

Preparations Begin



For most Americans, 1923 dawned with great promise. America was at peace. The Industrial Revolution had spread its wealth of new products and high wages down to the grassroots level.

Prohibition was the law of the land. Babe Ruth belted out home runs for the New York Yankees. People ate Kellogg's Corn Flakes for breakfast and washed it down with Maxwell House Coffee, which Teddy Roosevelt told them was "good to the last drop." Frigidaires replaced ice chests, and rayon hosiery from DuPont replaced silk stockings.

Empowered by winning the right to vote three years earlier, emancipated flappers shocked the public by binding their breasts and wearing lipstick, rouge, short hair, and knee-length skirts that exposed their legs while they publicly drank and smoked with the "smart set" in fashionable speakeasies.

Dancing marathons became a national craze. Weary, sleepless couples clung to each other for support as they swayed to music for up to one hundred hours until exhaustion and even death stilled the rhythm.

The affluent consumer had unprecedented choice. Motorcars from Cadillac, Packard, Peerless, Pierce-Arrow, Rolls Royce, Stutz, and Mercedes were available. Model-T Fords, Chevrolets, and Chalmer-Franklins put the less affluent on wheels.

Magnificent operas sung by Enrico Caruso and Nellie Melba played on the Victrola. Those less cultured listened to the first

broadcast of a heavyweight title boxing match between Jack Dempsey and Georges Carpentier. An enterprising radio announcer gave the first play-by-play account of a World Series baseball game. Just tune in station WJZ and there it was, the Yankees locked into a titanic struggle with the Giants in New York City. It was almost as good as being there, and getting better.

Russian-born inventor Vladimir Zworykin, working at the University of Pittsburgh, unveiled his latest invention, the iconoscope, which used a cathode ray tube to display moving images. The fantastic promise of future radios displaying moving pictures and electronic microscopes that could probe the secrets of molecular biology lay just ahead.

In 1920, fewer than two thousand American homes had radios. By 1923 that number had exploded to over two-and-a-half million. A humble, folksy humorist named Will Rogers made everyone laugh. Flaunting his poor Oklahoma Cherokee ancestry, he poked fun at the pretentious. “My folks didn’t come over on the *Mayflower*, but they did meet the boat” and politicians: “Congress writes most of my funniest jokes”.

Created originally in African-American saloons, the upbeat foot-tapping rhythm of jazz spread into the mainstream, led by Scott Joplin, Benny Moten, and pianist Eubie Blake as Dixieland and Ragtime. Despite Prohibition and jails filled with violators, alcohol could be easily found in many crowded speakeasies doing a hugely lucrative and illegal business.

To the general public, 1923 promised to be a great year and another giant step away from the deprivation of the World War. For the military, however, 1923 marked another year of disastrous budget cuts and the continuing loss of its most able young men. The Army Air Service, depleted by annual casualty rates of 35 percent of its pilots and diminishing enlistment enthusiasm, was particularly hard hit.

With an unsympathetic president and superiors too concerned about the budget axe falling on them to champion his cause, General Billy Mitchell tried to keep the flame of enthusiasm for aviation alive the only way he could—through appeals over the heads of superiors and directly to the general public, through sensational record flights and aerial demonstrations.

Commercial aviation thrived in Europe, aided by government funds in England, France, Italy, Russia, and Germany. By 1923 most

large cities of Europe were connected by scheduled airline service. In the United States, there were no scheduled airline passenger services—only airmail-carrying flights.

Mitchell had two main goals in 1923. The first was his elusive nonstop crossing of the United States after two failed attempts the previous year. Transcontinental flights across the United States always made newspaper headlines.

The first transcontinental flight was made in 1911 by Cal Rodgers in a spindly wood and fabric biplane built by the Wright brothers. Rodgers received his pilot's license on August 7, 1911, after ninety minutes of flight instruction and a solo flight at the Wright school in Dayton, Ohio. He combined \$11,000 he had won in a Chicago flying contest sponsored by Hearst newspapers with the sponsorship of J. Ogden Armour, the meat-packing tycoon eager to publicize his Vin Fiz grape soft drink.

Rodgers bought a new Wright Model EX airplane. He followed a three-car railroad train carrying spare parts and mechanics across the United States and received \$5.00 per mile from Armour. The *Vin Fiz* lifted off on September 17, 1911, from the Sheepshead Bay racetrack in Long Island, New York. After numerous mechanical failures, crashes, broken bones, and hospitalizations, and with only the rudder and two wing struts of the original plane remaining, the wheels of the aircraft ceremoniously rolled into the Pacific Ocean on December 10, 1911, after almost three months.

In October 1919, Lieutenant Belvin Maynard made the flight from Mineola, New York, to San Francisco in an Army DeHaviland DH-4 in three days, eight hours, and forty-one minutes, and in 1922 Jimmy Doolittle had reduced the crossing time to less than a single day.

On May 2, 1923, the T-2, using the heavier landing gear of the Martin MB-1 bomber to support its takeoff weight of 10,800 pounds, departed westbound from Roosevelt Field on Long Island, New York. Having burned off considerable fuel, it was better able to climb when it reached the western mountains, and prevail over storms, headwinds and mechanical problems. It landed successfully in San Diego after traveling 2,470 nonstop miles in twenty-six hours and fifty minutes.

Mitchell was now eager to challenge the other nations attempting the first world flight. This time he prepared a much more detailed plan employing eight specially built, rugged biplanes that would travel a new route westbound, against the prevailing winds, for meteorological considerations. His route would take him where no airplane had ever flown, over the frozen northern areas of the Pacific and Atlantic oceans.

The flight would have extensive logistical support from land bases established for this purpose and from ships at sea. The aircraft would be changed from wheels to pontoons as required. He calculated that of the eight aircraft, four to six would be lost, but the chances were good that two would complete the trip. In the summer of 1922, Major Herbert Dargue, chief of the war plans section for the Air Service, presented Mitchell's plan to General Pershing. The plan was immediately rejected as too risky and too costly.

