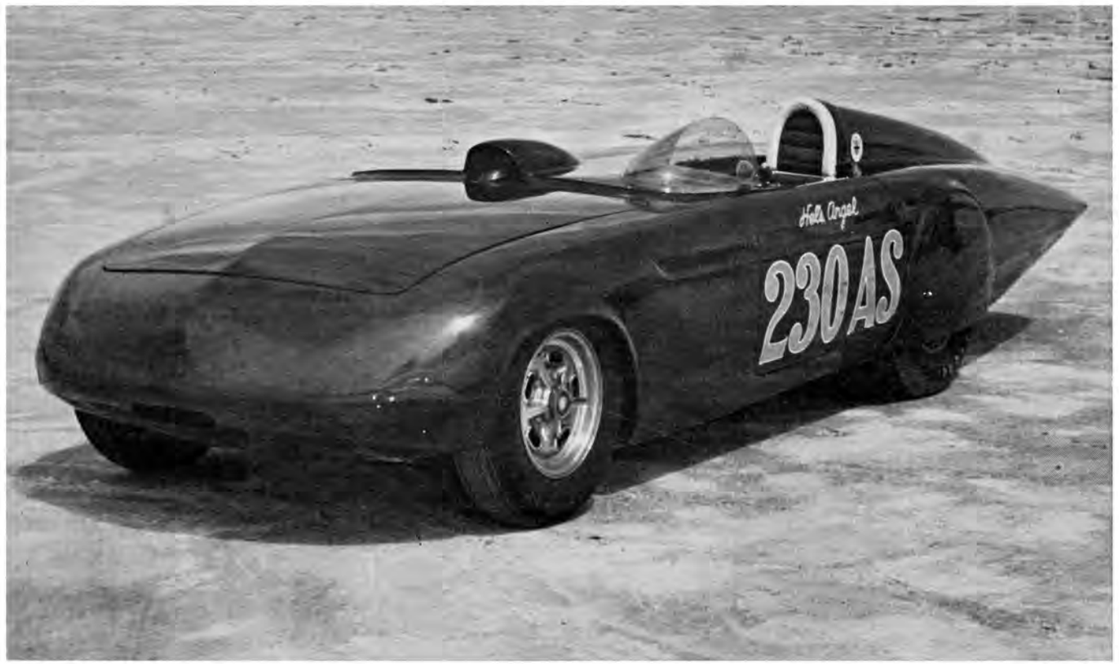
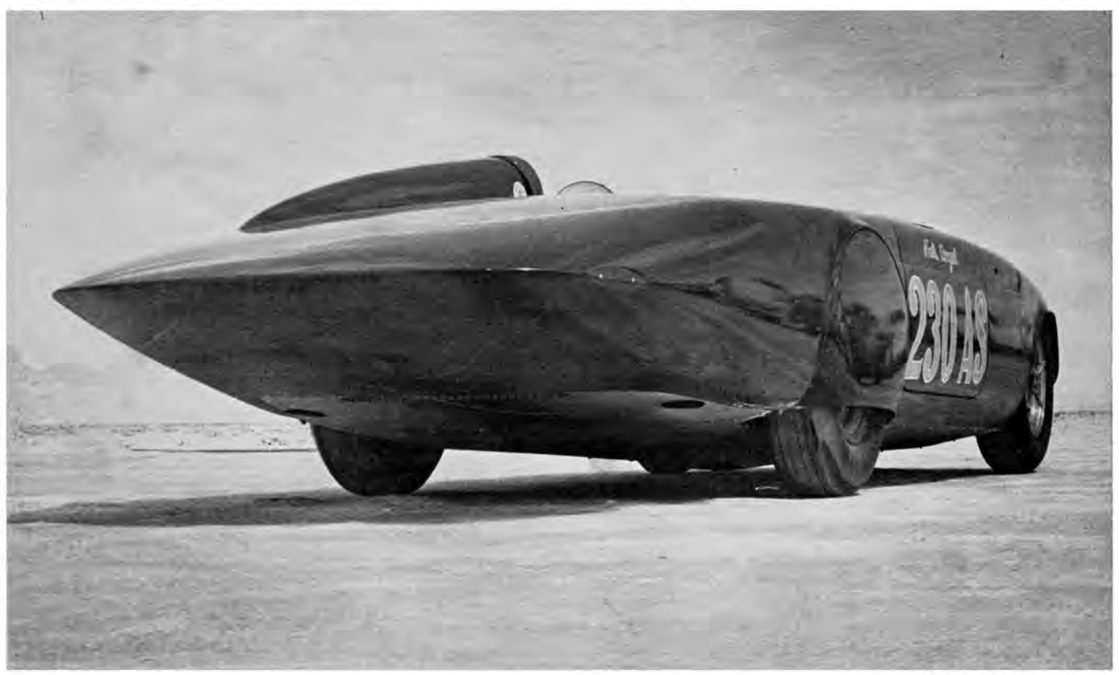
BIRD ON THE WING





