The History of the Twentieth Century
Episode 412
"Hero to Zero"
Transcript

[music: Fanfare]

The Japanese "Zero" was the most effective fighter plane in the world when it was introduced in 1940. The plane and its sophisticated design were a key reason why Japan won victory after amazing victory in the opening months of the war in the Pacific.

But by 1943, Allied air units were overwhelming their Japanese counterparts. Japanese air superiority became a thing of the past.

Welcome to *The History of the Twentieth Century*.

[music: Opening War Theme]

Episode 412. Hero to Zero.

Today, let's look at developments in 1943 in the Pacific Theater. In January, the Japanese decided to abandon the campaign to retake Guadalcanal from the Americans and began to withdraw. In eastern New Guinea, Australian ground forces had been steadily pushing the Japanese westward.

The Navy's decision to abandon Guadalcanal persuaded the Japanese Army that holding the northeastern coast of New Guinea was more crucial than ever. If the Australians and the Americans succeeded in driving Japanese troops off New Guinea, then Japan's most important military base in the region, Rabaul on New Britain, would be vulnerable.

The port town of Lae was now Japan's most important base on New Guinea. With the Australians closing in after their victories in 1942, some 6,500 Japanese soldiers were defending Lae. In January, the Japanese sent a force inland with the goal of seizing an Australian-controlled air base at Wau, but the Australians were able to turn back the Japanese advance.

In February, the Japanese Army transferred its 51st Infantry Division from Indochina to Rabaul, intending to send it forward to Lae in early March. But the American General George Kenney, commander of Allied air forces in the region, took note of increased Japanese aerial reconnaissance and deduced the Japanese were planning something important. He increased his own reconnaissance flights, which detected large numbers of transports and merchant ships gathering at Rabaul.

Allied codebreakers at Melbourne intercepted and decrypted a message that revealed the destination of the convoy would be Lae. The Allies moved their air units in the region to forward positions on New Guinea to be ready for the Japanese ships when they came.

The Allies had been experimenting with some new anti-ship tactics for their bombers. One was to install heavy machine guns that could be used to strafe enemy ships. Another was skip bombing, which involved approaching the enemy ship low and from the side, similar to the approach of a torpedo bomber, then dropping the bomb near the target. Its forward momentum would cause the bomb to skip across the water and strike the side of the ship. Newer bombs had five-second delay fuzes, which allowed the bomb to break through the hull or the deck and make its way into the interior of the ship before exploding.

The Allies had more planes in the area than the Japanese expected: 127 fighter planes and over 200 bombers.

The convoy left Rabaul for Lae on February 28, carrying nearly 7,000 Japanese soldiers aboard eight transports escorted by eight destroyers. On March 3, 1943, a squadron of B-17 bombers attacked the Japanese convoy, forcing it to disperse. One of the B-17s was shot down by Japanese Zeroes; the fighters then fired on the B-17s crew members as they descended on their parachutes.

Ninety more planes followed, attacking with the new “skip bombing” tactic. Within minutes, every Japanese ship in the convoy was either sunk or seriously damaged.

The attacks continued all afternoon. The Allies sank all eight transports and four of the eight destroyers, then strafed the surviving Japanese in their lifeboats. The Allies later justified attacks on the lifeboats by pointing to the Japanese attacks on those B-17 crews descending by parachute from their disabled bomber, and on the grounds that the soldiers aboard these boats were combatants who, if they had survived and made it to Lae, would have fought against Allied ground forces there.

Only about 1,200 Japanese soldiers made it to Lae, aboard the surviving destroyers. Japanese ships were able to rescue a further 2,700 or so and return them to Rabaul. About three thousand Japanese soldiers died.

This attack is known as the Battle of the Bismarck Sea, and it was disastrous for the Japanese. It was now clear to the Navy that reinforcing or supplying Japanese positions on eastern New Guinea was impossible. The Navy viewed its many air bases in the Solomon Islands as more important; they were the real last defense against the enemy seizing Rabaul. The Army disagreed, arguing that if New Guinea were abandoned, the East Indies and the Philippines would be left vulnerable. For now, the Army would get its way.

