of age and the marriage had been annulled. Because of this previous marriage his church did not recognize his marriage. Although he was permitted to come to church he could not take the sacraments. Therefore whenever he flew, he was not in a state of grace. A fatal accident to him meant death without salvation. He sums it up in the following way. "I know my tension and anxiety would cease if I could get back to the sacraments."

His marriage had given him little satisfaction. It had, in fact, contributed in good measure to his adjustment difficulty. His wife was described as a tired, ambitionless individual. They had one baby.

The patient first became interested in flying when he was in high school and went to visit his brother who was a Naval aviation cadet. One look at his brother in uniform made him decide: "That's the life for me."

The patient enjoyed flying when there was no weather. He felt that when he flew he left his worries behind. He had been trained originally as a navigator. He did not like being a navigator, because he lacked control of the aircraft. He went to pilot training. He was overtly anxious over the risks of military flying especially in weather.

Psychiatric evaluation revealed no underlying psychiatric pathological condition which would explain his problem. He was an individual who developed tension in situations where he lost the control that he felt necessary for safe flying.

Now that death had taken on a sting unrecognized before, anxiety over flying risks increased. Flying through weather is a situation which had always been tension provoking for him. Now, the tension had been exaggerated. He had attempted to handle this by rejecting aircraft for maintenance deficiencies before weather flights. This was a conscious technique for avoiding an anxiety causing situation. (For more about phobic responses see Chapters VII and VIII.)

CAREFUL PRE-FLIGHT

In the next case we shall see a patient for whom anxiety was not overwhelming but in whom it caused certain behavior patterns aimed at minimizing risks. On a conscious level he was able to avoid anxiety by avoiding passenger status and checking out his aircraft carefully each time he took off.

CASE 4

Lieutenant Colonel L.W.S. is a 38-year-old flyer with 2000 hours of flying time in conventional multi-engine aircraft. He was functioning well as a pilot. He was seen at the School of Aviation Medicine for an organic condition.

He became interested in flying when he was a small child. He went into the back yard each day to watch Army planes fly over his house. He thought to himself, "Now that's living. If I could only fly." When World War II came along he joined the Army Air Corps. Once he began flying he derived satisfaction from the fact that he had a job that not everyone else could do. When he was flying no one could shout at him. He was his own boss and could make his own decisions. During his early years in flying he was a very carefree pilot and an individual who

was willing to take chances. Then one day in 1942 he was flying as a passenger in a B-26 which crashed. Everyone else in the aircraft was killed. He suffered a head injury and was unconscious for 1½ hours. After that he was more wary and more conservative in his flying. He took fewer chances and was more careful in checking aircraft before flights. He no longer enjoyed sitting in the back seat when someone else was flying and commented that, "You notice a lot of difference from when you're flying and when you're a passenger." Being in control of the aircraft, taking minimal risks while flying and checking his aircraft carefully before each flight, gave him sufficient support so that he could assuage the anxiety and the tension that he would have had otherwise.

In this case we have a flyer who developed an increase in his anxiety over flying risks. This was neutralized by a number of genuine satisfactions which he derived from flying. He was able to continue flying and maintain his satisfactions by going through procedures which reassured him that the conditions under which he was flying reflected the ultimate in safety.

LEARNING SAFETY PROCEDURES

In the case which follows, the patient had overwhelming conscious anxiety and found he could not withdraw from the flying situation because if he did he would lose the respect of his teachers, his superiors and the fellow flyers with whom he strongly identified. He therefore had to work out a resolution on a conscious level which would permit him to continue to fly the aircraft which he feared. This resolution supported him until circumstances made the anxiety unbearable. Then he chose the ultimate mechanism -- withdrawal.

CASE 5

Lieutenant A.H.K. is a 29-year-old pilot with 2103 hours of flying time including 400 hours of combat. He flew in C-119s primarily. His chief complaint was anxiety of great magnitude associated with the risks of flying.

When the patient first began his flying training he enjoyed flying and was an efficient pilot. Immediately after basic flying training he was sent to C-119 school in Miami. He flew this aircraft for 8 months, logging 600 hours of flying time before he was sent to Korea. While in the Far East he was beset by a remarkable series of mechanical failures. At one time the elevator on an aircraft became stuck in flight. Once while taking off in Japan the nosewheel of his aircraft would not retract. He was carrying a heavy load and his engines were running at a very low RPM. As he became aware of this, his fuel feeding system failed. While these events were going on, weather conditions closed in and he had to land with GCA. As the plane touched the ground one engine quit and while taxiing another went out. In Korea he attempted to land at night at an airport closed in by weather. He could just make out the lights of the runway. As he let down, the

field sounded a red warning alert and all lights had to be put out. The patient landed in the dark. Another time, while flying over Korea, one engine quit and the motor that controlled the flaps caught fire. The airplane was filled with smoke and the patient had to choose between a forced landing or throwing his cargo of dead bodies overboard. These incidents are merely representative of the sort of things that happened to him on almost every flight. He got to the point that when he came off the airplane he was frozen by a fear which he could relieve only by going to his room and drinking whiskey until he passed out.

Mechanical and weather difficulties did not cease after he returned from Korea. Once while flying over Texarkana, his plane dropped 8000 feet in a matter of approximately 10 seconds. When he got back to the base he reported turbulent air and was told he had flown through a tornado area. Another representative story of happenings after he returned to the States follows. He was flying twenty pilots to an altitude chamber when the generator caught fire. As the engineer attempted to put the fire out he got extinguisher fluid in his eyes. The patient landed the plane safely. In another incident he lost an engine on take-off and had to land the plane on an alternate runway. It was a night take-off and it was only the quick thinking of the co-pilot in asking to have the runway lights put on all over the field that helped them get the plane down safely. When the patient left the plane he wanted to rest for a minute but was told by his operations officer that he had to get a new plane immediately and take off. These events made it clear to the patient that flying is a hazardous occupation.

About 6 months before the patient finally quit flying his anxiety hit its peak. He noticed when flying an airplane that if he heard the slightest sound he developed pain in his chest and became terribly anxious. Before taking off he went through his check list carefully. Some days he "died a thousand deaths." In spite of his careful pre-flights during this period, aircraft in which he flew lost a total of ten engines. While on the ground he became depressed, couldn't eat and could hardly sleep. He became anxious and tense. While in the air he was strikingly afraid, always looking for something to go wrong. He worried the entire night before flying and prayed that the plane wouldn't be able to take off. He worried that he might be killed. Because of his lowered appetite his weight dropped fifteen pounds. He had repeated nightmares in which he was pulling back on the controls but got no response from the plane which was in a dive and just kept going down. He developed pains in his chest both on the ground and in the air. His heart seemed to flutter when he took a deep breath, and he thought that perhaps he had heart trouble. Fluttering and pain in the chest became worse before flying. He developed a rash on the chest which cleared completely when he went off flying status. He always felt tired and worn out. Some attempt to control tension while on the ground was made by drinking excessively.

The patient felt that he might have left flying upon return from Korea but his commanders had been his teachers and had introduced him

as their old student to new pilots. He felt he had to continue to fly. He just couldn't let them down.

In order to be able to present the surface appearance of an effective flyer in spite of his anxiety, the patient made the following conscious restitutive attempts to minimize the danger in flying. Before each take-off he would "check every nut and bolt in the plane carefully." He would refuse to fly an airplane if there were the slightest thing wrong with it. He made repeated visits to the flight surgeon during which the least complaint was magnified. In this way he attempted to get himself assigned to DNIF. He had 45 visits to the flight surgeon during this period, 17 for colds, 10 for GU complaints, and 14 for generalized aches and pains. While flying he never relinquished control of the aircraft to his co-pilot. Since some of the flights took 14 hours, this necessitated sitting in the pilot's seat for this length of time without taking any rest periods at all. If he sat in the back of the airplane while another person flew he almost died of fright, but when he flew he felt calmer and at least in some control of the situation. He learned the mechanical details of the aircraft backwards and forwards including the electrical systems. He feels that if he had not had this knowledge situations which could have turned into disasters would have occurred.

Using the mechanisms described in the paragraph above the patient was able to function as a pilot and achieve an equilibrium which might have continued indefinitely if circumstances had not supervened. One morning while walking to the flight line he heard a loud noise. He looked up and saw a C-119, which was flown by his best friend, crash into a house about two blocks from his home, destroying the house and killing the occupants. On that day the patient went to his flight surgeon and told him frankly that he was afraid to fly. Two or three times before he had tried to go to the flight surgeon but each time withdrew since he felt that quitting was worse than staying in flying.

The patient's early life was marked by an unstable family constellation. He had a weak, dependent father and a strong, dominating, impulsive mother who tended to shout a good deal, and dominated the family. The patient left home early in his teens to become a musician. He played in bands all over the country. He developed a pattern of wandering from place to place. His pre-Air Force personality was marked by impulsive withdrawal reactions to stress situations plus compulsive cleanliness with feelings of tension in a room that was not neat. He had few really close friends. Upon entering the Air Force he assumed a degree of stability. He made an excellent identification with the service. This plus the sense of responsibility that was required in cadets had militated against any impulsive activity on his part. He had no difficulty in adjusting in the Air Force. His good identification was reflected in his feeling that it would not be right to run from the flying situation in spite of his severe anxiety. This resulted in his fight to remain in flying for as long as he could. He had recently married a young woman who was quite pleasant on the surface and attempted to make him give up his overbearing compulsion

toward cleanliness. She had control over the family and handled all of the finances. There was an undertone of similarity to his mother.

During the interview he was calm and collected when speaking about topics related to his life and past history. When he spoke about flying he became quite tense and lit a cigarette shakily. He took one or two puffs and put the cigarette out.

Here we have a case of a patient who developed overwhelming anxiety over flying risks. His pre-service pattern would have led one to predict that he would run from a stress. However, because of identification with the Air Force and his superior officers he chose to stay in flying by modifying his anxiety through the medium of a number of fully conscious techniques to minimize the risk to himself in the flying situation.

MALINGERING (See Chapter 12)

The next three cases represent individuals for whom flying was not particularly anxiety provoking but who found certain areas of flying less comfortable than others and decided to utilize symptoms which were already present or which they decided to manufacture in order to obtain reassignment. These cases are the malingerers. Generally flyers do not attempt to malingering themselves off flying status unless they have flight pay insurance. There is a preference for symptoms which will require reassignment to forms of flying in which the flyer can fly in comfort and still obtain his flying pay. Malingerers who are not driven by an overwhelming fear of flying, when informed that they will lose their flying status and flying pay, since there is no limited flying in the Air Force, are usually content to accept the assignment they were attempting to avoid. (For a study of exaggeration of symptoms as the result of fear of flying, see Chapters X and XV.)

CASE 6

Captain L.K. is a 34-year-old pilot with 2700 hours of flying time in military aircraft.

His complaint was inability to wear an oxygen mask because it hurt his nose.

His nasal difficulties began in 1944, when he had a submucous resection for a deviated septum. Prior to that he had done combat flying with no difficulty with oxygen masks or sunglasses. In 1945, after he had left the service, he tried to wear a pair of sunglasses but found that the presence of glasses on the bridge of his nose caused a good deal of pain and discomfort. In May 1952 he was recalled by the Air Force and assigned to Europe flying C-119s. This required flying over the Alps. If he had to fly at an altitude requiring oxygen he would take a few sips of oxygen from a tube when he became

woozy rather than put on a mask. He avoided altitude chamber indoctrinations. Upon return from Europe he was sent to Waco, Texas for upgrading training leading to the position of pilot and aircraft commander in the B-47.

As part of the training, an oxygen mask was placed on his face during a chamber flight, and he experienced such discomfort that he had to be removed from the chamber after the 5000-foot ear check. He was given a choice of leaving the course and obtaining an alternate assignment or finishing the course and having a special mask made for him. He elected to finish the course. While waiting to have a mask made, he was sent to a new base where he was made an instrument check pilot. When the new mask, which made no contact with his nose, was tested, it failed to support pressure breathing. The patient was then disqualified medically for further B-47 training. This did not displease him since his new assignment was comfortable and he had purchased a new house near the base.

An evaluation of the patient's flying motivation revealed that he had been interested in flying since he was a small child. His father had owned his own aircraft and used to take his son up for flights. When the boy was 9 the father was killed in a commercial airliner crash. The first few years after the death of his father, the patient's interest in flying was minimal. His interest gradually came back so that when he entered the service during World War II he selected the flying training program and obtained his commission through cadets. He enjoys flying. He describes it as a challenge with a lot of personal satisfaction. States he, "Even today I enjoy it. The novelty of flying hasn't worn off. I look forward to the next day when I know I'm going to fly. The wanderlust hasn't worn off. I love to travel." His flying experience included combat flying (1943-1945) in the Southwest Pacific. He had 201 combat missions including combat parachute drops and parachuting of supplies. He returned to civilian life in 1945 but remained in the reserve. He was recalled in 1952. His reaction to crashes and incidents was to be unmoved by them. He accepted them as part of flying. He noted that he had never become too friendly with other flyers because he had seen too many people kill themselves and if he became too close to them he would be hurt by their passing.

There was a crash which he recalled with full affect. The memory of this he had been unable to forget. An Army colonel who was to fly in the lead plane of an 8-plane flight asked if it would be possible to fly in one of the planes in the rear of the flight so he could see all of the other aircraft. The patient willingly complied with the colonel's wishes and carried the colonel's parachute from the lead aircraft to aircraft number seven. During the flight, aircraft number seven and eight collided in mid-air. Fifty-six people were killed including the colonel. The patient noted he had difficulty dispelling the feeling that he was in some way responsible for the colonel's death.

In all discussions of anxiety associated with the risks of military aeronautics, the patient smiled, even when the situation he described was actually tension provoking. He revealed a good deal of genuine positive motivation for flying. His anxiety associated with the risks of military aeronautics did not appear on the surface to be greater than that of the average pilot. From this it was inferred that his problem was not the result of fear of flying. He was questioned as to whether he had any objection to flying the B-47. He answered that he knew jobs he would like better and jobs he would like less well in the Air Force. He had no particular objection to the aircraft, especially since he had never flown in one. When it was suggested that a mask could be made to fit him he stated that he would be willing to fly with such a mask but doubted that one could be made since the people at Wright Patterson Air Force Base had admitted they could not make a mask to fit him. Even if such a mask could be made, he doubted whether he would have to fly in the B-47 since he already had a job at his base. In order to transfer him, another B-47 pilot would have to be assigned to his job.

He was willing to go through the altitude chamber at the School of Aviation Medicine with the special mask which had already been designed for him. He felt that he had nothing to lose. If he failed he was in the same position as he was before the flight. If he could pass, on return to his home base he was assured of being able to keep his job anyway. A suggestion was then made that if the special mask did not work a face plate mask might be made for him which could be used. The patient's answer was similar to those given above. He maintained that such a mask would be a good idea. It would help him remain on flying status but he doubted that he would be assigned to the B-47 since he had a good ground job. It was then suggested to the patient that, once a successful mask could be found, he volunteer for service with the B-47 to avert an impression that he had fear of flying and prevent a 36-70 action. At this point he became somewhat tense. That evening he telephoned his wife. The following day he returned to the examiner's office and explained the situation. In effect, what had happened was that he had found a comfortable berth at the base to which he had been assigned without the risks or the frequent TDYs usually encountered by people flying in the B-47 and he and his wife decided that it would be a good idea to keep on putting emphasis on the difficulties he was having with his mask. When he realized that he would lose his flying status and flying pay as well as the possibility that he might be stigmatized by removal from flying status for fear of flying, he decided that flying in the B-47 was the lesser evil. He therefore went through the altitude chamber at the School of Aviation Medicine with the mask which had been designed for him at Wright Patterson Air Force Base and completed pressure breathing successfully. Upon return to his home base he discussed the problem with his flight surgeon and operations officer and was declared physically fit to fly in any and all kinds of aircraft. When last seen he was awaiting assignment to B-47s.

CASE 7

Major O.B. is a 36-year-old pilot with 4550 hours of flying time in both conventional and jet type aircraft.

The patient had noticed headaches since assignment to jet aircraft. He attributed them to the glare of sunlight on clouds. He first noticed this when flying in a T-33 in September 1956. Since he was not primarily assigned to flying duties he could select the day on which he was to fly. If the sky were cloudy he would not fly. In this way he avoided cloud glare.

In the first week of May 1957 he was transferred to student status in a B-57 unit. While training as a B-57 pilot he could not select the weather in which he flew. At first he attempted to handle the glare by pulling his helmet visor down but found that this interfered with his vision for flying. He could not put on sunglasses in flight because the temples got in the way. He reported to the flight surgeon's office that his eye condition interfered with his transition into B-57s. He had hoped to be reassigned to primary ground duties and thus be able to fly at his leisure. However, the flight surgeon informed him that if he were not physically capable of flying in any and all aircraft at any time he would have to be removed from flying status. He then sent the patient to the School of Aviation Medicine for complete evaluation.

By the time the patient arrived at the School of Aviation Medicine his attitude had changed. He commented spontaneously that he enjoyed transition flying. He said: "It puts the edge on flying and makes it interesting." He brought a pair of modified sunglasses with him. He had removed that part of the temples which curved over the ear. He was able to put these glasses on and take them off as needed, even while wearing his jet helmet.

An evaluation of the patient's motivation for flying was made. It was found that he first became interested in flying when he was 16 years of age. A friend took him flying. After one flight he decided that this was all he wanted to do in life. Flying was his profession. He commented that he had always attempted to stay in the operational field because he was interested in flying and preferred to remain in flying. He described flying as a sheer pleasure, a delight, particularly during recent months since he had been able to transition into jet aircraft. He commented that the things he liked best about jets were the high speeds involved. "It's great. I'm completely happy when I'm flying. I have a sense of accomplishment. Transition to new aircraft keeps an edge on things."

The patient had extensive experience as a pilot of conventional aircraft. This included combat experience and helicopters. It was not until transition to the B-57 that he first reported to the flight surgeon's office that the glare of the clouds gave him headaches. He had not noticed this while flying in conventional aircraft and had not thought to report it while flying in the T-33.

The patient's reaction to the risks of military aeronautics was that of a mature utilization of anxiety associated with the risks of military aeronautics in the service of flying safety. Commented he,

"There is a reason why there are aircraft accidents. A part of flying is to try to prevent and avoid them. One must be mature and pre-plan even to the speeds one is going to use." He went on to comment that: "Crashes don't bother me since I've never had one myself." Flying risk anxiety was deemed to be within normal limits. Without fear of flying to be implicated, another source for the symptom had to be found. Physical examination was negative. A desire for a preferred assignment was the core of his problem. When he found that the symptom that he claimed to have would have caused loss of his flying status, he reversed his position completely.

CASE 8

Major L.L. is a 34-year-old pilot with 1200 hours of flying time. He had recently transitioned to jet type aircraft.

The patient's chief complaint was color blindness. He had been aware of it for as long as he could remember, although he had not called it to the attention of the flight surgeon until recently. He had been able to pass color vision tests through the help of technicians giving the tests or by using the School of Aviation Medicine color vision threshold tester which he had been capable of passing by about two points.

He freely admits that the reason that he brings up his color blindness at this time is that he does not like the airplane he has been assigned to fly. He states, "I want to fly. The trouble is that I have been out of flying for a few years and don't have many hours so they stuck me in the back seat of a B-47. After you've been flying by yourself for a long time you don't like to be in the back seat with some other joker up there flying. There is no flying for me, I just operate the radio. I'm a major and they put a second lieutenant just out of flying school on the same position I get. I want to do some real flying."

An evaluation of the patient's motivation revealed an individual who was well motivated to fly but had little concern for the mission of the Air Force.

He entered flying through the RCAF. He was a member of this group from 1940 until 1942. In 1942 he received a direct commission in the USAAF. He flew 173 fighter missions in the European Theater during World War II. None of these involved air-to-air combat. In 1946 he left the service but remained in the Air National Guard. In 1953 he was recalled and was assigned to B-36s. He was made third pilot in this craft. He did not like to fly them. He made his wishes known. He was transferred to personal equipment officer. He didn't like this job either, so he requested that he be sent to T-33 instructor school. He enjoyed flying this aircraft. After he completed T-33 instructor school, to his surprise he was sent to pilot observer school for upgrading training leading to pilot in the B-47. This was counter to his wishes. Attempts to have the assignment

changed failed. As a final maneuver he revealed that he had disqualifying deficiencies in his color vision.

He described himself as an individual who loves to fly and had wanted to fly as long as he could remember. He couldn't visit airports because he was "stuck on a farm as a kid." He saw aircraft fly over and felt that flying was something he really wanted to do. He experienced a big thrill when flying. "I enjoy flying by myself.

I don't like the responsibilities of others or having others responsible for me. I enjoyed the war. I enjoyed dropping the bombs, shooting at the trucks. It's a helluva thrill. You don't know what it is unless you've done it. I had 23 missions with the English and 150 with the Americans. A single-seater is something like a roller coaster. It leaves me feeling tingling. It's not like the jalopy I'm flying in now (the B-47). All alone in a fighter, I just get a keyed up, excited feeling. In pursuit planes you're up for short spurts, but in bombers you get bored, going on and on for hours. I get a helluva feeling of being let down if I'm not working and doing something all the time. It's a good feeling to be alone and responsible and know that you can make that bird do just about anything. I dislike the B-47 so much that I'd take a complete grounding rather than fly it. It gripes me that much to fly the fool thing." While speaking of flying he became quite elated and there appeared to be a contagious excitement present.

Here we see an individual who utilizes a symptom in order to avoid an uncomfortable assignment. There is no overwhelming anxiety, just discomfort in a type of flying which he would prefer to avoid.

The patient's history is of interest since he displays the type of life pattern often found in individuals who malingers. Notice that every time he was faced with a situation which caused him anxiety, he resolved it by withdrawing from the situation. He grew up on a farm. His father's discipline was lax. He did not remember being punished or spanked. He was permitted to do anything he pleased. When he was 9 his father became sick. He died when the patient was 12. After the death of his father the patient assumed full responsibility for the work on the farm. He had to get up in the morning and milk the cows, go to school and come home in the afternoon to milk the cows again. His mother helped with the chores. The work day was long and arduous and was described by the patient as a "rough row to hoe." He felt that work on the farm was overwhelming and that he wasn't cut out to be a farmer. Four days after high school graduation, without permission of his mother but with her full knowledge he left the farm. His mother, thus deserted, could not handle the farm alone so she sold it and since then had had no home. She found a means of earning a living by taking care of a household for a family. The patient joined the RCAF. After he had arrived in England he spent all his free time in London picking up women for the purpose of "catching up" on his sexual activities. He ate a steak every day since he remembered the days on the farm when he had very little to eat.

Shortly after his return to the ZI he was discharged. Immediately after discharge, he met a young woman whom he married after a 3-week courtship. Their relationship was a stormy one. His own comment on the marriage was: "I've got a child. Otherwise I would have left long ago, probably in the middle of a fight."

The first job the patient had after leaving the service was that of an insurance salesman. He found that he couldn't sell insurance because it was difficult for him to sell people things he could not hold in his hand. Abstract concepts have always been difficult for him. Then he became a sewing machine company representative. This was an easy job. He enjoyed it for 5 years. He did so well that his district manager offered him a job as manager of a store in a large city. When he got to the city he found that the cost of living was too high, the store was too big and the new district manager came in every day to pressure him into getting more work done. He was unhappy with this job so he quit and reentered the Air Force. He was assigned to the Strategic Air Command as third pilot in the B-36. He did not like this. He was sent to personal equipment. He did not like this job either so he got a job flying the T-33. Once he was back in single-engine aircraft he was happy again. This did not last long. He soon found himself assigned to a multi-engine jet aircraft as a second pilot. In response to this change, he took the path which he had taken so many times (the pattern of his character), a conscious attempt to avoid stress.

Notice that in this case the patient derived no discomfort from exposure of his attitude to others. He did not worry about public opinion. He sought a medical out by which he could be removed from the discomfort of his job without administrative action. He didn't care how he got it. He had planned to be removed from flying status for color blindness and then when he had obtained assignment to ground duties with a fighter outfit, he would reapply for flying status, requesting a color vision test with the School of Aviation Medicine color vision threshold tester. He knew he could pass this.

It is not uncommon for low back pain to be utilized in a similar manner. Usually the patient has removed himself from an uncomfortable flying situation medically only to find that his backache has cleared up sufficiently within a year or two for him to be able to request return to flying status, when an acceptable assignment is available.

The malingerer is an individual who on a conscious level attempts to find a medical way out of a flying situation which causes him discomfort.

BEARING THE ANXIETY AND WITHDRAWAL

Perhaps the most basic type of conscious adjustment to flight anxiety is bearing the anxiety. The individual recognizes flying as the source of his anxiety. He is stopped from running by counter pressures such as love for flying or fear of loss of the respect of his

fellows. Realizing that he is caught in an inexorable situation and recognizing the fact that continuing to fly (his only alternative) will be a source of tension, he continues to fly, bearing anxiety and hoping for the best, making no attempt to lessen it in any way. Sometimes this mechanism is successful. More often, one day for no apparent reason the stress becomes so great that it overwhelms the counter pressure and the patient is driven to elect the ultimate mechanism, that of moving away from the elements in the environment that cause anxiety (withdrawal). The following case presents a good example of these mechanisms.

CASE 9

Lieutenant A.C.P. was a 24-year-old student officer in pilot training. He had 120 hours of flying time.

In June 1957, the patient entered the cockpit of a jet trainer just as he had entered the cockpits of airplanes many times during the preceding 9 months. The only difference was that this time his attempt to force himself to fly failed. Morbid ideas, worries and frustrating thoughts poured into his mind. He panicked. He jumped from the cockpit, ran to the nearest telephone and called the flight surgeon. He appeared at the flight surgeon's office in a state of acute emotional distress, on the verge of disintegration, shaking, restless and obviously quite tense. The patient explained that he had been increasingly upset by the thought of flying that morning. He had developed abdominal pains and anorexia. While he sat in the cockpit he decided that he could not fly again.

The patient dated his fear to the very earliest days of his flying training. He had shown no fear during the one commercial flight that he had had before entering the service. As long as he could remember, it had been his desire to learn how to fly. When the time came to enter the ROTC in college it was natural for him to join the Air Force ROTC. During his first few days in flying training the patient felt that he had no more difficulty than the other trainees. As time went on and others began to learn their procedures and relax, he found he was becoming tenser. He developed a fear that he would forget what he should know and what he was expected to know. He had been in a constant state of emotional turmoil and anxiety both while in the air and while on the ground since that time.

While flying, his anxiety was considerably increased. On solo, he found himself watching the clock and the fuel gauge to find out how soon he would be able to land. Once he had landed safely, he left the plane and while he assured himself that he had been lucky that day, he realized that he would die the following day. He found that he was unable to relate the readings on his instruments meaningfully to things he had learned. Any tight situation resulted in what the patient described as a black-out and panic (See Chapter XIV). As an example he recalls that once while at the top of a loop the engine stopped for a minute. The patient lost complete control of the situation and grabbed

the stick so hard that he thinks he may have put his fingerprints into it. He worried about these reactions. In his own words his feelings were: "I panic and tighten up on the stick -- I fear that one of these days I'll auger the plane in."

While on the ground he was faced with a general impairment and decompensation of functioning. Although out of a sense of pride he had attempted to keep up with his class academically as well as he could, he failed. His mind appeared to block against academic work. Said he: "I remember what I read for about 5 seconds and then my mind shuts it out completely. I don't want to give up. This block comes in, a block having to do with anything with flying." In addition the patient was smoking cigarettes by the carton and could hardly sleep. His stomach tightened up repeatedly and he had a marked decrease in his appetite. He noted tension all over and a constant worry over having to fly again. He began to react in a nervous manner over picayune things in areas not related to flying. He felt that things were in a constant state of confusion for him.

During primary training when the choice of basic training assignments came up, the patient expressed a wish to train in multi-engine aircraft, however for administrative reasons he was assigned to jet aircraft. He was in jet training, when he finally bolted from the cockpit. He had actually forced himself to continue to fly up to that time because he felt that continuing to fly was the right thing to do. He felt he owed something to the Air Force and could not see why he should be afraid.

The flying situation itself was a two-fold source of anxiety for him. He had a feeling of constant frustration because he could not succeed at it; and a fear of death while flying. At first he had a difficult time admitting it to himself that his problem was fear of flying.

His reaction to accidents was exemplified by his response to two accidents which occurred while he was in flying training. Although others worried about it for a while and then forgot, the accidents made an indelible impression on the patient, causing an increment in his already constant anxiety.

Personality patterns derived from his parents contributed to the patient's difficulties. During his early years his father was rarely at home. When he was at home he had no time for the child. He was a self educated man who was constantly busy studying dictionaries and perfecting himself. He taught that anything could be gained through hard work. The patient had always felt a lack in that his father was never close to him. Even so he admired his father greatly and was motivated to emulate him in as many ways as possible. On the other hand his mother was constantly with him. She was compulsively clean about the house and demanded that her environment be completely under her control. She could be brought to anger by her son through contradiction. From his parents he derived an adjustment pattern of compulsive control and a superego of a fiber so rigid that his personality

was without the resilience necessary for accepting a view of himself which included the capacity for failure. This contributed to his problem. His fear of death while flying drove him toward failure in flying training. An awareness of the presence of an ego-alien element in his personality (i.e. a need to fail), was a source of great anxiety to him. Emotional factors had entered and threatened to destroy the premise that one could gain all things by dint of hard work and that all things can be controlled. It is of interest along this line of thought that when not in an anxiety state, his pattern of adjustment had to do with planning ahead in order to avoid situations which might provoke anxiety in him.

A review of episodes of failure and anxiety in the patient revealed that when faced with anxiety provoking situations he had repeatedly decompensated in all areas. There appeared to be no compensatory pattern for handling anxiety which this patient could have called upon.

He was eliminated from the flying training program and permitted to serve out his Air Force tour as a ground officer. When seen again 5 months later the patient voluntarily expressed thanks for having been removed from flying status (administratively) and described a complete resolution of his symptomatology following removal from flying.

CHAPTER VI

UNCONSCIOUS MECHANISMS

In the previous chapter we discussed examples of conscious techniques for lessening sources of discomfort in flying. In this chapter we will occupy ourselves with unconscious mechanisms utilized by flyers to balance the impact of flying stress. This includes the counter pressures which force a flyer to remain in flying in spite of fear; and the factors which diminish the impact of flying stress on the conscious awareness of the patient. The flyer need make no conscious expenditure of effort for these mechanisms to function. The results of these mechanisms are, therefore, not a product of the will.

IDENTIFICATION

The first such mechanism we shall discuss is identification. We have seen it at work in Case 5. In that case, a man who had never stuck to any person or cause when the going got rough remained in flying for years, in spite of his great anxiety, because he had developed a sense of loyalty (identification) with the Air Force.

Case 10 is similar. The contribution of group spirit to flying motivation is emphasized for it is of vital importance. High morale and esprit de corps will keep many men flying who would have quit otherwise. The development of group spirit is one of the key building blocks in an aircrew effectiveness program. Now let us review the case of a flyer who stuck in spite of discomfort, not because he loved to fly, but because he wanted to belong.

CASE 10

Lieutenant C.A.S. is a 28-year-old student navigator with 100 hours of flying time in conventional type aircraft. His chief complaint was anxiety during his period of training as an observer.

The patient entered the Air Force in 1950 as an enlisted man. He obtained his commission through Officer Candidate School. He served with distinction as an officer. At the end of his tour of duty he returned to civilian life in order to complete graduate studies in architecture. He joined the Air National Guard while at graduate school. After graduation, he spent more of his time with his National Guard activities than as a breadwinner for his family.

The unit to which he was assigned had no need for a non-rated officer. He was eager to remain with the unit. Since he qualified as an observer, it was suggested that he take a short tour of active duty

in order to obtain flying training. He accepted this readily, for he was willing to do anything to stay with his unit.

A review of his history revealed that such a strong sense of belonging was new to him. Although he belonged to many extracurricular activities in college and at one time was president of his fraternity, he had difficulty forming any significant group identification or feeling that he belonged and was accepted until he joined the Air Force. He wished to continue to belong. He had not had a feeling of belonging in his parental home. He was brought up by a step-mother who for eight years treated him as though he did not belong in the house (i.e. refused to let him go to the ice box to take food).

When the patient entered observer training he found that flying itself had very little meaning for him. He had never wished to fly and as far as flying was concerned he could take it or leave it. His difficulties began with his academic studies. He had never been good in mathematics and he soon realized that he was falling behind the others. His motivation for training was strong identification with the Air National Guard. The identification was so strong that when he realized that he might fail because of his poor mathematical ability he developed an anxiety state. Having to leave the Air Force was too much. He doubled his efforts. This only made him more tense. He soon reached a state of continual anxiety and mild depression.

This state of tension was noted to increase before and during flying. Fear of flying was suspected. On investigation it was found that this anxiety was derived from the fact that whenever the patient flew he was put under the stress of a testing situation which might mean the end of his Air Force career.

We can see from this case how strongly identification can motivate an individual to remain in flying. Again and again we shall see patients who have severe conflicts over leaving the flying situation in spite of overwhelming anxiety because: "Flying is my life," "I want to do the right thing," or "I couldn't let the old man down." In these cases the mechanism of identification is at work.

DENIAL

Perhaps the most important unconscious mechanism utilized by flyers to diminish their awareness of the dangers of flying is denial. Second in importance to this is a related feeling of omnipotence and invulnerability. When the denial mechanism is at work the flyer consciously believes that: "It's not really as dangerous as they say," or "Flying risks never bother me." Feelings of omnipotence lead flyers to believe that "it will happen to the next guy, it can't happen to me."

In Case 11, we shall see these normal mechanisms functioning so strongly that a pathological state exists. This patient had a great

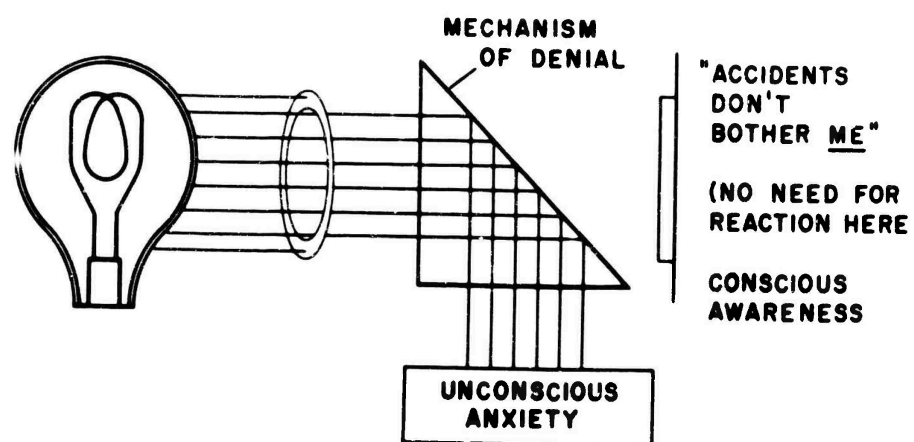


FIGURE 7

deal of positive motivation and, on a conscious level, no fear of flying. On a deeper preconscious level, in such a patient the amount of potential fear is great. The events which follow the shattering of such strong denial and omnipotence are well described in Case 15.

In our diagram denial might be viewed as a prism deflecting anxiety provoking material away from the conscious awareness (figure 7).

CASE 11

Lieutenant E.T. was a 24-year-old pilot with 1100 hours in both conventional and jet type aircraft. He was sent to the School of Aviation Medicine in order to determine whether his unusual behavior while flying was a result of poor judgment. The behavior under scrutiny was an attempted take-off from a main US highway in an L-20 aircraft. Although the aircraft was brought to flying speed there was insufficient lift for the plane to gain altitude and it did not leave the ground. During the attempt to abort take-off the patient was unable to stop the aircraft in time to avert collision with a civilian automobile. He was somewhat bewildered that anyone would criticize him for this behavior. He justified landing on this highway by stating that he was thirsty and had landed in order to get something to drink.

