

AIR OFFICER'S EDUCATION*

Captain Robert O'Brien

THERE are three distinct elements in the education of an Air ▲ Force officer: military instruction, technical or professional training, and general education.

Air warfare has come upon us so rapidly that the military instruction of Air Force officers has never been thought out and analyzed as a new military problem. The traditional army basic training has consequently served as the model for military instruction in the Air Force. Close-order drill, bivouacs, field exercises and the other common routine ground-training maneuvers are as much an introduction to military life for a young flyer as they are for a foot soldier. This approach overlooks the fact that each occupation has its own peculiar psychology, its own dialectics.

Flying, which has been a dream of mankind throughout history, adds a new dimension to man's existence. There is no experience in a flyer's life prior to his air training that prepares him for this dimension, whereas an infantryman learns to walk and to doubletime as a child, and a sailor learns the problems involved in handling a ship through the experience of operating and directing a wheeled vehicle over a definite course. When we subject the flyer to the same basic military instruction as an infantryman, we not only delay his orientation to this new sphere—the air—but we doubly handicap him by forcing him to act two more long years as an infantryman.

As there is no preparation for the flyer in ordinary life, a special emphasis is needed to steep him in his new element from the

^{*}Reprinted from Air University Quarterly Review 1, no. 2 (Fall 1947): 9-24.



very beginning of his military instruction. And emphasis means that he must be torn away from his habits of thinking of the earth as a place to be walked upon or driven over. The infantryman thinks of assaulting frontiers and breaking the resistance of armies. The sailor envisages the blockading of sea lanes, and victory through attrition and starvation. But total warfare, the new concept which has grown out of the development of the airplane, finds its most effective expression in the destruction of centers of production. The airman must be taught to think about methods which will paralyze the economy of an enemy nation; further on in this article, the study of economics is discussed as the major subject of general education which provides the airman with this knowledge.

The Air Force will never realize its full potentialities from its own element, the air, unless the airman is first allowed to develop his soldierly qualities out of this element. He must learn to look at everything from the air, including his problems of drill, discipline, comradeship, courage, organization, and administration. The preflight inspection, for example, might be the basic act around which all the discipline of the Air Force centers or grows. By learning to look at the world of the air, all misleading symbols, such as closeorder drill, would be done away with. If flying is at the center of the military instruction program, other related subjects will fall into place naturally and acquire greater meaning, "care and feeding of troops," "transportation and troop movement," "military history and biography," and "survival"—all these subjects which have become complicated in fast-moving aerial warfare should be approached by airmen who are familiar with the possibilities and limitations of Air Power.



A subject of military instruction that is lightly touched upon in the Air Force is "physical training." All voluntary or ordered hardship, such as training to get along with little or uncomfortable sleep, to survive on short rations, to know something about self sufficiency, should be included in military instruction. In the past, the Air Force has been able to provide its men with more conveniences than were necessary. It is fine if this can be done without interfering with operations, but unless the men have exerted themselves at some time to sacrifice these comforts, constant grumbling will always plague the field commander. The programs of physical training should not lead officers to think that they are passively undergoing this as a training, when in reality they are showing themselves capable of surviving a rugged experience. As long as we call it "physical training," we shall have no lasting results because the exertion must be an attainment of the character and not of the muscles.

The Air Force was founded and developed to full maturity, in only thirty years, under the pressure of two wars. This precocious growth has hindered the establishment of great traditions which mean permanency in any institution, for without a heroic past no really hopeful future is possible. This is a secret of institutional life which must be recognized in the Air Force. Continual neglect of tradition might lead to an argument by the other services that the Air Force is not permanent, but merely a new development which itself is now superseded by guided missiles. Therefore, the Air Force must insist that today it is the heir and the instrument which carries on the great military traditions of this country. In its exploration of new frontiers, in its responsibility as the first line of defense, and in its readiness to dissent from untenable military opin-



ions, the Air Force represents the continuation of the achievements of Lewis and Clark, of Fremont, of Perry, of Byrd. Our present pioneering in the Arctic and our explorations in the ionosphere represent a modern conquest of frontiers. The study of military history and biography should be included as an essential part of the military instruction program in all service schools so that this background could be added to the consciousness of the officers of the present Air Force.

