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BY- SHELBURNE, JAMES C. GROVES, KENNETH J.
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PART OF A LARGER SURVEY OF EDUCATION IN THE ARMED FORCES, THIS CHAPTER DESCRIBES OFFICER COMMISSIONING PROGRAMS (INCLUDING DIRECT COMMISSIONING OF AUXILIARY SPECIALISTS) AND PROVISIONS FOR SPECIALIZED DEVELOPMENT AND COLLATERAL TRAINING OF OFFICERS IN EACH OF THE ARMED SERVICES. PRINCIPAL SUBJECTS AND SKILL AREAS, NUMBERS OF ENROLLEES AND GRADUATES, OPERATING COSTS, EXPENDITURES PER CAPITA, AND TRAINING ACTIVITIES ARE INDICATED FOR THE FIVE SERVICE ACADEMIES, TOGETHER WITH DATA ON AVIATION CADET PROGRAMS, RESERVE OFFICER TRAINING CORPS ACTIVITIES, AND THE OFFICER CANDIDATE SCHOOLS. PROGRAMS OF SPECIALIZED TRAINING AND HIGHER EDUCATION THROUGH THE NAVAL POSTGRADUATE SCHOOL, THE AIR FORCE INSTITUTE OF TECHNOLOGY, AND OTHER MILITARY AND CIVILIAN INSTITUTIONS ARE VIEWED IN THE CONTEXT OF THE COMMISSIONED OCCUPATIONAL STRUCTURE. REPRESENTATIVE KINDS OF COLLATERAL (SUPPLEMENTAL AND SUBSPECIALIZED) TRAINING ARE ALSO NOTED. THE DOCUMENT INCLUDES NINE TABLES, 47 FOOTNOTES, AND MAJOR CATEGORIES OF OCCUPATIONS FOR ARMY, NAVY AND AIR FORCE OFFICERS. THIS DOCUMENT IS CHAPTER 3 OF EDUCATION IN THE ARMED FORCES, BY JAMES C. SHELBURNE AND KENNETH J. GROVES, WHICH IS AVAILABLE FROM THE CENTER FOR APPLIED RESEARCH FOR EDUCATION, INC., NEW YORK. (LY)

Education in the Armed Forces

JAMES C. SHELBURNE

Educational Advisor
Air University
Maxwell Air Force Base

KENNETH J. GROVES

Director of Evaluation and Special Studies
Air University
Maxwell Air Force Base

The Center for Applied Research in Education, Inc.
New York

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CHAPTER III

Officer Training and Specialized Education

> In the conditions of modern life the rule is absolute: the race which does not value trained intelligence is doomed. Not all your heroism, not all your social charm, not all your wit, not all your victories on land or at sea, can move back the finger of fate. Today we maintain ourselves. Tomorrow, science will have moved forward yet one more step, and there will be no appeal from the judgment which will then be pronounced on the uneducated.
>
> Alfred North Whitehead, *The Aims of Education* (1947)

Introduction

The military establishment of the United States is made up of the active force and the Reserve force. The officer corps of the active force is composed of those with Regular commissions and those with Reserve commissions.[1] These Reserve officers can be further divided into those that are serving their obligatory tours of duty—usually three to five years—and those who have declared their intention to remain on extended active duty. The Reserve force, which includes the National Guard, is made up of three components: the Ready Reserve, the Standby Reserve, and the Retired Reserve. The Ready Reserves can be ordered to duty by the President alone; the other two categories of Reserves cannot be ordered to duty without the approval of Congress.

On June 30, 1962, 343,121 officers were on active duty with the Armed Forces of the United States.[2] As a group, these officers made up 12.2 per cent of the total active military force for that year. The size and composition of the officer corps is regulated by congressional authority. The active-duty corps consisted of 159,685 officers with Regular commissions and 183,436 with Reserve commissions.

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[1] Regular commissions are made by the President with the advice and consent of the Senate. Reserve commissions are made by direction of the President and delegated to the services. Approximately 60 per cent of the officers of the active force are Regular officers; approximately 40 per cent are Reserve officers. Regular officers are selected from graduates of the service academies, of ROTC programs, and—to a lesser extent—of OCS.

[2] *Department of Defense Annual Report: Fiscal Year 1962* (Washington, D.C.: USGPO, 1963), p. 376. The total includes 3164 Coast Guard officers on active duty.

The term *career officers,* as used here, includes Reserve officers on extended active duty and officers with Regular commissions.

Commissioning Programs

To compensate for losses from death, retirement, voluntary separation at the end of obligatory tours, resignation, and other causes, the services commission approximately 35,000 officers annually. Some indication of the relative importance of various commissioning programs as sources of officer personnel is shown in Table 7,

TABLE 7

SOURCE OF COMMISSION OF ACTIVE-DUTY OFFICERS, PERCENTAGE DISTRIBUTION

Source of Commission	*Army*	*Navy*	*Marine Corps*	*Coast Guard*	*Air Force*
Academies	8.3	14.39	2.5	48.0	3.72
ROTC	45.4	10.54	12.6		23.62
OCS		4.35	59.0	26.6	6.15
Enlisted programs	24.9	34.10	13.1	20.67	9.85
Direct commissions	15.8	12.66	.1	0.03	10.63
Aviation cadets		20.84	11.2		40.38
Other	5.6	3.02	1.5	4.70	5.65

Source: Army data is from a sample survey of 7757 officers, excluding female personnel and general officers, as of November 1962; Navy, January 1964; Air Force, May 1963. Data on Marine Corps is for officer accessions 1952–63, rather than on total officers on active duty.

showing the percentage distribution of officers on active duty by source of commission. From the data in this table it is evident that the service academies provide a relatively small percentage of the total number of officers in all the services, with the exception of the Coast Guard.[3] In the Army, 70 per cent of the officers on active duty received their commissions through the ROTC program (45 per cent) or programs for enlisted men (25 per cent). A large source for the Air Force and, to some extent, for the Navy and the Marine Corps has been the Aviation Cadet programs developed for the greatly expanded pilot-training programs of World War II. Table 7 also shows that each service has programs that enable en-

[3] This relatively high percentage of academy graduates in the Coast Guard is explained by the fact that there are only some 3000 officers in its active force, and the academy graduates about ninety officers annually.

listed personnel to become commissioned officers. The Navy, the Army, and the Coast Guard have obtained substantial proportions of their officers from the enlisted ranks.

In order to compete with one another and with the recruiting programs of the other professions, industry, and civilian life in general, the services currently have a wide variety of officer-procurement programs.

Federal academies. The five federal academies are listed here chronologically: U.S. Military Academy, West Point, New York (1802); U.S. Naval Academy, Annapolis, Maryland (1845); U.S. Coast Guard Academy, New London, Connecticut (1876); U.S. Merchant Marine Academy, King's Point, Long Island, New York (1942);[4] U.S. Air Force Academy, Colorado Springs, Colorado (1954). The Army, the Navy, and the Air Force maintain academy preparatory schools that were established primarily to provide intensive review instruction for enlisted personnel selected to enter the academies.

As shown in Table 8, the five federal academies enroll about

TABLE 8

ANNUAL ENROLLMENT, GRADUATES, OPERATING COST, COST PER STUDENT AND COST PER GRADUATE FOR FEDERAL ACADEMIES, FISCAL YEAR 1962

Service Academy	*Enrollment*	*Graduates* *	*Operating Cost*	*Annual Cost per Student*	*Cost per Graduate* **
Army	2,400	500	$27,741,000	$11,558	$45,650
Navy	3,742	797	28,870,000	7,768	30,980
Coast Guard	600	80	4,065,000	6,775	†
Merchant Marine	983	270	3,170,000	3,224	†
Air Force	2,267	298	28,071,000	12,382	47,120
	9,992	1,945	$91,917,000		

Source: The Federal Government and Education, H. R. Document No. 159, presented by Mrs. Edith Green, Chairman of Special Subcommittee of the House Committee on Education and Labor (Washington, D.C.: USGPO, 1963), p. 144.

* *American Universities and Colleges,* 8th ed. (Washington, D.C.: American Council on Education, 1960).