Other evidence of a foolhardy attitude toward flying had occurred. At one time he was reported for buzzing a mountain top Air Force solar research unit while flying in an F-94C. He was also reported for pulling his landing gear up too soon on take-off. Shortly after this, he was reported for doing slow rolls in an F-94C at 1500 feet near the traffic pattern.

Upon close questioning the patient claimed some insight into the dangers inherent in flying but did not see that there was any danger in his own behavior. Some reflection of his attitude towards the risks of military aeronautics was seen in the following story. When he first arrived at his present base there were few trained pilots about. He was given the job of following drones and missiles in determining such things as rate of climb, speed and direction. He would fly five feet away from these craft and be able to determine their variations in speed with a good deal of accuracy. In addition to this he would follow drone aircraft down to ground level and pursue them at five feet off the ground until they would land. After about 6 months, more experienced pilots were brought in and put in charge of his flight section. These people weighed safety against the amount of information that could be obtained on the performance of experimental aircraft and decided to fly two miles behind the aircraft. The experimental aircraft carried explosives intended to destroy them in case they went out of control.

The patient's lack of safety consciousness derived from an absence of normal awareness of the risks of military aeronautics resulting from an unconscious denial.

An evaluation of the patient's flying motivation revealed that the patient had always been interested in flying. When questioned about the satisfactions he derived from flying, his reaction was mostly on a non-verbal level. He beamed, chuckled and seemed to glow as he said, "For me it's a feeling of accomplishment. I've always wanted to be a pilot and now I am." His reaction to aircraft accidents was explained with a certain degree of evasiveness. He blamed most accidents on pilot error and left it at that. He was sure that he would be able to avoid such errors (omnipotence). From his behavior it was apparent that he was oblivious to the risks of military aeronautics. This, coupled with strong positive satisfactions from flying, created the somewhat dangerous situation in which the patient found himself. He had sufficient love for flying to keep him flying often and well, yet he lacked a healthy fear of flying which permitted him to undertake unsafe procedures. The dangerousness of the patient's attitude was bolstered by his feelings of invulnerability which were manifested by his attitude that he need not fear for accidents which happen to others couldn't possibly happen to him.

SUPPRESSION

When denial is the mechanism at work, the material which causes anxiety is kept out of conscious awareness. Suppression is a similar mechanism of adjustment. While denial overwhelms anxiety, suppression merely keeps anxiety in line. When suppression is the mechanism at work in a flyer, he is able to verbalize his reaction to the dangers of flying with full affect during stress periods. In response to questioning directed toward fear of flying and to intermittent situational stresses, there is intensification of his conscious awareness of flying risk. As the activating event slips into the oblivion of past days, the awareness of risks once more drifts out of the consciousness, as it is suppressed.

In our diagram we might represent suppression by a prism that deflects some of the light (figure 8).

The following two cases are motivational studies of two successful pilots who use suppression.

CASE 12

Lieutenant J.M. was a 24-year-old student pilot with 150 hours of flying time in conventional aircraft.

When the patient entered the Air Force he was assigned to duty as a supply officer. He decided that it took more to be a pilot than a ground officer and so applied for pilot training. The patient genuinely enjoyed flying, although he did not have any special interest in flying until he had been in the Air Force for about a year. Above and beyond enjoying flying as one would enjoy driving, flying had no special meaning for the patient.

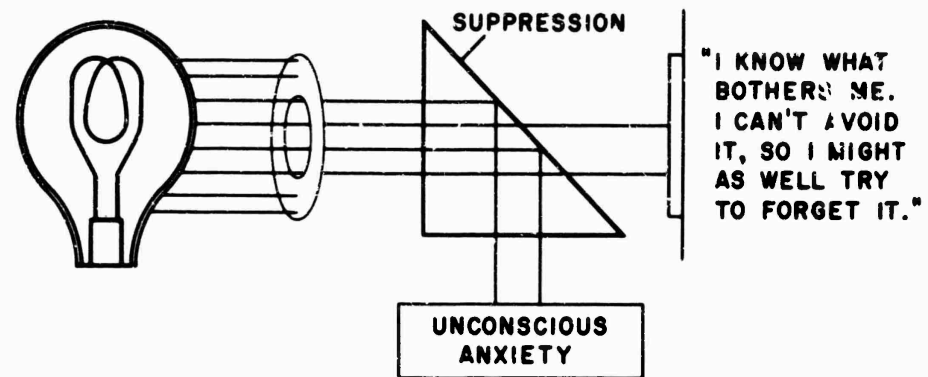


FIGURE 8

In reaction to aircraft incidents and accidents he meditated and found it difficult to believe that the people who had been flying in the aircraft were dead. Within two weeks of his wedding, six of the people attending had been killed in plane crashes. The patient had difficulty recalling whether or not he had been tense at the time of these accidents. He described himself as having gradually and completely resolved any tension he might have felt.

CASE 13

Major J.B. was a 38-year-old pilot with 3500 hours of flying time. He had been interested in aviation since before he was 12 years old. In grammar school he described himself in the class forecast as an individual who would become a commercial pilot flying from coast to coast. He collected Buck Rogers comic strips and any clippings and newspaper articles which had to do with flight. He joined the RCAF in September 1941 because he had less than 2 years of college and therefore could not get into the American Army Air Force cadet program. In May 1942 he transferred to the USAAF and completed pilot training. He had flown twin-engine aircraft exclusively and had no jet time. He had extensive combat experience during World War II and described his reactions to crashes as a stunned feeling, "It's hard to believe they are gone." He described a sickening feeling when he saw burned bodies. With the pressure of work and the passage of time this feeling subsided, although there was always some wonder left over whether it would happen to him.

PART 2: INCAPACITATING REACTIONS TO FLYING STRESS

Thus far we have emphasized anxiety, flying stress, factors contributing to flying motivation, and basic anxiety handling mechanisms directed towards resolution of conflicts over flying in favor of continuing to fly. In the cases in Part 2, we shall emphasize reactions to flying stress which resulted in removal from flying status -- adjustments which failed.

CHAPTER VII

ACUTE ANXIETY RESPONSES TO FLYING STRESS (TRAUMATIC NEUROSES)

When a person falls from a horse, the best advice is to have him ride as soon as possible, lest from fear he may never ride again. Just after passing the scene of an accident it is not unusual for the driver of a car to slow down for a few minutes. Both of these reflect non-flying examples of the traumatic neurosis. A "traumatic neurosis" is the name applied to the state of severe anxiety which is awakened by the occurrence of a highly unusual and disturbing environmental event. In aviation psychiatry, the event is usually an aircraft accident. The anxiety can take one of three courses:

1. It gradually lessens and disappears.
2. The reality (unusualness) of the situation is clarified for the patient by an authority figure and the tension is relieved.
3. The tension persists. Insomnia, anorexia and anxiety come into prominence. Horror dreams may appear. The tension may become great enough to interfere with flying or put heavy pressure on the flyer to remove himself from flying in spite of the fact that strong satisfactions from flying are still present. The patient may request DNIF or he may localize the source of fear to just one area and avoid that area of flying (i.e. phobic reaction to weather flying).

Occasionally the anxiety is expressed as a somatic symptom (making it possible for the patient to present as a medical rather than a psychiatric problem).

The important point to remember about these cases is that although predisposing factors in their personality have contributed to their state, the major source of anxiety is a single situational episode.

They are therefore quite amenable to superficial psychotherapy. Some, if left completely alone, will regain their composure and return to flying. Fortunately Air Force Regulation 36-70 makes provision for psychotherapy for this condition, before administrative action of a punitive nature is considered. All traumatic neuroses are considered to be psychoneuroses.

This group should be differentiated from patients presenting similar clinical pictures but whose anxiety has developed over a long period of time and whose motivation for flying is poor. (See Chapter VIII) This group is unaided by psychotherapy and rest.

The traumatic neurosis in flying is the result of the exposure of the conscious awareness to the raw facts of flying risks. The comfort derived from the presence of safety features is of little value in calming anxiety resulting from a crash in which they have all failed. The fact that a flyer has been involved in a crash makes him realize that his denial of the possibility of a crash or injury, involving his invulnerable self, is no more than a fantasy. Anxiety over the possibility of future accidents on future flights begins to grow.

Our diagram might best represent the traumatic neurosis which presents as a generalized fear of flying as a conscious awareness with no protection from full perception of flying risks (figure 9).

The traumatic neurosis which presents with isolation of the fear to one aspect of flying which is then avoided, might be represented by a diagram in which half the sensitized plate receives full blown anxiety, while the other half is protected from the full impact of an awareness of flying risks (see fig.10).

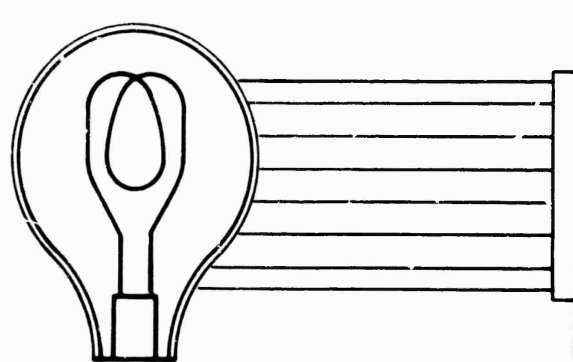
Cases 14 to 17 are descriptions of traumatic neuroses.

The following case is an example of undifferentiated anxiety in an aviation traumatic neurosis.

CASE 14

Major B.F. was a 34-year-old pilot with 3400 hours in jet and reciprocating single engine aircraft.

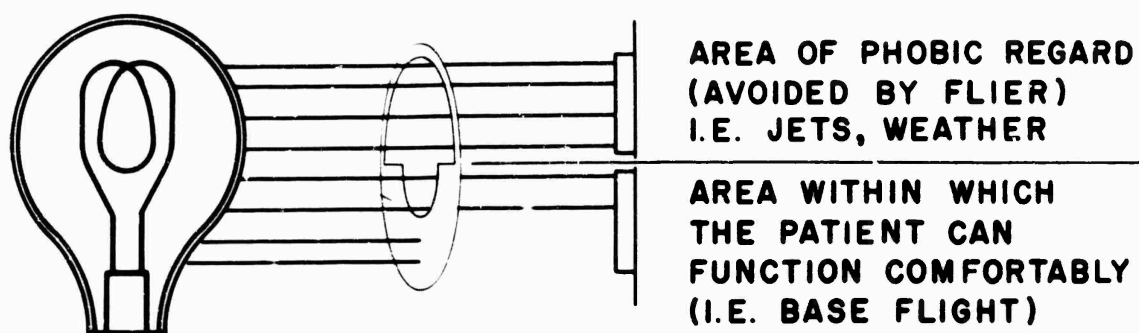
Early in 1956, while on a night radar mission in an F-86D, the patient lost control of the aircraft. Attempts at recovery failed. He finally ejected at approximately 500 feet. The time between the opening of the parachute and reaching the ground was estimated to have been anywhere from one to five seconds. Although he sustained only minor injuries from the bail-out, during the months that followed he developed tension and anxiety. He described himself as having run through the gamut of emotion because of this experience. His flying proficiency decreased. His check rides after the bail-out were very poor, especially when on instruments. The feeling of anxiety, tension, nervousness, and worry persisted at full force for 3 months. Then,



"FRANKLY, I'M
AFRAID I'LL
DIE EVERY
TIME I FLY"

TRAUMATIC NEUROSIS

FIGURE 9



"I CAN FLY ANY PLANE,
BUT NOT THE B-47."

FIGURE 10

the tension gradually began to decline until 5 months after the accident, when the patient felt perfectly well. He continued to fly during this time.

An evaluation of his motivation for flying revealed that he had always been interested in aviation. When he was 10 years of age he built model airplanes.

While a senior in high school he thought of joining the RCAF. However, he waited until the United States entered the war and then signed up for military aviation. During World War II he flew 52 missions as an escort fighter in P-51s. He left the service in 1945 and made an adequate adjustment to civilian life. In 1951 he was recalled to the service during the Korean War. He was made an instructor. In 1953 he became a flying safety officer. While in this job, he was required to examine and investigate many aircraft accidents. At the time of the accident he was in all weather interceptor training.

He preferred flying single seater fighter planes to flying multi-engine aircraft. In fact, stated he, "I detest multi-engine aircraft. Fighters give me a good feeling. I like to eat steak. I hate liver. I hate multi-engine aircraft the same way."

In reflecting upon his reactions to accidents and unusual events in flight he recalled many experiences which might ordinarily have been considered harrowing. For instance, while in combat a German plane was once so close behind him that the plane's bullets converged in front of the nose of the patient's aircraft. Once while flying at night he watched a plane in his formation fly straight into the ground for no apparent cause or reason. He reported no anxiety or particular tension about any of these incidents. In fact he had had no tension or anxiety about any aircraft accident until one happened to him.

Whenever discussing crashes or anxiety-provoking situations, the patient smiled and made a joke out of them. This sort of behavior is one of the clinical manifestations of the use of denial mechanisms for handling anxiety-causing situations.

This patient developed great anxiety in relation to the flying situation while still retaining his strong positive motivation for flying. Notice that with time, the strength of his anxiety decreased and the patient was able to return to his old flying motivation without outside intervention.

The case which follows is presented in the form of a verbatim fear of flying letter written by a pilot to his commander. Notice the appearance of somatic symptoms and the mention of a state of mind before the accident similar to that of Case 11.

CASE 15

Lieutenant S.G. was a 23-year-old pilot with 1500 hours of flying time mostly in C-47s.

On 28 October 1956 he wrote the following letter to his commander:

"Dear Colonel X:

"I hope you do not mind my by-passing the chain of command in writing this letter directly to you but I feel you should know exactly how I feel about flying. I have had a hard time expressing my feelings truthfully this last week and believe a letter will clarify matters. I have not willingly tried to deceive anyone but my pride particularly in discussing my feelings with my fellow officers has led me to be "two-faced" as far as my attitude at home and my attitude at the field is concerned. To begin with I want to say I am afraid of flying and do not want to fly any more. Before I tell you why, I would like to review my service record and review my attitude toward flying in the past.

"I received my commission from the ROTC in June 1953. I was designated as a distinguished military graduate having served as cadet colonel of our unit. I looked forward to military life although I was not sure whether I wanted to make a career out of the service.

"I entered flying school in August 1953 and since I had no previous flying experience was afraid of washing out during my first two or three rides. But after that, I rose to the top of my class (top 10%) for the remainder of flying school and confidence soared to the point that you might say I was dangerous in my attitude toward flying. I never had an unsatisfactory ride and I got so cocky that I felt I could get away with anything in an airplane. They say everyone who flies is afraid to an extent, but my fear was certainly at a minimum. My first assignment out of advanced training was with Special Air Missions. I volunteered for every flight I could get, particularly RONS (remain overnight). Just about every month I had the top flying time in the squadron. Their standards were among the highest in the Air Force and the training I received along with their accident free record extending back to 1949 further strengthened my confidence in flying.

"On 5 November, I was married. I went on indefinite status 21 November. In January, I applied for a regular commission even though both my wife and I were not positively certain we wanted to make a career out of the service. Around February 1956 I noticed a change in my attitude toward flying. My wife and I had learned we were expectant parents. The squadron's flying commitments were becoming greater and greater. With increased separation from my wife I began to feel that flying was more work than pleasure. I still felt that accidents happened to the other fellow. This attitude almost cost me my neck.

"In March 1956 we had a major accident in a C-47 because of failure to remove snow from the wings. I was flying left seat. After we started to get off the ground I felt we "had it made" until around 5 seconds before our left wing hit a brick building at the end of the runway. Although the wings were torn off down to the engines and the fuselage was ripped in two, no one was killed.

"Needless to say, this is where my fear of flying began to emerge. When I climbed out of the wreckage I told myself I never wanted to fly again. The next day in the hospital I realized that I should at least try to fly again so I would not be afraid of airplanes the rest of my life. My wife and I both decided that we would definitely not make the service a career, since I was not interested in flying on a lifelong basis and did not want a desk job in the service. I told my wife I could apply for release from indefinite status on 21 November 1956 and would try to stick it out until then as far as flying goes. My injuries were minor. I returned to flying and was assigned here in June. I have been flying the C-47 on navigational training missions as you know. I can honestly say that I did not feel afraid of flying to any large extent when I started flying again in June, but I respected the capabilities and limitations of the C-47 more than I had in the past. Although I was not aware of it, physical and mental changes were taking place during this time. In the 3-month period from 15 June until 15 September I flew 280 hours. My son was born on 25 August and some complications arising with him and my wife which were fairly minor seemed major to me.

"The first time I became aware that I was suffering from more than ordinary anxiety was the evening of 27 September when I became sick to the stomach at home prior to a flight and could not sleep. Then on 3 October on an RON at Denver, I became sick again and was admitted to the hospital overnight. When I got back to the base, I felt that with a little rest I would be my old self again. The flight surgeon put me on DNIF for a few weeks. This did not seem to have helped a bit. With such a short time left in the service I was sure I could rationalize around any fear. On 24 October after 3 weeks with no sickness and still feeling run-down I was put back on flying status and when the time came to fly the next morning I got sick again. I suffered from insomnia all the night. The next day I saw the flight surgeon and told him I'd hoped to be able to overcome this fear but I did not want to fly at the expense of my health. I realized that the Air Force cannot allow special concessions to certain pilots but as a last hope asked him if he could work out an arrangement with the operations section for an adjustment period wherein I could fly strictly as co-pilot. I sincerely felt that this might work out and was willing to give it a try. My optimism upon leaving his office diminished that evening. I felt extremely nervous at home. Just being near my wife or son was difficult to bear and I suffered from insomnia. When I went out to the field the next morning I found that our flight was cancelled. Today and this evening I have felt the same nervous feeling and anticipation. I have a flight scheduled for tomorrow. My appetite is very poor. Although I have not actually flown since I was at Denver, I feel that any continuation of my present state of mind will be detrimental to me, my family and possibly the Air Force. I still feel I can get in an airplane and fly it without any adverse effects, but the anticipation is just too much for me. I would still like to see the matter worked out without being taken off flying status but as far as I'm concerned the whole matter is now in the hands of the flight surgeon. I do not want to be eliminated from the Air Force because of fear of flying particularly since I have

only 3 weeks before I can apply for discharge, but if the Air Force feels that it is the best course of action to take, it probably has a good reason. I do not want a fear of flying discharge mainly because of my pride and secondly I feel some day perhaps I will be eager to fly again and will not be able to join a reserve unit. The most important thing is to put my health ahead of my pride. If a fear of flying discharge does become necessary I pray to God it will be honorable. I feel better now that I have finally got this off my chest than I have all week. It's 3:00 A.M. but now I know I can sleep in peace. This letter gives a good summary of my case and I wish you would turn it over to the flight surgeon. I remain respectfully yours."

The patient was given psychotherapy. His main source of tension was fear that he would be killed while flying in an aircraft because the aircraft could not be trusted. There were dangers. The airplane had let him down. The patient gained insight into the fact that his own irresponsible attitude toward flying had caused the accident and that he had let the airplane down; the airplane had not let him down. His anxiety resolved rapidly and he was able to return to full flying duties within 5 weeks of his first interview.

In the following case it is of interest to notice that the patient isolated his source of anxiety to the B-47. Also of interest is the natural resolution of his disease process. This case illustrates the phobic response type of aviation traumatic neurosis.

CASE 16

Captain L. was a pilot with 3700 hours of flying time. He had recently transitioned into multi-engine jet aircraft and had 188 hours of flying time in the B-47.

His previous experience had been in conventional aircraft. His primary duty had been in the Air Force Intelligence Service with flying as a secondary duty.

The chief complaint here was fear of flying.

During May 1956 Captain L. was on his first solo flight as aircraft commander in the B-47. His altitude was 40,000 feet and he was flying a routine flight with everything under control when his aircraft was suddenly sucked into the downdraft of a thundercloud. He began to lose altitude rapidly. At first the plane maintained a normal attitude. Then it went into a spin. It did not respond to pressure on the controls. The patient felt that it was all over for himself and his crew. Although he contemplated bail-out he could not, because the co-pilot and navigator were out of their seats and were plastered to the cabin wall by the centrifugal force of the spinning plane. The plane dropped to 15,000 feet in a matter of seconds. He recovered control eventually. He had had previous incidents in aircraft but had been able to explain all of them to his satisfaction. For this particular near-fatal aircraft accident he could find no explanation. After landing he found that he

was preoccupied by the thought that it could happen again and said to himself: "Will I bail out and kill the crew? Why did this happen? What can I do about it?" He developed mounting tension while in flight and on the ground. He experienced a growing aversion for the B-47. He was comfortable in other aircraft. His anxiety mounted and was manifested by sleep disturbance, increased irritability and decreased capacity for enjoying previously pleasurable aspects of daily living. During this period minor maintenance problems and mechanical failures served as trigger points for increasing tension.

In the hope that the fear would end, he continued to fly, accumulating an additional 180 hours in the B-47 under these pressures. Finally, he realized that the tensions would not decrease. Fear of loss of prestige and flying pay had kept him flying in spite of his anxiety. The realization that his anxiety was to remain constant, coupled with an awareness that his flying proficiency had decreased to the point that he was a hazard to himself and his crew, caused him to report his condition to his flight surgeon. He requested some time assigned to DNIF (duties not involving flying) in order to help him recover his balance. He was permitted to take two weeks leave. When he returned from leave, he was still anxious. He was then removed from flying status administratively.

An evaluation of his attitude towards accidents and crashes in flight 6 months after removal from flying status revealed an individual with no greater apprehension over the risks of military aeronautics than the average pilot. The traumatic incident had been threatening, not so much from the point of view of its actual physical presence, but because he could not explain it. He wished to return to flying. Although he was not overjoyed at the possibility that he might have to fly the B-47, he approached the possibility with equanimity and without incapacitating tension.

The traumatic material which brings on acute anxiety is not always apparent on a superficial level. Sometimes neurotic factors play a large roll. Case 17 is an example. Although this case and cases like it are descriptively like traumatic neuroses and often have the same good prognosis, the fact that the traumatic event was traumatic because of neurotic factors places such cases in the diagnostic category of "anxiety neurosis."

CASE 17

Lieutenant R.F. was a 26-year-old pilot with 920 hours of flying time primarily in jet aircraft. He was assigned to all-weather interceptor work, flying F-86Ds. His chief complaint was episodes of anxiety, while flying.

On 30 November 1956 while flying toward Duluth, Minnesota, the patient suddenly developed a knot in his stomach, and a feeling of hot flashes (which he described as a sensation of warmth through the entire

body), nervous tension in the muscles, and a lump in his throat. He had a feeling he was going to become nauseated. This episode came on quite suddenly and lasted for 5 minutes and then cleared up. On subsequent missions he developed similar symptoms. After four such episodes he reported to the flight surgeon who removed him from flying status for 5 days. His symptoms persisted after return to flying status. They were less severe but longer lasting.

The symptoms occurred whether flying in the T-33 or F-86D. If he were flying with another pilot whom he could trust the symptoms did not appear. When flying alone the symptoms always became apparent. When busy with flying or scanning he did not notice the symptoms. The symptoms had caused him to abort or shorten missions each time they appeared, and had occurred at all altitudes at various times after take-off. Anxiety was not present before or during take-off.

Evaluation of the patient's flying motivation revealed that he had been interested in flying since childhood. For many years his only conversations with his father were concerned with getting money to go for an airplane ride. There was no ROTC in his college so upon graduation he enlisted in cadets. He described flying as being all he dreamed it would be, "like being in a world all your own, 8 miles from nowhere, having a feeling of self command, as well as a feeling that people have trust in you, a feeling that you have achieved." Even though he had anxiety states while flying, the patient stated that: "I enjoy flying. I'd even love to fly today." He had made no effort to have himself removed from flying status permanently because of the presence of the anxiety states.

A review of the patient's recent history revealed no crashes or similar catastrophes. The patient himself had never been involved in an incident or accident. An unusual situation involving the patient may have contributed to his anxiety state. During the year before his episodes began there were 10 major accidents in his squadron. Since there are only 25 planes in this squadron, this was a rather high accident rate. The unusualness of the situation was compounded by the fact that not one person had been killed in any of these accidents. This circumstance was one of the main topics of conversation in the squadron. Once while the patient and some friends were driving towards a large city near their base, they began discussing the different pilots of the squadron. They picked one out and voted him the most likely to kill himself in 1957. Shortly after this, while the pilot who had been singled out was buzzing his father's farm in a jet, he flew into a tree. The pilot was killed. Within 10 days the patient had his first attack.

CHAPTER VIII

CHRONIC, SLOWLY DEVELOPING REACTIONS TO FLYING STRESS

In the previous chapter we occupied ourselves with anxieties of sudden onset which had been precipitated by specific stresses related to flying. We called these traumatic neuroses. In this chapter we shall devote ourselves to a study of the characteristics of anxiety states which have developed in response to multiple chronic, longstanding stresses.

Flying anxiety of a chronic nature, which has gradually increased to the point that it impairs flying motivation, usually has multiple sources of origin. These should be investigated in determining etiology. Most frequent are:

1. Family troubles.
2. Severe neurotic predispositions.
3. Loss of positive satisfactions (with growing maturity and family responsibilities) with a concomitant exposure of previously compensated flying anxiety.
4. Introduction to higher performance aircraft.
5. Piling up of harrowing experiences through the years.

In discussing and investigating most types of motivational problems in flying (i.e. traumatic neurosis) there is scant need to look to the individual's history and life patterns to explain his difficulties. With chronic flying anxiety, however, this becomes a most important source of information.

Short term psychotherapy is of little value in these patients for their problems are deep seated and long in developing.

Except for the group in which a recent change to higher performance aircraft has disrupted their equilibrium, most of these patients fall into one of two groups:

1. The young ones just starting to fly (See Case 9).
2. Pilots with over 3,000 hours of flying time who have stored up many memories of harrowing episodes in flight.

These patients present with:

1. Chronic, unmodified anxiety, severe enough to motivate withdrawal from flying.

2. Phobic reactions.

3. Somatization reactions.

The diagrams for the chronic anxieties and the phobic reactions are the same as those shown for similar reactions to anxiety of acute onset.

Unmodified anxiety and phobic reactions will be presented in this chapter. Somatization reactions will be discussed in Chapters IX through XIII.

The following two cases illustrate undifferentiated anxiety reactions to flying which have been intensified and complicated by environmental factors.

CASE 18

Lieutenant R.W. was a 28-year-old pilot with 930 hours of flying time primarily in jet aircraft. His chief complaint was a chronic anxiety state.

The patient was an excellent pilot. This was exemplified when he was returned from overseas and assigned to an Air Force base in the US where because of his excellent abilities as a pilot he was assigned to one of the finest squadrons on the base. His superiors were so pleased with him that he was soon made flight commander and operations officer of the squadron. As each week passed more responsibilities were given to him. In August 1955 he was sent to an aircraft plant to be among the first men to check out in a new high-performance aircraft (F-100). He remained there for a month. While there he reencountered an older woman with whom he had formed a liaison while in college. He had felt a good deal of guilt over this relationship and felt an urge to terminate it. This could not be effected however because of personal needs fulfilled for the patient by this relationship.

An emotional conflict, derived from the prolonged relationship with this woman, contributed in the patient's estimation a little less than fifty per cent to the difficulties that were soon to follow. In effect, these feelings of guilt compounded anxiety developing from another area. With greater increases in responsibility and requirements for higher performance the patient began to develop anxiety about accepting responsibility and positions of command. He felt incapable of functioning at the level required by the assignments he was given including assignment to training which would lead to being one of the first instructors in supersonic aircraft. These sources of tension combined to lead to a situation wherein he became depressed, moody, unable to eat, incapable of sleeping and unable to do anything but his work.

He gave up friends and all social relationships other than the closest ones. At first, his flying was unaffected. However during his eighth ride in the F-100, he began to feel uncomfortable. He described his sensations as similar to the hypoxia he had had in the altitude chamber. At first he thought that something was wrong with the oxygen system. He brought his plane to a lower altitude. His condition improved. After bringing the plane back, the oxygen system was checked and nothing was found to be wrong. Although he had begun to feel some apprehension while flying, he was able to complete his training in the F-100 and return to his home base.

After he had returned to his home base he aborted two T-33 tow missions without what he considered to be adequate cause. The first was aborted because the engine did not sound right and the second because he had developed an upset stomach, felt a little dizzy, had sweating palms and felt very nervous. After the second abort, he went to see his operations officer and asked to be taken off the schedule. From there he went to the flight surgeon's office where he requested permission to take leave in order to pull himself together.

On the ground as well as in the air, he felt disconsolate, listless, tired, and depressed, with sufficient stomach pains to make him worry that perhaps he had an ulcer. He noticed that instead of paying attention to others he paid attention only to himself, his personal problems and his physical complaints. In this way his thoughts were taken off worries about the added responsibilities which had weighed upon him so heavily that they precipitated a breakdown and caused the acute episodes of anxiety which had developed during flight.

An evaluation of his flying motivation revealed that flying had been his boyhood dream. He had made model airplanes and had had an uncle who was an Army flyer. His attitude toward his uncle was that he was one of the greatest people living. During the Korean War the patient was impressed by the fact that the local draft board was becoming increasingly interested in him. He felt he would rather fly than walk and rather be an officer than an enlistee so he took the cadet examination. He waited until graduation from college and then started cadets. Once he got into flying he found that flying was something that he liked, and something he did well, a challenge from which he derived satisfaction in being able to do the job right. In addition, he derived satisfaction from aerobatics and rat racing above and beyond that derived from just doing a good job. He was a career officer and saw being on flying status as a source of promotion and pay.

He found the fact that there are accidents in military aeronautics to be somewhat disquieting. He commented "It's kind of a _____," and left the last word of this phrase blank. Then he stated: "I hope, I wish they wouldn't happen." He studied any accidents that did happen with care and attempted to derive from the accident some cause for its happening and some means by which he could prevent such a thing happening to himself. In effect the patient directed his tension associated with military aeronautics, which was somewhat greater than the average, to the area of accident prevention.

Much of his trouble resulted from feelings of inadequacy derived from an identification with parents of whom he was ashamed. He described them as average lower class people. His father had a ninth grade education and was an emotionally unstable individual who was short tempered and became quite peeved with himself because of the difficulty he had in holding a job. Sometimes the mother had to send the children out of the house while his father was in a period of emotional disturbance. The child had difficulty in establishing any rapport with his father. The mother was a more approachable individual but she volunteered little advice and he felt he did not gain much from talking to her. He learned to keep things to himself most of the time. His mother was far more stable than his father. However, she was quite dependent upon the father for direction because of the difficulty that she had in making decisions.

His father worked as a migratory crop worker. The entire family with all its belongings was loaded into a truck and followed the crops. They never stayed in one place very long. The patient could never make any lasting friendships. He attended 7 different schools in one year. He missed very little school because his mother made sure to get him assigned to a school wherever they were.

At the beginning of World War II more non-skilled jobs became available and the family was able to settle down. The patient was thus able to attend one school for his entire high school career. During this period his father got a steady job as a carpenter. He developed a lung condition from the sawdust and was invalided to the extent that he had to stay at home while the mother worked. This created a good deal of emotional unrest in the father. This unrest remained until he died at the age of 48 of a coronary thrombosis. Subsequently the patient's mother remarried. She chose a man the patient described as "50 years old and a dishwasher."

While the patient was in high school he had to work after school and on week-ends and so took no part in extracurricular activities. However, he managed to date quite a bit. He did well in high school and his educational advisors recommended that he go to college. In college he majored in petroleum engineering. To take care of his finances, he had a scholarship and a job. He worked 18 hours a week for his room, board and transportation. He did gardening, took care of lawns, and acted as chauffeur for the family with which he lived. He became so interested in the family that it was as though he were part of it. He did not actually feel that this was a job. He became more comfortable there than with his own parents.

It was during his college years that he formed a liaison with an older woman. She gave him the understanding that he had failed to get at home. It was this liaison which subsequently gave him so much discomfort when the necessity for ending it became apparent.

The patient had a low self picture and an attitude reflecting feelings of inadequacy which appeared in response to increases in responsibility. These emotional factors, of a deeply personal nature, predisposed him to his breakdown. He had identified himself with his concept

of his father and his family and when increased responsibilities were placed upon him he began to feel uneasy. His positive motivation for flying decreased and the large flying anxiety which it had balanced became a prominent factor in his conscious awareness. He was removed from flying status medically, because of strong predisposition, and sent to an Air Force neuropsychiatric center where he received psychotherapy and gained insight into his problem. He was able to return to full functioning. He was not returned to flying.

CASE 19

Lieutenant E.M. is a 29-year-old pilot with 230 hours of flying time mostly in jet aircraft. His chief complaint was a long history of anxiety related to flying.

During his early days of flying training, flying was all thrill and enjoyment. It was not until transition to jet aircraft, that he began to feel anxious when he flew at high altitudes. At 30,000 feet he would become tense and say to himself, "Golly, this is too high for me." In altitude flying, the sense of thrill was gone. A sense of apprehension took over.

Following graduation from flying school, he was assigned to training in the F-94C. He enjoyed the training, but while he was flying he kept thinking the plane was too high. He would wonder to himself if this particular flight had his number on it. His attitude toward all of flying changed. There was no more feeling of excitement and thrill. It now became something about which one should be apprehensive. He constantly feared that he might die. If there were a good movie playing at the base, he would say to himself as he took off: "I wonder if I'll get back alive to see it." After checking out in the F-94C, the patient was assigned to Iceland. He remained there for 9 months. His condition had stabilized, and he was able to fly with his tension. At the end of his assignment to Iceland he was given a T-33 to transfer State-side. He was somewhat apprehensive about the prolonged flight over water but not sufficiently so to refuse the mission. On the day of take-off the temperature was sixty degrees below zero. Shortly after take-off, after reaching an altitude of 35,000 feet, the patient had a dimming of vision. He looked at his oxygen regulator and noticed that the blinker was not working well and that the only way he could get oxygen was by forcibly drawing a breath. Almost immediately he lost consciousness. The plane went into a dive. He regained consciousness at 8,000 feet. His first reaction was to question where he was and what had happened to him. Then he noticed that the water was coming straight up at him. He had no immediate overwhelming anxiety reaction at this time. He realized the situation and pulled out as quickly as he could. He then decided to return to the base at Iceland instead of continuing on. On the way back he was suddenly overwhelmed by a sense of anxiety and tension. He said to himself, "This is it." His mouth became dry. He began to shake all over. He thought that he was going to faint from fear. During the 40 minutes it took to fly back to his base he was sure that he was going to die every minute of the flight. He flew at low altitudes. There was nothing he could do

to control the way he felt, and no one he could ask for help. He prayed.

A check of the oxygen regulator showed that moisture in a feeder line had frozen and blocked the passage of oxygen. The patient made two subsequent attempts to fly the T-33 home. Each time he reached 20,000 feet, he became so overwhelmed by tension, anxiety and fear of death that he aborted the mission. Eventually he was returned to the States by a transport plane. After return he did not feel anxiety while on the ground as long as no flights were scheduled for him. When flights were scheduled he would develop fear that in the air he would have the same overwhelming anxiety and fear. He did not report this to his flight surgeon or commander, but instead took a 30-day leave, hoping that it would go away. During this leave, he married. The tension persisted after return from the leave. The patient was able to remain on flying status for a 3-month period by flying T-33s dual 4 hours each month. Then his commander told him he would have to check out in an F-89 or quit. He told the commander that he could not possibly check out because of his tension. He was then sent to an Air Force hospital for psychotherapy. As the result of psychotherapy the patient had a complete remission of his symptoms.

