



**AVIATION CADET
TRAINING
FOR THE
ARMY AIR FORCES**



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COMMAND OF THE AIR IS VITAL TO VICTORY



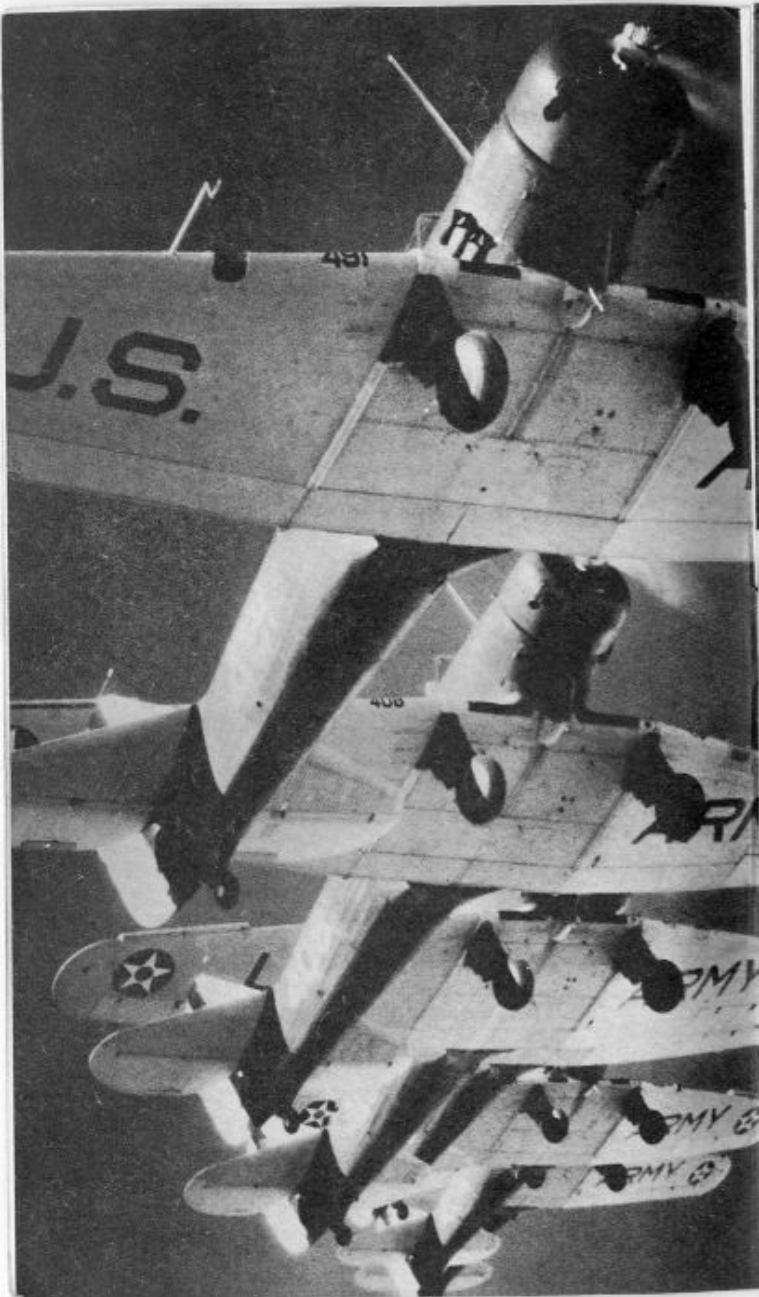
We are in the midst of the most momentous war of modern times. A coalition of powerful and ruthless enemies seeks not only to overwhelm us but to annihilate our institutions and our civilization. They have struck with suddenness and with all the force at their command, and have shown that it is their aim to conquer swiftly and completely. Therefore, we have no time to lose. We must surpass them in both strength and speed of attack. We must press them back behind their own borders and there defeat them so decisively that they can never again attempt to impose their wills and their ways of life on a people who cherish liberty above all things; a people always willing to lay down their lives to preserve their freedom.

The United States is now engaged in the greatest aircraft production program ever undertaken by any country. That program, however, can be translated into air supremacy only if we can muster the qualified man power to keep our planes flying. And the source of this man power lies in the youth of the land — they are the men who will "Keep 'em Flying!"