In October 1922, a frustrated Mitchell scaled back his requirements and leaked to the newspapers that he was "arranging a flight around the world with a squadron of six airplanes." With publication, the full wrath of General Pershing was brought to bear upon General Patrick, who was thought to have defied his decision. Patrick had not been consulted by Mitchell and knew nothing of the leak. To reassert authority on behalf of both himself and General Pershing over their subordinates, and to avert a potentially explosive confrontation, Patrick issued the following statement: "By *my* direction, one of the divisions in *my* office has been giving study to possible long flights." Patrick was hurt, and resented Mitchell's insubordinate and indiscreet behavior. He called him in and warned him never to do that again. Although chastened temporarily by Patrick's tongue lashing, Mitchell had no intention of dropping his plans for a world flight.

Meanwhile, the three Fokker torpedo planes Mitchell ordered during his European trip arrived in the United States. He planned to modify them discreetly for the long-range world flight. They were flown to McCook Field, where one was disassembled and a long list of modifications was prepared. The modifications would have to include substantial structural changes, which would have to be made in close consultation with Fokker's engineering department back in Holland. Lengthy communication delays were

certain, and the scope of the work would require skills that the McCook facility did not have.

Mitchell realized he had underestimated the amount of work necessary to make the Fokkers suitable for a world flight. He also became wary of revealing too many details of his world-flight plans to Fokker. At that time, Fokker was working with several other countries to build world-flight airplanes. They had recently delivered a modified biplane with a 360-horsepower Rolls Royce engine to Commandante Sacadura Cabral, a very experienced aviator from Portugal, for his world-flight attempt.

Mitchell considered requesting that Alfred Verville design a world cruiser. Verville was an aeronautical genius, a brilliant designer filled with new ideas. At Mitchell's request he had designed sleek new record-setting airplanes with many pioneering features, including retractable landing gear and reduced aerodynamic drag. From his fertile mind came designs for commercial and corporate aircraft, highly advanced bombers, pursuit planes, and record-setting racing aircraft.

Verville was on the cutting edge of aerodynamics, but had little experience in the design of sturdy, highly serviceable, long-range aircraft. He had never had to diagnose and repair a failed engine or airframe component a thousand miles from home, alone, with no spare parts and few tools—in the pouring rain. He had never endured the agony of piloting an airplane for twelve hours through a blinding arctic blizzard with one hundred-mile-per-hour winds howling through the cockpit, the icy chill turning the pilot's skin blue and then chalk white as he succumbed to frostbite. He had never wiped the oil streaming from a mortally wounded engine away from his flying goggles, praying that what was left up front would continue to turn the propeller just a few minutes longer until a landing place could be found. He had never sweated through a sleepless night working on that engine, his perspiration mixing with the black, oily grime that permeated every pore, muscles aching with fatigue, dawn coming without relief.

Mitchell knew from previous long-range flights that these would be just a few of the adversities that would face the crew and challenge the construction of a world-flight contender. Sitting at his drafting board with his clean sheets of white paper, it would not be possible for Verville to design an aircraft for conditions that he could not

begin to imagine, provide for obstacles he had never faced, or survive challenges that were unknown. Only Erik Nelson had the experience he required.

Within his first two years in the Air Service, Erik had flown seven thousand miles doing recruiting work in every state and major city. He flew the first photographic mission over the Grand Canyon, and was as skilled a mechanic as he was a pilot. Erik was the chief engineering officer and pilot on the difficult and successful flight from New York to Nome, Alaska, and back during the summer of 1920. Erik's preparation, maintenance, and flying ability pulled them all safely through where no man had gone before. It was Erik, working with Mitchell, who prepared the secret, complex logistical plans necessary to continue that flight into Asia and around the world. Erik had the experience required and understood the challenges they faced.

Mitchell assigned Erik to find and work with an alternate source for a world cruiser. Erik had evaluated the Douglas Cloudster in 1921, and considered it a very clever design, superior to the Fokkers. The Cloudster also used the Liberty engine, but its construction was of sturdier steel tubing with welded gussets and crossed tie-rods. The fuselage design used three easily replaceable sections containing the engine, crew compartment, and a rear baggage compartment onto which the tail surfaces bolted. The entire airplane, including the wings and tail surfaces, could be easily disassembled in the event of damage—a certainty on a world flight.

After being rejected by the Army, Douglas had turned to the Navy. The robust, damage-tolerant design of the Cloudster impressed them; they needed that for landing on rough seas and surviving controlled crashes on aircraft carriers. They took a chance on the new company and awarded Douglas Aviation a contract that eventually totaled eighty aircraft. The Cloudster became the prototype of a torpedo plane designated the DT-1. Further modified to meet naval requirements of a more powerful engine, availability of pontoons or wheels, and wings that folded, it became the DT-2.

Building the Cloudster depleted much of Donald Douglas's meager funds. He couldn't afford costly manufacturing space on an airfield, so he moved into the low-cost space of an abandoned movie studio in Santa Monica. To the delight of local children and itiner-

ant movie extras, he pushed completed airplanes, with wings folded, through the city's streets to nearby Clover Airfield (later Santa Monica Airport) for flight testing and delivery.

Nelson advised Mitchell that the DT-2 had many of the characteristics they were looking for in a world cruiser. Douglas Aviation, now filling ongoing naval orders, had sufficient credibility as a source. Mitchell agreed and sent Erik Nelson to Santa Monica in June 1923, to work with Donald Douglas on the design of a world cruiser.

What Donald Douglas lacked in years and experience he more than made up for in vision and brilliance. Douglas knew that to be seen as the equal of the more established manufacturers, his aircraft had to accomplish something new and spectacular. With the failures of the Fokker T-2 in 1922, he wanted to launch his own nonstop flight with the Cloudster, but he didn't have the money to cover the expenses.

