

## Often a bridesmaid but ...



The 1936 National Air Races saw the completely reconditioned Keith Rider R-3, now owned by Hal Marcoux and Jack Bromberg, and powered by the Pratt & Whitney "Wasp S1D1" engine. In the familiar Gilmore cream color with red trim, Earl Ortman piloted it to second place in the Thompson Trophy Race, following France's Michel Detroyat in his Caudron. (Photo - J.L. Bromberg)

### "THE BRIDESMAID"

The Story of Earl H. Ortman  
and  
The Marcoux-Bromberg Racer

By  
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In a small white barn on the western outskirts of Cleveland, Ohio, rest the remains of a veteran racing plane. As you enter the building and approach the fuselage, the pilot's name can still be seen lettered under the cockpit canopy. The name painted in black is that of the late Earl H. Ortman and the aircraft is the Marcoux-Bromberg Special. The wear and tear of continued racing as well as the ravages of Cleveland weather are quite apparent.

At present, the plane is in a dismantled condition with the wing and the engine removed from the fuselage for storage and the restoration work that lies ahead. In addition, most of the accessories and component parts have been stripped away for reconditioning. Under the careful hands of Rudy Profant, the present

owner of the aircraft, rehabilitation has begun. Assisting him in this difficult task is Robert J. Christensen, a Lead Mechanic for American Airlines.

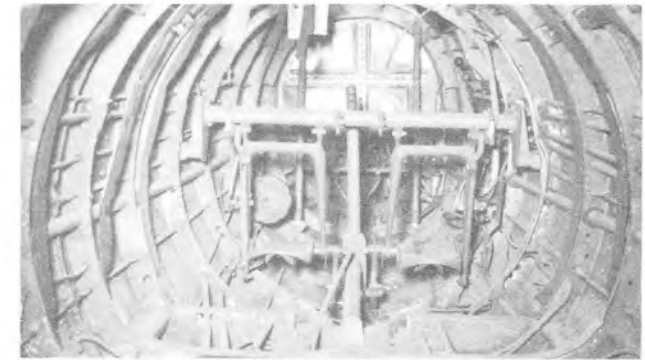
Originally, the only concern of the author was the preparation of a set of detailed plans of the plane in its present configuration. As the work progressed, interest grew in the various modifications that took place over the years. It soon became apparent that developing this information was hardly possible without simultaneously unfolding the biography of the people involved. And so the story goes back some twenty-nine years to 1933 when the Rider R-3 (as it was first designated) was conceived by its famous designer, Keith Rider.



R-3 as it originally appeared in the fall of 1934, too late for the Bendix Race. (Photo - Harry Gann)



Its maiden flight was marred by a crash and Jim Granger died of injuries, 2 October '34. (Photo-John Mitchell)



View looking aft from firewall inside the fuselage of the R-3, main fuel tank removed. (Photo - C.A. Bush)

The late Earl Ortman sitting on the Rider-Clark R-3. R-3 was not yet painted for the '36 NAR (Photo-Strasser)

In 1933, plans were under way for a long distance air race from London, England, to Melbourne, Australia. This of course, was the famous "MacRobertson" Race. When the wealthy Sir MacPherson Robertson stepped forward to sponsor this event, he donated a total of \$75,000 in prize money. This announcement spurred a great many people into action in the United States. Among these was California Keith Rider and his associates. (1)

The task of building his fourth racing plane was

(1) U.S. Department of Commerce, Aeronautics Branch, Certificate of Registration dated 16 May 1934: Signature of Keith Rider verifies correct spelling of his family name, i.e.; Rider, not Ryder as so often published.

begun by Rider in late 1933 with the experience gained from the B-1, R-1, and R-2 still fresh in his mind. The cost of financing this project was high even for the depression years. As a consequence, Rider turned to Mrs. E. B. Clark and H. W. Marcoux and persuaded them to invest in the venture of building and entering a plane in the forthcoming "MacRobertson" event. Edith Boydston Clark was secretary-treasurer of the Pacific School of Aviation at the time and it was she who provided much of the financial backing. Rounding out the key personnel for this undertaking was James E. Granger, who was selected to be the pilot.

Construction of the airplane took place in a West Los Angeles sash, door, and window-frame factory. After many long and difficult months of work, the finished product emerged in August of 1934 for flight tests. The R-3 was transported to Clover Field in Santa Monica for the initial hops. More problems followed, however, and the tests were delayed.

Meanwhile, Keith Rider had initiated formal government registration of the aircraft. On the 16th of May, 1934, the Department of Commerce granted the certificate of title for the airplane in Keith Rider's name. The model number was given as A-1 and a license number of X-14215 was issued. Fifteen days later the entries for the "MacRobertson" Race were closed. Although the R-3 was not destined to be a participant, the Rider group worked on unaware of what the future held in store for them.

Keith Rider was optimistic about the forthcoming

The R-3 as it appeared for its second flight from Canada to Mexico with Ortman on 3 July 1935 at an average speed of 236 m.p.h. (Photo-Peter M. Bowers)



event and estimated that his aircraft would complete the race in forty-four hours including a planned five hour delay in Singapore. The latter was needed to give Granger some rest during the grueling trip. In June of 1934, Jim Granger traveled to Europe to begin a study of the proposed route for the race. In the course of this mission, he flew out with K.L.M. Airlines to Batavia gathering maps and charts and reviewing the landing fields en route.

Granger returned to the United States armed with information and plans. Preparation continued on the plane. Probably as a warm-up for the "MacRobertson", entry was filed for the 1934 Bendix Transcontinental Race. The plane as it appeared prior to the Bendix was a cleanly designed, low wing monoplane with the fuselage of all-metal construction and all the rest was painted aluminum color with black identification numerals.

One of the reasons prolonging the start of flight testing was the lack of a suitable engine. Initially, arrangements were made with Pratt & Whitney to rebuild the "Wasp Jr." engine used by Lt. James Doolittle in his Laird "Super-Solution" during the 1931 Bendix. Conversion of this engine into a 375 horsepower S2A Series was under way when it was decided that a more powerful engine should be used. As a result, serial number 199, an experimental Series A Wasp Jr. was converted into a supercharged Model SB engine. This engine, developing 400 horsepower at 2200 revolutions, was shipped to the West Coast on 30 July 1934.

Assisting Rider with the installation of the new engine was Ivar L. Shogran, a power plant engineer for the Douglas Company. The final result included a close fitting metal cowling with large individual rockerarm fairings. A two-bladed Hamilton Standard propeller rounded out the power group.

On August 31st, the day of the Bendix Race, only three of the contestants managed to get away from the starting gate. Left behind for various reasons were Roscoe Turner, Lt. Murray B. Dille, and Jim Granger. With the loss of three entrants, the air race committee was prompted to send the following wire to the West Coast:

"...break the transcontinental record and you win \$3,500." (2)

The money was posted by Vincent Bendix and the next day, only Roscoe Turner was able to start. He successfully navigated the transcontinental route to win the added prize.

Misfortune still dogged the R-3 with the worst yet to come. Although nearly a year had elapsed, the plane had yet to be flown. The selection of Jim Granger as the pilot for the aircraft seems rather odd. Little could be found concerning his background other than he was an older man with an apparent lack of experience in major air racing events. The only significant event in which he participated that can be documented is the 1932 Cord Cup Race. This was a transcontinental handicap race won by Roy Hunt. Granger flew a Wright powered Swallow into seventeenth position for the western division. This type of flying is hardly comparable to testing an unpredictable, temperamental racing plane of unproven design.

Such was the situation when on 2 October 1934, the R-3 taxied out for the start of her maiden flight. During the take-off run, Granger lost control as the tail of the ship rose too high. The small silver racer twisted and nosed over gently smashing down on its back. As the tail surfaces gave way, Granger's head bounced on the runway surface resulting in the fatal injuries leading to his death. Ironically, damage to the racer was comparatively minor. The vertical fin and the cockpit were crushed. The only other scars from the accident were a bent prop and a damaged wing tip.

(2) Cleveland Press, 1 September 1934, p. 1.

Although Jim Granger was an excellent instructor and thoroughly familiar with the training planes of that era, he lacked the experienced touch of a professional test pilot. The circumstances surrounding this misfortune would seem to make the choice of Granger as pilot rather questionable. Following the mishap, damage to the plane was repaired. Having observed Granger's accident and being more familiar with the task at hand, Vance Breese successfully flew the R-3 for the first time. He recalls that one or two flights were made to check out engine cooling problems and handling characteristics. The ship handled reasonably well except for the limitations imposed by the light tail. Once he had proven that the R-3 was flyable, Vance Breese set about to earn the reward money posted by Earl Gilmore for a record run between Los Angeles and San Francisco.