When he returned to his base he was assigned to flying conventional aircraft. He felt no tension and was quite happy. In fact, it was "just like old times." If a long flight came up he requested to be the pilot. His wife who had witnessed the crash of a light plane during their honeymoon was far more apprehensive than he. She did not attempt to conceal this. His comfort while flying continued for about 6 months. Then one day he began to develop tension in a C-45 while he was doing lazy eights at 8,000 feet. He suddenly developed a "knotted up" feeling in his stomach and was described as turning white. He could not say why he felt afraid. After landing the fear went away completely. After the acute attack in the C-45 the patient became quite tense before each flight. He was overwhelmed by a fear that he would get in the air and get a feeling that he was going to die. He developed a dry mouth and his stomach became tight and painful. His hands began to shake. He was unable to concentrate. The tension built up until it got to the point that he just could not enjoy flying any more and got sick just thinking of having to fly. He could not perform his ground duties on the day before a flight. He told no one of his problem, not even his wife. Since her reaction to his flying was one of a great deal of tension and worry which she did not attempt to conceal from him, telling her that he must fly the next day added to his problems. The patient continued to bear the anxiety and to fly for six more months. Then he was assigned to go TDY to a course given in Chicago. While in Chicago his anxiety state spread to areas other than aircraft. When it came time to go to downtown Chicago he developed a severe apprehension that in the streets of Chicago he would develop fear and need help. In addition to this, while trying to return to his base he developed fear of travelling on trains or cars. The tension became so severe that it did not matter whether he was scheduled for a flight or not. He just felt bad all the time. When he

got up in the morning he did not feel like working. He started taking drinks to calm the tension. When he awakened he felt tense. His mouth felt dry and when he got up he felt weak and dizzy and would stagger. He felt as though his stomach were a hard pit. He would be so sick to the stomach that he could not eat lunch and if he did he developed heartburn. He began going to the flight surgeon with complaints of stomach pain. He was grounded for his anxiety state by his flight surgeon. After removal from flying status anxiety symptoms remained. Of course, the acute anxiety states which preceded flights were no longer present. (When anxiety has spread to areas other than flying, resolution comes slowly following removal from flying status.)

A review of the patient's flying motivation revealed that he had been interested in flying since childhood. His parents still had pictures of airplanes which he had drawn at 3 years of age. He had loved airplanes and had made airplane models.

He stated that he loved flying, that it was fun to fly in a thunderstorm and that he never had been afraid of tight situations. Stated he: "Nothing I can do in an airplane scares me. It's what I can't do that scares me." Then he launched into a description of his fear that he would get into a situation which he could not handle. Another aspect of flying that he enjoyed was the fact that one could do as one pleased when "up there alone in the plane." One felt important. One could look down at the ground and could see a lot of other people down there who could not do what you could do.

The positive aspects of flying are completely counterbalanced by the fact that while flying he develops periods of overwhelming anxiety during which he feels that at that moment he is going to die.

The patient was brought up in an emotionally unstable environment. His father showed lax discipline, was frequently aroused to anger and struck the children often. One day when the patient was in his teens, his father asked him to do something. When the patient, who was half awake told the father to do it himself, the father struck him with his fist. The patient was never very close to his father. The father tended to dominate his wife. He was a very nervous man. In addition, he was a severe alcoholic. The only name the patient remembers for his father is "Swallow." The patient's own description of his father is "Sot." In contrast to the patient's father, his mother never showed anger. Although often worried about her family, she never displayed her inner reactions to the children. A superficial picture of stability was presented to them by her. The patient had a great deal of respect for his mother. He described her as a person who had a way of making him feel at ease. Whenever he was overcome by any of the severe anxieties or phobias which dotted his childhood, the mother would say in a very matter-of-fact way to the anxiety ridden youngster, "Oh, get out of here, you hysterical kid." This phrase which seemed to denote derision was gratefully accepted by the patient. It was described by him as being so calming to him that he could then relax and go about his affairs as though nothing had happened. The patient's sister was an unstable individual who was extremely dependent and who, when

she had to go to school or do something she did not like, usually complained that she was sick. His brother was more stable. He was killed in a motorcycle accident. In response to hearing of the brother's death the patient broke into tears and trembling and had to be helped to his home. The sister's reaction was to become quite quiet and stare at the wall. His father began to cry quietly. The mother screamed. In addition to a neurasthenic sister and alcoholic father, there were three persons in the patient's family whose mental aberrations were severe enough for them to have been hospitalized.

His childhood and adolescence were marked by anxiety attacks similar to the ones he had while flying. These were related to fear of poisoning, spiders, illness and fighting. When he was bullied by others he refused to fight for fear that since he was larger than they, he might hurt them. If he came close to an individual who was ill or got near a spider or its web he would run to his mother in abject fear and terror to be soothed when she told him nothing was wrong. His school career was unremarkable.

Shortly after his return from Iceland he married. During his honeymoon he and his wife went to see an air show. There they saw a light plane crash and the occupants killed. Since that time, his wife has not approved of his flying. Whenever he came home and told her that he was scheduled for a flight she cried and threw fits and had temper tantrums. She had been known to call police stations and hospitals to find out the location of the crash when his plane had been late. She did not permit him to go hunting because she was afraid he would be shot. She was extremely possessive and jealous and did not want him to talk with other women. In the patient's mind, her only fault was that she trusted no one. She was described as an excellent clean housekeeper, perhaps too clean, for she cleaned all the time. She had a fear of dogs. She was afraid she would catch rabies if he got too close to them. She did not let him take out life insurance because she worried that doing so would in some way be tempting fate and might lead to his death. Her reaction to flying and her own constant state of perplexity and anxiety aggravated the patient's flying fear. They were happy together, for they understood each other's problems.

A study of his life, his disorganized reactions and of the influences which were brought to bear on him, gives us some insight into the sort of predispositions and environmental factors which exaggerated his anxiety reaction to flying. He was removed from flying status medically because of a preexisting psychoneurosis.

The next two cases are examples of chronic flying anxieties manifested by phobic avoidance reactions.

CASE 20

Lieutenant J.S. is a 33-year-old pilot with 2,000 hours of flying time, mostly in single-engine jet aircraft.

The patient described his problem as apprehension over flying the F-86D. Early in 1955, he was on Okinawa, assigned to a fighter unit, flying the F-84F. The entire unit was switched from the F-84F to the F-86D all-weather interceptor without what the patient considered adequate weather interceptor training. He was pleased with the plane at first but gradually developed a feeling of apprehension about it. Within three months the feeling of apprehension increased to such a degree that his proficiency as a pilot was impaired. He began to worry about mechanical failure in the aircraft. He worried that the escape system would not work quickly enough. Within seven months of the onset of his apprehension, he began aborting missions. He felt things were "not going right." He found himself waiting for things to go wrong and watching the instrument lights for signs of engine malfunction. At one time, the engine of his plane actually did develop trouble and he had to turn the engine off and land dead stick. This episode was followed by a period of sleeplessness and diarrhea.

Throughout his flying career, the patient had been aware of a recurrent reaction. Every time he transitioned to a new aircraft, he had been apprehensive. When he first transitioned into jets, he had a hampered feeling and felt tense about the new engine. He watched the engine warning signals carefully. He soon suppressed this apprehension, became relaxed and began to enjoy flying jets. When he switched to the F-84F his initial flights were also marked by preoccupation with the engine; but once again he suppressed this apprehension. The switch to the F-86D was not accompanied by apprehension immediately, but soon it grew.

The patient discussed freely those aspects of the F-86D that caused him tension. The plane had a bad reputation. It blew up, crashed and was dangerous. His duties entailed all-weather flying in areas where civilian airliners flew. He had a minimum of training for weather flying. Being tense decreased his flying proficiency. This made him even more tense. He particularly disliked the fact that the F-86D was radar equipped, its course guided by radar, and its armament fired by radar. He had little power over this. It gave him a feeling of being "hampered." He felt that the aircraft just flew itself and took him along. In other aircraft he had been in control. (The element of loss of control with its attendant tension is found repeatedly in the areas of flying avoided by phobic cases.)

In addition to aspects of the aircraft which could be related to break-down in his flying proficiency and motivation, there were anxiety causing situations in his personal life. The patient had married and had a child while quite young. His wife spent all his money and was unfaithful to him. He obtained a divorce. Every year since, she has sued him for more money for alimony and child support. He has remarried and has had a difficult time supporting his family on what is left after paying alimony to his first wife. He and his second wife now have a child, about whose future he worries, should anything happen to the patient.

His military career had not been going as he had planned. This had diminished his feeling of identification with the Air Force. He had been passed over for promotion to captain. Being assigned to the F-86D instead of an administrative post meant more time spent as an operational fighter pilot. He felt that since he was getting older he should have been given an assignment with command responsibility and more chance to use his mental capacities.

His interview behavior was remarkable in that he shifted between an open discussion of his feelings of apprehension and fear in relation to flying and absolute denial of same. He denied his anxiety when questions were asked of him which, if answered in the affirmative, put him in the situation of describing himself in a manner incompatible with his picture of himself as an outstanding pilot and an outstanding man. When not placed under pressure and permitted to pursue his own conversational goals he drifted again and again into an awareness of his fear of flying.

The patient's phobic reaction was specifically for the F-86D. He expressed a willingness to fly in the F-84F, T-33 or conventional aircraft. Apparently control of his environment was important to him. The passivity he found in the F-86D was a source of anxiety to him. Personal problems, reality risks in the aircraft and his disappointment in the course taken by his military career exaggerated his anxiety. His response was an attempt to avoid further anxiety by avoiding flying in the F-86D.

CASE 21

Lieutenant Z.T. was a 24-year-old observer with 700 hours of flying time in multi-engine aircraft. He was with the Military Air Transport Service. His chief complaint was a chronic anxiety state associated with performance of flying duties.

The patient described his difficulty as primarily a fear of falling from a high place. He felt that while he was flying, the plane would fall out of the sky and he would be killed. In his flying duties with the Military Air Transport Service he wore no parachute. His anxiety and discomfort occurred only while flying or while preparing for a flight. During these periods he became tense, argued easily, and while at home became grumpy. He could not eat before a flight and if he did eat, he felt nauseated. The anxiety state was intensified in bad weather to such an extent that he could not carry out his duties. When the air got bumpy and the weather bad, he found a place in the plane where he could sit quietly and held on for dear life. Individuals who had observed him during flights noticed that he drank a lot of coffee and although he appeared restless, remained in one place. There were no other overt signs of anxiety. His subjective sensation while flying was a feeling that he might as well be riding in a car that was headed for a brick wall. The main reason he sat in one place was a fear that if he were to walk to the back of the plane, it would tip and slip to the ground, tail first.

The patient did not remember any overt fear of flying or heights in observer training. He ascribed this lack of fear to the fact that he had never flown in weather while there. His first contact with weather occurred after he had been assigned to the Military Air Transport Service. His initial contact with weather flying resulted in a feeling of depression and the development of tension before flying. He pinpointed weather as a source of increase in tension and anxiety. An intensification of this symptomatology occurred after he had returned from a long flight and found that his wife had had a miscarriage while he had been flying.

In spite of the tension, he continued to fly for 5 months because he had too much pride to admit that he was afraid. He eventually decided that judgment would have to take precedence over pride and reported his condition to his flight surgeon. His commanding officer balked at accepting his story. He hinted that the patient was not a fear of flying case at all, but a "poorly motivated college man" who had completed the two years in service that he needed for his military obligation and, having used flying as a source of commission, was now attempting to get out of the service before his date of separation, on the basis of a feigned fear of flying. This the patient denied emphatically. In order to prove that this was not so, he returned to flying. He flew seven more long missions before he returned to the flight surgeon. This time he was removed from flying status. Since removal he has enjoyed his new ground job and has noticed an improvement in his relationship with his wife.

Two areas in the patient's life history contribute to our understanding of his present problem. The first was a weak capacity for identification. There was an absence of closeness with his family. After dinner he would get right up and walk out, without saying goodbye to anyone. In his marriage he had had difficulty in confiding things to his wife. Although he belonged to a fraternity in college he only went to mandatory dances and meetings. He dated infrequently. He summed this up by saying: "I'm not the friendliest type in the world. I just don't join groups easily." The second was a fear of heights. This dated from early in his childhood. In order to go to school he had had to cross a 200-foot high bridge. Other children sat or hung on the rails of the bridge. He could not bring himself to do this. It terrified him every time he had to walk across. About three years before coming into the service, he had to climb telephone poles to repair telephone lines while he was in the forest fire service. Once when he had to fix a telephone line while suspended over a cliff, he became tense and developed a feeling of nausea. While in flying training at Waco, Texas he went to visit a nearby national park. He stood close to the edge of a high cliff. There was a little dog sitting near the edge of the cliff. Although the patient was not close enough to the edge to be in danger himself, he developed an overwhelming feeling of anxiety lest the dog should fall over. He has had repeated dreams starting years before the apprehension over flying began during which he had a feeling of falling continuously. He never hit bottom. Each time, he awakened in a cold sweat.

The patient had little in the way of positive motivation for flying to overcome the overwhelming negative neurotic predispositions with

which he came into flying. He had had no interest in flying before he entered college. While in college, he realized that he was about to be drafted. He decided it would be better to be an officer than an enlisted man and took tests for aircrew training. He was assigned to navigator training although he would have preferred to be a pilot. He summed up his attitude by saying that he had never really been interested in flying but that it was better than being drafted. At first he was able to handle his tension reaction to high altitude. However flying in weather with the Military Air Transport Service intensified his anxiety and fear of falling. He would have quit then, but personal pride and flying pay kept him from revealing his fear of flying for as long as he did. Group identification and pride in his unit did not contribute in the least to his bearing of the anxiety. When he finally decided to quit, his poor group identification made his withdrawal from flying without qualms easier. The blasé and remorseless attitude he displayed while taking this step coupled with the ample evidence he presented of no true loyalty to the Air Force led to his commander's assertion (which was partly true).

CHAPTER IX

SOMATIZATION REACTIONS

There are many possible etiologies for the signs and symptoms of disease. In the investigation of the etiology of a symptom, the possible causes to be considered are neoplastic, infectious, vascular, degenerative, congenital, traumatic and psychogenic. In the initial stages of investigation of etiology each factor should be considered.

In aviation psychiatry the consideration of psychogenic factors in the etiology of somatic symptoms is of primary importance. We frequently find cases of fear of flying which present with somatic symptoms. The reason for this is readily apparent. Complaints and requests for special treatment based on a chief complaint of fear are far less acceptable socially than are similar requests based on the presence of "organic" symptoms. We have already seen a few cases in which somatization has been in evidence.

In describing the etiology of symptoms as psychogenic, the flight surgeon must be wary and sure that he is correct. Proof must be so positive that it can be presented before a board of lay persons and be self evident. The reason that such a strict approach must be used is that all "fear of flying," whether it expresses itself as anxiety, phobia or a somatization reaction, may ultimately be handled under Air Force Regulation 36-70. Under this regulation designating a symptom as of psychogenic origin with flying stress as the precipitating factor can leave a flyer open to loss of flying status and commission. In addition, a fear of flying diagnosis invalidates any claim for flight pay insurance. The social stigma associated with fear of flying should also be considered. Flying is the profession of these men. For them and for their fellow flyers, "fear of flying" is a bad word, connoting "cowardice and malpractice" at the very least.

In attempting to evaluate the psychogenic origins of symptoms, one should look for evidence of an awareness in the patient that he has a flying anxiety. In many cases, during initial contact with the flight surgeon, flying anxiety is belittled or ignored by the patient while the symptom is emphasized. Motivational evaluation (Chapter IV) brings out the presence of flying anxiety. The relationship between flying anxiety and the presenting symptom is established by fulfilling the following four criteria.

1. The patient must have a personality pattern which predisposes to the formation of somatization symptoms. Individuals with somatization reactions in the past, individuals who use suppression and denial mechanisms extensively, passive dependent and passive aggressive personality types are examples. When in doubt psychiatric consultation is indicated.

2. The symptom should be unusual or one in which a psychogenic etiology has been proved to play a part in previous cases.

3. One must elicit the fact that there is a flying stress which provokes anxiety in the patient (Chapter IV) or one must demonstrate the occurrence of symptoms in a situation which makes possible for the patient future exposure to a flying stress which is anxiety provoking for him (i.e. an instrument check flight for a flyer with a weather phobia.)

4. A direct temporal relationship between the stress and the symptom must be established. In establishing such a time relationship, one should keep in mind the fact that individuals vary in their reactions to anxiety so far as the temporal relationship between tension and stress is concerned. The most important time periods, during which flying anxiety productive of symptoms occurs are:

a. The night before a flight: The tension may continue until the end of the flight or terminate when the patient goes to sleep.

b. Just before a flight: The tension may remain through the flight or there may be a cessation of tension on take-off.

c. During a flight.

d. During in-flight emergencies or unusual circumstances in flight: among these circumstances are positions of passivity.

e. After an emergency during which calm and control was maintained.

f. Some time after return to earth.

g. Continuously as long as the possibility that the patient may have to fly is present.

The flyer may present himself to the flight surgeon during any of these time periods with somatic symptoms, and without overt expressions of an awareness of the presence of flying anxiety.

Once the four criteria outlined above are fulfilled, the somatization reaction should be classified as to type. There are at least four types of somatization reaction. We shall devote a chapter to each.

1. Somatic Preoccupation (Chapter X)
2. Somatic Anxiety Equivalents (Chapter XI)
3. Hysterical Conversion Symptoms (Chapter XII)
4. Psychosomatic Illnesses (Chapter XIII)

The four criteria for establishing a psychogenic etiology for a symptom may also be used to determine if flying anxiety contributes to an exaggeration of the severity of the subjective symptoms of organic disease. Occasionally such symptoms are exaggerated to the point that medical removal from flying status appears mandatory. (For a discussion of these cases and their handling, see Chapter XV.)

There is a group of flying stresses which sometimes decrease with familiarization. As the flyer becomes used to the situation and once more feels in control, the tension becomes less. Symptoms with their sources in these stresses may occur in any of the time relationships to stress, which are mentioned above. Among these stresses are: the first few flights in a new aircraft, introduction to new aerobatic maneuvers, upgrading (the uncertainty of one's position in SAC crew stratification), and entering combat. Patients exhibiting symptoms without overt fear in these circumstances, should ordinarily be given support and permitted to continue flying in hopes that the tension will be overcome.

CHAPTER X

SOMATIC PREOCCUPATIONS

Somatic preoccupations are somatization reactions in their simplest form. In this condition, the patient directs his interest away from the environment and toward his body. Minor variations in anatomy, normal physiological functions and minor ills become the focal point of the patient's interests and conversations to the exclusion of reality problems.

These patients usually have a record of many visits to the flight surgeon for minor complaints. When giving a history, they recount, with great detail, vague symptom complexes which often do not fit any logical medical pattern. Worry about their symptoms is expressed. Physical examination fails to reveal any signs which might explain the complaints. Prolonged supportive psychotherapy is sometimes helpful in treating the patients.

The term hypochondriac is often used to describe these patients. It should be kept in mind that somatic preoccupations are part of the picture of neurasthenia, and that they may appear in the early stages of many psychoses (i.e. schizophrenia, manic-depressive psychosis, and organic brain disease). This differential diagnosis should be kept in mind when dealing with such symptoms.

(Cases 22 to 24 illustrate Somatic Preoccupations.)

CASE 22

The following case illustrates a somatic preoccupation resulting from poor flying motivation.

Captain R.K. was a 34-year-old pilot with 2000 hours of flying time in multi-engine aircraft. He had been flying the B-47 for about one year.

He presented himself to the flight surgeon complaining of a feeling of fullness in his ears on descent. This was greater in the right ear than in the left. It persisted for about two days each time it occurred. He also gave a 3-month history of ringing in his ears in flight and trouble clearing his right ear on descent.

Upper respiratory complaints have been a source of concern for him since childhood. As long as he could remember, his right ear had itched, after events which caused him tension. He had had an allergy and a running nose all his life.

Since he had been assigned to the B-47 he had had numerous diffuse somatic symptoms. These had not prevented him from continuing to fly the aircraft. However, it had resulted in many visits to the flight surgeon's office, with loss of duty time for varied complaints of different degrees of seriousness. On 26 May he had an upset stomach and heartburn; 20 October, a U.R.I.; 31 May, cold and sinus; 2 March, airsickness. Accompanying the flight surgeon's reports of these visits were the comments: "The patient is scheduled to fly tomorrow. He has a stomach upset today," or "Airsickness, cause anxiety." In addition, the patient reported that tension provoked spasms of the muscles of the right side of his head. This occurred frequently while he was flying, especially on check-rides. From the observations of the patient and his flight surgeon, we conclude that in situations of tension he was apt to develop somatic symptoms.

The patient's interest in flying could be traced back to the days when as a small child he saw his first airplane. He decided then and there on aviation. He had remained fascinated by airplanes to the time of the interview. In his own words: "The thing that gets me is the wonder I have, what holds it up?" "I love to fly, especially formation flying, shooting landings, touch and go. I like anything that takes aviation skill, but I hate to fly that big monster, the B-47. That gets me." He had always preferred multi-engine aircraft to single-engine aircraft. "I like more than one engine. Too many times I've lost an engine and been grateful to have the other one."

During World War II he was assigned to New Guinea and the South Pacific. He flew 31 combat missions. After World War II he returned to civilian life. He was recalled in 1952 and was assigned to fly B-29s. In 1956 he was transferred to the B-47. He was assigned to this aircraft as co-pilot. He rarely got to fly the aircraft. He had to keep quite busy. His initial B-47 assignment was difficult for personal reasons. He had been assigned to an aircraft commander who used abusive and vulgar language. The patient did not get along with this man at all. He considered the man to be immoral and lacking in interest in religion and the church. He asked for transfer to another aircraft commander. There was some confusion in his orders so that he found himself assigned to two aircraft with orders to fulfill the requirements of two B-47 crews. It was during the time of this increased work burden that he first began complaining of his ear difficulties.

He freely described the feeling of aggravation caused by the amount of work he had to do in the plane and the tension engendered by the uncertainty of schedules, the prolonged time of the missions and the amount of time one had to spend preparing for the missions. Though his motivation for flying had been good, these factors had caused a lowering of his morale to the point that frequently the mildest somatic complaint would bring him to the flight surgeon.

The patient's deep religious feelings helped him accept flying risks. He described plane crashes as something that had to be. If someone were killed he felt that the individual had been transferred to a better place.

He commented, "For me it will be a pleasure to die. The things that I will get in Heaven will be so wonderful."

The patient had been married for thirteen years. During the first twelve years, he and his wife rarely fought. With assignment to the B-47 he began to flare up at her and their three children. Arguments began easily.

Of primary importance was the fact that his first love and interest was his church. He considered this to be the most important thing in his life. He considered the Air Force to be secondary and a means of supporting his activities as a missionary. He was superintendent of the six churches of his sect in the area around his Air Force base. The long hours of preparation, the long hours of flying and uncertain schedules in the Strategic Air Command as well as the wearying constant activity while flying the B-47, which forced him to spend most of his leisure time resting, had markedly curtailed his ability to perform the tasks to which he preferred to devote his life. He realized his responsibilities to the Air Force as well as to the church and was torn between the two. In his mind this was his major area of conflict and the prime source of anxiety for him. On occasion he found that this conflict was resolved for him when he developed somatic symptoms which grounded him giving him socially acceptable time off for his church work. No disease was found to be present. He continued to fly.

In the case which follows, the patient had resolved his problems by developing somatic preoccupations. Underlying, more severe pathology could be discerned. A secondary fear of flying was aroused by his decreased ability to function during his period of decompensation.

CASE 23

Captain P.K. was a 34-year-old pilot with 2500 hours of flying time. For five years, his flying time had been logged only in single engine jet aircraft.

On 21 February 1954 the patient reported to the flight surgeon that for the preceding 12 months he had had malaise, backache and fatigue. On 16 August 1954, he reported that he had also developed vague mid-abdominal pains and loose stools. The pains were constant, not related to meals and did not awaken him from sleep. The malaise, back pain, occasional abdominal cramps, weakness in the arms and frequent bowel movements continued until February 1955 when he had a tooth pulled and a periapical abscess drained. Following this he had a total remission of all symptoms. This lasted for about three months. Then his symptomatology returned with the addition of anorexia, tight sensation in his stomach, excess eructation and a bad, dry taste in his mouth.

Some of the symptoms increased during flight. The back pain increased in severity after prolonged periods of sitting in an airplane. He also developed rather severe cramps in flight.

The symptoms were described as variable, coming and going, never constant. An extensive medical work-up was done without positive findings. A few months before the onset of the patient's symptomatology he had developed influenza. It had been severe enough for him to have been confined to quarters for five days. He was very ill at the time. His wife had to devote her full time to taking care of him. The illness began with back pains. The most outstanding symptom he remembered was malaise. There were also abdominal cramps.

Flying had been the only sustained interest in his life. This began when he was quite young. He described flying in the following words: "I enjoy flying. To me it has always been an escape from work problems and worries." He denied any fear of flying, stating that he loved flying. He had been flying his minimums because he felt that the cramps he developed while flying made flying hazardous for him.

He was trained as a pilot during World War II but never saw combat during this tour. He left the service for two years at the end of World War II only to reenter in 1948. At first he was assigned to Okinawa as a fighter pilot. When the Korean War started he was transferred on TDY to Korea where he flew jet aircraft. At one time his air group was credited with killing 600 North Korean soldiers. After return to the US, because of his excellent combat record, he was made project officer on a special research project. He was also assigned to duty as base gunnery officer. He found himself with the equivalent of two full time jobs. It was necessary for him to be on duty for twelve hours a day. These military assignments could not be avoided. They were quite disagreeable to him. Toward the end of a duty day he became tense and extremely nervous. The only relief he got from this grinding schedule occurred when he developed influenza. It was in temporal relationship to the relief he found from his stressful job assignment in this illness, that the patient developed his symptoms.

His early life was marked by a striking emotional instability on the part of his parents. His father was a man of violent temper who struck out at anyone who opposed him and ruled the family with an iron hand. The patient's attitude toward his father had always been one of anger. He had to leave home when he was 18. He had had an argument with his father. During this argument his father threatened to kill him. The patient had to run from his home and hide in the woods while his father hunted him down.

He entered the service immediately after leaving high school. He adjusted well to the service. After leaving the service following World War II he wandered from job to job. He was never able to keep one job for more than a month or two. He had few friends. He got into fights with his bosses easily. When he developed a feeling of wanderlust he left for another job. He found it difficult to adjust to non-service life, and decided to reenter the service.

He was married and had two children. There was a good deal of disagreement over the bringing up of the children. He preferred to be strict.

In describing his combat experiences the patient's face took on an appearance of glee. His affect was markedly inappropriate and his mood quite labile. Evidences of concrete thinking and a mild thought disorder were present. This suggested an underlying psychotic process.

A diagnosis of "hypochondriacal reaction, chronic, moderate, manifested by malaise, bowel complaints, rectal burning, back pains, stomach pains, mild headaches, and shooting pains, in an individual with concrete thinking, a poor job history and a labile affect," was made. A recommendation was sent to the patient's flight surgeon that because of the schizoid coloring of the patient's personality and his interview behavior it was considered highly unwise to continue to expose the patient to the environmental stresses to which he was currently being subjected. It was hoped that further personality disorganization could be avoided, as a result of this recommendation.

In civilian life an individual with such a brittle personality can do well for he is able to select his environment. If a job or interpersonal contacts become tension provoking, he may avoid the tension by moving to a new location or job. In the service such an individual does not have the mobility necessary for avoidance of stresses. If the assignment is right, they do well, and may even make outstanding pilots and officers. When given an assignment which is anxiety provoking, a breakdown can occur.

Development of somatic symptomatology (In this case, cramps, a somatic anxiety equivalent) related to flying stress was not a reflection of primary fear of flying but of a secondary fear which developed as a result of a general defect in the patient's functioning. This defect was part of the disease picture. It is not uncommon for people whose functioning has weakened to find that they cannot adjust to anxiety provoking situations (i.e. flying) which they could have handled previously. This leads to a vicious cycle, since the patient is made more anxious and therefore becomes even more defective in his ability to adjust. Because of his marked predisposition and the non-flying nature of the primary source of tension, this patient was handled through medical channels.

In the following case, the typical past history found in somatic preoccupation cases is emphasized.

CASE 24

Major M.B. was a 41-year-old pilot with 2426 hours of flying time in conventional aircraft.

He reported to the flight surgeon with complaints of fatigue, nervous stomach, headache, insomnia, indigestion, nervousness and cramping bowels. This symptomatology had been present for about 8 months. Its onset was temporally related to an assignment to primary duty as second pilot on a Military Air Transport Service transport plane. For 10 years prior to this his primary duty had been in manpower. He had flown only his minimums.

He blamed his inability to function adequately as a transport pilot on aging, decrease in proficiency and the presence of his somatic symptomatology. Because of this he requested transfer to a primary ground job with secondary flying duties. He was removed from flying status. Upon removal from flying status the fatigue, nervous stomach, headache, insomnia, indigestion, nervousness and cramping bowels with which he presented himself to the flight surgeon cleared up completely.

The patient had an extensive history of somatic complaints dating back to his early youth. He apparently could recall having had almost any type of somatic symptomatology one might ask him about. He had a colitis-like picture in 1953. Throughout his combat experience in World War II, he had rhinitis and sinusitis. He also had two "heart conditions" of which he complained. The first was a steady gnawing pain in his left chest which had been present for about three years. Occasionally a sharp pain accompanied this gnawing pain. The second "heart" symptom he had was pain in the left chest which he distinguished from the gnawing pain. This had been present for 20 years. This developed when he was carrying heavy loads in a bottling plant. He noted that this chest pain became more apparent during times of fatigue, stress and tension.

The patient became interested in flying in the late 1920s during the days of barnstorming pilots. As a child this interest manifested itself in reading about World War I heroes and drawing pictures of them. This was his main hobby. In 1942 he applied for and was accepted for cadets. He was 26 years old and the oldest cadet in his class. He recalled flying as having been filled with moments of fright with laughter afterward. He loved flying and felt as though he were one of the chosen few since he could fly. He described enthusiasm and daring as making up his approach to the flying situation during World War II. He served in North Africa and Europe. He flew 145 missions in P-39s and is credited with one German aircraft destroyed. His main duty was strafing trucks, bridges and locomotives. He was proud to be carrying out his mission and approached his assignment with maturity.

There had been a marked change in his attitude toward flying since his World War II flying days. He felt that: "Now it doesn't hold much of a challenge for me. It's more like a job. There is the benefit of travelling and going places and doing things. Flying pay is important. But as a profession for a man of 41, it doesn't offer security or a future. The day comes when one no longer has the boyish enthusiasm or durability. I must think in terms of what I can do the best and what is best for me." The patient's assignment to line aircraft gave him a futile feeling. There was no future in it for a man of his age. This was a source of tension for him. He felt that he was too old and that his coordination had slipped so that he could not keep up with the younger men with whom he had to compete. He longed for the manpower job in which he excelled.

His reaction to crashes was: "It is deplorable that such things happen but you get over being moved by that sort of thing when you've been flying as long as I have. I have all kinds of friends who have

been lost. There is no shock now. Because of crashes you exercise more caution, care, judgment and concern."

There was no fear of flying in this patient. There was still sufficient motivation to remain on flying status though not as strong as in his youth and primarily derived from reality sources such as ability to travel and financial gain. He felt himself slower and less proficient physically than the younger pilots with whom he flew. This depressed him somewhat and the fact that he could see no future for himself in the flying to which he had been assigned caused tension. The patient turned his attention from the tension to somatic preoccupations (a reaction typical for his handling of anxiety). The physical symptomatology he presented did not distract the Air Force physicians or the patient from the primary source of his tensions. He was declared physically qualified to fly. Handling of this patient was through administrative channels.

CHAPTER XI

SOMATIC ANXIETY EQUIVALENTS

Diarrhea before examinations, vomiting during sports events, hyperventilation in tense situations, and tachycardia in the face of frightening elements in the environment are all examples of somatic anxiety equivalents. Such symptoms are exaggerations of one facet of the total picture of anxiety. They appear in response to tension in place of an undifferentiated anxiety reaction. Other somatic aspects of anxiety need not be present at the time the symptom manifests itself.

The nature of the anxiety equivalent symptom which appears depends on a predisposition in the patient. These symptoms are highly personalized expressions of anxiety. They have usually appeared previously during anxiety situations unrelated to flying.

It is uncommon for a patient to fail to perceive a relationship between tension provoking situations and the anxiety equivalent symptom. Such do occur.

Somatic anxiety equivalents may be reflections of a single tension provoking situation which soon passes. In flyers with a growing fear of flying, they are a warning of danger ahead.

There are some flyers with a strong positive motivation for flying who also have severe flying anxiety which is expressed in the form of somatic anxiety equivalents. To these people, anxiety and its equivalents are troublesome symptoms to be borne or ignored so that the joys of flying can be their's. They cannot be trusted to evaluate the hazard to flying that their symptoms present. Removal from flying in these cases should depend upon the degree of severity of the symptoms and the amount of incapacity produced.

There is a group of symptoms whose activation by multiple environmental stresses is similar to the activation of somatic anxiety equivalents by anxiety. They are such symptom complexes as "G" force intolerance, migraine, eyestrain, diplopia, epilepsy, syncope and blurring of vision. The environmental stresses are lack of sleep, lack of food, excessive alcoholic intake, physical exhaustion and allergy. In addition, the symptoms may be activated by emotional stress. Stress precipitates a pathological episode by activating latent pathological physiology. Because other factors besides emotional stress can activate these symptom complexes, they cannot be considered to be true

anxiety equivalents. As part of the evaluation of the etiological factors contributing to these conditions in flyers, an investigation of flying motivation should be conducted.

Cases 25 through 29 illustrate somatic anxiety equivalents.

CASE 25

Captain W.H. is a 37-year-old observer with 650 hours of flying time. He was in training as a radar observer in F-89s.

The patient had had feelings of discomfort and nausea in flight. Vomiting gave only temporary relief of the discomfort. His symptoms had never been incapacitating nor had they ever diverted him from his work. They came on only while returning from training missions through the turbulent late afternoon air of lower altitudes. The violent maneuvers and rapid changes in position of high altitude flying in this aircraft failed to bring on airsickness. The patient himself designated turbulent, bumpy air combined with a position of passivity as the precipitant of his motion sickness.

Being in a passive position had always made him tense. When he was permitted to take over control he did not become motion sick. If he drove his car, he did not become motion sick, but if he turned the car over to his wife, motion sickness ensued. He gave an extensive history of motion sickness in every kind of vehicle in which he had ridden.

The patient never had any particular interest in flying. He came into aviation because all his friends were joining up. When he took his first flight, he was openly frightened. He has never been able to relax enough to sleep in an airplane. He derived no satisfaction from flying as an observer. He became nauseated in flight frequently. He flew only for the sake of money and the prestige involved.

With assignment to the F-89, there was a change in his reaction to flying. He began to look forward to flights. He discovered that when he was actively engaged in his duties as a radar observer he was free of the physical discomforts that had afflicted him. As a radar observer he could tell the pilot which way to turn and in fact control the aircraft. After the flight was over, when they were coming in for a landing, and the pilot had taken over complete control of the aircraft with the patient sitting in the back with absolutely no control (a passive position) the patient developed severe nausea and vomiting.

The patient's handling of the risks of military aeronautics was through denial mechanisms. He commented that he had been lucky. Then he hit his head with his fist, stating that he wished to knock on wood. "They don't worry me at all. They haven't happened to me yet."

He was married and had three children. There were no palpable stresses in his home life. His early life pattern was relatively stable in spite of vesanic traits. His father had had many cultural interests

with which he enriched the home. There was one brother who had had a psychotic break during World War II. His mother suffered from migraine headaches.

The patient was well motivated to fly in spite of his motion sickness which had never occurred during the time it was necessary for him to perform his duties. He could therefore see no reason for being removed from flying status because of motion sickness.