** *Reserve Officer Training Corps Program,* H. R. Report No. 925, 88th Congress, 1st Session (November 26, 1963), pp. 10–13.

† Information not available.

[4] Although the United States Merchant Marine is not a military service, graduates of its academy, in addition to being commissioned in the Merchant Marine, may be commissioned ensigns in the Naval Reserve and the Coast Guard Reserve.

10,000 students, called *cadets* in the Army and the Air Force, and *midshipmen* in the Navy, the Coast Guard, and the Merchant Marine. In 1960–61 these academies produced nearly 2000 graduates at an annual operating cost of about $91 million and a cost per student ranging from $3224 to $12,382. In 1963 the reported total cost per graduate of these four-year courses ranged from $30,980 at the Naval Academy to $47,120 at the Air Force Academy.[5] (One possible reason for the difference in cost was the larger enrollment at Annapolis.) Legislation enacted by the 88th Congress will result in increasing the enrollment of the Army and the Air Force Academies to that of the Naval Academy between 1965 and 1968. This legislation will ultimately have the effect of producing some 2400 graduates annually from the academies. It is understood that the Coast Guard will increase its enrollment to produce approximately 100 graduates annually.

The academies are four-year undergraduate institutions; each is approved by the appropriate regional accrediting association. Graduates are awarded a Bachelor of Science degree and a commission in the Regular establishment of their service. The rank upon graduation is second lieutenant in the Army, the Air Force, and the Marine Corps, and ensign in the Navy, the Coast Guard, and the Merchant Marine.

The academies are inspected each year by statutory boards of visitors that prepare written reports to the President of the United States. The curriculums of the academies are divided between the more traditional undergraduate academic subjects and professional military subjects and exercises. Each academy emphasizes physical education, including intramural and intercollegiate athletic programs.

Traditionally, the curriculums of the academies were rather heavily oriented toward engineering and other technical subjects. Although this is still true to some extent, particularly in the Coast Guard and Merchant Marine Academies, since World War II the institutions have tended to offer a more balanced program of studies with additional offerings in the social sciences and the humanities.

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[5] A word of caution concerning the interpretation of unit costs in the services is appropriate here. The above data are cited because they give some conception of order of magnitude, not because they are necessarily comparable. The factors used in determining such costs and others given throughout this volume are decided upon by each service; consequently, any variation may be more the result of the difference in methods of computation rather than real differences in cost.

Because many cadets and midshipmen enter the academies after having attended college for a year or two, the academies are now tending to give recognition to such individual differences by enrichment programs and academic majors.

The Air Force Academy, in cooperation with Purdue and Georgetown Universities, has developed a plan for qualified cadets to begin graduate work during the senior year. These cadets then go on to complete requirements for the master's degree at one of the cooperating institutions. Purdue offers a degree in Astronautics; Georgetown, in International Affairs. It is understood that the Academy hopes to expand this program to a possible maximum of eight cooperating universities.

The professional military emphasis in the academies permeates the entire program, including the more traditional academic studies. Throughout the four years, cadets and midshipmen follow a rigid daily schedule and must conform to strict discipline and rules of conduct. Military training, however, is recognized as a separate phase of the program and is under the direction of a commandant of cadets, just as the academic phase is administered by a dean or other authority. The professional military instruction at the academies serves as the standard for the other commissioning programs of each of the services; to the extent that the time and facilities permit, ROTC and OCS programs are a reflection of what is done at the academies.

The military program consists of two types of activities. The first, usually conducted outside the classroom, is made up of a wide variety of exercises, drills, and ceremonies. It serves the immediate purpose of making a rapid transition from civilian to military life. The extremely severe discipline to which cadets and midshipmen are subjected immediately upon their arrival and during their first year has been characterized as a deliberate test of the depth of their commitment to military life.[6] But beyond this purpose, military training at the academies has the larger aim of developing qualities of leadership, self-confidence, self-control, as well as obedience to constituted authority, a spirit of public service, the cultivation of certain social graces, and adherence to a code of honor. Cadets are organized into groups under the leadership of student officers. As the cadet moves from his first to his final year, he learns to follow orders as

[6] Morris Janowitz, *The Professional Soldier* (New York: The Free Press of Glencoe, Inc., 1960), pp. 128–29.

well as to assume positions of increasing responsibility and authority over his juniors. It is this aspect of the academy life—the development of professional commitment and *esprit de corps*—that resembles in purpose the schools of other professions such as teaching, medicine, and theology.

The other aspect of the professional military program is designed to prepare the cadet for duty as a junior officer. The subjects and skills taught in the professional military area will vary to some degree among the services, but those listed below are characteristic of all academies:

1. The provisions of the Uniform Code of Military Justice.
2. Military history and the principles of war, beginning with Sun Tzu, in the fifth century, BC, and extending through such theoreticians as Machiavelli, Clausewitz, and Jomini to the more modern and contemporary strategists.[7]
3. The national security organization and the place of each service in this organization.
4. Service history.
5. Service weapons, and skill in firing certain small arms.
6. The traditions, customs, and courtesies characteristic of military life.
7. Personal hygiene.
8. Instructor training, including speech, instructional methods, instructional aids, and practice teaching.
9. Tactics and strategy.
10. Service skill structure and career planning, including professional and specialized postgraduate educational opportunities.
11. Case studies in military management and leadership.
12. Human relations and psychology.
13. Flight indoctrination in light aircraft.

In addition, each of three summers between school years is occupied with field trips or cruises and visits to combat installations, research centers, and overseas tours, to familiarize cadets with the military environment in which they will live and work.

When the academies were founded, and for some decades thereafter, they provided terminal professional education and were the source of service doctrine on strategy and tactics.[8] The Academy at

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[7] Edward Mead Earle (ed.), *Makers of Modern Strategy* (Princeton, N.J.: Princeton University Press, 1943), pp. 284–485.

[8] Thomas E. Shaughnessy, *Beginnings of National Professional Military Education in America: 1775–1825*, unpublished doctoral dissertation presented at The Johns Hopkins University, 1956.

West Point was the first engineering college in this country. The term *civil engineering* itself was coined to distinguish curriculums whose emphasis differed from that at West Point.[9] America's expansion to the West—manifested not only in military conquest but also in the construction of roads, bridges, railroads, and river and harbor facilities—was largely the work of West Point graduates. This kind of public works function is still being carried on by the Army's Corps of Engineers. Technical developments in weapon systems, the experiences resulting from the War of 1812 and the Spanish-American War, and professional military developments in Europe led to the establishment of additional postgraduate professional military schools. For this reason, the academies are no longer terminal institutions but simply the first important stage in the professional education of the career officer. They provide the knowledge that is prerequisite to later graduate study in specialized subjects.

Reserve Officer Training Corps (ROTC). Instruction in military subjects in civilian colleges was introduced in 1819 at Norwich University by Alden Partridge, a graduate and former Superintendent of the U.S. Military Academy.[10] Military subjects gradually spread to other civilian schools. Virginia Military Institute was established in 1839 and The Citadel (South Carolina) in 1842. In 1862 the Morrill Act gave impetus to military instruction in civilian colleges and universities. The ROTC program was formalized, substantially as it is known today, by the National Defense Act of 1916.

Originally designed as a source of Reserve officers, who would take periodic summer training but would be called to active duty only in the event of a national emergency, the ROTC program is now the largest single source of active-duty officers in the Armed Forces. Thus, to an increasing degree, the term *Reserve* is a misnomer.[11] For the fiscal year 1963 the cadet enrollment was 291,927 in 486 Army, Navy, and Air Force units located on 320 college and university campuses. The ROTC program produced 26,772 commissioned officers at a cost of $83.7 million, with 2847 officers,

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[9] John W. Masland and L. I. Radway, *Soldiers and Scholars* (Princeton, N.J.: Princeton University Press, 1957), p. 78.

[10] *Reserve Officers Training Corps Program*, H. R. Report No. 925, 88th Congress, 1st Session (November 26, 1963), p. 5.

