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**FALL 1948**

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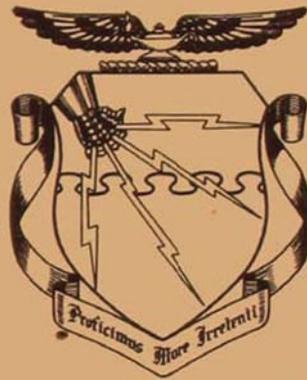
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## ATTENTION

An alphabetical index of Volume I, Numbers 1, 2, 3 and 4, The AIR UNIVERSITY QUARTERLY REVIEW, has been inserted in this issue.

# OPERATIONAL CONCEPTS FOR MODERN WAR

*Colonel Dale O. Smith*

THE operational doctrines for fighting a modern war are in need of drastic revision. We cannot hope to expend our efforts and resources to greatest advantage until we decide just how we intend to fight a modern war. We talk about modern war, but our plans indicate we expect a repetition of the past conflict. A revolution in weapons calls for a revolution in tactics. Traditional concepts of operations must only be followed insofar as they can be applied to best exploit our new weapons. Let us look at some fundamental tactical doctrines.

Traditional warfare has usually been a contest of strength between armed forces. Once one army or navy destroyed its opponent, national victory was generally assured. The Punic wars, the Napoleonic Wars (excepting the invasion of Russia), the American Civil War, and the Franco-Prussian War were all fought on this order. In fact most of history's wars were thus decided. Exceptions to this traditional form of warfare were found in the siege, where one side took the defensive and the other simply invested the enemy fortress or nation until it was starved into submission. The siege of Vicksburg was an example of this, and on a national scale, the defeat of Germany in World War I might be considered to have been primarily a siege. Another type of warfare can be found in what we now call psychological warfare, which consists of employing any means other than armed conflict to weaken an enemy's will to resist. This form was greatly responsible for the victories of Alexander the Great. His unorthodox but highly successful phalanx tactics spread exaggerated fear. More recently, the invasion of Austria by Germany (the *Anschluss*) falls under this category.

The present concept of war calls for the concurrent employment of combat, siege, and psychological tactics.

Economic warfare is simply one means of tightening a siege and reducing enemy combat effectiveness. Political warfare, subversive activity, and the coups of modern power politics are examples of psychological tactics. Strategic bombing is a tactic primarily of siege warfare, although it has combat and psychological ramifications--combat, through its effort to secure air superiority, and psychological, because of the terror associated with bombing. Bombardment of an enemy heartland, when done in force, not only effects a siege, but accelerates its crisis. Transportation is not only disrupted to the point where even food cannot be distributed, but all elements of the national economy are severely damaged in a short time. There is no waiting for the economy to run down to where national reserves are consumed, as in surface siege. There need be no fear of an enemy sustaining himself over a protracted period through self-sufficiency. Air bombardment destroys not only much of the reserves, such as oil, steel, and manufactured goods, but the means to use the reserves, such as transportation, communications, and power. It does more than simply destroy war potential; it kills the nation.

The effectiveness of siege by bombardment was amply demonstrated in World War II. By late autumn of 1944 the entire German industrial complex was beginning to crumble, and all postwar surveys show that she could not have survived as a nation even though her land offensive in the Ardennes had been fully successful. Numerous experts have further stated that she would have fallen without an invasion. In the Pacific, siege by bombardment and sea blockade resulted in Japanese collapse prior to large-scale combat. The decisiveness of air siege has resulted in its becoming the primary tactic of modern war.

**Y**ET the concept of strategic bombardment (or air siege) is nevertheless still open to some question. A long history of wars won primarily through open combat between armed forces prevents our discarding the combat concept entirely. Furthermore, the last war was not won solely by air siege, but by a combination of siege and combat. Even though the air siege is generally considered to have been

the most decisive factor, there remains a doubt in many minds that it would have been decisive without the support of surface combat. Indeed, air siege would have failed without air combat and without surface combat for air bases. In World War II lengthy build-up and operational periods were necessary to realize the effectiveness of air siege. Approximately two and one-half years were necessary to create the Air Power and its logistical support before effective air siege could be commenced. During this build-up period combat between conventional forces was naturally the order of the day. Orthodoxy held sway because the wherewithal to conduct air siege was lacking. Once large-scale bombing began, the limitations of Air Power's destructive force necessitated "sustained" operations--repeated attacks to destroy a system of industry that could not be fatally damaged on one operation and that could be repaired between attacks through the use of other industrial systems. It was a race between destruction and rebuilding, with the edge only slightly in favor of Air Power. The bold claims of air leaders that the enemy would be quickly subjugated by air attacks were not confirmed. The enemy fought on tenaciously.

Economists reasoned that if one key target "system," such as the ball bearing industry, could be cut out of the enemy nation and could be kept demolished through sustained operations, it would cause the collapse of a wide portion of other industry which was dependent upon the key product of the destroyed system. This theory was practiced but not proved. Target systems were often changed before any one system was significantly damaged. U-boat repair and construction, aircraft engines, air frames, ball bearings, oil, and transportation were a few of the major systems attacked by the AAF over Germany. The RAF generally attacked urban areas in an unsuccessful psychological campaign, although the attendant results of RAF bombing on all industrial systems (according to British surveys) were as effective, if not more so, than the target system bombing of the AAF. As noted in the United States Strategic Bombing Survey reports, when German industry collapsed, no single target system was responsible, but rather a widespread disintegration of *all* industry occurred.

From this it can be concluded that the most effective air siege will result by concurrently attacking every critical element of an enemy's economy *at the same time*. This will result in a general disintegration of all industry which will, in turn, prevent reconstruction. Oil, transportation, power, vital end products, and weapon factories, if destroyed concurrently, would leave a nation in such a devastated state as to preclude repair, since the capability for repair would have been lost as well. When our bombs were constructed of puny TNT this concept was questionable because we did not have sufficient power and we were forced, therefore, to look for panacea targets, Achille's heels, and short cuts. Now we have all the power we possibly need. Today the target system can be the overall national economy.

Not to be overlooked are the strategic results of population destruction in urban areas. In a nation of extreme specialization, where each man is likely to know how to perform only one type of work, population bombing may well result in an economic dislocation beyond all expectations. It is likely that not only the economic but the political and social activities of an urban area will grind to a sudden halt after an atomic bombing. Hamburg and Hiroshima are examples to be projected into the future.

If all the critical industrial systems could be destroyed at one blow, so that recuperation were impossible within any foreseeable time, there seems little question but that a nation would die just as surely as a man will die if a bullet pierces his heart and his circulatory system is stopped. Food and fuel would cease flowing. In a matter of days starvation would set in at every urban area. Any attempt to conduct warfare would immediately break down through a complete absence of logistical support. Without homes or fuel, people would perish from exposure. An army in the field with a life of thirty days or less, facing starvation, realizing that the loved ones at home are likewise facing famine, and seeing no prospect for future recovery, is not an army to fear. No army in history has been known to fight with a vacuum at its rear. Such an army will lay down its arms because all cause for hope will be lost.

CAN such destruction be achieved by modern Air Power? In the first place, no bombing in the past war resulted in complete physical destruction of industry nor did any target-system bombing cause any one industry to collapse. Still, after a long period of build-up and sustained bombing, major damage to many industries *did* cause a general failure of the whole national economy. Of course, it is illogical to assume that one hundred per cent destruction will ever be achieved in the future even with atomic bombs, but it is highly probable that major damage to all the critical industries will kill a nation's economy just as surely. A man or a nation will bleed to death very quickly with many deep wounds. It occurred in World War II, and can most assuredly happen again on a much more vast and sudden scale.

With the atomic bomb conservatively figured at 200 times the destructive power of conventional bombs, 300 B-29s could drop a destructive force equal to that dropped on Germany by all AAF bombers in the last war. Since a force of 300 bombers is small even by World War II standards, it can be employed in one operation. The factors of accuracy, misses, and gross errors are included in this figure. So, *with atomic bombs, Air Power has become 200 times as effective as it was in the past war and it is now able to deliver, in one mission, as much destructive power as it formerly did in approximately two years of sustained operations.* In other words, one mission of 300 B-29s completes two years of sustained operations by the standards of the past. Two missions by our force of 300 is comparable to four years of the old sustained bombing; three missions, to six years, and so on. It appears that we might have to revise our concept of sustained operations, and with that revision, correct our logistical and tactical planning. How can we conceivably bomb with such a force for more than a month and expect to have any targets remaining?

Next, the question is: Can we penetrate to our targets? In some respects the problem will be more difficult than before. Ranges will be more than double those ranges flown in World War II, and in situations where advance bases cannot be secured, ranges will be quadrupled. More enemy

contested air than before must be flown through to reach the targets. We will be up against first-class Air Power, and to be safe we can only assume that opposition will be at least as effective as that of the *Luftwaffe* at the height of its power. Hence, to plan an atomic bombing operation of the future we must use the combat planning factors of the past war that existed at the time when conditions were most unfavorable for us.

Round trip ranges can be achieved with present B-29 and B-50 aircraft operating from advanced bases. There is no doubt that we can reach the targets if we get by the opposition. But fighter escort for penetrating bombers, although highly desirable to reduce the risk factor, is not presently possible. It is conceivable that sustained daylight operations without fighter support might result in prohibitive bomber losses. This would naturally extend the war beyond one month and prolong it until that time when we could gain dominance over defending air. In this event, air siege would revert to air combat. But the element of tactical surprise, almost certain to exist on the first penetration and possibly for several more operations thereafter, should compensate for this weakness in fighter escort. It can be pointed out that the first few missions flown by small B-17 forces against Germany sustained no losses. Yet, a year later, an unescorted mission to Schweinfurt suffered losses of about twenty per cent and this was deemed prohibitive. It takes time for the defense to adjust itself to the offense, and the air force with the initiative is invariably successful. The Japanese at Pearl Harbor; the Doolittle raid; the first B-29 operation; the Nazi air blitzes of Poland, the Low Countries, Norway, Greece, Crete, and her early attack on Russia, are all examples of the overwhelming advantage of tactical surprise by Air Power.

To make our force estimate safe, however, we can postulate twenty per cent losses and increase the size of our force to 370, leaving ample bombers to destroy our targets. It is almost unthinkable that we should ever lose as high as twenty per cent on an original operation. The twenty per cent figure for combat and operational attrition was never used in operational planning during the past war. Five per

cent was a more realistic figure, and then only when opposition was extremely effective. Moreover, on those few missions where losses of around twenty per cent were sustained, the majority of those missing aircraft succeeded in bombing their targets. Losses were invariably greatest on withdrawal rather than on penetration. Hence, if a twenty per cent combat and operational casualty rate is used, there is every reason to believe that it will not be exceeded and even that most of those not returning will have bombed their targets.

If we assume that the relative combat effectiveness between the offense and the defense will be the same in future air war as it was in the past, it must follow that penetration to the targets will be possible. We must answer more questions, however, before we can assume that the bombers' ability to penetrate is as great as ever. Will guided missiles, proximity fuzes, improved electronics, better warning systems, and jet fighters reduce the modern bomber's ability to penetrate? Have improvements in the offensive kept abreast of defensive improvements? Let us take the new developments one at a time and examine them with respect to penetrating and defending air forces.

**J**ET fighters are operational, whereas jet bombers are only on the edge of becoming so. Does this mean that bombers have slipped in the race for technical improvements? Possibly, but our aim is not technical improvement, as such, but tactical improvement. The ultimate goal is to get the bomb on the target with minimum losses. Does the jet fighter prevent this to a greater extent than did the prop-driven fighter? If penetration is dependent upon fighter escort, the answer is yes. Defending jets will undoubtedly be superior to the long-range propeller fighter and the penetration escort will be defeated. But we have estimated that our penetration will not require an escort provided we achieve tactical surprise. Will the jet, then, be more lethal against the bomber than the old prop fighter? It is doubtful. In fact, it is even likely that the jet will be less effective.

Defending fire from bombers was not very effective in the latter stages of the past war.<sup>1</sup> A bomber generally survived simply because it was not hit, rather than because it fought off the attacking fighters. Once fighters closed on a bomber it was as good as gone unless, of course, the fighters missed or broke off their attack. The danger to the bomber, then, was measured primarily by whether or not fighters would intercept. Once an interception was made, the number of bomber losses was almost directly proportional to the time of sustained fighter attack.

Now, realizing this, wherein is the advantage of jet fighters over bombers? Jets have less range and duration than propeller-driven aircraft. The jet will have less chance of making an interception. Even in the past war the vectoring of fighters to intercept strategic bombers was a very inefficient process because well over half of the fighters dispatched ran low on fuel before interception could be achieved. The 12 May 1944 mission of the AAF to Merseburg and Brux is an example. Our losses were great (46 bombers) and the enemy was particularly successful in interception. Still, only 180 enemy fighters intercepted the bombers, although the *Luftwaffe* had over 815 fighters based within effective range of the penetration. Three hundred and fifty enemy fighters were airborne and concentrating near Frankfurt, yet less than 100 of these particular fighters intercepted.

Throughout the air war over Germany, much of the flying done by defending fighters consisted of "stooging" around in the air, forming up, and waiting for the fighter controllers to make up their minds just where to intercept the bombers. The controllers were bound to know the position, course, speed, and altitude of the penetrating bombers, but they had to guess where the bombers were going and whether they would alter course. Too, the controllers had to plan the interception so that a maximum fighter strength could be brought to bear on the bombers. There could be no snap judgment by the controllers, and while they studied the situation, their fighters stooged.

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<sup>1</sup> AAF Evaluation Board, *Eighth Air Force Tactical Development*, 1945.

Jets do not stooge very well. Their specific fuel consumption is much greater at slow speeds than at fast speeds. In the future the controllers must of necessity commit the jets to the interception quickly. In doing so, not only will mistakes be made, but the jets will be forced to make piecemeal attacks in small formations. There will be insufficient time to form up large forces of jets in order to make concentrated and forceful attacks.

Once an interception is made, the jet will have less chance of hitting the bomber than did the old prop fighter. The speed differential between a bomber and a jet will be so great that the jet guns will not bear as long on the bomber as did the guns of the prop-driven fighter. Finally, the jet will run short of fuel sooner, and will have to break off the attack that much earlier. All in all, the jet fighter will not cause as many bomber losses as did the prop fighter. The jet fighter is sure death to the prop fighter because the jet can make or break contact at will. But the jet will have less time to shoot down a bomber than before, and that time factor will save bombers that formerly would have been doomed.

**N**EXT let us look at the guided missile problem. We know little of developments in rival nations, but judging from our own development status we have little to fear from this quarter for the next five to ten years. Ground-to-air missiles are not yet operational, and there is no assurance at this time that they will be much more accurate than old-fashioned flak. Air-to-air missiles can be expected to improve some, but since bombers can carry them too, the offensive-defensive race in this respect should remain approximately unchanged.

There can be little question that proximity fuzes will make flak more deadly than before. Estimates have been made, that had the Germans used them, our flak losses would have quadrupled. However, it was not often that flak burst *directly* below or *directly* over a bomber, and only such rounds would have been fully effective with proximity fuzes. Many feel that the official estimate that flak effectiveness will be increased by a factor of four is unduly pessimistic.

Furthermore, influence fuzes can be jammed and decoyed by bombers. Certainly their accuracy can be reduced considerably by counter-measures, and perhaps even eliminated.<sup>2</sup> Bombers will fly at greater altitudes, and the enemy will have to build much better artillery than is now in use to be effective at 35,000 feet. It hardly seems likely that flak, no matter how improved, will prevent bomber penetration.

We are leaders in electronic development. And it is doubtful if potential enemies will even develop electronics and the techniques for their use to the stage we reached at the end of the past war.

It looks, then, as if new developments have not given an edge to the defense. In fact, the edge seems to be with the offense in every respect except possibly for proximity fuzes. It can only be concluded that an offensive bomber force, utilizing tactical surprise, *will* be able to penetrate to targets in the enemy heartland. And this force will be able to repeat its operation until the enemy defenses adjust to the offense. By that time atomic bombs will have destroyed all lucrative targets.

If we admit that bombers can penetrate to their targets, and if we admit that they can carry a destructive load on one mission equal to the hundreds of thousands of tons of TNT rained on enemy nations during the past war, why must we hold fast to the old doctrine of "sustained" operations? Suppose our first mission is not successful. We then repeat it. Perhaps we must go back five or six times to achieve enough destruction. Is that "sustained" operations? Indeed it is not. If a war lasts as long as one month, what possible targets will there be left to bomb by conventional TNT bombers? Certainly planners would be hard put to find them. Yet we seem to feel that we must plan for sustained operations with TNT bombs just in case atomic operations fail.

The conception of sustained air operations calls for near total national mobilization of manpower and industry; a huge training program for air crews and supporting personnel; a tremendous and continuous production schedule for aircraft,

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<sup>2</sup>See Col. Frederick L. Moore's article, "Radio Counter-Measures," in this issue. *Editor*.

weapons, and ancillary supplies; a full pipe line in hundreds of ships and trains through vulnerable lines of communications to advance bases; an elaborate sea and ground defensive to secure the lines of communication from enemy attack; and many army divisions running into the hundreds of thousands of troops to secure the air bases. *Life* magazine recently pictorially portrayed this extensive logistical condition as the nominal requirement, and many factions of the government refer to it as the necessary "balance" between land, sea, and air forces. These misconceptions are based upon and fostered by the Air Force belief that bombing must be conducted month after month, year after year, for an indefinite period, until the enemy is pounded into submission. The build-up to acquire this mammoth military machine takes years. A modern war will have been long decided by the time the gigantic effort could even get into low gear. Yet we adhere to the outmoded premise of sustained bombing. Even those few who believe in the effectiveness of the atomic blitz would like to hold out for conventional bombing for exploitation. In doing so they vitiate the great advantages possible with a lightning atomic offensive, for by far the largest percentage of our national effort must be devoted to sustained operations to make them even theoretically possible. Our initial striking force is then crippled through lack of national focus upon it.

THE atomic bomb is real. It is operational. It works. There need be no doubt about its combat worthiness. Why then must we revert to the old TNT bombs as a last resort weapon and forever hamstring our logistical and tactical plans with the requirement for sustained operations? In doing so we are depleting our budget with unnecessary expense, wasting our time, and putting ourselves in the same school of military logic that in the past has been the exclusive province of the critics of Air Power. Let us not be bogged down by orthodoxy. Let us not always plan the next war in terms of the last, but rather let us look to the future and devise new ways of employing our new weapons.

The traditional concept that wars must always be won by open combat between armed forces has seriously hindered the

development of strategic Air Power and is still holding it back. Yet it is obvious that an air siege which not only blockades an enemy but destroys his reserves, his war potential, and his very means of living will cause his complete capitulation. His forces in the field will rot on the vine without ever firing a shot in open combat. This air siege has tremendous psychological advantages for the attacker because of its lightning speed and overwhelming consequences. Combat between air forces need only be conducted to that point necessary to lay down the atomic destruction. Deception and cover will obviate most of such combat, provided the attack is made quickly and in force.

