



Tex Johnston lifts Cobra II from the runway at Niagara Falls, N. Y. Municipal Airport beginning his flight to Cleveland, Ohio for the 1946 National Air Races. (Photo-Bell Aerosystems Co. 70318)

COBRA... .

BY BIRCH J. MATTHEWS

Alvin M. Johnston, better known by his nickname of "Tex", stood relaxed by the side of his 1946 Thompson Trophy winning P-39 racing plane. He shifted the weight of his tired frame from one leg to the other slowly easing the tension from his body. Around his neck he wore the symbolic rose studded wreath proclaiming his victory in the Thompson Trophy Race. As the camera shutters snapped, Tex accepted the congratulations of Thompson Products' President, Fred C. Crawford, together with those of Tony LeVier and Earl Ortman, the second and third place winners, respectively. Behind this fleeting moment of triumph lay three months of planning, hard work and tragedy.

The idea of entering the 1946 Thompson Trophy Race developed during a conversation between Tex Johnston and Jack Woolams. At the time, Jack was Chief Test Pilot for Bell Aircraft Corporation in Niagara Falls, New York. Tex was assistant Chief Test Pilot for Bell and both men were part of a team of experienced professional test pilots hard at work on Bell's research aircraft activities. Woolams was being groomed to fly the Bell X-1 research vehicle which was to undergo powered flights later in the year.

After considerable thought, both men agreed they could cook up a good conversion for the Bell P-39 Airacobra that would enable the aircraft to make an excellent showing at the races. Gradually, the idea took shape and caught the enthusiasm of others. Bob Stanley, experimental test pilot for America's first jet aircraft, the Bell XP-59A Airacomet, and then responsible

for engineering flight test operations, broached the idea to Larry Bell, president of Bell Aircraft Corporation. Stanley succeeded in gaining the authorization and support of Bell and the idea of entering the Thompson race was transformed into reality. Although Larry Bell was willing to augment the project by making available technical assistance and plant facilities, he insisted that the entire adventure be legally divorced from direct Bell sponsorship. Fortunately, circumstances were to provide the two foremost ingredients to get the ball rolling; an existing legal organization to assume responsibility for the racing activities and availability of two aircraft suitable for conversion to racers.

The former was an inactive but legally constituted corporation known as Skyland Unlimited. Early in 1946 two Bell men pooled their financial resources and formed the Skyland venture to revamp a Navy surplus Lockheed PV-1 patrol bomber into a commercial aircraft capable of charter service for passengers and freight. Bell test pilot Chalmers "Slick" Goodlin and engineer Lick Frost purchased the surplus Lockheed and proceeded with the conversion. Work took place in one of the two old wooden hangars constructed during the war and located adjacent to the Niagara Falls Airport. Like hundreds of their contemporaries, the two men envisioned this as the first step towards a charter and aircraft conversion business for the anticipated post-war aviation boom. Unfortunately, the over-crowded market never fully materialized and both men were soon left with



Profile view of the "Q" Model Bell P-39 Airacobra, the counterpart of the two converted racers. (Bell 41912)

disappointment and debt and only the name of a corporation. But the decline of the charter service coincided with the proposed racing venture and thus, SkyLANES ultimately fulfilled a use for which it was never intended; a ready-made organization distinct from Bell Aircraft Corporation.

The second element necessary to literally get the project off the ground was the acquisition of an aircraft that would lend itself for conversion into a racer. The selection of a Bell fighter aircraft for the task was perhaps a natural since the principals involved were all experienced Bell test pilots. But again, circumstances combined to make the aircraft immediately available.

During the early stages of the post-war period, Bell Aircraft was engaged in some experimental work for the U. S. Navy. This work consisted of modifying a couple of P-63 Kingcobras into swept wing configurations for subsequent aerodynamic testing. As the conversion effort progressed, center of gravity problems developed which necessitated the installation of a lighter propeller. It was decided to remove the standard four-bladed P-63 propeller and replace it with a lighter three-bladed model from a P-39 Airacobra. At the time, the government wanted \$1500.00 for this type of propeller while surplus P-39s were available for only \$750.00 each. Taking advantage of this condition, Bell Aircraft procured two surplus P-39 aircraft and thereby obtained two propellers for the price of one, and two P-39Q-10-BE fighters. They were purchased from the War Assets Administration and flown to the Bell plant from the Air Force surplus depot at Walnut Ridge, Arkansas. The swept wing P-63 conversion, company designated as L-39, was then brought to completion and, it just so happened, two P-39s were left available for use by SkyLANES Unlimited's racing venture.

The planes were obtained by the SkyLANES group for the nominal sum of one dollar each in what was simply a paper transaction. To get the project under way, SkyLANES Unlimited contracted with Bell Aircraft to make engine and airframe modifications as well as conduct aerodynamic flight tests. To preserve the legal distinction between the Bell Corporation and the racing endeavor, key personnel that were to work on the two planes took leaves of absence from the company and were placed on the payroll of SkyLANES Unlimited.

Equipped with the two P-39s, the SkyLANES organization, consisting of Slick Goodlin as president together with Tex Johnston and Jack Woolams, set up shop in one of the Bell Aircraft flight test hangars on the edge of the Niagara Falls Municipal Airport.

To accomplish the task of converting the two military fighters into racing planes, a select crew of Bell personnel was invited to join in the venture. Assuming the duties of Project Engineer was Marvin "Lefty" McEuen. Until the end of the war, Lefty had lived with the P-39



Note 3-bladed propeller obtained from P-39Q-10s on U.S. Navy L-39, swept wing P-63 conversion. (Bell 73114)

and its successor, the P-63, as Project Engineer for models K through Q on the Airacobra and the C version of the Kingcobra. Working with McEuen was Art Krege whose credentials included flight line development experience with almost every experimental Bell Airplane since the beginning of the war. Art attended to the flight line operation and became crew chief for both planes. What Art and Lefty didn't know about a P-39 wasn't worth bothering to remember. This wealth of knowledge and experience formed the nucleus for the SkyLANES team which was composed of approximately ten specialists and the pilots.

Since only two planes were to be modified and flown in the races, a flip of the coin between the three pilots determined that Jack and Tex would fly the racers while Slick Goodlin would act as backup pilot for the trio. With this settled, work on the planes began.

Both aircraft were completely stripped down and every piece of non-essential equipment discarded. More than 200 pounds of armor plate, weapon systems and accessories, transmitting and receiving radios, and batteries constituted some of the twenty-odd major components that were removed. The heavy self-sealing fuel tanks were removed and replaced by specially constructed light weight fuel cells built by U.S. Rubber Company. These bladder type fuel bags proved to be very effective and eliminated the leakage problems encountered by other racing entrants that simply tried to seal off portions of the wing structure after removing the original tanks. In addition to the fuel tanks, the starter assembly was sacrificed in favor of a lighter hand-operated inertia starter augmented by a ground power supply. When the revamping was complete, over a 1000 pounds of excess weight had been removed.

One of the most significant modifications to both planes was the conversion of the landing gear electrical system from 2k to 36 volts. As a result, the landing gear retracted in less than five seconds. This particular feature would soon prove its worth during the start of the Thompson race.

