

THE JAPANESE AIR FORCES

Fighting Value of Both the Army And Navy Units is at a Low Point

IMPERIAL JAPAN has no separate air force. The Japanese Army and Navy have created and maintained their own air arms on strictly independent lines, thus giving Japan two air forces, the Japanese Army Air Force (JAAF) and the Japanese Navy Air Force (JNAF).

Generally the JAAF is concerned predominantly with land commitments and the JNAF with maritime operations. There has, however, been considerable overlapping of assignments and lack of coordination between the two air forces, which came to a crisis at the end of 1942 with the pressing need to reinforce the JNAF in New Guinea and the Southwest Pacific areas. There subsequently has been a rapprochement of the Army and Navy air services.

The need for further and more effective coordination of the naval and military air effort is appreciated by the Japanese High Command and some form of coalition is expected.

The aircraft strength of the JNAF is larger than that of the JAAF, and prior to December, 1941, it was agreed in Allied countries that the Japanese Naval Air Force deserved some respect, though the Japanese Army Air Force was largely held in contempt.

The attack on China in July, 1937, gave the two air forces their first chance to show what they could do in warfare of considerable scale. The operations of the JAAF were not impressive, and after a series of setbacks against Lanchow, JAAF units were withdrawn and JNAF squadrons put in their place. In the air combats around Hankow in 1938, Japanese pilots encountered a few Russian fighters and were beaten.

The Japanese Pilots: Japanese pilots have displayed a wide range of ability. In the months after Pearl Harbor, Japanese pilot ability was reported generally excellent. But as the war lengthened into 1943, 1944 and 1945, reports from the Far Eastern and Southwest Pacific theaters revealed that the newer crop of Japanese airmen were inferior to the original pilots. The Japanese air forces have suffered heavy losses in trained air crews, and the crack "first teams" which our flyers encountered in the early stages of the Pacific war are gone. The second team are proving generally unaggressive and lacking in training and skill.

In general, comparative reports show that the Japanese coordination of fighter attacks, the persistence of their attacks and the determination and ability of the individual pilots are far below the standards of German fighter pilots.

Combat analysts comparing notes in different theaters agree that the Japanese airmen have plenty of courage but lack ingenuity and judgment. The recklessness displayed by Japanese pilots in pressing home their attacks in the early days of the war is not so frequent today, although some units are now appointed as "Divine Wind" squadrons, whose mission it is to bring enemy bombers down by crashing into them with their own planes.

Japanese pilots have been taught to fly a certain way, and they usually follow the same pattern, even when the situation calls for drastic departures from accepted procedure. They have very little imagination.

Their Aircraft*: It is agreed that the greatest weakness of the Japanese air forces is the vulnerability of their aircraft. This defect was especially evident in the early stages of the war. The Japanese High Command had embarked on a policy of sacrificing the safety of the aircrews for greater maneuverability, range and rate of climb. It is only recently that Japan has increased the fire power, armor and general sturdiness of her aircraft.

Most of her aircraft were built without regard for losses. They were fragile and there was no protective armor for the pilot or the vulnerable spots of the aircraft. The cockpit shell was not made of bullet-proof glass and armor was lacking behind the pilot's seat and between the engine and cockpit.

A P-38 pilot who scored many victories against the Type Zero Mark I ZEKE and the Type Zero Mark II HAP described it this way:

"The Jap pilot is vulnerable because he doesn't have armor protection. You can kill him easily. The planes are inflammable and fragile. Hit them with a solid burst of 50s and you'll tear part of the plane away. Hit the gas tank with a burst of incendiaries and the plane explodes. A P-38 can take a lot of punishment and still get you home, but the Jap plane can't. It comes apart if you give it a solid burst."

Other reports from the Southwest Pacific state that the Japanese continued to suffer from the weakness of their planes, particularly because of the lack of self-sealing gasoline tanks and armor. Fighter pilots reported that both fighters and medium bombers (BETTY) exploded and disintegrated when hit by bursts from 50-caliber guns.

Improvement in Japanese aircraft has been noted from time to time and the trend to make stronger, better-protected aircraft is gaining despite difficulties in manufacture and training, for an armored plane's

* See pages 24-28 for a complete list of operational aircraft.