Erik Nelson arrived in Santa Monica just a few weeks after the Fokker T-2 had finally completed its successful nonstop flight across the United States. At the movie-studio-turned-aircraft-factory, Douglas enthusiastically embraced the concept of using modified DT-2 torpedo planes for the world flight. The first day's discussion with Nelson went on long into the night. Nelson's specifications required major changes and modifications to the DT-2; with Douglas's meager resources already stretched pretty thin meeting the naval delivery schedules, this would be very difficult.

Mitchell required a guaranteed delivery of a completed prototype aircraft, built to Nelson's specifications, within four months. After the prototype was approved, Douglas had to ship dozens of sets of spare parts, including manufactured subassemblies, pontoons, engines, propellers, and instruments, within sixty days, and completed aircraft within 120 days.

Donald Douglas spent a sleepless night following his meeting with Erik Nelson. He knew the extreme rivalry that existed between the services. If he accepted this new Army order and gave it priority over existing naval orders, he could lose his best customer. Additional orders from the Army were unlikely, and the chances for a successful world flight were very slim. Realistically, the survival of Douglas Aviation would depend upon the success of a world flight.

At 9:00 A.M. EST the next morning, Billy Mitchell received a telephone call from a sleepless Donald Douglas. "General Mitchell, I'm betting the survival of my company on your world flight. Can you at least assure me that all the necessary approvals and funding are firmly in place?"

Mitchell replied, "Of course they are, Mr. Douglas. You can rest assured this flight has been approved at the highest levels with ample funding. Stop worrying. We've got a dozen other countries breathing down our backs. You give me the airplanes on time and I'll give you the record. We'll make Douglas Aviation a household name."

Douglas waited before replying. Did he really want to put his company into jeopardy just when it had finally started showing a profit? Was he really willing to bet everything on the long shot,—fame and glory—or nothing? "Okay, General," he said, "I'll build the airplanes, you build the pilots."

Contrary to Mitchell's assurances, at the time Douglas committed his company neither approval for the flight nor funding had been secured. The delivery schedule Mitchell insisted on would have been very difficult for even the largest aircraft factory. Complicating matters further, as many as fifty Liberty engines, hastily assembled under wartime conditions, would have to be disassembled and rebuilt to assure reliability during the flight. Complex aircraft development projects usually take years, not months. The large sums of money required to meet the ambitious delivery schedule put Douglas Aviation deeply into debt.

Nelson and Douglas worked from early dawn to late into each night. Often groggy and ill tempered by lack of sleep, they had many heated exchanges. Thousands of modifications to the DT-2 were required. The 274-mile range of the DT-2 had to be increased to twenty-two hundred miles. Fortunately, its Cloudster origins included sufficient fuselage strength and space for additional fuel tanks.

After weeks of engineering changes, measuring, calculating, drawing, erasing, modifying, and redrawing, the new Douglas World Cruiser emerged. The fuselage stretched thirty-five feet, 2.5 inches long and stood thirteen feet, 7.25 inches high on wheels. The wings spanned fifty feet and were seven feet, six inches wide from end to end. The straight upper wing had no dihedral angle or sweepback. The lower wing had a dihedral, or upward slant for lateral stability, of two

degrees. Both wings had an angle of attack, the angle at which they meet the onrushing air, of three degrees, and were eight feet apart.

All three sections of the fuselage bolted together. The vulnerable tail section could be exchanged simply by removing four bolts. The aluminum engine cowling was divided into quickly removable sections for simplified engine maintenance. The tail skid connected to a steerable rudder bar to simplify taxiing.

The wheels were enlarged to thirty-six inches in diameter and eight inches wide. The distance between them stretched to eleven feet, three inches. The normal axle connecting the wheels was eliminated for safer landings in tall grass or rough fields. Special pontoons were designed with mounting legs easily attached to the fuselage wheel landing gear struts, simplifying field conversion from a land plane to a sea plane and back.

A modified, dual magneto-fired Liberty V-12 engine developing 420-horsepower and employing an electric starting motor was installed with an additional manual starter as backup. This eliminated the difficult and dangerous necessity of rotating the huge wooden bomber propeller, eight feet in diameter, by hand to start the engine. A tank containing thirty gallons of engine oil was fitted to the engine compartment, and a tank holding ten gallons of cooling water was fitted to the upper wing feeding the engine's honeycombed radiator. Special thermostatically controlled shutters adapted it to a wide range of outside temperatures. An additional ten-gallon reserve water tank was installed in the pilot's cockpit for either engine or crew survival.

A 150-gallon fuel tank was installed behind the engine and in front of the pilot, protected by a substantial metal firewall. A second 160-gallon fuel tank was placed under the front pilot's seat, and a third 105-gallon fuel tank was located under the rear mechanic's seat. Two additional 62.5-gallon fuel tanks were carried in the lower wing, at the side of the fuselage. Another emergency fuel tank of sixty gallons in the upper wing permitted the fuel to flow by gravity to the engine in the unlikely event that all three fuel pumps failed. Total fuel capacity increased to six hundred gallons.

A mechanical, engine-driven fuel pump normally supplied the engine. A wind-driven fuel pump served as the primary backup, and a manually driven, rear-cockpit mounted, hand-powered fuel pump provided secondary backup.

An external baggage compartment with a capacity of three hundred pounds, sufficient to hold a life raft, survival rations, rifles, paddles, tool kit, snowshoes, and clothing, was designed into the rear fuselage, with a second, smaller baggage compartment over it. This one would be accessible from the rear compartment in flight to hold maps, charts, small tools, flashlights, and other flight necessities. Night lighting for identification and formation flying were provided, with two white streamlined lights on the upper wing, red and green wingtip lights, and a rear-pointing red light mounted at the top of the vertical fin.

Flight instruments included an airspeed indicator, altimeter, turn-and-bank indicator incorporating two gyroscopes for instrument flying in fog, and a clock. A magnetic and wind-driven earth-inductor compass was installed to provide direction-indicating capability even in the northern polar regions that rendered magnetic compasses useless.

Engine instruments included a tachometer; ammeter; fuel, manifold, and oil pressure gauges; and water-temperature gauges. Mixture, magneto, and priming controls were also available. A large wooden wheel that could be rotated and moved fore and aft controlled the ailerons and elevators. A wooden, floor-mounted, foot-operated bar controlled the rudder.

