

THE RIDER R-4



by Mike Kusenda

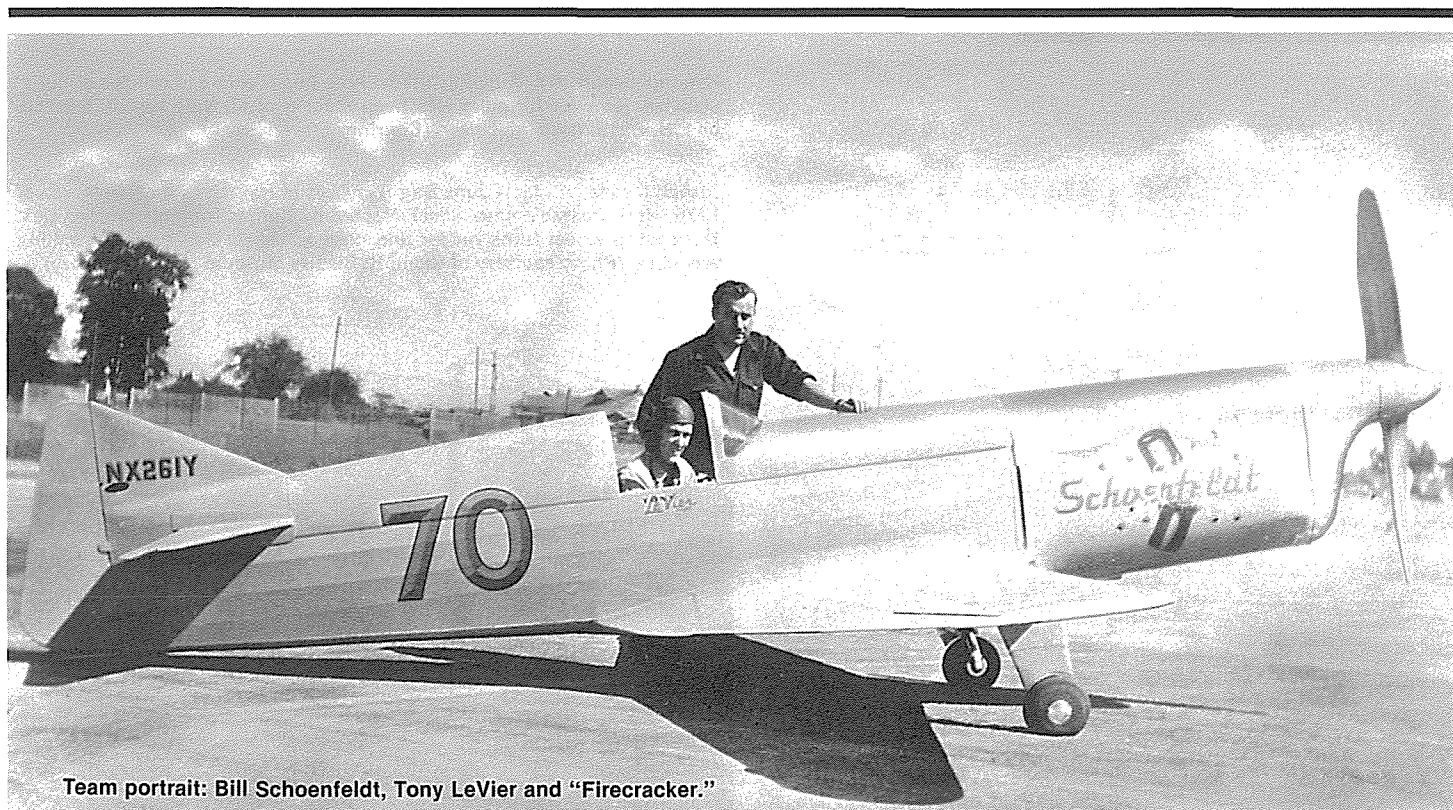
All photos from Dusty Carter Collection

To the casual observer of air racing in the 1930s, it was probably not readily apparent that the small Menasco inline powered racing planes were developing into serious challengers of the high-horsepower, radial-engined machines. One of the most prolific designers of these small, clean-lined planes was Keith Rider.

Rider had produced four racing aircraft; the original Rider B-1, an all-wood, Menasco-powered racer; the Rider R-1 and R-2, nearly identical airplanes similar in design to the B-1 except they had all-metal fuselages; and the Rider-Clark R-3, a P&W Wasp-powered racer for entry in the MacRobertson race from London, England, to Melbourne, Australia. In 1936 Keith Rider departed from the metal fuselage concept, used on the R-1, R-2 and R-3, and designed a low-budget racer that employed a conventional welded steel tube fuselage. The design for this racer was sold to Dave Elmendorph and Rider, with a group of volunteers, then started to work on the R-4. The R-4 was similar to the design sold to Elmendorph except that it was an improved design that had a reduced wing span from 20 feet to 18 feet and the empty weight was reduced by 80 pounds.

Dave Elmendorph took his Rider design to the Crawford School of Aeronautics in Venice, California, and there construction was started. Elmendorph had managed to salvage a Menasco B6S engine from his old Wedell-Williams No. 22 and installed it in the new "Elmendorph Special," sometimes referred to as the Rider R-5. Actually, the R-5 designation was assigned to a fighter proposal that was based on the R-3. Since the fighter was never built the R-5 designation was eventually applied to the Elmendorph airplane.

In the case of the Rider R-4, money ran out as the ship neared completion without an engine to power it. Allan Lockheed, no longer connected with the company bearing his name, was devel-



Team portrait: Bill Schoenfeldt, Tony LeVier and "Firecracker."

oping a radical small twin-engined light transport plane called the "Alcor," which incorporated two Menasco B6S engines, laid over on their sides, faired into the leading edge of the wing. He loaned one of his engines to Rider for use in the 1936 National Air Races to be held at Mines Field, September 4 to 7.

Roger Don Rae, who had been handling the Rudy Kling-owned "Suzy," a Rider design built in 1931, was prevailed upon to test fly the new ship. The R-4 weighed a scant 950 pounds and 1325 pounds ready to race. Impressed with the performance on the first test flight, Rae decided to remain with the Rider group, a move which forced Rudy Kling to become a racing pilot out of sheer necessity. At the time of the 1936 Nationals, Kling admitted having only 200 solo hours to his credit.

The 1936 Nationals are best remembered for the devastating invasion by Detroyat and the French-made Caudron, which so completely domineered the racing events, that many newly built American racing machines were somewhat ignored by the news media. New for the 1936 Nationals, in addition to the Rider R-4 and the Elmendorf special, was the Folkerts SK-2 with Harold Neuman piloting. Although not new, the Chester "Jeep" was completely rebuilt. Steve Wittman had discarded the anemic Cirrus engine and the "Chief" was now powered with a Menasco C4S, making it a real competitor.

An interesting comparison of the two new Rider-designed racers showed up in the first day's (Friday, September 4, 1936) 550 cu. in. qualifying event. Both the R-4 and Elmendorf were equipped with stock Menasco B6S engines rated at 200 hp. It is interesting to note that the Rider R-4 was entered by Homer T. Scale who possibly owned the ship or at least a major portion of it at the time. The results of the 550 cu. in. qualifying dash held Friday, September 4, 1936, were as follows:

M. Detroyat #100	Caudron-Renault	488 cu.in.	273.433 mph
R.A. Kling #131	Rider R-1 Menasco	544 cu.in.	226.444 mph
D. Elmendorf #22	Elmendorf Rider R-5		
	Menasco	489 cu.in.	224.551 mph
H. Neuman #38	Howard DGA-4		
	("Mike") Menasco	489 cu.in.	223.714 mph
R.D. Rae #70	Rider R-4 Menasco	489 cu.in.	218.155 mph
M. McKeen #33	Brown B-2 Menasco	544 cu.in.	217.365 mph

After this impressive first performance by Dave Elmendorf's new racer, it doesn't show up again in race results until the running of the Shell Cup event on Tuesday, September 8th, a race that had been postponed and finally run the day after the close of the 1936 N.A.R.

A clue to the problems Elmendorf was having can be seen in the results of this event:

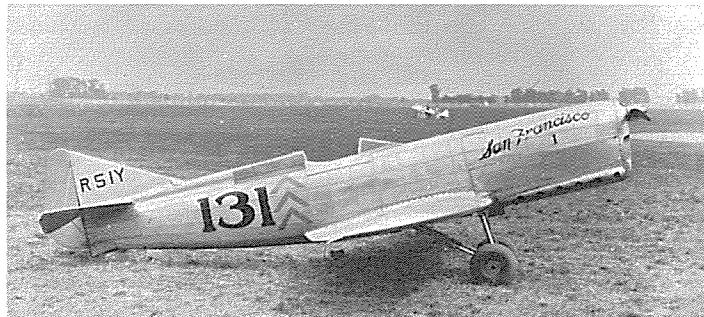
R.D. Rae #70	Rider R-4 Menasco	489 cu.in.	225.544 mph
H. Neuman #1	Folkerts SK-2		
	Menasco	363 cu.in.	223.561 mph
M. McKeen #33	Brown B-2 Menasco	544 cu.in.	218.808 mph
L. Miles #4	Miles & Atwood		
	Menasco	363 cu.in.	206.188 mph
D. Elmendorf #22	Elmendorf Rider		
	Menasco	489 cu.in.	205.933 mph
H. Crosby #52	Crosby CR-3		
	Menasco	544 cu.in.	

(finished 4th but disqualified for cutting pylon)

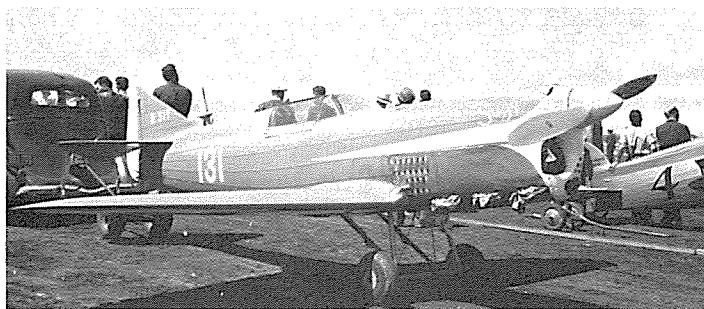
So much for the Elmendorf Special. Back to Sunday, September 6th. Roger Don Rae was having some difficulty getting



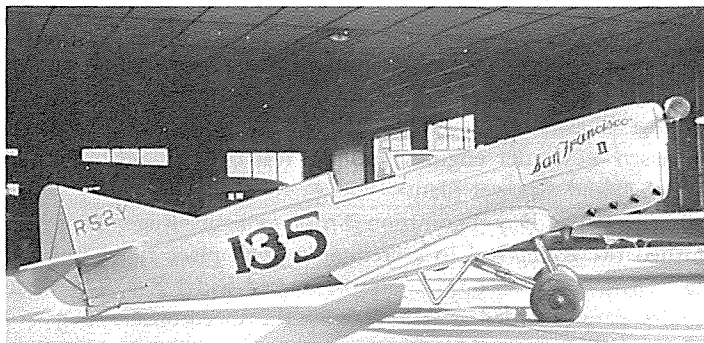
Original Rider racer, the B-1, flown by John A. Macready of T-2 fame.