The flight was made without incident flying at 10,000 feet with full throttle. Breese established the record which, incidentally, was later disputed by Roscoe Turner. At any rate, the R-3 was airborne and on her way to a successful career in air racing.

Returning for a moment to the 1934 National Air Races, the name of Earl H. Ortman appears for the first time on the entry lists. Flying the Menasco powered Bumblebee, (Rider R-2 license R52Y) Ortman completed in four small cubic inch displacement races placing in the money each time. Earl Ortman's participation in the Nationals was significant for it signaled the beginning of a long and fairly successful partnership with a Rider designed machine.

Born in Fort Gibson, Oklahoma, on the 10th day of January, 1912, Earl Hill Ortman was orphaned at an early age. He traveled to Pleasantville, Ohio, where he was raised by his paternal grandmother, Mrs. Benson Ortman. After high school, he again went west to attend the Hancock Foundation College of Aeronautics. It was here that his flying career began. Another school mate who was to play an important role in Ortman's future racing activities was Jack L. Bromberg. Earl Ortman's flying ability and air racing ambitions developed rapidly. Shortly after leaving school he began 'turning the pylons' culminating with the 1934 National Air Races.

Meanwhile, Jack Bromberg was employed as an engineer by the Douglas Aircraft Company. Through an association with Keith Rider, Bromberg became acquainted in turn with Harold W. Marcoux, also working for Douglas as Chief of Plant Protection. It was through the insistent urging of Hal Marcoux and Jack Bromberg combined with Ortman's flying skill that Keith Rider was persuaded to accept him as pilot of the R-3.

In contrast with Granger, the new pilot was a very young man. In spite of this, he had experienced big league closed course air racing. A comparatively short man of medium build, he was perhaps well suited physically for the task of an air race jockey. His quiet, unassuming nature evidenced the Cherokee Indian blood that was his heritage. This probably accounted for the fact that he seldom sought publicity in later years in spite of a very successful and consistent record of performance.

Despite the fact that the R-3 was now flying, there were other troubles ahead. With the country in the throes of a major depression, the R-3 went through a series of sit-down periods.

In early 1935, the Rider-Clark Aeroplane Corporation was formed with headquarters at 1800 Pontins Avenue, West Los Angeles, California. The president was Keith Rider and presumably, Mrs. Clark was still supplying the financial backing. On April 30th of that year, the R-3 was sold by Keith Rider to the Rider-Clark organization. Ortman began his new duties as pilot and flew the plane for the first time in June, 1935. At the time, preparations were being made to set a new inter-city record between Vancouver, Canada, and Agua

Caliente, Mexico during the coming summer.

On the morning of July 3rd, Ortman lifted the R-3 away from the Vancouver airport and pointed her nose southward. He sped into Mexico touching down at Agua Caliente just 5 hours, 27 minutes, and 48 seconds after take-off besting the old record by 1 hour and 12 minutes. The 1400 mile distance had been negotiated at an average speed of approximately 250 miles per hour. This record stood for over two years until Frank Fuller, in his Seversky racer, traveled the same route in 4 hours and 54 minutes to better Ortman's mark by 34 minutes.

During the year of 1935, Ortman added to his knowledge of experimental aircraft by performing the test work on Waldo Waterman's "Flying Wing". This effort continued until the plane successfully passed the tests.

As the summer rolled along it was soon time for the National Air Races to be staged at Cleveland, Ohio. Once again it was decided to race the R-3 by entering both the Bendix and the Thompson Trophy Races. This type of competition would be rugged, and in an effort to meet this fact, a new and more powerful engine was installed prior to the Bendix. Because the decision was made at the last minute, the job was very rushed.

The original Wasp Jr. was removed and an SLDL direct drive Wasp engine installed in its place. The new engine, serial number 5492, developed 550 horsepower turning 2200 revolutions per minute at 5000 feet. This engine was actually built in 1933 and shipped to Boeing for use in the prototype 247-D airplane. The engine began life as an S4DL-G, being converted to an SLDL-G in 1934 while still at Boeing. The engine eventually was purchased by United Airlines along with the 247-D only to be discarded at a later date in favor of the newer S1HL-G series Wasps. Ortman arranged for the use of this engine and Pratt & Whitney performed the conversion to a direct drive model SLDL. As a result, this engine, like its predecessor, was used by Ortman on a rental basis with Pratt & Whitney. All of this activity occurred at a time when Mrs. Clark was away on a world cruise. Without her financial backing, both time and money were in short supply.

The plane was readied just twenty-four hours before the start of the race. On this day, the 29th of August, Ortman took the R-3 up for a test only to have the cowl jump forward into the prop during the flight. After landing, the damage was surveyed and it was decided to complete with temporary repairs. Ortman drew first position in the staggered take-off system employed in the Bendix Race.

At 4:25 A.M. the following morning, the R-3 sat on the taxi apron in the pre-dawn blackness waiting for the starter's signal. Bright field lights reflected the silver finish of the plane and set it off from the dark background of night. The new Pratt & Whitney Wasp engine ticked over idly as Earl Ortman, dressed in white coveralls and helmet, crouched in the cockpit. At exactly 4:30 A.M., the throttle went forward and the big engine responded pulling the R-3 down the runway. With a full load of fuel, Ortman eased the racer into the air and headed east for the long flight ahead.

It was strictly a patched up airplane that began the long journey toward Cleveland that early morning. The hurried efforts and the limited funds available for the pre-race preparations began to show their effects. As the plane approached Kansas, a split developed in the main gas tank. Ortman was forced to land at the Kansas City Airport and abandon the race. With all hope gone for a slice of the prize money, Ortman proceeded with emergency repairs and eventually flew into Cleveland before the start of the Thompson Trophy Race. His trip was in vain, however, since the racing committee refused to allow the plane to compete. It was declared unsafe to fly in the Thompson. Beside the damaged fuel tank, large portions of the cowl were chewed up and the prop was nicked from the previously mentioned mishap.

The task of putting the R-3 back into airworthy condition fell to Jim Borton, owner of the General Airmotive Corporation at Cleveland's Municipal Airport. Borton's hangar attracted many of the racing fraternity because of its extensive facilities for aircraft repair and maintenance. The greatest problem facing the repair crew was fixing the main tank. "It seemed as if the airplane had been built around the gas tank", Borton stated in an interview for this article. (3) The criticism was not far from the truth since the main tank, combined with the second tank, extended from the firewall to a point just forward of the pilot's compartment. In addition, another fuel tank was positioned in the wing center section for increased fuel capacity.

After the work had been completed, Ortman flew the ship back to the West Coast. But this flight did not begin without its share of difficulties. The expenses of entering the races and the subsequent repair bills had left Ortman without a cent. While at Cleveland, Jim Borton had to loan the pilot enough money to return to the Coast. (4) In fact, to collect the money to repairs, Borton eventually had to turn to the Gilmore Oil Company which had sponsored the airplane. (5) More troubles followed, for the R-3 was grounded in California for several months by labor liens against the Rider-Clark Aeroplane Corporation.

So ended 1935, a year filled with frustration and only limited success. In appearance, the R-3 was little different from the 1934 version. With the exception of a new engine cowl, only minor refinements were made. A ten watt, self-contained radio transmitter had been installed for the Bendix. Most significant of the changes was an alteration to the undercarriage. This was accompanied by the addition of narrow, vertical fairing strips running from the leading edge of the wing to the center flap section. The purpose of this was to increase the streamlining along the main strut of the landing gear in the retracted position.

One more passing comment is worth relating before closing the 1935 chapter. Much earlier in the year, the Army Air Corps sponsored a design competition for single seat pursuit aircraft. Few people know that the R-3 served as the basis for a fighter plane proposal submitted in the May 6th competition. Officially known as the R-5, the aircraft never got off the drafting board. It did, however, bear a strong resemblance to the 1935 version of the R-3 in general layout. The twenty-two and one-half foot airframe incorporated a Pratt & Whitney Twin Row Jr. engine bringing the gross weight up to 4050 pounds. High speed was estimated at 276 miles per hour at 10,000 feet, with a service ceiling of 29,500 feet. The R-5 design was also indicative of things to come for subsequent modifications to the R-3 followed closely the design innovations of the fighter plane proposal.

Doing a major share of the engineering for the R-5 proposal was Douglas engineer, Jack Bromberg. As his sales representative at Wright Field during the competition, Rider secured the services of Major John A. Macready, famous retired Army flier and one-time partner in the adventures of the Rider B-1 racing plane of 1930. In spite of the work that went into the proposal effort, the R-5 design failed to gain favor with the Army and was eventually shelved.