Youth alone has the physical fitness, the mental alertness, the personal daring to meet the acid test for air crews of high-powered military aircraft.

Our Nation's future depends upon command of the air. The future of freedom and liberty everywhere is in the hands of our youth.





Aviation Cadet Training for the ARMY AIR FORCES

BY AGREEMENT between the Army and the Navy, important changes in procedure of induction into the Armed Forces have been effected, which now make it possible for young men to volunteer for air crew training.

This new procedure again offers the privilege of choice of service, limited, however, to men who are physically and otherwise qualified to meet the high standards required for Aviation Cadet training.

Men between the ages of 18 and 26, inclusive, may apply through voluntary induction for air crew training to become bombardiers, navigators, and pilots.

Young men who have reached the age of 17 but have not yet attained their eighteenth birthday may apply for enlistment in the Air Corps Enlisted Reserve.



How to Apply for Air Crew Training

This is how a young man can find out whether or not he can fly and fight in an aviation branch of the Armed Forces:

1. Go to any Aviation Cadet Examining Board (usually located in the Post Office or Federal Building in important cities and also at most Air Forces stations) and apply for examination.* This examination will consist of two parts: (a) mental, and (b) physical. If the applicant passes the examination, he will be given a letter addressed to the commanding officer of the Armed Forces Induction Station, stating that he is considered to be qualified mentally and physically for air crew training to become a pilot, navigator, or bombardier. This letter, to be utilized as evidence of the Aviation Cadet Examining Board's certification of the eligibility of the applicant, must be presented to the commanding officer of an induction station within forty-five days from its date of issue. The letter becomes invalid, however, if the applicant is called for induction in his regular order number by his Selective Service Board before he is accepted for voluntary induction.

2. Go to his Selective Service Board and volunteer for induction. (No applicant can volunteer for induction after he has been called in his regular order number for induction by his Selective Service Board.) If he is accepted as a volunteer for induction, the Selective Service Board will send him to an Armed Forces Induction Station for induction into the Army of the United States.

3. At the Armed Forces Induction Station, present the letter from the Aviation Cadet Examining Board addressed to the Commanding Officer, Armed Forces Induction Station.

Upon induction the applicant will be assigned to a Technical Training Command Basic Training Center for processing, after which he will be sent to a selected college for a five-month course of preparatory pre-flight training. The academic portion of this course will comprise mathematics, physics, geography, modern history, and English. An applicant whose educational qualifications are such as to make unnecessary the preparatory

academic training course may be exempted from it, in which case he will be sent from the Technical Command Basic Training Center to an Army Air Forces Classification Center for testing and classification. There he will be given comprehensive psychological and physical examinations to determine in detail his aptitude for bombardier, navigator, or pilot training. If he passes these tests successfully, he will be appointed an Aviation Cadet and sent to an Air Forces Training Center to begin the type of air crew training for which he appears best adapted. If, however, the tests indicate that he does not possess sufficient aptitude or is not qualified physically for air crew training, he will not be appointed an Aviation Cadet, but will be assigned to another type of training.†

Young men of 17 and less than 18 years of age may also apply for Aviation Cadet air crew training. The procedure is as follows:

1. Obtain written consent of parents for enlistment in the Air Corps Enlisted Reserve.

2. Go to an Aviation Cadet Examining Board and apply for examination and enlistment.*

If the applicant is found to be mentally, morally and physically qualified, he will be enlisted in the Air Corps Enlisted Reserve by the Aviation Cadet Examining Board. He will be on an inactive status and may continue his education or civilian pursuits until he is 18, at which time, or as soon thereafter as practicable, he will be called to active duty for preparatory pre-flight training. He may, at the time of enlistment, have the option of designating the month between his eighteenth birthday and six months thereafter in which he desires to be called to active duty. If, upon reaching the age of 18, he is a college or a high school student, his call to active duty may be deferred upon his request until the end of his current semester, provided that it is completed not later than six months after his eighteenth birthday.

*See "Qualifications and Eligibility," page 8, concerning presentation of birth certificate, letters of recommendation, etc.

