

# to Jets

**S**ome call it the most exciting sound of all — the roaring rush of burning wind from a jet engine. Up close it can crackle the eardrums. From a distance it still conveys power and might, like a sustained prelude to a thunderclap. The sound is dynamic, a living monument to man's continuing quest for new technological horizons.

It was not a common sound in U.S. Naval Aviation during WW II, but minds were laboring in various camps that would soon make it so.

In 1940, an Italian named Campini remained aloft for 10 minutes in a jet-propelled aircraft. In 1941, Great Britain plunged into development of jet planes. Toward war's end, Germany's twin-turbine ME-262 fighter was effective against Allied Forces. In fact, German expertise was to play a pivotal role in the development of jet aircraft after the conflict.

Though there were growing pains, the advent of turbine power paved the way for unprecedented performance in the aviation world.

Ed Heinemann, who the naval community would ultimately recognize as "Mr. Attack Aviation," was a pioneer aircraft designer. He played a key role in American aeronautical achievements, and designed both propeller and jet-powered aircraft. He and his Douglas Aircraft production team turned out the A-26 *Invader*, the SBD *Dauntless* and many others. In 1944, they conceived what was to become the A-1 *Skyraider*.

"We had the Wright R-3350 engine in the A-1," recalled Heinemann. "It produced 2,500 horsepower. Naturally, we wanted as much power as we could get but feared the dangers of too much torque. Excess twisting force of the engine would create difficulties. We tried counterrotating propellers on the TB2D but ran into problems. In the A2D *Skyshark*, a turbine drove counterrotating props and torque was equalized, but reduction gear problems eventually doomed that aircraft. Ultimately, we went to pure jets. It was that barrier of too much torque that turned our concentration to jets in order to achieve



The FM-2 Wildcat was a ruggedly constructed, well-armed fighter.

greater performance."

Declared Heinemann, "I believe that if jets came first we might never have needed piston engines for aircraft. For the most part, jets do a much better job."

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In the Naval Aviation world, the time period from 1945 to 1952 was characterized by the proliferation of jet-propelled aircraft amidst the continuing employment of piston-powered machines. Following are highlights from that period, gleaned mostly from the pages of *Naval Aviation News*. They have been selected to depict only the nature of the Navy's transition to jets, not the details of it. There is minimum mention of prop aircraft, a fact certainly not intended to denigrate those machines that got us where we are.

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## I. Beginnings

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The President of the United States proclaimed the end of the war in Europe on May 8, 1945, VE Day; in Japan, September 2, VJ Day. On September 10,

USS *Midway* (CVB-41), first of the 45,000-ton class aircraft carriers, was commissioned at Newport News, Va. In October, with an eye toward the heavens, the Bureau of Aeronautics (BuAer) established a committee to evaluate the feasibility of space rocketry.

Still, a period had begun which would be characterized by the problems of demobilization, organizational readjustment, and an uneasy international situation not in itself related to the outcome of the war. Demobilization was rapid. Ships were retired to a mothball fleet. Aircraft were placed in storage. Shore stations at home and abroad were deactivated. By the end of 1946, manpower dropped to a mere one-quarter of the WW II peak.

There was a clamoring for resources by the services and considerable disarray as a result. The value of carriers was questioned.

Despite these impediments, jet-propelled planes were considered the key to aviation's future and companies like Douglas Aircraft, Grumman, North American and McDonnell were creating new designs.

In the final days of WW II, government technicians made a concerted effort to gather up German and Japanese aeronautical reports before the enemy could destroy them. Much of this information was routed to the Office of Naval Intelligence in Washington and ultimately to BuAer for dissemination of all aeronautical research information. Thus, a data base of jet technology was established.

One set of documents detailed a German fighter designed to operate at 1,250 mph, 60,000 feet above the earth. The Siebel Aircraft Company in Halle had completed plans for a flight test model of what it designated the 8-346 supersonic plane. It would have been flown to an altitude of 33,000 feet by a mother ship, started upward vertically and released, firing off its two tail-mounted jets.