The year 1936 marked a definite turning point for Earl Ortman and the R-3. The continued financial problems that had plagued the Rider-Clark group might

(3) Statement by Mr. James Borton, President, General Airmotive Corporation on 11 March 1961.

(4) Ibid.

(5) Ibid.

have curtailed further competition by this pilot and his plane. In the same year, however, Ortman was employed by the Douglas Aircraft Company's Santa Monica Division. With Douglas, he worked as a mechanic on DC-2 and DC-3 aircraft. United with Jack Bromberg and Hal Marcoux, Earl Ortman was able to inject new life into his racing ambitions. On July 18th, Hal Marcoux took title to the airplane following earlier arrangements. Work was immediately begun to prepare the R-3 for the coming National Air Races.

The modifications which took place were extensive. The plane was almost completely torn down. New fuel tanks were made, presumably to eliminate another occurrence of last year's difficulties. A new cowling, made to Jack Bromberg's specifications, enclosed a completely reconditioned engine. The major overhaul was the work of Ralph Bushey, another familiar name in racing circles. The airframe received a much needed rejuvenation with the replacement of large sections of the fuselage skin. Further, the plywood wing surface was increased to one-eighth of an inch in thickness. The leading edge of the NACA 23012 airfoil section was blunted to improve stall characteristics.

This plane incidentally, was probably one of the earlier ships to incorporate that particular airfoil. A formal analysis of the 23012 section was not published until 1935. (6) Construction of the airplane, however, began some two years earlier. The airfoil, which was to become extremely popular in the years to come, possessed many desirable characteristics. It produced a relatively high lift and excellent lift over drag ratio. One inherent drawback though, was a large loss of lift when the airfoil stalled. (7) Evidently Ortman found this to be true in the flight characteristics of the R-3 and hence, the leading edge was modified. The same result might have been obtained by reducing the incidence at the wing tips. (8) This may well have necessitated, however, the costly construction of a new wing.

The most noticeable change in the outward appearance of the plane was an open cockpit arrangement. With the installation of the big Wasp SLDI engine, the balance of the aircraft was affected. Consequently, it was necessary to relocate the oil tank behind the cockpit. As a result, excessive heat was encountered. Lack of time in which to devise an adequate method of ventilating the cockpit, coupled with a poor visibility condition, led to a quick decision to remove the canopy leaving only the windscreen.

The Gilmore Oil Company again sponsored the plane and the color scheme of cream with red trim closely resembled Roscoe Turner's 1932 Wedell-Williams racer. Perhaps for the first time, the aircraft was actually in good flying condition. And the new, colorful paint job was symbolic of the coming events at the National Air Races.

The effects of a thorough reconditioning can be seen from the results of the initial test flights. The indicated speed at sea level was up to 312 miles per hour at 2425 revolutions and 49 inches of mercury. Ortman took the R-3 around a ten mile square course and reached an average speed of 272 miles per hour.

This year the races were transplanted from Cleveland to Los Angeles. The events were to take place at the Municipal Airport, September 4 through 7 with \$70,000 to be awarded in prizes. A decision was made to go all out for the Thompson this year and neglect the

(6) Ira H. Abbott, Albert E. von Doenhoff, and Louis S. Stivers, *Summary of Air Foil Data*, Report No. 824, National Advisory Committee for Aeronautics; Washington; Government Printing Office, 1945, 264 pp.

(7) Fike, W.J., *Practical Lightplane Design and Construction for the Amateur*, Anchorage, Alaska: W.J. Fike, 1955, p. 11.

(8) *Ibid.*

Bendix Race. Consequently, Ortman rammed the R-3 around the course in the qualifying trials at an average speed of 258.9 miles per hour, with one lap at 278 miles per hour. In spite of this acceptable showing, the tone of the meet was soured when France's Ace, Michel Detroyat qualified at 273.5 miles per hour on the first day of the races. His Caudron racer was a superb machine. When Detroyat took the 550 cubic inch event on Friday and the Greve Trophy Race on Sunday, it became all too clear that he was the man to beat in the Thompson.

On Monday afternoon, Ortman brought the R-3 up on line for the race horse start of the Thompson Trophy Race. His body had been tightly taped to reduce the strain of sharp, near vertical pylon turns. With the open cockpit arrangement, it was also necessary for Ortman to secure his flying helmet with tape. These measures were a far cry from present day modern flying suits.

The weather had been poor that day with fog threatening postponement of the big event. The starter's flag dropped on time, however, and the contest began with a roar. The Caudron, equipped with a controllable pitch prop, was never headed as it leaped from the ground and turned the initial pylon. Detroyat's commanding speed started to show by the third round as he began lapping the other contestants. The R-3 had been slow getting off the ground with five other planes leading at the scattering pylon. Once off the ground with the wheels tucked away, the power of the Pratt & Whitney allowed the R-3 to work its way into second position. And this is the way the race ended, with the R-3 trailing the Caudron across the finish line some eight or nine miles behind. The Frenchman had managed to lap the entire field with the exception of Ortman and thus stirred up a heated controversy over his government-supported aircraft. For the pilot of the R-3 though, it was a significant achievement. The plane had done well even if it had to settle for second place. It was America's best during the year of 1936.

Ortman's radial engine racer was unique in that all of the other contestants in each of the closed course events had flown aircraft with inline engines. Many were quick to point out that the days of the radial engine for racing aircraft were numbered. Advocates of the inline engine powered craft cited advantages in streamlining techniques that would offset the greater power of their radial rivals. It was an unending controversy. Another point worth noting about the race results was the fact that Keith Rider designed aircraft took home a majority of the prizes in the major events.

After several flights following the races, Ortman and company set about to again rework the R-3 for the 1937 campaign. The basis for this decision was the acquisition of a Pratt & Whitney S2A5-G Twin Row Wasp Jr. engine. The serial number was 422 and during the course of its life, described a rather curious history. Originally built as an S1A5-G production engine for the U.S. Army in March, 1936, the engine entered the company's Experimental Department for testing. On April 21st, a major failure occurred. A replacement engine was built for the Army and serial number 422 eventually was rebuilt into an S2A5-G model and shipped to Earl Ortman in Santa Monica on June 14, 1936. The engine was unique in that it was the only one of its type ever built by Pratt & Whitney. (9) Even though the engine was received by Ortman prior to the 1936 Nationals, it was never installed for the races. For some unknown reason, it was later returned

(9) Engine S/N 422 began life as an R-1535-11 (S1A5-G) and as indicated, was later converted to an S2A5-G. During W.W. II, some Northrop A-17A aircraft used an R-1535-13 engine also designated as S2A5-G models for export to the British. Hence, S/N 422 was a unique engine; the only one built by Pratt & Whitney.

to the factory for a second extensive rework.

The same engine was returned to Ortman in June of 1937. By this time, it had been converted to a "B" Series engine with potential "B" power ratings. Oddly, the designation of this engine (including the data plate information) never changed through these and subsequent modifications.

One of the major changes applied to the engine during 1937 was a change in the supercharging. The normal gear ratio for the S2A5-G was 8.7:1. When the engine was shipped from the factory in 1936, the gear ratio had been boosted up to 11:1. By the time the engine was finally installed in the airplane, the supercharger drive gears had again been changed to give a ratio of 12:1.

Under the critical eye of F.J. Roberts, another Douglas employee, the task of rebuilding the R-3 began. The fuselage was revised and stressed to accommodate the heavier weight of the new engine. Stronger longitudinal stringers were utilized. Added to this was a heavier gage fuselage skin from the cockpit forward to the firewall. A new engine mount was designed and fabricated by Jack Bromberg which would permit easy removal and rapid engine servicing. To absorb the increased power of the engine, a three-bladed Hamilton Standard controllable pitch propeller was used. The exhaust collector and cowling were obtained from an experimental Northrop A-17A to finish off the engine installation.

The fuel system was again revised and the capacity of the tanks increased. The total fuel capacity after modification was 240 gallons. The main tank alone held 125 gallons. This tank was also equipped with DC-3 type dump valves. All three fuel tanks utilized Douglas filler necks permitting the use of two and three refueling hoses at the same time. The reasoning behind these changes is obvious. Ortman planned to take another shot at the cross-country Bendix Trophy Race again. These alterations would provide added safety features as well as facilitate rapid ground servicing at refueling stops.

In overall appearance, the R-3 had changed quite a lot. The pilot's seat had been moved aft approximately one foot. Coupled with this alteration, it was decided to revert to an enclosed cockpit. A small scoop appeared on the heretofore smooth unbroken line of the fuselage undersurface. Through this scoop, a stream of fresh cool air entered a small heat exchanger and allowed the engine oil to be maintained at proper temperature. The flow of air was regulated through a shutter system giving a measure of temperature control.