THE SECOND element of education—specialist training—is an outgrowth of the union of economics and experimental science. Science has endowed technicism with the possibility of limitless growth, and industry has applied this knowledge in the development of innumerable diverse occupations. Specialization has thus become the means for advancement in modern society, yet we know that a wisely ordered society cannot be wholly controlled by specialists, and this same condition holds true for the Air Force. Modern warfare cannot be fought by the general-duty officer or soldier, but neither can the expert be allowed to determine what chances will be taken, for the expert is a specialist only in materials and techniques. Training a pilot in electronics will not produce a better commander, for it is not the possession of techniques that defines leadership. This situation was evident during the war, when many squadron commanders who had been in the Air Force long enough to have been thoroughly cross-trained were incapable of providing the leadership which the position required.

In politics, in art, in social usages, in the other sciences, the expert is apt to be an ignorant man. Because he knows his own tiny corner of the universe, he is led to believe that he may dominate



fields outside his profession. An examination of the graphic presentation of the "Army Air Force Educational System," depicting the career outlook of an Air Force officer, discloses no evidence which shows the specialist, despite his cross-training, growing into a wise, mature leader. The quality of leadership proceeds from the inner convictions of a man, and no amount of mechanical knowhow can substitute for this essential.

Despite the dangers in a system of specialization, no one can dismiss the value and necessity of a division of labor either in modern industrial society or in the modern army. The extent to which technological developments have been applied to military weapons staggers the imagination. Today the Air Force makes more use of these complex weapons than any other arm or service, and therefore it requires technical schools for instructing technicians which are comparable to the shops and laboratories in industry. Gone are the days in which basically qualified soldiers could man the several branches of the army. It has been necessary to diversify labor within the military establishment, and the classification system for Military Occupational Specialties has become similar to that of Civilian Occupational Specialties. Although the positions are broadly defined as possible, the number approaches a thousand, with twelve different specialties for enlisted radar mechanics alone. The training of individual specialties does not involve difficult educational problems, for the science of job analysis and the improvement of training materials have greatly facilitated the specialist training of an unskilled soldier.

Today when real technical progress is achieved in a particular field, it is usually due to a combination of two or more existing specialties. Thus experimental science is science in a constant flux,



and it is anti-specialistic. The intrenched specialists usually fight such integration, declaring it to be unwise, or unnecessary, or impracticable, or of merely transitory value. However, the profusion of cultural and technical possessions is such today that it threatens to engulf mankind. It is urgent, therefore, that we base our specialist training, its methods and instructors, upon the plain, humble principle that the student cannot learn all that we would like him to know. Since all officers and enlisted men have become specialists within the military profession, the most serious task now is the necessity of developing within each specialist a larger view of his contribution to the total social effort. This is possible only if he is given a broad familiarity with the men and ideas which comprise his heritage.

THE REMAINDER of this article will deal with general education, its definition, theory, development, content, and necessity in an aggressive, specialized, purposeless society. There is an airy and unspecific connotation to "general," for in uncertain circumstances we are carried through largely by the quality of our nature. In this study the word "general" signifies "universal," and it applies to and is concerned with the recurring and changing roles that we enact in our lifetime.

The universal theme of America is a belief that life holds a promise for all men, that limitations must not be imposed upon their development, and that this life can only continue as long as mutual trust exists among men. Many disintegrating ideas and practices have weakened this faith: in an ever-changing society, its true meaning and power must be constantly rediscovered. Education is not the only means of achieving this, but it is one of the in-



stitutions that men have built to accomplish it. There is another side to general education that emphasizes the recurring roles of father, judge, teacher, soldier, politician, worker, player, lover, and philosopher which each man lives in his lifetime. These actions and occupations are not produced in us mechanically. At each moment it is necessary to make up our minds whether we shall live vitally or whether we shall pass things by. Even when we seem to drift, to make no decision, aimlessness is our decision. The complexities of modern society have striven to split the personality: narrow specialization in the economic field is disorganizing family and community life; bureaucracy threatens to put an end to personal government; and pragmatism as a philosophy has substituted empiricism and expediency for authority and responsibility. Until 1939, life in this country was drifting into anarchy, and the tradition of liberal education which was concerned with the development of the whole man was being lost in departmentalization.