[11] Gene M. Lyons and John W. Masland, *Education and Military Leadership: A Study of the ROTC* (Princeton, N.J.: Princeton University Press, 1959), p. 241.

2654 enlisted personnel, and 357 civilians on full-time duty in support of the program.[12]

The major reason for the relatively low production rate of the program in terms of the number enrolled—26,772:291,927—is the fact that in many of the institutions, particularly the land-grant universities, participation by all male students is compulsory.

The Army has the largest ROTC program, extending even into more than 300 secondary schools. Two Army programs are conducted at the secondary school level: the Junior ROTC program and the National Defense Cadet Corps, both established in 1916. The Army supports the Junior ROTC by providing instructors, uniforms, and equipment for all cadets. In the National Defense Cadet Corps program, the Army provides training materials, including textbooks, but uniforms are provided by the cadets or by the school system, and instructors are paid and employed by the schools.[13]

The Army's ROTC program is designed to provide officers for both the Reserve and the active-duty forces. The Navy conducts two programs: the Regular ROTC program, known as the Holloway Plan, which offers substantial scholarships and is designed specifically as a source of Navy and Marine Corps active-duty officers; and the Contract ROTC program, designed to procure officers for the Reserve force. The Air Force program is wholly oriented to procuring officers for the active force. The cost per commissioned graduate in the ROTC program in 1963 was: Army $3950, Navy Regular $8913, Navy Contract $3298, and Air Force $6056.[14]

Although the curriculums of the Service ROTC programs vary, they can be characterized as supplementary, or auxiliary, to other subjects the student may be taking in his institution, and are generally patterned in emphasis and content on the professional military instruction given in the service academies. Typically, the ROTC cadet takes some four hours of classroom instruction each week,

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[12] *Reserve Officers Training Corps Program, op. cit.*, p. 7. Lyons and Masland, *op. cit.*, p. 249. *The Federal Government and Education*, H. R. Document No. 159. Presented by Mrs. Edith Green, Chairman of Special Subcommittee of the House Committee on Education and Labor (Washington, D.C.: USGPO, 1963), pp. 93–94, 149–50.

[13] *Department of Defense Appropriations for 1964: Part 4*, Hearings before a Subcommittee of the House Committee on Appropriations, 88th Congress, 1st Session, pp. 316–17.

[14] *Reserve Officers Training Corps Program, op. cit.*, p. 7.

supplemented by one hour of drill and ceremonies, and a summer camp or summer cruise of four weeks.

At the original suggestion of the Air Force, and patterned somewhat on the Navy's Holloway Plan, the Congress passed legislation sponsored by the Department of Defense which reduces the cadet workload in military subjects measured in class hours, eliminates drill during the academic year, reduces the number of institutions offering the four-year program, and provides a small number of scholarships for students in the last two years of college.

Each service has a civilian ROTC advisory panel, made up of representatives from colleges and universities in which ROTC units are located.

Direct commissioning programs. The services commission, directly from civil life, certain qualified specialists—chiefly physicians, dentists, veterinarians, nurses, lawyers, and chaplains. Navy medical personnel and chaplains serve the needs of the Marine Corps in their respective specialties. The U.S. Public Health Service details professional medical specialists to serve with the Coast Guard. Line officers in the Marine Corps and in the Coast Guard who came into their Service with legal training, or who acquired it on their own after being commissioned, serve as legal officers from time to time but not primarily.

The Coast Guard uses direct commissions to obtain some pilots who have completed Navy or Air Force flight-training programs, and also offers commissions to personnel of the Merchant Marine who have served at least four years as licensed officers on board vessels of the United States.

These various kinds of auxiliary specialists, all of whom have already completed their first professional education or training programs, report for duty with their commissions already awarded, or they are awarded these commissions immediately upon reporting. The services provide brief orientation courses of from three to nine weeks, designed to indoctrinate these specialists in their duties and responsibilities as commissioned officers and to give them some insight into the customs of the service, as well as instruction relating to the practice of their specialties in a military environment. If these specialists elect to become career officers, extensive postgraduate specialized schools, courses, seminars, and other programs are available to them. These brief orientation programs are condensations of

academy curriculums. Of all officers reporting for active duty, those with direct commissions have probably the least professional military instruction.

The specialties of law, medicine, dentistry, and nursing offer opportunities for qualified women to become commissioned officers.

Aviation cadet programs. During World War II, and for some time thereafter, aviation cadet programs were a principal means of entry into flying training for the Navy, the Marine Corps, the Coast Guard, and the Air Force, and as shown in Table 7, many officers now on active duty in these services received their commissions through these programs. The Air Force plans that, beginning in 1965, only commissioned officers will enter flying training, and the aviation cadet program will be discontinued.

In the Army, commissioned officers of all ranks may enter flying training, yet flying is not considered an officer's occupational specialty but rather a collateral skill. Military personnel who are at least high school graduates, who wish to become Army warrant officer aviators, and who qualify for training, are given the rank of staff sergeant for the duration of the forty-week flying training period, then are issued warrants when they complete the program.[15] All flying training in the Army is conducted at Fort Rucker, Alabama.

The Navy and the Marine Corps have aviation cadet programs for men who have completed at least two years of college work. These eighteen-month precommissioning programs are given at Pensacola, Florida, and Corpus Christi, Texas. The first phases of professional military education are given in conjunction with flying training. The Navy has programs for flight-crew personnel other than pilots and for aviation ground-support personnel that lead to a commission, but these two programs are given in connection with Navy Officer Candidate Schools, discussed in the following section. The Navy operates pilot-training programs for young commissioned officers from its own service, from the Marine Corps, and from the Coast Guard.

Officer Candidate Schools (OCS). In the past, in peacetime,

[15] Warrant officers occupy a unique place in the hierarchy of military rank: between the enlisted and commissioned grades. Although they enjoy certain officer privileges, they are restricted in the degree to which they can supervise and command. Essentially, they are specialists. They are not subject to as frequent rotation and reassignment as are noncommissioned officers and junior commissioned officers.

OCS was considered primarily as the avenue to commissioned rank for the enlisted man with little formal college education but with wide experience and with demonstrated skill and capacity for leadership in a military environment. Developments in the technical complexity of weapon systems and the resulting skill structure of the officer corps have made college graduation or its equivalent practically mandatory for admission to OCS.

It is still possible for an outstanding enlisted man in the Army or the Marine Corps who is not a college graduate to go to OCS. This practice, however, is now the exception rather than the rule.

College graduates now enter OCS directly from civilian life and from the enlisted ranks. The Navy and the Marine Corps also have OCS programs for undergraduates. These programs extend over two summer training periods of eight weeks each, and students are commissioned after they graduate from college. These programs, which are special kinds of Officer Candidate Schools, are known in the Marine Corps as the Platoon Leaders Course (PLC), and in the Navy as the Reserve Officer Candidate (ROC) program. Both these services also have OCS programs open to college graduates, and the Navy, as mentioned above, has flying-training programs related to two of its OCS programs for aviation personnel other than pilots. With the exception of the Coast Guard, all services admit women to OCS programs.

The Navy and the Air Force each have a specially designed subsidized college program leading to a commission for enlisted personnel. The Navy Enlisted Scientific Education Program (NESEP) sends qualified enlisted personnel to a civilian college for four years. The Airman Education and Commissioning Program (AECP) of the Air Force selects qualified enlisted personnel who have at least thirty semester hours of transferable college credit, and sends them to college for as much as two years. In both programs the enlisted men attend OCS after college graduation.

The OCS programs are from three to four months long; they vary according to the amount of military background the officer candidate brings to the school. The Army has three Officer Candidate Schools: at Fort Benning, Georgia, at Fort Sill, Oklahoma, and one for women at the Women's Army Corps Center at Fort McClellan, Alabama. The Navy's schools are at Newport, Rhode Island; the Marine Corps school is at Quantico, Virginia; the Coast Guard

school is at Yorktown, Virginia; and the Air Force operation, known as Officer Training School, is in San Antonio, Texas.