Once the Japanese learned how strong were Allied air forces in the Southwest Pacific, they deployed additional air forces of their own to the region and in April began an air offensive meant to destroy Allied planes and bases. Admiral Yamamoto was sent to oversee the operation. I already told you how that turned out in episode 397. Overeager Japanese fighter pilots, as usual, vastly overestimated the number of Allied planes they had destroyed, leading the Japanese to believe they had dealt a heavy blow; in fact Allied air losses were minimal. The Japanese lost more of their own planes than they had cost their enemies. The most significant outcome of this Japanese air offensive was that it led to the American Operation Vengeance, in which US fighters intercepted and shot down the plane transporting Admiral Yamamoto as he left Rabaul, killing him.

On the Allied side, the US Army and Navy were having their own debate. Douglas MacArthur put forward an ambitious proposal to push ahead on New Guinea, clear out the Japanese, then launch an amphibious invasion of New Britain to take Rabaul before the end of 1943. MacArthur requested five additional infantry divisions and 1,800 additional aircraft for this operation.

Giving MacArthur what he wanted would have required a major shift in American priorities. The Army Air Force objected to providing the planes. They cited the recent Casablanca Conference in which Roosevelt and Churchill had designated the bombing campaign over Germany to be the top priority. The argument had to be resolved by the service chiefs, General Marshall and Admiral King. As usual, Marshall was focused on landing American troops in France as soon as possible, while King felt it was important to continue the pressure on the Japanese, to deny them the opportunity to reinforce and consolidate their defenses.

The two agreed on a compromise. American forces in the Southwest Pacific would continue to press forward toward Rabaul, but the final assault on the base would have to wait.

MacArthur responded with a new proposal which, though toned down from the previous one, was still complex and extensive. It was called Operation Cartwheel, which was the overall name for a series of no fewer than thirteen smaller operations, each an amphibious invasion of successive islands in and near the Solomon Islands, beginning in June 1943 and culminating in an amphibious landing on New Britain and the capture of Rabaul by December 1943.

The Southwest Pacific was quiet over the months of May and June 1943, as both sides prepared for battle by bolstering their advance positions with additional air and ground forces.

On June 30, the lull ended when the Americans began landing on the island of New Georgia, in the middle of the Solomon Islands chain. The Japanese had constructed an airfield on the island, which they were using to refuel planes flying from Rabaul to bomb Henderson Field on Guadalcanal. New Georgia would be Guadalcanal in reverse. This time it would be the Americans trying to dislodge the Japanese from a crucial airfield.

The Japanese were not willing to be dislodged. After the first American landings, the Japanese relied on the "Tokyo Express" to transport 4,000 reinforcements to New Georgia on destroyers at night, nearly doubling their force on the island.

But the Allies sent reinforcements as well, ultimately building up a force on New Georgia four times the size of the Japanese one. Bitter fighting went on throughout the month of July, but in early August, the Americans captured the Japanese airfield. By the end of August, New Georgia was in Allied hands. Allied and Japanese losses of soldiers were comparable, but the Japanese lost over 350 airplanes to less than a hundred for the Allies. These were losses Japan could not sustain.

Just days after the Allies secured New Georgia, the Australian 9th Division, supported by the US Navy, landed just east of Lae on New Guinea. The next day, American paratroopers landed unopposed at an airfield just west of Lae, in the Japanese rear. They quickly seized control of the field, which allowed the Australian 7th Division to be transported there by air from Port Moresby.

The Japanese garrison at Lae was trapped between the two divisions, and the Australians were able to take Lae within ten days, much more swiftly and with fewer casualties than anticipated.

[music: Dvořak, *Symphony No. 9*.]