We have already seen other cases in which positions of passivity created tension in a patient. Here such a situation is presented in a remarkably clear manner. The violence of the maneuvers necessary for radar intercept work exceeds the turbulence of flight at lower altitude during warm weather. The patient did not experience nausea during radar intercept flying (he was in control of the aircraft). When control was lost with even less turbulence he became motion sick.

CASE 26

Captain A.M. is a 36-year-old pilot with 5000 hours in conventional transport aircraft.

While on a routine flight in a C-47 from the Philippine Islands to Guam, the patient developed a feeling of cold and was unable to catch his breath. He breathed faster and faster. He still could not catch his breath. Soon he developed symptoms of hyperventilation (dizziness, faintness and dimming of vision). He ordered the plane back to its base and gave control of the aircraft to the co-pilot. He then went to the bunk to try to get some sleep. After about 45 minutes the attack subsided and he felt comfortable again. When the plane returned to the airport he had to make the landing. Upon taking hold of the controls rapid breathing began again. The co-pilot landed the plane.

The patient went right to the flight surgeon. He was quite worried. He told the flight surgeon that "Under certain circumstances it would not do any good to have an attack like that." He then requested removal from flying status. (Notice the difference between this patient's reaction to his symptoms and the reaction of Case 25.) He did not relate the episode to any unusual incidents during the period immediately preceding the episode of hyperventilation.

An evaluation of the patient's flying motivation revealed the core of his problem. He had been interested in flying ever since childhood. This concern manifested itself in the making of model aircraft and showing interest in anything that had to do with flying. During his early years in flying, he derived great satisfaction from planes and flying. As time went on, pleasure derived from flying decreased. He enjoyed flying for pleasure but not for business. Day in, day out routine flying became too much like work. All the fun was gone. In addition, his wife openly disapproved of flying. He developed a constant nagging feeling. His job was oppressing him. He could not see continuing routine transport flights in C-47s for the rest of his

life, especially when this meant flying over water. This had created tension in him. He did not particularly care whether he went back on flying or not, but hoped that if he were returned to flying status he would not be returned to the routine, boring job that he so disliked.

The patient was commissioned in 1944 and spent World War II flying over the "hump" in the China-Burma-India theater. In 1946 he was discharged. He elected to remain in the service as a sergeant. Then in 1951 he regained his commission and was assigned to fly C-47s. In 1952 he was sent to Korea as a paratroop pilot. He did not see combat there. He was transferred from Korea to the Philippines. Here he experienced the episode of hyperventilation.

He had never been comfortable with the risks of military aeronautics. Previously he had been able to derive sufficient satisfaction from flying to offset this. Now the combination of a decrease in flying motivation, nagging from his wife who did not wish him to fly, and assignment to routine missions had made flying boring, oppressive and anxiety provoking for him. His comment that under certain circumstances it would not do any good to have such an episode occur reflected his awareness of the risk potential of flying, as well as his relatively neutral or even negative attitude towards flying.

The patient's early life was marked by extreme stress. His parents fought continuously. When he was 5 years old, he was beaten for not being able to walk as fast as his father. When he was 10 years old his father began coming home drunk. He witnessed many battles between his mother and father and the subsequent divorce. He had almost complete repression of all his memories before 10 years of age. Following the divorce he lived with his mother. She remarried after one year. His step-father showed understanding. While recounting the harrowing events he could recall from his early childhood, the patient had almost no overt reaction, affect or feeling.

Since the divorce of his parents he had been able to live a life free of anxiety causing situations. He had not had a chronic, unsolvable problem until the problem of flying the same aircraft day in and day out faced him. With little in the way of adult experience in handling anxiety, he attempted to bear the tension and continue to fly. When the tension manifested itself in the form of a somatic anxiety equivalent, he attempted to utilize the symptom to remove himself from flying status medically.

It should be noted that in addition to a somatic anxiety equivalent hyperventilation can also represent a response to hypoxia and an hysterical conversion symptom.

CASE 27

Captain T. was a 34-year-old pilot with 4200 hours of flying time in conventional and jet aircraft. He was an aircraft commander on a B-47.

He was sent to the flight surgeon for nausea and vomiting which interfered with a briefing.

The patient was TDY to England with a SAC B-47 crew. While attending a briefing before take-off for return to the US, he began vomiting. The vomiting became so severe during the pre-flight planning that the commander sent him to see the flight surgeon. When the patient reported to the dispensary he revealed that the nausea and vomiting had been going on all night. A blood alcohol test and his general appearance revealed that he had been drinking a good deal. He somewhat reluctantly admitted that he was afraid to fly and that vomiting, a feeling of shakiness, and diarrhea had been occurring before each flight for two years. These symptoms had always stopped when he began going through his pre-flight check list. He had been drinking to keep his courage up.

The patient recalled that in 1945, while he was in combat, he repeatedly had become tense before entering a plane and had vomited behind the tail section. Once he had entered the plane, he calmed down and was able to function.

He had always developed anxiety in situations in which he was under pressure and the work got ahead of him. Because he was crippled by anxiety, the work got even further ahead of him and he became even more anxious, so that a vicious spiral was started.

Anxiety had been most apparent before he took off for a flight. It was then that his symptoms appeared. He was willing to go through this period of anxiety in order to fly. Apparently the feeling of calm he felt while flying was a welcome relief.

The patient became interested in flying when he first saw a Ford tri-motor. His parents bought him a ticket to fly around the city in it. He described the need for flying in the following words: "I may be nervous or tense before I fly but once I board the airplane I become a very calm and collected individual. I enjoy it like someone else might enjoy mowing a lawn. It's a job, one I enjoy doing." When it was suggested that the patient might be less tense flying in an aircraft other than the B-47 he became quite hostile and commented that he only wanted to fly the B-47 because "that's my airplane."

His reaction to crashes was: "I turn and walk away. I'm not interested in the scene of the accident or what occurred. I get too tense." He was keenly aware of anxiety activated in him by the risks of military aeronautics. The anxiety was severe enough to bring on somatic equivalents. Apparently the positive satisfactions derived from flying were sufficiently great to counteract the discomforts caused by the patient's anxiety. This was a man in whom control was important. He derived comfort from the feeling that while he was flying he had complete control over the aircraft. He reacted quite negatively to the suggestion that he might prefer to fly as a co-pilot.

In his personal life, he developed anxiety during a period of legal separation from his wife. During this time he developed somatic symptomatology which was similar to the anxiety equivalents that developed before flying. He finally turned to alcohol to handle his domestic problems.

Apparently this was a man who developed anxiety easily. Since he had few mechanisms for handling anxiety in a manner which would screen it from his conscious awareness, minimal stress produced much conscious anxiety. The anxiety took the form of undifferentiated anxiety with marked somatic anxiety equivalents. He was removed from flying status because of an alcoholic convulsion.

CASE 28

Lieutenant R.F. is a 24-year-old observer with 500 hours of flying time. He was assigned to the F-94C. He reported to his flight surgeon because of stomach cramps.

For six months, the patient had been in a state of intermittent tension which had been greatest during the waiting periods associated with air defense alerts. At these times, he had severe abdominal cramps, nausea and loose stools. Vomiting never occurred.

The patient had no particular positive motivation for entering the Air Force. Flying did not appeal to him and military discipline was uncomfortable. He considered the Air Force to be the lesser of two evils since shortly after graduation from college he had been faced with the alternative of being drafted into the Army or enlisting in the Air Force. Shortly after he enlisted he entered cadets and was trained as an observer.

His initial adjustment to flying was good. Although he had not been particularly motivated to fly before he started, once he began to fly as an observer he enjoyed it. His first feeling of anxiety in flying came two years later at the time of the birth of his first child. He began thinking: "What will happen to my wife and child if anything happens to me?" The risks of military aeronautics became more meaningful. Tension was present. It was balanced by the patient's commander who had a strong personality and was an excellent leader. All the men could depend on him. He assigned responsibilities skillfully. He created a spirit among the flying personnel such that the pilots truly felt they belonged and that the Air Force was a unit they were proud to be a part of. Aircraft maintenance was excellent and so was spirit. Swept up in this spirit the patient extended his tour for an indefinite period of time. Soon after he extended, his commander left and a new commander came to replace him. The replacement failed and he in turn had to be replaced. The patient derived no inspiration from the third commander. Maintenance was poor. Three to four planes would have to be checked before one considered to be air worthy could be found. This was the experience of all the people

in his unit. In one plane an ejection seat failed to work because of poor maintenance. In another aircraft an electrical fire blinded the pilot.

The patient began getting more and more anxious with each incident. Cramps began to occur during alerts. He attempted to bear the tension. He was successful for a few months. Then a full awareness of his potentially dangerous position was brought home to him by an incident in flight during which the pilot of his aircraft developed hypoxia at 50,000 feet and lost control of the aircraft temporarily. Since the observer has no control of the aircraft in the F-94C, this incident shook the patient considerably. He went to the flight surgeon immediately and told him of his cramps. Evaluation of motivation by the flight surgeon elicited the patient's history and an admission on the part of the patient that he was afraid to fly in the F-94C.

The patient was quite introspective. To his mind, "Every man has some degree of fear," but he usually can control it. Most people do control their fear. Fear does not exist all the time. For me, once the aircraft is off the ground, the cramps and anxiety disappear."

The patient had an extensive history of emotional difficulties. He had obsessive compulsive personality traits. He had a need for control of his environment. Anxiety had arisen every time his control and planned pattern had been disturbed. At the age of seven he developed overt compulsive behavior. He still had obsessive thoughts and urges which he had to control consciously. As the result of the stress of the competition in a large college, he had become withdrawn, studied alone, and developed urinary complaints which were diagnosed as psychogenic at the time. He had always been able to function adequately in spite of his symptoms if he wished to. When his vulnerability to loss of control (in a situation which was already anxiety provoking for him) was revealed, he developed a great increase in anxiety. This appeared in the form of tension and somatic anxiety equivalents. He attempted to obtain a medical release from flying by complaining of his somatic symptoms. Evaluation of his motivation revealed the true etiology of his symptoms.

CASE 29

Lieutenant S.C. was a 24-year-old student pilot with 300 hours of flying time in conventional aircraft.

For as long as he could remember, when faced with situations of stress he developed sensations of perioral numbness, numbness in his arms, generalized lassitude, fatigue, frontal headaches which were not severe, and occasionally nausea. The headaches were never preceded by an aura. The stresses which could provoke these symptoms were: (1) periods of time when he did not eat, (2) having to go shopping, (3) poor hygiene (i.e. lack of sleep or a good deal of drinking), and (4) anxiety causing situations (i.e. before track meets and when talking to a group).

During the last few months of flying training, the patient began to develop these symptoms. He attributed them to problems in his domestic life and a feeling that he was unable to keep up with the mechanical demands of flying. He was worried that he would not be able to give the Air Force a good job and might fail in flying training because of the symptoms. He wished to be cleared of the symptomatology so he could improve his flying proficiency. When he found that because of his symptoms his flying status was placed in jeopardy he began to belittle the seriousness of the symptoms. He explained that this symptomatology lowered his proficiency but did not totally incapacitate him.

This case illustrates the type of somatic symptom described in the last paragraph of the introduction to this chapter. Anxiety was not the only stress that brought it on. Such a patient is returned to flying if the symptom he develops is not incapacitating.

CHAPTER XII

HYSTERICAL CONVERSION SYMPTOMS

In aviation psychiatry, hysterical conversion symptoms are the media through which an attempt is made to resolve a conflict between the urge to withdraw from the dangers of flying and a compelling need to avoid disapproval of one's actions by others and by one's self. In patients who develop these symptoms, flying anxiety is present in great amount. It is completely obscured from the conscious awareness by the mechanism of denial (figure 11). This does not obliterate the anxiety or its cause. To extricate himself from this situation, the patient unconsciously displaces the anxiety onto a symptom (usually involving the special senses or striated muscles), which will force the removal of the patient from the flying situation medically. In this way the patient seeks to quiet his conscience and the world by saying: "I love to fly but I can't because of my eyes." (See figure 12)

Occasionally a patient is seen who admits to having had fear of flying which cleared miraculously about the time the symptom appeared.

There are also patients in whom the symptom does not bring the desired response and who retain the symptom with decreased strength as actual anxiety breaks through.

The four criteria used to determine whether a symptom has a psychogenic component in its etiology may be used when dealing with hysterical conversion symptoms.

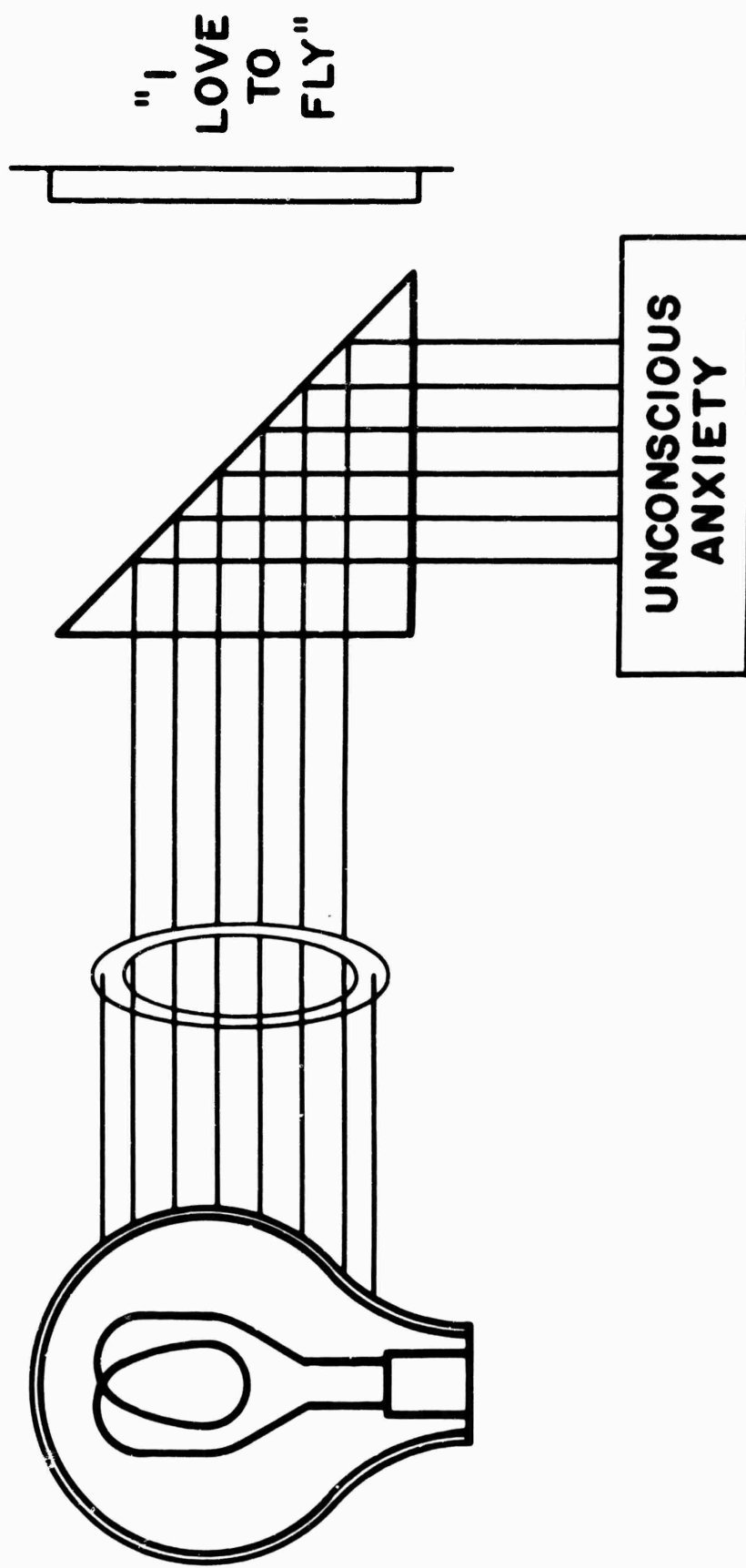
Let us review them in terms of the findings typical of hysterical conversion symptoms.

1. The predisposing personality varies from psychopathic (sociopathic) personalities to the neurotic character disorders. All patients with these symptoms have in common:

a. A strong identification with something (ego ideal, Air Force, etc.) which is threatened by a conscious expression of flying anxiety.

b. An overpowering desire to live.

c. An extensive use of denial mechanisms, which may be detected during the interview. The patient smiles as he discusses stressful areas in his life. When his smile is challenged he admits the inappropriateness of his affect, saying something like: "What can you do, you can either laugh or cry -- I prefer to laugh."



THE PATIENT DENIES FEAR OF FLYING

FIGURE 11

2. The symptom is unusual. It is in an organ without organic defect. It is of a nature which incapacitates the patient in the performance of his flying duties. In some cases it restricts the patient to less hazardous flying.

3. The patient presents no overt evidence of an anxiety reaction to flying stress. He denies the presence of "fear of flying." "I love to fly," claims he. He need feel no flying stress. He has his symptom to protect him from it.

Since the patient feels no fear of flying and verbalizes no awareness of flying stress, establishing the presence of a stress directly is impossible. This would appear to create an impasse', since it is necessary to establish the existence of a stress in order to fulfill the four criteria for establishing a psychogenic etiology for a symptom. Fortunately, for the flight surgeon, the hysterical conversion symptom in aviation psychiatry has certain characteristics which identify it. Inherent in these characteristics is a subtle revelation on the part of the patient that the flying situation is the stress that is the etiology of his symptom. These characteristics will be discussed in the second half of this chapter.

Careful observation of the patient for evidences of tension during discussion of flying hazards (to which the patient has been exposed) gives clues to the source of the patient's fear.

4. The time relationship between the symptom and flying stress is quite direct. The symptoms appear predominantly in flight or in situations which potentiate for flight. The symptoms occur in any of the time relationships discussed in Chapter IX. The vast majority of symptoms appear at times when their presence can grossly impair flying proficiency and endanger flying safety.

IDENTIFYING CHARACTERISTICS OF HYSTERICAL CONVERSION SYMPTOMS

In addition to the characteristics already discussed in the first half of this chapter, hysterical conversion symptoms have other identifying features. Inherent in these characteristics is sufficient evidence of fear of flying to establish flying anxiety as the stress in the etiology of the hysterical conversion symptom.

The patients have an unusual attitude toward their symptom. They appear to be indifferent to possible serious organic disease which may have caused the symptom. Frequently in answer to the question, "What do you think of your symptom?" they say, "I don't." Their primary concern is with the effect the symptom will have on their ability to fly. Often they present their symptoms spontaneously in the following or similar words: "I want to fly. I love to fly, but this darn symptom interferes with my flying."

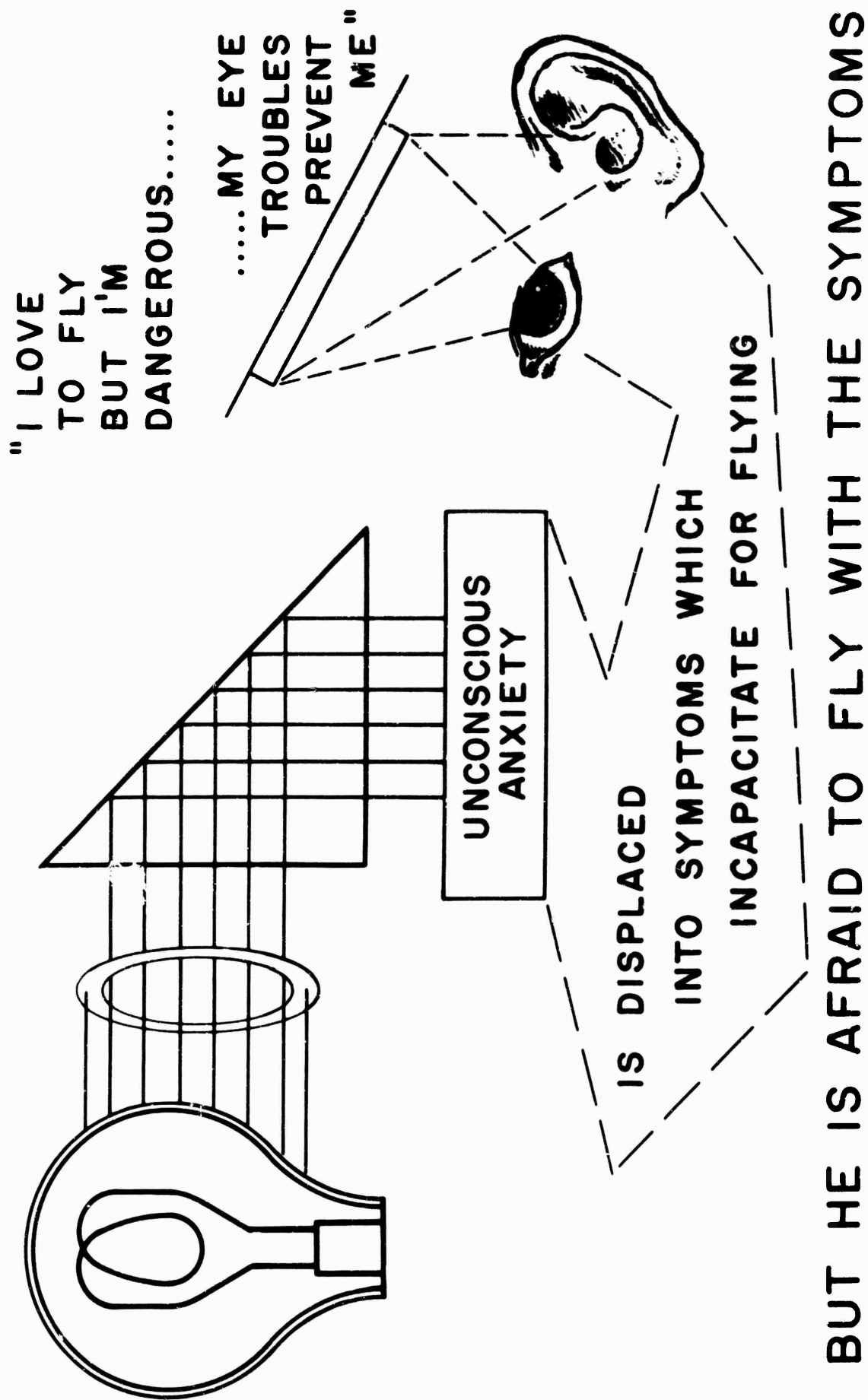


FIGURE 12

When asked: "Why not fly with the symptoms?" the patient answers, "I can't fly unless you cure me. I might kill somebody in a crash."

This answer is a far cry from the answer given by flyers who are so well motivated that they are willing to fly in spite of markedly incapacitating symptoms. This is exemplified by the story of the half blind aging pilot who said: "Just aim me down the runway. I'll get her off."

If a flyer with a conversion symptom is asked what he would do if his symptom could be cured easily (i.e. special treatment, glasses, orthoptic training) he responds with overt signs of anxiety (this can be used to fulfill the third criteria), or suggests other reasons why he cannot return to flying.

Differential Diagnosis. It is often necessary to distinguish hysterical conversion symptoms from (1) organic symptoms in inadequately motivated flyers, (2) the symptoms of malingerers, and (3) organic symptoms in well motivated flyers.

1. Organic Symptoms in Inadequately Motivated Flyers.

Inadequately motivated flyers with organic symptoms show concern for the symptoms and their possible causes. In addition, they express concern for the effect of the symptoms on flying safety. They exaggerate the severity of the symptoms or overreact to them in hopes that through the symptomatology they may be able to extricate themselves from an uncomfortable situation. They, too, say, "I want to fly, but I can't until you cure my symptoms."

When questioned about their reaction to a possible cure for their symptoms, they are grateful to have prospect of a cure. Depending on how much flying anxiety is present, the patient's response to the possibility of return to flying status varies from grudging acceptance of return to flying status (in poorly motivated flyers), to a grateful reaction, (in flyers who have a motivation which is healthy enough to keep them flying in the absence of the added risk of an organic illness, but who balk at flying when sick).

2. The Symptoms of Malingerers.

A clever malingerer can simulate hysterical symptoms. Usually the symptoms are aimed at assignment to less hazardous or more comfortable positions. The malingerer shows primary concern for the effect of his symptom on flying. The symptom is presented as a reason for withdrawal from flying. The patient expresses a wish not to fly with the symptom. When cure is suggested, he reacts hostilely. In cases where the goal of the symptoms (i.e. transfer to less dangerous flying) are exceeded by their effect (removal from flying), the symptoms often miraculously disappear.

3. Organic Symptoms in Well Motivated Flyers.

Well motivated flyers wish to fly under any and all circumstances. Their attitude toward their symptoms is concern for the possibility that serious pathology is present. They make every effort to fly in spite of the symptom. They often beg to be returned to flying status in the presence of incapacitating pathology. The possibility of cure brings unmixed pleasure to the patient.

To distinguish these groups, ask the following three questions:

- a. Why not fly with the symptoms?
- b. What if we can cure you?
- c. What do you think of your symptoms?

The answers are summarized on Chart I.

CHART I

	Organic Disease*			Functional Symptoms	
	Motivated			Hysteric	Malingerer
	Well	Adequate	Poor		
Fly with Symptoms?	Sure	I might be killed	I might kill myself or others	I might kill myself or others Too dangerous	I might kill someone Too dangerous
Fly if we cure you?	Sure	Sure	I guess I'll have to	"No" with an affect of anxiety or find another reason not to fly.	I guess I'll have to. Sometimes anger
What do you think of symptoms?	Worried	Worried	Worried	Don't think about it. (Indifference)	Either "Don't think about it" or a medical diagnosis

For explanation of this chart, see text.

* Similar attitudes are expressed by flyers with psychoneurotic symptoms which are unrelated to the flying situation.

To treat the hysterical conversion symptom, removal from flying (the source of anxiety) is indicated. This brings an end to the symptoms. This goes without saying, since the symptoms usually occur only in flight. About three or four months off flying combined with interviews (in amenable rated patients) should be tried. If resolution of the symptom cannot be effected, handling through administrative channels is indicated. Guilt over failure to fulfill their responsibilities may persist for years. Some interviews should be directed towards this problem.

CASE 30

Lieutenant W.C. was a 23-year-old student pilot with 170 hours of flying time. He was nine hours away from transition into jet aircraft.

He reported to the flight surgeon because of severe headaches and the recent appearance of substandard depth perception.

He had a background of outstanding achievements before he entered flying training. He was student commandant of his ROTC unit. His grades were sufficiently high for him to be designated a distinguished military graduate. He made military flights to Washington for conferences. He was also an outstanding leader in extracurricular activities in college.

He had a high self esteem which was well supported by history. He was therefore bewildered by the difficulties and failures which beset him in flying training. His instructor was a burly man who treated his students roughly. The patient felt that this instructor had made things doubly hard for him. Once, after the patient had flown quite close to some tree tops, his instructor told him that he felt that the patient would not live through pilot training. He was sure that if any one of the group would kill himself, it would be he. To make matters worse, the patient had some in-flight emergencies including an engine that overheated and a propellor that ran away. He also had difficulty with academics. He found that he could not keep up with the other members of his class. He blamed this on a poor mathematical background and on headaches which he developed a short period of time after he started studying.

The patient was free to admit that early in flying training he had had an overt fear of flying and a great deal of anxiety. He was afraid to admit this fear of flying because of a greater fear of what his instructor would do to him. He felt that the instructor knew of his fear and anxiety but did not say anything or try to help. In fact, his lack of tact made things more difficult.

Shortly before he reported to the flight surgeon he had been assigned to a new instructor. This man was understanding and helpful. He instilled new confidence in the patient. His fear of flying disappeared.

All of his worries were not over, however, for he had developed symptoms which incapacitated him. He had always tended to make rough landings; now they became worse. It was pointed out to him by his new instructor that the reason that he did this was that he did not round out in time. The patient suggested that this was due to poor depth perception (i.e. he was not aware of the height of the airplane above the ground during landing). His instructor sent him to the flight surgeon to evaluate this possibility. The patient failed all the depth perception tests. He had taken four flying physicals previously and on none of these had he failed the depth perception tests. At about this

time his headaches increased in intensity. At the height of the headache, he now developed ringing in his ears and a bilateral decrease in his auditory acuity. He found that he could not study for more than half an hour without developing a headache. The headaches persisted after the patient was removed from flying status, pending his appointment at the School of Aviation Medicine. They cleared after his assignment to ground duties was made permanent.

The patient lost his fear of flying about the time that he developed symptomatology which he considered to be incapacitating for flying. His own comments on his loss of fear are of interest. He stated spontaneously, "I no longer have a fear but I do have a wondering feeling about these symptoms. I wonder what will happen to me if I have a visual problem or headache while flying. It might happen only once or twice a year but that will be enough to kill me." (Notice that the patient had a keen awareness of the risks of military aeronautics. He presented his awareness in a manner devised to make the listener believe that because of physical symptomatology flying was far more risky for him than for another.) "Actually I would be afraid to fly with me if I were another person, in any kind of plane, but especially in a jet." When asked if he felt that he could fly at the time of the interview, he stated, "I would like to fly, but not with the symptoms I have now. If I can fly and be safe it's all right with me. If I am going to be dangerous to me and to others then I shouldn't fly. Flying the way I do, I could crumple the nose wheel of a jet." While speaking about his symptoms and their relation to flying, the patient displayed a good deal of anxiety and tension. When it was suggested that his eye problems might be cleared up through orthoptic training he became quite tense. Initially he had anxiety associated with the dangers inherent in military aeronautics. This transitioned into an anxiety associated with the dangers inherent in flying with his symptoms. Since he presented them as something not under his control, he felt that he did not need to feel guilt over leaving flying training because of them.

The patient first became interested in flying when he was 15 years old. His Air Force experience had been limited to flying training. When asked about his feelings when he heard of or saw aircraft accidents, he stated: "I try not to think of it. I just keep on flying. Some of my buddies have been killed. I try to throw it out of my mind. Of course I read the Bible."

He gave a family history in which the family relationship came very close to the ideal. If there were any discomforts in his childhood he could not remember them. He was an only child who was cared for continuously by his parents. He got whatever he needed and was protected from any frustrations by parental guidance.

His ophthalmological examination revealed an individual whose depth perception was faulty. No ophthalmological pathology was found which could have explained this symptomatology.

Throughout the interview, he smiled constantly, especially when discussing tension provoking situations. Only when he discussed the

impact of his symptoms on flying safety, was there evidence of clinical anxiety. His description of his method of handling problems and anxiety came close to a classical description of denial mechanisms. If he could not solve a problem by himself he just threw the problem out and refused to consider it. Problems which could not be thrown out he refused to let bother him. He commented that: "a problem doesn't deserve to be if it can't be worked out."

During the initial stages of flying training the patient developed fear of flying. Fear of his instructor coupled with an inability to perceive himself as an individual who could fail academically caused him to remain in flying training. The identification that held him was not with the Air Force but with himself as a success. The prospect of flying in jet aircraft compounded his anxiety. Using his usual mechanism of adjustment (denial), he denied the true source of his anxiety and displaced the anxiety itself to a somatic symptom, whose form was determined by an environmental need to remove himself without social stigma from a situation which was causing great tension.

CASE 31

Cadet B. was a 23-year-old student pilot with 150 hours of flying time. He was training in multi-engine aircraft. He was six hours from soloing.

He was sent to the School of Aviation Medicine for evaluation of a hearing loss of six months' duration. He was referred to the Department of Neuropsychiatry because of great variability in his audiogram. From one day to another the patient himself was aware of this variation, and commented that on some days he could hear well and on other days he could not hear at all.

Although the hearing defect was present on the ground, and he occasionally missed words that were said to him, it was most noticeable when he was flying. He had difficulty hearing the orders of his instructor and he had trouble making contact with the tower. This occurred only when flying dual. His hearing loss was greatest when he flew with an instructor.

Sometime before the onset of his hearing loss the patient had been removed from flying status for a day because of bilateral barotitis media. A few weeks later he reported to the flight surgeon with a complaint that he heard poorly when wearing earphones. Physical examination was negative. He could hear a low voice behind his back fairly well. He claimed that he loved flying. He was told to continue to fly with the symptoms.

The emotional milieu in which this symptom appeared was of interest. During his interview at the School of Aviation Medicine he recounted the discomforts he had endured in cadets. He felt he was neither airman nor officer. He was repulsed by assignment to work details. He claimed that he enjoyed flying. His claim was fragile. Under permissive questioning, he disclosed his feeling that within the flying situation itself was a

source of tension. This was that part of flying in which he had to fly with an instructor. Through his entire life he had had problems with instructors and authority figures. He described himself as running up against a mental block whenever a figure in authority approached him. ("I have a dislike, a distrust. They purposely try to 'shake' you. I don't know what they are thinking and I don't like it.") He did his best to avoid any arguments with his instructors.

The patient had been interested in flying for about six years. He had lived in Idaho where flying was a major method of transportation. He saw the value of aviation. He took rides and got a kick out of flying. He decided that he would like to fly himself.

He described flying as something he enjoyed, although: "When a check-ride with an instructor comes along all the pleasure is removed from flying 'cause you know he'll jump right down your neck if you make a mistake."

He described crashes as being the "breaks of the game," commenting that "everyone had to die sometime" and that "it's nothing to worry about." He smiled as he said this. He described flying as being safer than to be on a street driving a car. He denied fear of flying, blaming all of his anxiety on his relationship with his instructor. There had been a few accidents with which he came into contact during flying training. He recalled one vividly. A T-28 had crashed. It had been brought back to the training base. The flying trainees were able to see the remains of the aircraft. Said the patient, "There wasn't much left of it." His symptomatology appeared shortly after this. When it was suggested that he continue flying training with his hearing loss since he would eventually solo and thus be free of instructors, his ordinarily relaxed posture gave way to rigidity. He became quite tense. Then he lit a cigarette, smiled and said, "I hate to say it, but....." and then his face lost its smile and became tense again. "I couldn't fly with my hearing the way it has been. The instructor would have to yell all of his orders to me and if I make an error that would be the end."

Although the patient related his difficulty to his instructors and undoubtedly developed tension in learning situations, the flying risks which he consciously belittled were sources of great anxiety to him.

The patient was an only child. In response to questions regarding his family and relationships with the family group, he stated at first that everything was fine and his parents got along well. As he related his story, this facade of normalcy fell away. His father had suffered a psychotic break while in college. He had been a quiet individual who tended to stay apart from groups. The patient's mother was quite the opposite. She was frequently nervous. She took complete charge of running the house and the family. While discussing his mother, the patient became quite tense and it became apparent that his superficial comment that "everything in the family was fine" was somewhat at variance with the memories which were now flooding into his consciousness with their associated affect charge. He lit a cigarette, became quite tense and stated, "I don't want to go back into family affairs. Things happened that I don't want to talk about."

His family moved a good deal. This constant uprooting with loss of friends was hard on the patient and his mother. He became quite lonely because of these frequent moves and learned to draw into himself and found interests which did not require companions. He filled his time working on hobbies, such as chemistry. While in college he took up weight-lifting.

During the interview he was calm. Only from time to time did tension appear on the surface. Usually this was associated with specific topics (i.e. flying with an instructor, and his relationship to his mother during his formative years). During these times, he sat at the front of his chair, became quite tense and lit a cigarette. In discussing areas of tension other than those related to flying and to his mother this patient handled the problem of anxiety by smiling (using a denial mechanism). The use of denial was apparent throughout the interview. He had a brittle capacity for identification. He stated that if the Air Force did not give him assignments which he liked, he would get out as quickly as possible. He was quite grandiose. He could not take criticism and felt that those people who were not with him were against him. He could only picture himself in the Air Force as an officer.