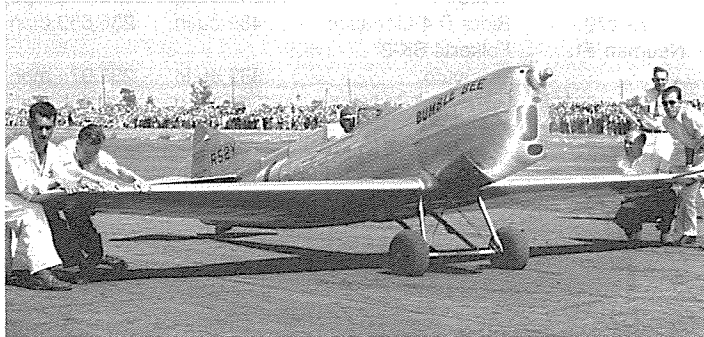
The Rider R-1, "San Francisco I," in its original configuration.



The R-1 at the 1936 National Air Races, Los Angeles, Calif. Owned by Rudy Kling who had to fly the racer when his pilot, Roger Don Rae, went with Rider to fly the R-4, Kling had limited experience in racing aircraft and miraculously escaped serious injury when he crashed during landing by striking a pylon guy wire then hitting a parked automobile. The R-1 was demolished.

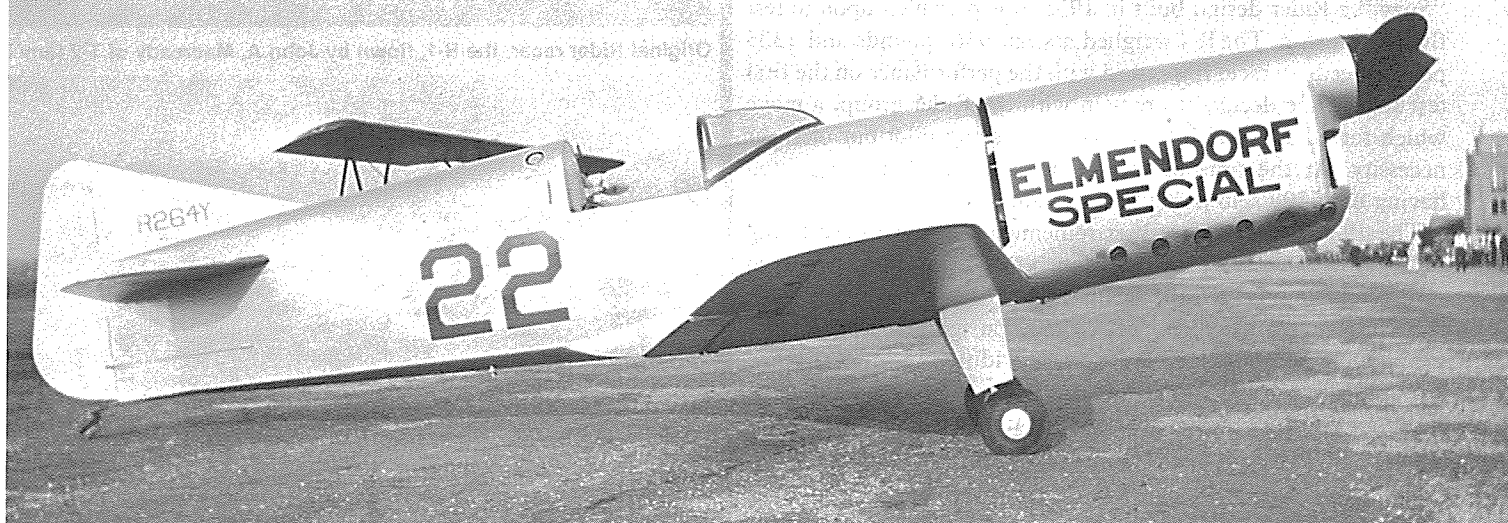


The R-2, "San Francisco II," nearly identical to the R-1 except for the four-cylinder Menasco engine.



Renamed "Bumble Bee" the R-2 at the 1933 air races in Los Angeles.

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the R-4 sorted out as can be seen in the results of the Greve Trophy race:

M. Detroyat #100	Caudron Renault	488 cu.in.	247.300 mph
H. Neuman #1	Folkerts SK-2		
	Menasco	363 cu.in.	225.858 mph
A. Chester #3	Chester Spl.		
	Menasco	363 cu.in.	224.682 mph
R.A. Kling #131	Rider R-1 Menasco	544 cu.in.	215.331 mph
J. Jacobson #38	Howard DGA-4		
	Menasco	489 cu.in.	212.325 mph
R.D. Rae #70	Rider Menasco	489 cu.in.	212.325 mph

Although outclassed by Detroyat's Caudron, Harold Neuman in Clayton Folkerts' new SK-2, flew a truly remarkable race as did Art Chester in his rebuilt "Jeep." In both cases, the small Menasco 4-cylinder engines beat the rest of the field, powered with 6-cylinder power plants.

In the Labor Day Thompson Trophy classic, Roger Don Rae pushed the Rider R-4 to a creditable third place finish behind Earl Ortman's 1344 cu. in. Wasp-powered Rider R-3. The final results were recorded as follows (note the speed differences):

M. Detroyat #100	Caudron-Renault	488 cu.in.	264.261 mph
E. Ortman #54	Rider R-3 P&W		
	Wasp	1344 cu.in.	248.042 mph
R.D. Rae #70	Rider R-4 Menasco	489 cu.in.	236.559 mph
H. Neuman #1	Folkerts SK-2		
	Menasco	363 cu.in.	233.074 mph
M. McKeen #33	Brown B-2 Menasco	544 cu.in.	230.465 mph
H. Crosby #32	Crosby CR-3		
	Menasco	544 cu.in.	226.075 mph

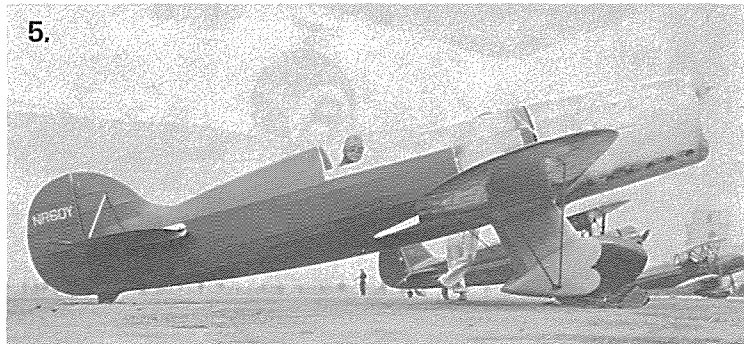
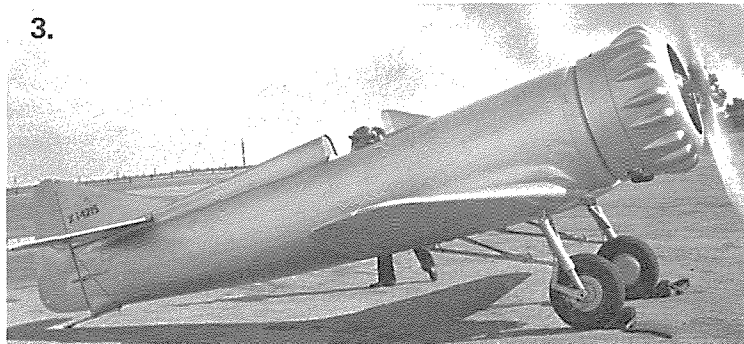
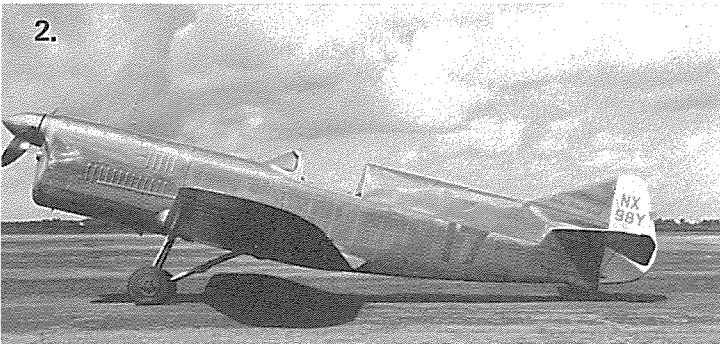
Again, the new Folkerts SK-2 flown by Neuman turned in an exemplary performance considering the diminutive 4-cylinder engine.

With the end of the 1936 N.A.R., Keith Rider had to return the borrowed engine to Allan Lockheed. The R-4 was taken back to

the Crawford School for Aeronautics to be stored until some money could be located to further its development.

William Schoenfeldt, who had considerable aviation experience as a service operator in Vera Cruz, Mexico, in the late 20s and later with the pioneer Pickwick Airways, was looking around for a hobby to keep himself out of mischief, when he was referred to the Rider R-4 by a friend. Keith Rider by now was well into the "Eight Ball" project and welcomed a chance to turn the engineless R-4 into some ready cash. The R-4 was a perfect starting point to try out some ideas Schoenfeldt had in mind. His first move was the purchase of a new Menasco Super Buccaneer C6S-4 engine. The C6S-4 was the latest development of the 6-cylinder Menasco engines with a stock rating of 250 hp at 2300 rpm. It might be informative, at this point, to examine briefly the Menasco 6-cylinder engine development.