These modifications served yet another functional purpose. The weight of the new engine drastically altered the center of gravity of the plane. By installing the oil cooler and moving the cockpit it was felt that the situation would be eased. Actually, the fuselage was slightly lengthened on the forward end to accommodate the engine installation. All of these changes contributed to the illusion of a much longer airframe. Topping off the near complete rework was a fresh coat of black paint. The result of all this effort, which took place in an abandoned casket factory, was a significant change in the performance of the aircraft. A press release stated:

"Engineer Jack Bromberg in collaboration with Douglas performance engineers has made some high speed calculations on Ortman's plane ranging from 366 to 389 m.p.h." (10)

This was a somewhat optimistic (if not exaggerated) claim but it made good press copy. In reality, no accurate speed checks were made prior to the big races. It was Ortman's belief though, that the plane was capable of a maximum speed of around 340 miles per hour.

(10) National Air Race press release, dated 2 Sept. '37.

The increase in speed was not brought about without sacrifice. In this case, the extensive modifications took their toll of the handling and flight characteristics. This was especially apparent at lower speeds. In fact, at anything less than 80 per cent of full power, there was a significant tendency for the R-3 to mush through the air. Directional instability was noted and longitudinal control suffered excessively. The elevator control was found to be very soft; so much so, that low speed flying was not safe. In spite of this, Ortman was soon to fly in the grueling events of the coming National Air Races in Cleveland.

It is interesting to note that two other significant changes were planned for the R-3 but never accomplished. The first was an alteration to the vertical stabilizer and rudder assembly. The rudder was to be cut down and squared off at the top with the vertical fin then reworked to overlap the top of the rudder. This was not done because of the inherently poor directional stability already present. A further decrease in rudder area was quickly ruled out. The second change, a modification of the landing gear, would have added to the streamlining of the wheels in the retracted position. It was planned to add housings which trailed the retracted wheels and gradually faired into the trailing edge of the wing. These were never installed due to unreliable attachment fittings. Since no problems had been incurred with the retractable landing gear to date, reliability was placed ahead of any streamlining benefits which might have been obtained. In appearance, the housing design closely resembled that used on the Army's P-35 aircraft.

Expectation in the Ortman camp must have soared quite high as plans for the '37 races were drawn. Entry forms for the Bendix and the Thompson had been submitted. Earlier in the year, Howard Hughes had established a new trans-continental speed record. His flight, from Los Angeles to New York, required 7 hours, 28 minutes, and 25 seconds and was accomplished at an average speed of 327.5 miles per hour. With the increased speed of the R-3, Ortman felt that he had a chance to break this mark during the course of the Bendix. The itinerary for this race included planned refueling stops at Amarillo, Kansas City, Cleveland, and then on to the East Coast for the record. An attempt on the three kilometer speed record would next be sandwiched in between the Bendix and the Thompson races.

On Friday, September 3, the Bendix contestants took off from Union Terminal at Burbank, California. In Cleveland, meanwhile, the program was kicked off with several closed course races and the usual intermediate events. Later in the afternoon, the Bendix racers began to make their appearance. The first to cross the finish line was Jacqueline Cochran whose elapsed time earned her the show position. Next, Frank Fuller's Seversky roared in long enough to take fuel aboard and continue on to Bendix, New Jersey, for the top money of the event. In the meantime, Ortman fought the R-3 through two thirds of the trip only to run into trouble on the last leg of the journey. Running into foul weather, he attempted to skirt it and in the process climbed too high. Lack of oxygen equipment proved to be costly as he became woozy and drifted off course. He became lost and eventually would up over Lake Michigan. Gaining new bearings, he made it into Cleveland just 11 minutes before the 6:00 p.m. deadline. In spite of this, his elapsed time of 9 hours, 49 minutes, and 22 seconds was sufficient for second place. This piece of unfortunate luck shattered the optimistic plans for the cross country event.

Two days of rest and an opportunity to put the final touches on the R-3 remained before the coming Thompson Trophy Race. Finally, on Monday, September 6, the day of the big race arrived. On that Labor Day afternoon Ortman sat in the cramped cockpit anticipating the competition about to begin. With him on



Ortman replaced the engine with a direct-drive "Wasp" for the 1935 Bendix Race. (Photo - C.G. Mandrake)

the starting line were eight other contestants. Only the day before, he had won the second Thompson qualifying heat with a speed of 248 miles per hour. This was some six miles per hour faster than that of Frank Sinclair, winner of the first heat qualification trials. At that point, everything looked good. By Monday noon, however, both Steve Wittman and Colonel Roscoe Turner had nailed down starting berths by taking first and second respectively in a special qualifying race that morning. Both of these pilots had bettered Ortman's speed by some twelve miles per hour. As the seconds ticked away during the final minute before the gun, perhaps these thoughts raced through his mind.

The starting signal sounded and simultaneously nine sleek, colorful racers shot forward toward the scattering pylon. Marion McKeen bounded the Brown B-2 racer into the air first but was swiftly overtaken by most of the field before the first turn. Sinclair tucked the landing gear of his big silver Seversky into the wings and forged ahead.

A few hundred feet behind were Art Chester, Ray Moore, and Turner. In the initial scramble, Ortman and Joe Mackey jumped off close behind the leaders. C.H. "Gus" Gotch and Rudy Kling completed the field. The drama that was to unfold in the ensuing laps began at the very start of the race. Unheralded Rudy Kling, whose cream-colored Folkerts racer was slotted in the eighth position at the starting line had gained seventh place by the time he rounded the first pylon. By the end of the first lap Kling would have moved into sixth position.

In spite of his lagging take-off, Wittman's powerful Curtiss D-12 engine pulled him ahead of the field, and at the conclusion of lap one he lead the pack. He was to continue this pace with monotonous regularity for the next fifteen trips around the course. Ortman meanwhile, steadily worked his way forward until only Steve Wittman remained before him. As the race continued, the contestants began to stretch out along the course. The race was on and the spectators could settle back on to their seats. The take-off and first few laps had gone off almost without incident. The only cause for anxiety had occurred during the take-off when Rudy Kling swerved to avoid colliding with Ray Moore's blue and yellow Seversky.

Ortman pushed the R-3 and clung to second place throughout the first nine laps. He was running at 2675 revolutions and pulling over 48 inches manifold pressure. This was nearly 12 inches above rated take-off power.

Almost unnoticed, Kling eased the Folkerts into fifth place, and if by coincidence, this occurred on the fifth lap. He was to maintain this position until very near the end of the contest. During the ninth lap, Roscoe Turner pulled ahead of Ortman. For the following five laps, the top four positions were held by Wittman, Turner, Ortman, and Sinclair. It appeared as if Steve Wittman was close to earning his first Thompson Trophy. Things began to happen during the thirteenth lap. This proved to be the unlucky circuit



In 1936 the R-3 became the Marcoux-Bromberg "Special". Top speed was now to 312 m.p.h. (Photo-Strasser)

for Marion McKeen as the old Brown Special dropped out of the race. By this time, Kling was moving up on Sinclair. The dispute for fourth place continued until the fifteenth lap when Kling slipped past to take possession. Neither the announcer nor the crowd sensed Kling's steady advancement. Attention was settled on the blazing pace set by Wittman in his awkward looking but extremely fast airplane.

Events now began to take place rapidly. Suddenly, in the seventeenth lap, Wittman pulled up high and simultaneously throttled back. His commanding half-lap lead disintegrated as Turner and Ortman shot past. At the end of the next lap, Kling had followed suit and Wittman dropped back to fourth. It was not until after the race was over that the cause of Wittman's misfortune became known. Evidently a stone had hit the prop during take-off and the vibrations that were set up eventually loosened an oil line. This was his undoing. Wittman reduced power and limped along to finish the race. His blistering pace up to the time of the accident accounted for the fact that he was still able to salvage a fifth place in the final tally.

It now looked as if Turner would be able to burn the mortgage papers on his new racer as he clipped along in the lead. Ortman hung on to second with Rudy Kling close behind in third position. Sinclair was back in fourth by virtue of Wittman's difficulties.