The standard engine for production P-39Q aircraft was the Allison V-1710-85 model. During the conversion, these engines were removed from the planes and replaced by V-1710-135 models with a manufacturer's rating of 1425 horsepower at take-off. A total of four of these late model Allison engines were purchased from government surplus stocks thus providing each plane with a spare. Under the supervision of Bell's Jack Berner, two of the engines were completely torn down. Bill Wise, Allison Division technical representative, traveled up to Bell Aircraft with sufficient hardware to rebuild both engines. The principal modification to the engines was the installation of new piston assemblies with specially shaped domes to counteract the problem of detonation during continued operation at maximum power settings. Minor changes were also made to the oil system in the

accessory case prior to final assembly. When the changes were finished, the two engines were taken from the Bell plant to the flight line for installation in the racers.

Neither engine used an auxiliary supercharger as this would have drained away usable horsepower while contributing nothing to low altitude performance. A water injection system was used, however, to increase mass flow through the engine as well as reduce combustion temperatures and avoid detonation. The injection system was borrowed from a P-63 installation and was essentially the same with only minor changes in plumbing. A seventy-five gallon tank was placed forward of the cockpit in the gun compartment and filled with a water-alcohol solution.

To absorb the increased power output of the new engine, the unused four-bladed propellers from the L-39 project were installed. It is interesting to note that some production variants of the "Q" Models employed a four-bladed propeller. The Q-10 model did not, however, and the addition of the large propeller was a significant change.

With the modifications listed the Allison engine in Tex Johnston's plane was capable of 85 inches dynamic manifold pressure while turning 3400 revolutions per minute. Under these conditions, the engine developed approximately 2000 horsepower. The engine in Jack Woolams' racer was capable of similar performance.

Both planes were now in flying condition and Tex and Jack began flight tests. It soon became evident that the oil cooling capacity was insufficient for the high powered engines. A severe frothing condition de-

veloped with the existing oil system. As a consequence, oil capacity was increased from eight to thirteen gallons with the addition of an auxiliary oil tank coupled to a new oil cooler. The new oil cooler was mounted amidships below the center wing section. A large flow-through air scoop was fashioned around the oil cooler to duct fresh air over the heat exchanger. The aft section of the scoop was shuttered to regulate air flow based upon oil temperature. Finally, at Art Krege's suggestion, an oil foaming depressant was obtained from Sohio (Standard Oil Company of Ohio) and added to the oil. Although never completely licked, the frothing condition was now minimized.

Externally, both P-39s were little changed from their military counterparts. In addition to the belly scoop, there were certain other differences. The pitot tube assembly was removed from the wing and mounted in the hollow propeller shaft which formerly housed the 37 mm cannon installation. The base of the pitot tube shaft was faired into the contour of the propeller spinner. As flight testing continued, two other changes were dictated. The tremendous amounts of torque produced by the new engine and propeller combination prompted the attachment of a fixed trim tab to the rudder in addition to the movable tab. The most noteworthy change resulting directly from flight testing, however, was the replacement of fabric coverings on the control surfaces with metal skin.

Revamping the control surfaces was brought about by the near fatal sequence of events experienced by Tex Johnston during a test flight in his racer over



From left, Tex Johnston, Slick Goodlin and Jack Woolams, principals in the revitalized Skylanes Unlimited organization standing in front of Cobra II during pre-race conditioning. (Photo--Bell 70035)



Jack Woolams and Tex Johnston (r.) pose in front of the SkyLANES Unlimited racing stable. The red Cobra I is in the foreground with the yellow Cobra II behind it. (Photo--Bell 70271)

Lake Ontario. After leaving the Niagara Falls airport, Tex wheeled the plane around and headed north toward the lake where all pre-race flight testing was conducted. Dropping down to a height of only fifty feet above the water, he progressively brought the engine to full throttle. With the racer indicating over 420 miles per hour, Tex glanced out of the cockpit and noticed the fabric on the ailerons starting to balloon. Suddenly, the control stick whipped out of his grasp. The plane reacted violently and instantly tucked over toward the water. Fortunately, the stick caught in the crook of his arm and Tex was immediately able to right the plane. The P-39 came so close to the water that nearby fishermen reported seeing considerable spray kicked up from the wash of the flashing propeller. It was later determined that the Airacobra had sustained a nine G loading during the extreme maneuver. Cause of the near mishap had been a severe high speed flutter in the elevator and trim tab surfaces which in turn caused a structural failure in the left elevator.

On the strength of his skill as a pilot, Tex was able to bring the crippled P-39 back to the airport. Damage to the plane forced him to land at a speed of 155 miles per hour; no mean feat in itself. As a result of this experience, the fabric on all control surfaces was stripped and replaced with metal skin. The flutter generated by the trim tab at high speed was resolved by re-sorting to a fixed elevator tab. The incidence of the new trim tab was determined empirically through subsequent flight testing. Control stick loads imposed by the elevators averaged about five to seven pounds in flight over the full speed range, from near stalling to maximum velocity, after the hurried fix.

Time was by now growing short and the Bell team of pilots, engineers and mechanics were working almost around the clock to put the finishing touches on the racers. The results of their labors began to pay off as Jack Woolams ran a speed check on his plane and indicated a very respectable 425 miles per hour. Tex took up the sister ship and approached the same speed. As the

trials continued, both planes developed about equally with respect to performance. With the final modifications nearly complete, the racers were given a coat of primer paint preparatory to the final color coat. In the end, four color coats of glossy paint were applied to each plane. Woolams' racer was painted a brilliant red while Johnston's received a bright yellow. The trim color for both airplanes was black. The pilots settled on the nickname of "Cobra" for their racers and this was inscribed on the planes with Jack's ship becoming Cobra I and Tex's taking on the markings of Cobra II. Racing numbers "75" and "84" were assigned to Cobra I and II respectively.

With the exception of the red and yellow base colors, the twin racers were identical in configuration and marking. Credit for the selection of the colors and trim arrangement belonged to the pilots. In their final dress, the racers were beyond a doubt, the most colorful and distinctive to enter the 1946 National Air Races.

The week before the Labor Day weekend, the weather dawned fair and cool. In Niagara Falls, the SkyLANES group worked endlessly to put the final touches on the twin racers. Amidst the feverish preparation, a feeling of excitement prevailed as Art Krege coaxed and cursed the liquid-cooled Allison engines into finely tuned instruments.

Work was finally completed on Monday, the 26th of August. At five-thirty that same afternoon, the pilots took the racers up for one last check flight. The trial runs finished, the planes were bedded down over night awaiting the next day's flight into Cleveland, Ohio. Art Krege and Lefty McEuen departed for Cleveland with two car loads of Bell personnel to set up field operations at the Municipal Airport.

The following morning, Tex and Jack sparked the Cobras to life and lifted them from the Niagara Falls Airport for the short trip to Cleveland. That same Tuesday afternoon, both pilots put their planes through the preliminary flight tests over Cleveland Airport as

required by the racing committee. This accomplished, trial runs began around the thirty-mile race course for familiarization. The race course was inadequately marked and although both Tex and Jack were ready for the qualification trials, the tests had to be postponed.

It wasn't until late Tuesday afternoon that the Army barrage balloons arrived and were positioned on the course marking each leg with the exception of the home pylon. This pylon was a conventional steel tower structure with the traditional checkered bunting draped down the sides. On Wednesday, veteran racing pilot Tony Le Vier piloted his flaming red Lockheed Lightning around the course on an inspection flight to determine whether the new markers would be sufficiently visible during high speed flight. With this complete, qualifications were immediately scheduled. Threatening weather hung over Cleveland skies, however, and the qualifications were further delayed. In spite of this handicap, Tex Johnston took Cobra II around the circuit for an unofficial trial and averaged 375 miles per hour.