The curriculums of these schools vary. The Army and the Marine Corps programs for male officers stress instruction in the tactics and leadership of small units, weapons training, as well as rigorous standards of physical conditioning. As is true of the other programs leading to a commission, the professional military aspects of the school are patterned on those taught at the service academies.

The length of time devoted to professional military education and training in the various commissioning programs varies from very little, in the case of the direct commissioning programs, to the longer periods spread over four years at the academies and in the ROTC programs.

Specialized-Training Programs

A few officers enter the services with specific skills or vocations that are directly related to their military careers. These are officers who are directly commissioned in medicine, law, religion; those who enter through aviation cadet programs and become pilots or navigators before being commissioned; and a relatively small number of skilled enlisted men who enter through officer candidate and officer training schools. The typical newly commissioned officer, however, lacks such a usable skill or vocation and requires fairly extensive formal training and specialized education before he becomes useful in the various officer occupational areas, groups, and subgroups of the services. The amount of education and training he needs will depend upon the career occupational area he chooses, or in which he is placed, and its similarity to his major field of study as an undergraduate. For example, a qualified civil engineer, who is placed in the engineering occupational area will need considerably less training and education than an English major who enters aviation, intelligence, or some other unrelated field. Regardless of the occupation area in which he is placed, the new military officer has begun a career which will consist largely of formal and informal training and education, all of which is concerned directly or indirectly with preparation for war.

Commissioned occupational structure. Each of the services has, over the years, developed its own system of classifying the occupational areas, groups, and subgroups or specialties in which its

officers serve. These systems are described in detail in service classification manuals and related documents.[16] Taken as a whole, they provide a means of classifying and coding the skills and levels of competency of individual officers, of identifying and describing positions in the organizations, and of matching individuals with positions.

TABLE 9

SUMMARY OF OFFICER OCCUPATIONAL CLASSIFICATION SYSTEMS OF THE SERVICES

Service	*Occupational Areas*	*Occupational Groups*	*Occupational Subgroups*	*Code*
Army	10 Major occupational groups	None	397 Military occupational specialties	MOS: Military Occupational Specialty Code
Navy	10 Major occupational fields	75 Major groupings	1639 Billet classifications	NOBC: Navy Officer Billet Code
Marine Corps	34 Occupational fields	None	93 Military occupational specialties	MOS: Military Occupational Specialty
Coast Guard	7 Occupational fields	66 Groups or specialties	740 Billet classifications	MDC: Military Duty Code
Air Force	15 Career areas	40 Utilization fields	187 Air Force specialties	AFSC: Air Force Specialty Code

Table 9 gives a summary description of the classification systems used by the five services. Analysis of the classification manuals of each of the services shows that the differences in the numbers of occupational areas, groups, and subgroups or specialties among the services are chiefly the results of different methods of classification rather than of real differences in the complexity of the mission to be performed. For example, the manuals of the Navy and the Coast

[16] "Manual of Commissioned Officer Occupational Specialties," *Army Regulation 611-110;* "Billet and Officer Designator Codes," *Bureau of Naval Personnel Instruction 1210.4C;* "Manual of Navy Officer Billet Classifications," *NavPers 15839;* "Marine Corps MOS Manual," *NavMc 1008-PD;* "Officer Career Patterns," *United States Coast Guard Commandant Instruction 1040.1;* "Officer Classification Manual," *Air Force Manual 36-1.*

Guard list a total of more than 2300 different specialties, but those of the Air Force and the Army combined list fewer than 600 specialties. The Marine Corps lists thirty-four occupational *areas* while the other services list from seven to fifteen.

The methods of classification of the services are different, apparently, because they were developed by different people who had little or no reason and probably no desire to coordinate their work. Each system evolved during a period when the services were more distinctly separate from one another than they are now. Because of the changes that have taken place in modern warfare, calling for greater unification of effort among the services, a standardized method of classification would be more useful today than it was some years ago. Although there is no standard classification plan for the Armed Forces as a whole, the Office of the Secretary of Defense is developing various procedures (including the conversion tables mentioned in Chapter II) to bring about a larger degree of uniformity in nomenclature.

The following list provides a general notion of the major occupational areas in which officers of the services will be engaged during their careers, and further illustrates the different methods of classification.

Major Occupational Areas for Officers of the Army, Navy, and Air Force

1. *Command and Combat*

Army Occupational Group:	Command and Combat
Navy Occupational Field:	Naval Operations
Air Force Career Areas:	(a) Commander and Director (b) Operations

2. *Personnel*

Army Occupational Groups:	(a) Administrative, Executive, and Training Services (b) Welfare and Special Services
Navy Occupational Field:	Personnel
Air Force Career Area:	Administration

3. *Medical*

Army Occupational Group:	Medical, Dental, and other Health Services
Navy Occupational Field:	Medical and Dental
Air Force Career Area:	Medical

4. *Materiel, Logistics, and Transportation*

Army Occupational Groups:	(a) Procurement, Supply, Maintenance, and Repair Services (b) Communication and Transportation
Navy Occupational Field:	Supply and Fiscal
Air Force Career Area:	Materiel

5. *Comptroller*

Army Occupational Group:	Fiscal, Accounting, and Budgeting
Navy Occupational Field:	Supply and Fiscal
Air Force Career Area:	Comptroller

6. *Scientific*

Army Occupational Group:	Professional, Subprofessional and Scientific Services
Navy Occupational Field:	Sciences and Services
Air Force Career Area:	Scientific and Development Engineering

7. *Engineering*

Army Occupational Group:	Professional Engineering and Related Technical Services
Navy Occupational Fields:	(a) Shore Construction Engineering (b) Electronics Engineering (c) Weapons Engineering (d) Naval Engineering
Air Force Career Areas:	(a) Electronics and Maintenance Engineering (b) Civil Engineering (c) Scientific and Development Engineering

8. *Security and Intelligence*

Army Occupational Group:	Protective, Intelligence, and Investigative Services
Navy Occupational Fields:	(a) Sciences and Services (b) Personnel
Air Force Career Areas:	(a) Security (b) Intelligence

9. *Legal and Chaplain*

Army Occupational Group:	(a) Professional, Subprofessional, and Scientific (b) Welfare and Special Services
Navy Occupational Fields:	(a) Sciences and Services (b) Personnel
Air Force Career Areas:	(a) Legal (b) Chaplain

10. *Public Relations*

Army Occupational Group:	Welfare and Special Services
Navy Occupational Field:	Sciences and Services
Air Force Career Area:	Information

The various occupational specialties are grouped into ten major areas. This list is intended to contain all, or nearly all, the principal occupational categories of the services. For each major occupational area, the appropriate Army occupational groups, Navy occupational fields, and Air Force career areas are listed. The Coast Guard and the Marine Corps have not been included. The classification system used by the Coast Guard is quite similar to that of the Navy. Most of the thirty-four occupational fields of the Marine Corps could be placed within the major occupational groups of the Army.

With approximately 35,000 officers entering the Armed Forces each year and requiring varying degrees of training and special education in at least one of the ten major occupational areas, it is easy to understand the enormity of the training task facing the Armed Forces.

Officer classification. A manual of each of the services gives a complete description of all specialties in which an officer may serve, including the duties and responsibilities and the prerequisites for service in a particular specialty. As noted in Table 9, the subgroups or specialties in all of the services are coded. During his career, each officer is awarded one or more codes to indicate his qualifications to serve in a number of specialties.

These codes are known as the Military Occupational Specialty (MOS) codes in the Army and the Marine Corps, and—in the other services—as the Navy Officer Billet Code (NOBC), the Coast Guard Military Duty Code (MDC), and the Air Force Specialty Code (AFSC). Generally, they consist of four digits which identify the major occupational areas, the group within the area, and the specialty within the group. In some instances, the digits in the code are used to indicate the military rank of the officer required to fill a given position and the level of the position within an organization. In addition, certain letter or numerical prefixes and suffixes are used to define further the qualifications of an officer or the requirements of a position. The usefulness of these codes in personnel assignment procedures involving automatic data processing systems is obvious.