All Menasco engines, regardless of number of cylinders or model, had the same stroke, 5.125 inches. Two sizes of pistons, 4.500 in. diameter and 4.750 in. diameter, served for both 4 and 6-cylinder model engines. The first 6-cylinder B6S model was essentially a 4-cylinder (4.500 dia.) B4 model with two more cylinders and superchargers added, and was rated at 200 hp at 2250 rpm. With the introduction of bored-out (4.750 dia.) 4-cylinder model C4S, a 6-cylinder version, Model C6S, soon followed with 225 hp at 2250 rpm. Much valuable data was obtained from the B6S installations in the Howard "Ike" and "Mike" racers. Early C6S experiments were carried out in the Israel "Red Head" and Brown B-2 machines. As more power was demanded of the C6S the biggest obstacle was heat dissipation. Al Menasco designed the C6S-4 around a new, longer crankcase, spreading the cylinders apart to improve air flow around them. A new extension of the crankcase permitted a more streamlined cowl. The new C6S-4 increased in length over the C6S by 13¼ inches and 116 lbs. in weight. These two figures became the first problems faced by Bill Schoenfeldt as he mated the R-4 and



1. The Elmendorph Special in its original form. Photo taken at Mines Field, now LAX, shows the basic Rider lines. Aircraft is painted all aluminum with black-bordered, red-lettered "Elmendorph Special," red spinner and black numbers. Race number 22 was carried over from Elmendorph's Wedell-Williams.
2. Bushey-McGrew B7M1, actually a much modified Rider R-2.
3. The Rider-Clark R-3 in its original configuration. Photo taken at Clover Field, Santa Monica, Calif. The racer is shown in an early engine run-up. It had not been flown at this time.
4. The Marcoux-Bromberg "Jackrabbit," ex-Elmendorph Special, in its present condition at the EAA museum in Wisconsin.
5. Dave Elmendorph's Wedell-Williams #22. Photo taken after the fuselage was recovered after a fire, hence no race number shown. Engine from this racer went into the Elmendorph Special.

the C6S-4. To keep the C.G. somewhere over the wing, the firewall was dished-in to mount the engine as far aft as possible. Sheet metal forming expert Al Novotny was called in to fabricate the engine cowling and cooling ducting. Rodney Nimmo painted trim, registration and racing numbers in the striking red/orange shadow figures.

C.H. "Gus" Gotch was chosen by Schoenfeldt to handle the controls at the 1937 International Air Races, Memorial Day weekend at St. Louis. While getting acquainted with the ship in the first event, Gotch placed second to Marion McKeen, flying the Brown B-2. The speeds for the 50-mile race were 240.0 mph and 239.9 mph respectively. This great performance by Gus Gotch and the "Firecracker" was miraculously upstaged by the "once in a lifetime" run by a usually overcautious Marion McKeen and the aging Brown B-2 "Miss Los Angeles." This was the fastest competition speed ever recorded by this pilot and/or plane combination. Getting the "Firecracker" back on the ground, Gotch didn't quite get the tail down quickly enough and it nosed over because of the weight-length bias of the new C6S-4

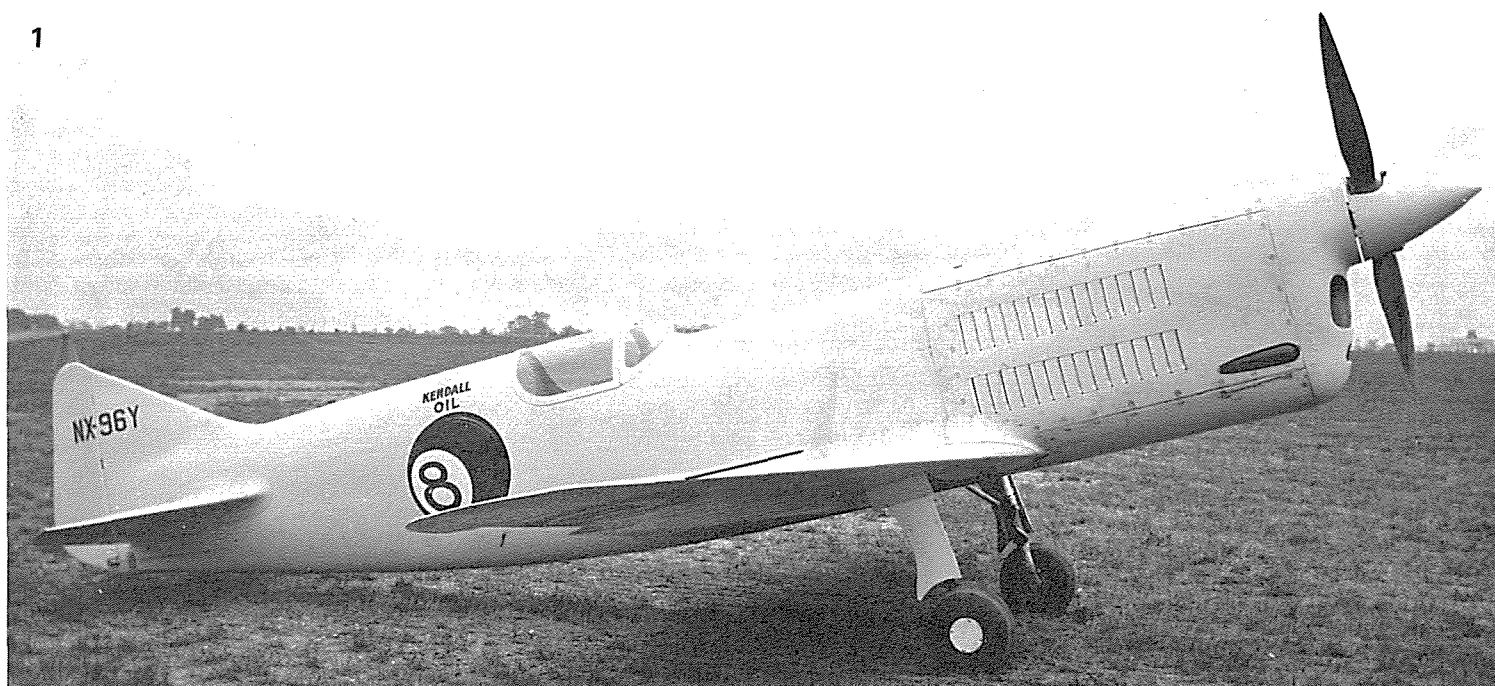
engine. Primary damage appeared to be a shattered propeller, dented engine cowling and some noticeable damage to pilot Gotch's pride.

With hopes of getting the ship repaired for Monday's feature, Missouri Brewers Association Trophy Race, Schoenfeldt telephoned Storey-Gawley in Los Angeles to send a new propeller posthaste. Although the new prop arrived by air freight the next day, it was found to be drilled to fit the old B6S engine. Fortunately, Ole Fahlin, attending the races as a spectator, saved the day by flying the propeller to his shop in nearby Marshall, Mo., and redrilling it to fit the C6S-4 hub. While the propeller was being shuttled cross-country, the "Firecracker" was being repaired and to help prevent a recurrence of the nose-over, 18 pounds of lead were crammed into the rear of the fuselage. At about 10 A.M. Monday morning, Schoenfeldt arrived with the redrilled propeller. With barely enough time for the installation of the prop, no test flight could be made before the 50-mile race around a 5-mile triangular course. Because the new propeller was somewhat higher pitched than the old one, it took five laps before Gotch was able to build up full power. For the remaining five laps the "Firecracker" was clocked at over 260 mph. It was a very deserved victory for Gotch and the Schoenfeldt crew after numerous setbacks. The average speed was 251.6 mph.

From Cleveland, the National Air Race management announced that the 1937 Thompson Trophy Race would be lengthened from 150 to 200 miles. To increase the fuel capacity of the "Firecracker," a new main tank was fabricated with a T-shaped cross-section, filling in almost all of the area between the instrument panel and firewall, leaving just enough space on each side for the pilot's legs. A tubular passage through the center of the tank allowed the actuator shaft for the hand-cranked retractable landing gear to pass through.

At the same time the Menasco engine was completely torn down and given a series of major modifications to hopefully gain

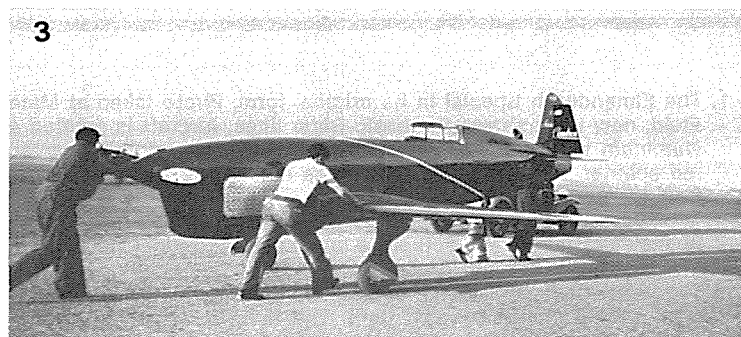
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another 1000 rpm. Special camshafts were ground by Bud Winfield, well-known for his Indianapolis race car expertise. High compression pistons were installed, which necessitated the addition of methanol alcohol and anillol to the 100-octane gasoline to control detonation. To survive the higher cylinder head temperatures, sodium-cooled exhaust valves replaced the stock equipment. A skin oil cooler was made to replace the curved top panel of the engine cowlings to cool the oil which was now helping to carry away engine heat. Story-Gawley made up two propellers to try out in Cleveland. As was usually the case, time ran out before any test flights could be made and the "Firecracker" fuselage and wing were hurriedly loaded on its special trailer behind Bill Schoenfeldt's Packard for the trek to Cleveland.