Thursday brought some improvement in the weather and with a 1500 foot ceiling, the pilots began the official time trials. Jack Woolams pushed Cobra I around the track at a scorching 392.7 mile per hour pace to establish a new qualifying record. Tex placed his name on the starting list for the Thompson Trophy Race with a speed of 348.5 miles per hour. The apparent differential in qualifying speeds of the twin racers was misleading. A later check of the elapsed time for Tex's flight revealed an error in the computations and he subsequently received credit for a qualifying speed of 409.1 miles per hour and thus earned the pole position for Cobra II.

After his return to the field following the qualifying run, Jack indicated that the Allison engine in Cobra I was detonating on him and, on the spur of the moment, decided to return to the Bell plant and have one of the spare engines installed. Art Krege offered to fly back with him by riding in the after cabin space to the rear of the pilot's seat. Jack refused though, believing that the job wouldn't take long and the mechanics back at the Bell plant could easily make the change.

Late Thursday, Jack brought Cobra I back to the Niagara Falls field and made arrangements for Harry SyIvies and Charles McAdams to change engines. Both men had worked on the two Cobras previously during the modification stage but had delayed going to Cleveland until the races began. They set to work tearing out the Allison and preparing to install the replacement.

By four o'clock Friday afternoon, the work on Cobra I was nearing completion. About this time, Jack Berner strolled out to the flight line to see for himself how the engine switch was progressing. As he approached the ramp area, he saw Woolams impatiently pacing up and down in front of the plane waiting for the job to be completed.

Berner asked Woolams if he would like him to "stick around and help run-up the engine for a ground check". He reminded Woolams that the spare engines had only the factory run-in time and should be checked out. Woolams declined, saying he would take care of the run-up out at the end of the runway before he made his test flight.

As Jack Berner turned to leave, Woolams handed him a pair of tickets to the air races as he nodded goodbye. Berner walked away and was soon on his way home for the evening.

Harry SyIvies wiped the sweat and grease from his face as he finished cowlings the engine. He and Charley McAdams had just finished their work and it was now nearing five in the afternoon.

"Want me to stay around and help you push the plane into the hangar after your test flight?" Harry, asked as he was gathering up his tools.

"No thanks," Jack replied, "I'll get a couple of the plant guards to help me when I come in." Woolams

thanked the men for their work and then climbed into the plane.

After getting the engine started on the sleek red racer, Harry locked up his tools and drove on home for the evening.

Jack Woolams taxied the airplane out to the end of the runway and ran up the Allison, braking the plane at a forty-five degree angle to his line of take-off. When he was satisfied with the instrument readings, he released the brakes and let the torque of the engine straighten out the plane as it sprang forward under full power. Once in the air, Jack circled the field several times and then landed again returning to the end of the runway.

Out at Harrison Grove Beach on the edge of Lake Ontario, Lick Bonhurst had joined a group of picnickers for a hot-dog roast. Relaxing after the day's work, he found the cool breeze coming off the lake very refreshing. Dick was Manager of the Niagara Falls Airport and a good friend of Jack Woolams. (Harrison Grove is one of many picnic and cottage areas that dot the Lake Ontario shoreline from the Niagara River east to Rochester, New York. On this particular Friday evening, the shore was crowded with summer visitors intent upon their recreation.)

At the end of the Niagara Falls Airport, Woolams gunned the big Allison again and lifted his racer off the runway for the second time that afternoon. Gaining altitude, he circled the field once and then pointed the plane north toward Lake Ontario. Within minutes, he was approaching the shoreline at a point seven miles east of the mouth of the Niagara River. Subconsciously, he recognized the beaches below. He was at that moment over Harrison Grove Beach.

At his home, Harry Sylvies turned on the radio to wait for the evening news and relax after a tiring day. He ate dinner and forgot about Allison engines and P-39s and the like.

From his vantage point on Harrison Beach, Lick Bonhurst soon heard the roar of the Allison engine overhead. He looked up to see the P-39 scream by and flatten out fifty feet over the water. Lick knew instinctively from the sound of the engine that the ship was really moving.

It was nearly six thirty in the afternoon but in Cleveland, Art Krege was still fussing over Cobra II. By this time, he had the ship completely uncowed. As the sun went down, the heat of the day eased a bit and Art with the rest of the Bell crew labored on, determined to achieve perfection.

On the beach, Lick Bonhurst stood entranced as he and the other members of the party followed the red P-39 out across the water. Seconds later, Lick saw the left wing dip and, to his horror, watched the plane dive uncontrollably into the water and disintegrate with a roar. Debris showered the area for several hundred feet from the terrific force of the crash, then sank beneath the surface of the water almost immediately. The violent noise which had accompanied the crash ceased as quickly as it had come and, for a moment, the air was still and quiet punctured only by the shrill scream of the gulls as they excitedly circled the area.

With presence of mind, Dick Bonhurst ran to the nearest farmhouse and rang up the Niagara Falls Airport control tower. Still excited, he demanded to know who was out in a '39 this evening. When the tower informed him that Jack Woolams had taken off a short time ago, Dick replied, "You had better pull the alarm then, because he just went into the lake". With that he directed that the Coast Guard Station at nearby Fort Niagara be notified and asked to send a crash boat to the scene.

Dick ran outside again and ordered two automobiles. He drove the first one to the shore line at Harrison Beach and switched on the headlights in the direction of the huge black oil slick that had formed over the



A profile of Cobra II showing the clean, uncluttered, lines of the Bell P-39 Airacobra, a design initiated by Bell's chief designer Robert J. Woods, some ten years prior to this photograph. (Photo.—Bell 71337)

area where the plane went in. With the second car, he drove to Roosevelt Beach, a mile or so down the shore road. Here, he repeated his actions, aiming the headlights of the car toward the accident site thus fixing its position.

The control tower notified the authorities and soon, the news was flashed on local radio stations. Harry Sylvies was startled by the bulletin and hurriedly jumped in his car and drove out to the beach. He met George White, also of Bell Aircraft, and the two men joined in with the Coast Guard to look for Jack's body and any clue that might indicate the cause of the fatal accident. Harry spent a considerable amount of time questioning the many individuals that witnessed the crash. The stories were varied and uncertain. Some claimed that the tail broke off while others insisted that something flew off the plane and struck the tail just before the accident occurred. A few simply didn't know what had happened.

But of all the eye witnesses, only airport manager Dick Bonhurst was a trained observer. It was his conviction that the Cobra I was intact when it hit the water. He felt certain that nothing in the tail assembly had let go causing the accident.

It was a little past six thirty in the evening now and the Cleveland airport control tower had received word of Woolams' death. They in turn passed it down to the crew working over Cobra II. Tex, Art, and Lefty, with the others in Cleveland, were shocked as the first sketchy details became known. The Bell group felt the loss of Jack Woolams deeply and they abandoned their work on the sister ship for the rest of the evening.

Efforts to recover Woolams', body failed that evening and it was not until the following day that the attempt was successful. The plane was never recovered and the cause of the accident remained a matter of conjecture. In Cleveland, however, Tex never gave a thought to withdrawing from the race.

Although the Labor Day air racing activities had already begun, Tex hurriedly returned to Niagara Falls.

to learn first-hand the details of his friend's tragic accident. In addition to the investigation activities of the Coast Guard and local officials, Larry Bell threw his personal resources into the matter to determine the cause of Woolams' crash. Added to the personal loss he felt from the death of his Chief Test Pilot, Bell was determined that a similar fate should not befall Tex Johnston. Indeed, he was undecided about permitting Tex to compete in the Thompson Race. In the end, although no positive answer could be ascertained regarding the cause of Woolams' crash, sufficient circumstantial evidence had been gathered to allow an educated guess regarding the two most probable reasons for the accident.