In addition to describing each specialty and the code associated with it, the service manual gives examples of the positions for which an officer having the code is qualified, the related civilian jobs (using the *Dictionary of Occupational Titles* codes and titles), and the education and experience required or desirable to become fully qualified in the specialty.

Specialty-training programs. The pattern of the education and training of the typical military career officer, from the commissioning programs through the specialty-training and education programs to the more advanced professional military education programs, is similar to the shape of an hour glass. As described in Chapter II, undergraduate commissioning education is relatively broad in scope. The military education (to be described in Chapter IV) which the officer will receive later in his career is also of a broad and general

professional nature. Specialized training and education, representing the narrow waist of the hour glass, takes place in the early years of the officer's career, after he has been commissioned.

The school systems of the five services, described in Chapter II with respect to the training of enlisted men, are also used for the formal training of officers. The courses of instruction for officers, however, are almost always separate from those for enlisted men. They are broader in scope, more complex, usually longer, and predicated upon a higher level of responsibility and educational background.

Army. The more formal specialized training of the typical Army officer is given during the first eight years of service and consists essentially of two phases. Soon after the second lieutenant is commissioned, he attends an orientation course of eight to ten weeks, usually conducted in the various branch service schools. Depending upon the branch to which he is assigned, he may attend the Armor School, the Artillery School, the Infantry School, or any other of the branch service schools operated by the Army. Although the Army regards these as general service schools, they are specialized in the sense that each is designed to meet the needs of a particular branch. Each of them, however, provides general professional education that will be useful to the officer no matter which branch he is assigned to. Thus these schools not only provide specialized training but also lay the basis for the professional military education to be described in more detail in Chapter IV.

After completion of the Orientation Course, the officer is assigned to duty with his branch. Officers in the Military Police Corps, Chemical Corps, Ordnance Corps, Transportation Corps, Quartermaster Corps, Adjutant General Corps, and Finance Corps are detailed to one of the combat branches for their first two years of service in order to experience the combat soldier's needs and problems. At least one year is spent in a rifle company or comparable unit.

After about five years of service, the typical officer, by now a captain, enters the officer career course of his particular branch. The course lasts approximately one academic year and is attended by all career officers of the branch. It consists largely of subjects peculiar to the particular branch, but also includes training applicable to any branch of the Army.

The Army operates a number of specialist schools dealing with

the fields of security, civil affairs, aviation, information, intelligence, foreign languages, and others. An officer may attend these schools at any point in his career, depending upon the requirements of his branch or the particular assignments he has received. The officer may be also selected to attend a civilian or military institution for the purpose of obtaining a degree in a special field.

Navy. The more formal specialized training the majority of Naval line officers receive during the first ten years of their careers consists of two major phases. Within the category of line officers, there are the three major areas of specialization: surface vessels, submarine, and naval aviation.

The newly commissioned ensign in the surface-vessels area is assigned to the fleet. He is trained by on-the-job methods, by attending relatively short collateral courses conducted by fleet training commands ashore, and by taking correspondence courses. The object of these is to qualify him for the next higher position or billet. The young officer is rotated through the various departments of the ship, such as gunnery, engineering, communications, and operations. This training is designed to give him a thorough understanding of the organization and operation of a ship at sea. During this first phase, the officer may attend the six-month Destroyer School at Newport, Rhode Island.

Naval flight training normally requires about eighteen months to achieve basic proficiency and is followed by operational assignments to the air arm of the fleet on an aircraft carrier or at a shore-based Naval air station attached to the fleet. Basic Naval flight training takes place at Naval air stations in Pensacola, Florida, and Corpus Christi, Texas.

Training for the submarines begins with a six-month course at the Submarine School at New London, Connecticut, that consists of classroom and practical exercises to qualify the officer in submarine operations. It includes a basic knowledge of engineering applicable to submarines, the operation of submarines, and the use of submarine armaments. Training submarines are attached to the school, and experience in submerged and surface operations, as well as in submarine tactics and strategy, are included as part of the course.

In addition, the Navy provides technical and collateral instruction at ten major centers located on the east and west coasts of mainland United States. Approximately 40 per cent of newly commissioned

officers participate before reporting to the fleet. Other officers participate in refresher training in preparation for additional tours of duty at sea or ashore. Literally hundreds of courses are given, each usually less than six months long. They include such subjects as civil engineering, intelligence, air traffic control, communications and electronics, transportation, military justice, cryptography, and a host of others.

During the second phase of specialty training, Naval officers with about six to ten years of service may take advanced courses in any of the specialty-training programs, depending upon Naval requirements and the individual's own estimate of the training he needs for his specialty. Within his specialty, the Naval officer has a large responsibility for planning his career; he himself indicates annually the kinds of collateral training and experience that are most appropriate for his specialty. Keeping in mind the needs of the service and the recommendation of the individual, the Bureau of Naval Personnel makes assignments.

The second phase also includes much of the training given at the Naval Postgraduate School in Monterey, California, and in civilian colleges and universities. (These activities are discussed in a later section of this chapter.)

Marine Corps. Upon receiving his commission, each Marine officer, with the exception of those who will become Marine aviators, attends the Basic Marine Corps School at the Marine Corps Educational Center (Marine Corps Schools) at Quantico, Virginia. The aviators take their flying training at the Navy Flying School at Pensacola, Florida. Immediately following the completion of flight training, they also attend the Basic Marine Corps School.

Because all Marine officers attend the basic school, it cannot be regarded strictly as a specialty-training program within the Marine Corps. It is specialized in the sense that it is unique to the Marines among all the Armed Forces. It is also in part the first step in professional military education (to be discussed in Chapter IV).

The basic course is designed to train the young Marine officer in leading a rifle platoon, the basic fighting element of the Corps. The course is six months long and, depending upon the needs of the service, there may be as many as five classes per year with overlapping schedules. Each class usually consists of about 400 officers.

Much of the course is devoted to field exercises, with about 12 per cent of the work being done at night. During the course, each officer is given the opportunity to occupy each position in a Marine infantry company and is trained in the tactical use of each weapon used in a Marine infantry battalion.

Insofar as possible, the Marine Corps uses the schools and courses of the other services for the specialized training of its officers. The only specialized school at Quantico is the Communication Officers School, which trains selected junior officers for communications duties in the Fleet Marine Forces. It is a six-month course, specializing in the communications used in amphibious operations. The school also offers a four-week orientation course to familiarize graduates of the basic school with the duties of a communications officer in the infantry battalion of a Marine division. As previously mentioned, the Marine aviator receives his specialized training at the Naval Air Station at Pensacola, Florida. Other examples are the Army's career officer courses, in which Marine officers become fully trained in such fields as intelligence, infantry, artillery, engineering, armor, security, and communication.[17]

Nearly 100 separate courses are used by the Marine Corps to train its specialists. The Coast Guard provides 23; the Army, 40; the Navy, 18; civilian colleges and universities, 11; and 5 are joint courses in which the other services participate.

In addition to the resident schools and courses, the specialist has at his disposal the correspondence courses offered by the Marine Corps Institute as well as the correspondence courses of the other services.

Coast Guard. Until recently, most Coast Guard officers were regarded as general-duty officers capable of assuming the duties of any billet in the Coast Guard except those (relatively few) requiring highly specialized individuals. These specialists have been generally recruited and already extensively trained to assume their responsibilities. They often come from the enlisted ranks or from the Merchant Marine and the Navy. Promotion to higher grades was essentially restricted to the general-duty officer who had demonstrated satisfactory performance in a well-rounded variety of duties. Satisfactory performance in a specialty was regarded as qualification for

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17 "Marine Corps Formal Schools Manual," *MCO P1500.12B*, p. III-1.

promotion to the lower grades but not sufficient for promotion to grades above commander.[18]

As recently as November 1963, the Coast Guard officially recognized that the scope of its activities has become so broad that no one officer is able to cover them adequately. In reality the general-duty officer has had to serve as a specialist in several fields, depending upon the particular needs of the billet in which he happened to be serving. Thus the program of specialty training for the Coast Guard is in a process of considerable expansion that will probably continue for a number of years.[19]

As now visualized by the Coast Guard, the training pattern for line officers will be general for the period of time in which they serve as ensigns or lieutenants (junior grade). Officers will acquire a basic knowledge of the sea, ships, and ship operation. The middle career period, during which the officer serves in the grades of lieutenant through commander, will be the period of specialization. Each officer is expected to specialize in one of six major areas: surface operations, aviation, engineering, merchant marine safety, comptrollership, or personnel administration. Thus, the category of general-duty officer will no longer exist.