He could not accept failure in the flying training program for many reasons. He could not admit fear of flying without admitting that he was not capable of functioning on a level he considered easily within his grasp. (One might say that he was "too darned proud" to admit to himself that he "couldn't hack it.") In addition, failure in flying training meant serving three years as an enlisted man. He wished to be an officer. However, continuing to fly meant anxiety and admission of such severe anxiety to himself or to others meant disqualification from flying training. An unconscious attempt to resolve this conflict by producing symptoms not under his control which he could use to rationalize his removal from flying was made. This attempt failed. Gradually some of the anxiety broke through. His hearing loss, still not under his control, continued as his rationalization to himself for not becoming an officer.

The patient recalled a long history of tension and anxiety feelings related to the fact that he could not tell what people were thinking. He felt that people often purposely tried to shake him up. There was evidence during the interview that this pattern of reaction was not a recent development but was based upon deep seated, unconscious attitudinal sets. He described a family background in which there was history of mental disease, a mother who took over the father's role, and a pattern of constant movement from place to place so that the patient was unable to find any masculine figure with whom to identify. This was a rich soil for the growth of psychopathology. Such a life history crowned by a reaction of anxious expectancy and hostile interpretations of the motives of aggressive figures in the individual's environment is commonly found in patients who develop ideas of reference.

Repeated audiometric examinations were performed on the patient before he was sent to the Department of Neuropsychiatry. They were shown

to him and it was pointed out that there was nothing wrong with his hearing. He was accused of faking. In response to this the patient's difficulty with hearing had cleared considerably by the time he arrived at the psychiatrist's office. During the neurological examination performed in the Department of Neuropsychiatry, it was discovered that he had developed tunnel vision, during the period of time his hearing was improving. Confrontation done a few days previously had revealed no constriction of the field of vision.

One of the most important things to learn from this is that a psychogenic symptom should not be removed unless one can remove the causing anxiety (either by removing the environmental source of anxiety or repressing the unconscious anxiety source). When his adaptation through his hearing loss had been sufficiently challenged so that it began to weaken, he developed a decrease in visual fields as an alternate attempt to defend against anxiety. It was fortunate for the individual who challenged him that the patient selected an alternate symptom from among conversion symptoms instead of selecting a regression to a more primitive level of adjustment (a process of which he was capable), in the form of a paranoid interpretation of the challenger's motive with the challenger considered to be a persecutor.

The patient was removed from flying status and sent to an Air Force neuropsychiatric in-patient center for rest and recuperation.

CASE 32

The following case illustrates the power of identification and the variation in the character patterns of individuals who develop hysterical conversion symptoms.

Cadet J.R. was a 20-year-old student navigator with 100 hours of flying time. He had begun celestial navigation. When the patient had recently been asked to focus a sextant on a bright star which he could see with ease without a sextant, he was unable to do so. A sextant could be set up by an instructor with a star clearly sighted. The patient could not see through the sextant.

He had done well in cadet training until he reached celestial navigation. Prior to this there had been no evidence of eye pathology. Following the onset of his symptoms, an ophthalmological evaluation revealed no abnormalities.

His flight surgeon's notes revealed numerous visits to the flight surgeon's office for episodes of gastrointestinal disorder, unexplained, shaking chills, cramps, nausea, vomiting when just down from a flight, and numerous allergies including heat rash and hives. There were about 20 entries during a period of about 6 months. No adequate diagnosis of causation was made for any of these illnesses. Prior to entering the service he had had no history of cramps, gastroenteritis, shaking, chills, nausea, vomiting or allergy.

He dated his interest in flying from his earliest childhood. As a child, while other children were out playing, he would stay at home to build flying model aircraft. He would wait until the night. Then he would soak the aircraft with kerosene and set them flying with a lighted fuse. He got quite a kick out of watching them crash in flames.

He stated that he enjoyed flying and was strongly motivated to fly. He wanted to be "the best damned navigator in the Air Force." He stated proudly that the Air Force has a mission and that he was proud to be part of it. He did not want to let the Air Force down.

An evaluation of his reaction to flying risks was effected by requesting that the patient himself suggest his eventual disposition so far as flying was concerned. In response to this he became quite emotional. His facial expression became affect charged as he said: "If this thing (symptom) means I'm gonna kill those people in the airplane, I don't want to fly. I don't want to go up in an airplane if it means I'm gonna kill somebody." When it was suggested that he fly with the symptom he repeated these answers. Suggestion that the symptom could be removed brought on an anxiety reaction.

His pre-service personality contained a striking amount of psychiatric pathology. He was the oldest of three children. His father was an intelligent man who was a strict disciplinarian. He was a rich man, whose anger turned into physical expression again and again. The patient remembered a new toy which had been destroyed because of some derogatory remark he made about it. He recalled another time when he did not like the soup for dinner. Because he did not eat it his father placed his head against a radiator and struck him numerous times. His mother conducted the household with lax discipline. When the situation became at all tense, she developed severe headaches which necessitated her confinement to bed.

When the patient was in his first year of high school he got into an argument with one of his teachers. She had not given him the approbation he felt he deserved. He decided that there was no use in studying. He began drinking and became friendly with the more delinquent of his age group in the community. He had his own car. He began heterosexual activities at the age of 15, usually going out with women considerably older than he and being "quite successful." He got into repeated difficulties. His father managed to pay his way out. He had been arrested numerous times for such things as driving while intoxicated, selling narcotics to minors, selling alcohol to minors and keeping company with individuals who used narcotics and alcohol to an extreme. He recalled beating up many people. (He was an individual of imposing size.)

If we think about handling of anxiety as our primary orientation in viewing these cases, we can see that this individual's handling of anxiety was ordinarily a raw attempt to flee anxiety causing elements or to destroy them. If the tension came in the form of sexual urges or a desire to express hostility, the patient did not feel restricted by social norms in accomplishing the fulfillment of these urges. He was apparently

quite successful in thus keeping anxiety at a minimum. In this regard, he looked like a typical psychopathic or sociopathic personality.

He had one weak point in terms of maintaining this adjustment. He had a strong capacity for identification in selected situations. This first expressed itself when he was 18 years of age. At that time he met a young woman with whom he became much enamored. He had seduced her. He felt some guilt at her reaction. When he came to her house in an effort to find some resolution for this problem he found that she had been killed when an automobile in which she was riding hit a creosote truck. There was a fire. She was instantly cremated. Stated he: "That is one memory I can't handle." He expressed the belief that she was not dead. Thoughts of her continuously returned, creating a good deal of depression in him. One of his theories was that the girl escaped from the wreckage of the car and went to a large town to become a prostitute. Whenever the tremendous amount of guilt related to her death overwhelmed him it was his practice to go to a hotel, rent a room for a few days, lock himself in the room and drink until he was stuporous. At one time he attempted suicide during one of these episodes.

His capacity for identification was awakened again when he entered the Air Force. He developed a new code of morality for himself whereby in situations unrelated to the Air Force he behaved according to his old patterns, but where the Air Force counted, "The best damned navigator in the Air Force," had to behave in a manner in keeping with his position. So far as the Air Force was concerned he had developed a conscience. All went well until he developed flying anxiety. This ordinarily would have caused him to act out (i.e. quit flying training) in order to destroy the anxiety causing situation. But he could not do this, for such behavior would have discredited him in the eyes of the Air Force. As he had denied the death of the girl he denied the existence of the anxiety and continued to fly. Denying their existence did not put an end to anxiety provoking situations. They continued, and so did the anxiety. At an unconscious level, the anxiety was displaced to a somatic symptom so that he no longer had need to express fear of flying; he need only fear that he might bring death in flames to his buddies because of his "defective vision." His identification with the Air Force was great enough so that instead of deserting as one might have expected him to do, he sought a socially acceptable medical channel for removing himself from a position of anxiety.

Sociopathic trends were dominant in this patient. Situations, which even for this individual with sociopathic tendencies were inexorable, were handled through the mechanism of denial and the development of psychoneurotic symptoms. (In his own words denial meant "making painful things dim.") A diagnosis of a psychoneurosis related to fear of flying was made. Because of the nature of his history the patient was separated from the service.

CASE 33

Captain C.K. was a 36-year-old observer with 2400 hours of flying time.

He reported to the flight surgeon because of nausea and vomiting which occurred when he breathed oxygen. He had been wearing oxygen masks and breathing oxygen since he started flying in 1942. He had no difficulty with oxygen until November 1956. At that time, the B-47 in which he was flying lost its pressurization. He had to fly for nine hours with an oxygen mask on. After six hours, he became nauseated and vomited. He had had nine flights since that flight. On each flight he had become ill if he had to wear an oxygen mask for a period greater than 1½ hours. If he took the oxygen mask off, the symptoms of nausea were relieved. They returned when he put the mask back on. Because of this difficulty with oxygen the patient preferred to fly without a mask. He was a navigator. On several occasions he had made significant errors in his calculations presumably as a result of self induced hypoxia. Because of these errors a conference was held with his crew and it was decided that it was best that he go to the flight surgeon.

In three different B-47s, the two men who were on the same oxygen line as he, breathing the same oxygen, had not developed any evidence of sickness.

The patient had had no interest in flying until he entered cadets in World War II. He was trained as a bombardier. He enjoyed the work and considered flying to be one big game. He commented: "Maybe it's morbid but I liked seeing towns blow up. It was fun, they shooting at us and us shooting at them." He smiled happily as he talked about this. When he discussed his present day feelings about flying, he remarked without pleasurable affect that: "It's a lot of satisfaction but it's work, battling the elements. It's a job, but I want to do the best I can." He found the Strategic Air Command somewhat difficult to work in because they had "funny ways of doing things," some of the time, stepping on his personal needs. Being away from home on SAC TDYs for five months out of the year was difficult for him. This was particularly uncomfortable for his wife. His primary positive motivation for remaining on flying was flying pay. He commented: "Loss of money is hard to take. I could certainly get along without flying."

The patient had an extensive combat record during World War II. He left the service in 1946. He returned in 1951. He remained in the United States during the Korean War.

In discussing the risks of military aeronautics the patient described some close calls he had had. He had to bail out in 1943 and 1945 because of fire in the aircraft. He felt that the chance of having an accident in flight was no greater than while driving an automobile. When questioned about what he thought about his symptoms he commented: "I don't know. I've made mistakes in math because I can't wear the mask." At this point he lit the first cigarette of the interview. When questioned about his reaction to being taken off flying status because of his unusual response to oxygen, he remarked: "I worry more about being over the Pacific and getting lost, with all the crew aboard, because I get sick." He then suggested that he would be all right if he were permitted to rest up for a while and then maybe be sent to KC-97s

which he would rather fly than a jet bomber. He denied any "fear of flying." He then spontaneously related a story of a particularly trying incident in the B-47. They were at 8,000 feet on take-off when the plane went completely out of control and began flapping upward and downward, while losing altitude. He was watching the altimeter and was preparing to eject at 2500 feet. He signalled his aircraft commander who was sitting on the ramp as a passenger to come down and jump after him. The commander had all he could do to maintain his balance. As the patient described this, he smiled. He was asked if he considered this to be funny; and he stated no, that he could cry, but he would rather make a joke out of it. After all, it was kind of funny watching things float around inside the ship. The mechanism of denial was used extensively by this patient.

During the work-up at the School of Aviation Medicine the patient was exposed to 100 per cent oxygen without his knowledge. He had no reaction. This was done while an electroencephalogram was being taken. There were no changes in the electroencephalogram with increases in the amount of oxygen given to the patient. He was given an altitude chamber test. An electroencephalogram, electrocardiogram and respiratory rate recorded physiological changes continuously. He was taken to 27,000 feet and his mask was removed. Oxygen was permitted to blow across his face unknown to him. This situation was maintained for seven minutes. During this period no physiological changes occurred. Then the mask was replaced. Sixty seconds later, the patient's respiration became irregular, his pulse jumped to 144 from its normal of 80. He began to cough and gag and have dry heaves. No electroencephalographic changes occurred at this time. With vomiting one would expect a vagotonia (i.e. slowing of the heart rate.). When he did not know he was getting 100% oxygen he had no reaction. When he knew he was getting 100 per cent oxygen his heart speeded up and he began to vomit.

He described his life as a happy one without particular troubles that he could remember. His parents got along well and punishment was minimal. There had been a good deal of closeness in the family and still was.

Complete evaluation of the patient by the Departments of Ear, Nose and Throat and Internal Medicine failed to reveal germane pathology.

Psychiatric evaluation revealed extensive use of denial mechanisms and maximum comfort in situations in which he maintained control. He was pleased with his position as navigator for he felt he was really in control of the aircraft. It was he who told the pilot which course to fly. Although he denied flying anxiety, he subtly disclosed discomfort and worry about loss of life associated with the responsibility of navigating over water.

The patient had a predisposing personality for a conversion symptom. The use of denial mechanisms was blatant during the interview. In addition, his need for control could predispose him to the development of anxiety when placed in a situation in which loss of control was a possibility (i.e. navigating over water).

The symptom was unusual. The development of nausea and vomiting when exposed to an oxygen mixture which has no effect on other individuals exposed to the same oxygen points toward an idiosyncratic reaction on the part of the patient, either organic or functional. The fact that he became nauseated and vomited on oxygen is almost paradoxical. This plus increase in pulse with vomiting militates strongly in favor of a functional symptom.

The source of his difficulty, the stress, is not overt. He mentioned that his wife disapproved of his SAC TDYs and that flying over water required complete dependence of the entire crew on the abilities of the patient to navigate. This created a heavy responsibility for him. These were a few areas which might have been suspected as being primary contributors of anxiety. He did not admit that either of these were stresses. We might have been stymied at this point if it were not for the fact that he had given us reason to believe that through his symptom he had been able to displace fear of destruction of the aircraft and crew onto discomfort over being physically incapable of using oxygen.

Since he developed the symptom only in situations related to flying a temporal relationship between the symptom and stress could be postulated.

Actually he had developed such a complex symptom (i.e. difficulty with navigation, when he left his mask off, because he developed nausea when breathing oxygen) that the anxiety source was too deeply buried to be uncovered with ease and proved with certainty. His answers fitted the five criteria for a hysterical conversion symptom in a manner similar to cases with proved relationships between anxiety and symptom. He was one of those aircrew members in whom a combination of a need for control and denial of factors which cannot be controlled produced an excellent crew member. His mechanisms of defense against flying stress compensated as age increased. He himself could never think of leaving the flying situation voluntarily. He had apparently resolved his problem by developing unconsciously a socially acceptable symptom which would take him out of flying.

CASE 34

Lieutenant R.M. was a 23-year-old pilot with 245 hours of flying time in conventional and jet aircraft.

He reported to the flight surgeon complaining of headache.

The headaches occurred after every flight he had taken at an all-weather interceptor school where he was being trained for transition into the F-102. Approximately one hour after returning to the ground, he developed a dull headache localized to the front of the head. Associated with this dull headache was a feeling of grogginess and haziness and difficulty in remembering what he had been told to do. Shortly after the onset of the headache he developed a throbbing pain in the area of the frontal sinuses and bridge of the nose. He relieved this frontal pain by placing a hot pack over the area. The dull headaches, grogginess, haziness, slowness in response and difficulty in

remembering persisted for four or five days. If asked to fly during the time when such a headache was present, he found a decrease in his flying efficiency. He did not wish to continue to fly with this symptomatology because he considered it too dangerous. Stated he: "I want to fly but I'd hate to take someone else's life as well as my own."

This headache had occurred in all types of aircraft, from B-25s to jets. They increased in frequency when he arrived at all-weather interceptor school. Though the headache affected his flying, it did not become more severe while flying. Sleep and medication were ineffective in controlling this headache. It was not intensified by reading.

During his flying training career he had had 27 visits to the flight surgeon for headaches and upper respiratory infections. He had been removed from flying status for these causes repeatedly. In civilian life he had had headaches after swimming or overexertion, i.e. playing sports in the warm sun. These headaches did not occur constantly in relation to such activities and were usually relieved after a few hours sleep.

A casual interest in flying began in childhood. The patient would not have come into flying or the Air Force if it had not been for his military obligation. He first became interested in becoming a pilot through AFROTC. He entered flying training upon graduation from college.

He described flying as something that he liked and commented that his career ambition was to be a commercial airline pilot. He described flying as: "It's nice to be up there." He talked about doing aerobatics, flying formation and instrument flying. He said that flying gave him a great "sense of accomplishment." With his description of all kinds of flying except weather flying, he smiled and conveyed an infectious feeling of joy and satisfaction. He had flown in weather for the first time at the all-weather interceptor base. When describing this, his face became rather serious and his affect constricted.

His attitude toward the risks of military aeronautics was that flying was something he loved to do but was too dangerous for him to do in the presence of the symptoms he had. He worried that the symptomatology might lead to his death and the death of others. Anxiety associated with the risks of military aeronautics was denied by this patient in all areas except for flying with the symptom. Suggested removal of the symptom caused the patient to be tense.

A complete neurological evaluation was negative.

The patient presented his history as cooperatively as he could. He described a happy childhood with little in the way of discomfort for a child growing up. He was one of eight siblings. His parents got along well. His mother used to develop headaches at the end of difficult days. He called these migraine. There was always enough for all the children in the family. Until his graduation from college he was

protected by his family from situations and experiences which might have caused him excessive tension or anxiety. It is of interest that this patient, like most of the other patients with conversion symptoms, described his childhood as the ultimate in happiness. This never appeared to be a conscious attempt to confound. There were no palpable areas of stress in his personal life. He was married and had two children. His wife approved of flying.

Whenever discussing anxiety provoking situations, the patient made a joke out of them, much in the manner of any individual who uses denial extensively. When his symptom was discussed, however, he became tense and his usual smile gave way to a sullen, flattened face. He took a knife from his pocket and began to play with it. He opened it. Finding he could do nothing with it, he closed it and put it back in his pocket. Then he took out a wooden match, broke it into two or three pieces, placed one piece in his mouth and the other pieces in an ashtray. The manipulation of the knife and the flattening of the face was repeated at a subsequent time when the question of return to flying with his symptoms was brought up. With discussion of weather flying his usual jocular mien was also not present. He spoke quite seriously. His reaction to the symptoms appeared to be that of a neutrality toward the existence of the symptoms themselves and their possible causes, and preoccupation with impressing the interviewer with the incapacitating nature of the symptoms. The patient did not ask to be cured of his symptoms as much as he asked to be removed from flying because of them.

This man apparently did enjoy flying but found one area in flying to be very uncomfortable. He was incapable of admitting to himself that a fear was present. Even so, there were surface evidences of it as he talked. The cause of the anxiety persisted in spite of his ability to deny that the anxiety existed. It presented a pressure to withdraw from flying. His high self picture would not permit him to see himself as an individual who was afraid. On an unconscious level he found a resolution of his conflicts through the formation of socially acceptable somatic symptomatology.

This case illustrates the fact that anxiety symptoms can come on after a flight.

CASE 35

This case illustrates the subtle way in which experiences from an individual's early life can contribute to the development of a fear of flying reaction.

Major C. was a 37-year-old pilot with 15 years of consecutive time in the Air Force and 1700 hours of flying time. His flying experience had been in conventional aircraft. He reported to his flight surgeon because of inability to hear radio range signals.

He was unable to distinguish low frequency radio range on and off course signals. This deficiency was severe enough to cause failure in an instrument check flight. Because of this failure, he was sent to

the flight surgeon. His audiogram was normal in all frequencies. The patient considered the possibility of psychological factors in the etiology of his symptom, but felt most comfortable with the concept that the symptoms had an organic basis. To explain what he meant by a psychological basis, he commented that he was a desk pilot, who could not fly often enough to keep himself proficient. Since he would be grounded if he failed the instrument check flight, he was overly careful on the flight. He felt that he may have paid too much attention to his instruments and was not listening for the range signals. A flight was arranged at the School of Aviation Medicine during which he was permitted to concentrate on radio range signals alone without having to worry about looking at instruments. He was unable to hear in this situation. He therefore concluded that an organic defect existed. The possibility of a fear of flying was not considered by him.

The patient's comments on his symptoms and their relationship to his capacity to fly safely was of interest. He stated, "I have no fear of flying. I have been flying for 24 years now. I love flying. I've asked to be grounded because there isn't a day when you don't have a load of passengers at my base. If I were alone it would be all right but I wouldn't want to be responsible for the death of other people." "If they can find out what is causing the deficiency and cure it, I'll fly. If not I wouldn't want to fly through weather some day with you." "Flying is going far beyond man's reaction time. By the time he sees the other plane he's passed him. I've had experience with coming head-on with German aircraft. You don't have much time. I like to fly. I've seen several people killed in the B-25. I'm not worried about me but what about the passenger who trusts me? A man who is a desk pilot has to stay proficient. One-hundred hours a year is not enough. If I were to get into bad weather I'd want a person who is proficient in weather." When asked whether he thought about the cause of the symptom he commented that he did not worry about it but that his wife does. When asked whether he felt that he would be more comfortable if he could fly every day and were assigned to duties involving frequent daily flying his answer was somewhat vague. His conversation drifted until it changed to a discussion of something that he had overheard in a conversation among pilot friends which might best be summarized in his words. "There is a lot of stigma in removal from flying status for other than medical reasons." He wished to be removed from flying because of the symptom, not by himself but by the flight surgeon.

It should be noted that failure on his instrument check flight prevented the patient from participating in weather flying. At this point one asks oneself what is going on here? From the way the patient presented the symptom he was obviously attempting to use it to remove himself from flying. Yet he appeared to enjoy flying and was strongly identified with it. He persistently pinpointed weather flying as a source of danger. We found some of the answer in his flying past. He had always wanted to fly, in fact, he soloed when he was 13 years of age. In 1943 he began his Air Force career. When he first began to fly "flying was the biggest thing in the world. It was the greatest sensation to overcome gravity and have the world beneath you." "There was nothing I liked better than fighters." However, the

years had gone by and he no longer felt a kick out of flying each time. At times however, it was still a wonderful feeling to get up there and watch the clouds. It's still a lot of fun for me to fly." The patient loved to fly and still wanted to fly, yet there was some element in flying which caused a need for withdrawal. Because of his identification with flying and the Air Force it was impossible for him to admit to himself openly that he feared flying. He therefore denied the source of his anxiety and displaced the tension to a medical symptom with which he unconsciously hoped to avoid the stress situation, without the stigma of "removal from flying status for other than medical reasons."

When asked directly about his reaction to crashes and accidents (in hopes of finding the source of his tension), he said: "Why be shook up? Steel yourself to things that are going to happen. You know that they will happen sooner or later." He seemed well aware of the risks of military aeronautics and appeared to accept death in a crash as an expected thing.

He tried to present himself as a man who is aware of the fact that accidents will happen and therefore feels: "Why worry about it?" But to this patient, being in an area of endeavor where accidents can occur is an intensely charged situation. He had had repeated serious accidents throughout his life. (1) When he was 13 months old his father ran over him with the family car. (2) When he was 4 years of age, a garage door fell on him breaking his right leg. (3) When he was 7 years of age he jumped off a haystack onto a seed corn board which had been covered lightly with hay. Seven spikes of the seed corn board went through his right foot. (4) When he was 13 years of age the horse he was riding rolled over him. He was unconscious for 5 minutes. (5) When he was 15 years of age he jumped onto the running board of a model-T Ford. He slipped and fell under the car. The car ran over his left ankle.

His unfortunate experiences did not cease when he started flying. In 1944 while in P-47 training he was in a head-on collision in mid-air with another aircraft. Although he lost part of a wing he remained calm. He flew his aircraft for a while to learn its characteristics and then landed it. In combat he was shot down over France and made many crash landings. In January 1945 he was flying over Luxembourg. His aircraft had been disabled and he attempted to make a crash landing. After making contact with the ground and while his aircraft was still sliding, he released his safety belt. He did this in order to be able to make as rapid an exit from the plane as possible to avoid enemy soldiers. About fifty yards from touchdown a rock the size of a moderate sized room loomed in front of his aircraft. His plane was stopped short by impact with the rock. As he was thrown out of the aircraft, he injured his face and skull. His forward motion was stopped when he hit a tree. The point of contact between the tree and his body was the lower thoracic spine. He suffered a skull fracture, fractured face and injuries to the lower thoracic vertebrae. He did not lose consciousness at this time but was somewhat dazed. He was picked up by a German soldier and taken to a German aid station where he was given first aid.

He was later moved to a field hospital. Two days after the accident he began a 20-day period for which he had minimal recall. At one time he recalled awakening on a troop train which was being strafed by the allies. A series of machine gun bullets were cutting a line across his bed within inches of his body. When he regained full conscious awareness, he found that he was paralyzed from the waist down. This paralysis was relieved one night when an American bomb went off nearby and he was blown out of bed. At first he was able to move his toes, then he gradually regained full control. He was returned to the Allies after ninety days as a prisoner and flown to the Zone of the Interior. The pilot of the aircraft asked him to come up and stand with him as he made the first landing of the trip. During the landing the patient experienced a good deal of anxiety and apprehension. He spent the ensuing four years in hospitals undergoing plastic surgery. He was returned to flying status in 1949. On his first four landings he was somewhat apprehensive and levelled off high on landing. However, he soon overcame this. Since then he has been able to make landings without tension. Because his primary assignments were in public relations, flying was a secondary duty for him and he had difficulty getting sufficient flying time for him to feel proficient. Shortly after being returned to flying status he saw a B-25 with a check-pilot on board crash, killing all three occupants of the aircraft. Subsequently he had seen three more B-25 crashes.

If we add the following facts: (1) the patient had a feeling that accidents were bound to happen in flying; (2) he was accident prone; (3) he had seen accidents in the B-25; (4) he worried about the dangers of weather flying, and (5) he had a history of a crash with an anxiety reaction following it -- we gain insight into the factors which have overwhelmed the patient's positive motivations for flying. One might even suspect that his positive motivation was a form of bravado (denial) and that the flying that he enjoyed was light plane flying.

Perhaps the true core of his conflict was his inability to admit to himself and to others that he could no longer fly well and was indeed a hazard. He summed it up himself by saying: "You want to be a good doctor and be considered to be one by your colleagues. I want to be considered a good pilot. That's why I concentrated so hard on passing that check-ride." "I know that some other pilots worry about the stigma of being removed from flying status for other than medical reasons. I'd like to have you people take me off flying because of the symptom rather than have to remove myself because of it. I know I'll have to. The danger of flying with the symptoms I have is too great.

Psychiatric evaluation of the patient revealed an extremely tense individual who smoked frequently during the interview. One time when talking about his symptom and its relation to his flying safety, he was unable to remain in his chair. He had to stand. He answered questions while standing. So much tension was present below the surface that his thinking was somewhat disorganized and in order to make his story coherent a great deal of directed questioning had to be done.

His usual mechanism for handling anxiety was denial. This presented itself in many ways during the interview. While he was describing quite a few of the accidents which we discussed, he let out a small laugh while talking or told the story as though it were a joke. He commented: "Why take a dark outlook on life?" His wife had been bothered by his attitude toward stress situations and had commented to him on it again and again.

In terms of the five criteria to be fulfilled for the diagnosis of a conversion symptom, the patient has each one:

1. Denial mechanisms are blatant. He has the predisposition.
2. The symptoms are unusual.
3. Although the patient denies any stress, on interviewing we find many palpable stresses. Flying the B-25 in weather appears to have been most stressful to him.
4. A temporal relationship between weather flying and the symptom can be established. The symptoms appear in a situation which disqualifies the patient for flying in weather (i.e. an instrument check flight).
5. The patient is more concerned with removal from flying because of the symptom than the symptom itself. He is afraid to fly with it and is made anxious by the thought of cure.

CASE 36

This was a patient in whom denial mechanisms were used extensively, who, in the presence of overt anxiety over flying began to develop a conversion symptom. One might say that this case bridges the gap between anxiety states and hysterical conversion symptoms.

Captain A.F. is a 33-year-old pilot with 2900 hours of flying time in multi-engine and jet aircraft.

In 1953 while he was a T-33 instructor pilot, he was involved in a major accident. A student pilot had made an error in handling the fuel supply of a T-33. While doing touch and go landings, the T-33 flamed out on the go around. The patient turned the aircraft so that it would crash into a golf course. When the plane came to rest he found no means of escape. He could not open the canopy. It appeared that the aircraft would soon catch fire. Eventually help arrived and they were able to extricate themselves from the aircraft.

Shortly after this, he was sent to the Far East. When he arrived, he noticed a decrease in his flying proficiency. He blamed this on a severe lingering sinusitis which he had developed. He designated three other factors which also contributed to the impairment. (1) His wife joined him. They were not getting along too well at the time. (2) The impact of the aircraft accident in the T-33 had added an element of apprehension to flying where previously he had enjoyed it. Flying had

become something of a chore. (3) Flying in Northern Japan, he was constantly in weather, wearing an exposure suit and flying each day in snow and rain. He disliked the aircraft he was flying (F-86D) since control was not given to the pilot but was handled through ground control intercept. He was not permitted to do aerobatics and always felt half frozen.

His flying proficiency decreased as apprehension increased. He began to pull wrong levers and turn wrong switches. He made errors which caused him to be wary of flying. He was so apprehensive and preoccupied that he thought he might make mistakes which could be fatal. If he had a mission with a goal he was less apprehensive than if he had to fly a routine mission with nothing to concentrate on.

The "sinusitis" was described as a feeling of stuffiness and fullness in his sinuses. This sensation increased to the point that it actually hurt. In the middle of the afternoon the stuffiness reached its height. He found that if his face still felt stuffy after a flight he would be irritable at home. He felt that this sinusitis endangered his flying safety.

While reporting his history, he vacillated between ascribing his anxiety and lowered flying proficiency to sinusitis on one hand and blaming it on apprehension and fear on the other. At times, he presented his somatic symptom as the only cause of his anxiety and tension in the flying situation ("It's dangerous to fly with this"), requesting removal from flying status because of it. However, repeatedly he forgot his symptom and blamed his decreased proficiency on apprehension and fear.

The patient had wanted to fly since the time he had been able to read comic strips about airplanes. He obtained a private pilot's license at the age of 18. He entered cadets during World War II. When he began flying he enjoyed it. "There isn't anyone who doesn't like shooting machine guns from an airplane. It's real great." He still enjoyed it at times, but the enjoyment was only rarely present because: "Too much of flying was tied up with apprehension and a feeling of stuffiness about the face."

In response to questioning about anxiety responses to flying risks he stated: "I don't do much thinking about it. No, I guess I do. It must be there. After that crash what used to be over-confidence became lack of confidence." Notice that the patient began to deny any anxiety. Then as his mind drifted toward anxiety material his denial mechanism fell away and he was forced to perceive the truth. His attempt at adjustment to flying stress, using denial mechanisms, was abortive.

Anxiety associated with the risks of military aeronautics (he preferred to use the word "apprehension") was overt and contributed directly to his motivation and his wish to remove himself from the flying situation. He had conflicts in this area because he had derived strong satisfactions from flying both from the standpoint of flying pay and the physical enjoyment which was still palpable for him.

Because of his strong identification with flying, a display of flying fear was an uncomfortable thing. He therefore attempted to deny the fear and displace his anxiety and the blame for having to quit flying on his somatic symptom. He was able to tell himself that his symptom had an external cause and that his loss of flying proficiency was a product of it. He could not maintain this, for anxiety over flying, recognized as his own, kept on rising to the surface through his weak denial mechanisms. He was sufficiently anxious and his thinking was sufficiently impaired by anxiety for him to be able to vacillate between these two points of view without being aware of his inconsistency.

If one were to interview him in a manner which was exclusively sympathetic to an organic diagnosis, he would not have verbalized his anxiety. This is one of the dangers of an evaluation of causation of symptom which does not keep psychogenic factors in mind.

Interviewing during a period when he considered his somatic symptom to be the cause of his trouble would have elicited a conversion hysteria diagnosis. In like manner interviewing during a period when he was aware of his core of anxiety would have elicited a diagnosis of anxiety reaction. Over a period of three hours, it was possible to observe the patient shift between anxiety state and conversion symptom and then back again. Needless to say, the Ear, Nose and Throat Department found no pathology.

CHAPTER XIII

PSYCHOSOMATIC ILLNESSES

In this category fall ulcers, colitis, asthma, etc.

Psychosomatic illnesses with their roots in the flying situation differ from other aeromedical ills of psychogenic etiology. The symptoms are chronic. Although exacerbations temporally related to flight occur, exacerbations also occur on the ground. Actual changes in tissues and physiology occur. The patient presents with signs as well as symptoms. Fairly clear cut oft reproduced symptom complexes are present. Because of these findings, there is a tendency to minimize the contribution of psychogenic factors in the development of these diseases.

In these illnesses, anxiety related to the risks of military aeronautics is present. It is usually secondarily activated by the presence of interpersonal problems. (i.e. Fights with the operations officer) or an anxiety provoking neurotic interpretation of elements in the flying environment (i.e. discomforts of the B-47; or when made aircraft commander, the patient is made tense by added responsibility).

These problems accentuate the risks of flying or decrease positive flying motivation to the point that an underlying fear of flying, if present, is uncovered. The fear of flying in these patients is a conscious thing. It motivates the patient towards withdrawing from the flying situation. This is countered by the basic personality of these patients. Their conscientiousness, their self picture containing "only success," their positive identification with the Air Force, and social pressures impel them to remain in the flying situation. This forces them to remain in contact with the interpersonal conflicts and the physical and emotional discomforts which activated their stress reactions.

These patients must stay in spite of discomfort. Their desire to run, to destroy, to change -- must be suppressed. Somatic symptoms appear as symbolic resolutions of their difficulties. If they had been capable of running or acting out (i.e. if their conscience had permitted them to do so), they would have developed no symptoms. But they are strongly predisposed by conscience to remain, and by neurotic factors to develop an attempt to resolve their anxiety through somatization.

It is possible for a patient who develops psychosomatic symptoms to have a character pattern other than the conscientious pattern

usually seen. These patients who ordinarily would not have remained in such a situation of stress are held in a position of discomfort by a loyalty, an identification or external (environmental) controls which have blocked all but the most subtle means of resolution.

Psychosomatic patients are aware of the stress that goads them. They are also aware of the fact that for them there is no escape. They can suppress this awareness. But, if they let their minds wander freely the awareness soon reemerges. Symptom and overt anxiety exist together.

The four rules for implicating psychogenic factors in the etiology of a symptom must be applied to these cases before a psychogenic label may be applied.

Removal from the flying situation leads to rapid resolution of the symptomatology. The patient's memories are short. (Suppression is their main mechanism.) Once there has been remission of symptoms, the patients attempt to return to flying. Return to the same flying stress brings on recurrence of symptoms.

Removal from flying or rearrangement of personnel to relieve tension is the preferred handling of these cases. A period of rest with return to flying may be tried. This has little chance of being effective unless some change in emotional pressures has been effected. The underlying predisposition is so deeply seated that only prolonged psychotherapy of the type which would be impractical in the military could make the patient combat ready under all conditions.

Let us illustrate the development of a psychosomatic symptom with our diagram (see figure 13).

TO REPRESENT A PSYCHOSOMATIC SYMPTOM
IN OUR DIAGRAM

WE START LIKE THIS.....

