

AIR POWER AND THE WAR

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This article is being written on the anniversary of the first thousand-plane raid in history. On the night of May 30, 1942, more than one thousand bombers based on Britain soared into the sky and pointed their noses southeastward across the Channel. The target for the night was Cologne. Two thousand tons of explosive and incendiary bombs were unloaded over the target area in ninety minutes; forty-four planes were lost. Two nights later, June 1, Essen, the home of the Krupp armament works, was struck with comparable force; here thirty-five planes were lost. News of these raids warmed the cockles of many a heart in Britain and elsewhere, for at last the Germans were being paid back in their own coin, and with interest, for the Luftwaffe had never dropped as much as five hundred tons of bombs over Britain on any one raid; in fact, only twice had it dropped more than four hundred tons.

But on the morrow of these thousand-plane raids, a word of caution came from high places in Britain. When Mr. Churchill announced the raid on Essen to the House of Commons, he said: "I do not wish it to be supposed that all our raids in the immediate future will be above the four-figure scale." He admitted, however, that these two great raids marked a new phase in the air offensive against Germany, which would be further developed when the United States air force was also in operation against Europe. "I may say, in fact," he concluded, "that as the year advances German cities, harbours, and centres of war production will be subjected to an ordeal the like of which has never been experienced by any country in continuity, severity, or magnitude."

Five months later, the Secretary of State for Air repeated Mr. Churchill's word of caution. He was reviewing the work of the R.A.F. for the first three quarters of 1942, and pointed out that there was a steadily increasing tonnage of bombs being dropped on Germany and German occupied Europe. This air offensive against the stronghold of the enemy had given great indirect aid to Russia, because "for the whole of 1942," the Secretary said, "we have held more than half the German fighter squadrons facing west and, in the Mediterranean area, south." Nevertheless, it was not true that Britain had all the bombers it needed. The force was as yet so limited that it was only by an exceptional feat of organization, which could be rarely repeated, that 1,000 bombers could be put into the air at one time. He, too, concluded on a note of hope, however, when he expressed confidence that in a few months such four-figure raids would be less important.

Time and events have proved the wisdom of the words of caution thus uttered, but likewise they have seen the partial materialization of the hopes expressed. The last two weeks of May, 1943, saw the heaviest bombardment of Germany since the war began. It is not inappropriate, therefore, to devote some consideration to the role of air power in this war.

Few if any, weapons of modern warfare have been acclaimed as enthusiastically as the airplane. Machine gun, long range

artillery, tank and submarine have each in turn greatly affected the nature of warfare and have wrought innovations in applied military science. But for none of these, with the possible exception of the submarine, have such extravagant claims been made as for the airplane. Among the most extravagant of these claims was that put forward by the brilliant Italian writer, General Douhet, in the years between the two world wars of this century. General Douhet advocated that an air force should be completely independent of the other armed services, and that it should be used to destroy an enemy's capacity to make war by bombing enemy factories and transport systems and by crushing the enemy's will to fight under a rain of terror from the skies. The use of air power to destroy the enemy's capacity to make war is referred to as strategic; it is contrasted with the use of air power to support ground troops, which is called tactical.

But the experience of the past decade has demonstrated that the strategic use of air power has not yet been developed to a point where it is complete in itself, where it alone can win wars. In Spain, during the civil war, civilian morale did not crack and crumble under bombing and strafing attack. It was said, however, that air power was not there used on a sufficiently large scale to produce the desired effect. But in Poland, in Holland and Belgium, and still more notably in Britain, the heaviest blows the Luftwaffe could strike did not stop the machinery of production or terrorize into helplessness the people who run the machines. Despite colossal damage inflicted by mass bombing, British morale remained good, even improved under fire. It was the German army, capitalizing on the work of the Luftwaffe, which overpowered Poland, Holland, Belgium and France,—something that proved impracticable in the case of Britain.