The targets should be the most vital enemy urban areas. Here all major industry is located and through these areas pulse the national life-blood in communications arteries. The destruction of target systems might seem to be a cheap and humane way to win, but experience proves otherwise and we dare not take that poor chance.

Once the atomic air siege is layed on, there is little more to do from a military standpoint. Postwar aims, occupational or otherwise, must be carried out, but these most certainly need not include bombing operations patterned after World War II. If more bombing is required to enforce our will, let it be atomic bombing. There seems no reason for clinging grimly to the outmoded sustained bombing concept. Once freed from this mental shackle we can concentrate our full energies on the concept of a super air blitz which will force an unqualified decision within a month at the very outside. The tremendous production, supply, transportation, and base defense requirements formerly necessary for sustained operations will be eliminated. Such a concept will give us the greatest chance of success and require but small drain on our national resources. A ready fighting team, a true atomic bombing-force-in-being, can win the game without ever making a substitution.

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*The primary role of military Air Power is to attack--not other aircraft but targets on the ground that comprise the source of an enemy's military strength.*

--Gen. Carl Spaatz, Chief of Staff, USAF

Report to the Secretary of the Air Force (30 June 1948)

# AIR POWER AND FOREIGN POLICY

*Lt. Col. John P. Healy*

THE historic discrepancy between our foreign policy aims and their means of military support is now ended. The "quantum jump" taken by military technology in this country affords a measure of military power sufficient to support our present aims if such power is wisely used as a deterrent. The defensive psychology of the American people, which would seem to somewhat vitiate this power, is not the immutable and substantial mood on which other nations can safely predicate a course of action, for the possible as much as the probable must concern foreign governments to a degree never known in the past.

This new power issues from the dynamic technology of the nation and has its finest expression in Air Power. Strategic Air Power, properly exercised, is a weapon of great potency and mobility, yet the present juxtaposition of atomic weapons with Air Power provides a completely new order of military force with which foreign policy framers must now contend. If atomic weapons are to be used they cannot logically be separated from Air Power. Atomic weapons, delivered other than by air, remain a rim-land force with all the weaknesses of time and continuity endemic to delivery by surface forces. Harbor mining, destruction of coastal cities, and surreptitious planting of bombs remain three alternatives to air delivery. Bernard Brodie notes that the mining of major cities is conceivable. (When the mining is completed the vulnerable nation is called upon to surrender.) But while it may be possible to secretly assemble the bomb, importation and assembly on a wide scale would be unlikely to escape detection. Furthermore, until the advent of reliable and long-range missiles, naval power will be unable to deliver weapons to the requisite depth in any great land mass.

On the other hand, to restrict Air Power to non-atomic weapons is to reduce its potential to an extension of World War II capacity. In short, atomic weapons without air carriage lose much of their universal threat; Air Power without atomic weapons is an orthodox element of military force. Alone, each is a powerful force; combined, they create a completely new order of forces.

Sea and land power have been, in the past, the orthodox forces used to buttress United States foreign policy. They were used almost as frequently in a negative as in a positive fashion. Albert Gallatin argued that a strong navy was undesirable because it would entice European nations to bid for strength; hence, we would find ourselves enmeshed in European schemes by the very force created to protect us. The lack of the requisite power to insure European acceptance of the Monroe Doctrine did not stop us from enunciating it. There is something admirable about such calculated risks undertaken by the leaders of a growing nation. When our nation could ill afford to divert its efforts into armaments, a daring but sound diplomacy sufficed to insure unimpeded growth.

Less admirable was our failure to sense the changes in technology which made continued acceptance of such risks inexpedient. The divergence between this nation's commitments and its military force, permissible in the nineteenth century by reason of external political factors, became dangerous in the twentieth century. A gross failure to appreciate the effect of the transportation revolution, among other forces, led the nation to rely on axioms of geography which progressive technology had rendered invalid.

Failure to appreciate the military effects of a dynamic age on the conduct of foreign affairs has twice in the past generation jeopardized our safety. Edward H. Carr notes that "any symptom of military inefficiency or unpreparedness in a Great Power is promptly reflected in its political status."<sup>1</sup> Such symptoms in the United States were easily discernible to the Germans and Japanese, and entered strongly into their decision to wage war. The fact that these aggressors misread

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<sup>1</sup>Harold H. and Margaret Sprout, eds., *Foundations of National Power* (Princeton Univ., 1945), p. 32.

our capacity and will to fight is small solace, for capacity and will to fight are more sensibly and economically employed as deterrents.

But whether the two World Wars sprang from a failure to understand the nature of power or from an immature unwillingness to accede to the requirements of our power position, heavy penalties have been paid for the disparity between our foreign policy aims and their supporting military force.

**WE** are concerned today with a new element of military force, an element so powerful that its mere existence has a profound effect on national policy. Because of its vast psychological and physiological implications the atomic bomb has been removed from the control of the military. We have, in such a removal, a clear indication of the true magnitude of atomic Air Power.

The very weapons the military will use must now be prescribed. The decision to wage war poses the equally grave decision to use or refrain from using atomic Air Power, and each separate decision thereafter must issue from the highest political level. Retention of atomic weapon authority at the highest government level limits the freedom of action of the field forces of the military, thus indicating a conjuncture of political and military strategy to a degree never known before. Thus, the pace of technological growth has quickened until the penalties for failure to comprehend such acceleration, and its significance in the struggle for national survival, will be fatal. Certainly it is as dangerous to misread the portents of the day as to ignore them. It is the speed-up of technology and the magnitude of military force which, in point of danger to soldiers and statesmen, distinguish the present era from the past. The unity of political and military strategy today should not be obscured by the legal subordination of the military. The first is an area of thought and action; the latter is a matter of political utility. Political and military strategy, by force of technology, are now one.

Today, the critical change which has recently taken place in the order of importance of military forces is clearly defined. Not only has Air Power been added as a mature

element, but it has also displaced naval force as the prime tool of foreign policy makers.

The elements of military force have been classified as follows:

First Order.....	Land Based Aircraft
Second Order.....	Carrier Based Aircraft
	Paratroops
	Torpedo Boats
Third Order.....	Armored Forces
	Submarines
	Amphibious Commando Units
Fourth Order.....	Motorized Ground Forces
	Destroyers and Light
	Cruisers
Fifth Order.....	Ground Forces
	Heavy Cruisers and
	Battleships <sup>2</sup>

The precise division of the elements as indicated above may be academic, but it serves to emphasize that under normal conditions land based planes dominate geographical values and relationships.

The rearrangement of forces comprising military power must cause changes in the norms by which we conduct foreign policy. The diminished role of sea force today deprives United States foreign policy of its customary buttress and substitutes a new one--atomic Air Power--which operates with completely different geographical and political requirements and effects. "To a considerable degree our foreign policy must be derived from the logic of the air."<sup>3</sup> And to a considerable degree the logic of the air dictates the balance between state systems.

This contemporary giant of military force--atomic Air Power--has caused a duality of the military means to support foreign policy. Such a condition can be dangerous to the national security of any democracy, for duality means division and division can preface confusion.

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<sup>2</sup>George T. Renner and Associates, *Global Geography* (Thomas Y. Crowell, 1946), p. 465.

<sup>3</sup>Hans W. Weigert, *Compass of the World* (Macmillan, 1944), p. 121.

AS long as the United States must, by political nature, refrain from preventive war, it is obliged to consider two distinct methods of war. It must be prepared to effectively wage non-atomic as well as atomic war. These are not simply different orders of magnitude of war, nor will preparing for atomic war, the greater order of magnitude, automatically ready us psychologically or logistically for the lesser order of non-atomic war.

The hesitancy of many Americans to accept the need for Universal Military Training can be traced to a misunderstanding of this duality. They have assumed that the advent of atomic Air Power has eliminated the need for orthodox forces. But they have failed to understand the effect such a monolithic military structure must have on the conduct of foreign policy. The rigidity implicit in military force based almost exclusively on atomic Air Power must reflect itself in a like rigidity in foreign policy. We thereby defeat the very purpose for which military force exists: to accord to foreign policy full freedom of action within the power potential of the nation.

The very characteristic of atomic Air Power which places it above ordinary military power is that which also renders it inflexible. Certainly it is not the precise, gloved force which would endear it to the diplomat. In his column, Walter Lippman calls the atomic bomb "a weapon of annihilation that can be used only as a last resort in total war. In all the intermediate phases of diplomacy..., as for example, in the Balkans today, the weapon is too powerful to be used.... The fact that it [the Navy] can act without exterminating great masses of innocent people means that it is all the more likely to act."

Such a statement applies solely to atomic Air Power and not to non-atomic Air Power, for there is not much distinction between the result of extensive naval air effort and limited strategic air effort. Mr. Lippman appears to develop the thesis that the need for varying degrees of force eliminates all but naval force from consideration for this role. His failure to consider strategic Air Power as a limitable force stems directly from his assumption that it

must use only atomic weapons. Yet it need not, any more than naval Air Power.

The division between strategic Air Power and atomic Air Power is one which, far from being academic, exists in the very nature of the weapons used quite as much as it issues from the moral inhibitions of the United States. Furthermore, an important objective of our foreign policy is the attainment of our security through the elimination of atomic war. Since this move would not necessarily mean the end of all war, we cannot dispense with our non-atomic means of waging war, for such action would invite aggressive moves by non-atomic means. Such aggression might not be aimed directly at the United States, but rather at the periphery of its interest. Lacking non-atomic means of military containment we should be forced to use atomic means or to write off these interests as temporarily beyond salvage. Certainly in the event of a dire threat against the security of the United States--again, not necessarily a direct attack upon the United States--atomic Air Power will be used if orthodox force is not available. But, by so doing, we shall lose our high moral position in the eyes of the world, a position which has always been a great democratic asset. This is a tempting course to lay open to an aggressor.

Economy of effort requires that gradations of force be available to deal with situations of varying gravity. The requirements of this dual force must be met or we shall be involved in a monstrous contradiction, for the United States cannot successfully espouse the elimination of atomic war if it does not possess the means of non-atomic war. It is quite illogical to work for an end of atomic war while simultaneously closing the door on our capacity to fight other than an atomic war.

A major effect of atomic Air Power is its disturbance of the archaic balance of power system. Any discussion of this question must take into account the fact that atomic Air Power has stripped all nations of the protective shield of time. The development of threatening situations could, under the old order, be carefully gauged by statesmen. As one nation improved its power position, thereby jeopardizing the balance of power, other nations, through alliances, strove

to regain the balance required for their security. Today, such regional and cultural blocs still exist for the purpose of defense but they are less important because atomic Air Power does not give them sufficient time to work. They are the statesman's tools of another age and, since those conditions necessary for their operation no longer exist, are not likely to succeed as war preventives today.

THE balance of power is actually a generic term for the struggle to maintain the position of those nations most favorably situated. Normally it has been secured through alliances. This quest for power or security through the support of others is as old as the contentions of the human race. Its formal christening may not have taken place before the nineteenth century, but the substance was present in the struggles of the earliest tribes.

The equipoise among nations that was achieved during the nineteenth century--the most successful period of this balance theory--was the result of many factors, not all of which exist today. Much of the great power effort during that period was directed at the colonization of areas outside Europe, particularly Asia and Africa. Furthermore, there existed the common ground of Western civilization which moderated and tempered the ambitions of the powers. Of greatest importance, however, was the absence of a fundamental, irreconcilable conflict of ideologies such as exists today. We are, therefore, now faced with a more complex problem in securing balance as it has been achieved in the past. In fact, it is difficult to find any meaning in the term in its old sense, for today "technological rivalry overshadows the disposition of international real estate."<sup>4</sup>

Edward Mead Earle states that Air Power "has completely and perhaps permanently upset the balance of power in the world." Others, like Dr. Waldemar Gurian of Notre Dame, assert that atomic Air Power has not changed the basic features of world policies, although it has rendered the balance of power system less stable, more precarious. Bernard Brodie believes that the balance of power idea "has become

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<sup>4</sup>William L. Borden, *There Will Be No Time* (Macmillan, 1946), p. 66.

a much more ambiguous concept; that is, the old calculus of what constitutes power largely falls to the ground." This is certainly an accurate statement if one visualizes the struggle to balance atomic Air Power by those not in possession of it. No balance can be achieved by mere additions of the orthodox elements of power. The geopolitical strength stemming from an array of allies is in itself not sufficient to counter this potent force, although it may be the source which in the future will provide atomic force for its bloc. But it is the present unbalanced situation created by atomic Air Power with which we are concerned, and alliances, while adding to the total strength available, cannot negate this new power.

Rigidity is the outstanding feature of the two state systems which exist today. The comparatively free movement of states from one bloc to another, which marked the balance system of old, is no longer practicable. The geopolitical elements such as population and resources, factors so important in achieving the archaic balance, are no longer freely available. Since they are static, the freedom of action which foreign policy framers require must stem from other elements. It is atomic Air Power which can provide such freedom of action today for the United States.

In the pre-atomic era no such rigidity among elements of power existed. The United States, for example, balanced German and Japanese manpower by a plenitude of machines. Britain balanced land power with sea power, made numerous alliances; and built the Suez Canal to improve her communications system. It was the totality of power which finally counted, and it is precisely herein that the magnitude of imperfect balance created by atomic Air Power becomes apparent. The total of the orthodox forces, no matter how large, will never equal this new power.

**T**HE question now arises, Why do nations still pursue basic policies? The United States proceeds vigorously toward the full realization of the Rio pact; Britain moves to form a Western European bloc. Such moves are not the fruitless scurrying of ministers in ancient avenues. The answer is, that for nations not possessing atomic Air Power,

such actions represent valid interim measures of self-defense. The orthodox, after all, is still their concern of the moment. Their relations with one another are still based on pre-atomic norms of power, for this is the only power they possess.

The aims of the United States remain unchanged. Atomic Air Power, as well as the whole system of balance, is simply a means to an end--security. But the degree to which security can be enhanced today by alliances is limited by the absence of significant power outside the state systems of East and West. Henceforth, additions of power must stem from the technological vigor inherent in a civilization.

Certainly at the present time the United States possesses overwhelming power. This potency is derived primarily from atomic Air Power. We ought to conclude, therefore, that the existence of such power points to the necessity for its energetic political use against that day when it will be negated. A decent regard for the problems of the future poses a requirement that today's power be used to insure tomorrow's position.

The most striking truth of atomic Air Power is that it cannot be considered as merely another weapon. It alone has reversed the historic discrepancy which has always existed between the aims of foreign policy and the military means of achieving those aims. It has put upon the framers of foreign policy the severe task of closing the gap now existing between our limited policy aims and our excess of power. Failure to use this power can only elicit from posterity the verdict that, while we were physically powerful, we were never politically great. Failure to employ this excess of power is tantamount to placing it in the hands of others. "Power never vanishes; if you do not wish to retain or wield it, somebody else will." In failing to exercise it politically we permit others a freedom of action not insured by their own power potential.

The archaic concept of balance does not suffice for a modern democracy. Nothing but a drastic excess of power inherent in its own technology can insure a nation's existence. An excess of power was, of course, a mark of the old balance system, but never was the excess so great as

today and never did it stem so overwhelmingly from technology. The effort to maintain the status quo of any particular period reflected a more favorable position for some than for others. The prime concern of Bismarck after the Franco-Prussian War, for example, was to maintain his favorable balance to prevent France from regaining Alsace and Lorraine. But those characteristics of society which permitted the evolution of the classical concept of balance no longer obtain. Fluidity has been replaced by rigidity in the structure of state systems.

Still another effect of atomic Air Power has been to deprive foreign policy of the weapon implicit in the threat of war. This device of threat has taken many forms in the past and achieved some degree of success. Such threats ranged from plain ultimatums to troop and naval movements. The United States has been among the most prolific users of this latter device. From the voyage of the "White Fleet" in Teddy Roosevelt's era to our present naval activities in the Mediterranean we have attempted a backhanded form of warning.

But today the threat of war has become a much greater terror when employed by aggressor nations, and at the same time it has become a means of diplomacy hardly at the disposal of the peaceful state. This holds true, of course, if atomic Air Power has been equalized between aggressor and peaceful governments. It is not necessarily false even when the peaceful government still holds a monopoly of atomic Air Power. In either case, the threat might become actuality and the peaceful government would be revolted at even the possibility of using a threat of force, for such a threat would risk an atomic war.

The important by-product of this psychological restriction is hesitation. The most natural tendency of the United States, even in pre-atomic days, has been to delay vital action in the hope that some historic force would exert itself to right an awkward situation. We have tended to hope that long term trends would remove the necessity for action. The moral and physical dilemmas presented by atomic Air Power will do much to strengthen this inclination toward delay. We will harbor hope that an aggressor may experience a revolt of her masses; or that her leaders may become

involved in a struggle among themselves. And if the temper of our nation is at all readable, we will continue to base our reluctance to act on historic improbabilities. For historic forces which favor a nation must, in most cases, be created by that nation.

STILL another effect of atomic Air Power springs from the collapse of collective security. Professor William T. R. Fox remarks that it has collapsed because "two is too few to collect." Should either Russia or the United States, he continues, prove "to be the disturber...there is not that overwhelming power available to check aggression on which a system of organized collective security must be based." Outside the already established and rigidly formed Russian and United States systems, there is not sufficient power to throw one way or another as a deterrent.

It is precisely because collective security in the classic sense has collapsed that we have today no diplomatic form of preventive. The role of deterrent formerly filled by collective security has been replaced by the naked military weapon of retaliatory force. Basic policies may remain in the field of foreign affairs, but new ones must be added if full political advantage is to be taken of the power excess now temporarily in the possession of the United States.

To accord full freedom of action to United States foreign policy, the retaliatory force must be based in areas politically as well as militarily controlled by this country. If this is impossible because of aircraft range limitations, we are to just such an extent restricted in our freedom of action. Our most imperative military requirement would appear to be sufficient range for our retaliatory Air Power to relieve us of dependence on other nations for this one vital element of defense. For a nation which must first secure permission to use another nation's bases is not honestly possessed of a retaliatory force. In this age of mass destruction weapons the political reaction of nations is extremely uncertain. The bases upon which we rely might very well be preempted by political action shortly before an attack on the United States.

In addition, there are political and military considerations which might render it inadvisable for various allies to enter a war at its outset. Yet the requirement that the United States have immediate use of allied bases would instantly involve those nations whose bases we use.

Full freedom of action, then, if it is to be accorded by the military to our foreign policy, requires construction of retaliatory atomic Air Power with a range enabling it to operate out of American controlled bases. Expensive and crude expedients such as air refueling may be necessary until engineering skill provides an aircraft with sufficient range. The utter dependence of the peace of the nation on its *independent* retaliatory capacity, however, makes any successful expedient attractive.

Since the elements of power which spring from technology are essentially military, they offer no long-range hope of solving political problems. They are a fortuitous substitute for unavailable political strengths. They will be most efficiently used when they support foreign policy in its attempts to recreate an atmosphere in which diplomacy may once more function freely. Surely the winning of peoples is as important as the winning of wars; and we are more likely to destroy people than to win them if war is required.