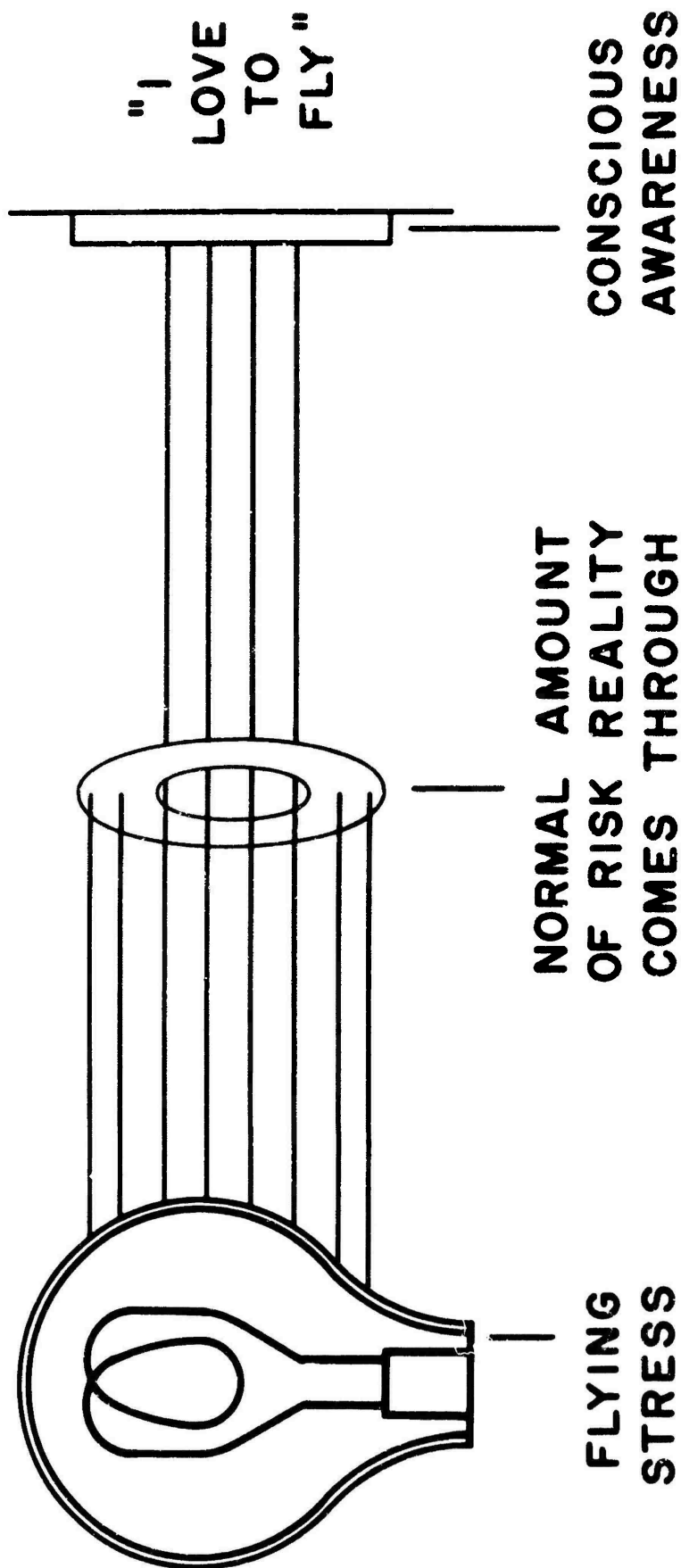
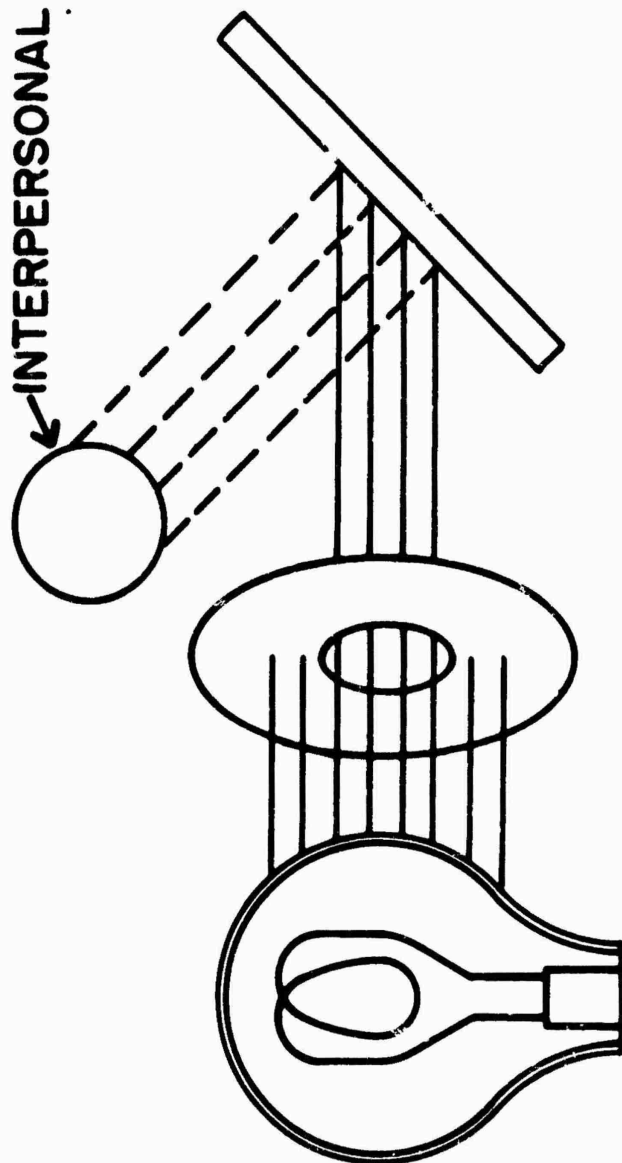


FIGURE 13A

THEN WE ADD AN INTERPERSONAL OR EMOTIONAL PROBLEM TIED UP WITH FLYING.

INTERPERSONAL PROBLEM



"THERE IS SOMETHING
THAT BOTHERS ME--
BUT THERE'S NOTHING
I CAN DO ABOUT IT."

FIGURE 13B

THE PROBLEM CANCELS POSITIVE MOTIVATION.

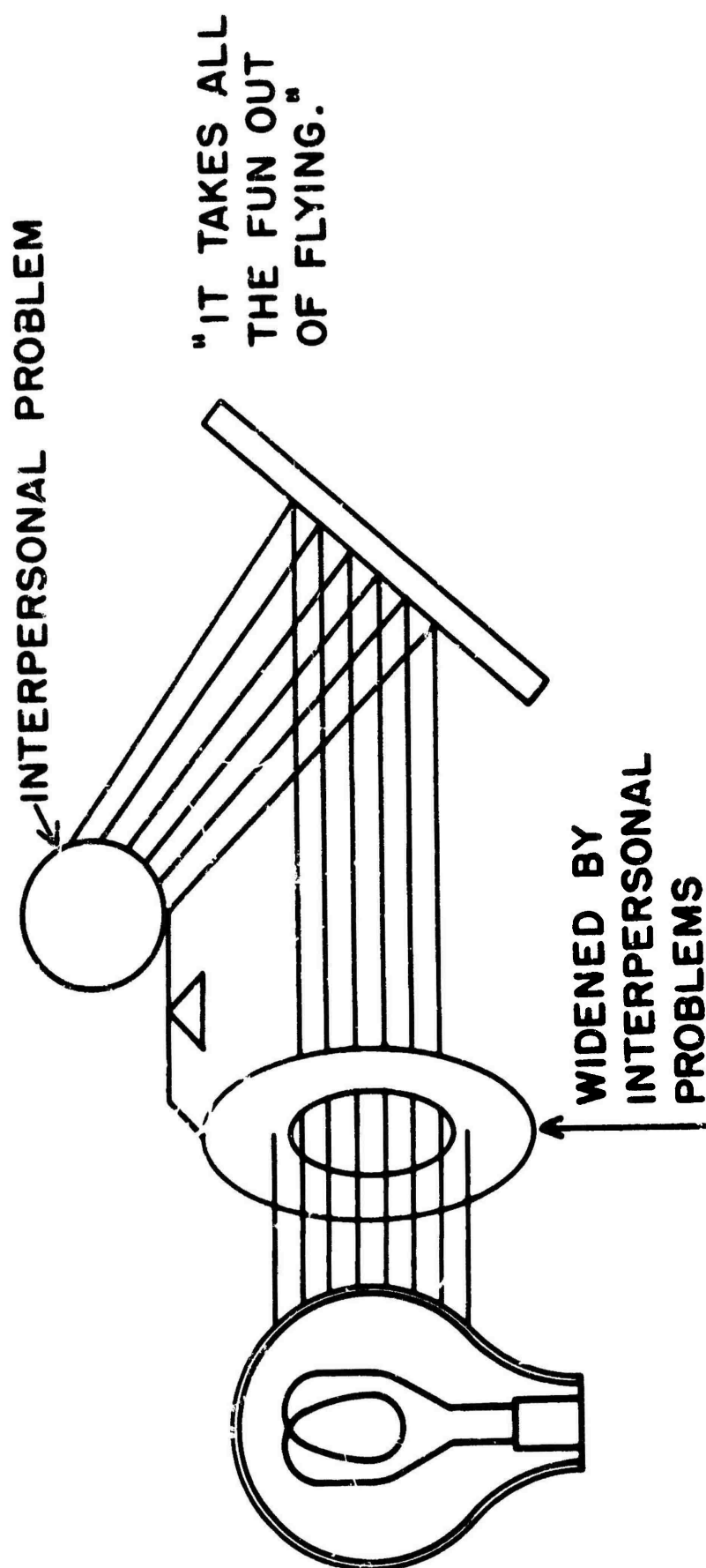


FIGURE 13C

THE PATIENT SUPPRESSES.

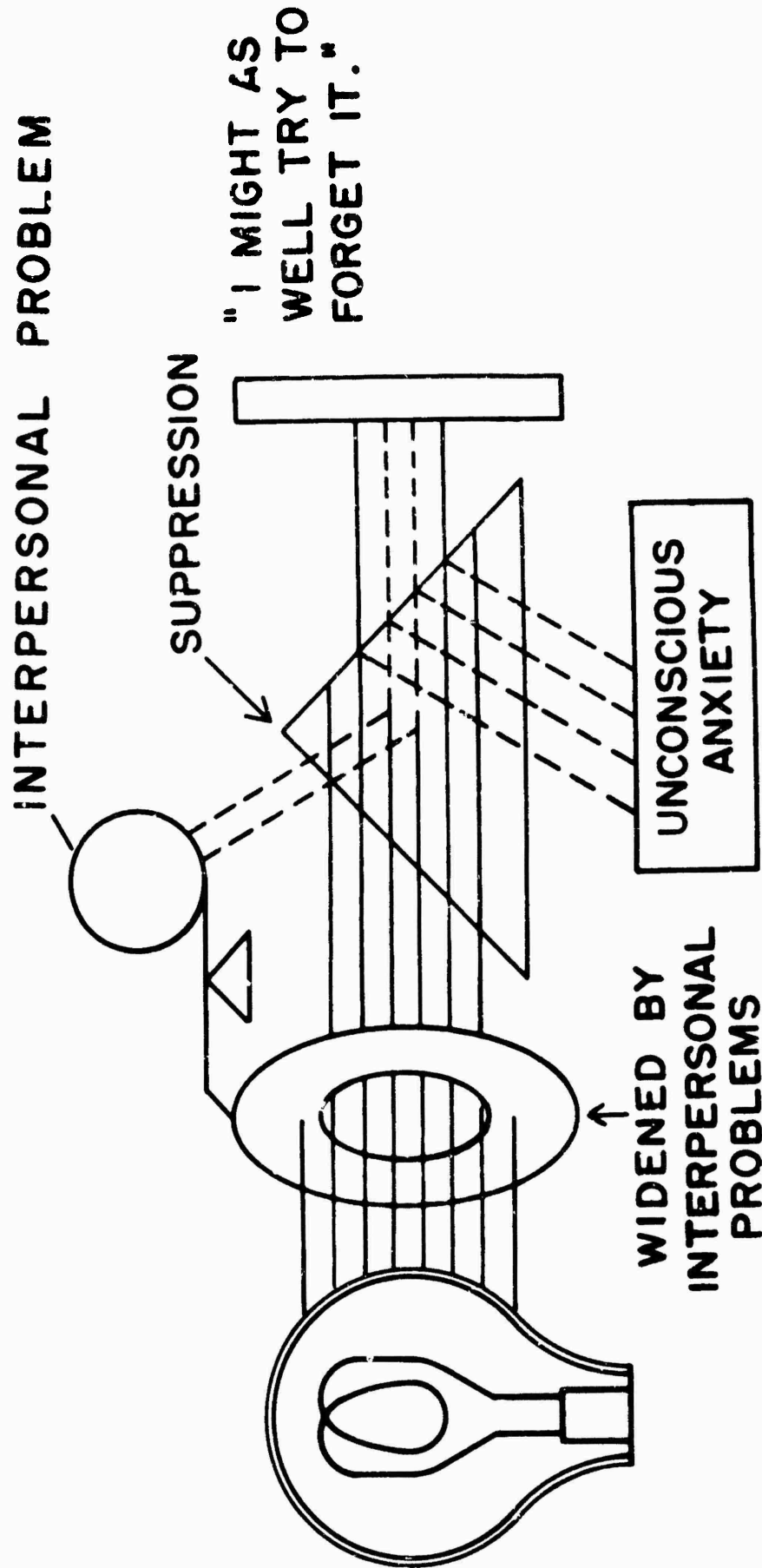


FIGURE 13D

IF THERE ARE UNRESOLVED CHILDHOOD PROBLEMS IN THE UNCONSCIOUS MEMORY, SIMILAR TO THE PRESENT DAY ENVIRONMENTAL DIFFICULTY, THE ANXIETY STILL ATTACHED TO THESE OLD PROBLEMS IS REACTIVATED BY AND ADDED TO THE ANXIETY ASSOCIATED WITH THE PRESENT DAY PROBLEM. THE INHERENT CAPACITY FOR SUCH A RESPONSE IS CALLED A NEUROTIC PREDISPOSITION.

INTERPERSONAL PROBLEM

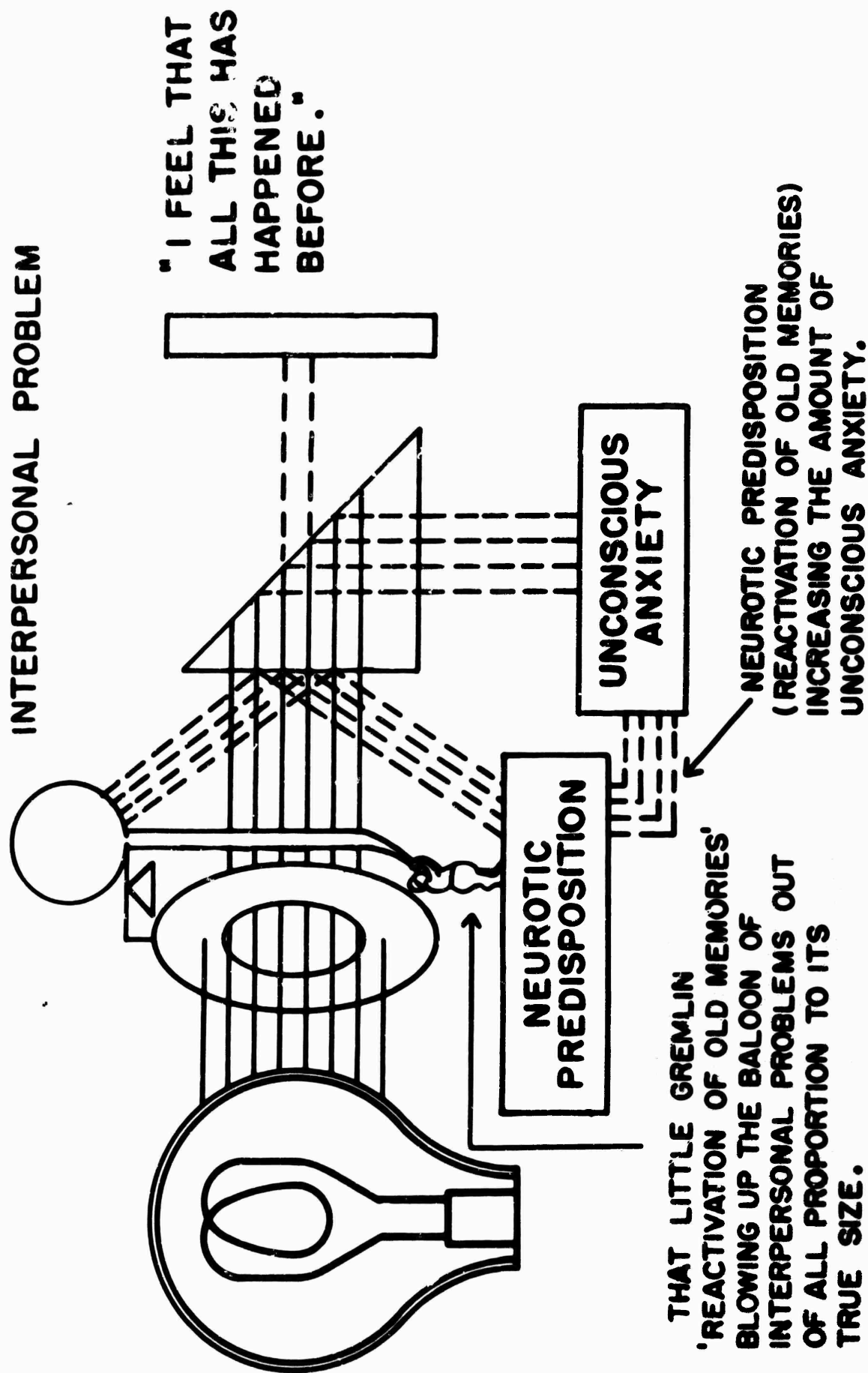
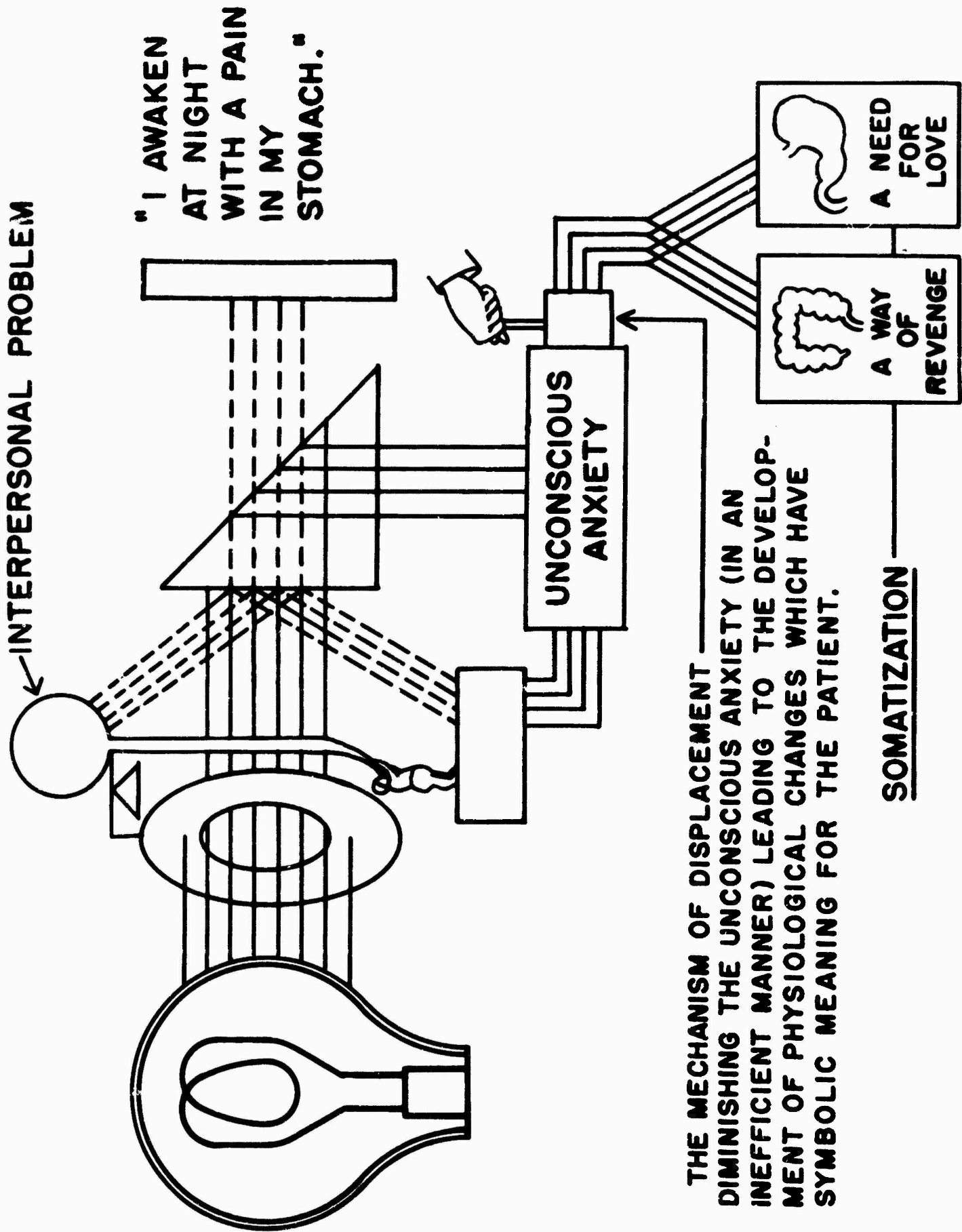


FIGURE 13E

UNABLE TO DO OTHER THAN BEAR HIS DIFFICULTIES ON A CONSCIOUS LEVEL, THE PATIENT UNCONSCIOUSLY DISPLACES HIS ANXIETY INTO A GESTURE, POSSIBLY EXPRESSING HOSTILITY, OR A DESIRE TO BE COMFORTED AS HIS MOTHER HAD COMFORTED AND PROTECTED HIM FROM HARM YEARS BEFORE. THIS GESTURE LOWERS HIS ANXIETY IN THE SAME WAY THAT A LETTER TO A LOST LOVE MIGHT DO. IT PUTS OFF THE DAY OF FINAL ACCEPTANCE OF A MISERABLE SITUATION. SINCE IT DOES NOT DO AWAY WITH THE BASIC PROBLEM, AND STRESSFUL STIMULI KEEP POURING IN, THE GESTURE MUST BE MAINTAINED. THE GESTURE FINDS ITS WAY TO THE CONSCIOUS LEVEL IN THE FORM OF PHYSICAL ILLNESS - THE PSYCHOSOMATIC SYMPTOM.



THE MECHANISM OF DISPLACEMENT —
 DIMINISHING THE UNCONSCIOUS ANXIETY (IN AN
 INEFFICIENT MANNER) LEADING TO THE DEVELOP-
 MENT OF PHYSIOLOGICAL CHANGES WHICH HAVE
 SYMBOLIC MEANING FOR THE PATIENT.

FIGURE 13F

CASE 37

Lieutenant A.W. was a 33-year-old married pilot with over 4000 hours of flying time.

He came to the flight surgeon's office to obtain medical clearance for administrative action on his request that he be removed from flying status for fear of flying. The evaluation of the patient was negative except for a history suggestive of peptic ulcer. An upper gastrointestinal series was done and an x-ray diagnosis of duodenal ulcer was made. This was not the first time that he had had gastrointestinal symptoms. He had been trained as a pilot during World War II. After the war, he had reentered the Army Air Force on enlisted status. He remained in this status until 1953, when he was recalled as an officer. After his recall, he was given refresher pilot training. During the retraining period, he developed subjective complaints of tension, nervous stomach and a feeling that he would like to vomit all the time. He was anorexic and gagged frequently. He attributed his tension to the fact that he had not flown an aircraft for seven years. As he became used to flying, the discomfort gradually disappeared.

From 1953 until a year before he went to the flight surgeon's office he was free of symptoms. Then early in 1956 he began to develop nausea, a tight feeling in his throat, difficulty in sleeping, anorexia and a "cold empty feeling" in his stomach. He had no pain at night. The severity of the symptomatology varied directly with the amount of tension that he felt. The tension was related to flying. It was present on routine missions. He worried about engine fires and in-flight emergencies even though such emergencies had happened before and he had been able to cope with them. He attributed the primary source of tension to the responsibilities, which had been given to him when he was upgraded to aircraft commander one year before he was seen at the School of Aviation Medicine. The symptomatology persisted unabated until he was taken off flying status by the flight surgeon. Since removal from flying he had been able to eat and sleep. The tension and abdominal discomfort were at a minimum.

He never thought about flying as a child and was not particularly interested in aircraft. He enlisted in the service in 1942 and was made an aviation gunner. Then he went to cadets. He enjoyed flying, finding great satisfaction in soloing single-engine aircraft. He felt a sense of accomplishment. He acquired approximately 300 hours of single-engine fighter time after graduation, but saw no combat. In 1946 when pilots were released, he separated from the service. He was in civilian life for approximately 7 to 9 months. Then he decided that the security and other long range advantages of the Air Force were to his liking. He applied for reentry. He was accepted on enlisted status.

From 1946 until 1953 he served as a radar gunner flying prolonged missions in the B-36. He logged close to 3000 hours in this aircraft. He felt that this much time in the B-36 had taken all the kicks and novelty out of flying. During the Korean War his application for commissioned status was accepted. He was checked out again as a pilot

but noticed that now flying did not have the old kick it used to have and that being a pilot was just a job for him. He commented: "I didn't like flying after recall, in fact, I disliked it. I started worrying from the start. I never did get the confidence back that I had when I left in 1946.

After finishing the refresher course, the patient was assigned to fly as co-pilot in the B-29 until he could accumulate a sufficient number of hours to qualify as an aircraft commander. He was happy as a co-pilot. He felt he was going along for the ride and was satisfied with his limited responsibilities. Then, he was upgraded to aircraft commander of a KC-97. His new job carried a need to make decisions and to be responsible for the crew. He became anxious and tense. He began to develop anorexia, insomnia, feelings of nausea and abdominal discomfort at about this time. At first he felt that the discomfort would go away as it had in 1953 when he was tense in checking out in a B-29. However such was not the case. The symptomatology increased to the point that he felt that his efficiency while not markedly impaired was sufficiently marred so that he did not feel that he was being fair to the other members of the crew. He therefore requested removal from flying status for fear of flying.

The patient appeared to have an oscillating ambivalent attitude toward his symptomatology. At one time he felt his symptoms were an integral part of an expression of his need to remove himself from the flying situation. At other times he referred to the entire symptom complex including insomnia, anorexia and abdominal discomfort and fear of flying as a single ego alien unit which was interfering with his flying.

His reaction to flying stress was not that of a specific fear of flying but rather an exaggeration of flying hazards by the absence of satisfactions in the flying situation. Flying no longer afforded a position of comfort for his dependency needs. Being an aircraft commander gave him the responsibility of caring for others instead of being cared for.

The patient was the fourth of eleven children. He described himself as always having been on the quiet side, more of a listener than a talker, and more of a follower than a leader. There was a great deal of closeness with his parents. He was closer to his mother than his father. He described many heart to heart talks with his parents in which anything could be discussed. Both parents were rather easily upset, their expressions of anger were rare. One sister was hospitalized for an emotional decompensation following the birth of a child.

The patient married in 1949. He had three children. His wife handled the finances, keeping all the books and writing all the checks and apparently the major portion of family responsibility fell to her.

The patient described himself as a person who seldom got angry but when he did attempted not to show it. When a situation which might

have made him angry was over, he attempted to forget about the situation as soon as possible rather than make anyone uncomfortable.

During the interview, he was very soft spoken. He entered the room in a very relaxed manner, sat back and dangled one leg over the edge of the chair. He answered an introductory question: "Why are you here?" with a sheepish: "I'm scared." His productions were sparse and he rarely produced information spontaneously. This diminution of verbal outflow appeared to be part of his personality. There was one area in which he spoke under pressure and rather quickly, producing much material. This was during a discussion of his symptomatology and his reaction to flying stress. There were no evidences of overt hostility. He had an affect which was constricted and flattened. Only questions revealed that there was an emotional turbulence within that was far greater than one would suspect from the expressions which were permitted to be exteriorized by the patient's mechanisms of adjustment. There appeared to be a generalized inhibition on the verbal and motor levels of external expressions of inner feelings.

He presented the general personality pattern of a passive dependent individual who was quite willing to find someone to carry the major responsibilities while he preferred to function as an integrated and following member of the team. Placing him in a position of responsibility prevented him from acting out his dependency needs on a reality level.

In this case we have seen clearly: (1) an individual with a predisposing personality, (2) a symptom known to be caused by psychological factors in a large percentage of cases, (3) an identifiable tension and (4) a clear-cut time relationship between the tension causing factors and the appearance of the symptom.

CASE 38

Captain X. is a 37-year-old pilot with 3000 hours of flying time.

The patient had been sent to the flight surgeon by his commander because of frequent episodes of nausea, vomiting, diarrhea and stomach cramps. He related these episodes to periods of tension which followed arguments with others with whom he had to work. Commented he: "When I get into an argument with someone I hold it in. I get madder than Hell at him and hold it in and then at night these attacks come on." He had been especially prone to develop attacks such as these after disagreements with his operations officer, and while flying jets.

The symptoms interfered with his flying. In his own words: "Apparently due to having colitis my system cannot tolerate flying in jet type aircraft. I have frequent spells of nausea, vomiting, air-sickness, stomach aches and diarrhea while flying in jets."

He first became aware of this reaction in 1952. It occurred occasionally as a response to some disquieting factor in his environment which he subsequently sought to avoid. In 1956, he was transferred to

the B-47. When he reached B-47 upgrading, with the discomfort of the aircraft, long hours of flying and lack of crew rest when flying from 35 to 80 hours a month, the patient began to develop attacks in the air and on the ground every other day. The symptomatology persisted at a severe level through March, April and May and continued at a somewhat abated level until September 1956. At this time his commander sent him to an instrument flight instructor's school. There he had to fly in the T-33. Each time he flew he developed episodes of vomiting and diarrhea. Because of this he was eliminated from the course. Upon return from the course he was removed from flying status by his commander. Since that time, he had done no flying and had had complete remission of his colitis.

The patient had had fifty visits to the flight surgeon in a period of four years. The most frequent reasons for his visits were rectal itching, hearing loss with no audiographic findings and repeated episodes of nausea, abdominal pain and diarrhea.

The patient's interest in flying had been present since he was eight years old. During World War II he was trained as a pilot. He enjoyed flying training and combat flying. Learning to fly had given him a feeling of accomplishment. He longed for the old days: "In those days you could buzz the Hell out of a field. I lost buddies but I felt bad only for a short time. There weren't any regulations then. If there were, no one would have followed them." "Now flying is just a job." "Modern flying is weighed down by regulations." The old satisfactions derived from flying were no longer present. He liked the B-47 because "it is slick looking and it is nice to be able to tell people that you are flying it." On the other hand, the discomfort of flying this aircraft was something which destroyed his motivation for flying. "Space is cramped." "One can't eat well while flying." "Rigid regulations ruin all the fun." "It used to be fun, now it's strictly business." "The plane is a business machine, flying hours are long, rest is short. Our operations officer is far from understanding." His flying anxiety, which previously had been kept under control, had become strongly motivating by default. There was an absolute absence of positive motivation. He seemed to say: "Why should I risk my life if I'm not even going to enjoy flying any more?" The major source of his anxiety in flying was not fear of the dangers inherent in military aeronautics (although this fear was secondarily activated), but a rigidly structured and regulated physically uncomfortable flying environment in which the problems of the individual had a low priority.

There was an unusual degree of parental instability during the patient's early years. His father had married four times. The patient's mother was the father's third wife. She died in childbirth when the patient was six years old. Her children from a previous marriage and the father's children from previous marriages plus the children of their marriage remained with the father when he married a fourth wife who also had children from previous marriages. They had one child. The number of children in the family totalled twelve.

During the depression years the family went to live on a farm, so that there would be enough food. The patient remembered little about

his mother. He remembered his step-mother as a calm and steady person. Although there were many children in the family the parents gave as much of their time to each child as was needed. Conversations and heart to heart talks were frequent. Rapport was good. The patient went to work immediately after leaving high school. In 1942, he joined the Army Air Force. Shortly after completing cadets he married a young woman who after marriage was discovered not to have been altogether truthful about certain aspects of her past. He divorced her after a few months. Commenting upon this he stated that as far as the whole incident was concerned he had just blotted it out of his mind, stating that if something is unpleasant he just forgets about it. (Note: The patient had not forgot the unpleasant memory. He was merely able to push anxiety provoking thoughts out of his awareness. Suppression is the name given to the mechanism of defense by which anxiety provoking concepts are excluded from the consciousness but can be easily reactivated. The mechanism of defense with which a person is able to dissociate himself completely from anxiety provoking memories and recognizes them only as something alien, outside of his own self and not a part of him is called denial.) At the time of the interview the patient had married again. He found no source of tension in this marriage. They had two children.

During the interview the patient was amiable and cooperative. He showed no overt anxiety and controlled the interview by means of limiting the content of the material which he permitted to be discussed. He did this by limiting the length of his sentences and changing the subject. Although there was no overt hostility in the interview, his flight surgeon's notes reflected a good deal of hostility toward the flight surgeon and some aggressiveness was shown by the patient in his handling of individuals at the School of Aviation Medicine. His affect was restricted although appropriate. His mood was neutral. He did not describe depressions beyond mild reactions to loss of position. Public opinion seems to have had a good deal of influence on him. He verbalized a feeling that being removed from flying status administratively by his commander had caused him to have loss of his "good social standing with my fellow officers." The presence of strong suppressive mechanisms in a man who is strongly identified with acceptable cultural patterns (i.e. who does not like to lose his social standing with his fellow officers) is a basic personality which is compatible with the development of psychosomatic symptomatology.

In a man with less character (who is less conscientious and is poorly identified with the Air Force), the most obvious approach to the problem of discomfort in the flying situation would have been to quit. However, this man was conscientious, and strongly identified with the Air Force. He had a need to maintain his social status with his fellows in the Air Force and to fulfill his job. He therefore controlled the tension and hostility responses which boiled within each time he was faced with the things that galled him. An integral part of this control was a limit placed on responses to stress. Certain responses were unacceptable to the patient and to society. From the outset, therefore, he could not respond on the level of flight (quitting) or of fight (striking out at people who angered him). If urges toward such responses appeared, they had to be suppressed.

Suppressing responses did not lessen the stress, nor did it destroy the prodding need for response. Suppressed tension and hostility, denied direct expression, found a mode of indirect expression -- somatization. The patient could have been expected to respond to almost any stress in this manner, providing that the stress were severe enough and the counter stresses sufficiently rigid.

SECTION V

OTHER ASPECTS OF REACTIONS TO FLYING STRESS

CHAPTER XIV

UNUSUAL REACTIONS TO SITUATIONS OF STRESS

There is a reaction to acute stress situations that is of particular interest in aviation medicine. This is the reaction of the group, of patients with low stress tolerance, who develop episodes of incapacitating anxiety in the face of situations of stress. These individuals attempt no defense against acute anxiety. They just bear it for the period of time the stress is present. During the actual period of stress, there is complete cessation of function with a disorganization of the individual's capacity to integrate his responses with changes in the environment. In a man who has control of an airplane such a reaction is dangerous. The disposition for cases with this reaction as the sole finding is medical disqualification under Air Force Manual 160-1.

This aeromedical disease entity is called "Unusual Reactions to Situations of Stress." Other names such as "freezing up," and "the clanks" are in current usage and in many cases refer to this reaction.

Such a reaction is more likely to occur when the patient is subjected to stresses in his professional and personal life.

Cases 39 and 40 are examples of unusual reactions to situations of stress.

CASE 39

Lieutenant A.S. was a 31-year-old pilot with experience in both conventional and jet type aircraft. He had a total of 860 hours of flying time.

The patient was trained as a pilot near the end of World War II. He was released without seeing combat. During the Korean War he was recalled. Although he had wanted a primary flying job, he was assigned to a desk. To fulfill his flying ambition, he volunteered for jet transition. During his first two flights in the T-33, he was tense.

He developed airsickness. At the end of five hours he began to like the aircraft and after completing T-33 training felt that jet flying was great sport. From the T-33 he was assigned to the F-86D. He liked this aircraft much more than he liked the T-33 and was disappointed when he was reassigned to T-33 instrument instructor school. He did not wish to be an instructor. He felt he did not know enough about instrument flying. He did not wish the responsibility of teaching someone else something of which he was unsure. In addition, he wished to fly alone. He did not feel sufficiently confident in his ability to fly jets to become an instructor. He became anxious and tense, could not eat or sleep, and became depressed and irritable at home. He found it impossible to remember things that he had learned about aircraft and there was a definite decrease in his flying proficiency. This feeling increased and spread until at the end of three months he felt that he did not wish to fly any aircraft. He reported to his commander that he had fear of flying.