The experience of this war has taught several things about air power. The first is, that it cannot be effectively used as an independent force until that day shall have come when its bombers and fighters can be supplied by air transport. As long as air power must rely for gasoline, oil, bombs and other material on land and sea transport, it cannot escape its ties to the other armed services. The Japanese planes which dominated the skies over Malaya and Burma flew from bases which had been captured by ground troops; these in turn had been transported by the Japanese Navy. These planes flew with fuel and were serviced with materials and parts which had been similarly transported.

The dependence of air power on land and sea transport was seen likewise in North Africa. The supply line of the United Nations to Egypt was longer than that of the Axis, but it was less vulnerable. By great effort, therefore, it was possible for the Allies to assemble the supplies necessary to seize and hold that air supremacy which was such a vitally important factor in the eventual victory of the Eighth Army. The Axis supply

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line, on the other hand, was under constant, effective attack by Allied airpower, surface ships and submarines. Axis sea transports moving across the Mediterranean lost heavily, and although air transport was pressed increasingly into service to make good some of the sea losses, the result was inadequate. The effectiveness of Marshal Rommel's air power in Egypt and Libya was seriously impaired by lack of supplies, and the work of the Eighth Army was made proportionately easier. The same pattern of circumstances reappeared in the battle of Tunisia.

But perhaps the most telling example of the dependence of air power on the other armed services to date in this war is seen in the difficulty of getting aid to China. In the absence of lines of supply along the ground or over the sea, air transport has risen nobly to the task which confronts it, but, even so, the bases from which it operates are themselves supplied in large measure and in substantial part protected by land and sea forces. Time, the genius of aeronautical engineers, and the energies of production may one day combine to make obsolete for war purposes the freight train, the truck and the freighter; but that day is not yet, and until it dawns the use of air power in war as an independent force seems hardly possible. Even after that day has dawned, such a use of air power may not be desirable in terms of optimum efficiency.

Another lesson suggested by the experiences of this war is that strategic bombing has not yet proved sufficiently decisive to justify a completely independent air force, because such bombing has yet to demonstrate its capacity singlehandedly to

knock an enemy out of the war. But given the overwhelming air superiority which the United Nations have concentrated against Italy, and the rising crescendo of air attack on Germany and Western Europe, developments of the not distant future may provide a stronger case for those who advocate that wars may be won by strategical bombing alone.

However that may be, the war has already demonstrated beyond doubt or cavil the effectiveness with which air power can be used tactically in close cooperation with ground forces. The early German team of Stuka dive-bomber and tank taught a sound lesson in this respect, a lesson which the Allies in Russia and Africa have learned well and improved upon. And the improvement of the lesson lies in the fact that the Allies in Africa combined strategical use of bombing with the tactical use of bombing as never before. Weeks of bombing of enemy supply lines and depots were followed by intensive bombing and strafing of enemy reserve and reinforcement areas close behind the front just previous to the assault upon land positions; then, during the assault, came low level attacks on fixed land positions while the harrying of enemy reserve areas continued. Finally, once the fixed positions had been broken through, there was relentless pressure during the pursuit, a pressure which was designed to transform retreat into rout.

The war has also provided basis for comment about the use of air power in relation to seaborne invasion. The record of war indicates that for seaborne invasion to be successful, it must employ the assistance of an air force capable of overcoming and eventually nullifying the air force of the enemy. The seaborne invasions of this war that have succeeded have enjoyed just such assistance in greater or lesser degree: the German invasion of Crete, the Japanese invasion of the Netherlands East Indies, the United States invasion of the Solomons and of Attu, the Allied raid on Dieppe. The evacuation of Dunkirk might be added to this list, because the same principle of air support was here in operation, although for an opposite purpose. Where seaborne invasion has failed, it is to be noted that the invader did not have the mastery of the air. This was the case in the Allied invasion of Norway, in the spring of 1940, and in the German attempt to invade Britain the following autumn; it has been true also of Japanese attempts to extend their conquests in the southwestern Pacific in the face of the air power under General MacArthur.