But the excitement was far from over. Joe Mackey dropped out of the race with engine trouble. The leaders swept past the grandstands at the end of the nineteenth lap and headed for the backstretch. At this point, misfortune struck Turner. Afraid that he had cut a pylon, he wheeled the bright silver "Meteor" around and recircled the marker. Undoubtedly his mind must have flashed back to the 1933 Thompson when, having finished in the lead, he was disqualified for cutting a pylon and not immediately recircling as the rules require. Now with the late afternoon sun partially blinding his visibility he reacted swiftly. This move cost him the front position though, as



In 1937 it became more powerful with "Twin Wasp Jr." new mount, Northrop A-17A cowl. (Photo-C.F. Reynolds)



R-3 as Number 4 in the 1937 Thompson Trophy Race.  
(Photo - William F. Yeager)

Ortman instantly streaked past followed quickly by Kling.

Earl Ortman had apparently inherited the victory. As the R-3 approached the last turn, Kling's Folkerts rode close astern but noticeably higher. Unexpectedly, the nose of the Folkerts dropped as Kling desperately gambled on the increased momentum of a shallow power dive to slip past Ortman. The roar of the crowd was almost as intense as the throbbing engines. It wasn't until after Rudy Kling landed and rolled to a stop that he discovered the coveted Thompson Trophy was his. In the heat and confusion of the race, he hadn't realized that Ortman held the lead coming down to the finish line.

In the photo finish, Earl Ortman had to settle for second place just two tenths of a second behind the winner. Fate had intruded during the last minute of the contest and taken victory away as quickly as it was given a few miles before. Never again would the R-3 come so close to winning the Thompson Trophy Race. And never again would the race be so closely contested. One can only imagine the terrific release of tension and the emotional let-down after 200 miles of hard fought competition. But then there was always the next year and another Thompson Trophy Race.

A post race diagnosis of the failure of the R-3 to live up to its potential indicated that the sparkplugs did not stand the gaff of the increased engine boost. The resultant loss of power contributed to the airplane's showing.

On the trip back to the West Coast, a gas leak developed in an inside stand-pipe vent of the main tank and due to its relationship with the inside stand-pipe, fuel poured out of the tank until the initial forty gallons were consumed. The location of the leak made repair expenses prohibitive. For this reason, no attempt was made to fix the trouble spot. In fact,

this defect still exists and will probably never be corrected.

Returning to California, Earl Ortman and the R-3 were engaged by Metro-Goldwyn-Mayer to perform the racing scenes for Clark Gable in the picture "Test Pilot". Following this Ortman worked for the Speer Flying Service in San Diego. His racing career was soon furthered as plans were announced for the Pacific International Air Races to be held in conjunction with the Golden Gate Exposition of May 1938.

The events were to consist of three closed course races. The first two would be for engines of 550 cubic inch displacement or less, and would take place on the 28th and 29th of May, 1938, respectively. The final event an unlimited free-for-all was scheduled for May 30th, the third and last day of the races. This contest was 150 miles long and wound around a tight eight and one-third mile course.

Many well known pilots gathered in Oakland, California for the coming program. Among them was Earl Ortman with the aging Marcoux-Bromberg R-3 racer. Other entrants in the featured Golden Gate Exposition Trophy Race included such veterans as Roscoe Turner and Steve Wittman as well as newcomer Tony LeVier in Bill Schoenfeldt's "Firecracker". In this plane, LeVier promptly demonstrated his flying abilities by grabbing off the first two races and illustrating that he would have to be reckoned with in the big race despite his limited experience. The Keith Rider designed "Firecracker" was a magnificent racing steed and combined with this young pilot's flying talents, posed a definite threat to the other contestants.

The day of the feature event arrived. At exactly 3:17 p.m. the starter's flag dropped signaling the beginning of the most exciting closed course race



MGM leased the R-3 for the motion picture "Test Pilot", with Clark Gable. Reg. No. used for film only.



Early in 1938 the R-3 looked like this. Photo taken at Sunnyvale prior to Golden Gate Exposition Trophy Race.

ever witnessed. The next 150 miles around five pylons produced a thrilling duel between Earl Ortman and Roscoe Turner. During the take-off, Ortman, Turner, and LeVier rocketed off the ground almost simultaneously. Earl Ortman took the lead and was followed closely by Roscoe Turner. The "Firecracker" staggered back of the field as LeVier cranked the retractable gear into place. This was a characteristic of the plane. To bring the gear up, LeVier had to climb out sharply and throttle back to facilitate the operation.

Ortman maintained his lead flying a low course seldom above 400 feet. Each turn was vicious and left no margin for error. LeVier quickly worked his way up to third position. A duel immediately began between LeVier and Turner for second. By the end of five laps, the race had stabilized with Turner's "Meteor" riding close behind the R-3 and the "Firecracker" bringing up a competitive third. At the outset of the sixth lap, LeVier made his bid for the lead. With his engine opened up for the first time in the race, he noticed the oil pressure dropping rapidly and quickly throttled back. Ortman's only challenger now was Roscoe Turner. At the end of ten laps, Turner was riding on the tail of the R-3. The battle continued with Ortman and Turner exchanging the lead several times. In contrast to Ortman, Turner flew higher and neutralized the former's advantage of a short tighter course by diving on his opponent and closing the gap. The issue was still in doubt as both planes skidded around the last pylon and headed for the finish. The last lap proved to be the fastest one for the R-3 as Ortman pushed home at 273 miles per hour. In the end, Ortman streaked across the finish line a scant 100 feet ahead of Turner. The R-3 had averaged 266 miles per hour for the 150 mile grind. This was Ortman's first major victory and must have been particularly satisfying since the contest was hard fought and the margin of triumph extremely narrow. Coupled with the decision was a new closed course record; a pretty fair day's work.

For his part, Colonel Turner was prone to scoff at the results of the race. Never one to hide his feelings from the public, he stated that it was... "a little secondary race of minor importance" (11) In view of the record performance, total distance of the race, short and rugged course, and the calibre of competition, however, Ortman's feat speaks for itself.

Not content with this accomplishment, Ortman prepared for a record attempt between Oakland and San Diego. Just two days after his closed course victory, Ortman slipped into the cockpit of the R-3 and taxied out to the end of the Oakland Airport runway. At exactly 12:00 noon, the throbbing R-3 left the runway and headed for San Diego. Bucking a 15 mile an hour headwind, Ortman rode the plane up to 8000 feet. At 1:10 p.m. the R-3 passed over Los Angeles. Ortman radioed his position and indicated that everything was satisfactory. Thirty-eight minutes later, Ortman rocketed into the North Island Naval Air Station with an elapsed time of 1 hour, 48 minutes, and 1 second. His only worry during the 264 mile per hour trip had been whether the fuel supply would last.

In the ensuing weeks, work was begun on the R-3 to improve its performance for the next assault on the Thompson Trophy.

One of the most obvious changes made to the airframe was the swelled portion installed behind the engine cowling. When the Twin Wasp Jr. engine and A-17A cowling were mounted on the ship in 1937, there remained a difference of some six inches between the diameters of the cowl and the major fuselage section. In an effort to improve the streamlining and air flow around the cowl and immediately behind the firewall, a false built-up covering was fabricated. This cir-

cular fairing extended from the firewall aft a distance of forty-two inches from a smooth sloping contour from the cowl into the fuselage. The new section was a balsawood buildup with a fabric covering. Because of this, a stainless steel shield was installed on the starboard side of the fuselage to protect the new surface from hot exhaust gasses. Ironically, subsequent flight tests indicated that all this effort had a negligible effect on performance.

Two air scoops were added to the forward portion of the fuselage. One scoop, to provide the up-draft carburetor with an improved air supply, extended from the lip of the cowl along the bottom centerline to the carburetor intake. It actually amounted to an extension of the original scoop and was designed to increase the ram air pressure.

The short scoop fitted about twenty degrees to the left of the top fuselage centerline served a dual purpose. A portion of the air intake was channeled into a newly installed oil cooler just aft of the engine mount. A divergent tube split off from the main section and funnelled a stream of fresh air into the cockpit. This was a safety measure to avoid possible carbon monoxide poisoning; a fate which befell more than one racing pilot. The additional oil cooler provided greater oil cooling capacity. The combined effect of these external modifications served to produce the illusion of a massive forward section quite out of proportion with the slender tail configuration.

Of equal significance, but not outwardly visible, was a small five gallon oil tank placed in the after portion of the fuselage. A line connected this tank with the main oil tank and was valved to permit a gravity flow of oil into the smaller tank. The purpose of this arrangement was to allow the pilot to alter the center of gravity prior to each landing. Oil was shuttled into the auxiliary tank shifting the balance of the aircraft. Since the large three-bladed prop made three point landings (and take-offs) mandatory, this system served a very functional purpose. A small quarter-inch drain valve was provided to remove the oil from the rear oil tank after each landing. This practice was religiously observed as the next take-off might be disastrous with the altered center of gravity position. In fact, the plane was difficult to taxi in this condition. Ortman found the installation satisfactory and used it consistently.