The patient's fears centered about responsibility for his students and his lack of self confidence as an instructor. His desire to fly alone and his uneasiness about flying with students were rooted in his fear that during his functioning as an instructor he would get into a "dither like I do at home." By this, he meant that if something were to happen in one of these aircraft he would get so "shook up" that he might pull the wrong switch. He did not mind risking his own life, but was wary of risking the life of another. He described flights during his jet training days during which he became so nervous that the instructor had to take over the flying of the aircraft.

By the time he was sent to the School of Aviation Medicine he had had a few months of DNIF. He felt that he was once again able to fly but still did not wish to be an instructor. His desire to fly was strong on some days. On other days, vacillation and uncertainty about himself reappeared. If ordered to fly he would do so willingly.

The emotional reaction to situations of stress which the patient called a "dither" was not isolated to the stress of becoming an instructor pilot. It also occurred at home. His wife was an individual who liked to argue. She repeatedly brought up charged topics and yelled and scolded about them. This caused the patient a good deal of stress and discomfort. He would get into such an acute state of tension that he had to leave the house for two or three days. His wife's nagging might occur once every two weeks or once every six months. Between outbursts they got along fairly well. When it was not possible for him to leave to avoid chronic nagging, he developed difficulty in eating and sleeping. Although he might have slept for twelve hours, he still felt as tired in the morning as when he went to sleep. He developed poor eating habits and a generalized feeling of tiredness and listlessness. At one time when he was in such a state of chronic anxiety he became preoccupied with a pain in his shoulder which he feels would not even be worth mentioning in his present state of well being.

He had wanted to be a pilot since the age of 8. He built model airplanes. Once he got into flying training, he considered flying to

be great fun and derived great satisfaction from being able to accomplish something that few else could do and from being alone with his thoughts off in the sky. In addition, he felt he was able for once to be master and to be in control of things. He preferred to fly alone. He did not consider flying with a student to be satisfactory flying.

His reaction to crashes, accidents and incidents was that: "It is more hazardous if accidents occur that you are not prepared for. You try your best and if you don't make it, at least you have tried. Besides, you can always bail out." He is somewhat wary of the fact that he has developed episodes which are incapacitating while flying.

The patient was the youngest of three siblings. He had two brothers much older than he. Both were married. He and his brothers got along well. He patterned a good deal of his life after them. Since his mother had to work, the patient found when he came home from school that his older brothers were usually there to care for him. At times he found the house empty when he came home. He did not talk to his mother about his problems because she had a "lack of understanding." She shouted a good deal and was emotionally unstable. She argued constantly with her husband who was a quiet man. When the situation became too charged the father would just walk out. The patient noted a great similarity between his mother and his wife in respect to their tendency to argue.

The father was described as a relatively stable man. He was very mild and had nothing to say during arguments. He was always ready to help the children and they always felt they could go to him when they were in any sort of difficulty. He was, however, not too understanding of the mores of the younger generation. The patient had many friends as a small child. He did well in school. He took part in no extra-curricular activities because when he was old enough he had to work after hours to help support himself.

The patient met his wife while they were in high school. They were separated during World War II. In 1947 they were married. The patient stated that he married her because he thought he was in love with her. He feels now that at that time marriage was a mistake because he had no money or wherewithal to support a wife. Everyone was marrying so he joined the group. The marriage was a stormy one. She was like his mother and her father, a fiery person with emotional instability and a severe temper who argued about the same thing repeatedly. At one time they separated. During this period he dated. She repeatedly called him to task for this later. He stated that his reason for staying with her was that he was not sure he would get anything better. In addition, he felt he was not the kind of person who divorces and he just could not admit defeat.

After discharge from the service, he had obtained a job as a dance instructor. He left this to go to a better paying job as a salesman for a meat company. His wife's parents were living in California. He felt opportunities would be better for him there, so he went to Los Angeles where he worked for a railroad company as a rate clerk. By

that time it was 1948 and he decided that he wanted to fly jet aircraft. He applied for recall.

This patient presented a history of a disturbed family constellation during his early life, and a wife who repeatedly activated anxiety in him. When at home and while flying the patient was subject to the development of episodes of incapacitating anxiety in response to situations of stress.

CASE 40

Lieutenant N.S. was a 21-year-old student pilot with 150 hours of flying time. He had 21 hours in jet aircraft. He was sent to the School of Aviation Medicine because of "G" force intolerance. No somatic cause of the "G" force intolerance could be found. He revealed that he was so tense during the time he had the "G" force intolerance that he could not defend against "G"s, and therefore lost consciousness. He went on to explain that when he got tense or in a situation which was not familiar to him he had trouble thinking out procedures. When excited or tense he developed overwhelming anxiety. He described a check-ride in his early training during which an instructor bawled him out. His mind went completely blank. He had to stop, take a deep breath and try to relax.

The patient had been interested in flying ever since he was in kindergarten. His father used to bring home metal airplanes for him to play with. When he became old enough, he made model airplanes. The patient described flying as being not a thrill exactly but a free feeling of being up above everything. "The happiest times I've ever known," stated he, "were when I soloed at night across country." He described the sky and the ground below as being quite beautiful.

His reaction to crashes was that he felt sorry for the individuals in the crash and felt that crashes were terrible things. "I can't help thinking it would be nice if it didn't happen." Whenever he heard of a crash, his first reaction was to hope that his wife would not hear anything about it. He had had this reaction when one of the students in the class ahead of him plummeted straight into the ground from 20,000 feet. This happened at the beginning of a week when the patient was not assigned to flying. On a flight at the beginning of the following week, the patient's flying proficiency was noted to be poor and he was given the check ride during which the "G" force intolerance occurred. He admitted to having been quite tense at the time over the risks of crashes. This predisposed him to more frequent anxiety reactions while flying. Although he recognized that developing incapacitating anxiety in flight was dangerous to him, his desire to fly was sufficient to make him wish a chance to take more training. He felt that once he had learned his flying procedures and was completely familiar with flying he would not develop these episodes.

The patient's father was a retired Naval officer with thirty years of service. His father and mother grew up together. They knew each other for approximately eighteen years before they married. After the

marriage, the father was at home for inconstant intervals. At times he would be home for six to twelve months. At other times he would be away on cruises for anywhere from three months to a year. When the patient was six years old, he and his parents were living in California. At about this time, World War II started and his father sent the mother and the boy home from California to the central United States where he felt they would be safer. There was some disagreement between the parents at this time which contributed to their separation. About seven years later a divorce was obtained. The father had since remarried. The patient had not seen him for three years.

The patient was fairly close to his father during the time he was with him. His punishment was spanking and scolding. He taught the boy much and was someone to whom the boy could come when he had trouble. The father had a high school education. The patient's mother was a college graduate who had a master's degree in education. After separation from her husband she went home to live and work as a teacher. She guided her son's education carefully, moving to a larger town when the boy became old enough to go to high school. The patient always felt he could talk things over with his mother and had good rapport with her. She was frequently ill and had to stay in bed because of colds and other signs of weak health. The patient found a substitute for his father in his paternal grandfather who was a kind man, who loved children and hunting and used to take the patient with him on hunting trips.

The patient had always done well in academic work. In college he took part in band and varsity sports. He had many friends. He met his wife while at college. After three years of going together and a year of engagement, they were married. They had practically no honeymoon since they were married between primary and basic training. The period of marital adjustment immediately after the wedding coincided with (1) the patient's introduction to jet flying, (2) the increase in the number of his episodes of incapacitating anxiety, and (3) the "G" force intolerance.

During diagnostic procedures at the School of Aviation Medicine with which the patient was unfamiliar he became exceedingly tense. He was soon overwhelmed by anxiety. He made no move to help himself. The episode of tension ended when the patient fainted.

CHAPTER XV

MOTIVATION FOR ILLNESS

As we have seen, flying anxiety is sometimes resolved by the development of incapacitating symptoms in the absence of organic defect. Similarly, individuals who have flying anxiety and who have organic defects will sometimes exaggerate their symptomatology and its effect on flying in an unconscious effort to withdraw from flying. Conversely, some flyers are so well motivated that they will conceal or refuse to acknowledge (denial again) a symptom or physiological event which would be self evident to an objective observer.

The nature of a flyer's flying motivation may distort the history he is capable of giving to the flight surgeon. It is therefore important to obtain information about a patient's flying motivation when taking a history. This is especially pertinent in cases in which the patient devaluates evidence of disease reported by a bystander and in cases in which a physical defect of long standing suddenly becomes symptomatic in such a way that the patient feels that flying safety is compromised.

Cases 41, 42 and 43 are examples of patients whose strong positive flying motivations caused an alteration in the course and handling of their diseases.

CASE 41

Captain J.L. was a 35-year-old captain with 1500 hours of flying time in conventional aircraft. He was about to start transition into the B-47. He was an observer.

On 28 August 1956 two and one-half hours after he had gone to sleep, the patient was observed by his roommate to have fallen out of bed. There was blood coming from his mouth and his arms were drawn up with his hands opposite his shoulders. His body was tense. There were occasional short, rapid movements of his arms. He remained in this state for 15 to 20 minutes. During this time, the patient was oblivious to everything around him. This episode was followed by confusion and sleepiness. His roommate called the hospital stating that the patient had had an "epileptic fit." When a corpsman arrived he found the patient in bed. He had difficulty getting him dressed. He was taken to the base hospital. Examination at the hospital found him to be somewhat euphoric and complaining of a sore upper lip. There was a coarse tremor of his hands. A blood alcohol drawn at the time showed the presence of an alcohol level below intoxication. A lumbar puncture was negative. The patient was amnesic for the entire episode. The following day he complained of sore muscles.

He was sent to an Air Force neurological center to be evaluated for the possibility that he had had a convulsion. He explained away the convulsion. He claimed that he had fallen out of bed because his bed was constructed in such a way that it was easy to fall out of it. His muscles were sore the following morning because he had done a good deal of cross country flying in private aircraft and such flying often leaves him with sore muscles. He had been sleepy and groggy because he had just awakened. The blood issuing from his mouth was not the result of biting his lip but rather the result of hitting his mouth against an article of furniture. The amnesia and the position of his arms on his chest were related to dreaming and sound sleeping. There was no family or personal history of fits, convulsions or faints. He argued his case with such intensity, keenness and sincerity that the neurological consultant returned him to duty with neurological clearance. The patient returned to flying.

About three months later he reported to a new base. There the flight surgeon discovered the episode in his records. He took the patient off flying status immediately and sent him to the School of Aviation Medicine where, during the psychiatric interview, it became apparent that the patient had not even considered the possibility of a convulsion seriously. It became clear that it was difficult for him to concern himself with any tension provoking situation and so could not weigh such material in a mature manner. He could not accept the concept of a defect in his body. That this was a use of the mechanism of denial was quite apparent. He made everything into a joke. He cajoled the interviewer into agreement with him. When an attempt was made to investigate the weak points of his completely integrated explanation for the episode, he responded with hostility. It was no wonder that previous investigators had felt that his illness "did not represent a central nervous system disorder" and that the phenomena was not considered to be a convulsion. However, armed with the knowledge that this patient's ability to interpret his environment and its happenings maturely was minimal, the School of Aviation Medicine psychiatrist discarded the patient's explanation and re-evaluated the original facts. Visual fields, electroencephalogram, neurological examination, skull x-rays and tests for defect in intellectual functioning were performed on the patient. The results showed decrease in amplitude in the electroencephalogram in the right occipital area and an obvious though mild defect in his intellectual functioning. This plus the history was considered to be sufficient information to refer the patient to a neurosurgical service for further work-up.

Having been challenged and contradicted the patient left the School of Aviation Medicine feeling as though someone had done him wrong. He was especially perturbed since, as he explained, flying was his life. He had been interested in aircraft since high school days. His uncle had had an airplane. The patient learned to fly when he was 14. He owned his own private aircraft and frankly enjoyed private flying more than he did flying with the Air Force because there were so many restrictions in the Air Force. He realized that he would lose his

private license if he were proved to have had a convulsion. He stated that flying provided him with an egotistical satisfaction of having his own plane and being able to fly wherever he wished. In general flying meant to him "living dangerously and getting away with it." He made reference to being in a different medium. Man was born to walk on earth. By flying, the patient was able to get away from these limitations and take to the air. He needed the flying pay, said he, and he loved to fly. He was quite perturbed to think that anyone could think that he had had a convulsion after he had explained so carefully what had really happened. After all such thinking could end his flying career. His reaction to crashes was that: "It happens to the other guy not me. It certainly doesn't bother me."

While the patient was waiting at his base for his appointment at the neurosurgical center, he had another convulsion in his sleep. This time the convulsion lasted for a period of two hours. He was transferred immediately on emergency status to a neurosurgical service where work-up indicated surgery and surgical procedure revealed a glioma in the right occipital lobe. The patient recovered from surgery and has recovered all functions except a residual defect in his visual field. He had been told to expect the tumour to recur by his neurosurgeon. With a little less denial he would have got surgery earlier and his prognosis might have been better.

CASE 42

Lieutenant N.Y. was a 33-year-old pilot with 2200 hours of flying time in conventional type aircraft. He was with the Strategic Air Command.

According to the patient, at 1200 hours on 8 October 1956 he fell asleep at his desk. While sleeping he had a dream that he was riding in the front of a toboggan. He held onto a rope. The toboggan was moving swiftly. Suddenly he felt a mask of snow hit his face. He could not catch his breath and could not see. He did his best to breathe. He felt suffocated, and was afraid. The toboggan hit something, perhaps a tree. The next thing he remembered was that someone was helping move the toboggan passengers. The patient could not remember where this individual moved him. He could not estimate the time period between the end of the dream and awakening. He felt that he did not awaken right away. He could not remember if upon awakening he was lying on the floor or sitting at his desk. He explained this by saying that he "is very slow to wake up" (a deep sleeper) and "becomes quite groggy when awakened." Sometimes he "is not sure of where he is." When he had achieved a wakeful awareness, his telephone was ringing and he was at his desk. He answered the telephone and began carrying on his business. At about this time a doctor appeared. He began to talk with the man who had been working in the same office as the patient with whom the patient had had some personal difficulties. This man, a major, reported to the physician that the patient had been sitting at his desk when he suddenly let out a sustained yell, sat back in his chair, stiffened all over and began a generalized tonic and clonic shaking that lasted about one minute. He frothed at the mouth. The major moved the patient to

the floor. The patient remained unresponsive for five minutes with heavy breathing and a blank stare.

Here we have two conflicting stories from two men working in the same office, who did not like each other. One said he had fallen asleep and when he awakened the doctor was there to take him to the hospital. The other said that the patient had had a grand mal convulsion. The patient attributed ulterior motives to the observer and denied that anything of the sort had happened to him.

An objective examination by a physician shortly after the episode revealed that the patient was alert and active, answering the telephone and conducting his business. Physical examination revealed that there had been no sphincter incontinence, that no Babinski sign was present, and that the patient's sensorium was clear. The patient told the physician that the night before the episode he had got drunk and did not get to bed until 0530. He had just returned from a sixteen-hour flight. He had got three hours of sleep the night before that.

The patient was well motivated to fly. He refused to accept removal from flying status on the basis of the unsupported word of the major. He had decided that he wanted to be a pilot when he was in the eighth grade. He took courses in high school, aimed at getting him into cadets more easily. When he finally did get into flying it was all that he had dreamed it would be. Stated he, "I got a tremendous thrill out of flying and I still do. It's a feeling of being close to somebody up there. It's a job that's worth doing, worth doing well. For me flying is more than a job. A pilot contributes to the total field of aviation."

He had worked as a flying safety officer and had investigated many aircraft accidents. He commented that as far as he was concerned after being exposed to many aviation catastrophes, flying was no more dangerous than driving an automobile until one started to take chances. "When you do that in flying the results are far more fatal." The patient flew aerial refueling tankers. He was an aircraft commander and an instructor pilot.

Because the patient was so vociferous in his defense against removal from flying status, he was sent to an Air Force neurological service where a complete work-up revealed "nothing which would corroborate a diagnosis of convulsive seizure." He remained off flying. He began to make quite a fuss and was so vociferous in his reactions to this problem that people got the impression that he felt as though the major's observation were an accusation. A board was called. It decided in favor of the major. The patient still insisted that he be permitted to fly especially in view of the inconclusive nature of the medical report on him. He was then sent to the School of Aviation Medicine where it became apparent that the patient had a rigid denial of the possibility that he had had a convulsion. This was impossible to pierce. Motivation for flying and the patient's concept of the integrity of his anatomy and physiology were so strong that all thinking in this area on

the part of the patient was slanted in the direction of health. He was, in effect, poorly motivated to have disease at that time. He was not capable of an objective appraisal of his condition. The work-up at the School of Aviation Medicine contained one procedure which was not performed at the previous neurological center. This was an electroencephalogram performed while the patient fell asleep. During the first fifteen minutes of sleep (the physiological state during which the patient had had his convulsion), the patient's electroencephalogram developed repeated bursts of 2-3 per second spike-dome brain wave activity. Such paroxysmal activity is compatible with a convulsive disorder occurring in sleep. On the basis of the electroencephalographic findings and the history there was enough evidence to suggest that the patient had indeed had a convulsion. This placed him in that category of individuals who are greater than average flying safety risks. It is quite apparent from this case that a patient can (by the nature of his answers and the strength of the emotional tension that lies behind them) sway a medical examiner from a clear-cut statement of the possibility of disease and indication for further work-up into the direction of drawing equivocal conclusions on the basis of the slanted facts presented by the patient.

CASE 43

Captain S.S. was a 34-year-old pilot with 3100 hours of flying time in multi-engine conventional aircraft.

The patient reported to the flight surgeon's office with the complaint that his heart was skipping a beat. This phenomenon had been going on for a number of years and he had never considered it to be serious. He felt that it was about time to drop into the flight surgeon's office to ask about it. His complaint was that his heart would beat faster and faster and then skip a beat. He developed a feeling that something had gone wrong. He would have to stop to catch his breath. The frequency of these episodes was once every six months. The last episode had occurred so long before he visited the flight surgeon that he could not remember it. The episodes lasted for a matter of seconds. During one episode the skipping of the beat had been accompanied by pain in the left side and a drawing feeling in the left hand. This had never occurred while sleeping or while flying.

An interview by the flight surgeon revealed the reason the patient had chosen that particular time to come to see him. He had recently heard of the death of a friend, about the same age and body build as himself, from heart trouble. Since the patient's father died at age 62 of a myocardial infarction, the patient felt that he had good reason to worry. He therefore went to see the flight surgeon in order to find out whether his symptomatology were serious. The flight surgeon ordered a cardiac evaluation. This was negative.

The flight surgeon interviewed further. The patient was delighted to find someone who was interested in his somatic preoccupations and gave forth with voluminous information about the dull pain that he sometimes developed near the lower ribs on the left side which had never occurred while he was sleeping though often just after eating. He also

described headaches which no medications could control, located in the back of his neck, having a steady quality and throbbing every time he moved his head. The patient talked on blissfully only to be stopped short with surprise when he found that the flight surgeon decided that his cardiac complaints deserved a more extensive work-up and removed him from flying status. Then he referred him to the School of Aviation Medicine.

The patient was bewildered. Suddenly all of his symptoms disappeared. He insisted that too much fuss was being made about his symptoms. He preferred to forget about them. "They were never really that important anyway." His attitude at the School of Aviation Medicine could be summed up by: "All I did was go into his office and ask a question and now look where I am."

He was not in any way motivated to use his symptoms to remove himself from flying status. When he found that they might have this effect, he immediately withdrew his complaints. He was very well motivated to fly, in fact, aviation was his life and career. He entered cadets in 1942, leaving college to do so. He chose aviation because he liked flying. He had remained in aviation because of the pleasure that he derived from it. It was a job he enjoyed. He was given responsibilities. This was something from which he gained great satisfaction. He commented that he liked flying. He did not consider it to be a job but something which was far more interesting than any of the other occupations known to him.

The patient was well aware of the risks of military aeronautics. This awareness of risks did not contribute to his motivation above and beyond his desire to follow safe practices while flying.

His strong need to fly and what he considered the utter futility of "all this needless fuss" led him to be quite hostile during the interview. He challenged the need for questions which were asked of him, especially those which were similar to the ones asked by the consultant in Internal Medicine. He was markedly suspicious of all questions asked and was careful of his answers. He appeared to be like a man playing poker with his cards close to his chest. Apparently he felt that he had put his foot in his mouth when he went to the flight surgeon and jeopardized his flying status and he did not intend to give any information which could further hurt him. After this was interpreted to him the patient became more relaxed and was far more cooperative during the interview. Anxiety was apparent only when the possibility of losing his flying status was discussed.

At about the time he went to see his flight surgeon he was faced with a situation which could not be handled on a reality level (i.e. his anxiety reaction to the death of a friend about his own age). He became aware of some physiological changes in himself and went to the flight surgeon in an effort to obtain his support to help him erase his fear of death from heart disease. The symptoms brought about an unexpected reaction from the flight surgeon which effectively obliterated

the patient's preoccupation with somatic problems by substituting a more important problem, that of possible loss of flying status.

Typically when a patient begins to notice mild physiological changes his symptomatology follows either of the following courses: (1) With the proper reassurance from an educated authority figure such as a physician, the symptoms are forgotten. (2) Because of secondary gain from the symptoms an emotionally predisposed person may maintain them for a long period of time. Neither of these alternatives occurred. The secondary gain in this case backfired and a secondary loss threatened as a new area of anxiety was introduced by the flight surgeon. By the time he was seen at the School of Aviation Medicine, the patient preferred to forget the whole thing. No evidence of cardiac abnormality was elicited from the patient by the Department of Internal Medicine. After he returned to his base he was called in by his flight surgeon and told that there was nothing wrong with his heart. The patient suggested that they forget the whole thing. The flight surgeon concurred and the patient returned to flying. In this case, we can actually see a change in the seriousness with which a patient considered his symptoms, which resulted from the appearance of a threat of removal from flying status. The patient was poorly motivated to have an illness that would cost him his flying career.

The two cases which follow are examples of patients whose poor motivation for flying resulted in exaggeration of minimal organic pathology.

CASE 44

Major C.C. was a 35-year-old pilot with 2700 hours of flying time including combat and test pilot experience.

His presenting complaints were back pain and stiffness in the left hip joint following prolonged inactivity. After first rousing, the joint was so stiff that he had difficulty walking. After a short period of use, the joint functioned effectively. Wearing a back pack chute made the pain worse. There was no relationship between joint stiffness and weather conditions. Long missions in the B-47 with prolonged periods of sitting without moving also brought on joint stiffness.

The patient first noticed low back pain during basic survival school. Cold damp climates brought on this pain. He was seen in consultation at two large Air Force orthopedic centers. The consensus of opinion was that the patient had arthritis. He was placed on exercises and it was recommended that he not continue flying operational missions.

He considered this recommendation to be an unmixed blessing, since he felt that if his leg did not want to move at the right time it could have been hazardous. His unexpected joy over the recommendation that

he no longer fly the B-47 caused his flight surgeon to question his motivation. A review of his chart revealed many entries which gave indication that there was a motivational factor in the emphasis he placed on his illness. There were repeated entries such as "the patient awakened at 2:00 A.M. with stomach cramps. He started talking with his flight surgeon and had relief." "The patient has had back pain and pain in the stomach mostly at night. He has difficulty in swallowing and blurring of vision after eating. He has some difficulty with the B-47 and feels that he is not keeping up with the crew. He has several loose bowel movements before each mission." "The patient is nervous, restless, has loss of appetite and inability to sleep." From these notes we could conclude that (1) when the patient had anxiety he sought out the aid of a physician; (2) it was not unusual for the patient to have somatic symptomatology during an anxiety state; (3) his back pain loomed larger in his mind during periods of time when he was somewhat tense; and (4) he was not happy in the B-47.

A physical examination revealed that his left leg was of smaller dimension than his right leg. This was attributed to an attack of polio in 1947 which affected the left lower limb. Deep tendon reflexes were less active in the left lower limb. Orthopedic consultation held under the auspices of the School of Aviation Medicine concurred with previous orthopedic consults that the patient had osteoarthritic changes in the lower back.

An evaluation of the patient's flying motivation revealed that flying was no longer satisfying to him and that prolonged missions in the B-47 were anxiety provoking. He had been interested in flying ever since he was a small child. When he was about seven years old some Army planes landed at an air field near his home. He and a friend were given 10 cents to watch the planes and keep the cows from chewing the wings. The youngsters stood guard over the planes. They extended their watchfulness to other hopefuls as well as the cows. Since that time the patient had associated a certain degree of importance with planes.

He described flying as having been fun for him. It was something he got a great kick out of. Stated he, you could go up and have a big old time and do what you wanted to do. In recent years however this has not been the case at all. "Flying used to be fun, now it's a job. I guess my age has something to do with it. The kicks are gone out of it now. There are too many regulations, too many things you have to do, it's a business now. He felt that the regulations and controls of the Strategic Air Command had turned flying which had been a lot of fun into an ordinary job which had to be done and sometimes became oppressive. The patient's reaction to crashes was denial. When he heard about a crash he said to himself: "It will never happen to me."

Here was a poorly motivated pilot who was not comfortable with flying. He had a strong superego which would not permit him to withdraw consciously. He had low back pain symptomatic of osteoarthritic spurting. He also had a predisposition to utilize organic symptomatology as

a tool to express inner woes and extract emotional support from his environment. He combined these and presented an exaggerated symptom. As a secondary gain he was able to remove himself from the source of stress (flying) through honorable (i.e. medical) channels. Upon removal from flying status his symptomatology became far less severe and was not at all incapacitating for ground duties. It is of interest to conjecture what would have happened if this patient had not had back pain upon which he could elaborate. Would he have exaggerated other symptoms such as the abdominal pain which he had also developed but had not emphasized?

CASE 45

Captain V.F. was a 32-year-old pilot with 2450 hours of flying time in helicopters and fixed wing aircraft.

The patient requested removal from flying status on the basis of the presence of vitreous floaters which compromised his flying safety by obscuring part of his visual fields.

The patient was free of symptoms until the fall of 1953 when he first noticed a spot in the periphery of his vision. This spot was small, semi-translucent, and in time developed a long tail. In 1954 when he was sent to a communications school where he had to do a good deal of reading, he noticed that the spot at times obscured small print. It was not particularly bothersome because it drifted away quickly. The condition was more noticeable when he was tired. In October 1954 he developed a viral infection. The number of small spots were noticed to have increased at that time.

The spots continued unabated and ignored until November 1956 when he was involved in a near mid-air collision. He blamed this on the spots. He felt that they had obscured a sufficient portion of his field of vision for him to have missed the presence of the other aircraft. He worried that in the future this might happen again or that he might confuse the spots with aircraft. He stated that his judgment told him that the presence of spots obscuring his vision of the surrounding air made it unsafe for him to fly.

Ophthalmological examination failed to reveal any physical disorder. Opacities (*muscae volitantes*) such as the ones the patient described do not form large scotomata. In addition, they do not cover comparable areas of the retina in both eyes. Therefore, the visual fields are not obscured. Individuals who have severe cases of *muscae volitantes* rarely can fixate upon them with their central vision. The spots appear to be constantly in motion and drift away when one tries to look at them. In other words, *muscae volitantes* cannot interfere with one's vision as the patient claimed they did.

The patient's flying motivation proved to be a key to his reasons for exaggerating this symptomatology. He had been interested in aircraft since early childhood. He spent his time making model airplanes.

He had continued to make models up to the present time, although he had recently switched from airplanes to boats.

When he first began to fly, it was a thrill and excitement, a fulfillment. Then came his first solo. He took off and as he did so, he began to shout and laugh. He felt happy, exuberant and free. Then suddenly he heard a voice saying, "All right, Mister, you're at 400 feet, are you or are you not going to stay in the traffic pattern?" This voice did not come over an intercom or from traffic control. He recognized it as the voice of an instructor who was on the ground at the time. From that moment on, flying became just a job of sitting. "It's something I do well. But then again I drive a car well, too," said he. He felt that conventional aircraft had always been uncomfortable for him. He preferred helicopters for in a helicopter one was his own boss. One worked within and knew his own limits, and the limits of the aircraft. The patient felt that, in the future the flying, that people would have to do in fixed wing aircraft, would be different from what it is now. "Once an unusual feat has been accomplished it is no longer considered unique and every pilot regardless of his capabilities is considered able to do it." The patient foresaw a time when airplane performance would go beyond the ability of the pilot to function within the limits of his vision and reaction time. This possibility caused the patient much concern. It became quite apparent that to the patient flying was a job without satisfactions. He had a response to the flying situation which was strongly colored by negative motivational factors.

In the presence of this extensive background of discomfort in flying, the patient experienced a near mid-air collision. He tried to explain to himself how he had got so close to the other aircraft. He could find no other possibility than visual floaters. His judgment told him that he no longer had the capacity to fly safely in the presence of these spots.

The patient's feeling about crashes was that crashes were part of the flying game. He felt however that because of the presence of his visual defect, for him the possibility of an accident was greater. When the patient was asked if he would fly if it could be shown to him that his symptoms were not incapacitating he answered: "That's hard to answer. I feel I'm no longer qualified because of my eyeballs." When the question of flying with the symptoms was repeated he answered: "Fortunately I've never developed any passion and love for flying and therefore I feel no regret in leaving the flying situation." The question was repeated again and he answered: "Well maybe there's something in what you're asking me that I don't see but I've made my decision." The only display of anxiety the patient made during the entire interview was during this exchange of questions and answers.

It was pointed out to the patient that it was impossible for his symptoms to have obscured his vision (his own physiological blind spots were marked out on a tangent screen and compared with his vitreous floaters.). When he realized that there was no true defect he became somewhat introspective and commented that he had actually been thinking

of finding a way out of flying since he had been taken out of helicopters. He reflected on the possibility that without the knowledge of his conscious awareness he may have fallen upon a way out which would be socially acceptable to himself, the medical profession and his fellow flyers.

His combat history was of interest. While in Korea, he won two medals. He received a silver star for a helicopter pick-up of a marine pilot who had been shot down in enemy territory, and a distinguished flying cross for taking a doctor to a group behind enemy lines. His helicopter was within firing range of the enemy. His primary assignment was that of night intelligence.

The patient was quite free to admit that while flying in helicopters he felt secure and felt that he had control. He also felt that helicopters had developed to their fullest extent so that if his flying were limited to them he would never have to worry about transfer to high performance aircraft which were far beyond his capacities. A need for control was certainly a factor in this patient.

The patient's relation to the flying situation was that of a man who had no positive factors mitigating the risks of military aeronautics and a few negative factors which tended to increase his wariness of any sort of aircraft in which he did not have absolute control. (He was willing to fly with his symptoms if permitted to fly in helicopters. He felt he had control here since the helicopter could be maintained at zero velocity.) A near-collision had magnified the realities of the dangers of military aeronautics out of normal proportions. Positive satisfactions to balance this fear were absent. In an attempt to find a means of withdrawal from an unmitigated anxiety source, with a minimum of social stigma, the patient exaggerated mild somatic pathology.

This was a case of an individual with minimal signs who had exaggerated the signs out of all proportion under the pressure of flying stress.

CHAPTER XVI

CASES WITH ANXIETY ASSOCIATED WITH FLYING BUT NOT DERIVED FROM THE RISKS OF MILITARY AERONAUTICS

Not all the factors which give rise to neurotic reactions to flying are related to flying risks. Occasionally a patient comes along who is not afraid of flying risks but finds a source of tension in another aspect of the flying situation. Tension arises for reasons which are peculiarly the patient's own. (Case 1 is an example of a similar, non-flying, idiosyncratic reaction to a stimulus which in the eyes of others is relatively neutral in import.) Such a patient is suffering from a psychoneurosis not associated with fear of flying and so should be removed from flying medically if the symptoms are incapacitating. Only by searching the patient's past can any idea of the core of his problem be uncovered. Psychotherapy for such patients as a rule would take too long to be practicable within the time requirements and physical demands of the Air Force.

Cases 46 and 47 illustrate anxiety associated with aspects of the flying situation other than flying risks.

CASE 46

Lieutenant was a 24-year-old pilot with 300 hours of flying time in conventional aircraft. He had been sent to the School of Aviation Medicine for evaluation of a dislike for flying.

He was quick to correct the impression that accompanied him to the School of Aviation Medicine that he disliked flying. Rather, he felt that his feeling about flying could be more clearly understood if it were described as a dislike for episodes he had while flying. For many months he had been having short episodes during which he appeared to be paying attention to something other than his aircraft. He found it almost impossible to bring himself to describe what held his attention during these episodes.

His group commander during flying training had been aware of the patient's difficulty. He had called him in and suggested to him that he could help the Air Force better in a ground job. However to answer the taunts of others that he was a quitter, the patient continued in flying training.

His difficulty had its start when he first began in flying training. He had noticed a sensation of tingling all over his body while flying similar descriptively to that mentioned in Chapter XIV, Area 2, Answer 23. He felt that such a pleasurable sensation was not proper in

an aircraft and felt quite guilty about it. His guilt interfered with his academic work. He was looked upon by his instructors as an individual who was shirking or trying to get out of the program. The patient denied this, commenting that although 50% of his class got out of flying in some way, he refused to quit. When he transitioned into B-25s, the tingling gave way to the disturbing episodes. They occurred only while flying. He had no warning of their coming on. In spite of all the obstacles and deficiencies which weighed him down, the patient was able to complete flying training and receive his Wings. He was assigned to SAC. He continued to fly with his symptom for many months. Then one afternoon while driving to the flight line and thinking about flying an episode developed. He became quite tense about having an episode on the ground for the first time. He went directly to the chaplain to confess. The chaplain, upon hearing a description of the episodes sent the patient to the flight surgeon.

In describing his visit to the flight surgeon the patient spontaneously revealed the contents of his episodes. While flying or thinking of flying his thoughts began to wander. His attention strayed from the world about him. He developed a feeling of tingling all over his body and then an erection. The duration of the episodes were long enough for observers to recognize a withdrawal of his attention from what he was doing. The episodes were terminated by a sensation that he could see a friend named Bill who said to him, "Ha Ha." He cannot recall whether these voices or visual images were actually perceived to the exclusion of other objects in the environment or were within the brain. He could not remember whether or not he was able to see the road, during the episode that occurred while driving. There was a good deal of similarity between his description of the episode and an objective description of a dream. However the episode did not have a dream-like quality for him. Once the episode was over, he had what he described as a "pooped out" feeling and was quite tired. His only reaction to the attacks was one of dismay. He was deeply concerned with them and worried that they might be evidence of some pathology in himself. He felt deep guilt about the contents of the episodes. He did not verbalize any anxiety over danger inherent in having such episodes during a flight.

The flight surgeon immediately removed him from flying status and referred him for psychiatric evaluation. The patient selected a job as armorer and gunnery officer at his base while awaiting his consultation appointment. After removal from flying status, he had no more episodes. An efficiency report written since his removal from flying status described him as an excellent and efficient officer. He liked the ground job to which he had been assigned so well that he was thinking seriously of a career for himself in the Air Force ground service as a gunnery officer.

The patient had never had any particular interest in flying. He was in AFROTC when it was announced that only those who wished to fly would become commissioned. All of his friends signed to fly, so he did, too. His initial attitude toward flying was that it was not satisfying

and the amount of work needed to pass added to the discomfort. His primary motivation for completing flying training was an attempt to erase a failure in college and reinstate himself in the eyes of his father. He quit once. That was in college. He had no intention of quitting again. Since he did not consider the presence of the episodes to be a hazard to his safety he saw no medical reason to fail to fulfill his duties and responsibilities to the Air Force. He was free to admit that the appearance of these episodes were discomforting to him. "I go home and worry about whether or not I should have an episode or a nice flight."

