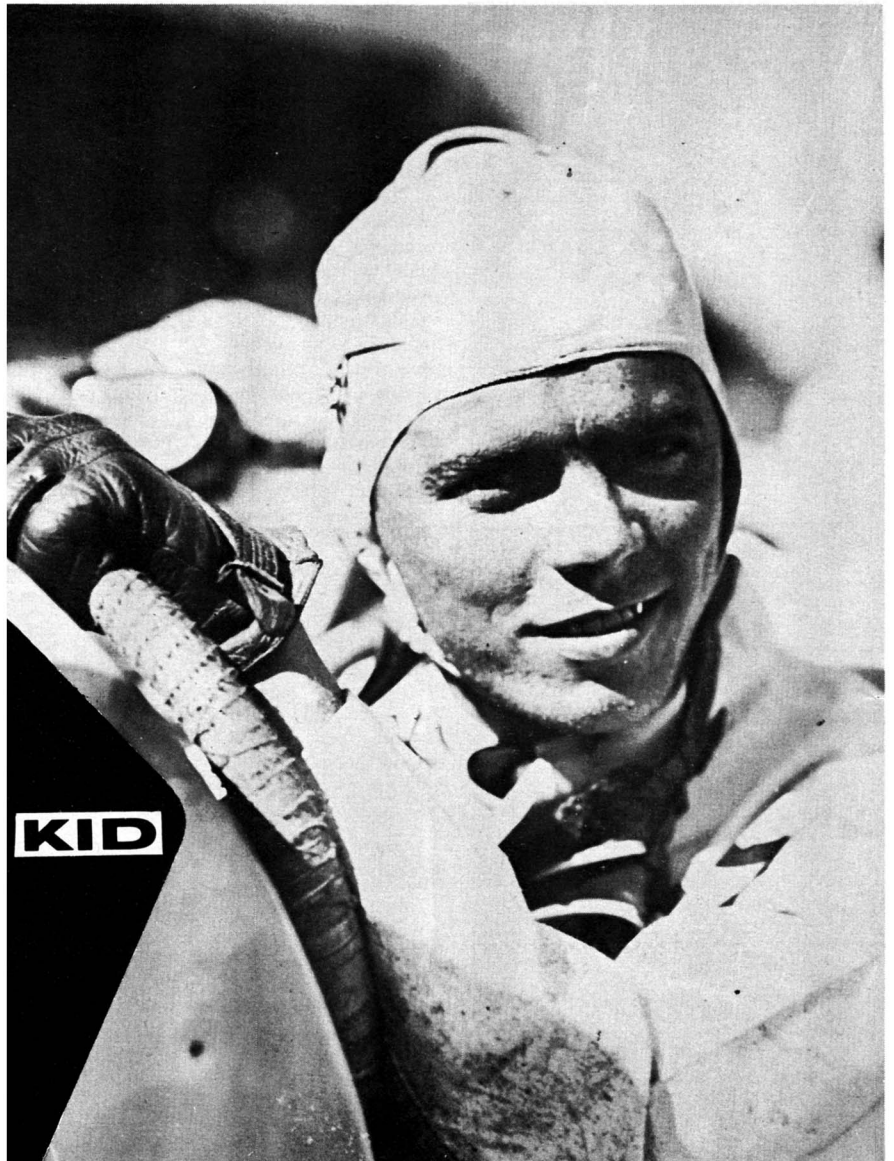


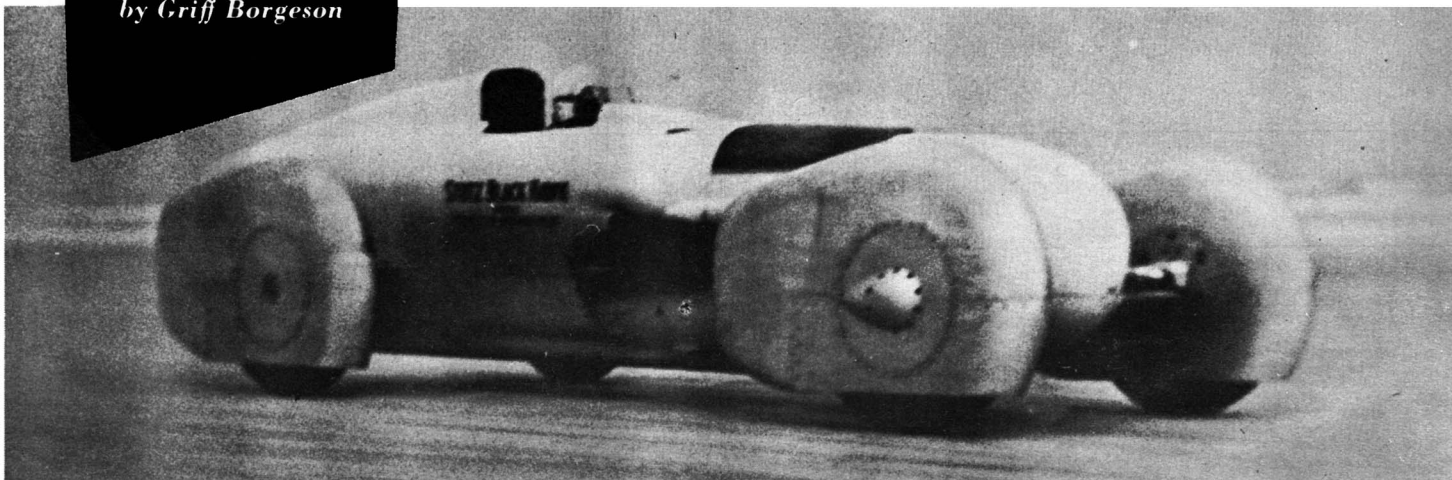
**THE  
GAMEST  
AND  
THE  
QUICK  
WHITE  
CAR**