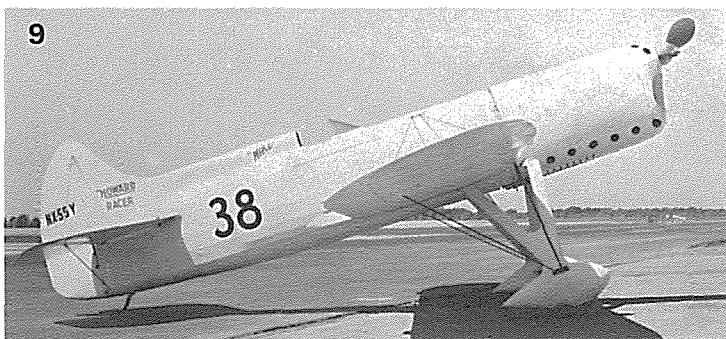
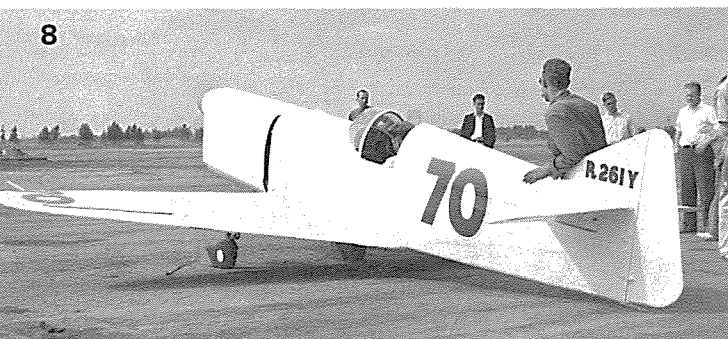
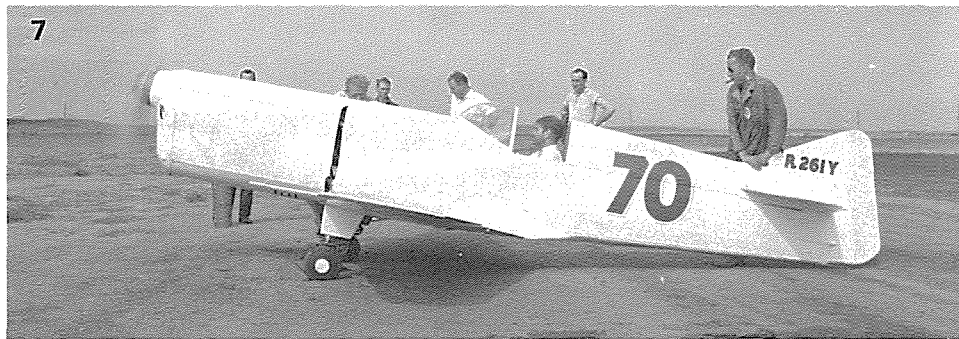
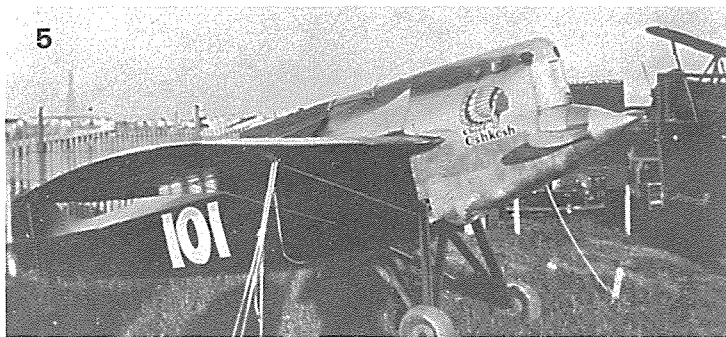
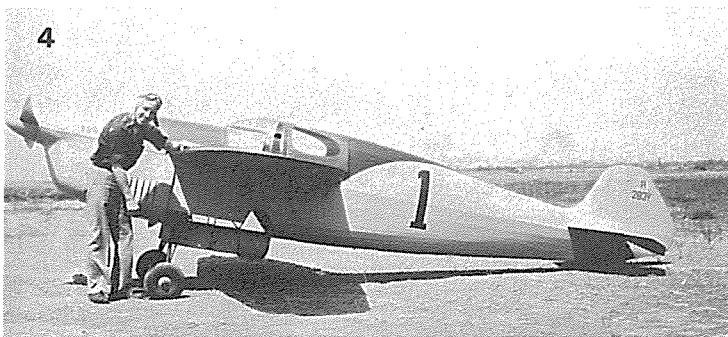
The bad luck that had dogged the "Firecracker" crew at St. Louis followed them to Cleveland. While the plane was still hanging on the chain hoist, after mounting the wing, the landing gear retraction was cycled for the first time with the new fuel tank. A pin in the actuator shaft that passed through the tank slipped out and cut a gash that required a complete disassembly of the plane to remove and rebuild the tank. A day later, on the first test flight, the engine overheated, melting two pistons before Gus Gotch could get the ship back on the ground. Fortunately, the original stock pistons had been brought along in the parts bin of the trailer.

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While the Menasco engine was being torn down, two minor events took place that would change the destiny of this airplane and the people involved with it. Gus Gotch, with time to spare, struck up a conversation with Ted Fordon, owner of the Folkerts SK-2, now renamed "Miss Detroit." Fordon was looking for a pilot to replace Roger Don Rae, who, because of his recent employment by TWA, was uncertain as to his racing future. Gotch agreed to sign on with Fordon as soon as his commitment with Schoenfeldt ended, the final day of the 1937 National Air Races. Ironically, Gotch was killed the following May at the 1938 Oakland International Air Races, when the Folkerts SK-2 dove into the bay.

Back to 1937 at Cleveland: A group of young Consolidated Aircraft Company employees were trying to get their C.C. Flagg-designed racer into the competition. Their pilot was a 24-year-old, skinny Californian with no racing experience, A.W. "Tony" LeVier. His first flight in the tiny plane was brief when it veered to the right on takeoff collapsing one gear and damaging the wing. Bill Schoenfeldt was attracted by young LeVier's courage and ambition and promised him a tryout when he got back to California.

Sunday, September 5th, the new, now detuned "Firecracker," flown by a rather uninspired Gus Gotch, placed third in the 1937 Greve Trophy Race. The winner was Rudy Kling in his new



1. The last Keith Rider racer, the R-6. Aircraft was not as successful as previous Rider designs. Was called "Eight Ball" and as Rider once said, "It was named that to put others behind the eight ball, not me!"
2. The beautiful black and gold Alcor C6. One of the engines from this Allan Lockheed-designed light transport went into the R-4 as the original power plant.
3. Michel Detroyat's Caudron C460. This beautifully built dark blue French racer ran away from its less expensive American competitors at the 1936 races in Los Angeles.
4. Harold Neuman and his Folkerts SK-2.
5. Steve Wittman's "Chief Oshkosh" with the Cirrus engine and the tripod landing gear.
6. "Chief Oshkosh" at 1936 races with a newly installed Menasco and the now famous Wittman spring steel landing gear.
7. The R-4 running up shows the clean, crisp lines of the typical Rider design.
8. This three-quarter rear view shows the markings to good advantage. The airplane was all white with deep purple numbers with medium blue shading.
9. Howard DGA-4 flown by Joe Jacobson at the 1936 races. Joe flipped "Mike" on its back during landing, after a race, causing Kling to land wide and hitting the pylon wire with "Suzy."

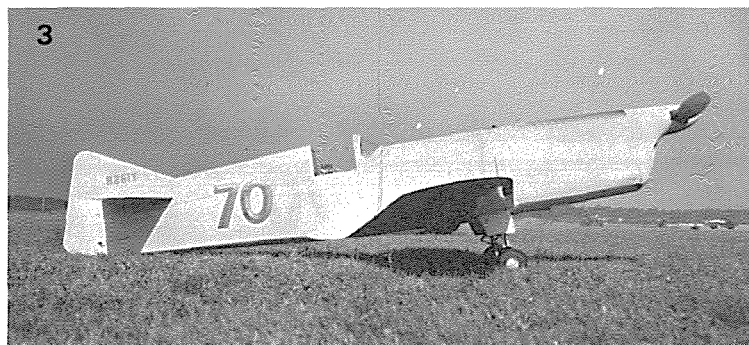
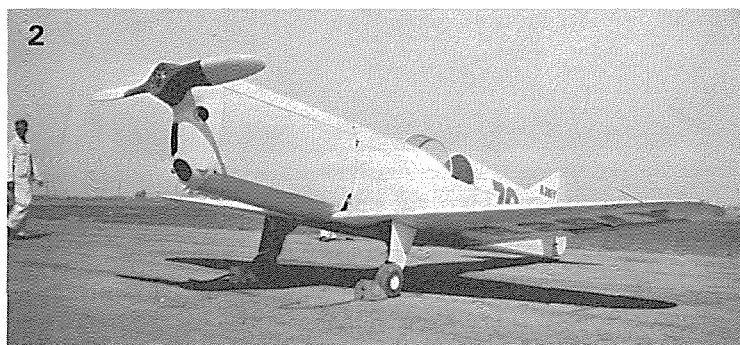
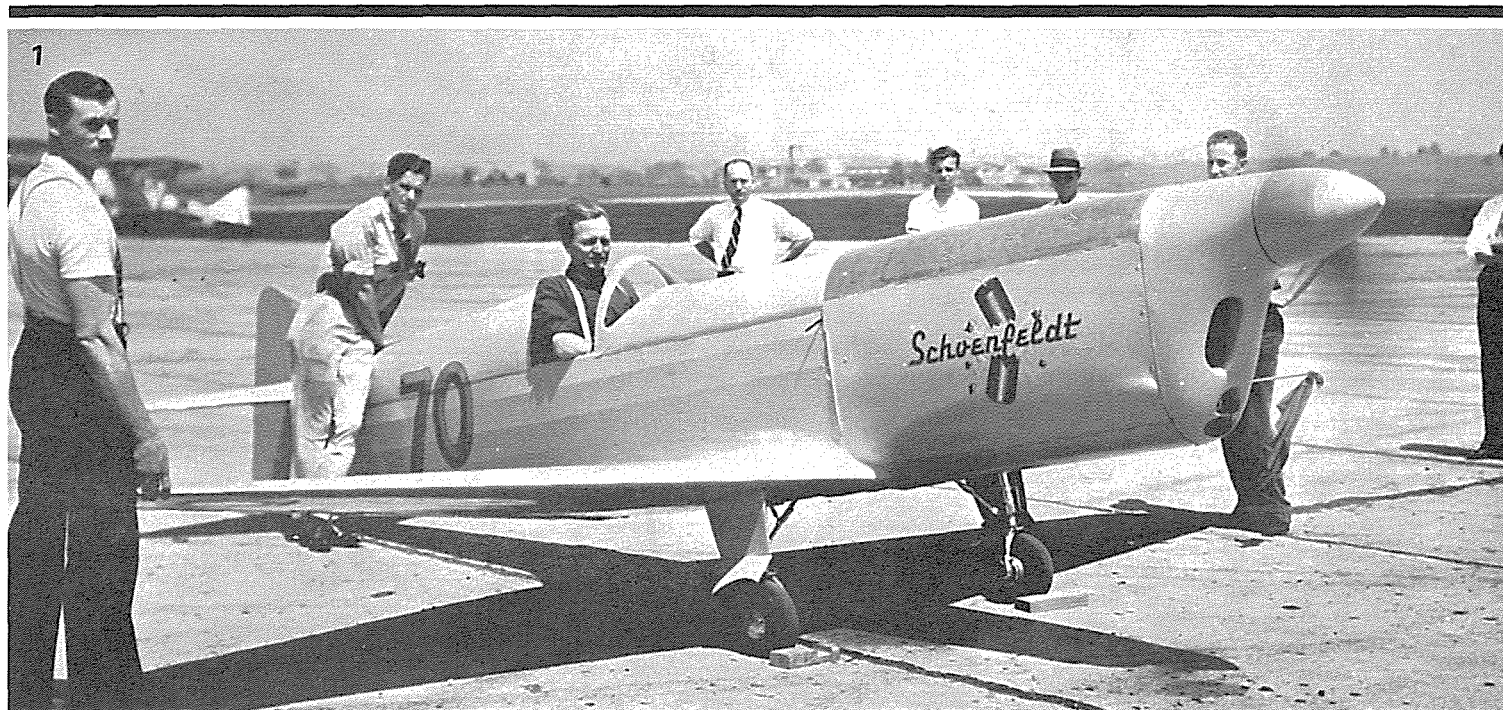
Folkerts SK-3 at 232.272 mph, just fast enough to beat the hard-charging S.J. Wittman in the "Chief Oshkosh" powered by a small 4-cylinder, 363 cu. in. Menasco, a truly sensational showing by the schoolteacher.