In contrast to the Fokker T2, the cockpits were large enough to be comfortable during the four hundred hours of flight anticipated. Back and seat cushions were designed to incorporate parachutes for both pilot and mechanic. Below them were Kapok seat cushions with handles that could be used as life preservers. The aircraft weighed 8,180 pounds fully loaded on floats, and 7,200 pounds on wheels. Maximum range on land using wheels stretched to more than 2,200 miles. Water takeoffs required drastically reducing fuel weights and ranges. Maximum cruising speed was one hundred miles per hour while normal cruise speed was eighty to ninety miles per hour.

While Eric Nelson and Donald Douglas were designing the World Cruiser, Lowell Smith was working with Billy Mitchell to develop techniques to refuel aircraft in flight. Detractors had said the idea was impossible. Two aircraft flying through the normal turbulence of hundred-mile-an-hour flight, each rising and falling separately, could never stay in position long

enough to transfer highly combustible aviation gasoline from one aircraft to another. The inevitable single drop of gasoline on a heated exhaust would engulf both aircraft in flames.

Smith had risen to the rank of Captain several years before with command over thousands of men. When the budget axe fell on him, he voluntarily agreed to a reduction of salary, rank, and responsibility rather than leave the Air Service. Smith represented the U.S. Army in the 1919 transcontinental speed, reliability, and endurance contest from San Francisco to New York and back. This contest was supposed to promote aviation, but it backfired with numerous crashes and nine fatalities. Smith became the first person ever to reach Chicago by air direct from San Francisco, and the first to complete the return flight. Despite seventy pilots entered, Smith won numerous honors.

During the previous four years, Smith flew 2,400 difficult and dangerous forest fire-fighting missions. He always led his 91st Squadron of twenty forest fire-fighting aircraft safely home without a single fatality. This was an incredible safety record for a service in which one third of its pilots could be expected to die within the first year. Smith agreed with Mitchell that aerial refueling was possible, and they intended to prove it.

On June 27, 1923, Lieutenants Lowell Smith and John Richter departed from Rockwell Field in San Diego in two modified DeHaviland DH4-B biplanes. The upper biplane carefully lowered a rubber hose enclosing a metal sleeve, and successfully transferred a small amount of fuel into the tank of the lower airplane. With the principle proven, on August 27 and 28 they set sixteen new world records for distance, speed, and endurance, flying 3,297 miles over San Diego for thirty-seven hours and fifteen minutes at an average speed of 88.5 miles per hour and refueling sixteen times. This flight covered the distance between the United States and Europe.

The following month they demonstrated the practical application of the new aerial refueling technique. They flew 1,280 miles nonstop from Canada to Mexico, refueling in the air over Washington, Oregon, and California while averaging speeds of over one hundred miles per hour. Mitchell reported that using the new technique, bombers could now depart on long-range missions with lighter fuel and heavier bomb loads. Experimental, advanced, or secret aircraft could be used and concealed from foreign eyes.

Aircraft could be flown from protected home bases to project U.S. air power, with its defensive and offensive potential, anywhere on earth without depending upon other countries to grant landing rights. General Pershing was unimpressed, however, and felt the technique had little practical application for the future.

On July 5, 1923, Donald Douglas signed a formal proposal. It included a full set of specifications and firm delivery dates for the prototype World Cruiser and four production models, and included all the spare parts, assemblies, and engines needed for the world flight. Douglas, under pressure from the short delivery time, started construction of the prototype aircraft that very day. Erik Nelson, having completed his work at Douglas Aviation, departed with the Douglas proposal and a briefcase filled with drawings, blueprints, and design notes. Extensive meetings with Generals Patrick and Mitchell were held on his return. Specifications were finalized on August 1 and forwarded to General Pershing, requesting his approval and funding.

Contrary to Mitchell's assurances to Douglas Aviation, and despite the successful transcontinental flights earlier, the chances for approval of a world flight looked very poor at that time. Mitchell complained in his writings that summer, "Air power doesn't seem to be getting anywhere at all. The public's interested, but people in Washington who could do something about it aren't." The newly installed, penurious President Coolidge disliked aviation in general and aviators in particular. The U.S. Air Corps, smaller than even the tiny Rumanian Air Corps, was still too large to suit Coolidge. He couldn't understand why the Army needed many airplanes at all. He suggested that they buy just one airplane and let all the pilots take turns flying it. His chief of staff, General Pershing, shared his views.

As the foremost advocate of aviation, Mitchell was particularly disliked by Coolidge, who was quoted in a newspaper interview during that summer: "Now, take those aviators, for instance. There's that Mitchell fellow. Why, he thinks nothing of flying in a government plane to Michigan to visit the girl he's engaged to marry."

Another complicating matter for world flight authorization was the continuing animosity between Mitchell and the naval adminis-

tration that surfaced again late in the summer of 1923. For two years Army aviators had been trying to get the Navy to supply ships for additional bombing tests, without success. The Navy and General Pershing declared the 1921 tests inconclusive, blaming deficiencies in the vessels for the sinkings rather than the effect of the bombs.

As head of the Army Air Service, General Patrick had been appealing for additional tests without success. In the spring of 1923, he wrote directly to General Pershing: "Repeated requests have been made to the Navy . . . the Navy is simply stalling. I am now told that the Secretary of the Navy will not make these old vessels available until the ratification of the disarmament treaty. This is simply and solely an excuse." Under growing political pressure from Mitchell's allies in Congress, Pershing finally agreed to expedite the tests.

The Navy turned over the *Virginia* and the *New Jersey* both fifteen-thousand-ton vessels. Restrictions were put on Mitchell intended to prevent the bombings from sinking the ships. He could not use the new four thousand-pound bomb he had recently developed, but must use bombs left over from the 1921 tests. The ships would be anchored rather than put into motion, as Mitchell had requested.