If air power has been an important factor in the success or failure of these several operations, then upon what does superior air power depend? Obviously, it depends upon having a great number of not inferior planes in the air. A layman is in a poor position to evaluate the qualitative features of one airplane against another; about all he has to go by is the reported ratio of losses between the contesting powers, and from this evidence he gets the firm impression that the air power of the United Nations enjoys a general qualitative advantage over the air power of the Axis. But a layman who has learned simple arithmetic can comprehend the quantitative aspects of air power: the number of planes available for operations in a given area, the distance that must be flown from base to target, and the speed with which servicing and refitting may be done at the bases in order to keep the maximum number of planes in the air. The slower the service of supply and the longer the distance from base to target, the greater the number of planes

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that will be required to achieve a given air strength against a given enemy area or position. To date, *terra firma* has provided the best of air bases and the greatest number. Bigger, faster, and more planes can operate from land than from carrier decks. To a layman, this simple combination of facts seems sufficient explanation of the advantages which land based planes enjoy over those otherwise based. Likewise, it goes far to explain why the control of land bases within reasonable operational distance of enemy shores is a desirable if not an indispensable prerequisite for seaborne invasion. The difficulty of carrying the war to Japan proper is due partly to the fact that the United Nations lack such bases in the Far East and partly to the fact that they do not yet control the seas there. That it is possible for the Allies to carry the war to the European end of the Axis is due largely to the fact that they have such bases and do control the seas around Europe. To the north of that continent there is Britain, from which big bombers may range far over enemy territory and from which fighters have already operated to cover invasion forces, as in the Dieppe raid. To the south are the bases in Africa and Malta, from which Italy may be bombed heavily, but from which it would be difficult to provide air cover for an invading force. It is generally expected, therefore, that the islands of Pantellaria, Sicily and Sardinia will be the next, limited Allied objectives in the Mediterranean, because they are close enough to African bases to be reached by fighter aircraft, and because these islands in Allied hands would provide bases from which an invasion of Italy might be covered.

Meanwhile, the bombing of Europe continues with ever-increasing intensity. To meet these bombing attacks the Germans have been obliged to increase the number of their interceptor planes in Central and Western Europe. During the first half of March, 1943, spokesmen of the British Air Ministry estimated this number to be twice as great as the number remaining on the Russian front. This means two things: that air raids in the West contributed to Russian successes during the past winter, and that if the Germans mount an offensive against Russia this year, that offensive will probably lack the air support to which German ground troops have been accustomed. For great as the Luftwaffe has been in the past, it has never during the course of the entire war mustered superiority on more than one front at a time. In the past three or four months, it has not enjoyed superiority on any front, including the home front. In short, it is now confronted with the situation that bedeviled the R.A.F. two and three years ago; there is not enough to go round. The Luftwaffe can only pay Peter on the Russian front by robbing Paul in the West.

Allied bombing of Europe has also played a part in the anti-submarine campaign. Heavy bombers have tried to knock out some factories, such as those at Nuremberg, which make engines used in submarines; they have struck hard at the yards outside Bremen and at Wilhelmshaven where submarines are built and repaired. One of the biggest raids of the war was made on March 18 by Flying Fortresses and Liberators against the submarine yards at Vegesack, some 15 miles northwest of Bremen. Then there is the bombing of the submarine bases, particularly those at Brest, Lorient and St. Nazaire. There is much dispute as to how effective these raids have been against the strongly protected pens in which the submarines are refitted

at these bases, but surely the raids would not have been kept up as they have been if they were not producing results.

But it is not only the submarine bases themselves that are under attack. The main railway junctions on the lines leading to the bases are favorite and frequent objects of attack by fast, low flying light bombers. The yards at Tours and Le Mans, on two separate lines running to St. Nazaire, as well as the yards at Rennes and St. Briec and the viaduct at St. Morlaix on the way to Brest are among those hit hardest. Presumably the object of disrupting railway traffic to the submarine bases would be to cause delays in the refitting process, which would keep the submarine away from the sea lanes as long as possible.