During the last few years, a general re-appraisal of college education has been taking place, and widespread plans for reshaping curricula have been proposed as a response to the need revealed and created by the catastrophe of a World War. Educators began to realize that peace and survival were frail entities, that social responsibility could not be delegated. The isolationism of this country did not belong to any class or section; it existed primarily in the hearts of the people. We know now that individuals must again begin to act energetically and directly in all of their roles, that they must become familiar with their history and with their society. General education is concerned with a people's attitudes and with the spirit in which they face life.



The renewed interest in general education has also been brought about by the contempt with which many college graduates view higher learning. Many have held that the essential benefit of college life resided in the social intercourse and the contacts that were made. As knowledge became investigation, information, and opinion rather than the pursuit of truth and wisdom, real intellectual development was frustrated.

When knowledge becomes cheap, mass production methods must be introduced to support the facade of learning. There has been a noticeable trend in the last thirty years to let students obtain a college degree in the least possible time and in the easiest possible manner. Pseudo-scientific systems of measurement have been devised to determine the amount of learning an individual possessed, and education has been reduced to a quantitative analysis. Here, again, knowledge was separated from purpose and became mere information which was readily forgotten. In professional and technical training the emphasis upon "scientific" testing methods and teaching procedures, optimum classroom size, and student load is well rewarded, but in general education, where there is a spirit to transmit, where great ambitions and the feeling of infinite growth are the conditions of learning, these practices emasculate teaching and degrade education. Any plan of general education must rule out shortcuts whether they be correspondence courses, intelligence tests, or other impersonal agencies which attempt to peddle education as if it were the latest breakfast food.

LET US now consider seven specific subjects in the field of general education and the contribution each can make toward bettering the performance of duty of every officer.



Knowledge, fundamental to the understanding of America and to the true meaning of our lives, is derived from the study of history. One of our greatest errors in studying history is that we generally study it on a small scale, in textbooks and outlines. History becomes an affair of abstract centuries and the struggles, agonies, passions, and uncertainties of events disappear. Issues which at the time were confused seem clear, outcomes seem obvious and inevitable, and we never realize how near to failure were the triumphs that to us seem easy, or how close to success were complete and disastrous failures.

Deterministic interpretations have confused and clouded the truly universal factor of history, the element of human nature as it struggles with an uncertain or unpredictable future. Geographers have won and lost history, due to geographical or climatical conditions. Marxists have found a class war in every uprising. Interpreting the appearance of an individual genius or the role of intellectual and moral qualities in these terms may satisfy the theorists, but it is no comfort to the human being who wavers, suffers, and sacrifices.

Popular government is based on the decisions of the majority. In the United States, if people are to decide wisely, they must know as many of the useful lessons from the collective memory of mankind as are available. The courage, the wisdom, and the faith of the people who renounced and sacrificed and died for us, inspire us to become worthy of them. This cannot be fully expressed in education, and yet education is the only peaceful method of learning these lessons.

If we are to have the best chance to avoid some fatal error in the conduct of our future affairs, we must break the spell of the purely American past. We need to find out which examples have



shaped men and what real choices lie ahead. Our first and most obvious task is to see that our officers are immersed sufficiently in history to act wisely in relation to Poland, Greece, Iran, China and all other parts of the world in which they are representing this country. Our foreign policy since the end of World War I has been partial and complicated, and our failures have been due to indifference, faulty analysis, and irrelevant emotion.

To know ourselves we must begin with the fact that the United States is the daughter and the hope of Europe, and that our heritage is directly drawn from the society of Western civilization. We must learn that our legal system, our universities, the rise of towns, and the development of modern science, are all intimate parts of our own history which represent marvelous responses to problems which at one time seemed insurmountable.

The second subject of general education is science and mathematics. Some understanding of the physical scheme of the world and the organic life therein is a prerequisite for citizenship in the Air Age. Unfortunately, most science courses in colleges are designed as introductory courses for the professional scientist. This is also true of college mathematics courses. There is no reason why the ordinary man needs this information. Even the professional man, the doctor or the engineer, is burdened in many courses with the study of scientific investigation. Mastery of these professions demands apprenticeship and repetitive practice, but not the attempt to turn people into scientists. The real scientist is a creative person, and his career involves a calling and an asceticism which is quite unworldly.