The Navy, with agreement from General Pershing, waited until August 31—just four days before the tests were to begin, and presumably too late for Mitchell to prepare counter measures—to put additional restrictions on the bombing. The bombs had to be dropped from an altitude above ten thousand feet rather than the earlier lower levels. The Navy knew that no bomber in the Army fleet could even reach this altitude with its bomb load, let alone hit anything from such a vast height.

Fully expecting the anchored ships to easily survive these restrictions, Admiral Shoemaker, an opponent of expanded air power who wanted to cut flight pay for pilots to ten percent of base pay, arranged for a large group of blue ribbon spectators. The navy's transport ship, *St. Mihiel*, came down from Washington with three hundred dignitaries, including Acting Secretary of War Dwight Davis, General Pershing, Glenn Curtiss, Vincent Astor, congressmen, numerous reporters, and foreign military leaders.

What the Navy did not know was that Mitchell had anticipated these restrictions. Several months earlier he enlisted the aid of

Sanford Moss, who had recently invented the supercharger, to modify the Martin bomber's engines for high-altitude flight with a full bomb load. Over the past two years, Mitchell worked with engineers at the Sperry plant to improve the precision of their gyroscopes for instrument flying. Alexander Seversky, the Russian war ace and now Sperry's inventive aircraft engineer, combined these gyroscopes with one of the world's first computers into a new type of more accurate, high-altitude bombsight that he completed a few days before the latest bombing tests were to begin.

Working that Sunday and Labor Day, Mitchell and Seversky used a hatchet and hacksaw to install a prototype of the new bombsight into a Martin bomber. This bombsight became one of America's most valuable, top-secret weapons during World War II. Seversky later wrote, "As a result of the energy and foresight of this great man, Billy Mitchell, America today leads the world in instrument flying."

Mitchell worked through most of the nights before the bombing tests, directing and orchestrating the thousands of technical details required. At four A.M. the morning of the bomb tests, he climbed into his DH-4, the *Osprey*, and flew out to check conditions at the target ships and direct the bombing. Using the new superchargers and bombsight, the *Virginia* and the *New Jersey*, were ravaged and torn from end to end. They both sank within twenty-six minutes.

The incredulous naval officers made an immediate attempt to conceal the results with the imposition of a huge fee of \$170 per thousand words for use of the ship's radio room. Only *The New York Times* could afford to pay. All the other newspapers were forced to run Pershing's tepid remarks, which had been written for him by the Navy. Major Lester Gardner, publisher of *Aviation* magazine, wrote his eyewitness description of the damage done by the bombing's accuracy and was forced to give it to Admiral Shoemaker for approval. Shoemaker read it and then tore it to pieces saying, "It's true, every bit of it, but by God, we can't let this get out or it would ruin the Navy."

Faced with every argument from "national security" to "naval morale," along with a good deal of arm twisting and not-so-veiled threats of loss of access, the newspapers cooperated with the Navy. *The New York Times* reported, PERSHING PRAISES AIR BOMBERS'

AIM—BUT TESTS DO NOT PROVE MODERN WARSHIPS CAN BE SUNK, HE SAYS.

Mitchell was infuriated at seeing the same misrepresentations that accompanied the 1921 bombing tests, and he tried to correct them. To the public, the tests were seen as a repeat of old news simply being rehashed. Pershing ordered Mitchell to leave the naval conclusions unchallenged.

Mitchell's latest tests did not endear him to either the Navy or the old-line Army officers. He never was one of them. He didn't graduate from West Point, as almost all officers of similar rank had. He started military life as a lowly private and was not from military stock, as most of the other generals were. He was a Democrat in a Republican administration, and his self-righteous, uncompromising, and argumentative ways offended and often embarrassed his superiors. The Navy characterized his use of new engine developments and bombsights as cheating. He was using alien and unfair technologies, of which they were unaware, against them.

Relations with Mitchell deteriorated even further when the Navy found out that, in collusion with Donald Douglas, he had "stolen" the technology of their own naval torpedo plane, the DT-2, and was now trying to steal their glory by making a world flight over "their" oceans. Desperate to block the Army flight, they requested the Chief of the Naval Bureau of Aeronautics, Rear Admiral W. A. Moffett, to create a naval world flight and seek immediate authorization.

Moffett's plan envisioned twenty-one station ships departing on February 1, 1924, along a flight route stretching from California to Hawaii, Wake Island, and Guam, then continuing in a global circle. As justification, he wrote, "We think we shall be able to operate aircraft with the fleet anywhere in the world by the time the next war comes along, but we haven't proved it. It's high time we started to prove it, before we go too far in placing reliance on aircraft. Maybe we are placing too much faith in aircraft; maybe we aren't placing enough."

The naval chiefs were ambivalent. On the one hand they were against an expanded role for aviation, which the world flight would almost certainly bring. On the other hand they were infinitely more opposed to the Army making the flight and Mitchell using it as justification for a separate air force. Within the Navy, other ideas began to surface.

A growing enthusiasm for lighter-than-air ships had created a rival aeronautic service. It was the Navy that had full responsibility for the operation of all dirigibles. Curiously, the most vocal opponents of airplanes within the Navy displayed a tolerance, if not outright enthusiasm, for their own proprietary airship program. Airships, imposing and majestic, presented no threat to their surface ships, and created enthusiastic and receptive audiences wherever they appeared. Many high-ranking naval officers confidently predicted that it was only a matter of time before these airborne behemoths, operating as an adjunct to an expanded Navy, were carrying thousands of passengers smoothly, safely, and in great luxury over the turbulent oceans of the world. An alternate plan to send the naval airship *Shenandoah* over the North Pole and beyond was proposed and began receiving increasing support.

Both naval plans were presented to Edwin Denby, Secretary of the Navy, with the request for funding and approval. Denby, embroiled in the expanding Teapot Dome senate investigation and pending criminal charges, showed little enthusiasm for promoting either plan to a hostile Congress and president. Patrick, however, strongly supported the Army's world flight and appealed to General Pershing for assistance. Pershing held Patrick in high regard, admiring the maturity and diplomacy he had shown in coordinating Allied air operations during the war. They agreed that Coolidge, who had often said, "The business of America is business," was unlikely to be moved by justifying the flight on the basis of military advantage. Coolidge believed a future war highly unlikely, and intended to continue the reductions of military expenditures and personnel.

