

“The Role of Air Power,” U.S. Strategic Bombing Survey, p. 1

United States Department of War, September 30, 1945

The Role of Air Power

The air forces of the Western Allies which were marshaled against Germany during the European war reached a peak of almost 28,000 combat planes and of 1,335,000 men assigned to combat commands. More than 1,440,000 bomber sorties and 2,680,000 fighter sorties were flown against the enemy. Almost 2,700,000 tons of bombs were dropped. The number of men lost in action was 79,265 Americans and 79, 281 British. The bombing effort is summarized in Table 1.

More than 18,000 American and 22,000 British planes were lost or damaged beyond repair. Chart 1 shows graphically both for American and British forces the total tonnage of bombs dropped in the entire European war and the countries and target systems upon which it was dropped. The expenditure in dollars made by the United States to sustain its part of the air war in Europe, up to VE-day, exceeded 43 billions. Allied Air Forces destroyed or heavily damaged 3,600,000 dwelling units, approximately 20 percent of the total in Germany. Records of the German Air Ministry show that through January 1945 a total of 250,253 civilians were killed and 305,455 seriously injured. It is virtually certain that the number of dead and wounded exceeded these figures. An estimate for the whole war period prepared by the Survey places total deaths at 305,000 and wounded at 780,000. The number of German aircraft claimed to have been destroyed or probably destroyed in combat and on the ground exceeded 57,000.

But the record of persons killed and buildings damaged is not the measure by which to judge the real accomplishments of the Allied air attack; rather, those accomplishments must be measured by the extent to which they contributed to the destruction of the enemy's military strength. Nor must military strength be confused with economic strength. The general economy of a country could be strong and dynamic and yet its military

strength fatally weakened if it were denied some vital military need, such as oil, or planes, or tanks. Of far more significance than statistics of strength and damage is the outstanding fact that the Allied Air Forces won the air war over Germany and obtained mastery of the skies in Europe. The significance of this achievement and the results which followed from its exploitation are developed in these pages.

In order, however, properly to evaluate that achievement and those results, it is necessary to consider briefly the evolution of air power and the functions it was called upon to perform in this war.

Air power in the last war was in its infancy. Behind its dogfights and hit-and-run tactics there were some glimmerings of the concept of using air power to attack the sustaining resources of the enemy, but these bore only a hint of future developments. In this war, air power may be said to have reached a stage of full adolescence. Its growth and development still continue.

In the period between the wars, many different theories as to the proper use of air power were propounded. Some said its role should be merely one of cooperation with land and surface forces. Others said that air power alone was sufficient to achieve victory and should be used independently of other forces. Between these extremes, there were, of course, many gradations of thought. One fact was certain; no one could be sure of what was the best manner to utilize what was virtually a new instrumentality of war. Hence the development of plans and planes in the United States proceeded upon the assumption that air power would be used in many roles. There was a strong current of belief, however, that air pow-

NOTE.—In this report, bomb tonnage figures are in short tons (2,000 pounds). All other tonnage figures are in metric tons (2,204 pounds).

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er's most vital role would be to reach far into the enemy's country and destroy his sustaining sources of military power and particularly that this could be done by precision bombing in daylight.

In Great Britain, because of her geographically more vulnerable position, developments placed more emphasis on defensive fighters and less on long-range bombers. Perhaps the two most notable developments during the period were the development by the United States of the Flying Fortress and by the English, of the Spitfire, both eminently adapted to the emphasis of planning of the respective countries. The Germans, however, took a different course and concentrated primarily upon an air force designed for use in support of ground operations and paid relatively little attention to the building of an effective heavy bomber force.