*by Griff Borgeson*

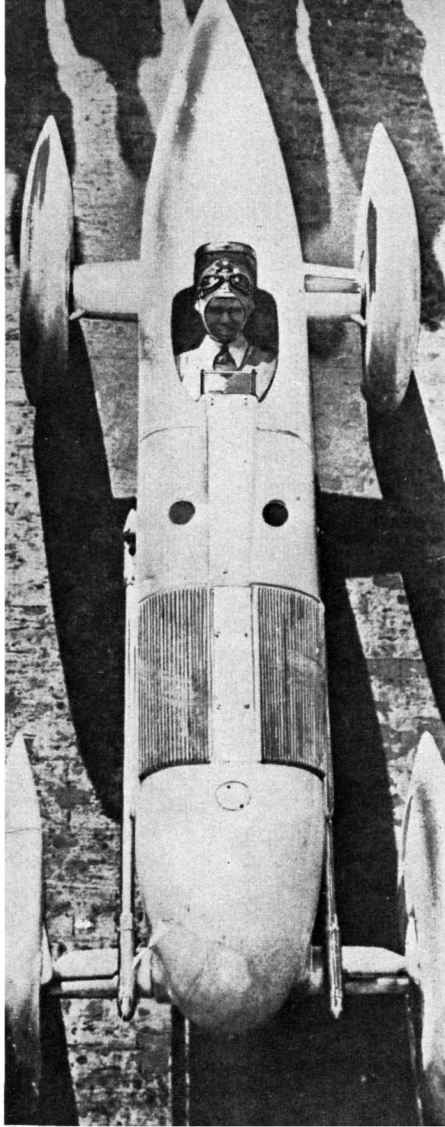


**W**HO WAS FRANK LOCKHART? Back in the Roaring Twenties he was a great national hero. He was one of the greatest racing drivers the world had seen. As a kid just out of his teens, jockeying a bucket of bolts, he became famous overnight as King of the Dirt Tracks. The first time he went near Indianapolis he won the 500-mile

race spectacularly and decisively . . . in a borrowed car. When he hit the Championship circuit after that he was consistently fantastic, winning races and smashing records from coast to coast. His name was as much a household word as that of Babe Ruth or Jack Dempsey even before he decided to become the fastest man on earth.







Then he built the Stutz Black Hawk, America's challenger for the Land Speed Record. Compared with the English record-holder, Seagrave's gigantic Sunbeam, the Black Hawk was a mere toy. But experts called it "the most mechanically perfect automobile ever built in the world" and predicted that what it lacked in size it would more than make up for in efficiency.

The eyes of the world were on Lockhart when, at the age of 25, he did go faster than man ever had gone on land. In 1928, 225 mph was as unprecedented for an automobile as 425 is today. But Lockhart had done it, the papers said. Then, they told how a tire had blown at that speed and how the tiny car rolled and banged eerily down the beach and how a cruel, ironic fate caused his broken body to be flung at the feet of his waiting wife.

Where the Lockhart legend survives it has a mythically heroic quality. Illiterate, the hero's intellect was awesome. Obscure,

he rocketed to world fame. Penniless, he raced his way to wealth. Frail, his endurance was unmatched. What other men accomplished with a lot, Lockhart surpassed with less. Horatio Alger never dared to invent such a hero—a little guy who slew giants by virtue of nothing but guts, infinite labor and, above all, brains.

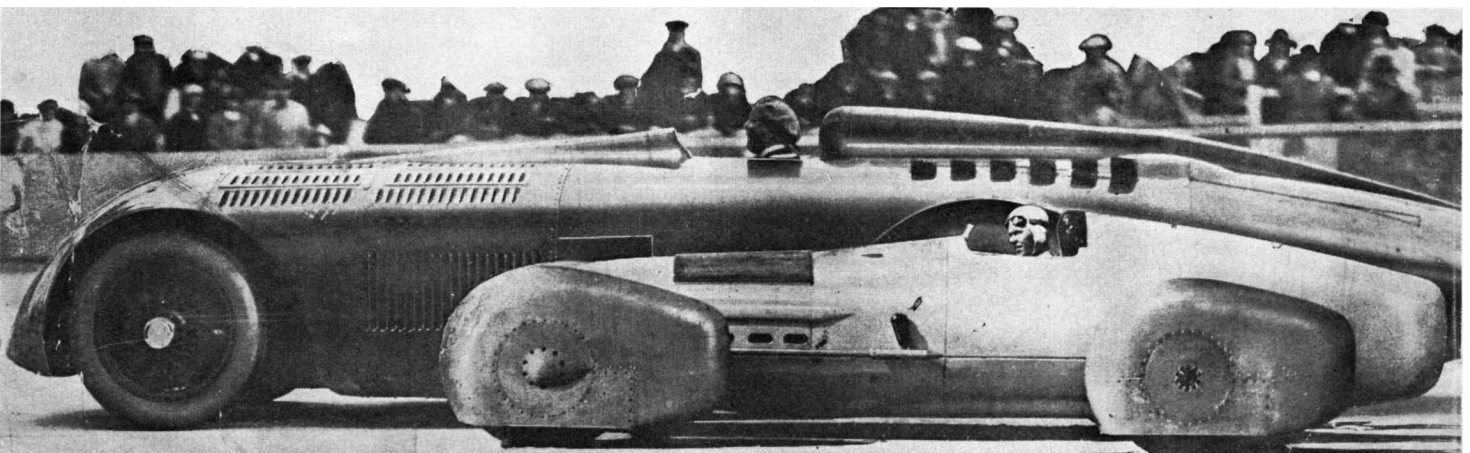
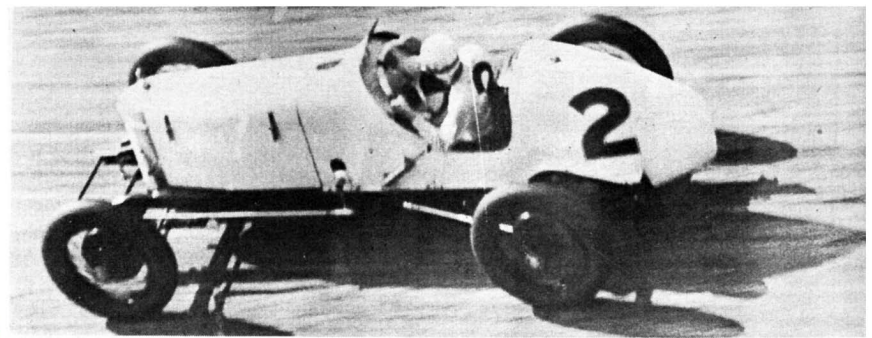
Legend though it is, it's not far from the truth. Lockhart did all these things. But he didn't do them all single-handedly, as the myth relates. Nor were the sacrifices and heartbreaks all his own.