When the reports of the witnesses to the accident had been sifted, there were the usual variations attendant to the stories of emotionally upset individuals. And in addition, the people watching from the beach were all laymen to the aviation world with the single exception of Dick Bonhurst. Boiled down, the different versions of the accident distilled into one of two categories.

One description of the events indicated that a structural failure had occurred in the tail assembly or perhaps the after section of the fuselage which resulted in the crash. One observer even suggested that something had broken loose from the forward area of the plane and had ripped back into the tail group. Contradicting these theories, Dick Bonhurst swore that the plane was intact when it struck the water. Hence, if there had been a structural failure, it may well have been in the cockpit thus incapacitating the pilot. Lending support to the latter idea was the condition of the pilot's body. In the end, most Bell officials agreed that the plexiglass windshield had burst in upon Woolams. Since the fuselage of the racer was constantly subjected to torsional loads induced by the torque of the engine and propeller, it was likely that the twisting forces caused the windshield to rupture. Without the protection of the bullet-proof glass, which



Cobra II was a modified P-39Q-10BE. It is seen here just prior to departing for the National Air Races at Cleveland, Ohio, in 1946. (Photo-Bell Aerosystems Co. 71340)

had previously "been removed, a failure of the plexiglass at high speed would have proved fatal.

When he returned to Cleveland, Tex Johnston was determined to fly in the Thompson as planned. Art Krege redoubled his efforts to ready the racer. Based upon information he received about the crash, Art installed a safety wire running horizontally across the windshield of Cobra II. The reinforcing wire was attached at the base of the windshield posts on each side of the cockpit. Because a majority of the witnesses indicated that a structural failure had occurred near the tail group, it was impossible to dismiss this version entirely. As a result, two aluminum strips a quarter of an inch thick and three inches wide, were hastily riveted externally to the sides of the fuselage. These reinforcing stringers ran aft from the engine compartment to the tail assembly.

After the hurried modifications were completed, Tex Johnson climbed into the cockpit of Cobra II for another flight test. When the engine was warmed up, he eased the plane out to the end of the runway and subsequently boosted Cobra II into the air for the crucial test. After a brief flight, Tex was satisfied that the ship was capable of withstanding the punishing grind of high speed, closed course racing. He brought the plane back to the airport and turned it over to Art Krege for final adjustments. Leaving nothing to chance and trusting no one with the aircraft but himself, Art bedded down with the plane and stayed all night.

Monday dawned over the city and brought with it fair weather to initiate the climactic events of the National Air Races. A casual observer could see Cobra II again uncowed and Art Krege patiently checking the plugs on the Allison for what seemed like the millionth time. The Bell crew took nothing for granted and by three-thirty that afternoon, they had sweated and cursed the big plane into tip-top condition.

Art rode with Tex out to the starting line as Cobra II was towed into position. The tractor crew deposited the racer on the line in the pole position next

to George Welch's bronze P-51 Mustang. As in the past, Cobra II sat screwed at a forty-five degree angle to the direction of take-off. At the signal, Tex would depend upon the torque generated by the oversized four-bladed propeller to straighten out the plane as the engine received full throttle. This unorthodox procedure drew the wrath of George Welch, but his arguments were in vain as Tex had received permission to line up in this manner.

Minutes before the race, Art started the Allison with a roar. Cobra II strained against the brakes as Tex eased the throttle ahead. At precisely four o'clock the starting signal brought the twelve Thompson entrants to life. Tex rammed the throttle forward and Cobra II responded like a shot.

The biggest worry confronting Tex was the possibility of a collision during the wild melee of the racehorse start when each of his competitors was digging out for the scattering pylon. Tex knew that he need only worry about this right flank as he owned the pole position with clear sailing to the left. His worries were unfounded as Cobra II accelerated at such a rate that Tex found himself in front of the pack with a lead of one hundred feet by the time he was airborne. As the landing gear snapped up, Cobra II made a flat low run for the first turn easily outdistancing its closest rival, George Welch's Mustang.

Thundering around the first pylon with a low level sweep, Tex set his course for the second turn ten miles down the track. George Welch gave chase as he followed the yellow Cobra around the pylon, promising the only real competition for the Bell racer. Fate was unkind, however, as the bronze P-51 turned off the course with a faltering engine even before the first lap was complete. The remaining contestants followed Cobra II onto the race track and began stringing out behind the leader.

From his vantage point in the grandstands, the air race announcer narrated the events over the public address system, noting that "Johnston is in first -



Tex Johnston stands beside the coveted Thompson Trophy and the Allegheny-Ludlum Trophy for establishing a new winning speed, record, of 373.9 mph in the 1946 Thompson Trophy Race. (Photo-Bell 71084)

Le Vier in second, and Earl Ortman is in third place on the backstretch." Unsure of his lead, Tex ran the engine at 3400 revolutions maintaining 85 inches of manifold pressure. After three laps, he throttled back to 62 inches manifold pressure since he encountered no difficulty in maintaining his substantial lead. He had no wish to chance losing the race by burning up the engine. Tex counted off the laps and concentrated on the now familiar landmarks by which he located each turn.

The air was rough and turbulent and Cobra II buffeted and strained under the buildup of stresses encountered in the low level flight profile of the race. As the contest progressed, black exhaust streaks all but obliterated the lower portion of the racing number on each side of the racer's fuselage. But with monotonous regularity, Cobra II maintained its lead with each lap and took the checkered flag after covering 300 miles in 48 minutes and 8 seconds for an average speed of 373.9 miles per hour.

Not trusting his count, Tex wound Cobra II around the course for one extra lap. Screaming down the home stretch after its one safety lap, Cobra II pulled up into a shallow climb, racing toward the setting sun in the afternoon sky. Circling the Cleveland airport, Tex made his approach and brought Cobra II back to earth. As the racer braked to a halt near the grandstands, Art Krege clambered up on the wing; first to greet the Thompson Trophy winner. Tex stepped out of the cockpit and into the winners circle to receive the coveted Thompson Trophy as well as the Allegheny-Ludlum award for establishing a new closed course speed record during the Thompson race.

That evening, Larry Bell, president and founder of Bell Aircraft Corporation, hosted a victory celebration at the Statler Hotel in downtown Cleveland for the

entire crew. Art Krege remembers that the "scotch flowed like water" but somehow it couldn't quite overcome the sadness that remained from Jack Woolams' tragic accident. Larry Bell and Tex Johnston left early that evening and returned to Niagara Falls by train. The rest of the team followed suit the next day. Slick Goodlin flew Cobra II back to the Bell plant where it would remain for nearly a year.

Tex and Slick settled down to the task of preparing the Bell X-1 rocket powered research plane for the acceptance tests ahead. In spite of the aviation achievements that Tex would continue to pile up, his victory in the Thompson Trophy Race was a day in his life that he would never forget.

Because of the loss of Jack Woolams, Bell Aircraft policy subsequently dictated that none of their test pilots would be permitted to fly in any future races and thus, Tex Johnston's racing career was over. Cobra II was destined to return to the National Air Races again, however, and very nearly duplicated the feat of 1946.