The results:

Rudy Kling #301	Folkerts SK-3, Menasco C6S-4	544 cu.in.	232.272 mph
S.J. Wittman #111	Wittman Chief, Menasco C4S	363 cu.in.	231.990 mph
C.H. Gotch #70	Schoenfeldt, Menasco C6S-4	544 cu.in.	231.598 mph
R.D. Rae #1	Folkerts SK-2, Menasco C4S	363 cu.in.	224.197 mph
M. McKeen #33	Brown B-2, Menasco C6S	544 cu.in.	223.644 mph

Bill Schoenfeldt felt that Gotch could have easily won the race, despite the lower power output with the low-compression pistons, had he flown the "Firecracker" as he did in St. Louis. Relations between Schoenfeldt and Gotch were now beginning to deteriorate rapidly.

The 1937 Thompson Trophy Race is legendary for the heart-stopping photo finish in which Rudy Kling nipped Earl Ortman to win at 256.910 mph. Gus Gotch flew the "Firecracker" to a disappointing seventh and last place. The following day, most of



the racers were airborne again, for the filming of racing footage to be used by MGM for its forthcoming movie, *Test Pilot*.

Once back at Long Beach, California, Bill Schoenfeldt began preparing for the 1938 Oakland International Air Races to be held the following May 28, 29 and 30. In October 1937, Tony LeVier brought with him a gifted, hard-working mechanic, Young McClure, to help with the teardown and overhaul of the "Firecracker" at Schoenfeldt's Mines Field shop.

Just prior to the opening of the Oakland races, after some coaching from veteran racing pilot Roger Don Rae, LeVier broke through the 200-mph barrier over Long Beach on his first flight in the "Firecracker."

At Oakland, Dave Elmendorf appeared with his Rider-designed "Special." The Elmendorf ship was unchanged from its 1936 configuration, and in contrast, the "Firecracker" was now a much more sophisticated racing machine. An unfortunate mishap three days before the start of the races ended in a belly landing for the Elmendorf Special, putting it out of the competition. Short of money for the repairs, Elmendorf sold the racer to the Marcoux-Bromberg partnership.

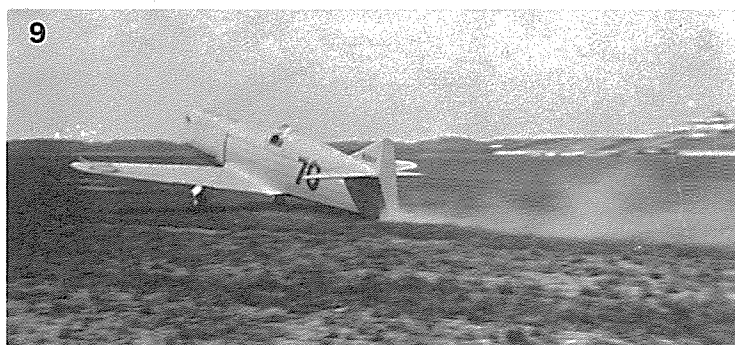
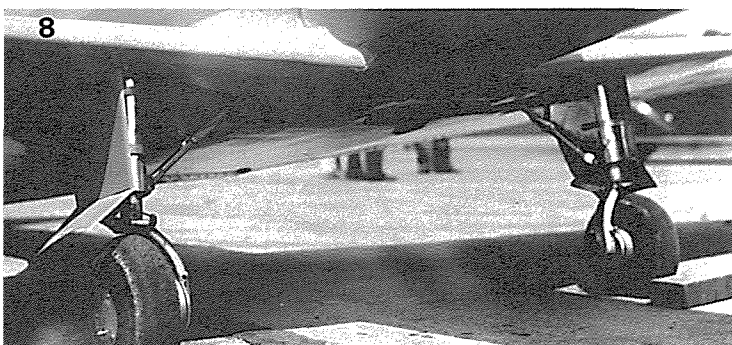
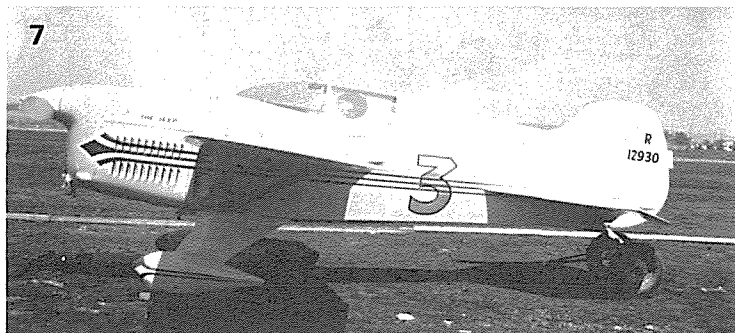
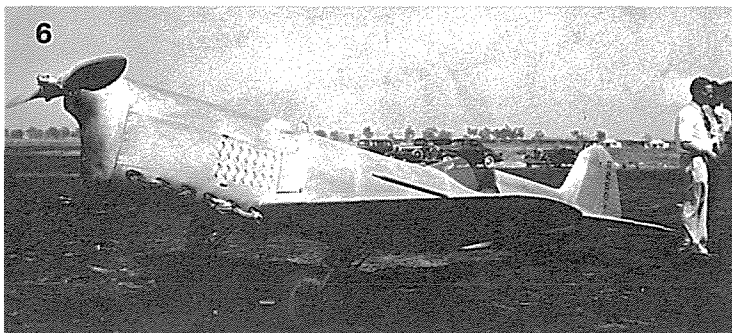
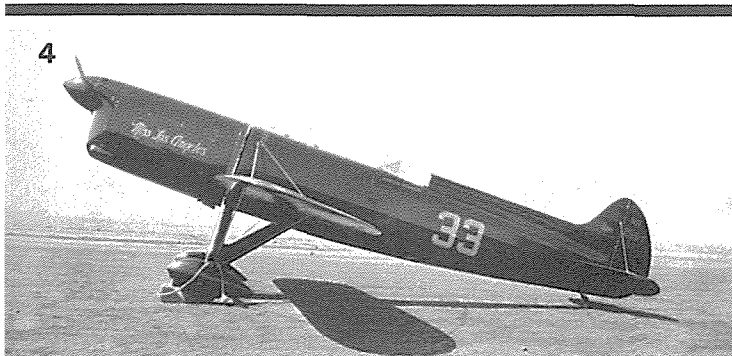
Tony LeVier's second flight in the "Firecracker" was his qualifying run on May 26, recording a respectable 236.2 mph.

The first race, limited to 550 cu. in. engines, was nine laps

around an 8½-mile course. After a rather shaky start that left newcomer Russ Chambers and veteran Marion McKeen at the starting line, LeVier pushed past an inspired Steve Wittman to win; the speeds 249.351 mph and 247.934 mph, respectively. This was an unbelievable performance by Wittman's "Chief Oshkosh," powered by the 4-cylinder, 363 cu. in. Menasco. In his first race, LeVier, in winning, had surpassed his qualifying speed by better than 13 mph.

The following day, Sunday, May 29, another 550 cu. in. race, this time for 100 miles, was marred by Gus Gotch's fatal crash in the Folkerts SK-2 at the first pylon. LeVier and Wittman resumed the duel started the previous day. After exchanging the lead several times, Wittman's engine, turning rpm's above and beyond original design limits, broke its crankshaft! Wittman made a skillful deadstick landing, ending up upside down but unhurt. LeVier won easily with the pressure off but showed Boss Schoenfeldt he was ready for the "Big Time" by averaging 251.01 mph.

Monday, May 30, Memorial Day, the unlimited Golden Gate International Exposition Trophy Race, 18 laps around the small 8½-mile course for a total of 150 miles, was held. Getting the "Firecracker" ready on the starting line, a small leak was spotted in the fuel tank. With only minutes left before the start, rags were



1. The 1937 version of the R-4 sports a new engine cowl, a new prop with spinner, a revised windshield and the addition of flaps to the landing gear.
2. A low-angle view of the 1936 Rider R-4.
3. This profile view clearly shows some of the changes for 1937.
4. The classic lines of the Larry Brown-designed "Miss Los Angeles" are revealed in this photo. This red and gold racer was flown by Marion McKeen.
5. Another Brown racer, the Miles & Atwood Special, flown by Lee Miles.
6. The first Crosby racer built by Harry Crosby in a hangar at United Airport, now Hollywood-Burbank Airport.
7. Art Chester's "Jeep" at Los Angeles in 1936.
8. Details of the R-4 landing gear.
9. Gus Gotch starting his takeoff roll at Cleveland in 1937.

stuffed around the leak. As the flag dropped, seven planes got into the air: Ortman, Wittman, Turner, Ray Moore, LeVier, Chester and McKeen. Marion McKeen, flying the Brown B-2 now equipped with a cantilever wing and retractable gear, dropped out at the end of the first lap. Wittman, in his Curtiss D-12-powered "Bonzo," right behind Ortman's Marcoux-Bromberg, had to give up on the sixth lap because of overheating. Ray Moore, piloting

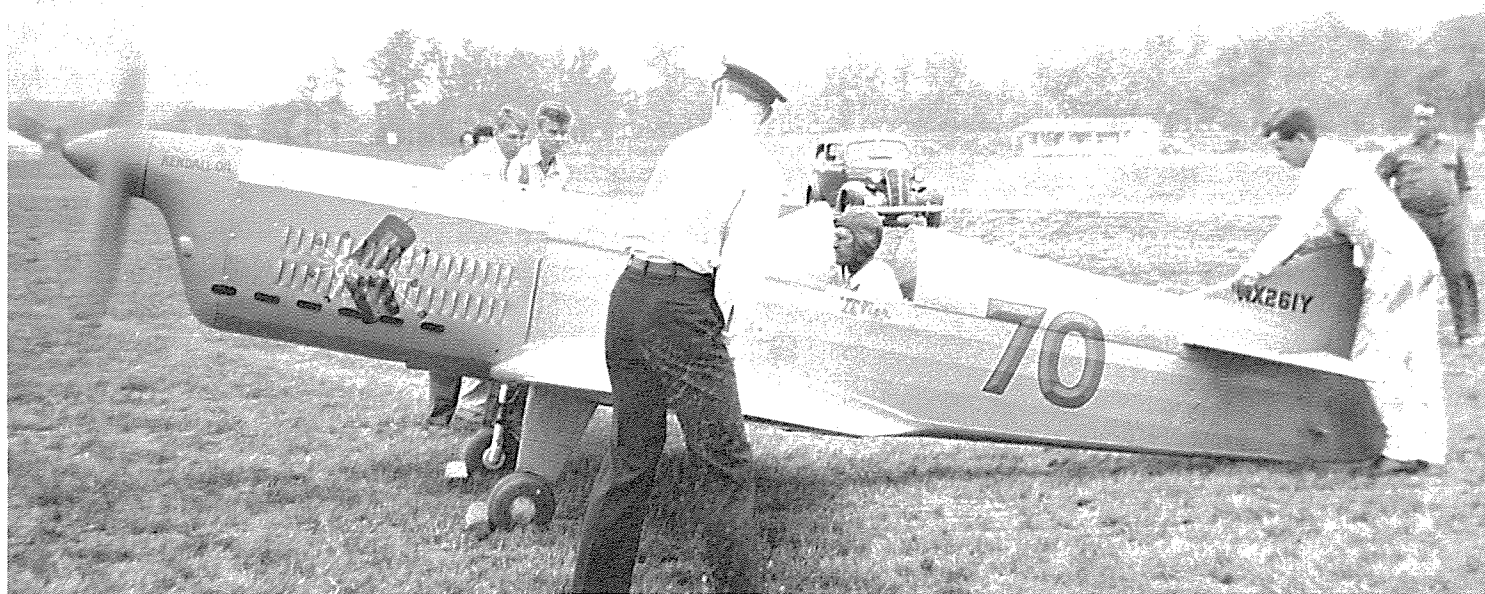
Frank Fuller's Seversky S-2, could not bend the large plane around the closely spaced pylons and was never a serious contender.