Frank Lockhart stood five feet three, weighed about 135 lbs., had hazel eyes and flaxen hair. He was born in Dayton, Ohio in 1903. Three years later he was spending all his waking hours in a nearby livery stable watching automobiles of the day being worked on. If there was an egg-beater in the house, or any other mechanism, Frank appropriated it for his own.

When Frank was six his father died and his mother, Carrie, moved with Frank and



- 1 Frank's first race car, a Ford T hot rod which he often ran at Ascot.
- 2 The big time: he won Indy his first time there; much faster than others in rain.
- 3 His reputation established, he got a ride in Harry Miller's 91-inch supercharged eight. He modified it extensively, adding intercooler, then swept field first time out at Culver City.
- 4 The goal of his heart, to be the fastest man on earth, led him to build this radically new concept in record cars.
- 5 It compared with Seagrave's Sunbeam as David to Goliath.





his brother Bob to California. She took in sewing to keep the family alive. It wasn't easy and they moved often.

Frank could not play with other kids; he had no patience with their aimless frivolity. He just worked on things, built things and devoured all the reading matter he could find that dealt with things mechanical. He never had time to be bothered with spelling: as an adult he spelled sugar *shougar*, with phonetic logic. Even as a child he loved mathematics and felt far more at home with numbers than with words.

When Frank was eight he built a coaster—a Soapbox Derby sort of thing that all the kids were building at the time. He couldn't get canvas or slats or tin to cover it with so he used tar paper. In neighborhood races he almost always won, mainly because he had the power to get the greatest number of kids to push him. Anyone who associated with Frank had to submit to his will. When his shoes had to be polished Frank took care of one shoe and his brother did the other. When Frank was running race cars no one could drop in at the garage just to talk. He was handed a rag or a tool and put to work.

Frank had nothing but trouble in school. He had a mind that was totally his own and would work at nothing that was not important to him, personally. When automobiles still were being built with acetylene lamps Frank would spend his classroom time drawing cars with fully streamlined bodies. Teachers would brandish sheaves of these, demanding that his mother punish her child . . . help to get him away from this nonsense and down to serious studies. But Frank had long since convinced her that automobiles had to evolve toward the streamlined form. When he miraculously graduated from high school—to the merciful relief of all concerned—the principal told Carrie Lockhart that he had never been taken advantage of (meaning “treated as an equal”) by a student as he had been by Frank.

By the time he was 16 Frank had to have a car, family poverty notwithstanding. He lived in Inglewood then and a Jewish vegetable peddler named Gentle listened to the kid's hopes.

“I've got an old Model T chassis in my yard over in Boyle Heights,” he said. “You can have it if you can get it home.”

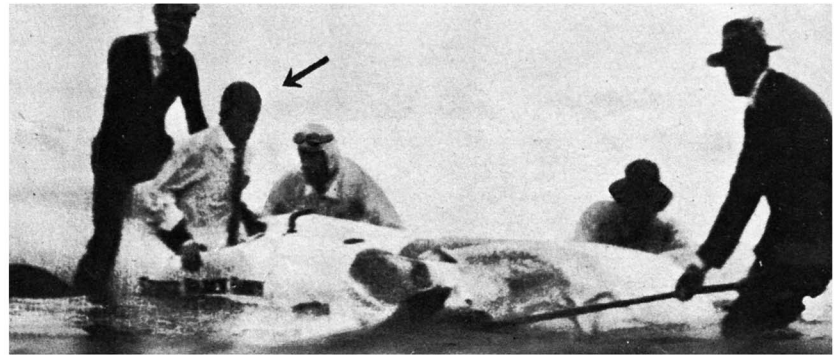
At that time Frank felt that anyone who would build a chassis from iron rather than from light hardwood was a fool. But here was the foundation for a car that he could own, now. Day after day he and his brother made the 12-mile trek on foot, carrying or dragging the T-chassis home piece by piece.

Frank hung around the speed shops and his favorite was Ray McDowell's in Hollywood. McDowell—who later won fame as a builder of racing engines and components—gave him a junk T engine. Frank got it home and rebuilt it on his mother's kitchen floor.

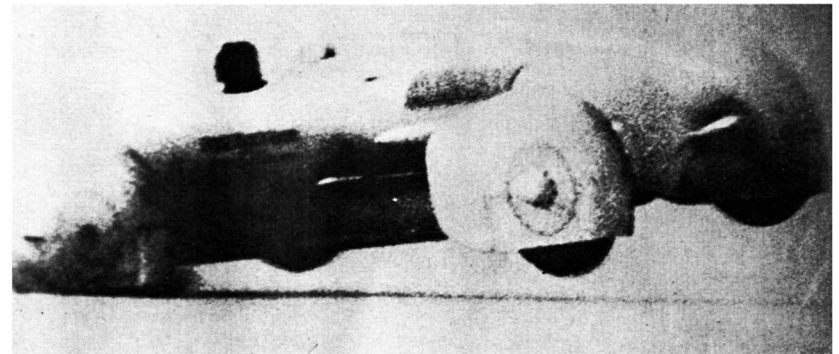
“Our house wasn't like other people's,” she told me. “That's how he started. McDowell was really a father to my Frank. He finally said, ‘Bring all of your plunder to my place.’ He had a pit. And they got that Ford so it would go. That was his first car. He ran it at Ascot and nobody



*First, non-fatal crash was in rain, Frank hit soft sand, flipped into Atlantic.*



*He was saved from drowning by Gil Farrell who covered his face as waves broke.*



*Movies showed fatal crash. Rear tire blew, car swerved round and tail dug in.*

ever passed him. He made no money there worth mentioning. He'd come home with burned feet and so tired that he couldn't get his shoes off. But that was what he had to do. He lived on grease and iron.”

He lived to go fast. He never touched a drink or smoked or swore, not so much for any moral reasons as for the fact that he considered these activities wasteful and pointless. He went with one girl in his life: the girl he married. In his human relationships he was spectacularly stingy but he would cheerfully spend his last cent to get a job done. That's what money was for.