The evolution of Knot Farrington's T-Bird from stock configuration to veritable airfoil permitted him to tax its blown Chrysler powerplant to the fullest—228 mph!

Text and photos by Don Francisco

One part of the question asked "... the reason for building your present car ... ?" The answer was "To try to set a record at Bonneville. I wanted to prove to everybody that you can make a T-Bird really run." The man answering the question was L. W. "Knot" Farrington, owner of Knot's Auto Service in New Orleans, La., member of the Grant 200 Miles Per Hour Club, and owner-builder-driver of "Hel's Angel," an A Sports Racing Bonneville rod. The "Hel's" in the car's name was derived from Knot's wife's name, which is Helen.

Knot made both his points with his car at the '61 Bonneville Nationals when he recorded a one-way run of 228.570 mph and a two-way record for his class with an average of 219.898 mph. But somewhere along the line theory and practice parted. The car, in its present form, only slightly resembles the '56 T-Bird it once was.

When the car made its first appearance at Bonneville during the 1960 Nationals it had a big GMC-blown Chrysler engine under its hood but, with the exception of the addition of a bellypan, its body was unchanged. It set a new record of 200.622 mph for its class. For '61 the Chrysler remained, although it had been moved back approximately 2½ feet in the frame, and a new rounded nose and long wedge-shaped tail had transformed the body from a blunt-ended roadster to a streamliner.

This isn't the first high-performance car Knot has owned. His interest in cars was sparked by the midget races he first attended twenty years ago, when he was twenty years old. Since that time he has built and raced midgets and stock cars and the two T-Bird's he now owns. One of the Birds is the Bonneville car and the other is a '55 he uses for drag racing. The '55, which has a Ford engine, has never been to Bonneville. Knot drives both Birds but he didn't drive his midgets or stockers. He dragged the Bonneville car once before he streamlined its body. It turned 128 mph on a quarter-mile strip.

ABOVE LEFT—Knot Farrington's "Hel's Angel" was built for show as well as for terrorizing the sporty car classes at Bonneville Nationals. Imagination and immaculate workmanship changed original '56 T-Bird into a streamliner.

LEFT — Its new streamlined tail added three feet to body's length. Additional streamlining for the underside of the car is provided by a full-length bellypan. Openings in the body for the required headlights and taillights have metal covers.

TOP — While assistant starter Kenny Burgraff holds the door for him, Knot slides into car's well-upholstered seat. Plastic windshield that protects Knot from the 200-plus mph wind car creates at speed is half of a bubble he had made. ABOVE — This is the way car looked in 1960, before engine was moved back 2½ feet in frame and body was streamlined. Even then it was capable of speeds over 200 mph.

All the body work on Hel's Angel was done by Floyd Pfeffer. Floyd added the steel nose, tail, and headrest sections to the body, reworked the hood, formed the combination cockpit-engine cover, made the steel covers for the rear wheels, etc. The tail section lengthened the body three feet. The smooth coat of Candy Apple Red lacquer that covers the body was applied in Knot's shop. Cannon Bros. Upholstery, in New Orleans, installed the red and white Naugahyde interior.

Changes made to the car's chassis are less apparent than those made to its body. Reasons for the chassis modifications were to improve the car's handling and make it safer to drive at high speeds. They include a completely new front suspension system and lowering both ends of the frame. The car still has its original 102-inch wheelbase.