LeVier, fighting the noxious fumes of the leaking fuel, stayed close to the leaders. The final average speeds tell the story of the race: Ortman, 265.539 mph; Turner, 265.457 mph; LeVier, 260.762 mph. This speed by LeVier broke the world's record for planes with engines of less than 550 cu. in. over a 100-kilometer distance.

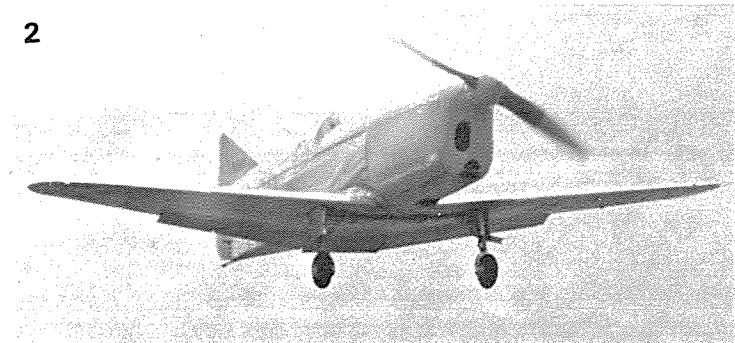
For the second consecutive year, the Thompson Trophy Race committee in Cleveland announced a lengthening of the race; for 1938 it would be 300 miles (30 laps around a 10-mile course). The "Firecracker's" fuel tank already had been expanded to the limit of available space. Schoenfeldt remembered the 18 pounds of lead ballast in the tail. With the lead removed, a 25-gallon auxiliary fuel tank was installed just behind the pilot's seat, increasing the total capacity to 80 gallons.

Arriving at Cleveland in mid-August to get a headstart on sorting out some of the "Firecracker's" various problems, the Schoenfeldt crew found Art Chester already unloading his new racer "The Goon," a machine that would prove to be the "Firecracker's" primary competitor in 1938 and 1939. The new Chester-designed and built racer reflected the latest state of the

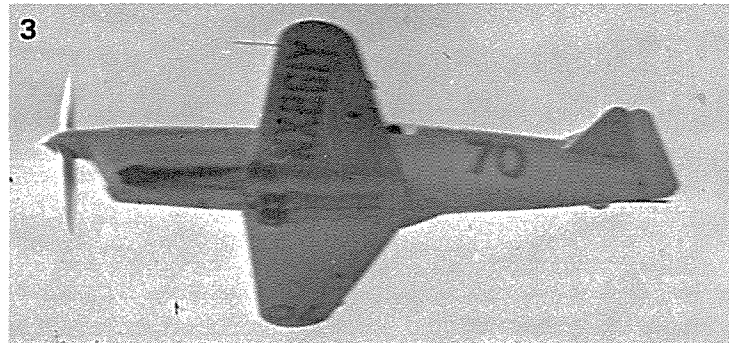
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art. One feature, the imported French Ratier two-position propeller, was expected to give the "Goon" a decided edge over the "Schoenfeldt Firecracker," particularly on takeoff. The Menasco C6S-4 in the Chester racer had been meticulously balanced and hand-assembled for maximum power and reliability by Chester, who was at the time employed by the Menasco Engine Company.

It didn't take long for the first crisis to materialize. While the "Firecracker" was being test flown after assembly, the propeller spinner loosened and began to wobble. LeVier managed to land the ship before it tore off. The front tip of the spinner was salvaged and adapted to the front propeller flange. This arrangement worked satisfactorily for the duration of the 1938 Cleveland races, although it marred the otherwise sleek appearance of the Schoenfeldt ship.

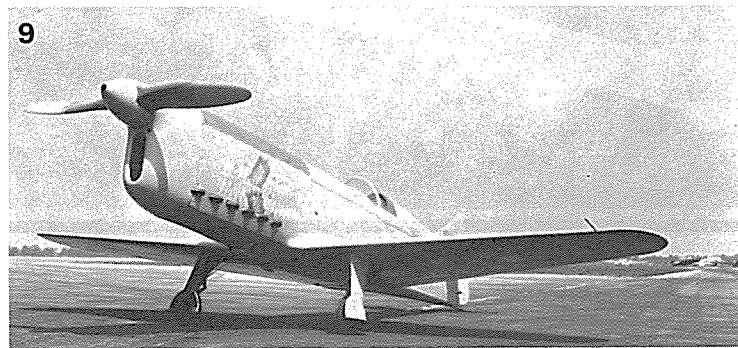
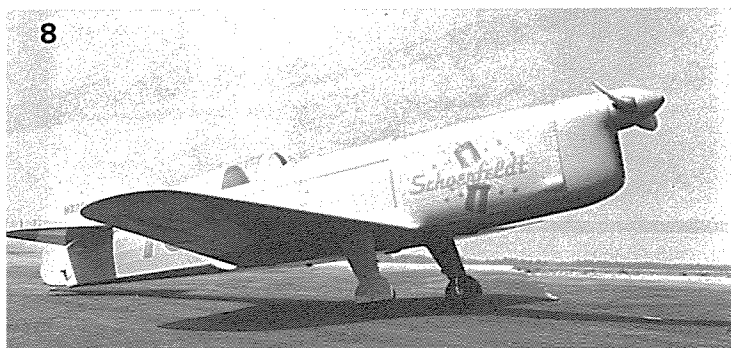
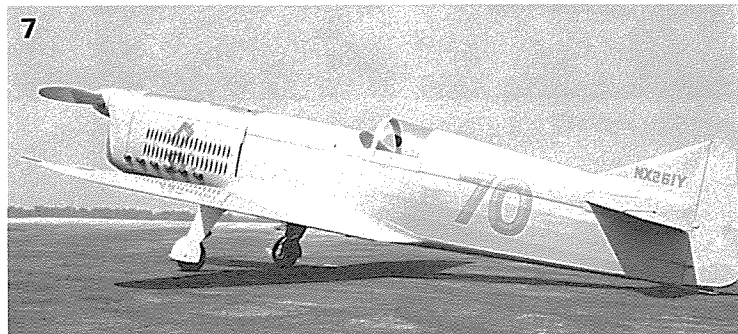
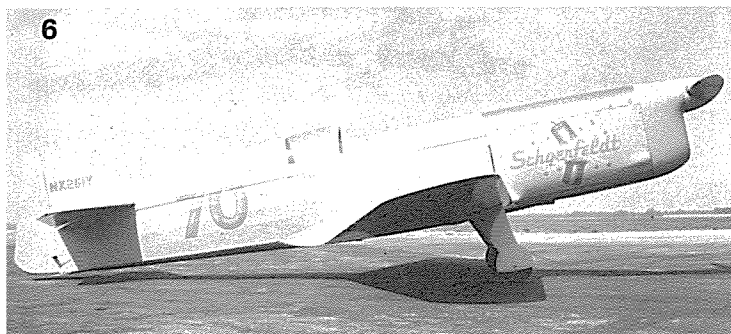
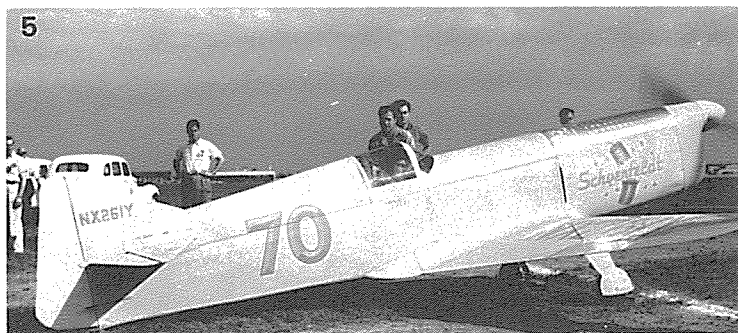
As a result of the new ruling prohibiting planes entered in the cross-country Bendix Race from competing in the Thompson and Greve events, the qualifications for later events were held on Wednesday, August 31. Two laps at better than 200 mph were required to make the starting field of the Greve Race or 225 mph minimum for the Thompson. Each plane was given three attempts.

The breezy weather conditions in the morning didn't seem to bother Turner or Ortman in their heavier planes; however,

LeVier and Chester, waiting for the wind to calm down, found even more gusty conditions in the afternoon. The official speeds printed below show the surprising performance by Chester on his first outing in his new racer, "The Goon." The new Chester ship flew somewhat more quietly behind the Ratier propeller than the "Firecracker," which gave rise to the rumor that Chester was holding back and would really "open up" in the Thompson.