Frank was no sentimentalist. “One day in '22,” his mother recalls, “he came home and announced that he had to have five new tires for the Ford. I reminded him that we didn't have the \$125—we hardly had a cent. He said, ‘Well the furniture is paid for and you own some equity in the house—borrow the money.’ I did. Frank wasn't a boy that you could say no to. His demands were very great.”

Out of high school Frank continued his

education at a technical night school and out of books at home. He was shy, quiet and well-liked. “Everybody loved Frank,” his mother says, “for his intelligence. He didn't have idle talk in him. When he talked you listened, because you'd never heard it before. Maybe you've known someone like that; they're rare.”

Somehow Frank came to the attention of the California Institute of Technology and was invited to take entrance examinations. He did and his mother was called to the office of Nobel Prize-winning physicist Robert Milliken.

“Your son's score in these tests is one of the highest in our experience,” he said. “He has the mind of a born scientist. Can't you find someone to back his education?”

Carrie didn't have to think for long. “We don't know anyone like that,” she answered. “But I'll do all your family's sewing if that will help.”

Frank did not attend Cal Tech.

Instead, he kept driving at Ascot and other small west coast tracks. Once in

a while someone would beat him but never when there was any good money at stake. Ernie Olson, one of the finest racing mechanics we've ever produced, used to watch him there. "No one ever sat in a race car like Frank," he recalls. "On a mile dirt track he seemed to begin his slide in the middle of the straightaway; nobody ever imitated him. His skill and daring were tremendous. He wasn't exactly cool. He always got real bad butterflies before a race; he'd even vomit. In the car he'd say, 'Pat me on the shoulder.' You'd do that and it seemed to fix the butterflies. But once the flag fell he was in command of everything. I once asked him what he thought about when he was racing. 'All I think of from one second to the next,' he told me, 'is how to drive to win.'"

When Frank, hoping for a start in the Big Time, wandered back to Indianapolis in 1926 he looked up the one man he knew there, Ernie Olson. Olson was in charge of the Miller of Bennet Hill and it was arranged for Frank to take a few practice laps on this course he had never seen before. The 23-year-old dirt-tracked the bricks, taking the turns in full, controlled slides, as the birds on the outside rail cringed. "My God," said Hill, "that punk's getting around faster than I do."

When Lockhart came in Olson got him in a corner and asked how he liked the ride. "Fine. But I never was really on it" was the answer. Olson then asked how fast Frank thought he could get around the big oval if he tried. "Oh, about four seconds quicker," he said. That would

have been a new track record and Olson said, "Kid, if Benny needs relief you've got a ride in the race."

But the day before the race another Miller pilot, Steve Kreis, was taken ill and Frank was offered the car. Newspapers reported:

"The race was a quarter over and the name of Lockhart burned every wire when a fine rain swept the brick saucer clean of dirt and in its stead deposited a slippery, slimy surface that drove veteran after veteran into the pits. The pace slowed—for all except Lockhart, who seemed to drive his foot farther into the floorboards."

When the race was called at 400 miles because of the rain the unknown kid from the west was five miles in front of his nearest competition. It was one of the

most dramatic victories ever seen at the Speedway and Frank was the talent discovery of that or any year. Harry Miller came to him and offered him a car for the rest of the season. This was praise from Caesar but Lockhart would not accept this fulfillment of his ambition until he had the promise of the help of the best mechanic he knew: Olson.

They made a nearly invincible team. Olson was a brainy engineer in his own right as well as being a master mechanic, race strategist and major domo of equipe. But Lockhart needed him not so much for his exceptional know-how—Frank knew all the answers—as for his ability to keep pace with Frank's ideas and to help translate them into action. For Olson it was an unforgettable privilege to be a principal

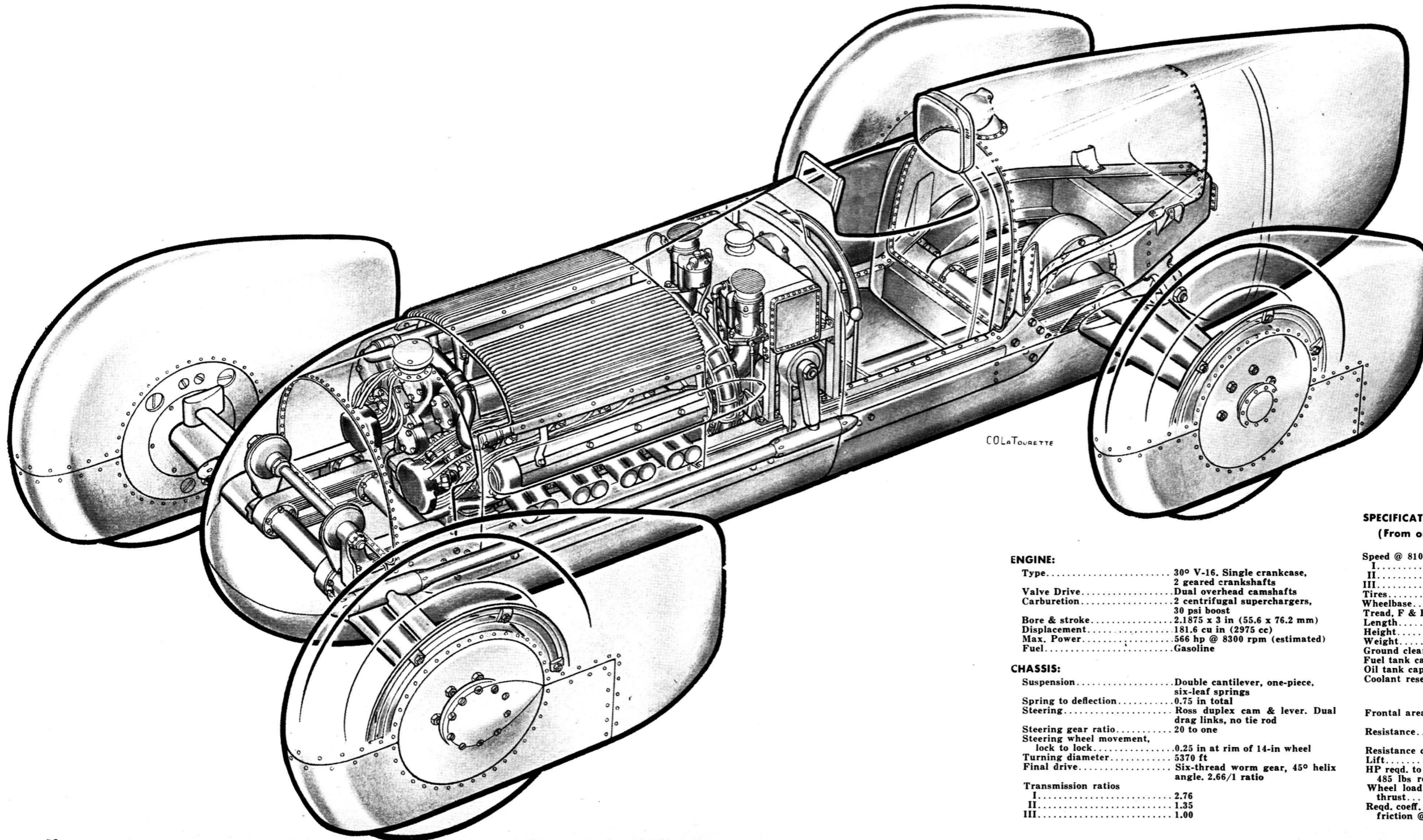
figure in the revolution that Lockhart wrought in American racing. "When any part failed or gave trouble," he recalls, "Frank would say, 'There's a reason for this. Let's find out what it is.' He might sit and study the problem for three or four days before doing a thing. But then he'd have the answer."