The standard T-Bird independent front suspension system was removed in its entirety and replaced with a '34 Ford axle fitted with '40 Ford spindles and steering linkage. An eight-leaf transverse spring connects the axle to the frame. The spring clamps to a special crossmember that was welded to the frame rails. Radius rods fabricated from a standard Ford wishbone and connected to the rails with ball joints locate the axle longitudinally and prevent its rotating when the '40 Ford brakes are applied. Wheel alignment settings are eighteen degrees caster, zero degrees camber, and 3/16-inch toe-in.

Knot used the standard T-Bird steering gear in its stock location but he had to change its angle in relation to the frame. The reason for changing the gear's angle was that the upper three-fourths of the steering column had to be moved to the left to make room for the engine when the engine was moved back in the frame. As moving the upper

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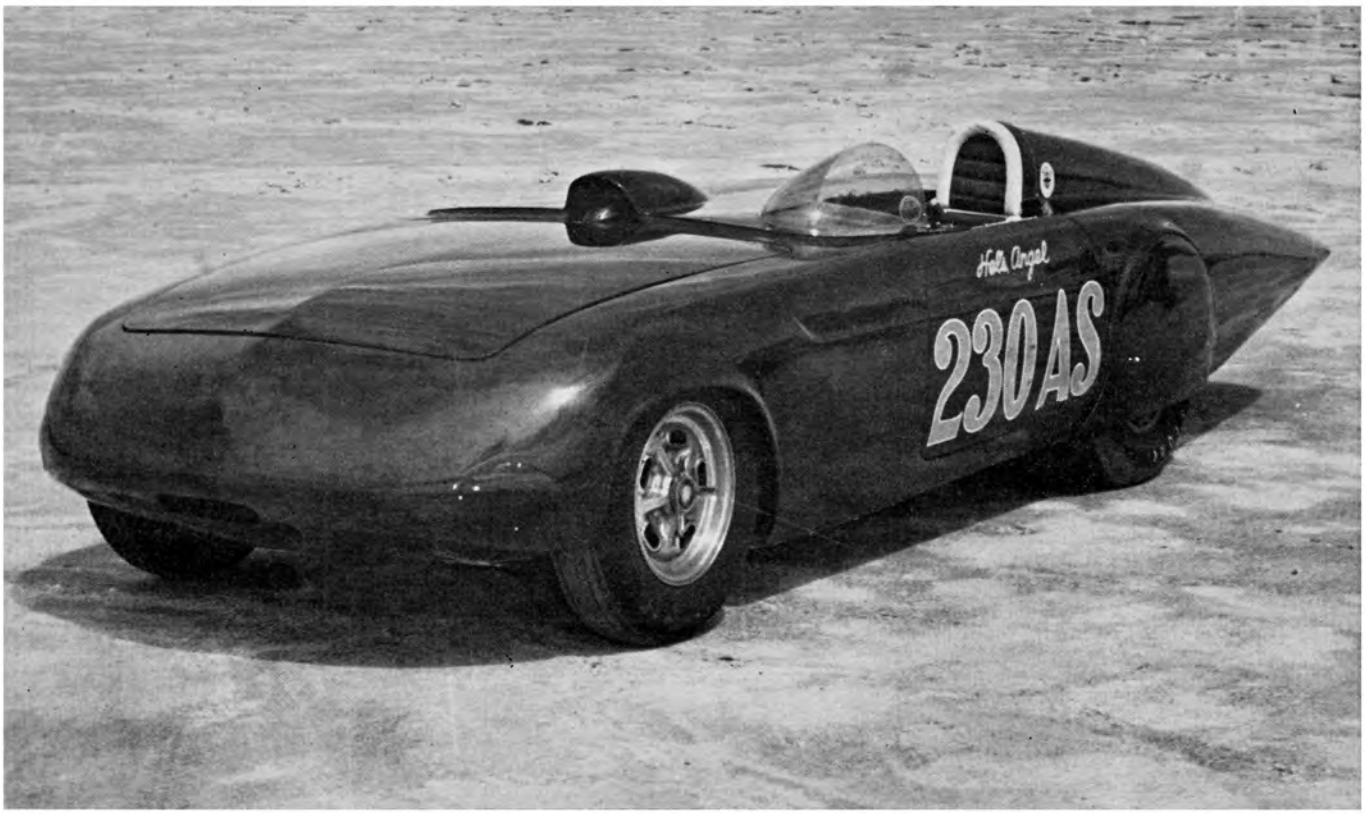