Even the courses designed for the technical or professional man are far beyond the need of general education in science for an officer. In considering the place of science in general education,



the Harvard Report on General Education in a Free Society states, "Most of the time in such courses is devoted to developing a technical vocabulary and technical skills and to a systematic presentation of the accumulated facts and theory which science has inherited from the past. Comparatively little attention is given to the examination of basic concepts, the nature of scientific enterprise, the historical development of the subject, its great literature, or its interrelationship with other areas of interest and activity." The general course in science is taught in very few American colleges, and on the whole science departments contribute the greatest proportion of backward looking, anti-intellectual, mechanic-minded members of the faculty.

We glibly talk about our "scientific age" and the need for the "scientific habit of mind." We mean by this a recognition of the fact that our lives, from the kitchen to the battle line, are shaped by the influence of machinery embodying scientific principles. On a large scale, all major social questions involve scientific matters. Everything from soil erosion and air transport to water supply and public health involves at some point matters of fact and theory from the realm of science. In spite of the fact that the sciences have been taught for fifty years in schools and colleges, the understanding of scientific truth and procedure which is necessary for intelligent leadership in public life is largely lacking. We tend to "leave it to the experts." The result is that we are ruled in public life by scientific ignoramuses and in the scientific laboratory we have, for the most part, political and social illiterates.

In mathematics students should be given an understanding of mathematical systems and their development. The role of mathematics in gaining knowledge of the natural world, its special and quantita-



tive relations, is as important as the mastery of the logical structure of algebra, geometry, trigonometry and calculus. Some conception of the theory of numbers, familiarity with statistical analysis, symbolical representation, and the calculation of chances, may aid in detecting many fallacies in a world that swarms with them.

The physical sciences are probably more obviously related to Air Power than any other subject. Consequently, most Air Force officers will accumulate a large amount of informal knowledge about the physical world. In formal education, however, such fields as the theory of the structure of matter—molecular, atomic, electronic—and theories of its variety and change, will serve to enforce their understanding of the principles employed in the development of the latest weapons. Air Force officers should also be familiar with the fundamental chemical phenomena, concepts, and classification: elements, compounds, affinity and stability, ionization, isomerism, and the periodic table. They should also know the present physical theories of waves and radiation, such as wavemotion, sound, and light; the quantum theory of light and matter, and the theory of relativity, as well as the fundamental laws of energy and the transmutation of matter. Finally, in the physical sciences, some consideration should be devoted to geological fact and theory, and to astrophysical phenomena and theory. All of this is the basis of language in the Air Age.

In the biological sciences, a general course should include the structure, function, variety and relationships of living organisms and the influences of heredity and environment in the evolution of life.

A review of the field of science and mathematics would suggest that treatment could be given in only a survey course or as it is presented now—an introduction to specialization. This is not necessarily



the case. General education calls for a thorough rationalization of the systems of instruction. The methods of descriptive analysis that have been used and are still in use must give way to the task of simplifying and synthesizing without sacrifice to the quality or substantialness of science. In order for a student to grasp the fundamental ideas of any science—the principles, the methods of procedure, the results—it is not necessary that he receive any great amount of formal training or familiarization with the techniques. Science presented in this manner will not be divorced from our first subject, history, for it will continually emphasize the greatness of man's conquests and will enable the student to realize and appreciate the advances of the qualified leaders of the modern scientific world.

THE THIRD subject in the general education curriculum might be criticized, but the major social problem of our day is the economic problem, and all Air Force strategy and Air Defense centers around a complete understanding of the rationalization and localization of industry. Economics as terminologically used here is not concerned with the superficial aspects of economics, such as tariff, money, banking, corporations, taxes, or the traditional subjects of an economics department in a college. We should be concerned with the study of the reproductive problems of society; the depersonalization of labor in modern industries; the disintegration of community life under the impact of industry; the organization of the large unindustrialized areas of Africa, China, South America and India; the just allocation of world resources; and the decentralization of industry. These are the unexplored fields of economics that lie beneath the ruins of thirty years of war and revolution. Whether the beliefs that led to the founding of this country can survive in this global economic world where unemployment, impoverishment,



inflation, hunger and forced migration strike all nations, is the outstanding question of our future. The professional soldier must think about these questions, for our society will live or die according to our settlement of these violent problems. How to make our own country invulnerable to the moral and physical onslaught of the new era will either be answered by bold thinking done in the Air Force or not at all. The so-called Air Defense will not protect the United States and its productive plant from the atomic bomb. It may be that this plant has to take on a different shape and for this reason economics in our sense of the term is a compulsory subject for the Air Force, for in exposing every officer to this subject we may find the true strategist of the Air Forces.