When war came, the Germans were the first to demonstrate their theory and, in the blitzkrieg campaigns of 1939 and 1940, the world was temporarily stunned by the seemingly invincible power of the Panzer-Stuka combination. But when the Germans ventured away from support of ground troops and used their airplanes to attack England in the Battle of Britain, the English pilots in their Spitfires won a magnificent defensive victory. Thus was demonstrated the striking power of air in tactical support of ground troops, and the vulnerability of bombers, particularly in daylight, to unbearable losses from fighters. Perhaps this should have disturbed our plans. Fortunately, it did not. The United States, with the knowledge that air power was yet too untried to rely upon it or any phase of it for final victory, continued with its plans for the use of air power in many roles, all designed to make possible a successful invasion of the Continent and the defeat of Germany on the ground. Still the emphasis lay upon the long-range bomber and, despite the German and English experience, upon precision attacks in daylight. Much had to be accomplished, however, before any large-scale bomber offensive could be mounted. England had been saved but it had to be kept safe as a massive base from which to launch offensives in the air and on the land. The attacks by submarines rose in steady crescendo, particularly after the United States entered the war. Unless the sea lanes were kept open, all else would fail. Air

and sea power worked together, and the submarine was hunted out and attacked from the coastal waters of America, across the Atlantic, around the shores of England, in the Mediterranean, and to the far reaches of the northern run of lend-lease to Russia. The menace never ended, but air and sea power won and the base of Britain was established and supplied. German shipping had vanished from the seas except in her coastal waters and the runs from Scandinavia bringing vital iron ore to the blast furnaces of the Ruhr. Again the air-sea team attacked, and kept attacking, with mines and bombs and guns.

By July 31, 1942, United States combat aircraft based in England had grown to some 423 planes. On August 17 of that year, 12 Fortresses, with Spitfire escort, had attacked the marshalling yards at Rouen without loss. The portent of the future had appeared. But Rommel had been loose in Africa and was knocking at the doors of Alexandria. The whole Mediterranean and the Near East and Russia's southern flank were gravely menaced. The weight of war—and of air—shifted to the south. Aircraft carriers carried fighters to the defense of Malta. The land-air team—fighters and fighter-bombers and heavy bombers, in close cooperation with land forces—turned the tide at El Alamein. Aircraft from carriers and Gibraltar covered the landings in north Africa. Everything that flew was thrown into the breach at the Kasserine Pass. Transport planes flew paratroopers from England. Rommel's supply lines across the Mediterranean were attacked from the air and under the sea. Africa was cleared. The “soft underbelly” of the Axis lay open. The triumvirate—land, sea, and air—attacked it at Sicily, Sardinia, and Italy. The airfields of southern Italy were captured and the way opened for long-range bombers to reach over the Alps at southern Germany.

In 1943, the emphasis again turned toward the north and the interrupted build-up of our forces in England was resumed. In January 1943, the Casablanca Conference had authorized an enlarged scale of air attack against Germany, with its primary objective “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

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armed resistance is fatally weakened.” Although in the directive certain primary target systems were specified for attack, wide discretion was given to the commanders of the air forces to use their own judgment on how best to carry out the attack. Many difficulties beset any quick growth in the striking power of the still small American forces. There were limitations of range, limitations of fighter escort, limitations of numbers, limitations forced by weather over the European continent, which was particularly unsuited to the desired form of attack. The German defenses were strong and vigorous and the hope that heavily armed bombers could protect themselves without fighter escort proved disappointing. The sting of the German fighter made it impossible to achieve sufficiently effective bombing to produce decisive results. Our air commanders quickly realized that the German Air Force must be destroyed before a sustained and devastating attack on the enemy resources could be carried out and air supremacy, vital to the landing of troops on the Continent, be obtained. Thus, for the first time in history, there developed an air war with a strategy and tactics of its own just as truly as land and sea forces have always had strategy and tactics of their own. Each penetration into the heart of Germany was as truly an invasion as the landing of troops on her soil. The role of the heavy bomber was to threaten the vitals of German war industry and thus force the Germans to deploy their primarily defensive air forces to protect those vitals and come up and do battle with Allied forces. But many vital plants lay out of effective range because of lack of long-range fighter escort. This lack was remedied by the advent of the P-51—the Mustang—at the beginning of 1944. In the fierce battles over Germany in the early months of 1944, the air war was won. It was not finished, but its outcome was no longer in doubt. The concentration of invasion forces in England could proceed without fear of serious air attack. The domination by Allied air power of the invasion beaches of Normandy was assured.