1938 QUALIFYING SPEEDS

R. Turner #29	L.T.B. Spl. P&W	1830 cu.in.	281.250 mph
S. Wittman #2	Wittman Spl. Curtiss	1145 cu.in.	277.780 mph
E. Ortman #3	Marcoux-Bromberg P&W	1535 cu.in.	270.437 mph
A. Chester #5	Chester Spl. Menasco	544 cu.in.	268.456 mph
L. Wade #41	HM-1 P&W	1830 cu.in.	264.417 mph
J. Mackey #25	Wedell-Williams P&W	1690 cu.in.	261.488 mph
A. LeVier #70	Schoenfeldt Spl. Menasco	544 cu.in.	259.740 mph
J. Jacobson #15	Folkerts SK-4 Menasco	544 cu.in.	251.748 mph
H. Crosby #52	Crosby CR-4 Menasco	544 cu.in.	239.680 mph
J. Jacobson #18	Rider R-6 Menasco	544 cu.in.	230.621 mph
G. Dory #17	Bushey-McGrew Spl. Menasco	363 cu.in.	214.431 mph



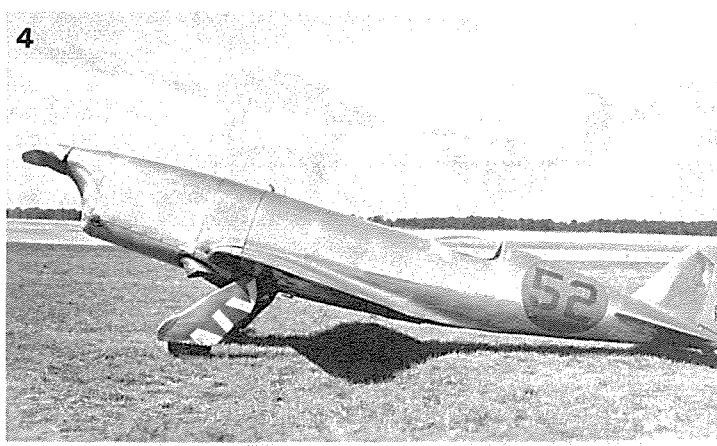
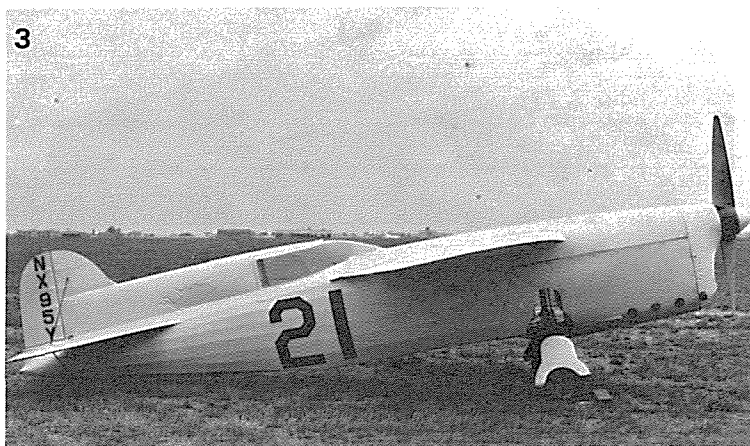
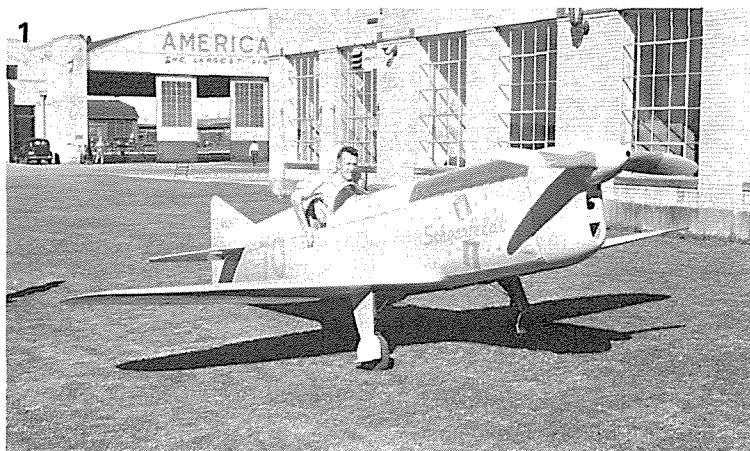
1. Tony running up "Firecracker."
2. A rare landing shot of Gotch in the 1937 R-4.
3. A rare flight shot of the R-4. LeVier at the controls during the Oakland races.
4. Tony LeVier in the cockpit of the R-4.
5. Tony and "Firecracker" on the starting line at 1939 Cleveland races.
6. The Schoenfeldt "Firecracker" in its final configuration. Changes include new engine cowl, completely new wing and a revised landing gear.
- 9.

Of note is Joe Jacobson's name as qualifier of both the Folkerts SK-4 and Rider "Eight Ball." Some witnesses claim Roger Don Rae was the pilot on both qualifying runs.

On Sunday, September 4th, six planes lined up for the Greve Trophy Race. The Folkerts SK-4 had been withdrawn. Roger Don Rae was being watched so closely by newsmen he decided not to risk his TWA job with the possible headline publicity. Joe Jacobson chose the Rider "Eight Ball" as the lesser of the two evils. Both planes were suffering from wing problems: the "Eight Ball" an inherently weak wing; the Folkerts' aileron flutter.

With the drop of the flag, Chester and LeVier left the rest of the lineup behind, badly outclassed. By virtue of the Ratier propeller, Chester had the early lead. By the fifth lap, LeVier had charged

into the front position with Chester closely behind; both having lapped the rest of the field. On the eighth lap, Chester regained the lead briefly, only to be passed again by LeVier. Chester got it back on lap 12, but an oil leak was now coating the "Goon's" windshield. Visibility deteriorated and Chester cut inside a pylon on lap 15. Recircling the pylon Chester lost the lead to LeVier again. At wide-open throttle, Chester began closing the distance between him and LeVier. On the 19th lap, he pulled up alongside of LeVier but could not make out the pylons through the oil-smeared windshield. LeVier crossed the finish line in front and pulled up sharply into a spectacular "victory roll." Chester did an additional lap, "just in case" Tony had miscounted. In his elation, LeVier neglected to lower his flaps and landed about 20 mph faster than normal. As the "Firecracker" rolled across the grass, the tiny 10½-inch wheels hit the edge of a concrete taxiway and drove the landing gear shock struts up through the wing, splitting the plywood covering from tip to tip. Although smiling for photographers as they accepted the Greve Trophy and the \$12,000 check, Tony LeVier and Bill Schoenfeldt were broken-hearted to be eliminated from the prestigious Thompson Trophy Race the next day. Art Chester challenged the large-engined machines for 20 laps in the Labor Day Classic but the oil leak of the previous day returned and forced him to drop out while in fifth place.



During the winter of 1938-39, Bill Schoenfeldt and his crew built a new wing using an NACA 23012 airfoil while retaining the same planform as the old wing. The 23012 airfoil increased the depth of the wing at the root enough to permit the landing gear to be completely faired over when retracted, where previously the wheels had protruded slightly from the old wing. Al Novotny, metalworking wizard, fabricated a new nosepiece and cooling ducting for the engine cowl. The nosepiece, like the one on Chester's "Goon," had the center line air intake which diverted to the right side of number one cylinder inside the cowl to join a tapered duct to direct the cooling air proportionately to the remaining five cylinders. On the left side of the air intake, an asbestos insulated duct drove air through the cartridge-type oil cooler which was supplemented by the skin-type cooler that formed the top panel of the engine cowling. It was hoped the new cowling improvements would allow full throttle operation without the overheating problems of previous years.

The International Air Races at Oakland in 1938 had been a financial fiasco, ending hopes of a 1939 repeat on Memorial Day.

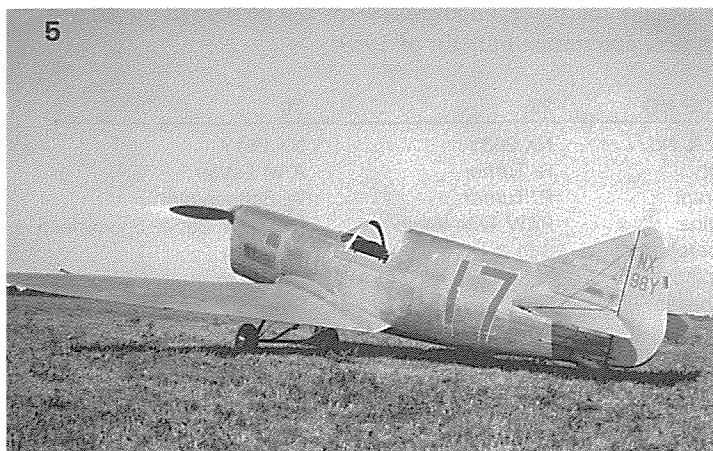
The eagerly awaited announcement from the contest committee in Cleveland did not disclose any lengthening of the Thompson Race as in previous years, but did include a new rule making parachutes mandatory in all racing events. The "Firecracker" as it was now set up with fuel tanks built around pilot Tony LeVier, didn't allow space for a "backpack," and a "seatpack" was out of the question because of the limited cockpit height. This crisis was resolved by the Irving Parachute Co. who made a special triangular-shaped pack that replaced the plywood headrest behind the

1. Tony LeVier emerging from the tiny cockpit of the R-4 at Cleveland, 1939.
2. Rudy Kling's Folkerts SK-3, 1937.
3. The Chambers R-1, "Chambermaid," built and flown by Russ Chambers.
4. Harry Crosby's second racer, the CR-4, in 1938.
5. Bushey-McGrew B7M1 flown by George Dory in 1938.
6. Steve Wittman's 1939 Curtiss D-12-powered racer, "Bonzo."
7. The 1938 version of Wittman's "Bonzo."
8. The last in the series of Rider racers, the R-6 "Eight Ball," flown by George Byers in 1938.

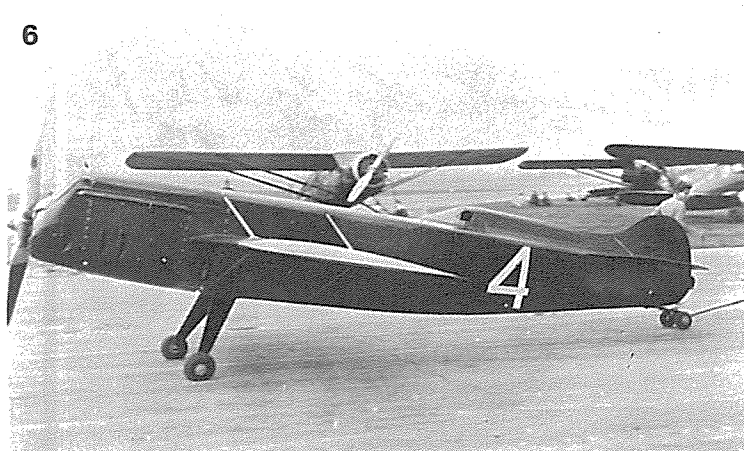
pilot's head. A rather unorthodox harness attachment made the feasibility of this arrangement somewhat questionable, but technically it met the requirements of the new rule.

The Schoenfeldt crew arrived in Cleveland for the 1939 N.A.R. again in mid-August, well prepared this time. Art Chester, anxious to resume the duel started the previous year, was on hand with his meticulously groomed "Goon." The Folkerts SK-4, scratched in 1938 because of aileron flutter, was back with ingeniously designed aileron counterbalances that solved the problem. The SK-4 had been thoroughly tested by Roger Don Rae, prior to the trip to Cleveland. New owner, Bud Tholen, brought with him Del Bush, an inexperienced pilot, to handle the SK-4. On his first flight over Cleveland airport, Bush crashed fatally when his engine failed.