† Revision of this procedure, when effected, will provide for testing and classification of the applicant at the Technical Command Basic Training Center in order that the type of training for which he is best adapted may be determined immediately following his entry into military service.



Qualifications and Eligibility

General.—An applicant for appointment as Aviation Cadet for air crew training must have reached his eighteenth birthday but not have reached his twenty-seventh birthday.

An applicant for enlistment in the Air Corps Enlisted Reserve must have reached his seventeenth birthday but not have reached his eighteenth birthday. Written consent of parents for enlistment is required.

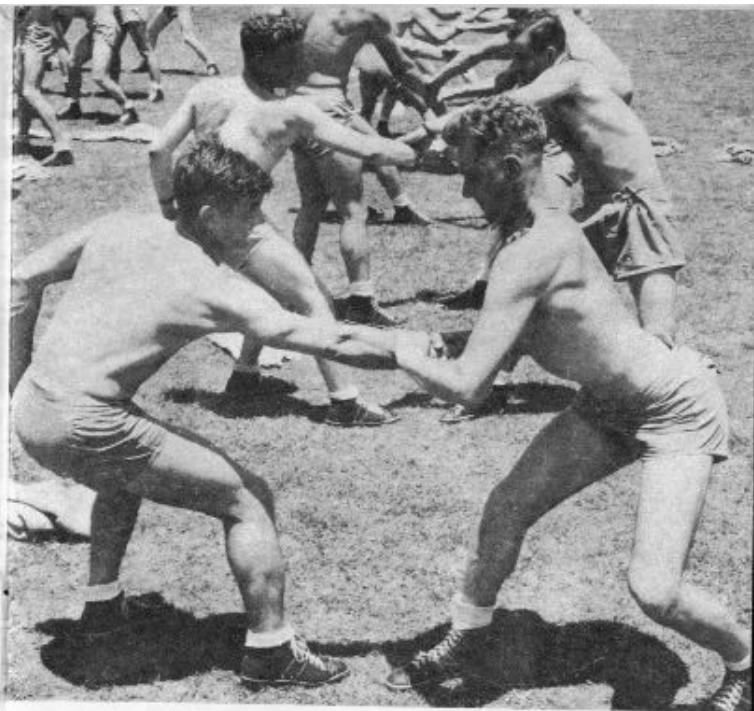
An applicant may be single or married.

An applicant must have been a citizen of the United States for at least ten years prior to date of application.

Birth certificate or other properly authenticated proof of date of birth or citizenship must be presented. In the case of an applicant who is a native of one of the Allied Nations and is now a resident of this country, of good reputation and unquestioned loyalty to the United States, a request for waiver of the ten-year citizenship requirement may be submitted to The Adjutant General.

An applicant for voluntary induction or for enlistment in the Air Corps Enlisted Reserve must present, as evidence of his good character, three letters of recommendation from reputable citizens who are not related to him and to whom the applicant is well known.

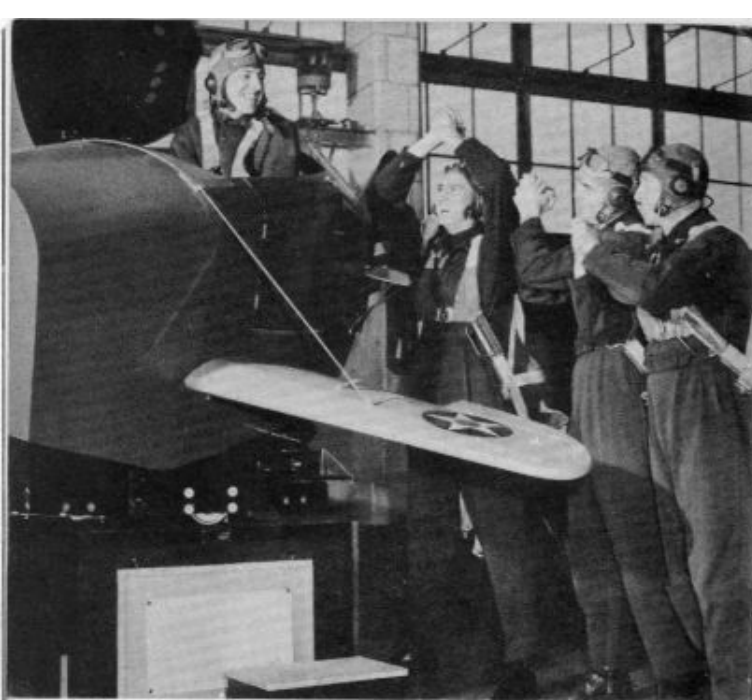
An enlisted man of the Army of the United States may apply for Aviation Cadet air crew training, provided he has the required qualifications. An enlisted applicant who is found mentally and physically qualified for Aviation Cadet training will be transferred in grade to the Air Corps, unassigned.