With the successful landings in Normandy, the role of air power in conjunction with land forces again came into full play. The break-through at St. Lo was preceded by saturation bombing of an area approximately 8,000 yards by 7,000 yards con-

ducted by approximately 1,500 heavy bombers, 400 medium bombers, and 550 fighter-bombers, during a period of 2½ hours. The land-air team pursued the Germans to the Siegfried Line; they fought it out in the Battle of the Bulge; pushed forward again up to and across the Rhine, and so into the heart of Germany. There were assaults on defended river lines, assaults on lines of permanent fortifications, assaults on fortress cities and fortified areas, and in all, air power played its vital role. In the dark days of the Battle of the Bulge, the enemy planned to offset his lack of air superiority by timing the attack to coincide with predicted adverse weather. The predictions were correct, and the counteroffensive met with initial success. But the threat was met with determined ground and air counteraction. Attacks on supply dumps, railroad and road communications, communication centers, forward dumps, reconnaissance flights—these and many others are the varied functions of air in conjunction with land forces.

This, in brief, is the broad sweep of the many roles which air power was called upon to play—partner with the Navy over the sea lanes; partner with the Army in ground battles; partner with both on the invasion beaches; reconnaissance photographer for all; mover of troops and critical supplies; and attacker of the enemy's vital strength far behind the battle line.

But what were the forces with which air power had to play these many roles? Prior to the war the foundation for the expansion of the air forces had been laid; yet when the Japanese struck in the Pacific, they virtually wiped out our overseas air arm, and there were left within the continental limits of the United States a mere 631 airplanes suitable for combat. After Pearl Harbor, the AAF completed plans calling for substantial increases in planes and personnel. Revisions were made from time to time, as the requirements of the air war became more apparent.

As these plans materialized, men and planes began arriving in Europe. The first units of the Eighth Air Force were in England 2½ months after Pearl Harbor. Six months later, thirteen Liberators, flying from Africa, bombed the oil refineries at Ploesti. Concurrently with the building-up of U. S. air power in Europe, the Royal Air

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Force was gaining in strength, which made possible an increasing tempo in our combined air efforts against the enemy. The statistical story of the growth and employment of British and American air power and activity is shown in the preceding charts.

Charts 2 and 3 show the build-up, month by month, of combat planes and personnel assigned to combat units in the European and Mediterranean theaters of operation. Chart 4 shows the growing tonnage of bombs dropped by the Allied Air Forces. Chart 5 shows on which countries this tonnage was dropped. Chart 6 shows the tonnage dropped upon different target systems. It is of vital significance that, of all the tonnage of bombs dropped on Germany, only 17 percent fell prior to January 1, 1944, and only 28 percent prior to July 1, 1944. Not until the war in the air had been won and the landings in the Mediterranean and France successfully accomplished, were the heavy bombers free to exploit the victory in the air and attack in full force the centers of oil production, the centers of

transport, and the other sustaining sources of military strength within the heart of Germany. Even then the attack could not be fully concentrated, for the V-1 and the V-2 were serious threats to England, and again air power was called upon to attack this threat by bombing the launching sites in France, Belgium, and in Holland.

In the pages which follow, the effect of these many attacks is evaluated. A better picture can be given in describing the effect of each particular role, but the reader must bear in mind that these roles were not played in separate scenes but that all were going on together. The menace of the submarine was never ended; support of ground troops went on from day to day; the war in the air required constant attention; and, although the weight of the attack was sometimes on oil, sometimes on aircraft factories, sometimes on transport or other target systems, each had to have some attention all the time. The greatest single achievement of the air attack on Germany was the defeat of the German Air Forces, and therefore we first treat with that subject.