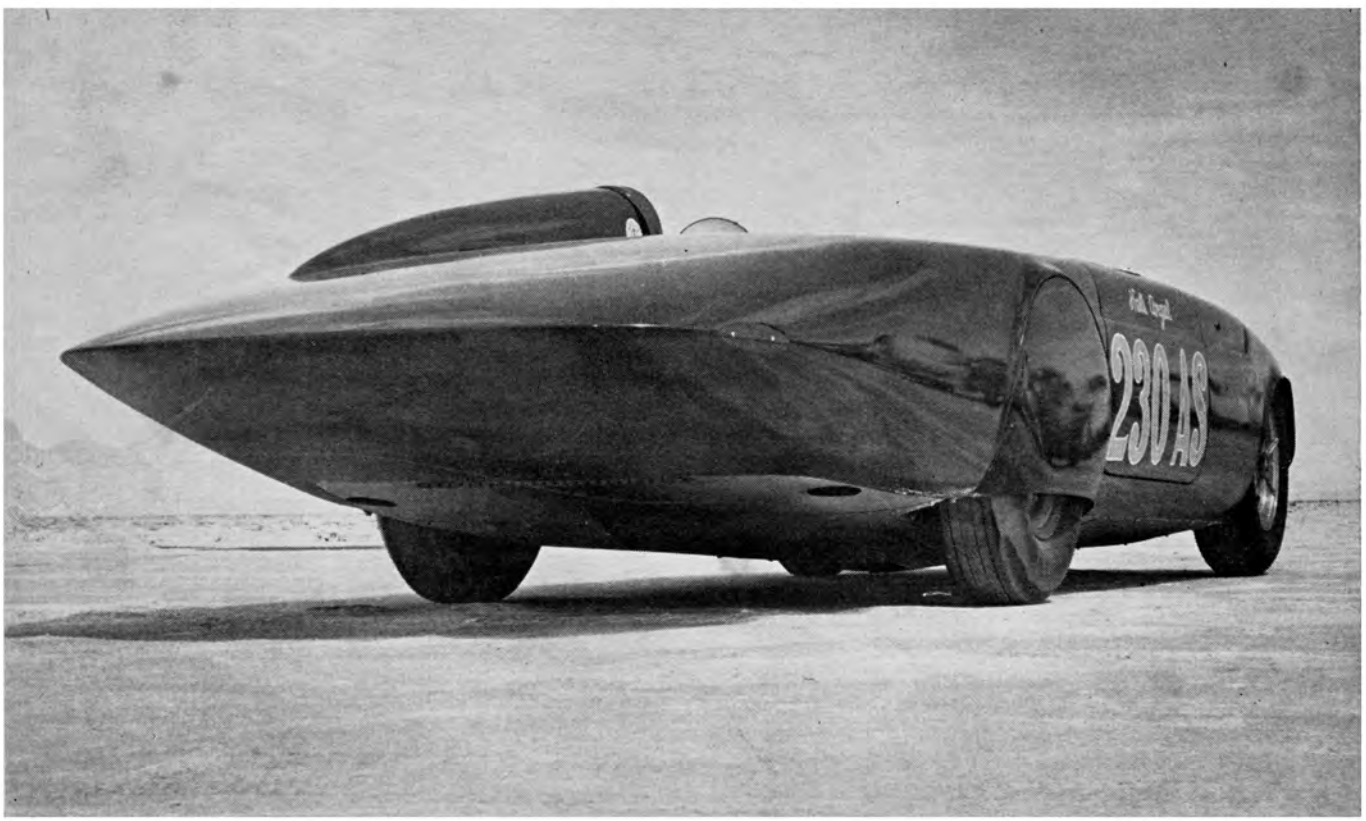

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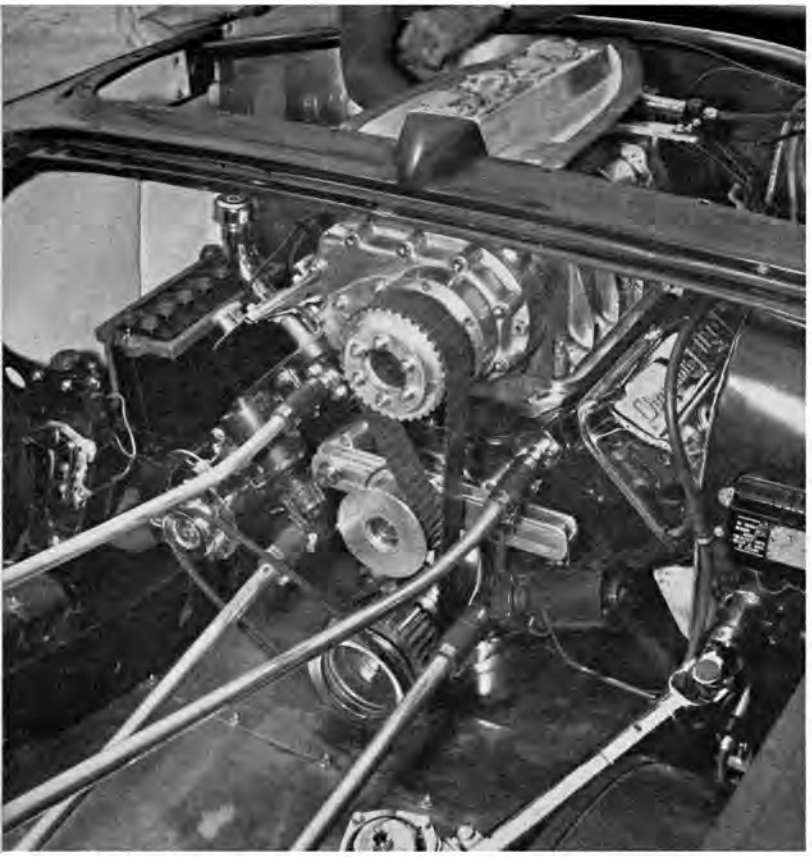

ABOVE — At extreme rear of car's lengthened engine compartment is a 429 cubic inch Chrysler V8 engine and its 6-71 GMC supercharger. Engine has the special equipment necessary for maximum power output and durability. Between it and its lower radiator pipes are two electric water pumps. TOP RIGHT — Small opening in the car's nose is for radiator air. Bubble on the cockpit cover is for fuel injector air.

RIGHT — A standard T-Bird radiator, at the front of engine compartment, and a tank of water in rear of car cool the engine. Special crossmember supports frame's front end.

BIRD ON THE WING continued

section of the column threw it out of alignment with the lower section and the gear box, the only way it could be connected to the lower section was with a universal joint. The gear's new angle aligns the lower section with the needle bearing joint Knot used for the connection.

A Bell Auto Parts three-spoke rubber-covered steering wheel is mounted on the steering column's upper end. Knot removed the wheel's upper segment to improve visibility when the wheel is in the straightahead position.

The only practical way of providing a car such as Knot's with the numerically high final drive ratio suitable for the speed it is capable of running is by installing a quick-change centersection in its rear axle assembly. This isn't easy to do with a rear end of the T-Bird type. Knot used a Halibrand centersection, the inner ends of a pair of '40 Ford axle housings, and the outer ends of the T-Bird housings. After the various housings had been cut to the correct lengths and welded together, the result was an assembly that has T-Bird brakes and a quick-change centersection and that clamps to the T-Bird springs. Inside the centersection is an early Positraction limited-slip ring gear carrier that has special differential gears to accept axle shafts that are basically T-Bird and is rotated by a 3.78 to 1 ring and pinion gearset.

The frame's rear end was lowered in relation to the axle assembly by changing the arch of the original springs and installing lowering blocks between the springs and the axle housing. The blocks were welded to the housing's spring pads to make the installation more solid. Columbus direct-acting shock absorbers were fitted to both the front and rear axles.

Fifteen-inch Halibrand wheels support the car's four corners. The wheels required special Halibrand front hubs and rear axle shafts. All tires are Firestone Bonneville's. The fronts are 6.70's and the rears are 7.60's. Inflation pressure for both front and rear was 60 psi.