The Army flight would have to be justified as a world demonstration of the peaceful applications and objectives of the U.S. Armed Services in the exploration and development of future routes of commerce and industry. If successful, it would showcase American ingenuity and counteract the enlarging stain on U.S. national honor inflicted by the Teapot Dome scandal. With elections coming up, it might just work.

Patrick listed objectives for the flight that he felt would be most palatable to President Coolidge, carefully excluding any military purpose. They were:

1. To determine the feasibility of establishing aerial communication with all the countries of the world
2. To determine the practicability of travel by air through regions where surface transportation does not exist or at least is slow, tedious, and uncertain
3. To prove the ability of modern aircraft to operate under all climatic conditions
4. To stimulate the adaptation of aircraft to the needs of commerce
5. To show the people of the world the excellence of American produced aircraft and thus stimulate American aircraft industry, and lastly
6. To bring to the United States, the birthplace of aeronautics, the honor of being the first to fly around the world

Mitchell was considered an insurmountable impediment to getting approval for the flight. His penchant for using aviation records to garner public and congressional support, coupled with the animosity of the president, General Pershing, cabinet officers, and the Navy, made authorization impossible. The flight would require the closest cooperation and logistical support from the Navy. They could only get it by removing Mitchell and any belief that the Army flight attempted to achieve military advantage over the Navy.

Pershing's 1923 evaluation of Mitchell read, "This officer is an exceptionally able one, enthusiastic, energetic, and full of initiative. . . . an expert flier . . . He is fond of publicity, more or less indiscreet as to speech, and rather difficult to control as a subordinate."

Patrick's 1923 evaluation similarly noted that Mitchell had shown "considerable improvement" in the last year but "it is difficult for him to subordinate his own views and opinions to those of others. He is somewhat erratic and changeable. I cannot always rely upon either his opinions or his judgment. His enthusiasm sometimes carries him away."

Pershing and Patrick agreed that if the U.S. world flight were to receive approval, Mitchell had to go as far away as possible and have nothing to do with it. Pershing left the details to General Patrick.

Patrick felt great sympathy for Mitchell. He knew, far better than most, that Mitchell's strong views and intemperate speech and actions were not motivated by personal aggrandizement but by firmly held convictions that he acted in the best interests of his country.

Undoubtedly he was a zealot, but a patriotic one, and therefore worthy of respect and compassion.

Patrick also felt sympathy for Mitchell's personal problems. His previous family life and relationship with his young children lay in shambles. His mother, with whom he had lived and was very close to, had recently died. Many of his young pilots, for whom he felt responsible, had been killed in air crashes. Patrick had seen the usually stoic General Mitchell weeping uncontrollably at the recent funeral of Captain Tiny Lawson, who had replaced his lost younger brother, John, in his heart.

Mitchell's engagement to Betty Miller provided Patrick with a seemingly benign plan that would meet everyone's objective. He would send Mitchell on an extensive fact-finding mission to the Pacific to evaluate air defenses at remote locations and report on aviation advances of potential adversaries. He could take his new wife with him and make it a relaxing honeymoon. Before leaving, Mitchell would turn over the plans he had developed for the world flight and his recommendations for the pilots most qualified to fly the aircraft. If funding were received, Patrick would implement his plans.

Mitchell was forbidden to speak with any reporters he might encounter on the trip, or have any further contact with the world flight. This would be simply a well-earned, pleasant vacation devoid of controversy for the Mitchells—or so he thought.

On October 11, 1923, a dozen airplanes from Selfridge Field flew in tight formation over Betty Miller and Billy Mitchell's wedding reception at Grosse Pointe, Michigan. Fawning over the event, the society columns of the local newspapers described the beautiful and charming bride and the handsome war hero, his uniform adorned with medals, "the youngest man in the legion of honor since Napoleon."

The next day the couple left for San Francisco to board the *Cambrai*, and sail to Hawaii. As he had done on his first honeymoon, Mitchell took time away from his new bride to continue military affairs. He sent a detailed report to Patrick of his evaluation of the air maneuvers performed for him by the west coast air reserve squadrons and listed the improvements they must make during his absence. He also informed Patrick that he would expand

the scope of his own mission, saying, "In addition to the regular inspections, I shall study the whole Pacific problem from both an offensive and defense standpoint." Patrick approved the expansion.

Meanwhile, the situation at the Douglas Aircraft Company grew critical. Donald Douglas had put thousands of man hours into the design of the World Cruiser. Despite assurances from General Mitchell, he had still not received any compensation or even a purchase order to cover the prototype now nearing completion. He had been thoroughly chastised by the Navy for giving the Army "their" designs. His future looked very grim.

With Mitchell exiled to the Pacific, General Pershing assured the Navy of an equal role with equal credit going to both branches. He stressed the historical importance of the United States capturing aviation's greatest prize and the enormous commercial benefits that would accrue for the balance of the century. Patriotism prevailed over rivalry, and the Navy withdrew its opposition. Liaison officers of both branches promised their full cooperation to the flight.

In Mitchell's original plans for the flight, naval support vessels played a relatively minor role. Most supplies were to be cached on land bases as Mitchell had planned for the Alaskan flight. Passages over water were shortened as much as possible. Only when they exceeded the aircraft's considerable range would they be supplied by commercial and government ships of the Bureau of Fisheries and the U.S. Coast Guard.

Mitchell's reluctance to rely on naval vessels was due as much to past experience as animosity. On May 16, 1919, three U.S. naval flying boats set off on the first flight from Newfoundland across the Atlantic to Europe through the Azores. The Navy stationed twenty-four warships at fifty-mile intervals to assist in rescue and navigation. Despite the ships' firing flares and making smoke, clouds, rain, and fog obscured many of them from the view of the pilots. One of the planes, the NC-4, succeeded, becoming the first to cross the Atlantic Ocean, winning a close race with the British.