Physical.—General: An Aviation Cadet candidate must meet the same physical standards as those prescribed for appointment and call to active duty as a Reserve officer in any component of the Army of the United States.

Air Crew.—An Aviation Cadet in training for duty as a flying officer is required to meet special physical standards, somewhat higher than for others. His visual acuity and color perception must be perfectly normal. Hearing must be normal in each ear. A flying officer, except fighter pilot, is required to be not less than 60 nor more than 76 inches in height and to weigh not less than 105 nor more than 200 pounds. A fighter pilot must be not less than 64 nor more than 70 inches in height and must weigh not more than 160 and not less than 114 pounds. Before an Aviation Cadet is eligible to enter upon any flying training, he must pass a complete physical examination for flying duty.





Mental.—Air Crew: All candidates for air crew training are required to take a preliminary mental examination which eliminates at the start any who may lack the fundamental knowledge and aptitude necessary to comprehend the instruction given in Army Air Forces schools. This examination is of the multiple-choice, short-answer type.* It is designed to give a picture of the general field of knowledge possessed by each candidate, but is so wide in scope that any intelligent young man with an average background of study should be able to make a passing grade. No definite amount of formal schooling is required. It does not matter how he gained the knowledge if he can pass the test.

Air Corps Enlisted Reserve.—An applicant for enlistment in the Air Corps Enlisted Reserve must pass an Army mental alertness test to determine his aptitude and suitability for air crew training.

* See explanation of this type of examination, with sample questions, on pages 22, 23, and 24.



College or Preparatory Pre-Flight Training

Under the College Preparatory Pre-Flight Training Program, Aviation Cadet candidates are enrolled as enlisted men in one of several score colleges and universities throughout the country for a five-month preparatory course, prior to being assigned for flight training in schools of the Flying Training Command.

This course of preparatory instruction is devoted largely to academic subjects. These comprise sixty hours each of English, geography, and modern history; eighty hours of mathematics; and 180 hours of physics. The instruction also comprises twenty-four hours of civil air regulations, 280 hours of basic military indoctrination, including infantry drill, ceremonies and inspections, physical training, interior guard duty, and other military subjects. During this time the Aviation Cadet may also receive ten hours of flight training in cooperation with the Civil Aeronautics Administration.







Air Crew Training

Flying officers are classified as bombardiers, navigators, and pilots, depending upon the type of duty for which they have been trained. The candidate's preference is respected in this matter as far as possible. However, applicants for flying duty training are given further psychological examinations—in addition to the routine screening test—prior to their appointment as Aviation Cadets. The purpose of these tests is to determine the type of training for which each is best suited by aptitude and personal characteristics.