To provide the specialty training during this period, the Coast Guard intends to assign the officer to various positions in one of the major areas. The officer will also make use of correspondence courses prepared by the Coast Guard Institute. As required by the Coast Guard, many officers will participate in the training programs of the other services, particularly those of the Navy. Much of the preparation for specialization will be taken at the Naval Postgraduate School in Monterey, California (to be discussed in a later section of this chapter).

Air Force. Officers entering the Air Force from the various commissioning sources, whether they are Regulars or Reservists, usually begin their careers with a training program leading to qualification in one of the 187 Air Force specialties. Throughout the development of the Air Force, a large proportion of officers have entered flying training to become qualified as pilots, navigators, or as other specialists in the combat and operations career area. The

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[18] "Officer Career Patterns," *United States Coast Guard Commandant Instruction 1040.1*, p. 1.
[19] *Ibid.*, p. 2–3.

rest have become trained in one of the specialties in the other career areas.

Those completing some form of flying training become classified as *rated* officers; the others are termed *nonrated*. Although all officers, with the exception of those in the medical and chaplain career areas, are line officers, traditionally the rated officer has enjoyed a status similar to that of the Naval unrestricted line officer and the general-duty officer of the Coast Guard. With the Air Force's major emphasis upon the airplane as a weapon system, the rated officer has had opportunities for a wider variety of assignments with higher levels of prestige than the nonrated officer.

With the advent of the missile as an increasingly important type of weapon system, the role of the rated flying officer is likely to diminish in the future. Flying duty, however, will continue to be an important part of the Air Force for many years to come. Personnel projections into the 1970's indicate a continuing need for navigators. The demand for new pilots is likely to decrease in the middle and late 1960's, but pilot duty will probably continue to be a strong area of specialization in the foreseeable future.[20]

Flying-training schools of the Air Force are operated by Air Training Command (ATC), with headquarters at Randolph Air Force Base, Texas. If the officer is able to meet the physical and mental requirements, he goes to one of several bases for preflight, primary, and basic training. This consolidated fifty-five-week flying training course includes 262 hours of flying, 430 hours of classroom instruction in flying, and 329 hours of instruction required of any junior Air Force officer.[21] The fifty-five weeks of training costs $82,400 per pilot.[22]

When he completes preflight, primary, and basic flight training, the officer receives his wings and is a qualified, or undergraduate, pilot. After he is thus qualified, he goes to graduate or combat-training schools operated by the Tactical Air Command, the Strategic Air Command, and the Air Defense Command. There he receives instruction in fighter, bomber, and fighter-interceptor aircraft,

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[20] *The Air Force as a Profession* (Maxwell Air Force Base, Ala.: Air Force ROTC, January 1963), p. 116.

[21] *Ibid.*, p. 117.

[22] *Department of Defense Appropriations for 1965: Part 1*, Hearings before a Subcommittee of the House Committee on Appropriations, 88th Congress, 2nd Session, p. 290.

and becomes completely qualified for cockpit duty in a tactical organization. This training phase requires an additional six to eight months, it costs as much as $0.5 million per pilot,[23] according to unofficial estimates.

If the officer is selected for navigator training, he will be sent to one of several Air Training Command bases for a twelve-month undergraduate course consisting of 160 hours of flying training, 687 hours of navigation instruction on the ground, and 565 hours of officer training. The program of instruction includes such subjects as radar, astronomy, mathematics, aircraft instruments, navigation, electronics fundamentals, and airmanship.

Upon completion of the undergraduate course, the navigator is usually sent to a more highly specialized thirty- to forty-week advanced course, after which he may be assigned to duty with an operational unit having a mission such as air refueling, transport, air rescue, or troop carrying. Later he may take even more advanced courses to become specialized in all-weather interception, electronic warfare, and radar bombardment.[24]

For the new officer who will not become rated, literally hundreds of courses are conducted by the Air Training Command to help him to become qualified in a specialty. These courses are considerably shorter and less expensive than the flight-training courses. They may be as short as a few days or as long as a full academic year. For career purposes, the longer courses tend to serve the nonrated officer in much the same manner as the flight-training courses serve the rated officer. Nearly all of the officer training courses conducted by the Air Training Command are also open to rated officers. Unlike the rated officer, the nonrated officer may acquire several months of duty experience on the job before he is selected to attend a training command course.[25]

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[23] *Ibid.*, p. 284. Francis V. Drake, "We've Got the Planes, What about the Men?" *Readers' Digest*, 83, 489 (February 1963), 114. Pilot training is the most expensive and hazardous of all service specialized-training programs. As noted in Table 1, the annual amount requested for all service flying training was $726 million. In 1964–65, the annual pilot-training rate was 1500 in the Army, 1700 in the Navy (including Marine Corps and Coast Guard pilot-training requirements), and 1700 in the Air Force. Hearings on Military Posture and H. R. 9637, before the House Committee on Armed Services, 88th Congress, 2nd Session, p. 7077.

[24] *The Air Force as a Profession, op. cit.*, p. 118.

[25] "USAF Formal Schools Catalog," *Air Force Manual 50-5:* Part III, *passim.*

Like the other services, the Air Force has an extensive program of specialized education conducted in its own Institute of Technology and in civilian institutions to prepare its officers in a variety of specialties.

Specialized Education Programs

Over and above the highly complex *training* programs designed to prepare officers for their specialties, the Armed Forces have a number of programs that might be called *specialized education.* These programs consist of high-level courses, often at the graduate level, and are conducted in degree-granting institutions in both the military and civilian establishments. Although distinction is made between specialized training and specialized education, many of the specialty-training courses are also at a high level, often requiring a bachelor's degree as a prerequisite. The specialized education programs presented here, however, are sufficiently different to be discussed separately.

The military institutions primarily concerned with specialized education are the Naval Postgraduate School at Monterey, California, and the Air Force Institute of Technology at Wright-Patterson Air Force Base, Ohio, a constituent part of Air University.

Naval Postgraduate School. The Naval Postgraduate School has had a long and interesting history.[26] It began in 1904, when a small group of officers were enrolled in a marine engineering curriculum at the Naval Academy at Annapolis. The success of this course led to the establishment of the School of Marine Engineering in 1909, which was designated the Postgraduate Department of the U.S. Naval Academy in 1912. Except for a period during World War I, when it was discontinued, the school remained at Annapolis until it was established at Monterey, California, during the period 1948–51. Between 1912 and 1961, various curriculums, programs, and schools were added to the complex. A reorganization in 1962 resulted in the combination of the separate schools into one, with the academic programs being put under the dual control of a Naval director and a civilian dean.

Today's students are grouped into the curricular programs of aeronautical engineering, electronics and communications engineer-

[26] *United States Naval Postgraduate School Catalogue for 1963–64* (Monterey, Calif.), pp. 10–12.

ing, ordnance engineering, naval engineering, environmental sciences, naval management and operations analysis, one-year science, and general line and baccalaureate. Within these areas the student follows a common core program for at least half of the period of residence.

Faculty members are assigned to one of eleven departments covering the areas of engineering, mathematics and physical sciences, management, naval warfare, social sciences, and humanities. About two thirds of the faculty are civilians; the rest are Naval officers.

The programs of the Postgraduate School include: engineering and scientific education leading to specific bachelor's degrees, master's degrees, and doctorates; management education leading to the master's degree; undergraduate education leading to a bachelor's degree; and Navy professional education which may lead to an officer's selection for a two- or three-year engineering or science curriculum for advanced degrees. The Postgraduate School is authorized to confer bachelor's degrees, master's degrees, or doctorates in engineering or related fields and is accredited by the Western College Association and the Engineers Council for Professional Development.