The Germans hoped to derive valuable scientific data on aerodynamic forces affecting aircraft at faster-than-sound speeds.

The 8-346's wing span was 30 feet. The wings were swept back 45 degrees. The pilot was to lie prone in the nose, permitting him to withstand up to 14 G's. The aircraft would land on skids at about 145 mph. Its pressurized chemically-heated cabin would be jettisonable, automatically or manually by the pilot.

Problems in jet plane development included airframe design for high-speed flight and achieving sufficient power

control for takeoffs and landings and other low-speed flight regimes. Jets required longer takeoff rolls and consumed fuel at a fearful rate, prompting concern by planners for operating range capabilities. Some elements advocated development of turboprop planes that combined jet engines and propellers. Turboprops remain popular today in larger planes but, for the most part, pure jets became the norm for tactical aircraft.

The Navy's first all-jet powered airplane, the design for which was developed in 1943, was the McDonnell FD-1 *Phantom*, a straight-wing carrier fighter powered by a pair of Westinghouse gas turbines. It weighed less than 10,000 pounds with a full combat load and could travel 500 mph. Range was 1,000 miles. It flew for the first time on January 26, 1945.

The first jet-propelled aircraft in the world was the Heinkel HE-178. It initially flew in Germany in August 1939. The first jet flight in England took place on May 15, 1941, when a Gloster-Whittle E-28 took to the air.

On October 1, 1942, the Bell XP-59, powered by a pair of General Electric I-16 engines, made the first jet-propelled flight by an aircraft in the U.S. The pilot was Naval Aviator No. 4967, Robert M. Stanley. He was a civilian at the time and chief test pilot for Bell Aircraft.

The Navy established its baseline for jet operations as April 21, 1943, the day

Captain Frederick M. Trapnell made the first jet flight in the Bell XP-59A *Airacomet*, at Muroc, Calif.

In 1945, Great Britain's Gloster *Meteor* held the world speed record of 606 mph. Designers were confident that bursting through the sound barrier was only a matter of time.

Grampaw Pettibone, who railed against brain deficiencies (inherent in some pilots) in a popular new *Naval Aviation News* safety column, described the case of an FR-1 *Fireball* landing:

"On November 6, 1945, while in the groove for a carrier landing, the pilot of an FR-1 (a fighter built by the Ryan Aeronautical Company with both a prop and jet engine) noticed a rapid decrease in rpm and manifold pressure in his reciprocating engine. Realizing he had little time to find and correct the trouble, he quickly started his jet engine. With the jet engine developing full power, he managed to complete the landing but, due to a faster approach speed than usual, the planner overshot slightly, engaging the last wire and the #2 barrier. Congratulations to the pilot for his quick thinking and skillful handling of an unusual emergency that surely prevented a much more serious accident." Added Gramps. "Another noteworthy fact about this incident is that, according to available information, it was the first jet-powered landing aboard a carrier."