The fourth subject in the general education of an air officer is philosophy. Men are crushed in all effort today by the commonplace. Mass systems of communication and unconscionable advertising beat on our individuality twenty-four hours a day and further atomize the tenuous organization of life. To attempt to uphold anything sacred, any value, anything of quality, is an almost impossible task. Everything that is different, that is excellent, anyone who holds out for the best, runs the risk of being eliminated.

An awareness of the great purpose of this country, the hope that it holds for its people throughout the world, lies neglected beneath the surface of everyday living. The absence of any common knowledge of the great ideas and aspirations which our best modern philosophers embody, further darkens an obscure future.

The unwillingness to take "time out" for meditation, the continual noisiness of our surroundings, the uncertainty of a drifting course, the immense complexity of modern life, all are provocations to discover and examine the systems, the problems, and the thoughts



of present and past philosophy for guidance in our confusion. Philosophy is the product of men who have suffered, endured, experienced, and comprehended the diversity and universality that underlie all things. William James said, "To know the chief rival attitudes toward life, as the history of human thinking has developed them, and to have heard some of the reasons they can give for themselves, ought to be considered an essential part of liberal education."

Soldiers in the recent war demonstrated that courage, obedience, judgment, and humor are present in our personality today as much as they ever were. But in war the issues are obvious, the choice is narrow and limited. In the times that lie ahead in peace the path is not clear; right and wrong often are hidden in mist. Uncertainty will inevitably lead to indecision. The profuseness of the sciences, far from strengthening our faith, has upset our unity and obscured our sense of values. We must remember that the German army fell an easy victim to a seemingly unbelievable political philosophy. In peace, extraordinary effort is needed to insure that our Air Force is soundly established in harmony with our fundamental beliefs. As Eugen Rosenstock-Huessy says in The Christian Future, "Thinking for soldiers is a very new aspect of research and education. But this is the reform of our educational system which . . . (they) demand. . . . Higher education in the future can only be planned for people who serve and fight life's battles, on whatever fighting front, who can see the flame of faith, the rays of thought, the reflexes in acts, all as incarnations of God's works. . . . Otherwise the bodies of the young might be slaughtered for the dated ideas of a senile science, or the mature ideas of truth might be butchered by the rash instincts of brutes."



A final word is necessary to forewarn us against the survey type of course in philosophy. The typical introductory course in college is a dreary and sterile survey which flashes one after another of the great philosophers before the class and produces only a shallow and useless knowledge of men and ideas. We must continually remember that even the most modern of philosophers did not anticipate and prepare us for the rise of Fascism and the fury of war. Our generation was born into a world of pragmatic thought in which every aspect of life, from war to worry, was overanalyzed. If the coming age is to find a faith to keep itself going, it must search out and study the prophets who understand our moral, economic, and philosophical needs and bury the "Freethinkers" who called forth such monstrosities.

Philosophy prepares us for one of the simple functions of our service. There are times when any commander must speak to his men with conviction. He must select examples that impress them as being true and as being espoused by him. Rare as these occasions may be, they deserve a lifelong preparation because they are the decisive moment. The morale of the troops may be ruined by an unconvincing, cynical, ignorant speech at a funeral or a national holiday or before a battle. The most convincing speeches are usually those of men who have been immersed longest and most vitally in history and philosophy. The philosophers to whom an American officer might well turn are the men whose spirit fills and keeps alive our democratic institutions.

THE FIFTH subject in general education of an air officer is the study of languages. Language instruction has been of superficial quality in all phases of American education and until the war it was



not intended to do much more than to allow a student to identify a foreign word when he saw one. Usually, several years of study in a foreign language produced neither the ability to read, speak, nor to understand the language.

Some common misconceptions have undermined the possibility of serious language study in the past. It was commonly felt that languages could not be learned in school. If one would learn French, one must travel to France and live there. When the war made such travel impossible, we found that we could learn at home. Unfortunately, during the war the Armed Forces had to set up their own language schools and cram German, Russian, Japanese, and a score of other languages and dialects into people whose previous immunity to language seemed absolute. Our success in meeting this problem was due to the concentration and seriousness with which it was sponsored. This provides the clue for successful language study. The curriculum at a future Air Academy must be arranged to allow the student exclusive concentration over a period of four or five months in his chosen language. If it cannot be arranged, no time should be wasted on "seeming" to learn the language.