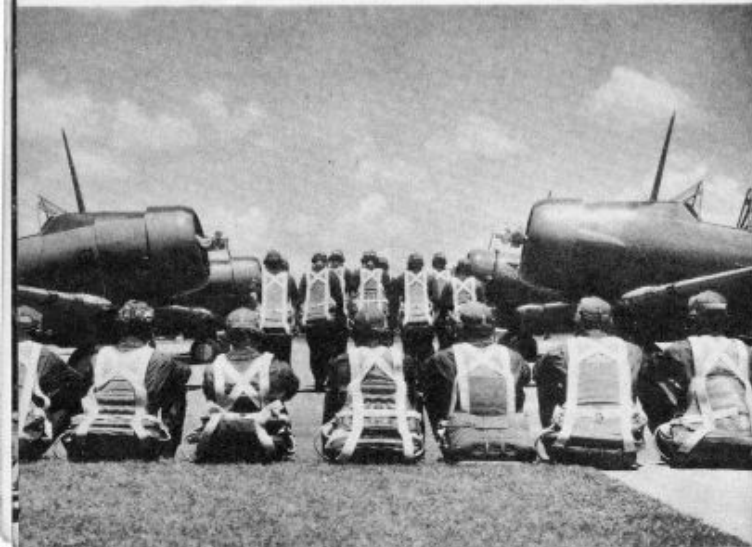
An Aviation Cadet eliminated from air crew training is eligible to apply for ground crew training, provided he meets the basic requirements for such training and is recommended for a particular course. Should he be unable to meet the requirements for ground officer training in the Army Air Forces, he will be relieved as an Aviation Cadet and will revert to an enlisted status. He may then be returned to his former organization in the grade he held at the time of his transfer to the Air Corps, unassigned, or sent in the grade of private to the Air Forces Training Center (Technical).



The Bombardier.—The bombardier's duty, once he becomes a participant in a combat flight, is performed in a matter of seconds—but the most important seconds of the flight. At the crucial moment, when the bomber reaches its objective, the bombardier takes over from the pilot. Upon his skill in landing his bombs on the target depends the success of the entire mission.

The Aviation Cadet who is training to become a bombardier receives twenty-seven weeks' instruction. Nine weeks are devoted to fundamentals, six weeks to gunnery and twelve weeks to specialized training. Ground training of bombardiers includes the basic theory of bombing, construction and maintenance of bombsights, bombing accessories, bombing procedures, bombing analysis, aircraft observer training, and general military subjects.

Air training of the bombardier includes target identification by day and night, tracking or simulated bombing; and actual bombing practice.





The Navigator.—To the navigator member of an air crew belongs the vital responsibility of plotting the airplane's course to its objective, be it near or far, and of determining at all times the exact position of the craft. He is the man behind the man at the controls, and his instructions enable the pilot to guide the ship directly to its objective.

The training of a navigator requires thirty-three weeks. Nine weeks are devoted to study of fundamentals, six weeks to gunnery and eighteen weeks to special navigation subjects.

The navigator receives thorough instruction in the four basic types of navigation: pilotage, calibration, dead reckoning, and celestial.

As in the case of bombardiers, evidence of formal schooling is not required of candidates for training as navigators. However, a definite mathematical bent is essential, and it is desirable that pre-Cadet training should have included a sound fundamental ground work in mathematics. A knowledge of astronomy will prove useful. Those interested in pursuing their mathematics studies still further, will find an excellent opportunity for doing so in the navigation schools of the U. S. Army Air Forces.

The Pilot.—The pilot is the member of the air crew at the controls, and the flight of the ship on its course is his responsibility. The navigator lays out the course at the end of which is the objective of the flight. It is up to the pilot to get the craft there in the shortest possible time—or at the desired moment, as the case may be. His is the spectacular role. Yet it is grueling, and his period of training is longer than that of any other member of the air crew.

The Aviation Cadet who is training to become a pilot receives thirty-six weeks' instruction. This instruction is divided into four courses, each of nine weeks' duration. The first course is devoted to fundamentals involving general military training and preliminary ground work.

Flying training of pilots is divided into three nine-week courses: primary, basic, and advanced, with flying time of sixty to sixty-five, seventy, and eighty hours, respectively. During advanced training the pilot is assigned to bombardment flying or pursuit flying and to twin- or single-engine planes, depending upon his temperament and physique—two important factors in determining the Aviation Cadet's particular field of specialization.

Mechanical aptitude, unusually quick reflexes, perfect physical coordination, and the ability to make rapid decisions are desirable in the applicant who wishes to become a pilot. A knowledge of mathematics and some experience in the field of the applied sciences are useful.





Pay and Special Benefits While Training

Pay of an applicant accepted for Aviation Cadet training through voluntary induction, while undergoing preparatory or pre-flight training, will be that of a private, \$50 per month.

Each applicant accepted for air crew training through voluntary induction will sign the following statement which will appear upon his application blank: "I understand that I will be assigned to pre-Aviation Cadet training, and will not be appointed an Aviation Cadet until I have completed such training. Further, that should I fail to complete such training, I will be eliminated from the eligible list for Aviation Cadet (air crew) training, and be assigned to the Air Corps in the grade of private."