The year 1938 also previewed an addition to the Marcoux-Bromberg racing stable. In May of that year, Hal Marcoux purchased the Keith Rider designed Elmendorf Special. This ship, which first appeared at the 1936 National Air Races, was originally built and flown by David R. Elmendorf. In outward appearance, the airplane was substantially similar to the Rider creation made famous by Tony LeVier. Here the resemblance ended however, as the Elmendorf Special never quite lived up to expectations. After a mediocre performance in the '36 Nationals, the plane was absent from the 1937 races. No attempt was made to modify or improve the aircraft during 1937 and it was probably determined to be no match for its hotter competitors. The plane was flown in 1938 and previous difficulties experienced by Elmendorf resulted in a crash landing during the Oakland races. Shortly thereafter, Harold Marcoux made the transaction that brought the plane into the Marcoux-Bromberg fold.

Several noteworthy changes were made to the ship including the name which now became the Marcoux-Bromberg "Jackrabbit". The cowling was extensively reworked. The Menasco B6S engine was wrapped in a bulky-like version of the Howard "Ike" and "Mike" cowl configuration. The fuselage was deepened to accept the retractable landing gear in a manner which permitted the entire structure to disappear into the wing and fuselage center section. A smooth surface was presented to the slip-stream by enlarging the strut covers and incorporating hinge plates to enclose the previously exposed wheel. The overall appearance took on a matron-

(11) Telephone conversation with Roscoe Turner on 24 March 1961.

ly look; on the heavy side in the mid-section. This was accentuated by dressing the fuselage in a new coat of black paint. The wings and horizontal tail surfaces were painted yellow. This same color scheme was reversed on the R-3.

The theme behind the modification and general reconditioning of the "Jackrabbit" for the 1938 races was one of dependability. It was hoped that by stressing reliability, the plane might outlast its hotter and more unpredictable rivals. There was a touch of irony in this approach since the future would soon bring about just the opposite results. Piloting duties were to be shared by Ortman and Elmendorf. The latter would handle the ship in the Thompson after Ortman's participation in the Greve.

On September 5th, six Menasco powered racers lined up for the now familiar Greve Trophy Race. Interestingly enough, four of the six contestants sat in Rider designed aircraft that day, awaiting the starter's signal. Besides Ortman's plane, the other Rider entries included LeVier in the "Firecracker", the "Eightball" with Joe Jacobson, and the old Bushey-McGrew Special with newcomer George Dory. Rounding out the field were Harry Crosby in the CR-4 and Art Chester with the "Goon". All the planes featured retractable gear.

The race began without incident. At the start, the entire group pulled ahead of LeVier while he brought the wheels up, but on the backstretch of the first lap he rammed past Dory and Crosby. Ahead were Ortman and Joe Jacobson, with Art Chester's cream colored "Goon" leading the way. At the third pylon, Ortman gave way to LeVier who sliced inside on the turn and rode past Jacobson at the same time. From that time on, it was a battle between Chester and LeVier. Disaster struck in the twelfth lap when George Dory rode the Bushey-McGrew down onto a dead end street. The CR-4 went out in the eighteenth lap. Tony LeVier went on to win the jackpot in a hard fought duel with Art Chester. The "Jackrabbit" was credited with fourth place and did not come away empty handed. In spite of its name, the "Jackrabbit" was no match for the explosive "Firecracker" and the sleek "Goon" racer.

The rules for the 1938 Thompson Trophy Race included a change in the method of qualification for the event. The previous qualification races were replaced by individual two lap trials. The minimum allowable speed for qualification was leveled at 225 miles per hour. Ortman rolled the R-3 around the course at an average of 270 miles per hour and later tied Turner's effort at 282 miles per hour in an unofficial trial. The latter speed lent enthusiasm to the belief that Ortman might repeat his West Coast performance and lead Turner across the finish line again.

Prior to the big event, a rumor spread among the various entrants that a concerted effort would be made to box Turner in and prevent him from winning. Irritated, and apprehensive about the coming race, Turner replied that "if anybody tries to box me up, I'll chew a fuselage apart with that fan of mine and then bail". The Colonel felt that Ortman might have had a little to do with that rumor. Having won at Oakland, Ortman appeared a little too cocky in Turner's opinion and this posed a threat to his reputation. (12)

Labor Day and the feature event of the meet arrived. The weather was sunny and hot; typical late summer weather for Cleveland. The small racers sat on the grass along the starting line waiting for the signal that would send them on a 300 mile trip around the pylons. Ortman's ship nestled between Turner's silver Laird and his gold Wedell-Williams racer. Oddly, it was Earl Ortman who was closely flanked by Colonel Turner on the left and his lieutenant, Joe Mackey, in the old Wedell on the right side. The tables seemed to be reversed at the starting line con-

trary to earlier rumors.

The late afternoon sun was casting long shadows when the race started. Ortman was off the ground quickly and grabbed an early lead. For the next six laps he lead the roaring pack of racers around the turns. Unfortunately, Ortman cut a pylon and was forced to recircle thus yielding the lead to Turner. Still maintaining second position, Ortman trailed his rival over the course. The straining Twin Wasp engine was pushed to its limit. Pulling 48 inches of manifold pressure, the tachometer indicated 2,675 revolutions each minute.

As the R-3 thundered past the grandstand during the 13th lap, the engine sputtered, sounding the rattle of trouble to come. In the 27th lap, an oil line ruptured and a trail of black smoke was clearly visible as the airplane continued on the course. Ortman determined to keep going in the face of imminent danger. The oil pressure dipped to zero and the oil temperature climbed off the gage. Reducing power, Ortman must have prayed that he could finish the last three laps. Somehow the engine held together until the race was over. In spite of his difficulties, Ortman managed to bring home the "place" money. An examination after the race revealed that someone had wired closed the oil cooler shutters before the race and this was the reason for the damage and near catastrophe.

The plane remained in Cleveland after the race. Loss of oil pressure and the resulting high temperatures caused the engine to freeze when the switch was cut upon landing. The engine was removed and shipped back to Pratt & Whitney for overhaul. After approximately two months, the engine was returned to Cleveland on November 19, 1938, for installation.

It was early in March by the time Ortman once again had the R-3 in flyable condition. The plane cleared the airport runway and for the moment, left the snow drifts behind. Throttling back to 2200 revolutions per minute, Earl Ortman swung to the west and headed for Kansas City, Missouri. This was to be the first stop enroute to the West Coast.

Ortman swung into the pattern at the Kansas City airport and began his approach to the field. At this particular instant he discovered that the flaps refused to lower; ice apparently having taken its toll of the system. Shooting down on the runway Ortman also found that the brakes had become frozen. The aircraft was rapidly becoming uncontrollable since rudder effectiveness was inherently poor at lower speeds. By now the plane had started to careen as the pilot fought for control. Skidding off the runway, the R-3 nosed over as the big prop dug into the earth with the ship finally coming-ignominiously to rest on its back.

Ortman's skill as a pilot probably saved him from a fate similar to Jim Granger. As a result of this accident, the R-3 wintered at Kansas City. Extent of the damage included a bent prop, broken nose casting on the engine, as well as damaged tail surfaces. Perhaps it was this accident, coupled with over five years of racing diet, that brought Earl Ortman to announce his retirement from air racing prior to the 1939 Nationals. Undoubtedly being the boss of a high speed, cantankerous, unpredictable airplane such as the R-3 must have made it seem desirable to learn how the other half lives.

In addition to this accident, Ortman had an earlier brush with disaster following the races. After the races in 1938, he had been hired to perform some test flights on the Military Aircraft HM-1 airplane. This plane had flown in the recent Thompson Trophy Race with Leigh Wade piloting into a slow fourth place. Disappointed with the Thompson results, Howell Miller's group hoped to interest potential buyers with further testing.

The airplane that Ortman was flying for Miller was a distant relative of the troublesome Gee Bee. Fortune also chose to cast a jaundiced eye on the

(12) Colonel Roscoe Turner, "Air Racing is Hell", Popular Aviation, October 1939, p. 68.



The 1938 Greve Trophy Race was entered by four Rider-designed aircraft; Ortman's Marcoux-Bromberg "Jackrabbit" (above left) Tony LeVier's "Firecracker", Joe Jacobson's "Eightball", and the Bushey-McGrew "Special". The "Jackrabbit" finished fourth. (Above left photo-Strasser)

Ortman entered the R-3 in the 1938 Thompson Trophy Race, finished second in spite of oil temperature troubles that nearly brought disaster in the last three laps. (above right photo Wm. F. Yeager)



The Marcoux-Bromberg R-3 ran its last big time race in the 1939 Thompson Trophy Race. Ortman finished third. (Left) photo taken at Cleveland Airport following World War II.