JAPANESE AIR FORCES ORDER OF BATTLE

(Including the Japanese Army Air Force and the Japanese Navy Air Force. Compiled from data available to 15 May, 1945.)

| Disposition | Twin Engine Bombers | Single Engine Bombers | Fighters | Floatplanes and Flying Boats | Bomber Recon | Total |
|---|---------------------|-----------------------|--------------|------------------------------|--------------|--------------|
| JAPAN | 430 | 370 | 1,380 | 180 | 190 | 2,550 |
| MANCHURIA-CHINA-FORMOSA .. | 100 | 20 | 410 | 65 | 150 | 745 |
| BURMA-SIAM-INDO-CHINA MALAYA-SUMATRA | 40 | — | 205 | 30 | 20 | 295 |
| PHILIPPINES-NETHERLANDS EAST INDIES-SW PACIFIC | 20 | — | 30 | 45 | 45 | 140 |
| TOTALS | 590 | 390 | 2,025 | 320 | 405 | 3,720 |

The grand total, all aircraft, is 1,050 less than the grand total of the disposition report for 15 February, 1945

flying characteristics are widely different from those of the lighter, unarmored aircraft. Recently there have been improvements in streamlining and engines. A few new liquid-cooled inline engines have made their appearance among the usual Japanese radial power plants.

Japanese Bombers: As a whole, Japanese bombardment aviation has been weak as compared with that of the United States and Great Britain. Successful Japanese bombing missions have become more rare as the war progressed, due largely to stronger opposition put up against them. The great weakness is in the lack of good heavy bombers capable of long-range flights with heavy bomb loads.

The Japanese have as yet nothing to compare with the USAAF's B-17s and B-24s, let alone the more recent B-29 Super-Fortress. The lack of good heavy bombers has given the Allies a tremendous advantage over the enemy, as evidenced by the growing mass-bombing attacks by the B-29s of the 20th and 21st Air Forces on the Japanese mainland islands.

These attacks on the Japanese homeland have been gradually stepped up, and recently armadas of 400 and 500 B-29s have flown over the heart of the Japanese Empire from their bases in the Marianas to bomb aircraft factories, airfields, naval and shipping installations and aviation gasoline cracking plants in the Tokyo and Nagoya areas.

Against these heavy attacks the Japanese have so far put up only meager air opposition, and as their tempo increases it becomes clearer that despite the new air program of the Imperial High Command, Japan's air power in the Far East and Southwest Pacific is at a low ebb.

Since the Battle of the Bismarck Sea, the Japanese have suffered staggering losses in aircraft, while US losses have been generally small. So great is the Allied air supremacy in the Far East now, that carrier aircraft attacks of more than 600 planes at a time are being made on Japan's mainland.

Trends in Japanese Fighters: Japanese fighter design now stresses low power loading and increased wing loading, with consequent gain in speed, climb and dive at sacrifice of range, maneuverability and equipment. The war in the Pacific from the Japanese point of view changed from an offensive to a defensive war in late 1942 with the resultant need of improving fighter aircraft. The bulk of the increase through 1943 was in the relatively old types of fighters such as OSCAR and ZEKE, but in 1944 a growing proportion of new and higher-powered fighters were being produced.

The original Japanese fighters, OSCAR and ZEKE, had considerable success in the early stages of the war, but were later outclassed by the F4U, F5F, P-38, P-39, P-40, P-47 and P-51. Subsequent Japanese developments like TOJO and TONY were unable to compete on even terms with the top aircraft of the United Nations. TOJO, for a time considered the best Japanese fighter, never appeared in large numbers outside the Burma-India-China front, suggesting that the Japanese air chiefs were not wholly satisfied with it. It did, however, set a style for new types of fighters.

The TOJOS and planes of similar type primarily designed for interception reflect the defensive character of the current Japanese air strategy and the enemy's concern over the growing bomber attacks against the Japanese homeland and Empire.

The present tendency is to put high powered engines into relatively light airframes, sharply reducing the power loading and increasing the rate of climb. Wing loadings are still somewhat lower than that of standard US designs, but considerably higher than in ZEKES and OSCARS. JACK, GEORGE, FRANK and SAM, among the new Japanese fighters, approximate in normal weights such US fighters as the F4F and the P-39, but are much lighter than the F4U and the F6F.

The armament of the new Japanese fighters is

also an improvement on the old types, but it is still below US fighters in rounds per minute.