The final rear axle gear ratio was boosted to 2.22 to 1 with the quick-change gears. Knot had the car's tach redlined at 6000 rpm, which he hoped the engine would turn with this ratio, but on the 228 mph run the tach indicated only 5900. The other 100 rpm would have been nice but if Knot can always calculate the car's performance this close he'll be o.k.

The engine is a '57. It has hemispherical combustion chambers and its standard displacement was 392 cubic inches. It still has its standard 4-inch cylinders but its stroke was lengthened ⅜-inch to 4.275 inches. The longer stroke boosted the displacement to 429 cubic inches.

Knot bought a complete stroker assembly from Edelbrock Equipment Co. in Los Angeles. Included in the assem-

At home on the salt but hardly one for the road, Hel's Angel is a wild looking T-Bird. It looks good in black and white, but it comes to life when seen in its natural Candy Apple Red. Its Halibrand knock-off magnesium wheels are buffed to high gloss.

bly were a Crankshaft Company welded stroker crankshaft, ForgedTrue pistons, piston pins, Perfect Circle piston rings, '59 Chrysler connecting rods, and Thompson Product connecting rod and main bearing inserts. The connecting rods had not been altered in any way. The crankshaft, rods, and pistons had been balanced as an assembly in Edelbrock's shop.

The engine's cylinder block is practically stock. The only modifications Knot made to it were to its lubrication system. He plugged the oil feed holes for the standard hydraulic valve lifters and drilled a small hole in the rear of the main oil gallery through which the SAE 40 Castrol oil used in the engine can spray onto the camshaft's distributor drive gear. Standard main bearing caps were used without modifications.

Cylinder heads are of the same year as the block and they are fitted with valves of standard diameters. However, the heads' intake and exhaust ports and passages were enlarged and polished and the valves were recontoured and polished to improve flow past them. On a stock engine the heads would provide a compression ratio of 9.5 to 1 but by using pistons of the correct compression height in combination with the longer crankshaft stroke Knot lowered the ratio of his engine to 8.5 to 1.

All the valve actuating mechanism, including the camshaft, lifters, adjustable pushrods, dual valve springs, and hardened steel spring retainer washers, was purchased from Iskenderian Racing Cams in Inglewood, Calif. The shaft is a stocker that was reground with Isky's number 7000 grind and hard faced. It uses flat tappets. The adjustable pushrods enable standard rocker arms to be used.

The reason for the engine's lower than standard compression ratio is a 6-71 GMC blower perched on top of a Weiand Typhoon intake manifold. An Iskenderian timing belt drive setup rotates the blower's rotors at 1.18 times crankshaft speed. Air and gasoline the blower inducts flow through a Hilborn four-throat injector. Fuel is fed to the injector at approximately 30 psi by a Hilborn fuel pump driven by a combination pump-magneto drive. The injector's throttle valves are actuated by a hydraulic throttle setup. As Knot didn't get around to installing a manifold pressure gauge on the engine he doesn't know how much manifold boost pressure the blower was creating at

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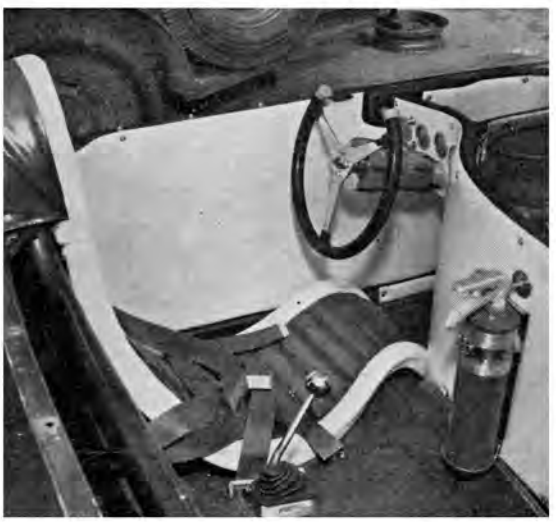
ABOVE RIGHT — Knot and his one-man crew Earl Karl didn't give the car a chance to get dirty either inside or out during the Nationals meet. The completely painted or upholstered surfaces of the engine compartment and cockpit made maintenance easy. The throttle linkage for the Stu Hilborn fuel injector is controlled hydraulically.