1947

With the announcement of plans for the 1947 National Air Races, pilots and sponsors the country over, began working on their respective racers. Throughout the spring and summer months, Cobra II remained in a corner of one of the Bell hangars practically unnoticed. As the races approached, speculation centered upon who would, fly the 1946 trophy winner. Because of his duties with Bell, Tex could, not fly the plane and so offered it for sale. Among the prospective individuals mentioned, in connection with Cobra II was veteran racing pilot Earl Ortman who was without a plane for the 1947 events. But the days and the weeks rolled, along into the month of August, and still Cobra II sat quietly in the hangar.

Also in mid-August, Bell test pilot Gerald A. "Jay" Demming found himself hundreds of miles from Cobra II and, the Bell plant in Niagara Falls. The 29 year old test pilot was in the midst of a series of helicopter demonstration flights for Indianapolis, Indiana businessmen.

Immediately following World War II, Bell Aircraft had jumped into the helicopter market and soon became one of the pioneering leaders in the field. Jay Demming had been with Bell during most of the war following a short stint with the Royal Canadian Air Force as an instructor. During his five years with Bell, he had logged over 3000 hours flying Bell products. With the closing of military fighter plane contracts and the subsequent rise of helicopter production, Jay made the transition to 'copters.

So it was that Jay found himself seated across the dinner table from Rollin H. Stewart one evening in August. Jay had previously demonstrated the Bell Model 47 Helicopter for Indianapolis business man Stewart, a prospective customer. During the course of the dinner, the conversation drifted around to the Thompson Trophy Race and in particular, Tex Johnston's victory in the 1946 race. Jay related that Cobra II had walked away with the race since Tex had never really been pushed, after the first few laps. He was confident too, that Cobra II could do it again barring the entry of any 4360 cubic inch engines such as powered the Goodyear F2G Navy fighter. Before the evening was out, Stewart's enthusiasm had developed to the point where he soon decided to purchase Cobra II and enter it in the 1947 Races.

Rollin Stewart subsequently bought the racer for \$10,000 and signed Jay Demming to fly the airplane. The conditions of the contract stated that Jay was to fly the plane as long as Stewart was the owner. In addition, Jay would own a half interest in the plane if he won the '47 Thompson together with fifty percent of the prize money. If Jay placed second, he would

receive half interest in the plane only, and if he placed lower than second, he would receive nothing.

The deal complete, Jay hurried on to finish his sales demonstration tour through the central states and on into Texas. Ten short days before the races were to begin, Jay was in Fort Worth. With precious little time remaining to prepare for the races, Jay completed the last details of the purchase and set the wheels in motion to condition the plane. Over the telephone, Jay made arrangements for Chick LaJudice, a Bell flight line mechanic, to ready Cobra II for the Thompson. While still in Fort Worth, he also negotiated with the Shell Oil Company to ship a special fuel blend from their Woodriver, Illinois facility to Niagara Falls and Cleveland for use in the racer. This accomplished, Jay returned to the Bell plant two days later.

Since company policy forbade the pilots to race, Jay had to resign from his job as test pilot. He could, however, return to Bell after the races with no loss in position or seniority if he so desired.

Chick LaJudice and his co-workers had done their job well and Cobra II sat waiting for the new pilot. Jay had enough time to briefly confer with Tex about the Thompson race and, on the following day, make a short test flight in the racer to check performance. With this accomplished, he took off again and this time headed, for Cleveland and the races. His arrival in Cleveland culminated in what he described as "the damndest race against time that I was ever in".

As it appeared for the 1947 races, Cobra II was little changed from the previous year. The same yellow and black color scheme was retained with only a change in racing number apparent. Jay was assigned the racing number of 11 for the events and Chick had had just enough time to make this change. Time did not permit any mechanical changes to the engine or airframe. Jay had to rely upon the built-in performance of the original conversion work. To this, Chick LaJudice had only sufficient time to add a final engine tune-up and polish job to the external surfaces.

Once in Cleveland, Jay was able to make a couple of pre-race test flights to check out the ship and become familiar with the course. The remainder of his time was spent in pilot briefings and meetings as well as completing the preliminary qualification and safety requirements.

On Tuesday, the weather remained disagreeable. Qualifications were rapidly falling behind schedule as less than a handful of pilots attempted to negotiate the two lap trials. Late in the afternoon, Jay waited impatiently for the weather to improve. He was anxious to put Cobra II around the course. The air was rough and turbulent and at times, a light rain pelted the airport. In spite of these conditions, Jay finally decided to "give it a go" and, he took Cobra II up for an official time trial.

Coming on the course, Jay signaled the timers and headed down the track. Cobra II completed the first lap and ventured into the second round. Jay held the ship low as he skimmed over the fifteen mile route. Wind gusts rocked the plane continually as Jay flew the prescribed course. Spectators on the ground watched the qualification run of Cobra II and observed the plane as it swung down the course and headed for pylon number three. This was the last turn and Cobra II was nearing the end of the trial.

As the observers watched, the bright yellow wing of Cobra II tucked over to the left as the plane slipped around the pylon. Suddenly and without warning, the racer yawed violently, a scant one hundred feet above the ground. Onlookers came to their feet as disaster seemed imminent and was in fact only seconds away. To the relief of the witnesses of this drama, the pilot recovered control an instant later and zoomed the racer for altitude and safety. In a moment, Cobra II dropped down again and regained position on the home stretch of the course to complete the qualifying run.



Pilot Jay Demming stands beside the 1947 version of Cobra II. Except for some minor changes in markings, the plane was unaltered from its form of the previous year. (Photo-Bell 77711)

Jay Demming had skirted close to the fringes of disaster and he knew it as he circled the Cleveland Airport and entered the landing pattern. Torrents of air from the slipstream poured in through the shattered remains of the window located in the left-hand cockpit door. On that last turn, the plexiglass had burst inward, momentarily blinding the pilot and inducing the violent yaw. Jay reacted instinctively, pulling up for altitude as Cobra II clawed its way out of immediate danger. His first thought was to gain enough height on the pull-up to parachute out safely but then he realized that he could salvage the qualifying run and bring the plane home again. Luck had been his companion. But the near accident brought back memories of Woolams' accident in Cobra I just a year before. Perhaps this had been his fate....

In a post-mortem of the near accident, Jay reasoned that three conditions combined to cause the plexiglass failure. The turbulent air during the flight was imposing strong gust (wind) loads on the racer. During the full throttle pylon turn, Cobra II was sustaining loads of four to five times the force of gravity. Coupled with these conditions, the large four-bladed propeller induced severe torque conditions on the fuselage structure. When all these forces combined at just the right instant, the plexiglass shattered and burst inward since the total pressure from the slipstream rushing past the cockpit was greater than the static pressure inside the cabin.

To prevent a reoccurrence of this incident, Chick LaJudice supervised the removal of both cockpit doors. The doors had been lightened during the original modification by stripping out excess structure. The shatter proof glass had, been replaced, by plexiglass in the process. Two spare door assemblies were hastily



Jay Demming with Cobra II just before leaving the Bell plant for the 1947 National Air Races. (Photo-Bell 77712)

borrowed from Bell, painted at the plant, and loaded on a train bound for Cleveland. The two replacement doors were entirely stock P-39 assemblies. After the doors were received in Cleveland, Chick LaJudice installed them on the racer and it was once again airworthy. In spite of mishap, Jay had earned fourth position on the starting lineup with a qualifying speed of 386.8 miles per hour.