If you recall my descriptions of the Japanese attack on Pearl Harbor in December 1941 and the months afterward, a period during which the Japanese won victory after victory and expanded control rapidly across the Western Pacific, you know what a crucial role Japanese air power played in those battles. Consider what Japanese planes accomplished at Pearl Harbor, and how days later they stunned the Royal Navy by sinking HMS *Prince of Wales*, one of the RN's newest and most fearsome battleships. With that in mind, you might well be wondering why it is that in mid-1943, just 18 months later, Allied air power is beginning to surpass the Japanese, and increasingly it is American aircraft that rule the skies in the Southwest Pacific.

America's industrial capacity, its ability to produce new aircraft at a much greater rate than Japan could, is part of this story. But the Japanese had also lost their qualitative advantage. How did that happen?

The nature of the war in the Southwest Pacific, hopping from island to island, makes air power crucial. The multitude of small islands hampers the advance of ground forces, but offer many opportunities to build airfields. Air units have to protect naval warships and troop transports in order for ground units to advance, and even after an island is secured, air cover is essential to ensure that the occupying garrison can be supplied.

The story of Japanese air power is mostly the story of the workhorse Japanese fighter plane, the Mitsubishi A6M, better known as the "Zero."

The story of the Zero begins with its predecessor, the Mitsubishi A5M, which was introduced in 1936. The letter A signifies a carrier-based fighter, the 5 signifies it was the fifth type-A plane developed for the Navy, and the M stands for Mitsubishi. It was commonly known among the Japanese as the Type 96, because the year it came into service was 2596 by the Japanese Imperial calendar.

In 1942, an American military intelligence officer stationed in Australia developed a set of designations for various types of Japanese warplanes, and it soon caught on among the Allies: fighter planes were given men's names and bombers were given women's names. The Type 96 was still in service after Pearl Harbor, and he dubbed it "Claude."

The Claude was one of the first monoplane carrier fighters in the world. It had an open cockpit and fixed landing gear.

By the time the Type 96 entered service, the Navy was already beginning the process of developing the next generation of carrier fighter. They specified a fighter that was faster, with a greater rate of climb and a longer range. Some aircraft designers believed the Navy's specifications were impossible to meet, but Mitsubishi's chief designer, Horikoshi Jiro, who had also designed the Type 96, accepted the challenge.

Horikoshi realized that the only way to meet the Navy's specifications would be if the aircraft was remarkably low weight, so keeping the new plane as light as possible was a key design goal. The new plane would be built using a new top-secret aluminum alloy developed in Japan that was stronger for its weight than any existing alloys. To keep the plane light, it had no armor to protect the pilot, the engine, or the fuel tanks, as did most other fighters. It had an enclosed cockpit and retractable landing gear, which increased performance.

The Mitsubishi A6M entered service in 1940, which by the Japanese Imperial calendar was the year 2600, and so it became known as the Type 0. Allied intelligence labeled it the "Zeke," but it was more commonly referred to as the Zero, even on the Allied side.

The Zero first flew in combat over China, where it thoroughly outclassed the Soviet I-15 and I-16 fighters the Chinese were using. The Zero combined speed, maneuverability, firepower, and range, and it was superior to any other fighter plane in the world at the time, and that includes the British Spitfire and the German Messerschmitt 109 that were at this same moment duking it out in the skies over Great Britain. And the Zero could take off from and land on an aircraft carrier, something neither of its rivals could do.

By 1941, reports were reaching the British and American militaries about the phenomenal new Japanese fighter plane, but intelligence officers in both countries tended to dismiss these claims as far-fetched. The new Japanese fighter could best Soviet planes flown by Chinese pilots, but it was surely no match for the best British and American planes flown by Western pilots. Westerners regarded the Japanese as excellent copyists of technologies and designs imported

from the West, but thought them incapable of innovation. Apparently, only white people can come up with new ideas.

In December 1941, the Western Allies got a nasty surprise, as you already know. RAF pilots engaged Japanese planes using tactics honed during the Battle of Britain, but found they were useless against the Zero. The Spitfire was faster than a Zero, but the latter was more maneuverable and its range meant it could stay in the air far longer than the British plane. The Zero's range also meant that these planes had the uncomfortable tendency to appear and attack Allied units who had thought they were safely beyond the reach of Japanese air power.