Atomic Air Power has already required profound changes in our foreign policy. It has imparted new strength to our disavowal of isolation as a practical policy. It has merged political and military strategy into a logical unity. It has erected a military barrier to war at a moment when political barriers have collapsed. Its greatest utility, however, will be known only when it becomes the shield behind which we pursue aggressive political action to rewin the nations now lost to us. The risk involved is considerably less than the risk entailed by inaction. For while such nations may have dubious value in the military scales, their free existence is the ultimate aim of our foreign policy.

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*One of the few beneficial results of World War II has been the awakening of the general public to the supreme importance of Air Power, in all its manifestations, to the regulation of world affairs.*

--Harold B. Hinton

Air Victory: The Men and the Machines (1948)

# ELEMENTS OF ORGANIZATION

*Lt. Col. William C. Cooper*

**M**AN is inherently a creature of organization. Organizational patterns and procedures attend him at his birth, nurse him through his infancy, provide for his education, surround him in his efforts to make a living, shape the development of his spirit, and accompany him to his final resting place. His expressed thoughts on paradise reflect a vague concept of perfect organization, and even hell is regarded by him as an organization uniquely designed to assure his diabolical torment in event he finds the heavenly gates closed.

Throughout his life he comes into contact with organizational forms at every turn; and in all his interpretations of nature and his human activities he notes their physical patterns and arrangements. He observes them in his customs, his mores, his economics, and his science. He seeks these physical aspects in new fields, and strives to improve or perfect his understanding of them in old ones. Placed in a position without apparent order or seeming design, his actions become constrained, erratic, or desperate. Unable for long to extricate himself from such a position, he normally grows frustrated and not infrequently goes mad.

It would seem then that the subject of organization, per se, is one of considerable importance to man, and one which he would have long since explored and analyzed. Strangely, however, this latter does not appear to be the case. So closely does man live with the physical patterns of his activities that he apparently accepts the concept of organization itself without cogitation or philosophical conjecture. Although physical aspects of organization are constantly present in his mind, and a notion of their universal application haunts his stream of consciousness, his thoughts concerning the fundamentals of organization for the most part are nebulous and vague. Should you call at a library

for books, treatises, or documents dealing precisely with organization as a field of study, you would likely be amazed at the relative dearth of material. Only recently, in fact, have analytical writings on this subject appeared. Man's daily intimacy with organizational forms seems to have bred a contempt for scientific thought on the subject of the fundamentals of organization far above the level of his natural curiosity.

It is generally thought that we Americans take the business of organization in our stride. Sired by a whole host of industrial giants, America's ability to organize swiftly and unerringly appears to be a national characteristic and one of our particular fortes. An eminent foreign statesman, while visiting an important American air base which had been hastily constructed and put into operation early in the last war, said with a faint note of wistfulness, "If only my people could learn to organize as well." Nor has the requirement for this art of organizing been overlooked by the military profession. It is a military axiom that the real crux of generalship is organization and not tactics. Shortly after our entry in World War II, the Secretary of War of a large co-belligerent impressively remarked that, "America's military genius truly lies in her ability to organize." And this expression finds ready acceptance by friend and foe alike.

History bears witness to the practicality of the art of organizing. Military institutions and states have become great through the application of the art, or decayed through neglect of it; and even though the principles of sound organization were unconsciously applied by the military leaders of history, their incorporation is usually found to have been inherent to the technique employed.

**S**INCE a technique for the development of sound organization can be more readily acquired if the fundamental elements of organization are recognized and understood, the requirement that a more precise understanding of these fundamentals is essential to military leaders should be clear to all. Twice in a generation America has been forced to organize its military potential to wage intercontinental

warfare against powerful aggressors. Twice it has mustered this strength in a manner apparently testifying to, and implying a wide knowledge of, the fundamentals of organization. Close inspection, however, reveals that manpower efforts spent in the trial and error processes of organizing and reorganizing during the last war were generally costly and colossal; and without superior resources and widely disseminated technical knowledge concerning the application of these resources, the final outcome may well have proved disastrous.

When the average Air Force officer, or his counterpart in the American business world, is asked what comprises the fundamentals or principles of organization, the broad generality and diversity of the answers clearly reflect a nebulosity of knowledge and thought. In fact, some Air Force officers have been heard to remark, "What difference does the organizational structure make? Give me good leadership and the job will be accomplished in spite of the organizational pattern." The fallacy of this argument is obvious. Good leadership will not condone unsound organization. True leaders normally recognize that operations will be more efficient if a sound organization is provided; and efficient leadership will inevitably strive to provide sound organization. Paradoxically, the very individuals making such remarks will, if confronted with investment contingencies for themselves or the need of obstetrical services for their wives, strive assiduously to secure the soundest corporation, the most competent medical staff, or the finest hospital available to them. In other words, they want the best organization they can procure.

What then are the basic elements underlying organizational requirements and patterns? What are the principles of developing sound organizations?

Even a cursory survey of writings on the subject of organization reveals that, although fundamental differences generally do not exist in the concept of molding organizations, variants do arise in the formulation and classification of principles. Analysis discloses that different writers not only classify physical elements of organization

as principles, but also classify conditional elements and procedural elements as well.

Hence, not only are the physical terms of *people* and *things*, and the conditional terms of *mission* and *situation* classified and incorporated as principles, but we likewise find such broad procedural terms as *administrative*, *scalar*, and *coordinative* classed and included as principles. Moreover, it is found that writers arbitrarily classify different phases of organizational procedures as principles; and even when such phases are closely analogous, different terminology has frequently been ascribed to them.

As a result, there exists a wide variance as to the number and terminology of principles. Some writers declare that there are only three basic principles; others maintain there are five, six, or nine principles; one writer holds that there are as many as sixty-nine; and one Air War College guest lecturer indicated that, in his opinion, there were no properly ascribed principles. In spite of the important military considerations involved, the average student, when faced with such a babble of terms and definitions, is likely to become discouraged in his pursuit of the study of organization.

THAT such a welter of terms and classifications exist is primarily the fault of many writers on the subject who have failed to recognize that organization is an extremely generic term, covering three broad aspects. These aspects are classified as:

The Conditional Aspect of Organization (Mission and Situation Elements).

The Physical Aspect of Organization (People and Things).

The Developmental Aspect of Organization (Procedural Elements).

In failing to note the trinity connotation of the term, *organization*, most writers intermingle analytical considerations of one aspect with one or both of the others, thereby obtaining the resulting variances previously noted.

With which of these three aspects of organization should we be most concerned? Should we, like some proponents, be

equally concerned with all elements of these considerations or, like others, primarily interest ourselves with certain elements of each?

Following either of these paths seems to be tantamount to entering a labyrinth of thought wherein the traveller's ultimate destruction by the Minotaur of confusion is certain. Common sense suggests that if we are to arrive at any coherent solution to the problem, we first must recognize that organization is an unusually broad term which encompasses the categorical meaning of conditional requirements, physical patterns, and developmental procedures. Continued study also indicates that it is futile to attempt to dislodge any of these aspects of organization, or to dodge any of the issues involved in their conjecture. They are here to stay. We should, however, recognize their three-dimensional relationship, and stop confusing or mingling analyses of one aspect with those of another.

The primary element of the conditional aspect that is selected by writers as a principle of organization is that of *the mission*. This element is regarded by some writers to be the most important of all the principles. The argument usually presented runs along the following lines: Without a need for work to be done, no requirement for organization exists. A secondary element in this category is that of *the situation*, which implies that the manner in which the work will be accomplished will be modified by the attending circumstances.

The basic elements of the physical aspect are *people* and *things*. The sustaining argument advanced here is that no organization can exist without people and things (tools and equipment); therefore, since these are essential elements, they may be regarded as principles.

Although only under unique circumstances might one or another of these conditional and physical elements be excluded from organizational considerations, the writer does not feel that they are ipso facto principles in the conventional sense of the term. On the other hand there is no intent to dismiss the existence or the essentiality of these elements. To indicate a type of organization whereby all of these elements could be dismissed, would entail considerations

of a supernatural order. If one is to regard them as principles, however, one might as well regard the essential elements of matter, time, or space as principles of physics, chemistry, electricity, medicine or even organization. It is suggested, therefore, that these elements be regarded not as principles of organization, but rather as primary factors of organization.

Cognizance having been taken of the inescapable requirement of work to be done by means of people and tools or equipment under specific operating conditions, the elements requiring most careful consideration seem logically to be those involved in the developmental aspect of organization. In other words, the most important consideration is to determine how we can best organize people and things to secure the most efficient or effective accomplishment of the mission under specific situation requirements.

IN order to assure that principles selected from an analysis of the procedural elements achieve a high degree of practicality, the following criteria have been established: that elements selected be essential characteristics of sound organizational development; that they be held to a minimum consistent with comprehensive coverage; that they be ascribed simple, self-explanatory terms; and that they be of such nature that their application to organizational structures may readily be tested.

On the basis of these criteria, the following principles, applicable to the development of sound organization, are considered acceptable:

The Principle of Unity of Command.

The Principle of Span of Control.

The Principle of Homogeneous Assignment.

The Principle of Delegation of Authority.

The principle of *unity of command* denotes that ultimate control of all action towards determined objectives of the organization be vested in one individual at each organizational level of control.

This principle is necessary in order to establish a definite chain of command and to attain the most effective direction of subordinates. This idea of one boss at each

level implies that everyone must report to someone and everyone must be subordinate to someone. Two corollaries are involved in this concept: know to whom you report; know whom you direct. Ideas indicated by these two corollaries are represented in the attitude toward an individual's position in an organization. Everyone has experienced it when taking a new position. It finds expression in the common queries, "What is your job?" "Who is your boss?" "What do you manage?"

To insure unity of command within an organization, the lines of authority should be definite, clear-cut, and understood by all. Every individual should be indoctrinated with the fundamental concept of "one boss at each level."

The principle of *span of control* signifies that there is a limit to the number of individuals within the organization that a supervisor can effectively control. To simplify consideration this principle has been divided into three parts: *span of control individuals*, *span of control distance*, and *span of control time*.

With respect to span of control individuals, management studies and experience have developed the idea that a supervisor should manage not less than three nor more than seven executive-type subordinates. The prime reason for limiting the number of personnel or units under supervision is based on the fact that as subordinates are added, the number of relationships between the supervisor and his subordinates increase in geometric progression. This idea has been generally accepted by management authorities and is based upon actual observation of management practices in many fields of human endeavor.

It should be noted that this consideration applies primarily to the span of executive control. Jobs which merely require supervision of machines or contain a high number of routine or repetitive elements are frequently exceptions since greater numbers of such elements can be effectively controlled by one supervisor. It is also much easier to supervise ten jobs of little importance or similarity of function than to supervise five jobs of major importance or that are dissimilar in their functional aspects. In addition, the personality, health, and abilities of the supervisor must be borne in mind, as these qualities frequently explain

why one individual supervises a high number of activities fairly well when another person would break down under the same load.

Span of control distance deals with the physical area of supervision and implies the locating of subordinates, installations, and activities in such manner as to permit ease of supervision. If the subordinate elements require frequent personal contact, then the question of their accessibility must be considered in determining their location. If widely spread out, the time required to travel to such elements may be excessive and transportation requirements may be wasteful. When the distance is increased to such an extent that the supervisor expends considerable energy and resources to reach them, his effectiveness is seriously reduced. Similarly, it may also be as unwise to locate subordinate elements too close to the supervisor as it is to locate them too far away. Close proximity may result in interference with the work of a subordinate to such an extent that the latter becomes an individual who does only what he is told to do when he is told to do it.

**S**PAN of control time deals with the control of time available to the supervisor. He does not control time itself, but rather the way in which he uses his time. It implies that the supervisor should regulate his use of time in order to effect accomplishment of all the work--routine, regular, special, and creative--with which he is charged. Such control presupposes the use of a time budget or time schedule.

The principle of homogeneous assignment implies that all functions required to accomplish the mission of the organization should be homogeneously grouped, and that all individuals should be respectively assigned to these groupings in accordance with their abilities and capabilities.

This principle is based on a division of labor economy which was firmly incorporated in many ancient civilizations. Xenophon, writing on this economic development in the fifth century B.C., noted: "In small towns the same man makes a couch, a door, a plough, and a table and frequently the same person is a builder too...but in great cities...one art alone

suffices for the maintenance of each individual; and frequently indeed not an entire art, but one makes shoes for men, another for women; sometimes it happens that one gets a maintenance merely by stitching shoes, another by cutting them out, another by cutting the upper leathers only and another by doing none of these things, but by simply putting together the pieces."

There are two phases in the application of the principle of homogeneous assignment--the *organizing* phase and the *personnel assignment* phase. The organizing phase is applied by the homogeneous arrangement of functions and relationships within the structural framework of the organization. Application of this phase entails two subordinate considerations: first, that all duties are homogeneously grouped; second, that all duties are specific and do not overlap. The personnel assignment phase is applied by assignment of personnel based on their abilities and capabilities to perform the homogeneously grouped functions of the organization. This phase is predicated upon the fact that every individual in accomplishing a task utilizes a basic knowledge or skill. In assigning an individual to a job, or in assigning additional responsibilities to an individual, more efficient results will be obtained if the job calls for a whole or at least a partial utilization of basic knowledge and skill already possessed.

Delegation of authority implies that authority delegated to a subordinate should be commensurate with his assigned organizational responsibilities. This principle applies to all levels of management, but becomes more important as the scope and degree of responsibility of the supervisor increases. It deals with a procedural element as old as human history. An early example is found in the Book of Exodus concerning Moses. Moses was staggering under the same problem that has caused many a later leader to fail. He was attempting to personally accomplish the task of controlling many people. His father-in-law observed his methods and suggested a delegation of authority. Moses heeded his father-in-law, and "...choosing able men out of all Israel, he appointed them rulers of the people, rulers over thousands, and over hundreds, and over fifties, and over tens. And they judged

the people at all times; and whatsoever was of greater difficulty they referred to him, and they judged the easier cases only."

When authority is over-delegated, the subordinate is not properly controlled. He frequently makes decisions without having the final responsibility for their results. Such an individual 'refers none of the cases to Moses,' but judges all himself. When insufficient authority is delegated, the subordinate is afraid to use his initiative or make decisions. He 'refers all of the cases to Moses.' When delegation of authority is commensurate to the responsibilities involved, the subordinate has the proper latitude of freedom and control to insure efficient operations. He judges matters within the compass of his responsibilities and takes those problems exceeding his responsibilities to the next higher level of control.

Determination as to whether the principles of unity of command, span of control, and homogeneous assignment have been applied to organizations may tentatively be tested by the simple expedient of carefully noting appropriate organizational functional charts. Absolute determination, however, can only be arrived at by on-the-spot checking to see that the provisions indicated have been put into practice and are being translated into action. Application of the principle of delegation of authority, although indicated in part by functional charts and office instructions, can normally only be determined by discussing with each supervisor the degree of authority delegated and the respective freedom provided for such authority to be exercised. It is noteworthy that all of these applicatory tests may be carried out by simple administrative inspection procedures without undue expense of time or effort.

Consideration of these developmental principles will show that all four meet the criteria requirements previously cited. All are essential characteristics of sound organization. Their terminology is explanatory of their nature, and together they provide a complete basis for the development of sound organizational structures. Furthermore, the degree of their application may be gauged by relatively simple processes.

# AIR POWER AND PRINCIPLES OF WAR

*Colonel Frederick E. Calhoun*

SINCE at least 500 B.C. soldiers have analyzed military campaigns and written of factors considered important to the successful prosecution of war. For centuries many of those factors have survived subsequent appraisal and have come to be regarded as principles of war.

While not all recognized writers on war have agreed as to the exact number and wording of these so-called principles, a remarkable similarity and continuity is evident. The oldest military treatise on record, *The Art of War*, written by the Chinese Sun-Tsu about 500 B.C., contains ample evidence that several principles of war were recognized at that time. The principle of the *objective* is identified in the following passage: "In war let your great object be victory and not a lengthy campaign." That Sun-Tsu appreciated the importance of mass is illustrated by the following: "We can form a single united body, while the enemy must split up into fractions. Hence there will be a whole pitted against separate parts of a whole, which means that we shall be many to the enemy's few." The principles of the *offensive*, *movement*, and *surprise* are readily identifiable in other passages of this famous military classic.

When General Nathan B. Forrest, C.S.A., uttered his ungrammatical but immortal formula for success: "Git thar fustest with the mostest men," he showed keen insight into the importance of concentration and movement.

Although the writings of Napoleon, Clausewitz, and Jomini probably exerted the predominant influence, "There is considerable evidence that a British military writer, Major General J. F. C. Fuller, is the father of the currently accepted modern version of the principles of war, or at any rate gave them articulate form and wide publicity."<sup>1</sup>

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<sup>1</sup>Charles Andrew Willoughby, *Maneuver in War* (Military Service, 1939), p. 32.

The American version of the principles of war first appeared in War Department Training Regulations 10-5, 1921. They were discussed in Section III of the Air Corps Tactical School text on Air Warfare (March 1, 1936), again in AAF Memorandum 200-7 (October 1943), and are currently being taught in schools of The Air University. They are:

- The Principle of the Objective
- The Principle of the Offensive
- The Principle of Mass
- The Principle of Economy of Force
- The Principle of Movement
- The Principle of Surprise
- The Principle of Security
- The Principle of Simplicity
- The Principle of Cooperation

It has been said that these nine principles comprise the whole art of war, that they are basic and immutable and are not subject to exception. "These principles have been deduced from the study of military history, the records of which show that the great commanders have ever been guided by them and that success or failure in military operations has depended upon the extent and manner of their application."<sup>2</sup> These statements are difficult to refute, but it should be remembered that the principles of war were derived from study of surface operations and written by soldiers with ground warfare in mind. They stem from periods in history when the airplane existed only in man's imagination. They now require analysis in the light of modern war; a period in which Air Power has reached at least "a stage of full adolescence."

**B**EFORE any such analysis can be undertaken it is necessary first to consider the influence of Air Power on war, since only by an appreciation of the nature and purpose of war itself can any principles for its conduct be properly evaluated.

The *Encyclopedia Britannica* defines war as "...the use of organized force between two human groups pursuing

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<sup>2</sup>Conrad H. Lanza, *Napoleon and Modern War* (Military Service, 1943), p. 155.

contradictory policies, each group seeking to impose its policy upon the other." There are others, but this definition is acceptable for the purpose of this article because it eliminates various elements of political effort sometimes referred to as war. It is acceptable also since it does not necessarily imply the use of organized force against organized force, for it is in this respect that Air Power has exerted a predominant influence.