Japanese Aircraft Engines : The Japanese have made considerable progress in recent months in closing the comparative gap in horsepower developed by their airplane engines and that turned up by corresponding US airplane engines.

The latest Japanese aircraft engines reveal the adoption of numerous new principles in design, departing from the previous conventional standards of the Japanese air forces. The two-row radial engines continue to form the bulk of Japanese engine production and 18-cylinder engines appeared operationally for the first time this year. Inline engines remain confined to the German DB 601 basic design, with the latest, the Atsuta 31, being similar to the DB 601 series.

Recent improvements include increase in piston displacement, increased manifold pressures, improved supercharger ratios, improved volumetric efficiencies, general increase in compression ratios, improved engine cooling and reduction in fuel consumption. Grades of engine fuel have not changed materially since the start of the war. Most engines still use 87 and 92 octane gasoline, although a 93 octane gasoline has been identified in use.

Japanese Air Tactics : Japanese air tactics have ranged from excellent to poor. In no instance have Japanese pilots displayed the ingenuity that marked the great US air strike in the Bismarck Sea. The Japanese have been slow in changing and improving their tactics. For months in early 1942, Japanese bombing missions against Port Moresby showed very little variation, the bombers always coming in flying in the same formations at the same altitudes. For a long time they stuck to the same tactical pattern in their bombing missions against Guadalcanal in the face of suicidal losses.

Against surface vessels, the Japanese have carried out some well coordinated attacks. Various combinations of horizontal, torpedo and dive bombing tactics have been used with some fighter strafing

completing the attack pattern. The emphasis appears to be on torpedo and dive bombing rather than on horizontal bombing in attacks on ships. The ratio of torpedo to level bombing attacks on the *Repulse* and *Prince of Wales* was more than 2 to 1. Japanese losses in attacking our warships and merchant vessels have increased sharply as our waterborne fire power has increased.

In general, formation flying by Japanese medium bombers is tight and well performed. If one plane is shot down, another immediately takes its place. AA fire and fighter opposition, even when they cause considerable casualties, rarely break up Japanese formations. On this, as in other aerial operations, the Japanese have been willing to accept high losses in seeking to achieve their objectives.

Japanese fighter tactics sharply reflect the differences in pilot ability. Our pilots have noted that in a mixup the Japanese do not possess the teamwork characteristic of US fighters. They often do not stick together for mutual protection, with the result that many more are shot down. In many cases they fly in accordance with a prearranged tactical plan regardless of consequences.

Japan's Air Power Setting : From the time that the initiative in the Pacific war passed out of her hands, Japan's aim has apparently been to fight a delaying war in the hope of forcing the United Nations into accepting a compromise peace. Japan's dwindling air power, despite statements to the contrary by her leaders, has been unable effectively to stem the Allied surge from island to island towards the Japanese homeland, which, now, with redeployment of the vast Allied air power from the European Theater to the Far East, faces greater air assaults than ever before.

Imperial Japan's air future depends on her capacity to outstrip the United Nations in aircraft production and technical skill. This she has been unable to do in the past and today, with the mounting increase of attacks on Japanese industry by B-29s and carrier-based aircraft, such a production schedule is impossible.



The Benefits of Being Beat Up

THE FACT that Japanese planes are now chiefly engaged in defending their own bases, instead of attacking Allied installations, is not without its beneficial results, according to Lt. Gen. Saburo Endo, as quoted in the *Naval Aviation Confidential Bulletin* for May, 1945. Speaking in Tokyo to urge increased aircraft production in Japanese plants, the General stated :

"From the outbreak of the war up to the time when America began its counter-attack, our air force usually engaged in offensive preparations, so, though our land forces saw the air force units take off for attacks, they hardly had any chance to see the actual aerial decisive battle. However, since the enemy began its counter-attack in earnest last year, they have been raiding our air bases. . . . Because of this, our garrison units on land see almost every day the marvelous fighting of our air force unit which may well be called a superhuman technique."

Miscellaneous Japanese AA and Defenses

FLAK Intelligence Memorandum Number 4 of the United States Pacific Fleet and Pacific Ocean Areas, published on 11 April, 1945, provides the latest facts on the antiaircraft weapons and defense measures employed by the Japanese in conjunction with their normally expected antiaircraft artillery and associated equipment.