HM-1. On October 3rd, Ortman climbed to 10,000 feet and proceeded to power dive the plane. At 7000 feet and 350 miles per hour, a tail flutter developed and the plane disintegrated. Ortman managed to parachute to safety as the wingless plane struck a barn and burned. It is possible that the seeds of retirement were planted that day in East Hartford, Connecticut, and were energized by the narrow escape at Kansas City. At any rate, he obtained employment with Canadian-Colonia Airways as first officer of a contented DC-3 flying between Newark and Montreal. This didn't last very long for he was persuaded to return to the cockpit of the R-3 for the 1939 events. Ironically, his retirement from racing was announced in the October issue of a leading aviation magazine following his participation in the 1939 Thompson Trophy Race.

The lure of racing which deeply fascinates a certain breed of men was evidently too much for Ortman and he returned to Kansas City to retrieve the R-3 for the coming races. Repairs to the plane were made including a slightly enlarged vertical tail surface in an attempt to improve low speed directional stability. A revised chin scoop was afixed to the cowl for the carburetor air intake. In addition, the top cowl scoop

was extended to the lip of the cowling in a manner similar to the 1938 revision to the lower air intake.

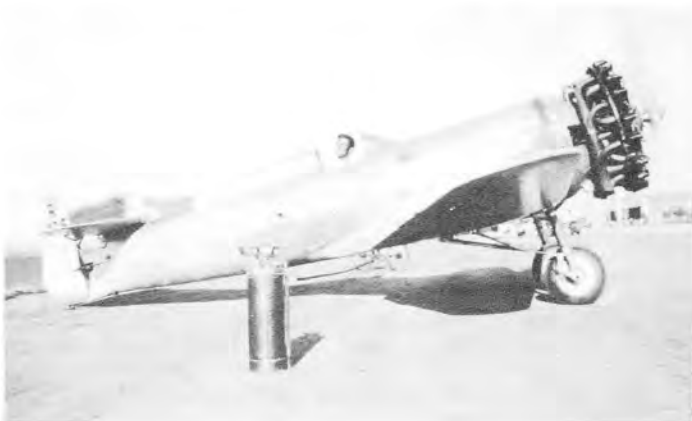
Earl Ortman and the R-3 arrived in Cleveland a few days prior to the air races. As usual, the flight from Kansas City to Cleveland was not without incident. Alterations to the stabilizer were not fully completed, and as a result, large adjustments were necessary to maintain flying trim and stability. Lack of time prevented any final refinements and so the ship was eventually raced in this condition.

Not as apparent, but contributing much to the performance of the plane was a new three-bladed Hamilton Standard constant speed propellor. The prop had increased blade area and a reduced diameter. The effects of this year's modifications would be seen in the forthcoming qualifications. The only other difference to the onlooker was a return to the number four as the racing number which appeared on the side of the plane. This fact has caused some consternation to several historians since the plane flew in the Thompson with a number two as the racing identification. This was a last minute change and the paint was hardly dry when the race began. During the qualification trials, number four still appeared on the ship. The answer to this slight mystery probably lies in the fact Steve

Wittman also arrived on the scene with a racing number of four. When both qualified for the Thompson it was certain that a change would have to be made. Since Ortman had placed higher in the previous Thompson he was probably given the option to retain or change numbers. In any event, the four was scrubbed and a two used in the 1939 Thompson Trophy event.

The strategy for the forthcoming race was mapped out when Ortman qualified for the race with a per-

functory speed of 244 miles per hour; just four miles per hour over the minimum specified requirement. He had deliberately held the R-3 in check so as not to reveal its capabilities to the other entrants. This was in marked contrast to the flamboyant Colonel Turner who established a new record of 297 miles per hour during his qualifying run. Speculation ran high especially since Ortman later barrelled around the course at an unofficial 307 miles per hour. This was ac-



A PAGE OF R-3 PHOTOS by BILL YEAGER and EMIL STRASSER

Top - Another view of the R-3, Number 3 at 1938 N.A.R. (Photo - Yeager)

Center - Ortman revving up the "Wasp, Sr." at Mines Field, 1936. (Photo - Strasser)

Bottom - As No. 4, coming in for a landing at Cleveland for 1939 N.A.R. (Photo - Strasser)

Top - At the 1938 National Air Races - Cleveland. The wheel under the tail was attached to the tail skid for towing only. (Photo - Yeager)

Center - At the 1937 Nationals, as Number 4. (Photo - Strasser)

Bottom - Ortman in the R-3 (Rider-Clark) one week before the 1936 Nationals. The mechanic at the right, in coveralls, was with Ortman for several years. His name is unknown. (Photo - Strasser)

completed at 2800 r.p.m. while pulling 53 inches of manifold pressure; significantly higher than the manufacturer's take-off rating for the engine.

The Thompson Trophy Race, originally scheduled for the 4th of September, was postponed because of poor weather until the following day. Thus the final flight of the old R-3 was delayed twenty-four hours. Following this last 300 miles, the ship would be landlocked for the rest of its life. And this flight would only require a little over seventy minutes from take-off to touch down.

The ground handling crew towed the bright yellow and black airplane out to its familiar place on the starting line. Several minutes before the starting signal, the powerful Twin Wasp Jr. engine would be sparked to life through the manual efforts of the ground crew using a portable power supply. Since there was no weight consuming power source in the aircraft, a hand-cranked inertia starter was used.

Tension and excitement were mounting. Time for the engine to be started. The personnel handling the ground duties for Ortman go into action. A religious sequence of events takes place as Ortman goes to work. The engine is primed with the hand primer, the mechanical brakes are locked, and finally, the ignition switch is flicked to the on position. The familiar whine of the inertia starter is followed by the barking roar of the big radial engine. The engine is warmed and the instruments scanned for any signs of malfunction.

A minute or two before the race begins, the cowl flaps are cranked shut. When the signal finally comes after that last eternal minute, Ortman's tasks multiply rapidly. The throttle goes forward to full manifold pressure as the R-3 starts to bounce down the field. The gear selector is unlocked and moved to the retracted position and as soon as the ship becomes airborne, the wheels are pumped into the wing housings. Flaps are brought up and the prop control eased back slightly. Ortman must go through many gyrations to get the R-3 into the air and at the same time avoid a collision course during the confusion of the race horse start.

The R-3 actually got off the ground third behind Wittman and Mackey but once LeVier retracted the gear of his "Firecracker", he shot past the field and took the lead. Ortman slotted into the fourth position around the circuit and remained there until the seventeenth lap. Art Chester pulled the "Goon" out of the race and Ortman inherited third place; a position he

maintained to the finish. The engine of the R-3 performed erratically and quit three different times during the race. The roughness of the engine forced Ortman to throttle back and run the course at partial power. Unfortunately, the plane never had a chance to show its full potential of over three hundred miles per hour and Turner took the lead in the ninth lap to go on and win his third Thompson Trophy.

A dangerously faulty fuel mixture doomed the R-3 to defeat once again. The engine was not damaged in spite of its performance. No matter, the R-3 had reached the end of its racing career. Time and the rumblings of war combined to force the plane into retirement. Again, Ortman announced his retirement from competition. Simultaneously, the fabulous era of aviation racing drew to a close.

An obituary for the R-3 must indicate that it was a long lived airplane as time is measured for any type of highly competitive vehicle. It was born and lived during a period of individualism in air racing. Despite a significant lack of publicity, the team of Earl Ortman and the R-3 was consistently successful. This combination never placed less than third in any event following the first year of partnership; a statement that can be made for no other racing plane of that era.

The classic Thompson Trophy, however, remained elusive to the end. In this regard, Earl Ortman and the R-3 were collectively, "often a bridesmaid but never a bride".

#### ABOUT THE AUTHOR

Birch J. Matthews has followed aviation history for the past fifteen years, particularly in the field of air racing between two world wars. He would like to see much more of the JOURNAL devoted to this fascinating sphere of interest. To show his own enthusiasm and to stimulate more participation by other Members he wrote the accompanying account of Earl Ortman hoping that other racing enthusiasts will continue in the same spirit. The story of Earl Ortman does not end here. Matthews and Member Jerry Skinner are preparing another article on the life of Ortman, through a final flirtation with the elusive Thompson Trophy.