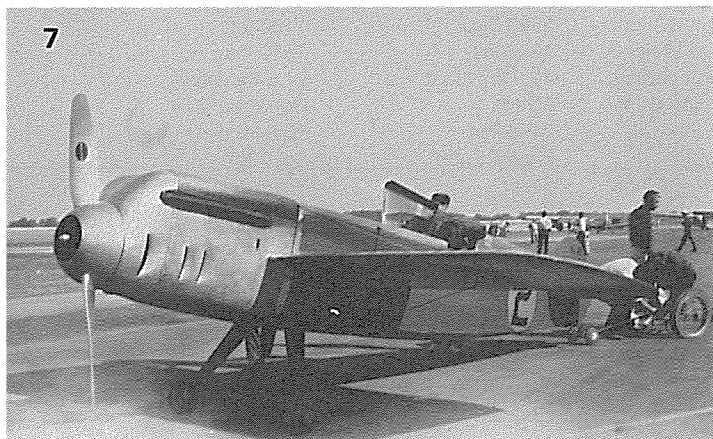
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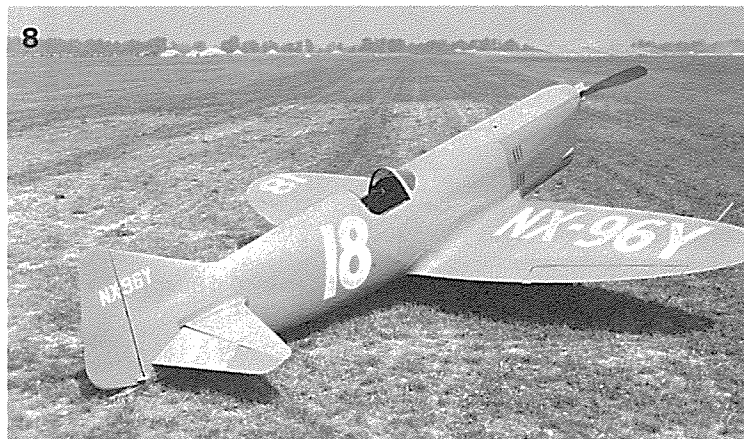
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The results of the qualifying trials looked like this:

R. Turner #29	L.T.B. Spl. P&W	1830 cu.in.	297.767 mph
A. LeVier #70	Schoenfeldt Spl. Menasco	544 cu.in.	277.163 mph
S. Wittman #4	Wittman "Bonzo" Curtiss	1145 cu.in.	273.764 mph
A. Chester #5	Chester Spl. Menasco	544 cu.in.	268.857 mph
H. Crosby #52	Crosby CR-4 Menasco	544 cu.in.	263.158 mph
J. Mackey #25	Wedell-Williams P&W	1690 cu.in.	251.221 mph
E. Ortman #2	Marcoux-Bromberg P&W	1535 cu.in.	244.565 mph
G. Byers #18	Rider R-6 Menasco	544 cu.in.	234.834 mph
L. Williams #33	Brown B-2 Menasco	544 cu.in.	228.137 mph

Tony LeVier's qualifying time, 277.163 mph, was the fastest time ever turned by an inline racer in the history of the N.A.R. Art Chester's speed was almost identical to his 1938 time, indicating a decided edge in favor of LeVier for the Greve Race.

Sunday, September 3, 1939, the start of the Greve Trophy Race was marred by the fatal crash of Lee Williams at the scatter pylon. Art Chester jumped out into the lead while Tony LeVier was laboriously cranking up the "Firecracker's" landing gear. By lap five, LeVier had caught up with Chester and passed him on the sixth. The "Firecracker" was timed at 285.6 on one lap, surpassing its record qualifying time by more than 8 mph. The heat and humidity, however, caused the Menasco's ignition system to misfire badly and LeVier was forced to pull out of the race on the

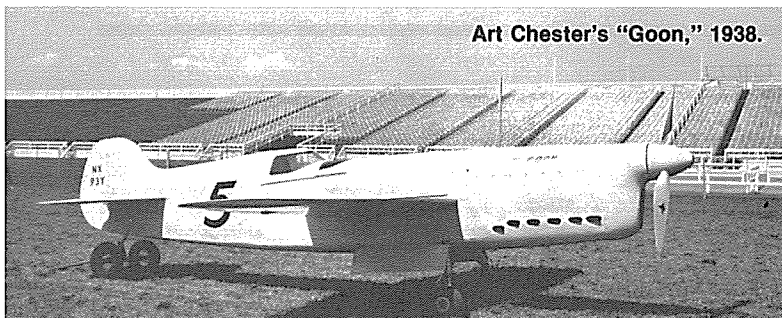
11th lap. Chester finished the race all by himself at an average speed of 263.390 mph, a new Greve record. The "Firecracker" magnetos were changed and the ignition system given a thorough scrutiny in preparation for the Thompson Trophy Race. A torrential rain on Monday caused the Thompson Classic to be postponed until the following day. Unfortunately, many of the spectators had to return to their jobs on Tuesday and one of the greatest showings by a Menasco-powered racer was witnessed by only about 60,000. The Monday rain brought cooler temperatures Tuesday, a factor favoring the "Firecracker's" temperamental Menasco engine.

At the start, Steve Wittman in his angular "Bonzo" took the lead but the old Curtiss D-12 engine couldn't take the pressure and LeVier passed on lap 5 to take the lead. Chester tucked in behind LeVier and Ortman followed in third. Turner had cut a pylon on lap 2 and had to recircle it, losing precious time. By lap 9, Turner had caught up and moved past LeVier into first. An oil leak reappeared on Chester's "Goon" and he had to pull out on the 17th lap. The official finish was as follows:

1st	R. Turner	282.536 mph	\$16,000
2nd	A. LeVier	272.538 mph	8,000
3rd	E. Ortman	254.435 mph	4,000
4th	H. Crosby	244.522 mph	2,500
5th	S. Wittman	241.361 mph	1,500
6th	J. Mackey	232.926 mph	1,000

The "Firecracker" was undisputably the fastest plane of its class in the world in 1939, a real tribute to the men that developed this machine from the inexpensive 1936 Rider racer to the

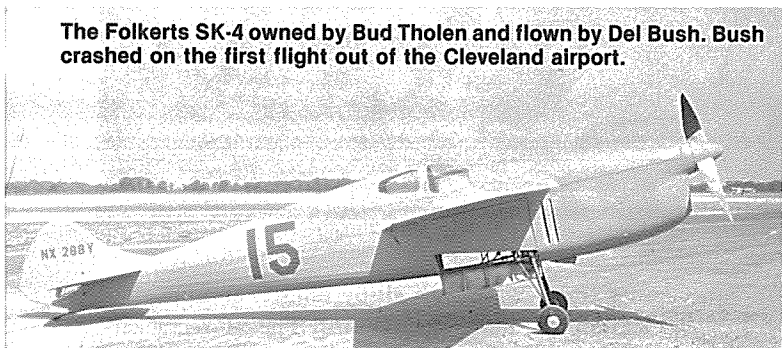
Art Chester's "Goon," 1938.



Roscoe Turner's old Wedell-Williams restored after the crash in New Mexico. Flown by Joe Mackey in the 1938 Cleveland races.



The Folkerts SK-4 owned by Bud Tholen and flown by Del Bush. Bush crashed on the first flight out of the Cleveland airport.



The Brown B-2, "Miss Los Angeles," equipped with a new tapered cantilevered wing and a retractable landing gear. This modification was flown at the 1938 Oakland races by Marion McKeen.



The old Miller HM-1, "Time Flies," reconfigured to a military aircraft, was entered in the 1938 Cleveland race and flown by Leigh Wade.



number two in the nation in 1939. An interesting comparison of the 1st and 2nd place Thompson ships can be seen in the N.A.R. technical committee bulletin of 1939:

RACE NO.	29	70
C.A.A. No.	NX 263Y	NX 261Y
Pilot	R. Turner	A.W. LeVier
Entrant	R. Turner	W. Schoenfeldt
Engine	P&W Twin Wasp	Menasco Super Buccaneer
Supercharger	3 to 2	10.9 to 1
Displacement	1830 cu.in.	544 cu.in.
Propeller	Hamilton Std.	Story-Schoenfeldt
Type	Const. Speed (3 blade)	Fixed wood
Dia.	9 ft. 6 in.	5 ft. 9 in.
Airplane	Turner-Laird	Schoenfeldt Spl.
Fuel Capacity	205 gal.	80 gal.
Span	25 ft.	18 ft.
Wing Area	100 sq.ft.	68 sq.ft.
Empty Weight	3500 lbs.	1160 lbs.
Gross Weight	4980 lbs.	1870 lbs.
Wing Loading	49.8 lbs./sq.ft.	27.5 lbs./sq.ft.
Landing Gear	Fixed	Retractable
Tire Size	24-in. dia.	10.5-in. dia.
Flaps	Plain T.E. 35°	Split 30°
Color—Wings	Silver	Yellow
Body	Silver	Yellow
Number	Black	Red
Qualifying Speed	291.8 mph	277.1 mph

It's apparent that the consistent high horsepower output of the sophisticated P&W 1830 cu. in. Twin-Wasp spelled the speed difference in the two airplanes. The 544 cu. in. Menasco Super Buccaneer, when pushed beyond its normal power rating, became painfully unreliable in the longer races.

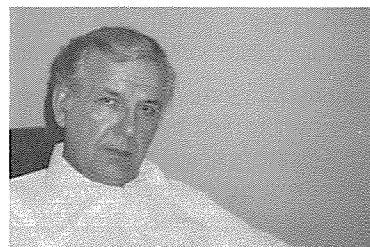
The Schoenfeldt "Firecracker," in the hands of Tony LeVier, came quite close to earning the title of "Giant Killer"; unfortunately, the 1939 Nationals were the last of the golden age of air races.

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ABOUT THE AUTHOR

Mike Kusenda attended the 1929 Cleveland National Air Races as a youngster of eight and became irreversibly "hooked," and didn't miss any of the succeeding events except the 1930, 1933 and 1934 races, which were held in Chicago and Los Angeles.



In 1937, to gain admittance to behind-the-scenes pre-race activity, he joined the local CBS affiliate in Cleveland, WGAR, to help out with the radio coverage of the racing events.

In WW II he served with Navy Patrol Bombing Squadron 104 in the CBI theatre, flying PB4Y1 Liberators and PB4Y2 Privateers.

Since WW II he has been employed by NACA and the Lewis Research Center of NASA in the Engineering Design Division which is located at the former site of the 1930s' air races.