Smoke Screens : Harbor areas, aircraft and steel plants, arsenals, and power plants seem to be the primary objectives which are usually cloaked by black or white smoke screens with varying degrees of success. The target area screening is accomplished by haphazardly arranged smoke generators and special smoke-laying aircraft, with the defense being occasionally augmented by decoy smoke screens produced several miles from the target area itself. The limited success that the Japanese have had with the use of smoke in preventing the actual pinpointing of the target is more than offset by the reduced efficiency of the Japanese AA crews which is always brought about by the presence of the smoke around their defense installations.

Balloons : An increase in the use of barrage balloons, with varying altitudes from 500 feet to 7,000 feet, is noted along the East China Coast, Formosa, and the Jap homeland. Emphasis is placed on the protection of harbor facilities and shipping, but it is encouraging to note that the Japanese will not be able to employ these balloons in effective numbers. Silver or gray, spherical or tear-drop shaped high altitude free balloons have been sighted in the same districts at altitudes ranging from 10,000 feet to 27,000 feet. Their exact purpose is not known, but rather than having any connection with AA defense as was first suspected, it is believed that they are being employed as experiments in the "long-range indiscriminate bombing" of the North American Continent, quite a few having been sighted and recovered recently over Alaska, Western Canada, and Northwestern United States (see page 22).

AA Rockets : The indicated experimental use of ground-to-air rockets by the Japanese is still unconfirmed by photographs, captured equipment, documents, or known damage to our aircraft. Manifestations of Jap rocket research appear in recent B-29 reports of "balls of fire" over Tokyo, which followed the aircraft for as long as six minutes, and are described as similar to the "balls of fire" or "Foo Fighters" encountered over Germany last summer. The Tokyo raid reports on 3 April, 1945, show that the "balls of fire" appeared as steady glows with faint following streams of fire which gained on straightaway courses, but fell behind when evasive action was taken. Rockets and rocket launchers being easier and cheaper to manufacture and requiring less technical skill to operate than normal heavy anti-

aircraft materiel and ammunition, they may well be encountered more frequently as the research in that field continues.

Railway Flak : Specially equipped flat cars to protect trains from strafing attacks are now being used limitedly by the Japanese. There are as yet no reports on the use by the Japanese of heavy railway flak to reinforce the defense of vital objectives.

Flak Ships : No warship specifically designed as a Flak Ship has been or is about to be developed by the Japanese Navy. The Jap Merchant Fleet, however, has acquired two "Special Type Ships for Amphibious Operations," which possess antiaircraft armament primarily. One is of the large *Mayazan* class (9,430 gross tons), and the other is of the small *Takazu* class (5,350 gross tons), with both ships mounting four AA guns (probably the 75-mm. type 88) on each of two platforms fore and aft, a possible two additional single guns abaft the stack in tubs on the superstructure, and eight to ten probable 25-mm. guns around the deck.

AA Mortars : The employment of 70-mm. and 81-mm. mortars in an antiaircraft role is definitely substantiated. The 70-mm. has a maximum vertical range of 1,500 to 2,000 feet and fires a projectile which bursts and scatters seven explosive charges each supported by a small parachute. The parachutes require two to three minutes to float to earth from maximum altitude, and the explosives will detonate upon contact. The 81-mm. has a vertical range of 3,280 feet, and fires a projectile releasing an explosive charge supported by a parachute fastened to a cord 33 feet long, which is in turn attached to a second parachute. The explosive will detonate upon contact with either chutes or cord and has a lethal radius of about 30 feet. Barrage type fire is employed with both these weapons, but to date no serious opposition has resulted to our airmen.

Unorthodox Defenses : Land mines effective up to 500 feet are ordinarily used in the vicinity of airfields along probable lanes of approach for low attacking aircraft. On a recent strike against Clark Field, Philippine Islands, four A-20s were simultaneously lost at 500 feet altitude when "the ground just seemed to come up in front of them" as the result of an explosion beneath them. The presence on photos of "small mounds with holes in the tops" or a series of "dots approximately the size of tree stumps" may well indicate the presence of land mine fields which can be detonated either sonically or by remote electrical control.

Water mines, described as small brightly colored boxes floating on the water, have been infrequently encountered by our airmen in the Pacific Area. It is

(Continued on page 23)

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 IN EUROPE
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