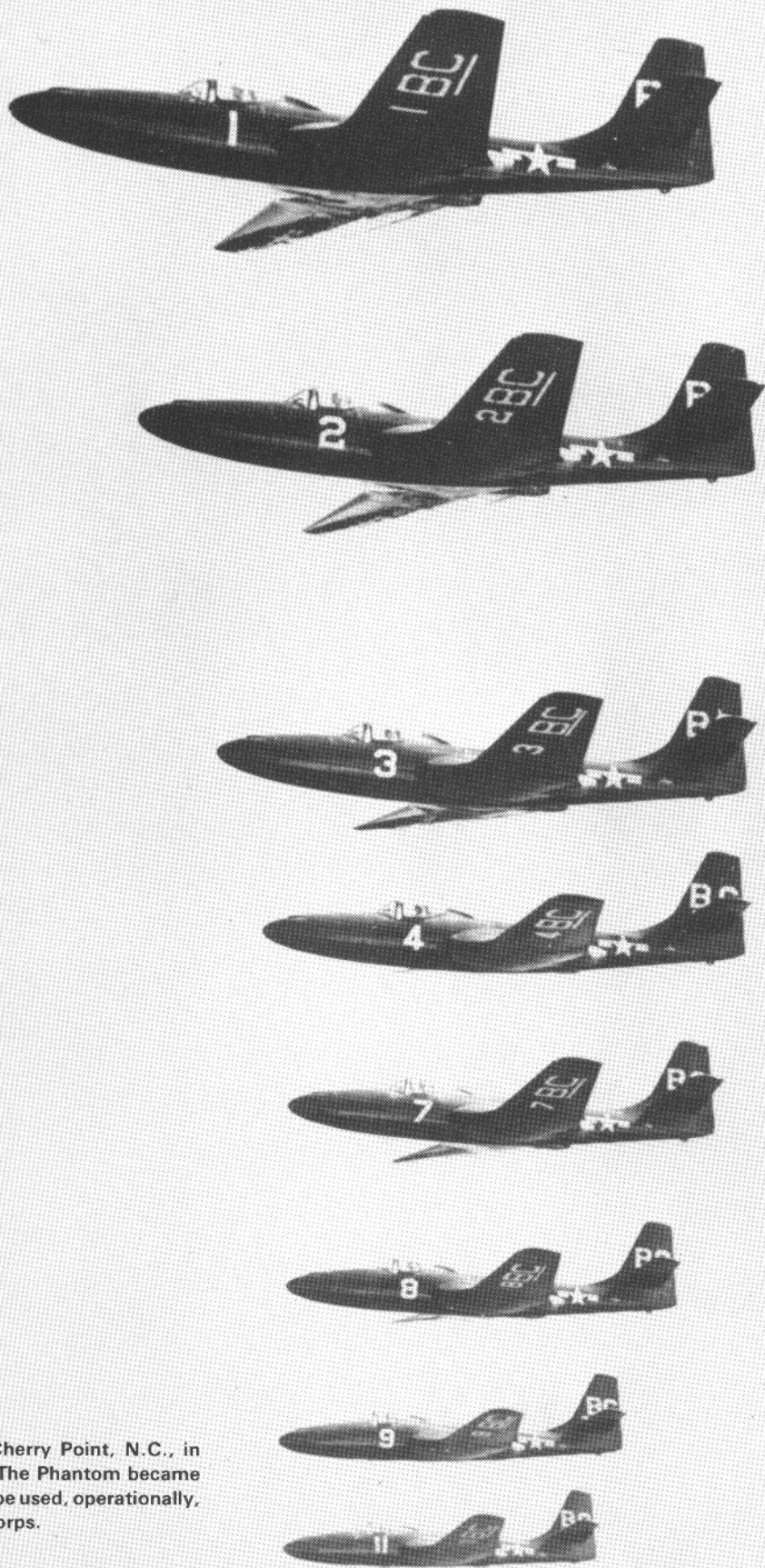
A British *Vampire* jet took off and landed on HMS *Ocean* on December 4, 1945, about a month after the *Fireball* event. It marked the first carrier landing and takeoff by a purely jet-propelled aircraft.

In March 1946, the *Fireball* joined elements of Air Group 74 aboard USS *Midway* off the coast of Labrador during Operation *Frostbite*. The FR-1 operated in frigid weather along with other wing aircraft including the relatively new Grumman F8F *Bearcat* and the HNS-1 helicopter by Sikorsky.

On July 21, 1946, Navy Lieutenant Commander James Davidson made five successful touch and goes aboard CVB *Franklin D. Roosevelt* in an FD-1 *Phantom*, signaling the first time an all-jet plane made a "fly-off" from a U.S. carrier.

An F8F lands at MCAS Quantico, Va. The Bearcat arrived late for WW II, but was a venerable part of the aircraft inventory in the late 1940s.





FH-1s from MCAS Cherry Point, N.C., in stair-step formation. The Phantom became the first jet fighters to be used, operationally, by the U.S. Marine Corps.