Valves broke regularly in the racing engines of the day. Frank figured out why, which is why valves rarely break today. Everyone used differentials on paved tracks until Frank started winning with a locked rear end, which everyone uses today. Everyone was content with torque tubes until Lockhart discovered that rear axle housings were bending under load. Now everyone uses truss rods or radius rods, as he did. Lockhart experimented constantly

and carried an elaborate machine shop with him for track to track. What Miller and Duesenberg considered their best he refined to the nth degree.

Lockhart has been credited with the invention of the supercharger intercooler but this truly was not one of his original contributions. While working on his car at Miller's plant in Los Angeles in the summer of '26 he became acquainted with John Weisel, a young Cal Tech engineering student who spent his vacations in Miller's employ. When Lockhart tried to interest Miller in detail improvements on his masterpieces the Old Man was scornful. So Lockhart hired Weisel to help him with design and drafting problems and through John met his brother, Zenas, who

(Continued on page 94)



COLLA TOURETTE

**SPECIFICATIONS—STUTZ BLACK HAWK**  
(From original engineering data)

**ENGINE:**

Type.....	30° V-16. Single crankcase, 2 geared crankshafts
Valve Drive.....	Dual overhead camshafts
Carburetion.....	2 centrifugal superchargers, 30 psi boost
Bore & stroke.....	2.1875 x 3 in (55.6 x 76.2 mm)
Displacement.....	181.6 cu in (2975 cc)
Max. Power.....	566 hp @ 8300 rpm (estimated)
Fuel.....	Gasoline

**CHASSIS:**

Suspension.....	Double cantilever, one-piece, six-leaf springs
Spring to deflection.....	0.75 in total
Steering.....	Ross duplex cam & lever. Dual drag links, no tie rod
Steering gear ratio.....	20 to one
Steering wheel movement, lock to lock.....	0.25 in at rim of 14-in wheel
Turning diameter.....	5370 ft
Final drive.....	Six-thread worm gear, 45° helix angle. 2.66/1 ratio
Transmission ratios	
I.....	2.76
II.....	1.35
III.....	1.00


**Speed @ 8100 rpm**

I.....	99 mph
II.....	200 mph
III.....	283 mph
Tires.....	30 x 5
Wheelbase.....	112 in
Tread, F & R.....	52 in
Length.....	189 in
Height.....	49 in at headrest
Weight.....	2800 lbs
Ground clearance.....	4.5 in
Fuel tank capac.....	40 gals
Oil tank capac.....	6.5 gals
Coolant reservoir.....	8 lb ice tank

**PERFORMANCE DATA**

Frontal area.....	10.8 sq ft, incl. rear wheels & covers
Resistance.....	242 lbs @ 200 mph, 485 lbs @ 283 mph
Resistance coeff.....	.000497 lbs. per sq ft mph <sup>2</sup>
Lift.....	54 lbs @ 283 mph
HP reqd. to overcome 485 lbs resistance.....	367 hp
Wheel load per 100 lbs thrust.....	637 lbs @ 200 mph
Reqd. coeff. of friction @ 200 mph.....	0.16





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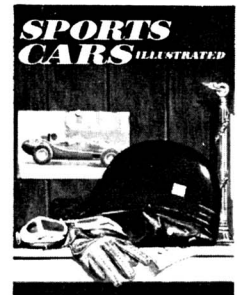
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**Frank Lockhart**  
(Continued from page 59)

recently had obtained his degree in mechanical engineering. His master's thesis had been a study of the supercharging of aircraft engines.

It was Zenas who proposed the inter-cooler. Frank had the excellent idea of building a gear train that could be bolted to the top of the transmission of his Buick road car and could be used for testing superchargers at racing revs, anywhere and at any time. Zenas proposed a refinement: design a dynamometer into the device so as to be able to tell with precision the effect of any change in blower setup. And it was at this time that Zenas explained intercooler theory to Frank. With Frank's Buick engine turning over at 1450 rpm and, through the transmission, driving the blower at the equivalent of 7500 crankshaft revolutions, Weisel asked Frank to feel the blast from the blower outlet. From 18 inches away it was like touching a red-hot bar. Weisel said, "I can design an air-cooled manifold for you that will get rid of a lot of that heat. If it doesn't give you another eight mph you won't owe me a dime." The first time out with the new setup Lockhart's Miller went 8.5 mph faster than it ever had before.