The only American fighter planes widely available in the Pacific at the time were the Wildcat and the Brewster Buffalo, which was also in use in Dutch and RAF air forces in the region. The Buffalo was hopeless against the Zero; American pilots were soon calling it the "flying coffin."

The more modern carrier-fighter in the American arsenal was the Grumman F4F Wildcat, which was also used in the Royal Navy and the Royal Canadian Navy. The Zero beat the Wildcat in speed, maneuverability, and range, but the performance gap was less stark than it was with the Buffalo. And the Wildcat came with a couple of advantages. Unlike the Zero, the Wildcat had armor protecting the pilot and the engine, and it had self-sealing fuel tanks.

Fighter aircraft of the time were armed with machine guns and small-caliber cannons. The latter were more likely to bring down a plane, but machine-gun bullets could often do the job if they punctured the fuel tank. The resulting leak would spray gasoline and fumes, which were likely to ignite and start a fire. Self-sealing fuel tanks, on the other hand, do what it says in the name. When a bullet punctures the tank material, raw rubber inside fills the hole. Horikoshi chose not to put self-sealing tanks onto the Zero, to keep the weight down.

For this reason, it wasn't only Allied pilots who got nasty surprises early in the fighting. Japanese pilots shot up Wildcats to a degree that would have reduced a Zero to a ball of flaming wreckage, but the Wildcat would still be in the air and shooting back.

Speaking of pilots, the dramatic success of the Zero in the early months after Pearl Harbor is attributable not only to the superior qualities of the aircraft itself, but also to the high quality of Japanese pilots. The Japanese military ran a rigorous program of pilot training that focused on quality over quantity. Even so, Japan had ample numbers of trained pilots in 1941 who were graduates of that program, including many who had gained further valuable combat experience in China.

I'm not suggesting that Allied pilots were green rookies. They were not. Allied pilots also had to go through extensive training programs, but training and experience are two different things. Allied pilots entered the war with Japan unfamiliar with the capabilities of the Zero and its pilots. American pilots had no combat experience. Some British and Commonwealth pilots were veterans of the Battle of Britain, but as I said, their experience was of little use against the Zero.

Among the first American pilots who faced off against Japanese Zeroes were members of the American Volunteer Group who were flying for the Chinese Air Force. This is the unit better known by its nickname, the Flying Tigers. The Flying Tigers quickly learned a simple truth: you don't get into a dogfight with a Zero. Their commander, Claire Chennault, passed on the unit's observations about the capabilities of the Zero to Washington, but even then, the American military found them hard to believe.

A breakthrough came from the commander of an American naval aviation unit named John Thatch. Even before Pearl Harbor, when Thatch was stationed at San Diego, he considered the problem of how a Navy Wildcat might fight back against a plane with the Zero's rumored maneuverability. By manipulating matchsticks on his kitchen table during his off hours, Thatch devised a tactic that came to be known as the Thatch Weave. In simple terms, two fighter planes fly together; if an enemy fighter came up behind one of them, the two planes would turn toward each other and cross paths. Timed properly, this would put the pursuing enemy plane square in the sights of the second plane as it approached the path of the first. Thatch and pilots from his squadron tested his idea in mock combat, and it seemed to work, even against superior enemy aircraft.

Thatch's squadron entered combat for the first time during the Battle of Midway, flying from the carrier USS *Yorktown*, and the maneuver proved successful in live combat.

While we're talking about the Battle of Midway, I should say a word about the other kinds of planes that flew from Japanese and American carriers. Besides the fighters, the Japanese Zero and the American Wildcat, there were also torpedo bombers and dive bombers. The Japanese torpedo bomber, formally the Nakajima B5N, dubbed "Kate" by the Allies, was also a well-designed and successful plane responsible for sinking USS *Arizona*, *Oklahoma* and *West Virginia* at Pearl Harbor, *Lexington* at the Battle of the Coral Sea, *Yorktown* at Midway, and *Hornet* at the Battle of the Santa Cruz Islands. The Americans' torpedo bomber, the Douglas Devastator, was far less successful. It was an inferior plane in itself, while also suffering the disadvantage of carrying unreliable torpedoes that usually ran too deep or failed to explode.