Periods of residence vary from one to three years, depending upon the program being taken. In addition to the courses taken in residence at the Postgraduate School, considerable use is made of civilian colleges and universities to finish programs begun at the Postgraduate School or to provide complete programs leading to advanced degrees.[27]

> In 1961, some 287 graduates were awarded baccalaureate degrees, 175 were awarded master's degrees, and one received his doctorate. Expenditures for the school totaled $14.051 million for 1752 students.[28]

The increasing importance of competence in a technical specialty is indicated by a recent statement by the Chief of Naval Personnel:

> We are placing much more emphasis on specialization in the Navy today than we have in the past. In other words, the so-called rounded career is no longer as important as the officer's specialization or his subspecialization. We are now requiring all officers to have a subspecialization of some sort. All unrestricted line officers,

[27] *Ibid.*, p. 53.
[28] *The Federal Government and Education, op. cit.*, p. 59.

> such as I am, have a primary specialty: warfare at sea. Naval warfare. That is my prime specialty. My second specialty, my subspecialty . . . is communications. I am a postgraduate in communications. I specialized in communications during my younger years until I was able to get excommunicated. But each officer, today, is going to be required to have a subspecialty. Now, it could be in strategic planning, . . . political military policy, . . . management, [or] . . . international relations. But mostly it is going to be in technical areas like communications, ASW [Antisubmarine warfare] or missilry. . . . I tell each selection board today . . . that they are not to consider the well-rounded background as important as how well a man has performed and the degree of specialization he has achieved in something other than his naval warfare specialty.[29]

Air Force Institute of Technology. The history of what is now the Air Force Institute of Technology (AFIT) dates back to World War I, when an Army and Navy School of Aeronautical Engineering was opened at the Massachusetts Institute of Technology.[30]

This school closed after graduating two classes. In 1919, however, the Air School of Application was established at McCook Field near Dayton, Ohio. In 1920 it was redesignated the Air Service Engineering School. Students were instructed by specialists assigned to McCook Field.

In 1927 the school was transferred to Wright Field at Dayton, Ohio, along with the expanded engineering and test facilities of McCook Field. It was then renamed the Air Corps Engineering School. It remained in operation until shortly after the beginning of World War II, when classes were suspended. In 1944 it was reopened to conduct short courses to meet emergency needs.

At the close of World War II, a survey of the officer corps indicated a lack of educational attainment and insufficient technical capability among Army Air Force officers. Consequently, the Engineering School was reopened and expanded to form the Army Air Forces Institute of Technology. When the Air Force became a separate service in 1947, the school was renamed the Air Force Institute of Technology. In 1950 it was placed under the command jurisdiction of Air University. At present, the Institute consists of three schools: the School of Engineering, the Civil Engineering Center, and the School of Systems and Logistics. The Institute was

[29] *Department of Defense Appropriations for 1965: Part 1, op. cit.*, p. 195.
[30] *Air University Air Force Institute of Technology Catalogue, 1963–65* (Wright-Patterson Air Force Base, Ohio), pp. I-6–7.

selected by the Department of Defense to operate the Defense Weapons System Management School established in September 1964. The mission of this new school is to develop in officers and civilians from all services the skills required in managing the acquisition of complex, costly, and high-priority weapon systems.

In addition, the Institute administers the Air Force programs in civilian colleges and universities. Each year approximately 4000 students enter programs under the jurisdiction of the Institute.

The School of Engineering and the School of Systems and Logistics are accredited and, like the Naval Postgraduate School, are authorized by Congress to grant baccalaureate and advanced degrees. The accrediting associations are the North Central Association of Colleges and Secondary Schools and the Engineers Council for Professional Development.[81]

The Institute's degree programs are set up largely for the purpose of giving advanced degrees in areas of importance to the Air Force. The resident School of Engineering conducts a small undergraduate program. All courses in the Civilian Institutions Program are directed toward meeting requirements for advanced degrees.

Officers usually enroll in AFIT resident and civilian institutions programs early in their careers. Except for shorter nondegree courses in the Civil Engineering Center and the School of Systems and Logistics, enrollment in the programs is voluntary. The usual procedure is for the student to apply to the Institute for a Certificate of Eligibility. If the Institute review of his educational background shows that he is qualified, he is admitted to a program after Headquarters USAF determines that he can be made available for the period of time required to complete the program.

Specialized courses leading to advanced degrees in the resident programs are: aerospace and mechanical engineering, astronautics, electrical engineering, nuclear engineering, engineering physics, engineering-space physics, reliability engineering, space facilities, and systems management. These courses range in length from one to two years and usually lead to a master's degree. The quotas for fiscal years 1964 and 1965 called for an entry of 293 students into these resident degree programs. In addition, two two-year undergraduate programs in the fields of aeromechanical engineering and electronics are conducted with annual enrollment of thirty students per class.

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[81] *Ibid.*, p. I-8.

In 1964, the Air Force estimated that in the next ten years, 22,000 officers would require increased technical education in scientific, engineering, and managerial specialties to develop, procure, support, and employ the sophisticated weapon systems that would be developed.[32] In 1963, 25,804 Air Force officers were assigned to positions requiring scientific and engineering knowledge and experience. At the same time, the total Air Force inventory showed only 18,934 officers with baccalaurate or higher degrees in these two fields. The national shortage of this kind of talent will make it difficult for the Air Force to recruit the needed specialists through its commissioning programs. Hence, AFIT programs are necessary in order to provide these kinds of educational programs for career officers.[33]

Civilian institution programs. Over the years the Armed Forces and civilian colleges and universities have enjoyed a relationship that has been marked by an unusually high degree of successful cooperation and coordination. This cooperation has not only resulted in the production of large numbers of officers in the ROTC program, but also in a large amount of defense research which has been of mutual benefit to the Armed Forces and the civilian institutions. The outstanding efforts by civilian institutions to provide off-duty educational opportunities for military personnel are described in detail in Chapter VI.

Each year civilian institutions contribute to the effectiveness of the Armed Forces by providing specialized education for thousands of military officers to meet specific service requirements.

The training of Army personnel at civilian institutions dates from 1868, when special congressional legislation authorized the training of medical officers. The action was followed in 1871 and 1873 by further legislation which granted similar authority to the Chief of Engineers and the Chief of Ordnance, respectively. A more general program was introduced in 1914, at the beginning of World War I, and was later formalized in the National Defense Act of 1920.[34] Currently, the services are allowed to send not more than 8 per cent of their authorized personnel strength to civilian colleges and universities.

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[32] *Department of Defense Appropriations for 1965: Part 2, op. cit.*, pp. 440–41.
[33] *Ibid.*
[34] *Army Report*, contained in the 1963 unpublished proceedings of the Defense Advisory Committee.

The Army enters about 400 officers per year in civilian institutions; since 1946 some 4000 officers have received postgraduate education in civilian institutions.[35]

In 1963 the Army had students enrolled in 81 U.S. and nine foreign universities for the purpose of providing education to produce officers who could deal effectively with political, economic, scientific, and social problems related to their military duties. A small number specialize in scientific fields to enable them to work effectively with civilian scientists and to direct research and development projects for the Army. Other officers specialize in personnel and industrial management. Civilian institutions are also used by the Army to give language training not provided in Army schools and to provide qualified faculty members for the Military Academy and the Army service schools.[36]

As of April 1963, the Navy had 285 officers in forty-eight civilian institutions taking a wide variety of postgraduate programs including engineering and physical sciences, social sciences, and humanities. The Navy also indicated that it intends nearly to double the number of officers participating in postgraduate programs by 1969.[37]

The Air Force program with civilian institutions is designed to provide advanced education in engineering, physical sciences, arts and social sciences, and management. The largest numbers of students are enrolled in the engineering and physical sciences courses. Also, the program provides for the preparation of Air Force Academy instructors in many fields appropriate to the undergraduate curriculum of the Air Force Academy. During the fiscal year 1965, more than 1300 officers were entered into the programs with 80 cooperative institutions.[38]