After appointment as an Aviation Cadet, and while in training in that grade, he receives base pay of \$75 per month and a ration allowance of \$1.00 per day. He is also furnished quarters, medical care, uniforms, and other clothing and equipment. He is given a \$10,000 Government Life Insurance policy at Government expense while undergoing actual flying training. After his graduation, and while on flying status, this life insurance policy must be continued at his own expense.

An enlisted man of the Army of the United States, transferred in grade to the Air Corps, unassigned, for Aviation Cadet air crew training, will receive the pay and allowances of his enlisted grade while undergoing the pre-flight training prior to his appointment as an Aviation Cadet.





Pay and Benefits After Completion of Training

An Aviation Cadet who successfully completes the course of air crew training will be commissioned as a second lieutenant or appointed a flight officer in the Army of the United States. He will then be assigned to active duty with the Army Air Forces. He will be given an allowance of \$250 for uniforms when he is called to active duty.

Monthly pay and allowances of a second lieutenant or flight officer when on flying duty are as much as \$291, if he has no legal dependents. A second lieutenant or flight officer with legal dependents may receive as much as \$327 when on flying duty.

The amounts received by a second lieutenant or flight officer, under the conditions described above, include the base pay of his grade, as well as flying pay while on flying status, and allowances for subsistence and quarters. No allowance for quarters will be paid to an officer or flight officer while he is occupying suitable government quarters.



The Long View

Looking beyond the end of the war, it is easy to see that your training in the Army Air Forces will undoubtedly prove of great benefit to you after your return to civil life. Most of us are old enough to remember that commercial aviation, as we know it today, came into being following the last war. Largely, it was developed as a result of the lessons learned in that war, and by the men who learned those lessons first-hand. The aviation pioneers of the 'twenties, and aviation kings of the 'thirties, were practically all men who had learned to fly while serving in the Army Air Corps in 1917-1918 and in the years immediately following.

It is not at all unreasonable to predict that following the close of the present war, commercial aviation will develop even more rapidly than it did in the 'twenties. Although it may not be apparent at the moment, things are being learned about planes and methods of flight today that will lift the science of aviation to heretofore undreamed-of levels of achievement in the years that are to follow.

"Keep 'em Flying!"



EXPLANATION OF THE PURPOSE AND SCOPE OF THE AVIATION CADET QUALIFYING EXAMINATION AND SAMPLE QUESTIONS.

Purpose of the Examination.

This examination is now given by Aviation Cadet Examining Boards as a substitute for previous educational requirements for admission to the Air Corps as Aviation Cadets. The purpose of the examination is to make it possible for every American young man who desires to serve his country in the Army Air Forces, and who possesses the aptitude, knowledge and skills required in flying, to have an opportunity to become a bombardier, navigator or pilot.

The examination is designed to qualify all men who have a good prospect of succeeding and to eliminate only those who are definitely unqualified for flight service. The sections of the examination measure the types of proficiency in comprehension and in problem solving which are typical of those required in Air Forces training schools.

General Description of the Examination.

The examination will be given to an applicant by any Examining Board. It is not a test of speed, but is a measure of level of ability. Most men complete the examination in less than two hours. No candidate will be able to answer all the questions correctly, but the more questions answered correctly, the higher the rating. The examination contains a number of different sections measuring different abilities and characteristics. The following is a general description of some of the abilities measured by the test:

One necessary qualification of the Aviation Cadet is quickness in comprehending instructions and accuracy in following directions. If a characteristic of a plane is explained, a demonstration of flight characteristics is given, or some similar information is furnished, he must be alert to understand and to assimilate this information. This ability to comprehend and to follow directions will depend in large part upon his vocabulary, his ability to understand the exact meaning of words and explanations.

The Aviation Cadet must be able to read intelligently from Army manuals, technical manuals, texts, and other sources, and understand what he reads. In addition to a knowledge of individual words, he must understand sentences and paragraphs, be able to pick out the central thought or essential idea in a passage, organize the given information, see its relation to previous explanations, make interpretations, and draw conclusions on the basis of what he reads. Aviation is a complex subject, and the Aviation Cadet must be able to educate himself in this field through his own reading and study as well as through actual experience in the air.