Indeed, the ability of weapons of the air to strike at the very roots of power of an enemy nation without necessarily coming to grips with its armed forces has put an entirely different complexion on the very nature of war. The air age has seen the disappearance of the traditional barriers of mountains, oceans, and distances upon which nations have so long relied for security. The vital centers of all nations have now become vulnerable to attack by Air Power. It is this vulnerability, and the capability of Air Power to deliver weapons of mass destruction with lightning-like rapidity, that has exerted a major influence on war and the preparation for war. Some contend that a future war might last only hours, days, or weeks at most, but regardless of which is correct the implication is clear: time is of the essence, and any consideration of the principles of war must include consideration of their application to the preparation for war and its direction. Such preparation and direction is called strategy, while the conduct of specific operations is called tactics. Combined, they represent the scope of applicability of the principles of war.

Having briefly considered the influence of Air Power on war, the currently accepted principles of war can now be analyzed one by one with the object of accepting, modifying, or rejecting them. An objective consideration of the influence of Air Power on the principles of war, rather than an elaboration of those principles, is the aim of this study.

The principle of the *objective*, or as stated by the British, the maintenance of the aim, is largely self-explanatory. It is the end toward which any undertaking is directed. The objective in any war is to cause the enemy to believe that the evils of further resistance will be greater than

those of yielding. The planning and direction of the war effort must, therefore, be undertaken with this ultimate aim in view.

It is with respect to the objective and the means of its attainment that the effect of Air Power has been most revolutionary. Historically the prime objective of military operations has been the defeat of the enemy's armed forces in battle. Clausewitz said: "Warfare has three main objects: (a) To conquer and destroy the armed power of the enemy; (b) To take possession of his material and other sources of strength; and (c) To gain public opinion. To accomplish the first purpose, we should always direct our principal operation against the main body of the enemy army or at least against the important portion of his forces. For only after defeating these can we pursue the other two objects successfully." A century later the United States War Department endorsed this doctrine when the 1923 revision of the *Field Service Regulations, U. S. Army*, stated: "The ultimate objective of all military operations is the destruction of the enemy's armed forces in battle. Decisive defeat in battle breaks the enemy's will to resist and forces him to sue for peace."

Clausewitz was probably right in his time, but the War Department view failed to recognize the potential of Air Power. Some recognition came, however, in 1945 when Japan surrendered with the major elements of her army still intact. "The public admission of defeat by the responsible Japanese leaders, which constituted the political objective of the United States offensive begun in 1943, was thus secured prior to invasion and while Japan was still possessed of some 2,000,000 troops and over 9000 planes in the home islands. Military defeats in the air, at sea, and on the land, destruction of shipping by submarine and by air, and direct air attack with conventional as well as atomic bombs, all contributed to this accomplishment.... Nevertheless, it seems clear that, even without the atomic bombing attacks, air supremacy over Japan could have exerted sufficient pressure to bring about unconditional surrender and obviate the need for invasion."<sup>3</sup>

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<sup>3</sup>*United States Strategic Bombing Survey: Summary Report (Pacific War).*

FROM the preceding paragraph it is clear that this method of applying the means to attain the objective is nothing short of revolutionary. Control of the air permits the destruction of such industries, cities, or other objectives as may be chosen for attack. Strategy, then, must be projected beyond bringing war to a favorable conclusion. It must consider the postwar effect of such destruction if chaos is to be avoided. The selection of these objectives opens up a field so vast and vital that it is a challenge to military men and civilians alike. It calls for the best thought regarding industry, economics, politics, the humanities, and even ethics, that can be brought to bear on the problem.

The gaining of air superiority has for years been advocated by airmen as the primary or initial objective of Air Power. With the advent of the atomic bomb and other deadly weapons transportable by air, the degree of control of the air becomes of vital interest. It is conceivable that relatively few airplanes or guided missiles carrying these highly devastating weapons might deal a mortal blow without first having achieved air superiority as it is now defined. Both from the offensive and defensive standpoints, in preparation for and in the conduct of war, this factor must be borne in mind.

The importance of the objective and the influence of Air Power upon its selection is clearly evident. It is not the principle of the objective that requires modification; it is the thinking concerning the intelligent application of the principle that requires attention.

The principle of the *offensive* teaches that only through offensive action can a victory be won. While not all offensives result in victory, defensive action can never attain it. It is only through the offensive that the initiative can be retained and surprise exploited.

Any nation, historically committed to a peacetime military policy of the defensive, must now recognize the grave dangers inherent in such a policy in an air age. It must accept the fact that complete defense against air attack cannot be secured with any reasonable expenditures of its resources. Any nation must realize the possible effect of

penetration of its defenses by aerial weapons of mass destruction. The Battle of Britain is recorded as one of the most magnificent defensive operations in history, yet it did not result in victory. It gained time for the preparation of an offensive. Had the German airplanes which penetrated the defense been armed with the devastating weapons of today, the outcome would have been totally different.

The United States Strategic Bombing Survey states: "The threat of immediate retaliation with a striking force of our own should deter any aggressor from attacking." This is unquestionably good insurance, but it should not be interpreted as meaning that an attack must first be absorbed. Indeed the first blow might well be decisive. In the event war should become imminent and unavoidable, serious consideration should be given to delivering the first attack rather than a retaliatory blow. To fail to take the initiative might mean never to regain it.

The military airplane is an offensive weapon. It does not operate in a defensive position. Even in a defensive operation the airplane operates offensively, carrying its firepower to the enemy, thereby epitomizing the principle of the offensive. The influence of Air Power then only serves to strengthen this principle.

THE principle of *mass* is one that has survived all military history. Sun-Tsu expressed it simply and very much to the point when he said: "And if we are thus able to attack an inferior force with a superior one, our opponents will be in dire straits." Napoleon demonstrated the principle most effectively, and broadened it to include the time element now considered vital to the success of air operations when he said: "The strength of an Army, like power in mechanics, is the product of the mass by the velocity...."

This principle was consistently violated by the Army with respect to the air component until 1943. Prior to that time aviation had been parcelled out under decentralized control. In North Africa, after the Air Force had been committed piecemeal, General Eisenhower placed all air units under air command. With this unified command it then became possible to apply the principle of mass.

The time element now becomes a vital factor in achieving mass. The ability of a nation to recuperate from the effects of piecemeal attacks must be considered. The effects are not always cumulative or decisive. The employment of the V-weapons by Germany and the *kamikaze* weapons by the Japanese would have been far more effective if they had been concentrated in terms of time.

Numbers and time are not the only elements now necessary to achieve mass. Quality also looms as one of the major factors to be considered. Technical superiority, now more than at any time in the past, can more than make up for quantity. Superiority in quality of men and airplanes during the last war enabled our air forces to exact a toll from the enemy far out of proportion to the numbers involved. This factor was perhaps most convincingly demonstrated by the dropping of an atomic bomb from one airplane. Were he living today, it is likely that General Forrest would want to add to his famous phrase--"and the bestest."

Air Power convincingly demonstrates the factors applicable to this principle, although the word *mass* is not entirely suitable today. Concentration of combat power, or in shortened form, *concentration*, is a more appropriate and descriptive term for use at this time.

*Economy of force* is directly related to the principle of concentration and serves to reinforce that principle. It teaches that to attempt to be strong everywhere may result in a lack of sufficient strength at the decisive time and place. The principle recognizes that diversions of effort away from the most important objective may well jeopardize this primary aim.

Earlier in this article it was contended that principles of war were applicable to preparation for war as well as to its actual conduct. Preparation for war has traditionally been a costly undertaking, but Air Power has now introduced total war. Preparation for and conduct of such a war can tax the resources of a nation beyond the point of successful recovery. The economy of these resources is now imperative in the organization of the armed forces. The proper balance of these forces can no longer be based upon tradition, nor can it be unduly influenced by vested interests. Realistic

and objective evaluation is necessary in order to keep this balance within acceptable bounds.

It is generally accepted that air superiority is a prerequisite to successful surface engagement. The President's Air Policy Commission recently advanced the theory of Air Power well beyond that concept. This commission finds that Air Power is essential to survival in the air age--it now has become the first line of defense. The necessity for proper priority in the allocation of resources then, if a nation is to recognize the principle of economy, is clear. To undertake the building of the strongest Air Force, the strongest Navy, and the strongest Army all at the same time might well be disastrous.

The principle of economy of force, or the broader and more generally applicable term, *economy of effort*, is substantiated by the advent of Air Power. Decisive blows can be delivered through the air with resulting conservation of manpower, resources, and time.

THE principle of *movement* is epitomized by the airplane. The ability of an air force to assemble from dispersed bases and strike rapidly to the extent of its range in any direction makes it the most mobile of all the armed forces. Its mobility is insured by adequate bases and a command structure which permits it to transcend geographic or arbitrary boundaries.

The influence of Air Power on the mobility of surface forces is also most significant. With serious and determined air opposition, surface movement becomes exceedingly difficult or prohibitively costly. This was demonstrated effectively in World War II when the German Army was forced to make all movements of any consequence under the cover of darkness. The greatest of all amphibious operations, the invasion of Normandy, convincingly demonstrated the freedom of movement made possible with air supremacy.

The principle of *surprise* can be exploited by Air Power with most deadly effect. The use of new air weapons or a new method of employment of conventional ones can reap large dividends. Surprise has long been considered important in war, but weapons of the air provide new and varied means of

attaining it. Supersonic missiles of the V-2 type, which so far have defied interception or effective counter-measures, launched from undetected locations, now provide a means of achieving almost total surprise. Methods of dealing with weapons of this nature constitute a challenge to any nation.

The principle of *security* encompasses the measures taken to guard against surprise and to prevent hostile interference. From the standpoint of air action this principle would dictate active and passive air defense, but the real effect of Air Power on the security of the United States has broader implications. It is recognized that Air Power can now transcend the traditional barriers of oceans, mountains, and distances upon which reliance for security has heretofore been placed. From the standpoint of surface action a new element of security has been added. No longer must only the right and left flanks be guarded; a third flank, the vertical, must also be secure.

The traditional principle of simplicity, although described as a relative term, is unacceptable in the air age. While unnecessary complexity should be avoided, it is not possible to exploit the quality factor to a satisfactory degree if simplicity is the overriding influence.

The weapons of the war of today are inherently complex machines, the effective employment of which demands precise skill and training. Furthermore, successful operations demand the utmost effort in planning, coordination, and execution. In football, straight simple plans can no longer be counted upon for success in the face of an alert opponent. The champions of today rely a great deal upon deception and complicated but well-timed plans. Of course, complex measures require a high degree of planning, training, and practice, but the full effect of military effort cannot be realized unless both the technical potential of the weapons and the mental capacity of the men who operate them are utilized.

The principle of *cooperation* implies a voluntary combining of various efforts toward a common goal, and is too loose to be relied upon in war. Cooperation leaves entirely too much to chance and depends to a large extent upon personalities. Organization in the Pacific theater during World War II was based on cooperation and functioned with

varied success. The outstanding example of its failure was much publicized as a result of the Pearl Harbor attack.

Numerous examples could be cited to illustrate the fallacy of depending upon cooperation to achieve unity of effort. They would show that military operations are too important to be left to chance. Operations involving surface, sub-surface, and aerial action require more than cooperation; they require mandatory coordination of effort. The principle of unified command under the recent armed forces unification act provides a means of securing this coordination.

OF the nine principles of war thus far examined with respect to the influence of Air Power, eight have survived with minor modification. They are: the *objective*, the *offensive*, *concentration*, *economy of effort*, *movement*, *surprise*, *security*, and *coordination*. *Simplicity* is rejected as unacceptable as a true principle in the air age.

It has sometimes been contended that air superiority is a principle of war. While it is generally conceded that air superiority is a necessary prerequisite to successful surface operations, to hold that it is a principle of war is tantamount to saying that the battle must be won before it is begun. Field Marshal Montgomery, in his notes on High Command in War, does list air superiority as a principle only to surface action: "The first and basic principle is that you must win the air battle before you embark on the land, or sea, battle. If this is not done, then operations on land will be conducted at a great disadvantage."

In the same pamphlet Field Marshal Montgomery advances administration and morale as principles of war. On morale he states: "Morale is the most important single factor in war." In discussing the principle of administration, he considers the importance of the logistical requirements to the maintenance of the force.

Other important factors such as resolution, discipline, and leadership might be listed and defended as principles of war, but they would serve only to strengthen the conclusion that there is something missing in the eight previously listed principles. They fail to consider, to an adequate degree, the importance of the national will, the necessity

for vigorous mobilization of science and industry, the effect upon the vitality of a nation or its armed forces of such factors as discipline, morale, and leadership. They do not adequately express the rapidly narrowing relationships between the civilian and military echelons. They do not give sufficient recognition to the importance of the national potential in an era of total war. They neglect the importance of the proper maintenance of the forces in battle. In short, these factors add up to sustaining power, or the *capacity* to support the previously analyzed principles of war. Thus, the principle of *capacity* must then be added to the eight principles earlier summarized, thereby bringing the total number back to nine.

It will be noted that the surviving principles do not differ to any astonishing degree from those previously advanced. They bear out the theory that true principles have a very considerable degree of permanence, but that they must be subjected to constant and objective analysis in the light of new knowledge. It is in the application of the principles of war, rather than in their statement, that Air Power exerts the predominant influence. Properly interpreted and wisely applied, they constitute an acceptable basis for both the preparation for, and the prosecution of, war.

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*Cities--for their own self-protection, and also for the protection of military targets--must rid themselves, as far as possible, of the military installations that have grown up in many of them. These installations make a city a doubly inviting military target and enable the enemy to "kill two birds with one stone" --wreaking havoc alike upon both military and home front. Dispersion insofar as possible of the military installations to other non-urban areas would at once render those installations more safe than they could possibly be in the heart of a city and would at the same time tend to divert the enemy's attacks from the cities to the military installations.*

--Hanson W. Baldwin  
The Price of Power (1948)

# THE STRATEGIC STRIKING FORCE

*Lt. Col. Frank R. Pancake*

**I**N THE three years that have elapsed since the end of World War II several significant facts have been brought home to the American people. First, the victorious conclusion of a war does not insure an acceptable and durable peace. Second, the United Nations is still far from maturity as an instrument for outlawing war and preserving the security of the world from aggression. Third, the United States has inherited from Great Britain the role of leader among the democratic nations of the earth.

Following a period of gradual disillusionment, during which time we began to understand these and other truths, we have come to the realization that if we are to have peace in our time it will have to be a Pax Americana. There has been further awakening to the fact that the instrument of Pax Americana must be Air Power, just as the instrument of Pax Britannica a century ago was sea power. We have come to understand that we will not be heard at the conference table, we will not be heeded in the halls of the United Nations, we will not acquire and maintain the respect of aggressor nations, and we will not be able to insure a reasonable degree of security unless we have a striking force of highly trained air units capable of immediately attacking vital targets in an enemy's homeland.

Thus, the main burden of preserving the security of the United States rests squarely on the strategic striking force of our air arm. It behooves us then to carefully study the requirements for this strategic striking force, so we may be certain that it is at all times capable of performing its mission with absolute precision and success. Its failure could well bring disaster and ruin. What, then, are the requirements, the fundamental necessities, which must be provided if the operations of the strategic air force are to be successful?

The First Requirement: *Complete knowledge of the economic, industrial, military, and political targets in potential enemy states, including the vital elements in their war making machinery.*

General H. H. Arnold, in his "Third Report of the Commanding General of the Army Air Forces to the Secretary of War," 12 November 1945, expressed this requirement as follows: "Through a world-wide intelligence system, maintain constantly up-to-date information regarding all phases of the national life, economy, and philosophy of potential enemy states." And further: "Maintain an analysis, continuously being revised to meet new conditions, to show the importance of all industries and other activities of potential enemies and to evaluate the relative importance of each of the units in each activity." In short, we must know the weaknesses and the bottlenecks in every nation's economic system before we can hope to direct operations against those weaknesses in time of war.

In order to insure that this information will be available in the minutest detail when hostilities threaten, we must have an intelligence system second to none, a system which will keep our Air Force constantly abreast of developments in all other countries of the world. Analysis of all information must be continuous to insure that we are fully cognizant of just what the vital elements are, where the components are located, and what the physical layout of each component is.

The machinery for obtaining this information--The Central Intelligence Agency--is now in being. This agency has been established as the organization which is responsible for collection and coordination of all intelligence information affecting the national security. It analyzes and disseminates this information to the using agencies, one of the most important of which is the United States Air Force. The Air Force in turn relays pertinent information to the Strategic Air Command and its striking units. Thus, although the intelligence organization exists, there remains the tremendous job of making it function properly. We cannot afford to wait until hostilities have begun to get this machinery operating effectively. We made that error in World

War II and had we not been able to call upon the British Intelligence Service and those of other allied nations, we could not have launched the strategic air war against Germany in the summer of 1942. We would not have known what to bomb. It took several years after Pearl Harbor to assemble the necessary information on Japan. We know that such negligence in the present years of peace will be fatal in any future war.

THE Second Requirement: *Strategic Air Power in being, capable of launching destructive attacks immediately upon commencement of hostilities.* In addition to knowing what and where to strike, it follows that we must have the weapons with which to strike. In the next war, blue prints alone will not deliver heavy blows. Time will not be permitted us to tool up. The United States will stand or fall on her ability to wage decisive war in the first days and weeks after the initial onslaught.

This point is stated quite emphatically by General Carl Spaatz in "Strategic Air Power: Fulfillment of a Concept," *Foreign Affairs*, April 1946. In speaking of the lessons learned from our experience with strategic Air Power in World War II, he says:

One lesson is that the time we were given to make our preparations was an absolutely essential factor in our final success. We had warning in 1939, and by 1941 had made notable progress. Following Pearl Harbor, with the United States actually at war, we had two and a half years more to build the striking force necessary to fulfill the strategic concept. The total time allowed us to prepare for the final all-out assault was four and a half years. It is unthinkable that we should ever again be granted such grace.... Had our peacetime air force been maintained during the 1930's at the level it attained even as early as the date of Pearl Harbor, and had it in consequence been prepared to act in the first year of war on the level it attained in mid-1942, then the tremendous and costly effort of the next two and a half years would have been enormously lessened. We would have struck at the heart of the enemy much earlier. It is even conceivable that the fact of an American air force in being, with full potential in 1939, might have prevented the outbreak of war. In the next war, should there ever be one, four and a half years will not be allowed us in which to build up an air force, insured by the resistance of our Allies to common enemies. America will be Target

Number 1; we will stand or fall with the air force available in the first crucial moment.

A corollary to this second requirement of strategic Air Power in being is the requirement of penetration. Our aircraft must be capable of penetrating to and destroying enemy targets, otherwise we do not have true Air Power in being, but only impotent numbers of men and machines. The strategic air force must employ equipment and tactics which can cope with enemy defenses and hit enemy targets, or admit defeat.

The Third Requirement: *Possession of bases from which the vital elements of our potential enemies can be attacked.* The fulfillment of this fundamental is, of course, directly related to the range of the aircraft being used. We must strive for aircraft with sufficient range to operate from the United States against targets anywhere in the world. Meanwhile, we must make every effort to obtain and maintain bases which are within striking distance of our potential enemies.