Matthews joined the Society in 1959, is an engineer by profession, and graduated from Case Institute of Technology after wartime paratroop service in the 82nd Airborne Division, U.S.A.

|                          | <u>YEAR</u> | <u>RACING<br/>NUMBER</u> | <u>EVENT</u>       | <u>PLACE</u> | <u>SPEED</u>               | <u>TIME</u> | <u>PRIZE<br/>MONEY</u> |
|--------------------------|-------------|--------------------------|--------------------|--------------|----------------------------|-------------|------------------------|
| Table "A"                | 1934        | 9                        | Bendix Trophy      | -            | Did not start              |             |                        |
|                          | 1935        | 9                        | Bendix Trophy      | -            | Dropped out at Kansas City |             |                        |
|                          | 1935        | 9                        | Thompson Trophy    | -            | Did not start.             |             |                        |
| RACING RECORD            |             |                          |                    |              |                            |             |                        |
| Marcoux-Bromberg Special | 1936        | 54                       | Qualification*     | -            | 258.9                      |             |                        |
| 1934 Through 1939        | 1936        | 54                       | Thompson Trophy    | 2            | 248.042                    |             | \$5,000                |
|                          | 1937        | 4                        | Bendix Trophy      | 2            | 224.833                    | 9:49:21.73  | 5,000                  |
|                          | 1937        | 4                        | Event No. 8*       | 1            | 247.975                    | 12:05.88    | 900                    |
|                          | 1937        | 4                        | Thompson Trophy    | 2            | 256.858                    | 46:43.11    | 5,000                  |
|                          | 1938        | 4                        | Qualification**    | -            | 266.                       |             |                        |
|                          | 1938        | 4                        | Golden Gate Trophy | 1            | 265.593***                 |             | 5,000                  |
|                          | 1938        | 3                        | Qualification*     | -            | 270.                       |             |                        |
|                          | 1938        | 3                        | Thompson Trophy    | 2            | 269.718                    | 66:14.18    | 9,000                  |
|                          | 1939        | 4                        | Qualification*     | -            | 244.                       |             |                        |
|                          | 1939        | 2                        | Thompson Trophy    | 3            | 254.435                    | 70:44.70    | 4,000                  |

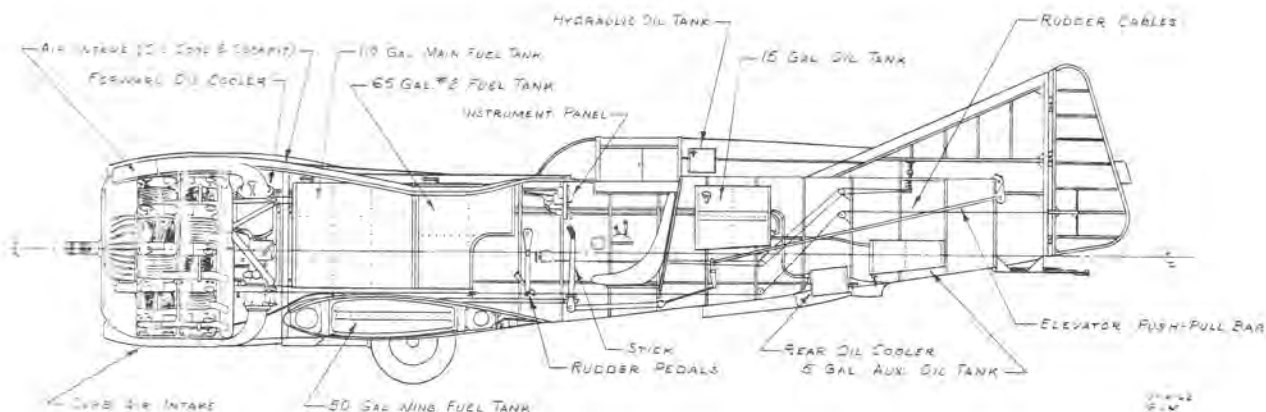
NOTES: \*Qualifying event for the Thompson Trophy Race.  
\*\*Qualifying event for the Golden Gate Exposition Trophy Race.  
\*\*\*New closed course record. Old record held by Michel Detroyat of France.

## BIBLIOGRAPHY

- Abbott, Ira H., von Doenhoff, Albert E., and Stivers, Louis S. Summary of Air Foil Data, Report No. 824, National Advisory Committee for Aeronautics, Washington: U.S. Government Printing Office, 1945. 264 pp.
- Ashley, R.B. Air Corps Information Circular No. 679, Washington: U.S. Government Printing Office, 1933. 10 pp.
- Buehl, Fred W. and Gann, Harry S. The National Air Race Sketchbook, Los Angeles: Floyd Clymer Co., 1949. 84 pp.
- Eaton Manufacturing Company. A Chronicle of the Aviation Industry in America, Harrisburg, Pa.: J. Horace McFarland Co., 1948. 98 pp.
- Interview with Mr. James Borton, General Airmotive Corporation, Cleveland Hopkins Airport on 11 March 1961.
- Kinert, Reed. American Racing Planes and Historic Air Races, Chicago, Illinois: Wilcox and Follett Co., 1952. 130 pp.

- Mandrake, Charles G. The Gee Bee Story, Wichita, Kansas: The Robert Longo Co., 1957. 106 pp.
- McLarren, Robert. "Aviation's Dare-Devil Scientists", Model Airplane News, December, 1938. pp. 48-50.
- Morrison, Robert C. "Frontiers of Aviation", Model Airplane News, December, 1937. pp. 52.
- Ortman, Earl H. "I'm Through with Closed Course Racing", Popular Aviation, October, 1939. pp. 27, 83-84.
- Wendell, DeWitt. "Pylon Polishing in 1937", Popular Aviation, November, 1937. pp. 41-42, 76.

Various correspondence between the Author and Mrs. Earl Ortman, Maxwell Balfour (Pres., Spartan Aircraft Co.), Q. B. Boydston (Pres., Chamber of Commerce, Fort Gibson, Okla.), Vance Breeze, Jack L. Bromberg (Director of Programs, Douglas Aircraft Co.), Gregory C. Kohn, Capt. Truman C. Weaver, USAF, and LeRoy Weber (Members, A.A.H.S.), Harvey Lippincott (Pres., Connecticut Aeronautical Historical Association and A.A.H.S. Member), Col. John A. Macready, USAAF (Ret.), Col. Roscoe Turner, and from Keith Rider (Space Recovery Systems, Inc.). Also correspondence from the late Earl H. Ortman.



INBOARD PROFILE - MARCOUX-BROMBERG R-3

## CONSTRUCTION DETAILS

Dural formers with connecting longitudinal stringers provided the framework which was covered with riveted aluminum skin. The major fuselage diameter of forty inches was located at the firewall. Succeeding stations aft of the firewall tapered gracefully on one foot centers for 109 inches to the tailpost. The outward appearance of the plane was practically unblemished except for the punctuation of rivet lines.

The cantilever wing spanned twenty-five feet and ten inches including a seven foot symmetrical inboard section.

The outer wing panels contained tapered leading and trailing edges. Construction consisted of dual black walnut spars, spruce ribs, and plywood covering. A layer of fabric was doped onto the plywood surface as a final covering. Generous fairings blended the wing smoothly into the fuselage contour. Split flaps were employed for use in landing.

The vertical stabilizer was built integrally with the fuselage, the tailpost being the last fuselage former. A two degree offset was used to combat propeller torque. The rudder was plywood covered with a fixed trim tab. An adjustable metal-skinned horizontal stabilizer was employed. Elevator surfaces were fabric and hid a metal framework with magnesium tips. The general arrangement of the tail group was typical of previous Rider racers. Indeed, this configuration was

the trademark of all Keith Rider designed aircraft.

The enclosed cockpit featured a sliding canopy and a headrest fairing that disappeared into the tail group. As the canopy was only large enough to house the pilot's head, a larger detachable section incorporating the canopy was fitted into the sides of the fuselage for access to the cockpit. Spring loaded pins with connecting cables were pulled to release the entire section and permit the pilot to bail out in an emergency. Normal entry and exit was accomplished by releasing one side of the cover and swinging the assembly toward the opposite side. Needless to say, the cockpit was close-quartered; however, it was spacious compared to some of today's midget racing planes.

The landing gear, with wheels mounted inboard of the main struts, was retractable. The gears swung straight back in an upward arc until the strut was approximately flush with the wing undersurface. Small wheel wells were provided to receive one-half of the wheel. The supporting linkage disappeared into narrow slots running from the wheel wells forward to the pivot points located on the forward spar. Small, broad fairings dipped down to cover the pivot mechanism and increase streamlining. The gear was operated manually through a mechanical-hydraulic system with locks in the up and down position. Mechanical brakes complemented the under-carriage system. The tail skid was a leaf spring arrangement which necessitated a dolly for ground handling.