But the competition facing Jay Demming and Cobra II this year was much more formidable than in the previous Thompson race. Jay had contended all along that Cobra II could show her heels to any and all save the powerful Goodyear F2G Corsairs. As it turned out, not one, but four F2Gs arrived for the races and all of them qualified for the Thompson. On top of this, Ron Freeman's bronze P-51 Mustang was back for another try. This was the same racer that had shown promise of pushing Tex Johnston in the 1946 Thompson until forced out early in the race. Paul Penrose, substituting for George Welch, had taken Freeman's plane into the third starting position behind. Cook Cleland's two F2G Corsairs. All told, the field was considerably stronger this year and Jay was sure to have a battle on his hands.

Monday, the last day of the races, featured the classic Thompson Trophy event which came at the very end of the program. The grandstands were packed with spectators and every road and field for several miles around the race course was crammed with onlookers. To augment the festivities, the weather turned warm and sunny after being extremely poor during most of the previous three days. While the aerobatics and pageantry of the program continued on, the planes of the Thompson contestants were towed out to the starting line some thirty minutes before takeoff. Jay Demming and his crew rode out with their plane and slotted into the fourth position from the pole. The field was muddy and soft in places from the previous day's rains. Cook Cleland's big blue Corsair became lodged in the mud just minutes before the race and Jay sent his ground crew down to help extract the big racer. They returned to Cobra II just in time

to get the powerful Allison started and warmed up before the gun went off.

With the flash of the starting signal, Jay bent the throttle home and once again, Cobra II was off and running in the Thompson Trophy derby. The dazzling acceleration of the light weight P-39 shoved its pilot hard against the seat as the racer gained momentum. Cobra II broke the bounds of gravity and quickly became airborne. Seconds later, the wheels retracted and Cobra II shook itself loose from the parasitic drag of the landing gear. In comparison with its challengers, Cobra II was a smaller airplane. The needle-nosed racer was a sprinter relying on a very favorable power to weight ratio to get it out in front of the pack and keep it there. In any comparison of brute horsepower, the plane was no match for the radial-engine F2Gs possessing over twice the cubic inch displacement and a third more horsepower.

Jay Demming pointed his mount in the direction of the scattering pylon near the west end of the grandstands and broke for the first leg of the course. Cobra II held the lead until the second lap when both Dick Becker and Cook Cleland pulled ahead. For the next three laps, Jay stayed in third position. In the sixth circuit, Paul Penrose nosed his bronze P-51 ahead of Cobra II, but his achievement was short-lived. His engine quit cold forcing him to land dead-stick on the airport. Once again, Cobra II moved into third position.

Jay used every inch of manifold pressure that the powerful Allison engine could provide. Static manifold pressure on the ground was 80 inches but once airborne, the engine picked up another 5 inches at full speed due to ram air pressure. The engine r.p.m. wound up to 3200 as Cobra II settled out over the course.

In the fourth lap, Cook Cleland edged past his racing partner, Dick Becker, and assumed the lead. Jay still trailed in third place but managed to keep Becker in sight. About half way through the twenty lap race, Jay knew that he was steadily gaining on the

big red and white Corsair that Becker was flying. As his fuel load lightened, Jay picked up a little speed and continued to close on Becker. Rolling into the turns nearly a mile ahead of the pylons, Cobra II was pulling four to five G's around each pylon. Straightaway speeds were now well over 400 miles per hour as Cobra II bore down on the Corsair. Jay was flying a beautiful race, reining Cobra II in tight around the track.

By now, Jay had lost track of the number of laps in the heat and excitement of the tension-filled race. The 1947 Thompson Trophy competition was the wildest free-for-all ever witnessed. In the confusion of the race horse start, thirteen aircraft took off which was one over the twelve qualified starters. In the end, Skip Ziegler, who was the unauthorized thirteenth starter, blew up his engine during the race and parachuted out of his disabled P-40Q racer. In addition to Ziegler, three other planes crashed, one of which claimed the life of the pilot Tony Jannazo. Before the race was over, seven of the thirteen starters would be out of the race.

Cobra II continued to press the second place Corsair as Jay coaxed the last ounce of speed from the yellow and black racer. Finally, on what Jay thought was the last lap of the race, he caught and passed the big Corsair. Since Jay had lost track of the laps, and had been relying on the hangar lights at the finish line for his count, he didn't realize until after the race was over that he had overhauled Becker on the twenty-first lap. Both men had piloted that extra safety lap and Jay's efforts were in vain.

Cobra II finished third behind Cook Cleland's two F2G racers. Jay's average speed was only three-tenths of a mile per hour less than second place winner, Dick Becker. The final tally would show that Cleland had averaged 396.1 miles per hour while Becker and Demming ran 390.1 and 389.8 miles per hour respectively.

Although Jay was saddened by the fact that he had come so close to owning second, the performance of Cobra II and its pilot left nothing at all to be desired. Jay had flown a great race, steadily dogging the big Corsair throughout. No other airplane in the race could match the performance or the endurance of the Cobra with the single exception of the two F2G's and they simply housed too much brute force under their cowlings.

After the races were over, Jay flew Cobra II back to Indianapolis which had become the racer's home port. Rollin Stewart wanted to create additional publicity with Cobra II so a series of inter-city speed runs were planned. Jay noted that Roscoe Turner, whose aviation operation was also based in Indianapolis, had always wanted to fly from Indianapolis to Chicago and back in one hour. This served as the basis for the idea of flying Cobra II between these two cities on the first of several anticipated speed runs.

The proposed flight to Chicago and back was an unofficial speed run and the record would not be recognized by official sources. In reality, it was done more for the publicity value in connection with Stewart's enterprises. None the less, at three o'clock one afternoon, Jay Demming slid Cobra II down the runway of Weir Cook Municipal Airport (Indianapolis), and climbed to 6,000 feet. Jay settled, back for the flight and brought the big Allison to 52 inches manifold pressure at 3,000 revolutions. This was, of course, significantly less than the power output obtained during the Thompson race. But, for the entire race duration, Jay had continually used his water-alcohol injection system and for this flight, there was none available.

The flight was relatively uneventful. Jay buzzed the control tower at the Chicago Municipal Airport and headed back to Indianapolis. Over northern Indiana, he ran into some rain storms which slowed down the flight somewhat, but in the end, he covered the 338 mile distance in 59 minutes and 18 seconds to better the predicted time of one hour flat.

Jay next flew Cobra II to Roosevelt Field on Long Island. Bill Odom, famed round-the-world flyer was

interested in obtaining the sleek P-39 for the coming year. After flying to New York to let Odom inspect the plane, the deal fell through and Jay returned Cobra II to Stewart in Indianapolis. Jay was now set to move to Idaho and resume his interests in the helicopter business, and he was forced to leave the racer behind.

1948

When the following summer rolled around and air racing time drew near, Jay Demming expected to again fly the Cobra in the National Air Races. He had a signed contract with Stewart to fly the plane as long as the latter owned the aircraft. However, unknown to Jay, Rollin Stewart had sold the plane to his attorney and thus the contract was broken. When he found out, Jay was "mad as hell", but in the end he decided not to contest the matter.

Stewart had in the meantime selected Allison test pilot Charles E. Brown to pilot Cobra II. Unlike the previous year, time was available to groom the P-39 for additional performance. Brown set about modifying the racer with the help of Allison's Don Nolan who was charged with the responsibility of developing the engine installation for Cobra II in time for the forthcoming races.

Under Nolan's supervision, the original racing engine was removed from the airframe and the last available spare V-1710-135 from 1946 was installed. The major changes included an increased blower capacity achieved through a gear ratio change and the return to a three-bladed propeller installation. The latter was a P-39 propeller assembly.