His reactions to crashes was that he felt terrible for the families but that after all one can get hit walking across the street. Commented he, "I don't think about the plane falling out of the sky. I don't have a terrible reaction to crashes. It's part of the business." His reaction to the flying situation was derived from feelings of guilt and uncertainty, arising from the existence and contents of his episodes.

A neurological evaluation was performed on this patient since such patterned episodes occurring repeatedly could be evidence of temporal lobe disease. No evidence of abnormality was found on neurological examination, electroencephalogram and skull x-rays.

The patient described his life as having been a very satisfactory and happy one. The first impression which he had attempted to give was somewhat modified when his description became more detailed. He was an only child. His parents had married late. His mother was 42 years old when he was born, his father 52. The mother died when he was 8 years old. He recalled nothing about her although he was told she was kind and generous. His father was described as a generous man who spent a good deal of time with the boy, taking his son to sports events and playing ball. The patient remembered nothing of his father during his early years except one episode in which the father hit him for clenching his fist at one of the series of housekeepers who had been engaged to bring the boy up. The boy's eye was blackened.

The patient always specialized in mathematical subjects in school. He took part in few extracurricular activities. He dated often.

He was married and described himself as getting along quite well with his wife because he followed a simple maxim: "In order to get along happily with a woman all you have to do is to let her be the boss and then things are fine."

The major influence in the patient's life was his father. He had an excellent job as a mechanical engineer and was able to earn sufficient money to become a rich man in his later years. He expected the very best from his son. He was described by the patient as "perfection itself." When the time came to select a career the patient decided that he would go into the same field as his father. His father's company was willing to hold his father's job open for him. When the father retired the son would replace him. The boy went to his father's school in order to study the same courses his father had. He did well in the first semester but in the second semester he failed in mathematics courses and had

to leave the school. Although it was possible for him to return to this school it was decided that he should take a business administration course in a different school instead. He led the class in many of the subjects he had failed in his first school. Upon graduation he entered the Air Force. None of his relatives approved of his flying.

During the interview, the patient related well to the examiner. When placed in situations in which he was unsure he became quite tense. Anxiety was present in discussing the episodes although not when discussing the flying situation. He requested a discussion of the possible dynamics of his episodes. In the course of this discussion he became quite tense and developed a tic, involving jerking movements of his head. There was no overt hostility during the interview. He described an episode reflecting a good deal of aggressiveness. A check-pilot had taken him aside before a check-flight and called him a shirker. The patient flew the best ride he had ever flown. When he was done the instructor asked him how he felt. He told the instructor he felt like punching him. Although the patient attempted to be cooperative during the interview it was apparent that repressive mechanisms were so strong that there were whole areas in his past lost from his consciousness. Thus a large amount of material was excluded from the interview. His speech showed no evidence of thought disorder above and beyond a circumstantiality which derived from the fact that he was not too anxious to disclose the nature of his episodes and so tried to circumvent description of them. There was some evidence of bizarre use of words. He defined a person who wants to hit people as "war-like" and reports made out on him by an instructor as "instructor's literature." Proverb interpretation showed a similar autism. It was apparent that there were elements of a more malignant pathology underlying his disorder. Therefore removal from the precipitating stress was indicated as soon as possible. The patient was an individual for whom factors which usually contributed positive motivation for flying had caused a negative response and led to a condition of negative motivation. Only the fact that failure in any form, administrative or medical, was unacceptable to the patient, caused him to remain in flying in spite of the symptomatology which he had developed.

CASE 47

Lieutenant M. was a 26-year-old student officer in pilot training. He had 150 hours of flying time and had not yet soloed the B-25.

He had never had any particular interest in airplanes and becoming a pilot was the furthest thing from his mind. His life ambition had been to be a music teacher. While he was a graduate student the ROTC had organized a band. He was offered a job as bandmaster. He joined the AFROTC in order to qualify for this job. After he had joined the AFROTC, the announcement was made that all AFROTC trainees had to fly or come into the service as enlisted men. He was neutral about flying. He thought that he would try flying because he might like it. (In any event he preferred to be an officer.) Once he began flying he found that he was just not interested in it. Occasionally he had a good day

and was very pleased with his flying but most of the time it was just a chore. Flying itself did not bother him. He disliked flying training. He summed it up by saying that if he could have been a ready made pilot he would not have minded it at all but going through training was difficult for him. He would have taken the path of self-initiated elimination if it were not for the fact that there were social pressures from his fellow flyers against such a maneuver.

His reaction to crashes and near crashes had been that it happened to others but certainly would not happen to him. "Flying is no more dangerous than driving a car." Once he made a low landing close to a fence and although he was not tense at the time of the crash he was quite tense a few hours afterward when he realized what had almost happened. He felt that any tension that he may have had associated with crashes expressed itself in the same way that a close call expressed itself in an automobile. He was careful for a few minutes but soon went back to his old pattern.

In explaining the reasons for his dislike for flying training, he commented: "I can't put my finger on the reason for the tension. I certainly have no fear of death in a plane." He paused, then he said: "You know I'm not prone to verbal chewing out. I don't think the instructor was very understanding. He made me nervous. I couldn't talk back. Then I started making stupid mistakes when he put the pressure on." (He had developed episodes of incapacitating anxiety.) Feelings of rebellion had been the patient's lifelong response to criticism. Under the impact of such criticism he also developed tension. In flying training, the instructor made no attempt to modify his critical approach to teaching or to bend to the personality needs of the patient. As we shall see such a situation has always been a difficult one for the patient.

The patient did not feel sufficiently threatened by the flying situation to take himself off flying status voluntarily. He stated that he wanted to do his best to succeed in the flying training program. His attitude was summed up in the following words: "I signed up for pilot training with no experience along this line. I thought I might like it. Once having started the program there was no other than a socially disgraceful one. I didn't particularly like to fly but I wouldn't quit because of the social pressure." "However I would be more grateful if I could be placed in one of the many Air Force fields or specialties in which I have been trained in college for over 8 years. I feel I'd benefit the Air Force and myself more." The particular field in which he wished to be placed was personnel services.

In this case as in the previous one there was neither love nor fear of flying. There was insufficient neurotic satisfaction from flying to overcome those aspects of the flying situation which caused the patient to have anxiety. On the other hand awareness of the risks of military aeronautics was not sufficiently exaggerated for them to be driven to a socially unacceptable resolution of their problem, so they kept on flying and being tense.

The patient's history gives us additional insight into his problem. He was the youngest of two siblings. His elder brother was 18 years older than he. His mother was 40 at the time of his birth and his father 41. He was brought up on a farm. He had good rapport with his parents and could always go to them with his problems. Although he was considerably younger than his father, when working with him the patient often had disagreements with him about how things should be done. One summer the patient worked for his brother. Although the patient was only in his teens at the time he often told his brother how he felt things should be done. The brother had no intention of listening to him and their business relationship soon came to an end.

In school the patient made excellent grades. He took part in many extracurricular activities, belonging to ten to twelve groups at a time, and was busy each evening. He took part in swimming, basketball and football, but his main interest was the band. He got along with the bandleader fairly well during the first year of college. During subsequent years he felt that he was maltreated by the bandleader and became angry with this authority figure, finally quitting.

At graduate school he studied for four years beyond college, receiving master's degrees in music and in child development. He was interested in music and musical composition. He played the clarinet. At the end of his Air Force service, he intended to continue his studies and obtain a doctorate, aspiring to a professorship in music in a large university where he might have the prerogative of teaching music to children in grade school classes. He had no wish to do concert work because the tension that developed before concerts caused him nausea and vomiting. He did not intend to play in an orchestra because of the difficulty he had in dealing with an individual such as a conductor who would want the patient to play according to a preset arrangement. He did not wish to have someone tell him what to do. It was apparent from this that there was present in this patient an emotionally sensitive area related to contact with rigid authority figures in areas other than aviation.

Elements which were constant in his personality were: (1) a desire to be liked; (2) a wish to have public opinion on his side; (3) a high self picture. He demanded a large portion of his emotional support from the environment. At times this demand became exorbitant. When he came into contact with an individual who did not praise him and recognize his mind as being the more competent, the patient developed tension. His instructor in primary training appeared to be one of the individuals who tended to pull the supports out from under the patient by being unwilling to bend to the patient's will. Constant contact with this man led to anxiety. Social pressures forced the patient to continue to fly in spite of the anxiety.

SECTION VI

NONAVIATION PSYCHIATRIC PROBLEMS

CHAPTER XVII

PSYCHIATRIC DISORDERS IN FLYING UNRELATED TO THE FLYING SITUATION

Psychiatric disorders are uncommon in flyers. Interviews and the stress of flying training select out a majority of the predisposed individuals. Most of the emotional disorders that do occur in flyers are related to the flying situation and reactions to it. Psychiatric difficulties unrelated to the flying situation occur occasionally. Because of the nature of Air Force Regulation 36-70, it is best to make a clear delineation of etiology. The following group of cases are examples of psychiatric disorders occurring in flyers but unrelated to the flying situation. During the acute stage of their illness, all were able to fly without difficulty.

SITUATIONAL MALADJUSTMENT

CASE 48

Major L.C. was a 37-year-old pilot with 3000 hours of flying time in conventional aircraft.

In September 1954 the patient left the Military Air Transport Service to take college courses under Air Force sponsorship. He had looked forward to this as a welcome change. However, when he began to study he found that in the years since his last contact with school his academic prowess had decreased. School work and studying were difficult for him.

At about the time this became apparent, the patient's wife had to be hospitalized because of a severe attack of asthma. With his wife away, the full burden of caring for their mentally defective child was added to the patient's other responsibilities and burdens. The child needed constant care and screamed continuously.

The combined stresses of school work, a sick wife, and sole responsibility for his child were great. He became quite tense, anxious and irritable. He developed a slight pain in his left side which he suspected was related to his anxiety state. He went to a physician

because of this pain. A routine electrocardiogram was done and read as indicative of myocardial damage. On the basis of the clinical picture of pain in the left chest and an abnormal electrocardiogram, he was told that he had severe myocardial disease. He was advised to avoid walking up steps and was given a bottle of nitroglycerin tablets. He was also taken off flying status. He soon developed shortness of breath, chest pain, palpitation, a pounding heart, depression, excessive worry and sinking spells. He had been told by the doctor that he had myocardial disease and that he had to be careful because he might have a heart attack at any time. He was constantly on the alert for this attack. Two months after the diagnosis of myocardial infarction was made, he had a sudden faint feeling. He thought to himself, "This is a heart attack." He was taken to a hospital. He arrived in a state of extreme nervousness, anxiety and hyperactivity. He continually thrashed in bed. He complained of twitching sensations in the forearms, numbness of fingers and hands, a sinking sensation, a marked feeling of weakness, and a fear that if he should relax and fall asleep he might die. He had a heavy feeling in his chest but no actual chest pain or shortness of breath. Subsequently he developed such episodes from time to time.

About two months after the first sinking spell, some doubt was cast upon the organic origin of his symptoms by a family doctor whom he trusted. He sent the patient to a large medical center for a complete work-up. Their impression was that the symptoms were the result of hyperventilation and an anxiety state of moderate severity with very adequate cause. The electrocardiogram was described as abnormal but in the absence of symptoms of heart disease, not pathological. The patient was told that he had no heart disease.

In the meantime, the other stresses which faced him had been relieved. His wife was out of the hospital and taking care of the child and he had been taken from school and assigned to work he enjoyed. He recovered his composure. The sinking spells continued to recur from time to time. Whenever an episode started, the patient would think to himself: "Well for goodness sake, it's only in my head." The episode was thus aborted.

The patient had a prolonged military history. He took flying training during World War II. He flew anti-submarine patrols, during this war. He left the service in 1946 only to return in 1952 because he needed to obtain medical care for his sick child. He trained in B-29s. He was sent to Korea where he flew 45 missions in a 5-month period. In September 1953 he was assigned to the Military Air Transport Service. Here he flew transport aircraft. He enjoyed flying them better than any other.

Flying had great meaning to the patient and was a source of great comfort to him. He described his interest in flying as having existed when he was a small child. He did not believe that he would have fear or anxiety while flying in the future because while flying he was always at his calmest. Stated he: "I have too much pride to show fear in front of somebody else. I'll die first."

He felt that the stress of flying was far different from his recent health worries. He explained the difference between his reaction to flying and his fear reaction to his "heart condition" by saying: "I was pretty much alone. I couldn't even turn to my wife. There was nothing I could do. At least when you are in a plane you have control and you can bail out. When they told me that there was nothing I could do. It was final. It meant the end."

The patient felt that all the provoking factors in his stress situation had been relieved at the time of the interview. The only thing that worried him was not being returned to flying status. He stated: "When I'm not flying I feel like a bump on a log. I'm just not interested in a desk job. I feel I'll never be a man again if I don't fly. I've been told I can't do something I used to be able to do. Someone had taken something away from me. I feel like I've been castrated. I feel impotent. Believe me you don't have to worry about me getting tense in the air. I stay icy calm when the chips are down. If I can't fly I just don't feel. I'm 100 per cent." During the period of his acute episodes there was no interference with his flying proficiency.

The flying situation was unrelated to the development of the patient's symptomatology. Removing him from flying status added to his anxiety and tension. In such a case, the question may come up that since flying is relaxing for these people and might be considered a form of occupational therapy, why not permit them to continue as a co-pilot during their tension period? The answer to this is simple. Airplanes are part of the primary mission of the Air Force. This mission is the defense of the United States. Aircraft should not be used as medical treatment facilities. With recovery of his composure, the patient was returned to flying status.

OBSESSIVE COMPULSIVE NEUROSIS

CASE 49

Lieutenant L.Q. was a 23-year-old pilot with 500 hours of flying time. He had experience in jet and conventional aircraft.

The patient had difficulty in maintaining social contacts. He was afraid he might not be accepted or might arouse the disapproval of others in his interpersonal dealings. A few hours after he had had to say "Sir" to someone, he was often suddenly overwhelmed with fantasies of tearing that person apart. He also went to judo class and enjoyed the violence. When he was in company, he developed a feeling of inferiority. His voice began to shake. If he had been hostile to someone he had a constant apprehension that he would be hit in the back of the head by persons unknown. If he behaved in a manner which displayed weakness, he felt he would be disliked.

He described feeling as though he were about to explode when in a crowded restaurant. A casual observer could not see this tension outwardly but to the patient there was a very real feeling within.

This feeling diminished when hostile phantasies of "tearing the place apart" occurred.

The patient had had overt compulsive symptoms. During the time he was in the Air Force, his compulsive symptoms were at a minimum. However, there had been a time when he had performed compulsive acts comprised of ritualistic door closing and turning off of water taps.

The patient had feelings of guilt over marginal thoughts. The ordinary thoughts, which exist on the margin of the mind (such as hostility feelings or sexual urges) which are ordinarily quickly repressed suppressed and forgotten, were the subject of a good deal of preoccupation and a source of guilt for this patient.

About every two weeks the patient had a sudden upsurge of marginal thoughts. This took the form of periods of obsessional thinking which lasted about a day or two. No external cause for them could be found. Short lived episodes similar to the bi-weekly ones occurred during situations of stress and tension. A good deal of anxiety accompanied the presence of these thoughts. The content of the thoughts were usually related to the envisioning of women in different stages of undress.

These emotional difficulties had been present from the time the patient was quite young. He had neglected to inform his medical interviewers of their existence when he was applying for flying training.

The patient's parents had been a source of confusion to the patient. His father was a physician, who, at his work, was respected, but at home, was a meek, dependent, and mild individual who did a good deal of drinking. The boy's attitude toward his father was one of displeasure and disappointment. He felt that the roles of his parents were reversed with his mother being the stronger member of the family. She was an individual who was strong and willful, a hard headed person who used to put emphasis on discipline. The patient remembers having been got out of bed in the morning with a riding whip.

From childhood, he had had difficulty getting along with others. As a small child he was big and ungainly. He had to play with older children. These older children beat him up. As a result of this he broke off contact with them and remained home reading books and dreaming of being a superman, able to jump higher than others, able to excel, able to beat other people as they had beaten him. He did poorly in most athletics, but found himself in boxing. In high school he had two girl friends whom he dated for prolonged periods of time (two years in each case). He worked summers but never was able to return to the same job on repeated summers because the people on the job did not like him. He related this to his tendency to make comments to people of a hostile nature. Friends had commented to him about his lack of tact and empathy.

He recalled early evidences of psychoneurotic symptomatology in himself. He remembered being yelled at and scolded by his parents for blinking. At another time he received reprimands for flushing the

toilet before he used it as well as after. This caused difficulty for his parents, for they had a cesspool which overflowed as a result. He also had had hand washing rituals.

Flying was rich with satisfactions and fulfillments for this patient. His interest in flying began when his father was assigned to an Army Air Base, and he saw the aircraft flying overhead all the time. The planes, especially fighter planes, were to him exciting, phantasy fulfilling, grandiose symbols, as well as expressions of hostility similar to judo. He stated that "a fighter pilot is 'somebody,' an individual who has status," and described his identification with the concept of a pilot as the "man with the white scarf." The Air Force was an obvious choice for him. He attempted to fly every chance he could once he had obtained his Wings. He considered being able to fly, his only compensation in the Air Force since he had been assigned to primary duty as Personnel Affairs Officer on his base. He described himself as a careful pilot with a tendency toward compulsive pre-flight preparation and careful planning of flights. His reaction to crashes was: "If you do what you are supposed to do you will probably be all right."

After graduation from aviation cadets the patient had spent a year at an isolated radar site in Alaska. His emotional difficulties did not interfere with his ability to function there and there had been no increase in symptomatology.

Flying had a number of positive satisfactions for this patient. It fulfilled and satisfied many of his neurotic needs. His symptomatology in no way affected his flying.

INVOLUTIONAL DEPRESSIVE REACTION

CASE 50

Major M.J. was a 35-year-old pilot with 3000 hours of flying time.

For one and one-half years the patient had been suffering from multiple symptoms of emotional illness. He had had fear of having an acute attack of anxiety while speaking before a group or writing his name. (This fear actually became severe enough to cause the very incapacitation which he had feared.) He had sudden attacks of shakiness when handling a drinking utensil. He could not sleep. He developed self-deprecatory ideas, loss of self confidence and fleeting self destructive impulses.

The patient had had no previous history of decompensation. Although faced with some severe life stresses he had functioned well. Except for occasional periods of tension during the past few years, which had been quickly quelled, he had been free of symptoms until Christmas 1954. At that time he had been handed a champagne glass and had found that he could not hold it because his hand shook so. From then on when his hand held a cup or a glass, he would get tense. He wondered if his

hand would begin to shake. His hand did not always tremble. The same sort of tension and anxiety was soon elicited by signing his name. He noticed that if there were people about he had difficulty writing his signature.

He was able to carry on his duties as a pilot during the illness. He had been assigned to a diplomatic mission. Toward the end of this assignment, he found himself withdrawing from social contacts because of fear of sudden attacks of nervousness. After return to the United States, he became depressed. He lost his self confidence. Upon arriving at an airport he had difficulty signing in.

The depression deepened. He found that he could not fall asleep easily. After sleeping for a short period of time he would awaken and think about his problem, fall back to sleep and shortly after awaken again. His mother had committed suicide when she was the same age as the patient. This disturbed the patient. He began to have fleeting self destructive impulses. During this time, the frequency of sexual relations decreased.

His condition improved slightly and levelled off six months before he came to the School of Aviation Medicine. This was a weak sort of relief for he had exacerbations of his tension and depression from time to time which were extremely painful to him. He did as much of his work as he could while waiting for these episodes to pass.

He noticed no loss of flying proficiency. He had done well on his check rides. During this time, he noticed that the tension was alleviated while flying. He became tense while flying only when heading for an air base at which he would have to sign in. This kept him from flying cross country and precipitated a consultation at the School of Aviation Medicine.

The patient had had a varied military career. He entered the armed services as an enlisted man. He obtained his commission through Officer Candidate School and then attended flying training in grade. He did not serve in active combat during World War II. He was in the Army of occupation. He flew in the Berlin airlift in 1949. He was assigned to jobs of gradually increasing responsibility. At the time of the interview he was the executive officer for his squadron.

The patient's flying motivation was late in developing. It was quite strong. His interest developed after assignment to an Infantry unit. He requested training in grade. He could think of only one time when anxiety occurred in flight. During a bad storm, the airplane in which he was flying was turned upside down by a gust of wind. He enjoyed flying and believed he was doing something useful when he flew. His tension was relieved by flying.

He had a tendency to get tense when he saw or heard of crashes. He did not get depressed beyond having a feeling of sorrow for something that had happened to a friend. The tension that developed soon was suppressed.

The patient's parents showed evidence of marked personality difficulties. His father was a rather rigid man who handled his children's misdeeds by spanking with a razor strap. He lost his patience easily. In spite of this, there was good rapport with the father. The patient had ambivalent feelings towards his father. On the other hand the mother was an individual who was rarely angry and never expressed her anger verbally or physically. She spent her time continually cleaning and straightening the house and aiming at neatness. When she was 36 years old she had to undergo an operation. Following the operation she often became depressed and moody. Although this was only a spasmodic thing she did her work less well than before. During her depressions, the patient helped her around the house. He did far more than any of his siblings. One Sunday Morning the patient's father came home from church and asked for the mother. The boys did not know where she was. The father went to his room. He screamed. The patient's mother had put herself in a closet, covered her head with a blanket and placed a shotgun under her left breast. She then pulled the trigger with a coat hanger. From time to time, the patient felt some guilt over the fact that he did not do more for her during her illness.

The parents got along poorly. They fought often. The father was quite jealous of the mother and often accused her of having a lover.

The patient was a freshman in high school at the time of his mother's death. His own description of his reaction was that of terrible grief. Yet he was able to function well enough to receive good marks during that year. During the ensuing years he did well in school and had many friends. He dated often. He took part in no extracurricular activities except varsity sports. He kept one job from the time of his graduation until he came into the service when he was 24.

He had had a hectic series of relationships with women. After entering the service, he received a letter from his girl friend back home saying she planned to marry another. He became depressed as a result. He began dating a woman whom he had met on the base. He dated her for approximately ten months before they planned marriage. The woman was 27 at the time. He doubted whether he truly loved her and felt that the marriage had occurred on the rebound. This marriage lasted until 1946. There was one son eleven years old. In 1945 while still married he met a school teacher who was also married at that time. He went overseas shortly after, taking his wife with him. He told her he was in love with this other woman. His wife asked him to try to work things out and perhaps give her a chance to try to save their marriage. After his return to the US, he left his wife. There were no hard feelings. He still had a good deal of respect for her. A divorce was obtained subsequently and the child's custody went to the wife. After his difficulties with his wife were straightened out, the teacher obtained a divorce from her husband. In order to obtain some degree of common interest with the patient she decided to take flying lessons. During her flying lessons she began to date her flying instructor. The patient saw her occasionally. She married the flying instructor. She continued

to see the patient, however, from time to time during this marriage. In 1949 she obtained a divorce and married the patient. They returned to her home for a short time during their honeymoon. While they were there, her second husband called and told her that he was going to give her his life insurance as a wedding present and proceeded to jump off a ladder. He did not kill himself. Their married life had been marked by jealousy on both sides.

During the interview, the patient was markedly preoccupied with anxiety charged material. This manifested itself in the content of his answers, which were related more to anxiety material than to the content of the question. There was a good deal of anxiety present. There was no overt hostility. There was a definite stilting of reactivity. Historical data of an emotionally charged nature was presented by the patient with a bland facies which apparently reflected the patient's capacity to extract from the memory of these things most of its sting.

There was an underlying depressive mood associated with psychomotor retardation. He described a definite interference with sleep and fleeting self destructive impulses which were compatible with his mood and feeling tone.

A good deal of underlying psychopathology had always been present in this patient. He apparently had been able to control it during the early years of his life. As he had reached the early involutional period he began to decompensate. The only environmental difficulty that he could relate to his problem was the fact that his wife had become extremely jealous and had refused to let him dance with other women. She had become aloof and cold. She had stopped giving him the emotional support he needed. This factor in the precipitation of the patient's psychiatric difficulty was similar to the relationship between a fuse and a bomb, the fuse was the immediate situation which precipitated the major explosion which had been ready to go for a number of years.

PSYCHOSOMATIC DISORDER

CASE 51

Captain Y. was a 38-year-old pilot who had 11,000 hours of flying time. He had been removed from flying status because of his ulcer history.

While stationed in Korea, the patient had developed abdominal pain, cramps and indigestion frequently accompanied by nausea and vomiting. The culmination of these symptoms was an episode of bleeding and tarry stools. He was treated with blood transfusion and diet. On this diet, he was asymptomatic until 1954 when he again had a period of epigastric distress, and several tarry stools during a survival

training course. At this time, he was removed from flying status. He attributed both of these episodes of gastrointestinal hemorrhage to poor food. He had been able to maintain comfort with a bland diet and Amphogel. He stated spontaneously that he could think of no emotional difficulty or worry that had brought on the symptomatology.

During the interview, the patient answered questions as briefly as he could. Answers conformed to the pattern considered by the patient to be normal. Any attempt to investigate beyond the few brief productions, which the patient was willing to give spontaneously, gave rise to obvious tension and anxiety. When questioned about this, the patient commented that he had attempted to tell the truth. Suppressive mechanisms were very strong in him.

This tendency modified the history the patient gave. He was the second of three siblings. His father was a mild tempered man who shared the upbringing of the children with the mother. The patient could not remember any severe punishment. He remembered no particular excitability or temper on the part of his father. His mother was described as a hard working "normal" housewife who took care of the family, made their clothes and watched the children. His relationship with his father was such that he could go to him and talk with him about anything. They used to have bull sessions, the discussions being evenly distributed, no one person talking more than the other. He always brought his friends home. His parents held open house for them. They did this because, as the patient stated, "They wanted to know the kind of people I was going around with."

He married while he was in the Army in 1941. He had known her for weeks. He went overseas before they could establish a home. They were divorced in 1943. He left the service in 1946. From 1946 to 1948 he ran a flying school. In 1946 he married a young woman whom he had known for three years and to whom he had been engaged for one year. They had been married for seven years before they had children. He reentered the service in 1948 when he was recalled for the Berlin airlift.

Flying had been the patient's entire life. He started flying when he was 16 years old. At first flying meant a thrill. It offered a common ground for talking with other people. As time passed, flying had come to mean no more to him than any other means of earning a livelihood. Flying instructor had been the only job he had ever done. Upon graduation from high school, he and his brother set up a flying school. He entered the Air Force as an instructor.

He was eager to return to flying status. Although he stated he had no financial problems he would like to have been able to earn the additional two-hundred dollars a month. His response to crashes was to feel sad for the person who had been hurt without identifying himself with him.

During the psychiatric interview the patient presented himself verbally as a man who had no temper or emotional problems and never suffered from anxiety or depression, a man who lived a normal, balanced life and

got along well with everyone. When permitted to answer in his formalized and restricted manner, he appeared to be placid. Yet he spoke only with his lips. No motion of his teeth which were in close approximation could be seen. Interrogation aimed at getting behind his stilted formalized answers brought on flushing of his face and tension. At one point during the interview when the interrogation became more detailed than the limits which the patient had set, he became highly agitated and stated: "I get to the point where probing, probing, probing starts to tee me off." At this point he got up and left the office ostensibly to get a drink of water. He commented as an interjection at one point while under pressure that: "I fought hard for what I got and I'm going to hold onto it." When asked to explain the basis for this comment he attempted to clarify its origin but had difficulty finding the words and could not complete a sentence. The possibility of a psychogenic origin for his symptoms was discussed with him and he rejected it, commenting that probing was not in his line, that he was more interested in machines and mechanical things. He refused to participate in any psychomotor testing because he felt that it was nonsensical. At the end of the interview, in spite of the fact that he had repeatedly commented that we were wasting time, the patient had a difficult time withdrawing from the presence of the examiner. He asked questions and seemed to wish to remain and talk. The open displays of hostility and aggressiveness which he showed were definitely not in keeping with his own picture of himself, for at the end of the interview he denied that he had developed any tension and apologized profusely and sincerely for his behavior during the interview. It was quite apparent from the interview that the patient had difficulty in controlling his hostility. When he was able to maintain control over more direct expression of his hostility, sarcasm, cynical comments, compulsive movements, and tightening of his muscles occurred. The fact that hostility, when suppressed by controls from without or within, expresses itself in the form of somatic symptoms such as stomach ulcers (as well as sarcasm, etc.), is a currently accepted axiom in psychiatry today. Thus we may say that this patient had a personality which predisposed him towards the development of psychosomatic symptoms. In addition, the symptom that he had, had in the past been known to have as an etiology, psychogenic factors. We can go no further for we have not delineated the stress or proved a time relationship between stress and symptom. When a psychosomatic symptom develops, the more palpable the environmental factor responsible, the less severe the underlying psychopathology. A patient with a psychotic break which is being masked by psychosomatic symptoms can rarely describe an environmental factor in the etiology of the disease. One should be wary of suggesting removal of the target organ or symptoms without psychiatric preparation of the patient in such cases.

PSYCHOSIS IN A FLYER

CASE 52

Captain W. was a 33-year-old pilot with 2000 hours of flying time in conventional aircraft. In May 1956, he was assigned to an overseas

base. His primary duty was that of food service officer. His job had been left in a turmoil by the previous officer. The task of rearranging things so that they could be handled in the neat, well organized manner the patient desired, was subjectively overwhelming. The dining halls were dirty. There were flies in droves. The kitchen was short many supply items. The KP commodes were overflowing onto the kitchen floor and the people assigned to KP had no soap in their latrines. Their showers were used for hanging clothes. The patient had also been given the additional duty of supply officer for the headquarters squadron. Shortly after he received his new assignments, he became grandiose, inappropriate, confused and demanding. He wrote a letter to his commanding officer ordering him to make certain changes in the Mess Hall procedures. He suddenly felt that the men in the unit considered him their leader instead of the colonel. He also had feelings that he would die. His affect was completely inappropriate. He grinned out of context. At other times he appeared very bland. During this period he logged eight hours of flying time, with no impairment of his flying proficiency. He flew a B-25. He was air evacuated to a major military hospital in Europe where he appeared affectless, manneristic and inappropriate. He stared at objects but did not admit to any hallucinatory experiences. He was somewhat grandiose but not as much as before. Although he recognized that he was having a breakdown he was not able to account for all the experiences he felt including a feeling of being able to read everyone's mind. Four weeks later he was sufficiently recovered to be quite cooperative and was referred stateside. He remained in an Air Force hospital for two months. He was discharged in remission. Then he was assigned to the job of adjutant at an Air Force base. His commander at that base sent a note to the School of Aviation Medicine commenting that: "The patient has done an outstanding job as adjutant." "His work was meticulous and concise." "He excelled in assignments requiring preoccupation with detail."

The patient first became interested in flying when he became draft eligible. His father had been in the Army during World War I and had a good deal of respect for officers. He felt his son should be an officer and decided the best way for his son to become one was to join aviation cadets. Flying motivation did not enter into the patient's choice. Cadets was a source of commission. When he first entered flying training he had no idea of what flying was or what flying training entailed. In fact, he recalled that the first instruction he received was from a training officer who pointed to a part of an aircraft and said, "This is a cockpit." Stated the patient, "That was news to me."

Once the patient began flying he enjoyed it. "You can see the country. You get a nice view. You see highways and railways and how they cross. Looking down on the country and seeing how big the world is, is interesting to me." The patient still had this feeling for flying at the time of the interview. After flying training, he was assigned to the P-47. He was sent to England, where he flew 300 combat hours (a total of 71 missions). He shot down three German aircraft. Upon return to the ZI in May 1945 he was released from the service. He remained in civilian life until February 1951, when he was recalled.

His primary assignments during his second tour of duty were administrative. He continued to fly whenever he could.

His response to hearing of crashes and accidents was worry that his father might read about them and be concerned. He stated that crashes did not bother him. However, he avoided seeing crashes at first hand. The patient was rather fatalistic, stating that when the time came to die it did not matter whether you were in a plane or train. His description of the circumstances surrounding his birth was quite unusual. He used the following words: "I was taken with instruments. I appeared to be dead. The doctor was a man of great physical strength. He had my father fill one tub with very hot water and one with very cold water. He submerged me in one and then the other to bring me to life. The doctor was under great strain. He almost collapsed. I was born in an old farm house. There was an awful storm that night. Lots of thunder and lightning. The roads were terrible; bridges were washed out. The doctor almost didn't get there." He was one of two siblings.

There was a definite history of vesanic traits in the patient's family, all on the father's side. The father's aunt and sister had both been hospitalized for psychosis. The patient's father was a strict man who held many non-skilled jobs for periods of time ranging from six months to three years. He was a strict man who frequently was raised to anger and when angry showed it by physical expression. This manifested itself in an incident in which he shot another man. In the patient's own words: "He beat the Hell out of me." (As the patient said this, he smiled.) In spite of this pattern of relationship, the father was very close to the boy giving him an affection and constancy which gave the patient a feeling of security. The father was often and easily upset. The patient's mother also displayed evidences of nervousness and easy worry. He never felt he could talk things over with her. When the patient was 13 years of age his parents divorced. When his mother left the house she told the patient she was going to have a nice home and would send for him. She took his brother with her. Three weeks later she remarried. She never sent for the patient. He stated that he did not particularly worry about this because he wanted to go with his father anyway since he felt closer to him. He and his father hitchhiked to wherever work could be found, finally settling in California. While he was in California, his mother came to visit him and he renewed acquaintance with his brother for a short time. He remembered crying for his mother to stay. She did not. As a small child even though other children were near, he played alone.

In high school he got excellent grades. He left one high school to go to another because he felt he was not getting grades comparable to the amount of work he was doing. He took no part in extracurricular activities. He palled around with a small group of young men. He still sees them occasionally. He did no dating.

On graduation from high school, he went to work in a shipyard. Then he entered the Army. After leaving the service he returned to his father. During his adult life the affection and warmth and

constancy that he had realized from his relationship with his father continued. Between 1945 and 1950 the patient held six different jobs, usually of a non-skilled type, including salesman jobs in which he sold everything from hand carved wooden portraits, to pumps, wells and insulating materials. In addition he worked as an ice cream maker and laboratory technician in a borax mine. The longest period he held a job was two years. This was the last job he held. This long tenure was probably related to the fact that he had married and had assumed responsibilities so that he had to maintain this job. He had two children. His wife was an individual who kept cool control when anything went wrong. She had a tendency toward coolness and aloofness in her dealings with her children and her husband. The patient still maintained close contact with his father.

When seen in the interview the patient showed no evidence of psychosis. He was oriented for time, place and person. There was no evidence of ambivalence, autism, or thinking disorder. There were no productions indicative of a psychotic or psychoneurotic process. He spoke with an intense affect, often with wrinkling of the brow when speaking of his recent episode. Variations in this intensity were only occasionally related to changes in the thought content of the patient's productions. From time to time he smiled an inappropriate smile. The general impression of his affect was that it was appropriate but of less variability than could be expected to accompany the content of his productions. His mood was neutral.

Form and control had apparently been quite necessary for the patient. Tension for any prolonged period was not recalled by the patient except for the specific episode which led to his decompensation. He was apparently a conscientious, meticulous, intensely interested worker, who was well identified with the Air Force. His resolution of stress situations, against which ordinary mechanisms had been ineffective, was behavior based upon phantasy unbridled by reality. He had been able to avoid previous decompensations by patterning and planning his life in such a way that he could avoid precipitating stresses.

The handling of flyers who have had a psychotic episode is outlined in Air Force Manual 160-1, paragraph 106, c(1) which states: A single well established psychotic episode is disqualifying for flying, Classes II and III." There is no appeal.