We must also remember from the bitter experience of the last war that possession of bases in time of peace is not synonymous with possession of bases in time of war. We discovered that as we helplessly watched Wake, Guam, the Philippines, Hong Kong, and Singapore being overrun by the Japanese early in the war. These islands, instead of being the strong points in our outer armor, became spearheads of the enemy's attack aimed at our own heart. If our bases in the far corners of the world are to serve the purpose for which they are intended, they must be garrisoned and equipped to withstand an initial siege, and airborne troops and supporting Air Power must be ready at all times to go to their rescue. Unless we are prepared for such eventualities our bases will do us more harm than good. It goes without saying that the support of distant bases will be difficult and will require a tremendous overhead of supporting troops.

**T**HE Fourth Requirement: Our fourth requirement follows logically upon the heels of the first three. If we know what to strike, have the Air Power with which to strike, and possess the bases from which to launch that Air Power,

we can by no means be assured of successful operations unless we also have *sufficient resources in personnel, materiel, and productive capacity to back up our air effort for the duration of the strategic air war*. Our initial effort must be a strong one, but it must be followed by successively stronger attacks until our enemy's will to resist is completely broken. We have already stressed the requirement for an adequate initial striking force. This force may well be all that we will have a chance to use. However, we cannot discard the possibility of a delayed decision. This means that resources in personnel, materiel, and productive capacity must be maintained in a state of readiness so that they may be quickly transformed to a war status when needed.

It is vitally necessary that the timing of this transformation be geared directly to the calculated endurance of the strategic air force which is maintained in being. Since this endurance is definitely limited, our resources must be easily convertible to wartime operations.

This means, first of all, a pool of trained personnel. As a result of the tremendous training program of World War II, we now have the richest reservoir of air force talent on earth. We must not allow this talent to disintegrate through lack of interest in the military needs of the nation. This means a progressive and realistic reserve training program which will maintain the proficiency of reserve officers and men in strategic air equipment. It also means a coordinated effort with the Air Training Command to insure that strategic units will have a satisfactory number of trained replacement personnel.

Our research must be continuous and progressive. Our weapons must be the best that science and industry can provide, and we must constantly strive to better them. The using agency--the Strategic Air Command and its subordinate units--can and must be ever critical of the faults of its equipment and ever constructive in its suggestions for new and better replacements.

As our instruments of war are perfected, the heads of industry must be informed as to the estimated requirements of strategic Air Power in time of war, so that necessary plans may be laid to facilitate conversion to mass production

with the least possible delay. It may be necessary to build vital plants and hold them on a stand-by status. Strategic air leaders must leave no stone unturned to insure that our productive capacity can convert to wartime operations in time to support our air offensive during the first crucial days of the struggle.

The Fifth Requirement: *Adequate logistical support.* If we have fulfilled requirement number four and are assured of the necessary resources in men, materiel, and productive capacity, we know that our strategic air force is still not operational until replacement personnel and materiel are flowing regularly to the using wings and divisions.

World War II has often been called a war of logistics. The expression "too little and too late" was a common explanation for air battles lost and territory sacrificed to the enemy. We turned the tactical tide only after we had swelled the logistical tide.

World War II furnished us with an excellent example (the B-29 force in China) of strategic Air Power rendered almost impotent by the logistical problems of operating from remote overseas bases. During some ten months of operations in India and China the Twentieth Bomber Command hit Japan proper only six times and ran a total of but *forty-four* operations, an average of 4.4 per month, against all targets. After this force was moved to the Marianas as the 58th Bomb Wing, it immediately became as operationally efficient and dependable as any of the wings of the Twentieth Air Force. In three and a half months it flew *thirty-four* operations for a monthly average of nearly *ten*. The principal reason for this transformation was the absence of insurmountable logistical problems which plagued our forces in China.

The lesson is clear for the future. Strategic air units cannot carry out effective operations against an enemy unless ample logistical support can be provided.

**T**HE Sixth Requirement: *Adequate communications.* The strategic air force needs the following communications services: command channels to both higher headquarters and subordinate units; air-to-ground, air-to-air, and ground-to-air operational control; and aids to navigation and bombing.

These facilities existed in fairly satisfactory form at the end of World War II. All should be greatly improved before another war. It is particularly imperative that we do our utmost to improve our blind bombing equipment and our means of communication over vast distances.

The Seventh Requirement: *A sound plan of action.* The basic plan for the employment of strategic Air Power is to strike at such vital targets of the enemy's national structure as his heavy industry, his transportation, his oil, and his electric power. If we sufficiently weaken those vital elements we can force his capitulation, although in the meantime we may have to strike at his strategic air arm to prevent his attacking our own vital targets. This method of employment of strategic Air Power proved itself so decisively in World War II that we take it for granted that this same general plan of action will be used in any future war. But beyond that broad basic plan there must be detailed plans specifically designed to deal with all potential enemies. We must gather our intelligence, pick out prospective targets, and plan how we are going to destroy or neutralize those targets.

When we have mapped out the strategic plans, their actual realization becomes the responsibility of our strategic air force commanders. They must then evolve their tactical plans for carrying out the preconceived strategy.

We have an excellent example of the evolvment of a sound tactical plan of action in the experience of the Twentieth Air Force. The original plan for the employment of B-29s against Japan was modeled on methods the Eighth Air Force had tested and found successful in Europe--high altitude daylight formation bombing. After all, the B-29 was designed specifically for that tactical use. But three months of effort in applying these tactics did not bring results. Japan had only been scratched. Results indicated that a new plan of attack was urgently needed. Low altitude night bombing and incendiary attacks, supplemented by daylight bombings and aerial mining, provided the solution. The new plan was the beginning of the end of the Pacific War.

We need, then, a sound overall strategic plan directed against vital targets, plus a sound tactical plan of action

which will provide the proper employment of our striking force for the accomplishment of its mission.

The Eighth Requirement: *Relentless prosecution of the plan of action.* Our final principle may seem somewhat obvious, but it is nonetheless important. It is to prosecute the plan of action relentlessly and unceasingly until the enemy's economic system has collapsed and his will to resist has been crushed. This means that strategic Air Power should not be diverted to tactical targets except in extreme cases. It must be remembered that the consequences of strategic air assaults are like the spread of cancer; the effects are not immediately apparent but, like that fearful disease, the results are fatal.

Probably the most outstanding example of strategic air operations which failed because the plan was not pursued to a decisive conclusion was the German air battle against Britain. As early as 1938 the *Luftwaffe* had a *Studie Plan* of Great Britain, an intelligence analysis of that country which included its strategic weaknesses. Nazi Air Power was first to be aimed at RAF and aircraft industry targets in order to eliminate any threat to the *Luftwaffe* and to establish its supremacy in the skies over Britain. Then the German Air Force was to attack shipping and harbor facilities in an effort to interdict supplies to Britain and throttle her imports of war materials. The Germans had a good plan of action, but it failed for one principal reason: Goering did not follow it. He was under pressure from Hitler to destroy English cities; the German Navy wanted mining and shipping attacks before the RAF had been neutralized and domination of the air assured; and there were other spectacular schemes which offered better advertising for the *Luftwaffe*. The end result was diversion of effort, failure to wrest control of the air from the RAF, and defeat in the now historic Battle of Britain. The Germans had a plan but did not see it through.

In direct contrast to the German effort was The Combined Bomber Offensive Plan of the Allies, which was approved in June 1943 by the Combined Chiefs of Staff and called for around-the-clock bombing of strategic German targets. The objective of this plan was the "destruction and dislocation

of the German military, industrial, and economic system, and the undermining of the morale of the German people to the point where their capacity for armed resistance is fatally weakened." The ruins of Germany testify that the objective was achieved. It was achieved because the allied strategic air forces in Europe had a definite plan of action and followed that plan to its victorious conclusion.

In summary, the essential requirements for the conduct of successful strategic air operations are: a superior intelligence system, strategic Air Power in being, suitable bases and sufficient resources, adequate logistical support and communications, and a sound plan of action, plus relentless prosecution of the plan.

In the event of another war our first and perhaps only major offensive effort will be strategic air attacks. It is imperative that these operations be successful. These requirements, properly fulfilled, will guarantee a successful strategic air campaign which, in turn, will guarantee a successful war.

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*We must assume, in making our plans, that there will be a direct attack on the United States mainland in any major war in which the United States will become engaged on and after January 1, 1953. It may be that the war will not open with this direct assault. It may be that the fighting will start at some point in the world where our forces will come in contact with those of other nations. It may be that the fighting will be localized at that point, on the model of the practice war between Germany and Russia in the Spanish Civil War. But this is not likely; and certainly we must not count on it. We must assume, in making our plans, that if the enemy can do it he will make a direct air assault on the United States mainland regardless how or where the first shooting starts.*

*It must be assumed that there may be no warning of the attack. We must assume that the force we will bring into being by the end of 1952 will be the force which will have to handle the attack. We will get no further warning than that which we already have.*

--The President's Air Policy Commission  
\* Survival in the Air Age (1948)

# RADIO COUNTER-MEASURES

*Colonel Frederick L. Moore*

THE application of radio counter-measures (RCM) in conjunction with heavy aerial bombardment attacks during World War II proved a very effective means of aerial defense. In a war of lightning retaliation (with atomic weapons, guided missiles, and 500 m.p.h. bombardment aircraft) such as we may expect World War III to be, RCM should be of even greater value.

The technical measures likely to be employed in the next war are in considerable contrast with those of World War II. The general tactics of warfare from 1941-1945 are not so much outmoded as will be the weapons which were then used. The emphasis is now on increased speed and range of aircraft. When these two characteristics are attained new developments in aerial weapons are necessary to offset them. The airplane becomes a more potent weapon. When the speed of the bombardment vehicle approaches a Mach number of 1.0, consideration should be given to the removal of all guns from the bomber, since the speed at which it is traveling makes interception by a piloted fighter almost an impossibility. With fast bombers a definite possibility, all means for opposing them are again being studied to determine ways of stopping the aerial attack. The outcome of such study results in a requirement for earlier warning of an attack, greater speed of the intercepting missile, continuous and positive control of the missile, target-seeking characteristics, and some means of detonating the missile at the proper distance from the target. The application of electronics appears so far to be the best solution to the problem of missile control and guidance. Radio control is instantaneous in action and can be adapted to exercise any type of control desired. This is where radio counter-measures will apply.

In World War II RCM followed a general pattern: Radio and technical intelligence would give details on the enemy's

communications system; research and design specialists with top priority would then produce an electronic jammer or other means with which to counter or nullify his communications; these counter-measures would suddenly be applied in conjunction with a planned bombardment attack on the enemy; with RCM being successful in disrupting the enemy's defense against attack, he would change his method of communications and the cycle would begin over again.

Underlying this pattern of events and causing it to assume the form it did was the basic policy of our air attack against Germany and her allies. With the weapons of that day it was necessary to darken the skies over Europe with clouds of bombers carrying a maximum tonnage of explosives aimed at the war-making potential of the enemy nation. The pattern of aerial warfare of World War II defined the pattern of RCM. The bomber offensive was spread over a long period of time. And although RCM did prove of value in the reduction of bomber losses from enemy fighters and antiaircraft artillery, its use was required continuously with each offensive. Whenever the enemy shifted to other means of communication it meant that the protective effect of RCM was diminished. The end result was an electronics research battle with the trend being called by the Allies in their application of offensive RCM. The enemy was finally forced to neglect radio development for offense and to concentrate on defense.

The British were the first to employ RCM outside of the laboratory stage during World War II. The Battle of Britain lent a very effective impetus to all means of countering the German air attacks. Consideration was given by the British to the use of RCM early in 1941, but the country was on the defensive. It was a well founded view at the higher levels of command that to commence a jamming war, to which the enemy would reply in kind, would only result in serious damage to the home defenses, particularly the British night defense organization which was extremely vulnerable to radio jamming. It was not until the middle of 1942 that Britain had turned sufficiently to the offensive to enable RCM operations to begin in the British Bomber Command.

Since United States air operations were planned and coordinated with those of the British, RCM was likewise

considered by the American staff. The resultant evaluation of the enemy's air warning system led to projects for RCM to neutralize or deceive the German radar early-warning and gun-laying system.

**B**EHIND the problems of tactical employment, however, lay the absolute requirement for accurate intelligence concerning the communications system employed by the enemy. It was only when this information had been compiled, digested, and analyzed in the light of contemplated operations, that an effective plan could be worked out.

After intelligence had collected sufficient information to work on, and electronics engineers had designed the jamming weapon which would be effective, the equipment to fulfill such a plan had to be built. And in this case speed was all important. The foe was continually redesigning old communications equipment to give greater effectiveness and reliability. In addition he was bringing out new types which utilized different principles of transmission and reception than were contemplated in our RCM plan. As a result "RCM" became to the radio equipment manufacturer a synonym for high priority projects--equipment built on a "forget-the-cost" scale, of limited numbers, and custom built with the emphasis on speed. Everything was geared to a pace to put the RCM equipment into operation before the enemy could change his current methods of defense against aerial bombardment. After the rush project equipment was installed in the aircraft and its effective use realized, the enemy would make a quick switch to different means of doing the same job, and the cycle of plan, design, construction, and utilization would be repeated.

In the application of RCM the entire enemy communications system must be scrutinized and the weakest link in the chain attacked. For instance, in the complex, radar-directed, fighter control system on the continent, there were several points at which RCM was applied. When the enemy used medium-frequency voice radio from controller to pilot, it was possible to utilize very high power ground stations in Britain tuned to the same frequency. A German-speaking announcer would break in and override the actual German

controller. In a carefully pitched voice an allied announcer would give the night fighter pilots conflicting orders. This threw the night fighter control system into a state of turmoil. By this simple method of RCM many pilots were led to airdromes closed in by weather conditions or confused to the extent that extra delay was caused in obtaining correct directions from their own controller. This resulted in heavy attrition of aircraft, complications in assembling aircraft for the defense the next day, and, above all, a decided lowering in morale of the air crews.

When the Germans changed to very-high-frequency radio for ground-to-air communications it was still possible to cause nearly the same confusion by airborne jammers broadcasting random noises or a wobbly tone ("bagpipes"), or by having a radio operator in the aircraft call out false instructions in the German language.

"Window" was a method of blindfolding the enemy radar operator. Window itself was nothing more than thousands of pieces of tinfoil ribbon cut to a precisely calculated length to give maximum response in the enemy radar scope. When dispensed from pathfinder ships it effectively blanked out the radar presentation received from that area with the result that after the initial drop of the window along the bomber stream path, individual formations could no longer be "seen" in the window path. As a result, fighter controllers could not see to direct their fighters to an interception. With the aid of window, decoys and feints of simulated large formations could be run with few aircraft, thereby increasing the weight of effort available for the main attack.

Of course these were not the only RCM measures used. There were many more and they all served to complicate the communications and warning systems of the enemy. The most important result was that losses suffered by our own formations were substantially reduced. Without the benefit of RCM the losses would have been prohibitive in some cases.

Now that sufficient time has elapsed to permit a fair evaluation of RCM in World War II, it is certain that many more aircraft would have been lost if it had not been

used. This is clearly shown in a study made by the British Bomber Command in evaluation of night bomber raids on Germany.

It is interesting to note from that study the marked decrease in bomber losses following the employment of new counter-measures, and the interval of two weeks to a month required by German research to overcome the effect of each. As techniques of RCM were further developed the loss rate curve showed a distinct downward trend between January 1943 and October 1944. A sharp drop in the curve after October 1944 was mainly due to the change in the military situation on the continent, which by October 1944 had deprived the enemy of his radar early-warning in France and Belgium.

The effective use of RCM in the American air offensive is also indisputable.

The operational use of counter-measures equipment involved some of the most extraordinary duels of wit in the history of war, and it helped mightily to speed the day of victory. It has been estimated that radar counter-measures saved the U. S. Strategic Air Force based on England alone 450 planes and 4500 casualties. But that is only part of the story. They played a major part in the masterly deception which covered our landings in Normandy and in Southern France. By blinding the eyes of our enemies while permitting our own radars to scan with little or no interruption they struck from the hands of the Germans and Japanese new and potent weapons, while leaving us free to do our utmost.<sup>1</sup>

A second important result of RCM during World War II was the strain it imposed on the enemy's radio research and production organization. Every successful RCM effort had to be countered by the enemy in order to restore his defense. Many RCM devices--in particular those against radar--involved the Germans in the design and quantity production of new or modified equipment. Evidence now shows that while there were delays in design and production on this side, similar difficulties were much more serious in the German Air Force which suffered far more than did the Allies. The German radio industry, though fully mobilized and completely under government control, was faced throughout the war with demands which became more and more difficult to meet. Many of these

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<sup>1</sup>James Phinney Baxter, III, *Scientists Against Time* (Little, Brown, 1946).

demands were the direct result of the RCM campaign. This meant that the radio industry, with the research organization behind it, was forced to neglect radio development for offense and concentrate on defense. Their greatest problem in this connection was countering the RCM program.

Another unseen dividend from RCM was its capacity for lowering the morale of the operational personnel of the enemy night defense system. Here the effect on the flying crews was most serious, since the target of many radio counter-measures was the radio link between the fighters and ground control. For the most part this was effective, the enemy soon being brought to the point where he had to rely on a handful of "ace" crews for his results.

FOR the employment of RCM in aerial operations there are certain prerequisites for successful application. The one requirement that has been consistently emphasized more than any other is the absolute necessity for a steady flow of high-grade technical intelligence. Every means available must be used to ascertain the new developments brought forth by the enemy. Continuous evaluation and research must be carried on to anticipate the application of new discoveries made by our foe if the advantage gained by intelligence is to be exploited. Such superior intelligence is extremely hard to obtain and the lack of it has been the norm.

Another important prerequisite is the requirement for trained personnel to operate the RCM devices. The World War II technique of a microphone strapped against the fire wall of an aircraft, with the radio operator tuning the liaison transmitter to the high-frequency control channel of the enemy interceptor, belongs in the past. Other nations now use much equipment similar to ours on the ultra-high-frequency bands. A radio operator qualified to adjust his jammers to the best advantage and make proper changes in the equipment in flight cannot get the necessary training by attending a special school between the time of attack on this country and a retaliation mission take-off. During World War II it required six months to train alert draftees to become the most elementary aerial radio operators. Personnel qualified to perform modern RCM duties while in

flight will require specialization and considerable schooling long before they can be used on a bombardment mission.

In summary, the major requirements for successful RCM will include all the intelligence we can gain; the proper type RCM equipment with which to do the job, installed and ready to go; and trained personnel who fully understand their duties and the most effective means of applying RCM.

Up to this point we have touched only briefly on the type of warfare that we may expect in the future. With the use of atomic weapons, the mass bombing raids of World War II must be a thing of the past. Whatever the size of future bomber formations carrying atomic bombs, they will never equal the size or frequency of strategic bombardment raids as we have known them. Future formations carrying atomic bombs might well contain about sixteen aircraft. We can expect such aircraft to be extremely fast. Speeds up to 450-500 m.p.h. should be obtained for short intervals, with cruising speeds of 300-350 m.p.h. In short, whatever the type of bomber, it is certain to be faster.