That was at the Culver City board track on Mar. 6, 1927. Frank took one warmup lap in his 91 cu. in. Miller, raised his hand to signal to the starter that he was on his way, and turned an all-time record of 144.2 mph.

The intercooler was a secret. The car's hood was kept locked and never was raised until hidden from unauthorized eyes. Frank drove the Big Time circuit from coast to coast and dominated almost everywhere with lap records and overall victories. In one afternoon at Cleveland, for example, he broke over 100 records for the mile dirt track, including de Palma's from one to 25 miles and Milton's from 50 to 100 miles. The intercooler was kept secret for almost a year.

That season Lockhart and Olson took their much-modified Miller 91 to Roberts Dry Lake in the Mojave Desert—the car long since had been purchased from Miller, who would not tolerate design changes being made on his car. There Lockhart ran for official straightaway records under AAA sanction. Said a newspaper account, "Shattering all records for the 91 inch class at 171.02 mph—the fastest time made by any car in the world excepting the Daytona monster, 30 times larger. Lockhart's two-way average against a heavy cross-wind was 164.85 mph. The new record, made by a midget with the power of a giant, is a startling achievement when compared with the records established during recent years by cars with motors many times its size."

In '27 Lockhart came within an ace of winning the Indianapolis 500 for the second year in a row. He held the lead for 300 miles and then a con rod broke. After that he re-designed Miller's rods. He finished the season a wealthy man. His lap winnings alone at Indy: \$11,000.

Among the millions who had been following every step of Lockhart's blazing career with fascinated admiration was Fred E. Moskovics. His family had moved

(Continued on page 96)





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**Frank Lockhart**

to the U. S. from Budapest when Moskovics was only four. His father had been a mining engineer and F. E. took a degree in mechanical engineering. He grew up with the automobile and with racing. He had managed the Mercedes team in the first Vanderbilt Cup Race, gotten Ralph de Palma his first ride in a race car and, after taking over as president of Stutz in the mid-Twenties, he put that marque back in the racing business both in America and in Europe.

Moskovics' enthusiasm was boundless when he learned that Lockhart had beaten the previous year's Land Speed Record with a tiny car of American manufacture. He sought the kid out and got to know him well.

Says Moskovics who, in his seventies, does his commuting in a 300SL, "Frank was the greatest natural mechanic I've ever come in contact with. He told me of his ambition to win the Land Speed Record for the U. S. I knew that if anyone could do it, Lockhart could. I agreed to give him all the backing in my power. I got a group of wealthy sportsmen together who put up about \$20,000. He agreed to call his machine the Stutz Black Hawk and I was able to add another \$15,000 and put the facilities of the Stutz factory in Indianapolis at his disposal."

Olson, in the meantime, had been working hard to arrange Lockhart's participation in the Italian Grand Prix at Monza. "I had the deal wrapped up," he says, "when Frank told me he was going to build the beach car. I didn't exactly have a premonition of disaster. I just got physically ill. I felt it was the wrong thing to do and began to look for another job."

Lockhart wired the Weisel brothers, asking them to come to Indianapolis to work on the record-machine project for a guaranteed salary for a minimum of four months. The challenge was fascinating to them. They hurried east and travelled around the country while Lockhart kept up with his racing commitments.

"My brother and I," says Zenas, "travelled with a suitcase each of clothes and a big trunk filled with books and instruments and a drawing board. We landed in Indianapolis, went with Frank to Altoona, then to Salem where we got the car pretty well in mind, then to Buffalo, then to Detroit, then back to Indianapolis. Unusual working conditions. I can remember yet him sitting in a chair in a hotel room while I measured his seated posture and laid out the frame kickups so they would just clear his elbows. We built the car around him."

Lockhart's idea was to attack the record with a car running two separate Miller 91's geared together after the fashion of Milton's LSR Duesenberg (SCI, Nov. '58) and he also planned on using a bug-shaped envelope body. Zenas' engineering training had included heavy emphasis on aerodynamics as well as engine design. In this case both were closely related and he produced drawings of the Bugatti 16-cylinder aircraft engine to show how a pair of straight eights could be joined in a very compact manner by integrating them into a single crankcase.

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Concerned with the smallest possible frontal area for the car, Zenas squelched the envelope-body approach: it would sacrifice more than the meager available horsepower could afford. He held out for exposed wheels and for a torpedo shape that would enclose everything within the frame. Thus, not one square millimeter of frontal area would be given away, would be allowed to absorb thrust that otherwise could be converted into speed.

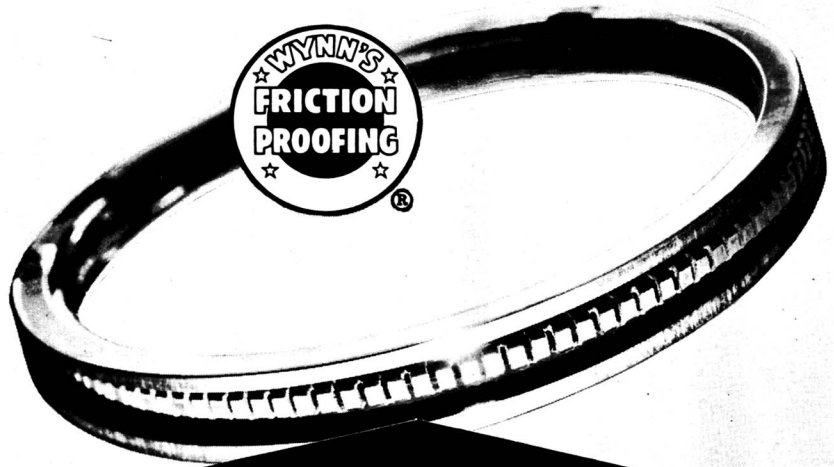
He streamlined the axles of course. He also streamlined the wheels that were sitting raggedly out in the air. He had listened to drivers who had run at high speeds and had been unhappy with the handling of disc-covered wire wheels. He reasoned that the effect of cross winds on their steering was not due entirely to the lateral load created by the wind acting against the area of the wheel discs and pushing them in the direction of the wind. Zenas felt that the unexpectedly strong effects that had been noted were due, at least in part, to the fact that at high speeds the disc wheel, if inclined at an angle, became a lifting surface similar to an airplane wing. He also reasoned that the center of pressure on such a wheel was well ahead of the king pin, adding leverage to the tendency to steer in the direction of cross winds. So Weisel designed the streamlined wheel spats for the Black Hawk and made them long. He calculated their shape so that the center of pressure would be well aft of the king pins and would tend to counteract the car's tendency to steer in the direction of a cross wind and so that, acting as air rudders, they would contribute to the car's directional stability.