Considering the amount and length of American education, the ignorance that we show of the language and the culture of foreign countries is amazing. This ignorance has made us inept at conference tables, exposed on the battlefield and in enemy territories, conceited before foreigners whose customs and culture we cannot understand, and incapable of catching the drift and trend of current political and social changes in other countries. The general and his aide who were responsible in our zone for the German press, schools, and mentality did not know the German language.



The ultimate educational value of knowing a foreign language is derived from the chance it gives us to watch the workings of other people like and unlike ourselves. It opens up their literature, philosophy, and shows their contributions to science and religion. Thus the study of a language becomes the study of a people, and we who make this study adopt a second home which allows us to transcend any narrow local nationalism.

The sixth subject in general education of an air officer is fine arts, including music. As this article said earlier, vulgarity is a burden today. The fine arts expose the cheapness and shoddiness of radio and movie productions and provide the main fountainhead by which we refresh our sense of proportion outside of nature itself. This study is not ornamental, but absolutely necessary to our health. Sickness is not only caused by the outside attack of disease upon us, but also by the exposure of our bodies to continuous dissipating influences. The pressure of always "doing" and of never seeing, feeling, singing or experiencing directly the great works of art, exhausts our nervous system. Nowhere is man's ability more evident than in the richness, the diversity, the miraculousness of his expression in music, painting, sculpture, and architecture. The pleasures derived from an understanding of form, balance, arrangement, variation, design, and harmony are a tremendous refreshment to life. General education in the fine arts is not concerned with turning out either a performer or a critic. Primarily, it should acquaint the student with the existence and development of visual and auditory languages in which truth is expressed in sound or color better than it could be in any other medium. Fine arts are as much an introduction to passionate feelings and precise expression as philosophy is. All art interprets life, determines values, and



shapes our character. The type and quality of art that we favor reveals our inner nature whether we are aware of it or not. The leisure of an officer will reflect in his performance of duty, and if he develops no deep aesthetic interests, he will turn to cheapness which will weaken his firmness and his influence over his men.

The seventh and final subject of general education of an air officer is literature. All the subjects of general education are interrelated; this is especially true in respect to literature, for all subjects have their classics, and in the teaching of these a tremendous opportunity exists for introducing books that convey ideas of universal significance. Everyone is familiar with the scheme of basing an entire college curriculum on one hundred great classics. This extreme imposes such severe limitations on study that it does not seem practical, but this use of the classics does surround them with an aura of importance that is often lacking in the conventional classroom where analysis has supplanted understanding. However, aside from a judicious use of the classics as texts in all courses, literature should command a field of study in itself, for it is only by familiarity with the classics that they are kept alive by each generation and made permanent possessions of our heritage. Literature provides the common body of stories, phrases, beliefs, heroic lives, imaginative understanding, and drama which accompanies civilization. In the early history of America, a comparatively few books provided the basis for all knowledge. The biographies of the founding fathers continually refer to Pilgrim's Progress, Blackstone's Commentaries, and the Bible. The influence of these books on the thought, the expression, and the values of generation after generation is felt in every custom and law of our own period.



IN PEACE, the years rapidly diminish the number of combatexperienced men on active duty, and the lessons that one generation had to learn in the fire of battle, the next generation must believe on faith. All knowledge that can be acquired in one's own life is experimental, but all knowledge that is acquired from traditions is fundamental and is the knowledge which makes leaders in peacetime. The channels which open up this knowledge are enthusiasm, love, and admiration. Only those officers who can inherit from previous generations unbreakable, unexperimental standards of behavior, can be entrusted with the lives of men or with grave decisions. The good staff officer or the accomplished specialist must be at the beck and call of these leaders because only these men have identified themselves with former generations, and they alone have the right to dispose of the lives of future generations. It is the duty of every officer to equip himself with the tools which such a responsibility requires.



Capt. Robert O'Brien of the Air University's Academic Staff, a Dartmouth graduate and former faculty member in the Philosophy Department of that college, was group bombardier of the 333rd Bomb Group during the war in the Pacific.