Mitchell thought the flight would provide salvation for his shrinking Army Air Service by demonstrating the feasibility and military significance of establishing air routes to Japan and the Pacific region. He believed air forces based in Alaska, Labrador, Greenland, and Iceland would contain any potential future aggressors, and support for the world flight would provide a plausible reason to establish these bases.

No aircraft had ever flown over this route. The flight depended upon advance parties laying in food, fuel, supplies, tools, engines, and spare parts in advance of the aircraft at newly created air bases. In anticipation of the flight, Mitchell formed an Army World Flight Committee before he left for Hawaii. Members of the committee included Lieutenant Robert J. Brown, chairman; Captain Lorenzo L. Snow, foreign relations; and Captain William Volandt, finance.

The flight route was divided into seven sections and each assigned to a committee officer. They had the responsibility of completing all the logistical support arrangements within their division as the flight proceeded west. The first division, from Seattle, Washington, through Alaska to Attu Island, was headed by Lieutenant Clayton L. Bissell; the second, from the Russian Komandorski Islands through Japan, was led by Lieutenant Clifford C. Nutt; the third, from China through Calcutta, India, was headed by Lieutenant Malcolm S. Lawton. Lieutenant Harry A. Halverson led the fourth, from Allahabad, India, through Constantinople, Turkey, and the fifth, from Bucharest, Rumania, through London, England, was headed by Major Carlyle H. Wash. Lieutenants Clarence E. Crumrine, LeClaire Shultz, and Clayton Bissell shared the sixth from Brough, England, to Boston, Massachusetts. The seventh, from Mitchell Field on Long Island, New York, to Seattle, Washington, was headed by Capt. Burdette Wright.

With Mitchell's departure, the role of the Navy increased substantially. Naval warships became primarily responsible for support of the flight. They would be supported by other ships only where naval ships were lacking. Land-based supply depots would be used only in the few areas ships could not reach. For maximum naval access, the flight's route was modified to pass over coastal areas wherever possible.

Overflight and landing permits had to be obtained from dozens of countries, many unfriendly or even hostile to the United States. General Pershing, always diplomatic and politically astute, insisted there be no further mention, either within or outside of the United States, of any military purposes for the flight, nor any desire to gain any advantage over another country by beating them in the race to be first to fly around the world.

Captain Volandt, finance officer, came up with estimates of \$257,882 for the flight expenses, \$50,000 for contingencies, and

\$192,684 for purchasing the aircraft. When he presented the estimates to President Coolidge, the president said he would not spend half a million dollars of taxpayer money on a risky venture with little chance of success, unknown benefits, and a high likelihood of fatalities.

The Senate Teapot Dome investigations taking place at the same time threatened to continue through the upcoming elections. The scandal was growing, and Coolidge faced the prospect of losing. He could be forced to leave office without the legitimacy of being elected and a legacy of leading his Republican party into defeat.

Pershing had sought the Republican party nomination during the last party primary and was politically savvy. Meeting with Coolidge, he convinced him that a U.S. attempt at a world flight had the unique ability to divert public attention and create positive newspaper headlines during the upcoming election season. As a loyal Republican, he asked Coolidge to reconsider—for the benefit of the party.

THURSDAY, NOVEMBER 1, 1923

9:00 A.M.

HONOLULU, HAWAII

Billy and Betty Mitchell were still unpacking their large steamer trunks when the knock on the door came. Billy checked his watch. His new orderly was right on time. That was good. He had given Betty the full week he had promised during the voyage. No Army. No Air Corps. No fights with the Navy. Just a happy honeymooning couple dancing the night away. Now it was time to get back to business—Air Corps business.

Billy opened the door. The army lieutenant standing outside saluted, and Billy motioned him inside. The lieutenant saluted again and stood stiffly as he introduced himself. “Good morning, General Mitchell. Welcome to Hawaii. I’m Lieutenant Johnson. General Summerall has assigned Sergeant Palmer and I to escort you and Mrs. Mitchell while you’re in Hawaii, sir.”

Mitchell casually went back to his unpacking. “At ease, lieutenant. What did General Summerall have in mind for us?”

Lieutenant Johnson relaxed slightly before replying, “Sir, General Summerall thought you might enjoy a visit to our gardens

at the country club and a round of golf this afternoon. I've also brought a guidebook for Mrs. Mitchell, sir. We could drive you anywhere you wish. General Summerall wants your stay in Hawaii to be as pleasant as possible, sir. He's planned a welcome party for you and Mrs. Mitchell this evening at the Officer's Club, sir."

Mitchell's face clearly showed he was not happy. Betty caught the look and cautioned him with a quick glance to be nice. "I certainly appreciate the General's hospitality, but I'm here to evaluate Hawaiian defenses. An airplane for reconnaissance would be a lot more useful than a golf game. Also, I prefer to do my own driving, so if you can leave me a car, preferably a fast one, that will do nicely."

Johnson nodded his understanding. "Yes sir, General Mitchell. I'll send Sergeant Palmer to make those arrangements right now, sir. Will you need a pilot, sir?"

Mitchell replied scornfully, "Johnson, I *am* a pilot. Go do it. I'll be down shortly."

Johnson saluted smartly and left the room. This was not going to be as easy as all those other visiting bigwig assignments. He sent Sergeant Palmer on ahead to the airfield to make the arrangements for Mitchell's flight. As Mitchell approached the waiting staff car, Johnson dived out to open the right rear door at the curb for him. Mitchell walked around the back of the car, opened the driver's door, and sat down. "I'll drive. You navigate," he said.

The sentry at Luke Field was reading a magazine in the small gatehouse as Mitchell's car pulled up. Without looking up, he motioned for the car to continue through the open gate. Mitchell stopped the car and started timing. It took twenty-six seconds for the sentry to take his feet down from the desk and turn curiously toward the stopped car. It took another four seconds for the startled sentry to recognize the fluttering flags of rank on the fenders of the car, run outside, snap to attention, salute General Mitchell and, wide-eyed with the shock of being caught, wave him through the gate. Johnson gave him an exasperated look as they passed.