Military flying requires a careful planning and a skillful execution of definite missions. The members of the air crew, especially the navigator, must be able to read charts, maps, and weather reports, keep a constant check on the plane's speed and location, plot a course, check it, and carry on many similar activities with speed and precision. Skill and accuracy in fundamental mathematics are essential to many of these activities. The Aviation Cadet should possess the ability to solve problems involving proportions, fractions, ratios, decimals, formulas, and elementary algebra, and also to read and interpret graphs, tables, and charts.

The air crew is immediately responsible for the operation of a very complicated and highly developed machine — the modern fighting, observation, or bombing plane. In addition to other abilities, it is necessary that members of the air crew have good mechanical comprehension so that they will understand the basic principles of operation of the airplane and the rest of their mechanical equipment.

Members of the air crew frequently have to make sound judgments in practical situations. When an Aviation Cadet is faced with a problem, whether in the air or on the ground, he should consider all angles of the problem, call upon his previous training and experience, and make the best judgment possible under the conditions. Poor judgment renders the aviator a source of danger, not only to himself, but to others. The sort of ability needed by a successful aviator can be measured by presenting problems which might be met, not only in

flying, but in everyday activities, so that solutions to the problems do not depend upon any special training or unusual experiences as a flier, but rather upon practical judgment.

The Aviation Cadet has an opportunity to become an officer in the Army Air Forces. If he becomes an officer, he will have to assume many responsibilities of leadership. Among other things, the officer must keep up with the most recent changes and developments in aviation and in many other fields. By this alertness to recent happenings, he can take advantage of these developments, see their importance, be ready to adopt worth-while improvements, and as an aggressive leader, help to keep our Nation at the top.

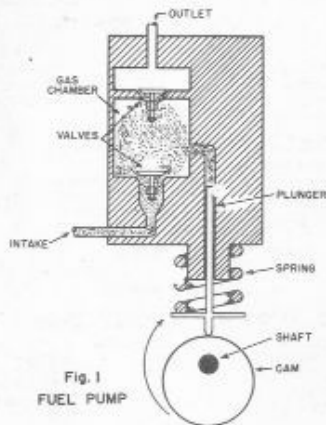
Sample Examination Questions.

The following questions are typical of those contained in the examination. The candidate is asked a question, given a problem to solve, asked to read a passage or study an explanation. In all cases he answers the question by choosing the best one of the five possible answers which are given for the problem.

1. When a man is asked to help reinforce a bridge, he is to
 - 1—A widen it.
 - 1—B strengthen it.
 - 1—C destroy it.
 - 1—D close it.
 - 1—E replace it.
2. Barracks are
 - 2—A airplane hangars.
 - 2—B flat-bottomed boats.
 - 2—C living quarters.
 - 2—D street obstructions.
 - 2—E underground passages.

"Military courtesy is basic to effective leadership and the maintenance of good discipline. Courtesy implies polite and considerate behavior toward others, whether senior or junior, and whether or not members of the military service. In general, officers of junior rank habitually give the same precedence to and show the same consideration toward their seniors that any courteous person does to his elders. These courtesies, if shown promptly and smartly, do much to add firmness and dignity to the leader."
3. On the basis of the above paragraph the best general summary of the sort of courtesy that is expected from an officer would be the statement that he will show courtesy to
 - 3—A other members of the military service.
 - 3—B everyone with whom he comes in contact.
 - 3—C officers of higher rank.
 - 3—D officers of junior rank.
 - 3—E civilians who are older than he.
4. The paragraph can be interpreted to mean that courtesy toward senior officers is one military duty a soldier should have little trouble remembering because
 - 4—A he will be required to show courtesy while in the Army.
 - 4—B he will expect it from other men who are below him in rank.
 - 4—C it is something which is shown only in the Army.
 - 4—D the penalty for failure to be courteous is certain.
 - 4—E courtesy toward older persons already should be a fixed habit with him.
5. If a hangar which is known to be 30 feet high casts a 20-foot shadow, what is the height of a signal tower which casts a 70-foot shadow at the same time of day?
 - 5—A 46 $\frac{2}{3}$ feet.
 - 5—B 140 feet.
 - 5—C 210 feet.
 - 5—D 23 $\frac{1}{3}$ feet.
 - 5—E 105 feet.
6. If Speed equals one-half d square, what is the Speed when d equals 6?
 - 6—A 36
 - 6—B 6
 - 6—C 18
 - 6—D 9
 - 6—E 24