An interesting Air Force postgraduate activity is the Strategic Air Command Minuteman Education Program, conducted at five minuteman missile complexes. The instruction at four of these sites is provided by civilian institutions; the faculty of the Air Force Institute of Technology provides instruction at the other. The purpose of the program is to bolster the morale of launch-control officers

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[35] *Department of Defense Appropriations for 1965: Part 2, op. cit.*, pp. 71, 75.
[36] *Army Regulation 350-200.*
[37] *Department of Defense Appropriations for 1964*, Hearings before the Subcommittee of the Senate Committee on Appropriations, 88th Congress, 1st Session, on H. R. 7179, pp. 572–73.
[38] *Air Force Report*, contained in the 1964 unpublished proceedings of the Defense Advisory Committee.

who are required to spend long and boring hours on the alert at missile sites and to provide education in critical areas without loss of duty time. Courses now included in the program lead to master's degrees in aerospace engineering, business administration, industrial management, or administration. There is also an undergraduate program in mathematics and science. When the program is fully operational, the Air Force intends to have a total enrollment of 800 officers.[39]

The civilian institutions programs of the Marine Corps and the Coast Guard are, of course, smaller than those of the Army, the Navy, and the Air Force. The Marine Corps relies heavily upon the Navy Postgraduate School but has programs in financial management at George Washington University, in management and industrial engineering at Rensselaer Polytechnic Institute, and in personnel administration and training at Stanford University.[40]

The Coast Guard uses both the Naval Postgraduate School and the Air Force Institute of Technology, as well as eight civilian institutions, in such fields as management and administration, naval engineering, civil engineering, aeronautical engineering, electronics engineering, and oceanography.[41]

As was true of ex-servicemen on the GI Bill after World War II, the success of the military officers in their academic pursuits is particularly noteworthy. Not only has the rate of successful completion been high but, as Masland and Radway have observed:

> Not the least important result of the assignment of officers to civilian institutions for graduate study, particularly in the social sciences, has been the contribution they have made to these institutions. We have talked with a considerable number of professors about these men and with very few exceptions they have testified that the officers have made excellent students and have added much to the conduct of seminars and their activities. Moreover, the association of professor and officer has served to increase the mutual understanding between the two professions that was stimulated during World War II.[42]

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[39] *Ibid.*

[40] *U.S. Marine Corps Report*, contained in the 1963 unpublished proceedings of the Defense Advisory Committee.

[41] *U.S. Coast Guard Report*, in *ibid.*

[42] John W. Masland and L. I. Radway, *Soldiers and Scholars* (Princeton, N.J.: Princeton University Press, 1957), p. 305.

Collateral Training Programs

In addition to the many instructional programs designed to produce specialists, the services conduct a variety of training and educational experiences for both enlisted and commissioned personnel, the object of which is to orient or to train specialists of various ranks and experience to use their skills under certain specialized conditions or circumstances. For the purposes of this monograph, this type of training is termed *collateral instruction* in order to distinguish it from specialist training. These collateral programs do not lead to a MOS, AFSC, or other military specialty designation; rather, the fact that the specialist has had this kind of experience is indicated by a prefix or suffix to his four-digit numerical specialty code.

Many of the conditions for which collateral instruction is designed may be characterized as either physiological, environmental, or tactical in nature.

Examples of physiological conditions that call for collateral training are diving training for intelligence or demolition specialists, training in altitude and explosive decompression chambers for specialists who must perform duties in military aircraft at high altitudes or in tactical submarines, and training in coping with the phenomenon of weightlessness for aviation and astronautic specialists or for other specialists who would be expected to perform duties under similar conditions.

Other special environmental conditions in which military operations take place require the additional training of specialists. One such situation is in the classroom where the specialist acts as instructor. In the Armed Forces, military personnel—both enlisted and commissioned—spend much of their time either being taught or teaching others. The services require specialists to attend instructor-training schools and courses before they are permitted to teach their specialty. These courses are usually about six weeks long and provide intensive practical teaching experience, as well as instruction in methods, evaluation, and educational psychology.[48]

Escape, evasion, and survival in the arctic, jungle, desert, and at

[48] "Military Training," *Army Field Manual 21-5;* "Techniques of Military Instruction," *Army Field Manual 21-6;* "Manual for Navy Instructors," *NavPers 16103-B;* "Techniques of Effective Military Instruction," *Marine Corps Educational Center Order P1500. 10B;* "How to Instruct," *Air Force Manual 50-9.*

sea pose special environmental problems for specialists operating in or over these areas and require collateral training.

Duty as civil affairs officer in an occupied foreign area may be temporary, but it requires special training. Competence in the control of damage aboard ship and the disposal of explosive ordnance are skills required in the Navy, the Marine Corps, and the Coast Guard of a wide variety of specialists. Duty as a pilot, in the Army, is not a basic MOS for commissioned officers. It is a skill that is collateral to any commissioned MOS, and officers of all ranks and specialties take collateral pilot training. Career pilots in the Army are warrant officer aviators and civilians on contract.

Many specialists require additional training before they can operate in certain tactical situations. Clandestine and covert operations may call for skills in camouflage, karate, foreign languages, underwater swimming, parachuting, photography, and other special competences. Participation in amphibious landings or in airborne operations necessitates additional training for, among others, medical, chaplain, and intelligence specialists.

Another type of collateral duty that officers may be called upon to perform from time to time is that of military attache in a U.S. embassy abroad, that of military adviser to a foreign government. Or officers may be required to take part in counterinsurgency operations. Languages and associated area education concerning the country to which the officer is to be assigned may require periods of training as long as two years. The Defense Language Institute, with branches in Monterey, California, and in Washington, D.C., conducts courses for all services in over thirty languages, and language courses in civilian colleges and universities and proprietary schools are used as well. Used in this sense, proprietary schools are commercial language schools operated for profit, as contrasted with nonprofit public and privately controlled institutions. The term is found frequently in educational literature. In addition, some officers take language and area instruction at the Foreign Service Institute, operated by the Department of State. The Defense Intelligence School in Washington and the Military Assistance Institute in Arlington, Virginia, offer collateral instruction for military personnel who are going to these foreign assignments.

The Institute operates under the direction of the Assistant Secretary of Defense (International Security Affairs). Its course provides

a general coverage of U.S. foreign policy and military strategy as well as an understanding of the organizational relationships among and the functions of the many federal agencies which have responsibilities for military assistance to allied governments. The curriculum includes a detailed study of the country to which the specialist is to be assigned—its history, geography, economics, politics, military forces, and the status of U.S. and Soviet aid programs. In 1964, 8564 military personnel were working abroad in military assistance advisory groups and missions.[44]

Under the Military Assistance Program the services train approximately 25,000 military officers of our allies each year—about 8000 in U.S. schools overseas and some 17,000 in service schools in the United States, at an annual cost of about $80 million.[45] Both the Army and the Air Force operate schools in the Canal Zone for military personnel from Latin America.[46]

Finally, management training is another type of collateral program. As the specialist advances to senior rank and is required to assume larger managerial and supervisory responsibilities, training programs are geared to his needs. A wide variety of fiscal, logistic, transportation, and personnel management courses are used by military specialists, both within the services and in civilian colleges and universities. Because defense expenditures represent such a large proportion of the total federal expenditures, improved management techniques and procedures are stressed at all levels of command. A large increase has also taken place in the degree of centralization of logistic operations and the number of logistic activities that cut across all services. This tendency is expected to continue and to increase.[47] Education and training in joint logistics management is a natural and necessary corollary to this trend in order to provide trained and educated officers and civilian employees to staff these activities.

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[44] *Department of Defense Appropriations for 1964: Part 3, op. cit.*, pp. 42, 157, 177, 296. See also William R. Kintner, "The Role of Military Assistance," *United States Naval Institute Proceedings*, 87, 3 (March 1961), pp. 76–83.

[45] *The Federal Government and Education, op. cit.*, pp. 110–11.

[46] *Department of Defense Appropriations for 1964: Part 4, op. cit.*, pp. 311–12, 845.

[47] *Study of Management Education and Training: Part 4.* Department of Defense, Special Logistics School Task Group Report (January 18, 1963), pp. IV-6.