The Allison team reverted to the use of a stock propeller to regain more directional stability. The four-bladed fan had produced excessive torque and although the performance was exceptional, the flight characteristics of the racer had suffered. The airplane was so unstable directionally, that both Tex Johnston and Jay Demming had used a large ball indicator to show the direction of yaw. During flight, the pilots had applied whatever rudder pressure was necessary to keep the ball in the center of the instrument.

With the three-bladed propeller, the stability problems diminished. Decreased performance with this propeller was recovered with the new blower which resulted in manifold pressures up to 122 inches of mercury. The engine was now capable of over 2200 horsepower. Unfortunately, no provisions were made to increase the oil and prestone cooling capacities; an oversight that was to eventually defeat the Cobra in the coming events.

Externally, Cobra II received a great deal of attention to insure that the airframe was aerodynamically clean. The result was an extremely smooth outer skin with all seams covered, over except in the case of access panels. Sheet metal sections were fashioned to cover the after cabin windows and fair neatly into the fuselage contour. In the end, the entire airplane was repainted retaining the basic black and yellow color scheme of previous years. The racer was trimmed quite differently, however, as the control surfaces were painted with a checkerboard pattern of the basic colors. The license and racing number were unchanged, though the markings were considerably different as the racer carried the Kaiser-Frazer lettering symbolizing Rollin Stewart's automobile interests. Indeed, Cobra II lost its original identity and carried, the inscription "KF-1" on the nose.

Once again, the familiar P-39 arrived, on the scene at Cleveland, Municipal Airport, home of the National Air Races. Shortly before sundown on Wednesday, September 1st, Chuck Brown proceeded to establish an all-time high qualifying speed of 418 miles per hour during his two lap trip around the course. The twenty-five year old veteran fighter pilot had managed to top the previous record set by Cook Cleland a scant five



The revamped Cobra at Cleveland Airport during the 1948 National Air Races with the markings of Kaiser-Frazer auto dealer, Rollin H. Stewart. (Warren H. Bodie)



Cobra II as it appears in 1963, restored to war time configuration by Ed Maloney of Claremont, California. (Air Museum Photo)

hours earlier, by one mile per hour. With this mark, Chuck Brown earned for himself the pole position for the Thompson Trophy Race.

The 1948 Thompson race began as one of the fastest ever staged on a closed course. The principal combatants were again Cook Cleland's two big and powerful F2G Corsairs and Chuck Brown's revamped P-39Q-10 Airacobra. With its usual agility and phenomenal acceleration, the Cobra assumed the lead at the scattering pylon and forged ahead on the first lap. The two Corsairs moved in rapidly and gave chase with Dick Becker in second and Cook Cleland following.

During the initial laps, it was a three plane race for the front running position as Brown held on to a precarious lead challenged constantly by Cook Cleland's team of racers. In the third lap, misfortune caught up with Dick Becker as the air scoop atop the engine cowl- ing broke loose forcing his retirement from the race.

Cleland, however, matched Brown's blistering pace with each mile of the race. In the fifth lap, though, Cleland also lost his air scoop and this finished the Corsair. For the next fourteen laps around the course, Brown held undisputed lead. He lapped all the remaining contestants with the single exception of Anson Johnson's P-51D Mustang. Over this period, the field had dwindled down to only four planes including the Cobra. Mechanical difficulties had forced six other racers from the race in addition to the two Corsairs owned by Cook Cleland.

Chuck Brown continued to lean on the throttle in spite of the complete absence of any stern competition and during one lap, he posted a speed of 413 miles per hour. Unchallenged, the flashing Cobra swung into the 19th lap and was less than thirty miles from victory. Before the lap was out, though, the continued strain of full power operation caught up with the mighty Allison engine and forced Chuck Brown from the contest. His engine had failed him only minutes from the end of the race.

In retrospect, the Cobra might well have won the Thompson going away if sufficient cooling capacity for the oil and prestone had been available. The existing capacities, although modified in 1946 over the stock configuration, were insufficient to cope with the added power of the 1948 engine. Conversely, if Brown had chosen to reduce his power settings after gaining a strong lead, the existing set-up may have proved adequate. In short, ample pre-race flight testing for the estimated speeds and duration of the race would have determined optimum power settings. As it turned out, Brown averaged 392.4 miles per hour for nineteen laps of the 20 lap course. This was, ironically, some ten miles faster than the eventual winner, Anson Johnson.

Brown and the Cobra returned to Indianapolis. Soon after, Chuck Brown went to work for North American Avia-

tion and subsequently lost his life while participating in a demonstration flight for the company. For its part, the racer sat out the 1949 National Air Races and indeed, was all but forgotten. The moments of greatness for Cobra II had rapidly been eclipsed by time.

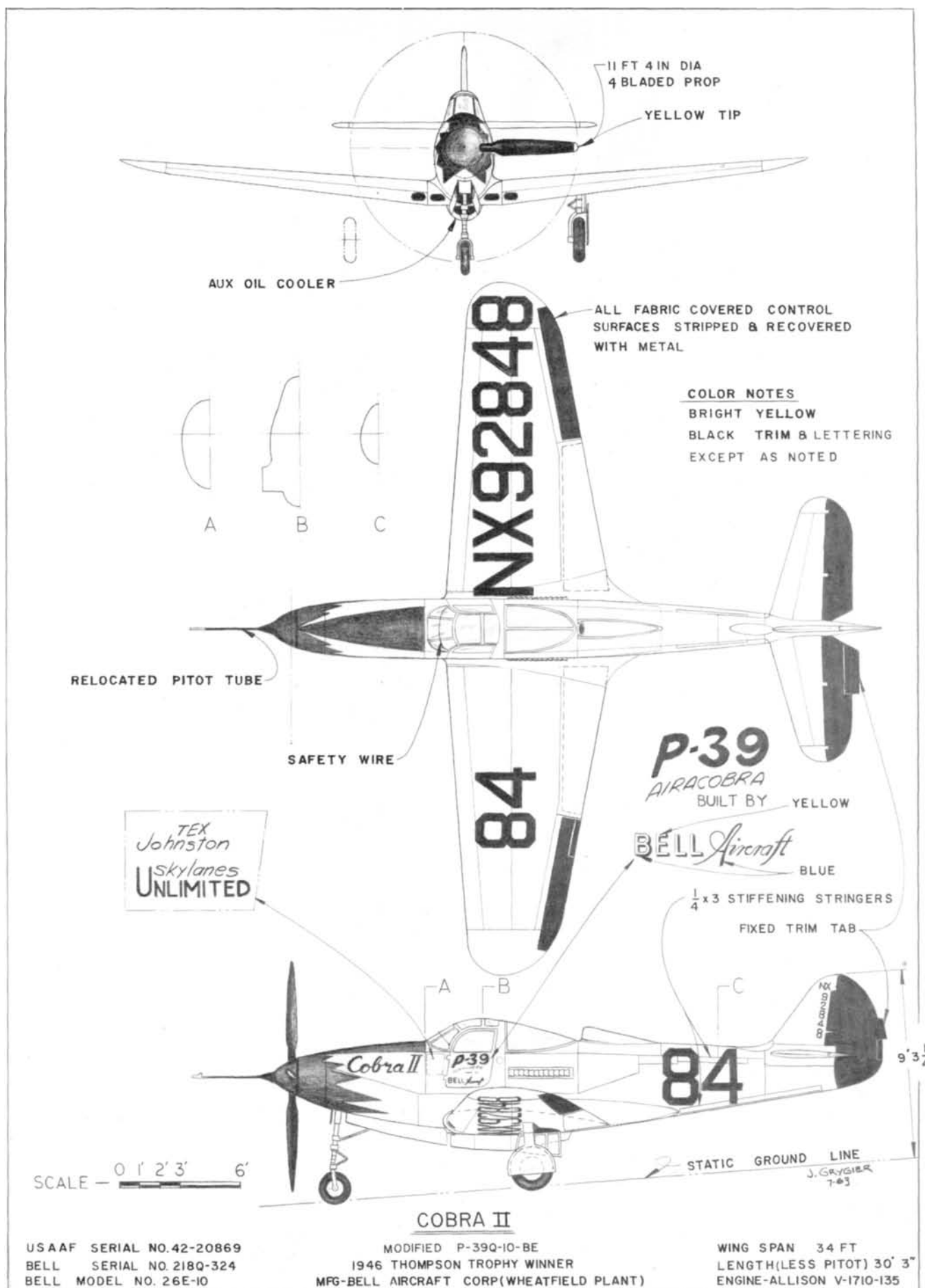
Finally, in 1960, Ed Maloney, curator of The Air Museum in Claremont, California, located the old racer and purchased the remains from Rollin Stewart. The next year, Ed trucked the aircraft cross country from Indianapolis to California where the old P-39 was restored to military dress. Ed has indicated that future plans call for a return to the 1946 Thompson Trophy winning version thus preserving an integral and colorful era of aviation.