7. Ten trucks are transporting road-building material across country. The leader comes to a 50-foot stretch of ice-covered hill which is so steep and slippery that his truck will not pull it. The most practical thing to do in these circumstances would be to
- 7-A tie all the trucks together so that the first could be pushed up the hill, the last pulled up.
 7-B turn back and wait for warmer weather.
 7-C put the drivers to work building a temporary road around the hill.
 7-D have the trucks back up and take a running start at the hill.
 7-E put the drivers to work scattering some sand from one of the trucks onto the ice.
8. The first U. S. Army pilot to be publicly acclaimed a hero after our entry in World War II was
- 8-A Charles Lindbergh.
 8-B Wiley Post.
 8-C Eddie Rickenbacker.
 8-D Roscoe Turner.
 8-E Colin Kelly, Jr.
9. Which one of the following is an adaptation of a slogan which was popular in the United States during the Spanish-American War?
- 9-A "Thumbs Up"
 9-B "Remember Pearl Harbor"
 9-C "Time Is Short"
 9-D "We Do Our Part"
 9-E "Keep 'em Flying"



Fuel injection pumps are usually operated by a cam and spring. The cam moves the plunger during the delivery stroke and the spring returns it during the suction stroke. The cam is coupled with the engine crankshaft by means of gears or chains. Fuel is drawn into the gas chamber during the suction stroke and forced out during the delivery stroke.

10. If the cam shown in Figure 1 is rotated in the direction indicated by the arrow (clockwise) the gas will be pumped out
- 10-A in a continuous flow.
 10-B during about one-half of each revolution.
 10-C during one rotation, chamber refilled during next rotation.
 10-D during approximately two-thirds of each revolution.
 10-E when the cam is in the position shown in the drawing.

Further information on the procedure of becoming an Aviation Cadet may be obtained from The Adjutant General, Washington, D. C., or the Commanding General of any Service Command. Headquarters of the various Service Commands and the States included in their respective areas are as follows:

FIRST SERVICE COMMAND:

Headquarters: Boston, Massachusetts

CONNECTICUT	NEW HAMPSHIRE
MAINE	RHODE ISLAND
MASSACHUSETTS	VERMONT

SECOND SERVICE COMMAND:

Headquarters: Governors Island, New York

DELAWARE	NEW JERSEY
	NEW YORK

THIRD SERVICE COMMAND:

Headquarters: Baltimore, Maryland

DIST. OF COLUMBIA	PENNSYLVANIA
MARYLAND	VERGINIA

FOURTH SERVICE COMMAND:

Headquarters: Atlanta, Georgia

ALABAMA	MISSISSIPPI
FLORIDA	NORTH CAROLINA
GEORGIA	SOUTH CAROLINA
	TENNESSEE

FIFTH SERVICE COMMAND:

Headquarters: Columbus, Ohio

INDIANA	OHIO
KENTUCKY	WEST VIRGINIA

SIXTH SERVICE COMMAND:

Headquarters: Chicago, Illinois

ILLINOIS	MICHIGAN
	WISCONSIN

SEVENTH SERVICE COMMAND:

Headquarters: Omaha, Nebraska

COLORADO	MISSOURI
IOWA	NEBRASKA
KANSAS	NORTH DAKOTA
MINNESOTA	SOUTH DAKOTA
	WYOMING

EIGHTH SERVICE COMMAND:

Headquarters: Dallas, Texas

ARKANSAS	NEW MEXICO
LOUISIANA	OKLAHOMA
	TEXAS

NINTH SERVICE COMMAND:

Headquarters: Fort Douglas, Utah

ARIZONA	NEVADA
CALIFORNIA	OREGON
IDAHO	UTAH
MONTANA	WASHINGTON