Air warning and control systems experienced many difficulties during World War II in making lethal contact with the aircraft. When anti-aircraft was successful in destroying more than ten per cent of the attacking force its part of the air defense was considered effective, because when that figure was reached no air force could maintain large scale attacks.<sup>2</sup> This ten per cent was attained by using radar early-warning and radar gun-laying sets. Incoming aircraft did not exceed an average speed of 240 m.p.h.

Now consider the problem of downing the 500 m.p.h. bomber. Work is being done on improved methods of anti-aircraft gun-laying. Radar controlled guided missiles are being designed to have the speed and range necessary to intercept the incoming bomber. Target-seeking heads for guided missiles are being considered. And as always we have a requirement for a proximity fuze.

But visualize the means of control available to guide the missile to a successful ground-to-air interception. The only means of control which so far has been considered practicable

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<sup>2</sup>E.M. Friedwald, *Man's Last Choice* (Viking, 1948).

is by *radio waves* in some form. There are many variations in the methods of radio control, but regardless of the method there must exist on the ground a transmitter which sends out a signal in some distinct form. The receiver in the guided missile receives a certain coded pulse, which moves the control mechanism causing the missile to change course. It is in this link-up between ground and air that RCM can play a definite part. Whenever a radio receiver is accepting a radio wave it is also possible for a second radio wave to enter the receiver and either confuse or obliterate the desired signal. These jamming waves could be sent from a bomber in flight. The control pulses from the ground station would then be confused or interfered with to the extent necessary to cause an appreciable error in the trajectory of the missile. With the high speed of the bomber only a slight deviation is necessary to cause a miss.

**I**N the case of defense against a piloted high speed interceptor we have a slightly different problem. This type of attack will have several communications links to which RCM can be applied. The pilot will receive instructions from the ground controller on course changes and altitudes at which to fly. We may expect an airborne radar set to be installed in the aircraft which will enable the pilot to "see" his target while still at some distance from it. But each communication link is susceptible to RCM.

Early-warning radar using centimetric wave lengths was in operational use in 1945. This type of equipment provides a certain amount of immunity to RCM. But the point remains that since its application is new it has not been fully tested for RCM. RCM in the form of airborne jammers and window was effective in World War II. Even though it may be more difficult to design and construct a jammer for centimetric radar with its narrow beam width, should not our design efforts keep pace with the increased destructiveness of the weapon we will employ?

Military men are acquainted with the tremendous problem of training the personnel to operate an aircraft warning and control system. The efficient operation of such units does not blossom out after only two or three months training and

operating. It requires a considerably longer time to whip into shape an efficient and dependable organization. It is also definitely recognized that until such units have received their first taste of battle their overall efficiency is comparatively poor. This condition should operate to our advantage in the control and warning system of the enemy country.

For the use of RCM as a means of defense in strategic aircraft, four factors must be kept in mind:

1. Bombers are likely to have a ground speed of about 500 m.p.h. and will fly at 30,000 feet or above.
2. Formations will contain few aircraft. No longer will the mass raid attack be employed. The destructive power of the atomic bomb will make this unnecessary.
3. Bomber raids will be concentrated over a relatively short period of time, perhaps not more than three months, at which time the war will have been decided one way or the other.
4. There will be a definite lag in the air warning and defense control system. It takes time to identify the target as enemy or friendly and to dispatch a missile or interceptor to ward off the attack. There is a *decreasing* amount of time available for interception as the speed of the target increases.

Any nation's bombers making use of the above factors would be difficult to stop. Since these characteristics are potentially realizable many nations are expending a great deal of research and development effort on means to intercept and destroy the attacking aircraft.

ONCE hostilities have begun and our retaliatory striking force is on its way, we will find a small hard-hitting bomber formation of several aircraft identical in appearance. But a few of these aircraft will be completely equipped with the latest design electronic jammers, with equipment of sufficient power to confuse and bewilder the unseasoned enemy radarscope operator. The jamming equipment should cover almost the entire radio frequency spectrum known to be used by the hostile nation. The guided missiles of the enemy will be confused by the strong radio signals coming

from the formation. Their proximity fuzes will be detonated before their missiles arrive close enough to do us damage. The speed of our formation, together with the interference of the jammers, will so reduce the time available to the enemy air warning and control system that their interceptor fighters will have difficulty in making contact with our formation. Even this controlled interception will be made more difficult by jamming the ground-to-air fighter control channel. Robbed of some of his defense measures while others are reduced in effectiveness, the enemy will have difficulty in warding off our attack. The speed of our bombers, in a small formation, will add further complications to his already harrassed defense. With the present destructive capabilities of only a few aircraft the enemy will be seriously hurt, since a high percentage of bombers will reach their objective.

Thus, electronics design is progressing rapidly toward more complex, higher powered equipment, and to the higher frequencies where it is easier to focus radio waves and attain the equivalent of higher power. To successfully jam newer equipment and to interfere with the exchange of intelligence between two parties, is a difficult task. To this is added the everlasting need for technical intelligence, complete and recent enough to enable RCM apparatus to be designed and built. Effort must be put into the RCM program now if we are to have, in being, the equipment and trained operators ready to do their job. When this task has been accomplished the enemy will find his guided missiles rendered incapable of the mission for which they were designed. With few bombs required to obliterate any target, we should take every possible step to insure that the bomb-carrying vehicle reaches the bomb release line. It would be far less costly to do the research and equipping for RCM now than to lose a few vital aircraft short of the target if war should come.

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*The mastery of one's own sky is an unavoidable necessity, death being the penalty for failure.*

--Gen. Giulio Douhet  
The Command of the Air (1927)

# EDITORIAL

COLONEL MATTHEW K. DEICHELMANN, USAF

## AMERICAN SECURITY

"**T**HERE is no defense!" This statement attributed to some of our leading scientists since the development of the atomic bomb, can, as a catchword, become extremely dangerous to the future security of the United States.

Regardless of the intent behind them, such statements, when made by reputable persons, tend to establish a pattern of thought in the mind of the general public. Through lack of understanding and mental laziness the average person is inclined to accept the unqualified opinions of real or apparent authorities. The least harmful effect of such an acceptance is the likelihood that our future security and existence as a free nation might be based on the hope that someone or some organization will obviate the implied danger. The most pernicious result of such acceptance is the possibility of resignation, despair, and passive yielding to what appears to be the inevitable--in short, the development of a national defeatist complex. "Nothing can be done about it, so--why try?"

It is generally believed that a future major war will be more horrible than any catastrophe that has yet been suffered by mankind, and that civilization as we know it will be endangered. The obvious and lasting alternative is the preclusion of such a prospect by the cooperative and unified action of all nations. This implies an effective United Nations organization, universally supported without reservation, and with the guaranteed authority and power to prevent the development of any such conflict. The desperate need for such an organization demands not merely the hopes and sympathetic thinking of all civilized beings, but their active efforts as well.

Unless and until a guarantee of permanent peace is firmly established, we must make every effort to assure that if the peace we so earnestly desire is not to be realized, we shall be the victor in any armed conflict. Our continued existence as a free nation, and the extension of our way of life, demand this attitude, as contrasted to that of wishful thinking or futile resignation. One prominent military staff correspondent bluntly states: "It is not enough in the atomic age to wring our hands and cry 'havoc'; intelligent action is essential."

True, there is no direct military defense against the atomic bomb. Yet there is still no complete defense against many powerful, destructive agents previously developed and employed by man. Methods of protection that minimize and neutralize destructive devices have been developed; however, it does not necessarily follow that ways

of neutralizing new methods of mass destruction will be easily found. It seems likely that a "suit of armor" behind which we can hide in comparative safety will never be found. Does this mean that we must adopt a hand-wringing attitude of appeasement? Not unless we would compromise the ideals for which we live, and when necessary, for which we fight.

The primary step toward protection from a threat to our national security is a realistic facing of the danger. An enlightened public, aware of all facts incident to the problems of this atomic age, and of the potential dangers that can develop, is essential. This does not imply a propaganda campaign or an attempt to frighten people into taking precipitate action, but rather a rational presentation of the issues by military and scientific leaders. The objective is to secure popular approval and willing support of such governmental action as may be necessary to assure the common defense against both danger from without and subversion from within.

A second requirement is for complete and dependable Intelligence. Lack of knowledge of the purpose, nature, and timing of the internal and external forces threatening our peace and security precludes the initiation of timely and appropriate counter-measures. Proper Intelligence will frequently permit the countering of situations which, if allowed hidden development, would inevitably lead to war.

The third essential is the planning and waging of an aggressive campaign against the "internal offensive" now in progress in this country. History has proved that a nation weakened from within cannot long withstand pressure from without.

Another requisite is an executive with the authority and power to take action in the furtherance of the common defense. This executive, aided by the advice and collaboration of a National Security Council, must know that he has not only the obligation, but also the power to act, backed by the unqualified support of the people he represents. He must know that preventive action, when the situation demands, will receive the enthusiastic acclaim of a people who realize that such a course is the only alternative to catastrophe.

Finally, there is the need for an adequate military force, ready for action at any time and so constituted as to accomplish most efficiently the tasks required of it. In this, the Air Age, this balanced structure must reflect the dominant requirement for a striking Air Force. The obvious presence of such a force would form one of the strongest bulwarks for peace, inasmuch as words at the conference table are still measured in terms of the power behind them. The lack of such a force makes impossible the initiation of necessary action, and actually invites aggression. Without such a force the words of this government "become as sounding brass, or a tinkling cymbal."

Assuming that our ultimate national objective, insofar as security is concerned, is to assure the continuance of our system of government and way of life, have any vital considerations been omitted in the program proposed above? The answer is yes--the capabilities and intentions of potential enemies. Any nation or group of nations capable of a major threat to this country must be credited with a plan as timely and forward-looking as our own. They will have an initial plan of action as well as retaliatory measures in the event their opening blows are compromised. If we win such a war, yet suffer such devastation that our way of life is greatly affected, we have failed in the accomplishment of our ultimate security objective. Therefore, we must be prepared to defend ourselves to the degree necessary to achieve victory through the application of our offensive force, and at the same time prevent critical dislocation of our own structure. This makes mandatory continuous research and development of weapons capable of providing this degree of protection.

Achievement of the foregoing proposals will counteract the effects of the potentially disastrous "there is no defense" attitude. General H. H. Arnold, in *One World or None*, lucidly summarizes the situation:

"A far better protection from atomic weapons lies in developing controls and safeguards that are strong enough to prevent their use on all sides, for that offers the only hope for preserving the values of our civilization. Still, it is my duty to trace what must be the Air Force policy of the U. S. in the absence of such controls. Our counter-measures to anticipate and block an aggressor's blows, so long as such blows are possible, must be developed to the utmost. Since, in the near future, we expect that offensive Air Power will outstrip defense and become adequate to accomplish almost any degree of destruction, the nation that first develops a means of protecting itself will be the first able to initiate an atomic war without simultaneously bringing equal destruction on itself. Thus we must make sure that no potential aggressor out-distances us in his defense developments."

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I am not one of those who think that the priceless freedom of our country can be saved without sacrifice. It can not. That has not been the way by which during millions of years humanity has slowly and painfully toiled upwards toward a better and more humane civilization. The men who suffered at Valley Forge and won at Yorktown gave more than money to the cause of freedom.

--Henry L. Stimson

On Active Service in Peace and War (1948)

# AIR ANTHOLOGY

## THE PIONEERS

Thousands are building; in byways and backways, unpressed by  
profit, then bought by it,

The cold plow turns the land; the duplex telegraph says Yes and  
No; the first

Web press and linotype machine convert the forests into what?  
The burning plain is crossed by the refrigerator car; the voice  
from a machine

Sings Mary Had a Little Lamb; the figure of a man upon a  
screen

Moves silently, flickering; the ears at the receiver hear;  
And everywhere the frequencies of hope ask breathlessly whether  
the brain

Has established communication between men, has conquered the  
ancient fear.

Humboldt on Chimborazo studied the condor; Darwin compared  
wing motion to a sculling oar;

Marey computed ratios of weight-to-wingspread; Pettigrew  
ascribed to gravity, drift;

Means said: "It will be done because the air is solid if you hit  
it hard enough . . ."

When the biologists and artists got together the smoke of in-  
dustry began to lift.

They studied form. Langley deduced the horsepower by meas-  
uring a pterodactyl's bone.

Tachometers took shape when sailors checked the tags on birds  
that crossed the ocean.

They recognized the economy of nature in the buzzard's yacht-  
like sails

No less than in the engine-crowded hummingbird. They studied  
motion.

Lilienthal with his brother in North Germany hears the fable of  
the willow-wren

Riding the stork's back: at midnight in the cemetery they trap  
butterflies;

Notice, with the wind behind them, how storks hop *toward*  
them in fright;

Their father, preparing to emigrate to mechanical America, dies.  
On the Potsdam drill-ground they experiment nightly to avoid  
laughter.

When Otto is drafted for the war with the French, he returns  
shouting: "Now, wings!"

In the attic their fingers bleed at the tips from quills and pali-  
sander sticks;

At Spandau Road they build kites in the form of birds controlled  
by strings.

Maxim, between artillery work, studies wind-currents over roll-  
ing land.

Pilcher in the Royal Navy, hearing of Lilienthal, forgets war.  
The American builder of bridges and stockyards, at the age of  
seventy-two

Retires--to test the conditions of equilibrium on the dunes of  
the South Shore.

And across Lake Michigan in Dayton, the vibrations of that  
hope awake

Such joy as the rescuer feels when he signals he can reach the  
ship;

Abandoning Inherent Stability, the arbitrary creature of the gale,  
They look for the principle of operator's touch upon body and  
arched wingtip,

Deferring principles of power: what furnaces Force might mount  
On Atlas-shoulders challenging heaven but subservient to earth,  
is deferred;

Oblivious to the triumph of the wind-bag whose motor-driven  
day has come,

Their faith in the body is unshaken. They return to the study  
of the bird.

Knowing no bird is lighter than the air, that insect, bat or bird  
falling

Converts that weight, or gravity, or what you will, in such a way  
That like the albatross, all motionless but for the turning

Of eye on prey, the Australian crane so ponderous of pinion,  
 Or frigate bird: the wind is made to work, the air uphold  
 Expanding tail; stretched neck must form the proper planes,  
 Shifting the center but controlled at will . . . Their will  
 Fortified by these facts, calls the balloon "the great misleader"  
 Refusing to be satisfied with less than natural skill;  
 Experience, less wholly free than birds', disdains.

Spiraling through their minds to consciousness, the dream has  
 not yet cast

The shadow of its wings upon their world. They only see,  
 Childlike, the dimensions of a bright universe where fear  
 And fire from the clouds are dragons of the unreal night.  
 "We will cross chasms," they say, "accompanied only by the  
 wind,

Earth's jarring combat left below, we who believe in buoyancy  
 Will train the eye by gradual ascent, free, motionless, suspended  
 there

To look upon earth's perilous landscape unconcernedly . . ."

But ages mix. Their toy demands the weight of industry upon  
 its back.

Will Otto find the bridge-truss that Chanute has brought enough  
 To lift four cylinders? Is Pilcher in "The Hawk" prepared  
 To give Lord Braye an exhibition in bad weather? Is the gruff  
 Smithsonian professor ready to go beyond  
 The ballistics of bluejays, the wingspread of gnat and chick?  
 Has Ader's political party the right amount of "pull"?  
 Can all the sandpaper in the world make Maxim's propellers  
 click?

They asked no monuments. They were rivals; but for fun  
 Who asked fearlessly before their time for wings to raise them.  
 Let the patent-offices take care of their return. The response to  
 an open "gun"  
 Or a three-point landing should be enough to praise them.

--Selden Rodman, *The Airmen*  
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 Random House, Inc.

# FOREIGN HORIZONS

## NEW RUSSIAN AIRCRAFT

Reprinted from *The Aeroplane* (London), 18 June 1948.

**E**VER SINCE the end of the war in Europe, the question has been asked "What is the equipment of the Russian Air Force like?" A four-engined aircraft of the classic formula, but clearly of Russian design, once brought Mr. Molotov to this country and jet fighters have been seen flying over Moscow on the occasion of the May Day Parade but not much more has been disclosed. There has thus been much argument regarding the new equipment. One school has argued that the real reason for Russian reticence on the matter is to be found in the fact that although the quantities are satisfactory, the quality is not sufficiently high for the Russians to wish to boast about it. The other school has argued, and what follows seems to justify their point of view, that the later equipment was so good that the Russians had every justification for keeping it up their sleeve.

As will be obvious there is no easy way of establishing which of the two points of view is right. However, fortified by the possession of contacts all over the World, the editor of our associated paper, *THE AEROPLANE SPOTTER*, set to work to piece together all the scattered pieces of information which find their way into newspaper offices. After many months' work he reached the stage where drawings could be made. When these had been done the major characteristics were checked again. The result of all this work is to be found in "The Spotter" for June 12 together with as much information as checking shows to be worthy of acceptance. A summary of this follows.

Since the end of the War in Europe, Russia has intensified research and development work on aircraft and accessories. Until 1945, the policy of the Soviet Air Force was quantity rather than quality, but now there are plenty of signs that





the Air Corps is one of constant struggle for recognition of the capabilities of Air Power and for autonomy from the War Department, whose General Staff is described as the "stronghold of bureaucratic conservatism." This struggle, dominated in its early stages by the "energetic and sometimes flamboyant" figure of General Mitchell, was characterized by a constant series of boards and committees that led General Mason M. Patrick to comment that "the Air Service...has probably been the most investigated activity ever carried on by the United States."

The authors point out the significant steps in the slow progress of the Air Corps toward organizational maturity. Equally slow and beset with difficulties was the development of an air doctrine. "While Mitchell's ideas on Air Power had raced ahead of the technological development of his weapon, those of the War Department had followed a more leisurely course." The General Staff's doctrine, expressed by Field Service Regulations, U. S. Army, published in 1923, and Training Regulation 440-15, in 1926, stated that the mission of air units "is to aid the ground forces to gain decisive success." Even the early teachings of the Air Corps Tactical School, 1928-31, subordinated the air force to the ground forces. Later concepts of the ACTS, circa 1935, after it had moved to Maxwell Field, produced the fullest development of the theory of strategic bombardment, summarized by Craven and Cate under nine fundamental principles.\*

Paralleling the development of an air doctrine was the evolution of a suitable airplane to implement it. The authors describe the efforts of the Air Corps, over the objections of the War Department, to obtain a bomber with a range in excess of the minimum required for close support of ground troops. Only the implications of other factors, such as increased range for coastal defense, reconnaissance, and ferrying, enabled the Air Corps to procure the B-17, which was destined to fulfill the strategic bombardment concept.