That was the philosophy behind the spats, which always were essentially parallel to the car's long axis. Calculations indicated that, with an anticipated coefficient of friction on the beach of .5, the front wheels could not be turned more than zero degrees, six minutes without throwing the car into a skid. The lock-to-lock arc was fixed just short of that figure; total movement at the rim of the 14-in. steering wheel was just 0.25 in.

Efforts had been made in the past to give racing and record cars a streamlined appearance, at least, but their undersides had been left ragged. And so had their engine spaces. This cost a tremendous price in wind drag which Weisel saved by enclosing the underside of the car and by sealing the engine compartment off from outside air, except for small intake and exhaust openings. He originated the idea of eliminating the conventional radiator from straightaway machines. Coolant for the Black Hawk's power plant circulated through an eight lb. ice tank.

The tiny 181.6 cu. in. engine was supercharged of course and it was fitted with intercoolers. But the intercooler on the speedway car had been mounted under the car's hood and its effectiveness depended upon the flow of air through the engine compartment. For the record machine Weisel designed an entirely new kind of intercooler: a delicate, almost filigree aluminum casting contoured to follow perfectly the surface of the car's skin.

The basic idea was to enclose all parts of the machine while still avoiding the



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## Frank Lockhart

obvious tactic of wrapping it in a continuous envelope. To get the body as small as possible while enclosing everything but axles and wheels called for an extremely narrow frame and for springs that also would be located within the body shell. Given these conditions the springs as well as the frame rails had to be extremely close together, which would not help stability with regard to torsional action of the front axle.

To get the springs within the minimum-area body they had to be only 11 inches apart. Weisel wanted to tie the axles to the chassis without even a thousandth of mechanical play so that the car could be steered without concern for any movement between these elements. He designed and patented a unique suspension system. Each spring was a double cantilever machined from a solid steel billet, as shown in La Tourette's drawing. The front ends of the front springs were bolted to a steel spool which served as the center section of the front axle. The stub axles, in turn, were bolted to this assembly outboard of the springs; the back ends of the springs were bolted to bronze spacer blocks which were bolted to the frame. Total spring deflection was 0.75 in., during which the king pins remained parallel with the frame.

The rear springs were of the same unusual construction; their front ends were bolted solidly to the frame and their rear ends pivoted around the rear axle housing. The worm gear final drive was dictated not by Stutz sponsorship of the project but by the fact that this feature permitted lowering the car's height by about six inches.

It seems that the Black Hawk was the first car in the U. S. to make extensive use of wind tunnel testing. The base line for the record machine was Frank's 91 in. speedway car and the knowledge that it had turned 171 at 7200. Therefore a precise scale model of the 91 was built, complete with radiator opening, dummy engine under the hood, hood louvers, knock-off hubs, dummy driver—all the features that contributed to wind drag. An equally precise model of the Black Hawk also was made. Utilizing the known top speed of the 91 and the data obtained by wind tunnel tests the approximate available horsepower of both car's engines could be calculated . . . and so could the terminal velocity of the Black Hawk.

Bear in mind that the fastest car in the world at this time was Seagrave's huge Sunbeam. It weighed 8000 lbs., had a 2760 cu. in., 1000 bhp engine and held the world's two-way record at 203.790 mph.

Lockhart's Black Hawk weighed just under 2800 lbs. This may sound light but, for its size, this was a heavy car. Its 181 cu. in. engine was assumed to deliver 525 bhp to the rear wheels at 7500 rpm. Thorough wind tunnel tests were conducted by the Curtiss Airplane Co., whose engineers credited the little car with a top speed of 283 mph.

The models then were sent to the Army wind tunnel at Wright Field for double checking. There the top speed was calculated to be 281 mph. But by this time Lockhart, still racing in every Champion-

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ship event, had his 91 turning 8200 rpm on the board track straightaways. The horsepower estimate had to be revised upward and final calculations indicated that, on gasoline, the Black Hawk was good for 330 mph! Methanol had not yet been discovered in the U. S. as a racing fuel.

Naturally, no word of this fantastic potential was allowed to leak beyond those persons most intimately concerned with the car. Even Moskovics seems to have had no inkling of it. But Zenas Weisel still has the records.

Standard strategy among record breakers is not to exceed existing records by extravagant margins but, rather, to top them adequately, reap the rewards, rest on the laurels until a new record is established and then, if the potential of your machine has not been exhausted, go back and break the record again. Lockhart's plan was to boost the L.S.R. to about 225 mph and most of his equipment tests were based on this simulated speed. Tire tests were among them.

Jean Marcenac was in charge of the inner sanctum in the basement of the Stutz plant where the beach car was built. He helped Frank run the tire tests. The test rig consisted of a big Stutz straight eight engine, bolted to a concrete foundation and driving the shaft on which the wheels and tires were spun. Finally the time came for the destruction test. The shop was cleared, the test tire, inflated to 125 psi, was set spinning at the equivalent of 225 mph. Marcenac and Lockhart shrank behind concrete columns and Frank fired at the tire with a shotgun. The tremendous imbalance forces that suddenly were released tore the heavy engine from the block and its aft end disintegrated. Lockhart grimly said, "Well, I'm done for if a tire blows." He was depressed for days but eventually accepted the gamble.

In February of 1928, less than eight months after the preliminary paperwork on the Black Hawk was completed, the car was finished and ready to go. The \$35,000 with which the project had been launched did not go far and a large percentage of Lockhart's massive racing winnings had been drained unexpectedly into the beach car. Estimates of its total cost run as high as \$100,000. As Lockhart's investment in the project rose beyond all expectations his concern necessarily swung more and more from the pure challenge of ultimate speed to the financial relief and reward that would come once the record was in his hands. The project took on a definitely commercial character and Frank and his manager would spend long hours computing the eventual take from track and vaudeville appearances, product endorsements and awards from manufacturers.