RIGHT — Knot sits in a contour seat with his legs in a tunnel. Upper portion of steering wheel was removed to give an uncluttered forward line of sight.

BIRD ON THE WING

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Bonneville. But from the way the engine performed it would be safe to say that the boost was adequate.

An Eelco five-gallon aluminum tank mounted on the floorboard in what was originally the passenger's side of the car carries the car's fuel supply. The main fuel line between the tank and the injector's pump has an inside diameter of ½-inch. Fuel that leaves the tank must flow through a large-capacity filter before it reaches the pump.

A Joe Hunt Scintilla Vertex magneto fires the engine's AG403 Autolite spark plugs. Secondary voltage created by the mag travels to the plugs through Packard 440 wires.

Knot built the engine's exhaust system from 2-inch outside diameter tubing. Each cylinder bank has its own header that ends near the engine's rear end. Exhaust gases from the headers are directed through a pair of openings in the aluminum bellypan.

One interesting feature of the car that can't be seen in the photographs is the rear half of the engine's cooling system. This consists of an electric water pump and a ten-gallon tank of water in the car's tail. The pump forces the water from the tank into the standard drain cock openings in each side of the cylinder block's water jacket. The water circulates through the block, up into the cylinder heads, out of the heads through openings in their rear ends, and then back to the tank. This arrangement supplements the forward part of the system, which consists of the T-Bird radiator, long pipes that connect the radiator to the engine, and two electric pumps. The pumps are mounted near each of the block's standard water inlets. They force water from the radiator into the block, up into the cylinder heads, and then out of the heads and back to the radiator.

A small opening in the car's nose lets a limited amount of air flow through the radiator and into the engine compartment. As the air intakes of the Hilborn injector are isolated from the compartment so that only air from outside the car can enter them, the temperature of the air in the compartment doesn't have any effect on the engine's power output. Air inducted by a high-performance engine should be as cold as possible because cold air is more dense than warm or hot air. The denser the air inducted, the higher will be the compression and combustion pressures in the engine's cylinders.

Knot adapted the T-Bird synchromesh transmission to the Chrysler with a Cragar adaptor but after he slid the engine back in the frame he found there wasn't much space left between the rear

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BIRD ON THE WING
continued

of the transmission and the front end of the Halibrand centersection's input shaft for a driveshaft. To correct this he chopped enough off the end of the transmission's output shaft to provide sufficient space for a driveshaft twelve inches long. He had the shaft's end resplined for the front universal joint and then he shortened its housing to the correct length by cutting a piece out of the housing's middle and welding the ends together. The driveshaft's rear joint was adapted to the rear axle assembly's centersection with parts Halibrand supplies for this purpose.

Knot used a complete Schieffer single-disc clutch assembly and a steel flywheel. The clutch's pressure plate is aluminum and the driven disc is eleven inches in diameter.

To be eligible for a Sports Car class at Bonneville a car must have all the equipment necessary for everyday driving. This includes headlights, taillights, generator, battery, starting motor, horn, etc. Knot's car has all these; however, the recesses in its body for its headlights and taillights were covered with metal covers that conform with the body's shape. Enclosing the lights of a Bonneville car in this or some other manner is considered a safety factor as it eliminates the possibility of the course's being littered with glass fragments from a light that might break for some reason during a run.

A Bonneville sports car must also have a head-high roll bar and a shoulder harness. Knot fabricated his roll bar from ⅛-inch wall, 1½-inch outside diameter seamless steel tubing. Its ends bolt to the frame rails on either side of the cockpit and its upper side was bent to follow the outline of the top of the body, including the contour of the headrest. Two braces that angle downward and to the rear are welded to it to increase its resistance to collapsing. Lower ends of the braces bolt to one of the frame's crossmembers.

In addition to capturing records when it is running, Hel's Angel also gathers trophies while it is standing still. In 1960 it won the Sports Car class trophy at the Autorama in New Orleans and in 1961, just after Bonneville, it won the Autorama Sweepstakes trophy.

Records and trophies are ample rewards for the time and sweat a man puts into a car of this type but they are small compensation for the amount of money involved. Knot's records show that in addition to the three year's spare time involved his car has cost him at least ten thousand of his hard-earned dollars. This is a lot of money, as few will deny; but on the happy side, the money bought a lot of car!