In discussing the commencement of the war, the book retells the familiar story of Pearl Harbor, then goes into

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\* See Prof. James L. Cate, "Development of Air Doctrine, 1917-41," *The AIR UNIVERSITY QUARTERLY REVIEW*, Vol. I, No. 3, Winter 1947, pp. 11-22. *Editor.*

greater detail on the less well-known events in the Philippines. Quoting from statements by General Brereton, Commanding General of the Far East Air Force; General Sutherland, General MacArthur's chief of staff; and from files of the daily Summary of Activities of the Headquarters, Far East Air Force, the authors throw interesting light on the questions of why Formosa was not bombed and why the B-17s were caught on the ground at Clark Field. It is pointed out that unofficial information of the Japanese attack on Pearl Harbor was received at 0300, 8 December (Philippine time), followed by official confirmation at 0500; that plans existed for attacking Formosa; that the Japanese task force which subsequently made the initial landings at Appari and Vigan was at that time in harbor at Formosa; and that the raid on Clark Field, which destroyed half of the Far East Air Force's bomber force, did not occur until 1235. The available information on General Brereton's conversations with General MacArthur's headquarters is reported; the reader is left to draw his own conclusions.

The early months of the war, with their humiliating defeats, disappointments, shortages of personnel and equipment, first small-scale successes, and plans for the future, are vividly described. The chapters on the war in the Pacific cover the loss of the Philippines and the Netherlands East Indies, the battles of the Coral Sea and Midway, the commencement of the struggle for New Guinea and the Solomons, and the Japanese attack on the Aleutians. The AAF's efforts to provide for the air defense of the United States are recounted, including the ludicrous story of the "battle of Los Angeles." The early history of the Ferrying Command, which subsequently became the Air Transport Command, is told. There is a very interesting narrative on the antisubmarine effort, described as a "story of jurisdictional and doctrinal debate...[and] interservice controversy."

The concluding portion of the book deals with the preparations for the air war in Europe. Background is laid in an earlier chapter relating the strategic planning for the conduct of the war and mentioning the instruments, such as ABC-1 and ABC-2, RAINBOW No. 5, and AWP/1, that defined the U. S.-British strategy. The projects preceding the launching

of the bomber offensive are described: BOLERO, which covered the build-up of American forces in the United Kingdom; GYMNAST and SUPER-GYMNAST, early invasion plans for Northwest Africa; SLEDGEHAMMER, proposing an invasion of Europe for 1942, later abandoned; ROUNDUP, a plan for invasion of Europe in 1943, postponed until the next year; and TORCH, the invasion of Northwest Africa as accomplished. The authors describe the organization plans for U. S. forces in Britain, the interesting story of General Chaney's ill-advised dispute with General Arnold, the effect of the various changes in strategic planning on the strength and composition of the Eighth Air Force, and the movement of Eighth Air Force fighters and bombers to England through Greenland and Iceland. The book concludes with an account of the historic mission of eighteen B-17s to the marshalling yards of Rouen-Sotteville, 17 August 1942, which was the first attack by American heavy bombers on German targets, and marked the beginning of the air offensive on *Festung Europa*.

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The Memoirs of Cordell Hull, by Cordell Hull, 2 vols. (Macmillan, \$10.50).

Reviewed by  
Hilton P. Goss

TO THE shelves rapidly filling with biographies, memoirs, and apologies by the world's notables of the past two decades, these two volumes add considerably, both in bulk and in substance. Rarely has an American statesman retired with more in his favor and with less recrimination than did Cordell Hull, Secretary of State from March 1933 until November 1944. To have his story of the years he spent in office so soon after the close of his career is the good fortune of those who have the task or the inclination to assess the contributions of American leadership during recent times.

Cordell Hull was born in Tennessee in 1871. Following early experiences as youthful politician, Spanish-American War soldier, hill-country lawyer, and district judge, he

appeared on the national scene as representative in the 60th Congress in 1907. Hull quickly made himself an indefatigable worker on the subjects of taxation, revenues, and tariffs. He became active in the legislative insurgency which helped along the progressive movement of those days and led to the election of Woodrow Wilson in 1912. With the Democrats in ascendancy, Hull asserted his claims to congressional leadership in the fields he had worked out for his specialization and was instrumental in the adoption of much of the fiscal legislation of the Wilson era.

He also, in these years, developed his growing interest in international affairs, an interest which stemmed jointly from his espousal of the low-tariff policy of the Democratic Party and his advocacy of the Wilson cause for the establishment of a world society of nations. With many another Democrat he went down to defeat in 1920. Re-elected to the House in 1922, he served through the lean years of 1923-1933 as a vigorous supporter of internationalism and was elevated to the Senate in 1930.

Through the Hoover administration Hull worked valiantly to convince the Democrats that their 1932 platform and candidate should oppose not only the high-tariff and isolationist Republicans, but also those factions in the Democratic Party led by Alfred E. Smith and John Raskob who, according to Hull, were likewise in favor of such measures. His support of Franklin Roosevelt's candidacy led to the politically logical choice in 1933 of Hull as Secretary of State in the new administration.

During all his congressional service, Cordell Hull voiced the need for international trade as a guarantee of international peace and cooperation. In fact, if the present reviewer's memory does not play him false, Hull made very few remarks in Congress or from the public platform which did not deal directly with this theme. Every speech followed a clear and reiterated pattern--trade between nations means peace among nations. Coupled with the domestic plans of the New Deal, Hull's reciprocal trade program helped to lift the nation out of the depths of the economic depression of the 1930s. If he had accomplished little else in his eleven years in the Cabinet, Cordell Hull would have merited

inclusion in a list of America's productive secretaries of state. But he had more than one string to his bow. Direct and friendly diplomacy, implementation of the Good Neighbor policy toward Latin America, the destroyers-for-bases deal with Britain, lend-lease, and above all, the concept and creation of the United Nations bear witness to the influence and often the direct inspiration of Secretary Hull.

No competent man could have served for more than a decade in such high place and in such strenuous times without leaving his impress upon the history of the nation. These two volumes make clear the ways in which Cordell Hull saw his duty and did it. In the view of his contemporaries he was not always right, but by his own recital he was always firm and fair. He sometimes disagreed with President Roosevelt and with many of his associates, but his account of these disagreements never betrays an unwillingness to recognize the other side of the question. The character of this strong-principled, democratically-minded Tennessean shows through on every occasion which he describes, and never more so than when he is defending honesty of purpose in others. However, he can be intolerant of hypocrisy and double-dealing in international negotiations as is evidenced by his accounts of discussions with Nazi and Japanese diplomats in the pre-Pearl Harbor period.

These two volumes are not designed for the hurried reader. The wealth of detail packed in their 1804 pages, and the minute attention to day by day developments command close perusal. For a man with a reputation for picturesque speech and a sulphurous vocabulary, Cordell Hull writes in a somewhat formalized and pedestrian style. Only in the early chapters, telling of his youth in backwoods Tennessee, does he illuminate the pages with anecdotes. Later he is too absorbed in the solemnity of world affairs to insert more than an occasional glimpse of the humanness he brought to his high office. The facts are there, and there in plenty. It is too bad Secretary Hull, or Andrew Berding, who assisted him with the writing of the *Memoirs*, could not have infused more color into the telling without sacrifice of the solid worth of the detailed discussions.

Mr. Hull designedly omits consideration of the domestic program of the Roosevelt administration--Harold L. Ickes, James A. Farley, Henry Morgenthau, and others cover that subject from the top level. He also stays away from an account of the military conduct of the war--someone will have a difficult job of doing as well for the Navy what Henry L. Stimson has done for the War Department on this score. The State Department, itself, will someday issue the documentary volumes of *Foreign Relations of the United States* for the period of Hull's secretaryship. But for the student of American diplomatic history from 1933 to 1944, these *Memoirs* afford as full a source as he is likely to find for the present. For the reader who would prefer to have his information on the subject in a form more comfortable to handle, these two weighty volumes provide no short cut.



Applied Physics: Electronics, Optics, and Metallurgy, edited by C. G. Suits and Others (Atlantic--Little, Brown, \$6).

Reviewed by

Major John J. Driscoll

**D**ESPITE its documentary atmosphere, emphasized by occasional lists of participating personnel and contractor firms, this volume has much to offer the student of military affairs. This is more than just a history of wartime projects, as it represents the first thorough correlation of two important phases of wartime technology, civilian scientific research and military combat operations.

The book, one of eight in the *Science in World War II* series, deals with those divisions of the Office of Scientific Research and Development concerned with applied physics in the fields of electronics, optics, and metallurgy. A summary of the activities of the entire OSRD organization was published earlier in this series as *Scientists Against Time*.

Since V-J Day U. S. scientists have continually expounded the need for adequate peacetime research in order to forestall the handicaps which might again accrue from a World War II-type accelerated program. This lesson is more than

adequately supported by many examples throughout the text. There are other lessons which are particularly applicable to the military planner. The airman is reminded of the danger of relying upon superficial analyses of World War II results in projecting and planning future operations. The success of our radar blind bombing, for example, is recognized as having been primarily dependent upon the fact that it was essentially unopposed from the counter-measure point of view. Of special interest to airmen is the electronics section, which contains an excellent evaluation and detailed review of the overall story of radar counter-measures in World War II.

The electronics story was initiated on 11 February 1941 when the German battle cruisers, *Gneisenau*, *Scharnhorst*, and *Prinz Eugen* made their escape, under cover of fog, by jamming the British radar. Beginning with the once highly secret British program following this incident, the report carries through to the war's end, and includes much interesting theoretical data, such as the effect of atmospheric conditions upon radar performance. Although radar is often said to work only as far as the line of sight, there is included a startling illustration of a 1.5 meter radar on the coast of India overlooking the Arabian Sea. Despite its expected range of only twenty miles, the range increased to as high as 1500 miles during the hot season (favorable for duct formation.)

The optics section covers not only the usual instruments, but also infrared and ultraviolet development, and advances in the field of acoustics. In the chapter covering the land-mine counter-measure campaign against the Japanese, an interesting paradox is revealed. Many will recall the non-standardization of Japanese equipment and the resulting self-imposed handicaps. In the design of land-mines this lack of standardization proved unexpectedly beneficial to the Japanese, for, as a result, our researchers had no objectivity, and no predetermined scientific goal. This is one of the few examples of the OSRD's lack of success.

The metallurgy section covers metal aircraft materials, in addition to the developments in armor, gun steels, and

ammunition. The impact of welding on World War II weapons fabrication is adequately discussed in two chapters.

As with many contemporaneous histories, some of the personnel data will be important only to historians of the future. Nevertheless, the occasional lists of participating personnel are easily condoned when one remembers that during the war the civilians in this phase of national defense were generally unheralded, and this belated recognition is well deserved.



Europe on the Move, by Eugene M. Kulischer (Columbia Univ., \$5).

Reviewed by  
Robert W. Schmidt

MAN'S history is the story of his wanderings," writes Kulischer, and *Europe on the Move* is an account of the population shifts or wanderings in Europe from the close of the First World War to the end of the Second World War.

At the beginning of the book the author states the thesis of an earlier volume (Alexander and Eugene M. Kulischer, *Kriegs und Wanderzüge--Weltgeschichte als Völkerbewegung*). Population, the Kulischers maintain, is constantly migrating, the larger population shifts resulting from continual "short-distance migrations" both within a political entity and beyond its borders (when such migration is permitted).

This thesis is then applied to the account of the population shifts throughout Europe, during the period between the great World Wars, and immediately following the Second World War. Thus, for instance, the author traces the movement of population in Russia, where there were two directional tendencies. From central Russia, one stream was moving East and one West. He shows how these general tendencies continued during peacetime, during war, and during revolution, and how they affected those who tried to move against them.

Mr. Kulischer likewise traces the migrations which took place in Poland, Czechoslovakia, Germany, the Balkans, Italy, Spain, France and the Baltic countries. Population movements

in Great Britain and the remaining countries of Europe receive less attention.

In these analyses, the author shows how the larger shifts were almost invariably made up of innumerable short-distance migrations, which created voids. The voids were in turn filled by short-distance shifts by neighboring peoples. For example, during most of this period Germans were moving from Eastern to Central and Western Germany. Poles then occupied the area vacated by Germans, and Ukrainians the area which the Poles left. This movement was slow and took place over a considerable time, but the end product was a fairly large population shift. Hitler unsuccessfully tried to reverse this movement, but it was intensified after the close of the Second World War.

Mr. Kulischer then projects his analysis to suggest possible trouble spots for the future. He does not see any immediate dangerous population pressures in Russia, unless these are created by the Russian government. Population pressures in Greece and Yugoslavia he considers potentially dangerous, but not half so grave as those of Italy and Germany.

The volume is not merely an account of population changes in Europe; it goes far beyond these narrow limits, and relates population changes to the conditions and events of the period. Particular attention is given to the relationship of population changes and armed conflict between countries.

"A warlike migration can always be traced, in the last analysis, to a frustrated peaceful migration," writes Kulischer. He does not say that a country goes to war simply because its population is growing more rapidly than its means of subsistence. The development is generally much more subtle and at times also contradictory. Population pressure, for example, may create a generation of dispossessed and brigands, as was the case in Nazi Germany and Fascist Italy, and thus lead to war, but it may also take other forms.

To the student of contemporary history, and European history in particular, the volume is a must. Though he may not always agree with the conclusions, in no other place is

he likely to find such a mass of factual material regarding the populations of Europe during the period covered.

To those who are interested in the prospects of peace for the future, the population pressure now existing in Italy and Germany, as described by Mr. Kulischer, must be alarming. This pressure can be relieved peaceably only by one or a combination of the following methods: 1) Increasing the means of subsistence (Economic development); 2) Reducing the natural growth of population (Birth control); 3) Removing part of the population (Emigration). A peaceful solution is not impossible, but all will readily agree that differences of opinion and political expediency have not provided adequate cures for the situation.

Those who predict calamity for the United States or any other country whose population has become or is about to become stable (annual death rate equal to the annual birth rate) will not find solace in this volume. A declining birth rate is merely one of the normal adjustments to the pressure of population upon the means of subsistence, but more particularly, to the normal migration of rural peoples to urban centers. Those who object to such a condition can best remedy it by an intelligent immigration policy. Most nations of the Western Hemisphere have grown prosperous and powerful with a large heterogeneous immigrant population.

Military leaders and those responsible for military operations will do well to read *Europe on the Move*. They will find much food for thought, both as to the relationship of population changes to past wars and as to possible trouble spots in the future.



The Pattern of Imperialism, by E. M. Winslow (Columbia Univ., \$3.75).

Reviewed by  
Captain Paul J. Sterne, Jr.

**T**HE practice of imperialism began when a leader of a post Cro-Magnon band of Mediterranean Man farmer-hunters first attacked with covetous intent a neighboring group, usurping thereby its hunting area and fields. Through the centuries this practice developed into an art, and became an

accepted factor in the inter-relationship of governments. That nation which possessed power grew, that which did not, dwindled.

Discussion of the act of imperialism as an element in political ethics, however, did not become widespread, or even very thoughtful, until the sixteenth century, and then only in those few nations which were developing a constitutional government. This discussion expanded in volume as the political education of commoner leaders in these governments increased. Serious thought resolved gradually into two main lines of questioning concerning the basis of imperialism. First, was imperialism an atavism; did it answer a basic human urge for violence, for war, for power; was it, therefore, an uncontrollable, irremediable factor of human society? Secondly, was it the result of certain economic conditions, themselves the result of the organization of society, and could imperialism, therefore, be eliminated by the reform of this specific organization of society, or by the substitution of an entirely new concept of society and government founded on new principles of political science?

Both these lines of reasoning are covered very ably, and in an exhaustive, if slightly exhausting, fashion by Dr. Winslow. He inclines to the view that imperialism is inherent in national governments, and feels that entirely too much emphasis has been placed on economic determinism. He admits that many times in history mercantilist theories have demanded expansion of overseas dominions for certain nations. He does not agree, however, that this fact proves the economic interpretation of history. In support of his contentions Dr. Winslow has reviewed, and discusses at considerable length, most of the familiar and practically all of the important works on imperialism starting with Francis Bacon's essay, "Of Empire," and concluding with the latest Stalinist revisions of Karl Marx.

Analyzing imperialism in history, using as examples the empires of Greece and Rome, the author found a classic imperialism, uninhibited and completely lacking in self-consciousness. In both of these early empires two facts became well defined. First, to those in positions of superiority in government, *imperium*, the Roman understanding

of absolute power over life and death, was the ultimate form of power--power for the sake of power, power as an end. Second, the more an empire had, the more it had to have to hold what it had. The author feels that though imperialism of the classic type no longer "goes nakedly through the world," and now must be justified in practice by reason of *Kultur, Liebensraum*, or some other equally insecurely founded nationalistic program, these two factors still lurk in the background of every expansionist campaign.

Each of the foremost writers on imperialism receives from Dr. Winslow a thoroughgoing evaluation. For this reason the book is as much a textbook of modern political and economic thought as it is a discussion of the specific item of imperialism. The early English writers in particular, Adam Smith, Herman Merival, Jeremy Bentham, James and John Stuart Mill, are given considerable attention, as is the mercantilist theory which these authors propounded and opposed.

The author divides imperialism into three eras: Classic imperialism; the mercantilist empires of the sixteenth century; and finally, the so-called capitalist imperialism of today. Dr. Winslow sees John A. Hobson and Karl Marx as the two main antagonists of this modern period.

Hobson, says the author, was the intermediary between the Mercantilists and the Socialists. The first did not anticipate industrialism, and sought either complete control of trade, or complete freedom for trade. Karl Marx declared that imperialism could only be ended by the destruction of its basis, capitalism. Between these two views Hobson formed the bridge with his theory of economic imperialism.

Hobson, in the author's opinion, best summarized the views of modern economists "who, though critical of the system, still thought that free-enterprise capitalism, if properly directed, need not produce undesirable (i.e., imperialistic or mercantilist) results." As the author says, radical socialists regarded this as "bourgeois nonsense." Karl Marx, himself, did not enter into argument with the Hobson theories, as he died nineteen years before Hobson's *Imperialism* appeared in 1902. The followers of Marx, however, declared that Hobson did not go far enough in calling for reform, that only a complete change could erase the evils.

The chapters devoted to Marx and the neo-Marxists are the best in the book. Socialist theory is discussed with a discerning eye for the illogicalities of Communist economics. The author states that Marx, through a failure in his later years to follow his own arguments, came close to proving that capitalist imperialism was not only right, but necessary. Since capitalism, according to Marx, must run its course, allowing the seeds of destruction which it carries within itself to reach their fruition, imperialism, as a result of capitalism, also must continue to exist and run its course.

The final chapter of the book is devoted to a summing up of the author's viewpoint. He compares the historical theory of economic imperialism with what he considers the true facts of the basis of imperialism, and criticizes the proponents of the economic view for failing to carry out a logical study of the events of history. He says that while the economic theory follows a logical line, once started, it is based on a fallacy; that the real basis for imperialism is a natural conflict between nations. He is certain that until there is one nation on earth, or until such time as by a relinquishment of nationalistic rights of sovereignty a truly federal union of nations is possible, imperialism will not be curbed. He sees the only hope for the world in the possibility that eventually reason and maturity such as most of the world now enjoys in economic practice will permeate political practice. Then, he says, politics, national and international, will come of age, and world peace will be in sight.