Mitchell looked over the obsolete biplanes responsible for Hawaii's defense. He selected the newest of the aging group, a Thomas Morse Scout. The Scout was based loosely on a European design. It was faster and more maneuverable than the large DeHaviland DH-4 next to it but inherently unstable. If you took

your hands off the controls, even for an instant, the Scout would bank sharply. If you didn't correct quickly, it would turn over onto its back and drop its nose into an inverted high-speed dive toward the ground. If you survived your flight, on landing it would take another bite at you. Unless you were quick—really quick, with the correct rudder inputs at the exact moment they were needed—the little Scout would ground loop, the tail would come around, a wingtip would dig into the grass, and it would cartwheel onto its back. If it didn't kill you, it would sure leave you looking like a ham-handed dunce to your fellow aviators.

The nimble Scout was loved by only the most skillful aviators, the ones who could master it. Mitchell confidently climbed into the cockpit, carefully folded the borrowed map, and strapped it and the small notebook he always carried to his leg. He buttoned his worn leather jacket before pulling his goggles down over his eyes. After starting the engine he checked the wind sock, put in the appropriate aileron and then rudder inputs, and lifted off into a freshening southern breeze.

Flying low over the many naval ships anchored at Pearl Harbor, Mitchell returned the friendly waves of the sailors on the decks below him—then recorded the type and exact location of each ship in his notebook. Continuing his low flight around the island, he marked on his map the exact location of Wheeler Airfield, its hangars, defensive gun emplacements, bunkers, fuel depots, armories, barracks, and communication facilities.

Mitchell went to full throttle on the Scout and pointed the nose upward. He climbed one thousand . . . two thousand . . . three thousand . . . four thousand feet, then leveled off and flew in large slow circles, mentally formulating a theoretical air attack on the island. *How easy it would be*, he thought. He drew the lines of attack on his map. He would strike early on a Sunday morning, when they would be least prepared. One hundred attacking airplanes would reduce Pearl Harbor to a watery naval graveyard in minutes. The few coastal gun positions and antiquated U.S. airplanes would be no match against a determined, better equipped foe.

On landing, Mitchell was required to present his pilot's license and medical certificate for recording in the airbase's logbooks. His medical had expired, so he reported to the resident flight surgeon,

Dr. David Myers, for renewal. The examination was more thorough than Mitchell would have liked. Dr. Myers duly recorded the numerous old fractures and dislocations from his early days of riding and jumping and his punctured eardrum from the rapid descent he had made over France to escape enemy fire. Listening to Mitchell's heart and taking his blood pressure, Dr. Myers shook his head. He didn't like what he heard and saw. *High blood pressure* and *increased arterial tension* were noted on his chart. This could disqualify him for a medical certificate.

Mitchell blanched noticeably. He feared the loss of his pilot's license more than anything else on earth. Quietly he explained to Dr. Myers what that would mean to him. Myers understood. He noted on Mitchell's chart that the readings might have been the result of extensive travel, the loss of recent sleep, and a transitory gastrointestinal upset. He recommended a follow-up examination but signed him off as being fit for flight. Immensely relieved, Mitchell carefully placed his renewed medical certificate with his pilot's license in his wallet and left a happy man. He could fly for another year.

Betty and Billy Mitchell enjoyed the next six weeks in Hawaii. They went horseback riding, hunting, swimming, sailing, fishing, hiking in the mountains, attended numerous parties in their honor, visited every island in the group except Lehua, and attended plays, polo matches, and sumo wrestling.

General Charles P. Summerall, commander of the Army's Hawaiian Department, was the consummate host, graciously acceding to Mitchell's every request and making certain he and Betty were always well provided for. Even his former Chief and adversary, General Menoher, now happily stationed in Hawaii's Schofield Barracks, warmly welcomed him with an honor guard.

Mitchell flew almost every day in the Scouts, DeHavilands, and Sopwith biplanes of Luke and Wheeler Airfields. He inspected almost every military installation on Hawaii and participated in all the maneuvers and training exercises. Each night he made copious notes, often working into the dawn hours to prepare the most exten-

sive report ever made on Hawaiian defenses and the improvements he deemed necessary.

Before sailing to Guam and on to the Philippines on the old Army transport ship the *Thomas*, Mitchell completed a scathing one hundred-page preliminary report that severely criticized Hawaii's defenses and the complete lack of communication and coordination between Army and Navy commanders. As with most of his reports, this one was open, impersonal, unsparing, and critical of almost every command function.

He cited the lack of adequate air power, gun emplacements, poor training of personnel, lack of proficiency, inadequate weapons, inefficient deployment, and a high degree of vulnerability to even the smallest attack from the air. He concluded that the supply system was chaotic, the islands lacked airways or even weather reporting and no command communication with defenses existed. He reported General Summerall as hopelessly unprepared for war.

After showing his report to headquarters at Schofield Barracks, Mitchell sent it to General Patrick for forwarding to the War Department. General Summerall felt Mitchell had betrayed him, stabbed him in the back. He derided the report as an academic exercise with little practical application. Mitchell's assumption that an enemy force might someday attack Pearl Harbor was, he felt, ludicrous and unrealistic. Summerall believed Hawaii's defenses were completely adequate and capable of repelling any attack with minimal damage. Summerall complained bitterly to General Patrick of Mitchell's unwelcome and undeserved criticism. Although Patrick wrote at great length to Summerall apologizing for Mitchell's evaluation, calling it a theoretical exercise, Summerall joined the long and growing list of Mitchell's lifelong enemies.

On November 23, 1923, a greatly relieved Donald Douglas finally received his purchase order for \$192,684 to cover immediate delivery of one prototype and four World Cruisers plus spare parts to be delivered in March 1924. With re-election looming, the antiaviation president reversed course and gave his approval to the first world flight.