If you remember Midway and those other battles in 1942, you'll remember that American torpedo bombers seldom accomplished much; it was the American dive bombers that scored most of the hits, including sinking four Japanese carriers at the Battle of Midway. The US dive bomber, the Douglas Dauntless, was a better plane than its Japanese counterpart, the Aichi D3A, known to the Allies as the "Val." The Val did sink its share of Allied ships, most notably the British aircraft carrier HMS *Hermes* during the Japanese raid on British Ceylon in April 1942.

The Battle of Midway cost Japan dearly, including losses of hundreds of planes and experienced pilots. The Japanese were forced to accelerate their pilot training program to compensate for the losses, but keep in mind that faster training means lower quality pilots.

I should mention here, for the sake of clarity, that both the Japanese and the Americans highly valued their naval air pilots, as they should, since replacements were costly to train. Normally, there would be surface ships and a submarine or two in the area with orders to rescue downed pilots from the ocean, even when under enemy fire. Pilots on either side who were shot down over water had something around a 50/50 chance of rescue.

In the case of the Battle of Midway, most of the pilots the Japanese lost were not shot down; more often, they went down with their carriers when the Americans sank them.

Which brings me to a story. You'll recall that the Japanese landed forces in the Aleutian Islands at the same time as the Midway operation. On June 4, 1942, the same day that the Battle of Midway began, a force of Japanese carrier planes bombed the American naval base at Dutch Harbor. One of those planes was a Zero piloted by 19-year-old Koga Tadayoshi. Koga's plane was hit by American machine gun fire, probably from anti-aircraft units defending the base. One of those bullets hit an oil line, and the plane began leaking oil.

The Japanese plan for this raid included a provision for what pilots should do if their planes became disabled and they couldn't return to the carrier: they were ordered to land on nearby Akutan Island. A Japanese submarine was stationed nearby, ready and waiting to pick up any Japanese pilots forced to land there. That's what you call planning.

Koga flew his plane to Akutan. Two other Zeroes escorted him. That was also part of the plan. Koga attempted to land his plane in a grassy field on the island; sadly for him, he did not realize the ground was swampy. If he had known that, he would have attempted to land his plane on its belly, without extending his landing gear. But he didn't know that, he did extend his landing gear, and when the wheels touched down, they got stuck in the mud, which caused the plane to flip over onto its back. Koga died in the crash, probably a result of a serious head injury.

The other two pilots saw that the plane had crashed, but was largely intact. Their orders were to destroy any Zero that crashed, in order to prevent the enemy from learning the plane's secrets. But these pilots believed Koga was still alive inside his plane and couldn't bring themselves to shoot at him, so they returned to their carrier. The submarine waited for Koga to come to the shore so they could take him aboard, but they never saw him and had to leave abruptly when an American destroyer turned up.

A month later, the crashed Zero was spotted by an American PBY Catalina reconnaissance plane that had gotten lost. The crew reported the crash, and salvage teams were sent from Dutch Harbor and were able to free the plane from the mud, drag it to shore, and put it on a barge. They also buried Koga's corpse.

The captured Zero was in pretty good shape. The Americans took it to San Diego and fixed it up, including painting over the Japanese roundels. Those are the circular insignias painted on the warplanes of most nations to identify their nationality. The Japanese roundel was simply a red

circle, representing the Rising Sun. Allied pilots called it “the meatball.” On this Zero, it was replaced by the American roundel, which at the time was a blue circle with a big white star inside.

By September, the Zero was fixed up and ready to be flown by American test pilots, who would study the aircraft’s performance. They discovered a few vulnerabilities which could be exploited. First, the ailerons didn’t work so well at high speeds, meaning the plane wasn’t so maneuverable when it was moving fast. Second, Zeroes could roll left much more easily than they could roll right. Third, Zeroes had carburetors that cut off fuel to the engine during steep dives. (Alert listeners may recall when I told you the British Spitfire had the same problem during the Battle of Britain, episode 328.)