The Mediterranean, by Andre Siegfried (Duell, Sloan and Pearce, \$3).

*Reviewed by*  
Woodford A. Heflin

**A**LTHOUGH Andre Siegfried in this book successfully provides a certain background on the Mediterranean useful to the traveller or sight-seer, and although his final judgments on the military, commercial, and industrial importance of the region appear to be sound, his analysis of

the region is often contradictory within itself, open to attack in the matter of details, and inducive to the view that a geographical unity transcends social and political barriers. The reader will, in fact, have difficulty in avoiding the impression that the book was written from unsystematically collected and undigested notes, which, having grown to a certain bulk, were cast into a framework and published without special purpose.

Attention should particularly be called to many unprovable generalizations. For instance, on page 101 the author says that the Nordics "possess one essential quality in which they take special pride, and that is their sense of leadership." "Thus," he concludes, "the addition of this blood from the north has undoubtedly infused into the Mediterranean people a firmness of character which probably they could not have acquired otherwise." This proposition, of course, can neither be proved nor disproved.

Siegfried comes out strong on matters of the subjective, especially people's happiness. He seems to know just how "happy" the ancients were, and makes fine comparisons between their subjective feelings and those of modern men.

Perhaps most of all, Siegfried allows the notion of a collective brain to lead him down the primrose path of verbiage. "The West," he says, has always been ready to recognize the Turks' qualities. "The West" is thus conceived as thinking and recognizing, and no doubt of sleeping and eating. This is the kind of unguarded reasoning that allows a figure of speech to pass for statistical observation.

A particularly striking example of this may be found in the author's comments on the conversion of the Languedoc farmlands from a many-crop to a single-crop (wine) region (page 119). "The State," says Siegfried, "even seemed to dread the change towards the single crop, for in 1730 a decree had been passed forbidding further extension of the vineyards." Here "the State" becomes an entity having the ability to dread. What we would like to know is, What particular person or group of persons had enough influence with the king's ministers in 1730 to forbid the extension of vineyards? Perhaps, when we get down to it, "the State" is equal to a single individual having a corner on the local market for the crops being grown.

Thus, throughout three-fourths of the book we find a pseudo-analysis. The redeeming feature of the work is the generally sound judgment of the last two or three chapters in which the author appraises the place of the Mediterranean in the modern world. As the author points out, with practically no coal or iron, the area's industrial development is retarded; with a climate and soil limiting its agricultural production to flowers, wine, figs, dates, citrus fruits, and olives, its inhabitants are dependent upon the outside world for food; with the centers of world population far removed from its shores, its shipping and commerce lag behind those of many other regions. But as a highway of commerce, as a strategic center of access, it is considered important in the world's affairs.



A History of the United States Navy, by Commodore Dudley W. Knox (G. P. Putnam, \$7.50).

*Reviewed by*  
Colonel Wilburt S. Brown, USMC

**T**HIS is a revised edition of a history first published in 1936. This edition is in two parts; the first, an almost verbatim reproduction of the earlier edition, takes the Navy from its earliest beginning to circa 1936. Part II devotes two hundred more pages to World War II.

The author entered the Navy in 1902 at the age of fifteen and retired, as a captain, for physical disability in 1921, but was retained on active duty in charge of the archives of the Navy Department until his final retirement as a commodore in 1947. His opportunities for research and study were great, and he has certainly availed himself of them. His background identifies him as a member of the old guard of the Navy.

Commodore Knox demonstrates a thorough understanding of sea power, including its new development of sea-air power. With respect to economic and political conditions, both foreign and domestic, as well as the relation of sea power to military, land based air, and political developments, the author's comprehension is also sound.

His treatment of the Civil War throws a new light on its naval and amphibious aspect, particularly the fire support by the river gunboats. Also of great interest is the account of the little known amphibious and naval actions preceding the Battle of New Orleans in 1815. In fact, a great many little known events of naval history are covered in this complete and concise history.

Particularly impressive is the author's understanding of the American concept of a balanced fleet. The U. S. Marine Corps is appreciated as the major influence in the development of U. S. amphibious doctrine, which is a contribution that is too frequently omitted or belittled by most naval writing.

The account of World War II adds little to recorded history, but is an excellent condensation of many source documents concerning the Navy's and Marine Corps' records. The pains taken to record each warship and its commander in each operation is a labor of love that bores the reader. Continuous use of single adjectives to characterize various naval leaders (e.g., "the indomitable Halsey, the efficient Fletcher, the gallant Callaghan, the redoubtable General H. M. Smith, the clever Turner") is very subjective, naive, and annoying.

On the whole, Commodore Knox has produced an excellent history. His research has been careful and his conclusions are quite valid, but it is to be wished that he had been less lenient in his observations on the Navy's occasional lapses, like Turner's crushing defeat at Savo Island.



For Want of a Nail, by Hawthorne Daniel (Whittlesey House: McGraw-Hill, \$3.75).

*Reviewed by*  
Lt. Col. Harry A. Sachaklian

**T**HIS is a study of the influence of logistics on war. The analysis is based on six historic campaigns: The American Revolution, Wellington's Peninsular Campaign, Napoleon's Moscow Campaign, various phases of the American Civil War, Kitchener's conquest of the Sudan, and the invasion of Europe in World War II.

Mr. Daniel shows how the military results of the above campaigns can be traced primarily to proper or improper use of military transportation, communications, quartering, and supply, and compares the logistics of these campaigns with that of modern warfare. The author emphasizes the fact that drama lies not only on the field of battle, but in the forces of supply that made the battle possible.

Although the claim that the book "does for land warfare what Mahan's *The Influence of Sea Power on History* does for war at sea," is exaggerated, the book is extremely interesting and valuable as a brief historic summary of logistics problems in war.

Perhaps the most interesting illustration of the effect of logistics in predetermining the outcome of a campaign is the coverage of the Napoleonic fiasco in the invasion of Russia in 1812. The author points out that Napoleon's reputation as a great military leader suffers when an analysis is made of his failure to adequately consider even the most fundamental logistics factors. The author quotes the Marquis de Caulaincourt as saying, "To insure that no indiscreet word should be uttered the Emperor had consulted no one, consequently, our wagons and all our transport built for metalled roads and to accomplish ordinary distances, were in no way suitable for the roads of the country we had to transverse."

Here is an illustration of the military mind failing to comprehend that no individual, however gifted with military genius, is able to master all of the details that arise in connection with any vast military campaign. This same failure to properly appreciate the necessity of informing logistics agencies of the job they will be called upon to do in time to permit them to do it, was repeated a number of times by our own Air Force in World War II.

The book will serve as a valuable source of historical examples of successes and failures of military campaigns due to logistics considerations. It illustrates very well the need for strategists to constantly bear in mind that strategy developed without an appreciation of logistics is strategy of the arm chair variety.

## BRIEFER COMMENT

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**Air Victory: The Men and the Machines**, by Harold B. Hinton.

HOW the weapon of Air Power was forged from the earliest beginnings through World War II is the subject of this volume by the former Assistant Chief of Staff, A-2, of the Twelfth Air Force. Sponsored by The National Air Council, the book represents the best one-volume survey to date of America's military air arm. Its 428 pages cover the ground from the Army's original purchase of a Wright airplane to the dedication speech for The Air University, delivered by General Spaatz on September 3, 1946. No major peacetime problem or wartime operation has been left out. And since the story of the Air Force still lives largely in the memories of the men who built it, considerable use has been made of the personal recollections of these officers.

*Harper \$5*

**Public Opinion and Propaganda**, by Leonard W. Doob.

SINCE its publication in 1935, Professor Doob's *Propaganda: Its Psychology and Technique* has been the standard work in its field. The present volume appears to replace this work with even better applicability for the military reader. The basic purpose is to analyze public opinion and propaganda from the viewpoint of modern social science. In so doing, principles are made intelligible by specific illustrations given at frequent intervals. These have primarily been drawn from the fields of politics, business, and war. It is the author's belief

that public opinion and propaganda are intimately related and can best be understood through an appreciation of human behavior itself. This book will be invaluable to personnel working in Public Information activities.

*Holt \$3.75*

**American Experiences in Military Government in World War II**, by Carl J. Friedrich and Associates.

THIS book should prove indispensable to personnel interested in or assigned to duties with military government. Throughout, emphasis is placed on the need of members of the armed forces for a political training as comprehensive as that required of the personnel of the foreign service. The volume is divided into four parts. Part I discusses the broad general aspects of military government experience, and an overall picture of Axis occupation practices is given for purposes of contrast and comparison. The remaining parts are devoted to descriptive chapters of military government operations in Italy, France, Austria, Germany, and the Pacific.

*Rinehart \$3.50*

**The Stilwell Papers**, by Gen. Joseph W. Stilwell. Theodore H. White, editor.

THE war narrative of a devoted American soldier, as extracted from his diary and letters home, is also a blistering indictment of the Chinese Kuomintang government. General Stilwell assumed

command of the China-Burma-India theater early in 1942. Simultaneously he took over two Chinese armies with the objective of forging them into a genuine fighting unit. But the Chinese military was a hollow shell and its leaders were unfit and insubordinate; indecision, ignorance, and graft riddled all departments of the government; the Generalissimo himself first praised Stilwell, then betrayed him. But the sting of Vinegar Joe's pen was not reserved for the Kuomintang alone. American and British leaders and their policies were denounced when, in Stilwell's opinion, their contributions were detrimental to the allied war effort. He wrote as he felt and whatever he felt. This is a candid book by an outspoken soldier.

*Wm. Sloane Associates \$4*

**Organizing Scientific Research for War, by Irvin Stewart.**

THIS volume, the fifth in the series entitled *Science in World War II*, describes the administrative operations of the Office of Scientific Research and Development. This was the agency which harnessed our nation's top scientists in effective partnership with the military, and which so largely contributed to our winning the war. The administrative problems encountered in establishing this vast organization were monumental. Dr. Stewart discusses them ably. (A full length review of another book in this series, *Applied Physics: Electronics, Optics, Metallurgy*, appears in this issue.)

*Atlantic--Little, Brown \$5*

**Flak Bait, by Devon Francis.**

HERE is the story of the men who flew the B-26 in World War II. It is the record of the con-

ception of the Marauder, its trials, its tribulations, and the training and problems of the men who had faith in it. The book is a collection of press releases, radio scripts, and articles, with running comment, edited to form a chronology of the Marauder and its personnel from inception to obsolescence. Former members of Marauder groups will find *Flak Bait* a vivid living thing, with the names and actions of men they know or knew, and will read it with nostalgia, for it is personal and intimate and "only the carcass of the Marauders is gone, what still lives and will live for years to come is the memory of the men who flew them."

*Duell, Sloan and Pearce \$5*

**Civil-Military Relationships in American Life, edited by Jerome G. Kerwin.**

SO well established is our tradition of subordinating the military to civilian authority that most of us take this arrangement for granted. To continue to do so is to invite a sweeping and perhaps disastrous change in "the American way of life." This book is an attempt by eight authorities to bring together the many segments of this problem and to show how almost every part of our society is being affected by a shifting balance in civil-military relationships. The authorities are: Waldemar Kaempffert, Quincy Wright, Hanson W. Baldwin, Charles E. Merriam, Paul H. Appleby, T. V. Smith, Dixon Wecter, and Adlai Stevenson.

*Univ. of Chicago \$2.75*

**The AAF Against Japan, by Vern Haugland.**

ANOTHER in the excellent series sponsored by The National Air Council, this book is the story of all the Air Forces of the AAF

whose target was Japan. Here in one compact authentic volume is the history of the Eleventh Air Force in Alaska and the Aleutians; the Fifth, Thirteenth and Seventh in the southwest, south and central Pacific; and the Tenth and Fourteenth in China, Burma and India; and the Twentieth with its B-29s, incendiaries, and atomic bomb. Here are the facts and figures of the air campaigns waged by Kenney, LeMay, Chennault, Stratemeyer, Hansell and many others. Filled with personal stories and detailed events, air veterans of the Pacific-Asiatic theaters will want this epic for their own libraries.

*Harper \$5*

**The Naked and the Dead, by Norman Mailer.**

NO MORE realistic novel than this has yet come out of World War II. It is the story of the capture from the Japanese of a mythical Pacific island called Anopopei, which could have been any of those from Guadalcanal to Okinawa. The combat is entirely ground fighting, but the real theme is the men themselves. These soldiers who tear their hearts out in jungle war are the product of the years they have lived. They have been formed by their women, their jobs, their schooling, and their personal fate. To each, war has been an activating agent. This is an excellent and supremely entertaining study of men in war from generals to privates.

*Rinehart \$4*

**On Active Service in Peace and War, by Henry L. Stimson and McGeorge Bundy.**

WHEN, over a span of 40 years, a man has held many of the highest appointive offices in government,

his record should be worth recording. Such is the case with Henry L. Stimson, lawyer, soldier, and diplomat, who was Secretary of War under three presidents, Secretary of State under another, and Governor-General of the Philippines under still another. Early in his career he foresaw the necessity of strong national defenses. As Franklin D. Roosevelt's wartime Secretary of War, he pressed for an early (1943) invasion of Europe via the English Channel. He strongly feels presidents must be the framers of public opinion, that when a conclusion appears inevitable the people must be immediately and thoroughly informed and hence united. This is an adequate study of a distinguished American.

*Harper \$5*

**The Enemy at the Gate, by Major Reginald Hargreaves.**

*A Book of Famous Sieges; Their Causes--Their Progress and Their Consequences* is the subtitle of this novel military history by a British author. Major Hargreaves points out that a siege is a unique type of "combined operation," in which there is added to the ability or incompetence of the military the unknown factor of the civilian population, which can affect the operation just as vitally as can the troops. The sieges described are Rome, Constantinople, Londonderry, Gibraltar, Acre, Sevastopol, Lucknow, Paris, Plevna, Mafeking, Port Arthur and Stalingrad. It is notable that the Russians are contenders in four of these: Sevastopol, Plevna, Port Arthur and Stalingrad. Of valuable current application is the analysis of the qualities and limitations of Russian generalship and the Russian soldier.

*Military Service \$5*

Gettysburg, by Earl S. Miers and Richard A. Brown.

THE battle of Gettysburg, as presented in this book, bears little resemblance to the text-book accounts. This version is an intensive description of the invasion and battle as seen through the eyes of the men, women, and children of the town and the participating foot soldiers, cannoneers, and generals. Union and Confederate viewpoints are equally represented. It is a human drama rather than an unimaginative record of troop movements. The hopes and fears of the men in the ranks, the anguish of the housewives who fear for the safety of their children and their homes, the exultation of a young boy who watches the battle from a fence rail--these are the foci of a poignant history.

*Rutgers Univ. \$3.50*

The Origins and Consequences of World War II, by Floyd A. Cave and Associates.

THREE principal objectives form the basis of this book: (1) to focus attention upon the problem of our age--War--and to seek a clearer view of its causes and consequences by a study of the events and trends leading to World War II; (2) to present the salient problems resulting from this war and their effects upon the world, present and future; and (3) to examine postwar great power conflicts and attempts at solving them. This is not an analytical study of the nature of war, but an attempt to plot the historical sequences leading to the war and their immediate consequences. Each chapter has been written by a specialist in his respective field, thus utilizing the abilities of a number of scholars.

*Dryden \$4.75*

Twelve O'Clock High, by Beirne Lay, Jr. and Sy Bartlett.

EARLY in the war, an Eighth Air Force bomb group was falling apart at the seams. Leadership was inept; casualties were heavy; crew members felt sorry for themselves. To exhume this "worst group" was sent Brig. Gen. Frank Savage, an audacious, untiring and out-spoken air veteran. The manner in which he accomplished his reforms was unique, but highly effective. But this leader's major problem was not the enemy; rather it was his immediate superior, a combat neophyte jealous of Savage's exemplary record and primarily interested in placating higher brass. The symbolism is reminiscent of that in *Command Decision*. Numerous sentimental props and stereotyped situations do not unduly detract from this gripping story of air warfare.

*Harper \$2.75*

The Negro in America, by Arnold Rose.

ONE of the most vital social problems of our day--that of the American Negro--is dispassionately and searchingly probed in this volume which is a condensation of Gunnar Myrdal's classic study, *An American Dilemma*. Although reduced to one-quarter the length of the parent volume, the real heart of Myrdal's work--the significant points of view and main conclusions--remain. The colored race is analyzed from manifold viewpoints, and reasons are sought out for the present social status of one-tenth of our people. The race myths are exploded with a wealth of irrefutable facts in this superior social study. Mr. Rose's efforts should greatly widen the circle of informed readers on this explosive topic.

*Harper \$3.75*

**Europe in Our Time**, by Robert Ergang.

SUBTITLED, *1914 to the Present*, this history attempts to give "the present generation a better understanding of recent events and contemporary problems," particularly as they apply to Europe. Beginning with the issues leading up to World War I and ending with a summary of current European problems, the author presents a straightforward account of major events. Economic considerations and a resurgence of the nationalist spirit of the great powers are listed as the main causes of the recent war, the actual battles of which are simply but ably chronicled. A valuable bibliography is included.

*D. C. Heath \$5.50*

**Fundamentals of Economics**, by Myron H. Umbreit, Elgin F. Hunt and Charles V. Kinter.

DESIGNED to introduce the general reader to the study of economic principles, this text is completely modern, yet organized along traditional lines. The discussion has largely been limited to those basic facts, concepts, relationships, and institutional arrangements which are most essential to an understanding of our economy. Much effort has been exerted to make the discussion clear, concrete, and to the point. For the adult reader the volume will provide a convenient review of the general field of economic principles.

*McGraw-Hill \$3.75*

**The Development of the Constitution**, by Percy T. Fenn.

THIS case book has been planned for the general student of constitutional law, on the theory that his needs and interests are not those of students of the same subject in the law schools. As

such, it is well fitted to the the military student, whose interest in governmental supervision and control will lead him to an interest in the judicial power. The introductions and notes surrounding the cases are given as a guide to the use of the text and are not intended as summaries of the rules of law contained in the cases.

*Appleton-Century-Crofts \$5*

**Survival or Suicide**, by Harry H. Moore and Others.

THE prodigious question--Are we to have peace or a Third World War?--is probed in this simple volume. Reasons contributing to present world problems and their solutions are outlined. The authors appear alarmed at our present large military appropriations. The Soviet threat to world peace, they believe, can best be halted by greater world cooperation and understanding on our part. If we can prove to the world that our system of government excels communism, "Soviet expansion may be stopped, and there may develop...a fairly stable division of the world between the Communists and the Western democracies."

*Harper \$2*

**Customs of the Services**, by Group Captain A. H. Stradling.

FORMERLY published as *Customs of the Service*, this small book provides a handy guide to the unwritten laws which commissioned officers are expected to observe. Although prepared expressly for the British services, most of the customs apply equally well to American situations. The volume is recommended by the Air Ministry.

*Gale & Polden, Aldershot 5/-*



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