Money became all-important to this extent: Lockhart had always driven on Firestone racing tires and had used them in his tests at the Stutz factory. But a new tire manufacturer offered him \$20,000 if he would set the new record using this firm's experimental high-speed tires. He accepted.

Just before his final attack on the record Frank's mother wrote him. "I told him that I was very ill and almost des-



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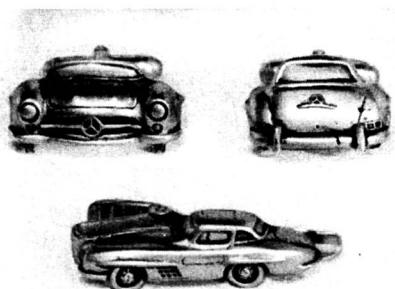
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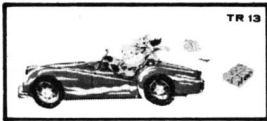
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## Frank Lockhart

perate. Would he send me just \$10? It would make all the difference in the world. A couple of days before the run I got a wire from him. He didn't mention the money. It just said, 'Ma, I have the world by the horns. You'll never have to push a needle again. I'll never have to work any more.'

The Black Hawk was shipped to Daytona early in February and practice runs began. Day after day they ran but could not get above 180 mph. Frank was in a frenzy. Finally, with Moskovics' help, they found their trouble: laminar flow across the supercharger inlets was starving the engine for air. Small scoops at the inlets transformed the car's performance. But by this time the weather had become increasingly bad and the AAA timers were ready to pick up and leave. They would stay just one more day: for Washington's birthday and the scheduled stock car runs on the beach.

The weather was foul and the beach was miserable. But thousands of paid admissions had been taken in and, in spite of intermittent rain all day long, the crowds stayed to see if Lockhart would run. Finally, late in the afternoon, the little white car was towed to the south end of the course. The next thing the crowd was aware of was the 40,000-rpm scream of the Black Hawk's superchargers. He was on it all the way, taching between 220 and 225, when he hit a patch of rain. He couldn't see and the car edged into soft sand. Then a crash, two end-over-end flips and a flight into the sea. The car landed on its belly, then skipped like a stone over the water making slow barrel-rolls in the air. It came to rest wheels down but nearly submerged in the surf.

It seemed impossible that Lockhart could be alive but after the first wave passed over the car he raised a hand and the crowd, seemingly with one voice, roared, "Save him . . . he'll drown." Lockhart was pinned in the cockpit but 20 men rushed into the waves and dragged the car to shore. Aside from shock—and he had a congenital fear of water—his only injury was, miraculously, a couple of cut tendons in his right hand.

Moskovics says, "The car looked like a ruin but actually it wasn't badly damaged. We shipped it back to Indianapolis for repair. I did everything in the world to keep Frank from going back to the beach that year. But he had made no end of commitments and I guess he had to go."

In mid-April Lockhart and the Black Hawk were back at Daytona and the eyes of the world were on them. It was at dawn of the 25th that he made his first sally, a warmup run to the south. The beach was perfect and he returned north a little faster. Then south again, with the superchargers' scream announcing that he was getting down to business. Then he began his fourth run, really flying. He was just about to enter the traps when a spray of sand shot from his right rear tire and the car came smashing, tumbling, thudding down the beach and that was the end.

Officials who examined the evidence before the tide came in said that in braking at the end of his third run Frank had locked his rear wheels for about 100 ft.

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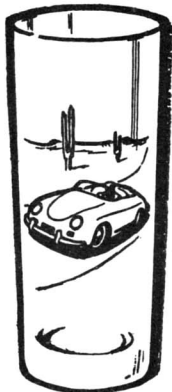
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## Frank Lockhart

and that a seashell had cut the casing of the tire that blew.

All the expert eye-witnesses seem to be agreed that Lockhart was turning at least 220 mph before his fatal crash. The one-way 198.29 clocked on his third run that morning was the fastest speed ever achieved by a car smaller than the locomotives of Seagrave and Campbell. It stands today as the National Class D (122-183 cu. in.) record for the flying mile in the USAC record book.

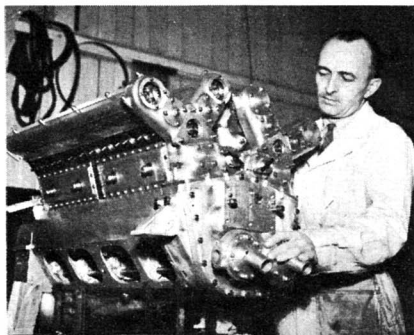
Lockhart was gone but his track racing achievements in that fragment of the 1928 season won him second place in the AAA Championship for the second year in a row. His personal property was auctioned off to members of the racing fraternity. This included his two 91 in. Miller speedway cars. As testimony of Lockhart's mechanical genius, these machines continued to dominate all Championship races for the next two years, winning nearly everything and simply alternating as first and second place finishers.

The magnificent Black Hawk engine was sold to car-builder Riley Brett, along with many patterns, drawings and spare parts. Brett put it in mothballs until 1938, when he decided to build an Indianapolis car around it. Gordon Schroeder worked for Brett then and went to the Speedway in '39 with the new SMI Special that was powered by Lockhart's engine, then 12 years old. Bob Swanson qualified it at a record-breaking 129.431 mph but brought it in after 19 laps reporting strange noises in the drive line. Later it was found that the driveshaft was bowing under load. In the 1940 race Swanson drove the Lockhart-engined car to an easy sixth-place finish. In '41 Deacon Litz had to retire it on the 90th lap with lube system troubles.

Schroeder had developed a genuine love for this car and for its magnificent engine. He bought the machine during the war and in '46 entered it again at Indy, this time with Sam Hanks up. With its engine pushing 20 years of age, Hanks still qualified it easily in the front row. For reasons that may have been more political than mechanical the car again did not go the distance.

The Lockhart engine was as good as new and still a potential winner, although that was its last race. But it did not die. Today it and the SMI Special are among the treasures of the Indianapolis Speedway Museum, where it remains as a small monument to the reality of a once-great dream.

Griff Borgeson



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