More recently there has been a notable emphasis on the bombing of German industry. The list of industrial objectives is long. It includes such centers as the Renault works outside Paris, the steel and armament works of the Ruhr, the Cockerill engineering and armament works near Liège in Belgium, the power station and railway workshops at Trier near the German-Luxemburg frontier, the Erla plane works near Antwerp, the Skoda armament works at Pilsen in Bohemia, the Fockewulf plant at Bremen, and more recently, the Moehne and Eder dams in the Ruhr. In fact, the last two weeks of May, 1943, saw a greater concentration on one industrial area than has yet occurred in the war. This concentration was against the Ruhr. There, within a radius of fifty miles or so from Essen, Allied bombers delivered in that fortnight blows against Duisburg, Dortmund, Duesseldorf, Wuppertal and the two dams already

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mentioned. It is true that there has been an appreciable relocation of German war industry further east and south, but the heart of Germany heavy industry remains in the Rhineland and Westphalia, in a zone 250-400 miles distant from London and within easy reach of Allied medium and heavy bombers. Estimates as to the damage done to German production for war vary, but in the past five months they have all varied in an upward direction, until as May, 1943, comes to a close, it is being said, without official confirmation, that German war production has fallen as much as twenty per cent, largely due to bombing, and that if it falls off as much as forty per cent, Germany will be unable to carry on effectively even defensive warfare. These estimates are encouraging; but for the moment they should be accepted with sober reserve.

Able and informed men have argued that German industry is a less vulnerable spot in Germany's war armor than is German transportation. Be that as it may, the pattern of Allied bombing suggests that it is designed to strike blows not only at Germany's vital organs, that is her war industries, but also at her circulatory system, that is, her railways and rolling stock, her canals and aqueducts, and her coastal shipping. Against this shipping, which moves cargoes from the Bay of Biscay and from Norwegian waters through Belgium, Dutch and Danish ports, Allied air power is constantly on the offensive. It lays mines, destroys docks and shipping at such places as Flushing, Rotterdam and Hamburg. Every week from spring through fall, German controlled canal and river traffic is the object of one or more attacks, and well it might be, for in peace time rivers and canals moved about one-third as much of German cargoes as did German railways. Barges themselves are blown up or important inland ports like Duisburg are bombed. Last, but by no means least, there are the attacks on railway transport. Railway shops and locomotive works at Tours, Nantes, Trier and elsewhere have been hit hard. Railway junctions and marshalling yards in the Low Countries, northeastern France and western Germany, as well as those in western France already mentioned, have been more frequently attacked in the past four months than any other type of objective. Then

there are almost daily attacks on railway traffic. Cannon-bearing fighter planes and fast bombers are usually over northern France and Belgium several times a day; their favorite target seems to be railway locomotives, whose boilers, under 200 to 300 pounds pressure per square inch, carry their own explosive charge of steam, a charge released by shells from the attacking planes. It is a poor day's work when two or three locomotives are not attacked, and it is not uncommon for airmen to register scores of six or eight in twenty-four hours. With Germany now confronted with attack from all sides of Europe, there is a high premium placed upon the efficiency of her transport system, yet the most important part of that system is under constant and heavy attack from Allied air power.

Italy is even more vulnerable to Allied bombing than is Germany. Except in the valley of the Po in northern Italy, her main railway lines follow the sea coast and are within the range of big navy guns as well as planes. Italian transportation and industry relies heavily upon hydroelectric power, and these power installations are fairly vulnerable to air attack. It may well be that the strategic use of bombing will be so effective against Italy as to make actual invasion little more than a nominal operation. If this turns out to be the case, it would indeed be justice,—for Italy would then fall as first victim to that theory of air warfare so ardently propounded by the Italian Douhet.

Nor is the present bombing of Germany, without appropriate and ironic justice. For it was in the air that the Germans regarded themselves as so superior to their foes. But the Luftwaffe was organized on the assumption of quick victory. And when quick victory eluded it, it was unable to sustain the great attritional cost of prolonged war. As Allied air power climbs steadily upward, German air power has passed its peak,—certainly in quantity and probably in quality as well. The resulting altered balance of power in the air is the handwriting on the wall for Germany: the Luftwaffe has been weighed in the balances and found wanting, and the kingdom of its creators will soon fall before invaders. Could it be that those great Aryans, Hitler and Goering, failed to study such a minor prophet as Daniel?

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