These discoveries suggested countermeasures that Wildcat pilots could use to evade Zeroes. For example, if you have a Zero on your tail, try a power dive, wait until the Zero’s engine begins sputtering out, then make your getaway. Or increase speed, then roll to the right. The Zero probably can’t keep up with you.

By 1943, American pilots were learning how to deal with the Zero. And also by 1943, they had a new type of fighter plane to work with: the F4U Corsair, a new naval fighter and fighter-bomber.

Development of the Corsair began in 1938, with the first test models available by late 1940. The Corsair was the first American single-engine fighter plane that could fly at speeds in excess of 400 mph. That’s about 650 kph, for you metric people. The US Navy received its first production-model Corsairs in mid-1942, but although the Corsair was intended to be a carrier-based plane, Navy tests revealed problems with its ability to land on and take off from ships. Otherwise, it was a good, fast plane.

Due to the carrier issues, the Navy decided to assign its Corsairs to the Marine Corps. The Marines flew their planes from airfields on land, like Henderson Field on Guadalcanal, making the carrier landing issues irrelevant. The Navy had another new type of carrier plane that was just about ready to come into service, so they decided to wait for those to become available to replace the Wildcats on Navy carriers. But that is a story for another episode.

The first Corsairs to fight in the Pacific arrived at Henderson Field in February 1943. Corsairs played a prominent role in the Allied advances in New Guinea and along the Solomon Islands chain. The Corsair was much more effective against the Zero than the Wildcat had been.

Midway had led to serious losses of skilled Japanese fighter pilots. The heavy aerial combat in the New Guinea and Solomon Islands campaigns made the situation much worse. The Japanese responded to this problem by rushing pilots through increasingly abbreviated training programs, which meant Japanese pilot quality was going down, which meant more losses of Japanese planes and pilots, which meant further declines in quality.

At the same time, American pilots were getting better planes and honing their skills in aerial combat against the Zero, skills they took back to America and passed on to trainees.

The skill of Japanese pilots would decline throughout 1943 and 1944. Japanese pilots got as little as 40 hours of flying time in training before they were sent into combat. American pilots were getting 500 hours of flying time in training, and were flying more advanced airplanes. By 1944, the Zero, which had proved so fearsome three years ago, was reduced to serving as a throwaway plane in suicide attacks. But that, too, is a story for another episode. The Japanese put some effort into developing a next-generation fighter to replace the Zero, but that plane never went into production. The war was already making more demands of Japanese industry than the nation could bear. A whole new fighter plane was out of the question.

We'll have to stop there for today. I thank you for listening and I'd like to thank Mike and Filip for their kind donations, and thank you to Shawn for becoming a patron of the podcast. Donors and patrons like Mike and Filip and Shawn help cover the costs of making this show, which in turn keeps the podcast available free for everyone always, so my thanks to them and to all of you who have pitched in and helped out. If you'd like to become a patron or make a donation, you are most welcome; just visit the website, historyofthetwentiethcentury.com and click on the PayPal or Patreon buttons.

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I think it's time to take another break from the war, so I hope you'll join me next week, here, on *The History of the Twentieth Century*, as we round off our survey of Hollywood film studios with a look at the biggest player of the day, MGM. Frankly, my dear, that's next week, here, on *The History of the Twentieth Century*.

Oh, and one more thing. Germany suffered a decline similar to Japan in the quality of its Luftwaffe pilots over the same period. You might wonder why both Germany and Japan rushed their pilots through such perfunctory training, rather than follow the American model. The short answer to this question is: petroleum. The United States had plenty of aviation fuel available, both for combat and for training, while by 1943, stocks of aviation fuel in Germany and Japan were sinking to dangerously low levels. Front-line combat got first priority for what fuel there was and what planes were available; the flying schools had to make do with whatever they could get.

[music: Closing War Theme]