EPILOGUE

With the resumption of the post war Thompson Trophy Races in 1946, another portion of aviation history began. There were many misgivings about the complete domination of big time air racing by the surplus military fighter aircraft. The enthusiast and perhaps the average spectator lamented the absence of the unique homebuilt racers of the decade prior to World War II. But as with all things, this colorful period of individualism and showmanship was irrevocably locked in the past with the advent of the second great war.

Undoubtedly, the post war National Air Races served a useful purpose both in the aviation world and to the public at large. To the military, the races offered an opportunity to display its wares and gain some measure of acceptance before the public and their representatives in Congress for the establishment of adequate peace time forces. For many in the civilian aviation fraternity, the races offered the challenge of competition and reward. A majority of the pilots entered in the events were mere youngsters during the previous era of air racing and the post war competitions presented a realization of long standing dreams. And to the public, tired and worn by the years of war and shocked by the development of the "cold war", institutions such as the National Air Races provided a measure of comic relief from everyday realities. In a sense, it was a momentary return to the "good old days" of barnstorming and carnival attractions.

But regardless of the purpose, it is difficult to objectively judge the post war races as colorfully inferior to the meets of the 1930's. The typically American traits of ingenuity and innovation were as prevalent in the late '40's as in the past. Pilots and crews developed the surplus fighters into unique variations which often times dramatically altered the familiar silhouettes of the Mustangs, the Lightnings, and the Cobras. Engines were boosted, beyond the



designer's wildest dreams. The resultant combinations were "both potent and colorful. In witness to these statements, one need only recall Bill Odom's beautiful "Beguine" racer with the coolant ducts mounted on the wing tips. In the same category were Charley Tucker's clipped wing P-63 Kingcobra, Anson Johnson's streamlined Mustang incorporating the air intakes in the wing leading edge, and, of course, the Bell revamped Cobra II with its inherent speed and acceleration.

There was no lack of color either, as the assorted racers were dressed in brilliant paint schemes with individualistic trim arrangements. When this is realized in conjunction with the increased speed of the second generation racers, the panorama of post war air racing is indeed exciting.

Perhaps the one dimension lacking in the post war events was the growth in the public's eye of strong personalities to match the Roscoe Turners, Jimmie Doolittles, and Benny Howards of the past. This might have again developed but for two reasons. First the post war races were conducted over the brief span of four years and this was hardly long enough for the public to identify itself with popular individuals. And secondly, most of the contestants were employed full time during the year as test pilots, airline pilots, fixed base operators, and a hundred other occupations in the rapid pace of the modern business world. Their work was for the most part, quite obscure from the public. The barnstorming era of the twenties and thirties was, by contrast, completely different. Popular heroes of aviation were continually in the headlines for their feats in local races, cross country dashes and assorted publicity stunts.

But if, for the most part, the new crop of racing pilots were not as colorful to the public imagination as their counterparts in the previous decade, this was only the result of the times. And in support of this contention, one need only review the career of Tex Johnston to substantiate the comparison. While gaining his technical education, Tex barnstormed in the thirties. When World War II forced aviation in the United States to mature rapidly, Tex made the transition and was soon employed by Bell Aircraft in the capacity of production test pilot and later, as an experimental test pilot. Following the war, Bell embarked on a series of experimental research airplane contracts and Tex became absorbed in the new field of rocket powered, sonic aircraft.

Tex moved on to Boeing next and participated in the B-47 program and later was assigned as project test pilot for the B-52 bomber. Today, Tex Johnston is Program Manager for Boeing's X-20 aerospace research plane being developed for the Air Force.

The story of Cobra II then, reflects a state-of-the-art advancement in air racing activities. From a

stock military fighter that was, in fact, considered obsolete even in the early stages of the war, a team of Bell Aircraft mechanics and pilots evolved a formidable competitor that was destined to outstrip the more fashionable and favored Mustangs and Lightnings. The product of their endeavor was a durable, high speed airplane capable of running with the best. During its three-year racing career, Cobra II was the only racer to match the speeds of the 4360 cubic inch Goodyear F2Gs which dominated air racing's post war classic. Perhaps this is the best tribute that can be paid to the team of Bell Aircraft personnel that created the Cobra.

ACKNOWLEDGMENTS: As with any compilation of historical material, this article was accomplished only through the efforts and assistance of a great many individuals. For this reason, I am especially indebted to Art Krege, Lefty McEuen, Harry Sylvies, George White, Jack Berner, and Joe Cannon of Bell Aerosystems Company (formerly the Bell Aircraft Corporation) for their generous cooperation. Art Krege deserves a special vote of thanks for sitting through a dozen or so "bull" sessions and patiently answering many, many questions regarding Cobra II and the events of 1946.

Ed Rice of Aerojet General Corporation helped locate Jay Demming and Tex Johnston for me and this proved invaluable. Subsequent correspondence with Jay together with the loan of his personal scrapbook substantiated the incidents of 1947 and 1948. Ed Rice also interviewed Tex Johnston thus providing me with the details of Tex's near fatal accident over the waters of Lake Ontario prior to the '46 races. The Public Relations Department of Allison Division, General Motors Corporation was helpful regarding Allison personnel connected with the races.

The majority of the photographs of Cobra II were graciously provided by the Public Relations Department of Bell Aerosystems Company as well as general arrangement drawings of the P-39Q Airacobra from which A.A.H.S. member Jim Grygier developed the accompanying drawing of Cobra II in fine style.

Specific detail and background information was obtained from various news clippings presented during the appropriate years in the newspapers of Niagara Falls and Buffalo, New York, Cleveland, Ohio and Indianapolis, Indiana. Reference was also made to Reed Kinert's book entitled, "American Racing Planes and Historic Air Races", and "Pilot" by Tony LeVier. Information on Tex Johnston's accomplishments and background were obtained from a short biography presented in the 1956/1957 edition of Air Progress. Finally, a note of thanks to all the other individuals not specifically mentioned who were equally helpful in the development of this article.