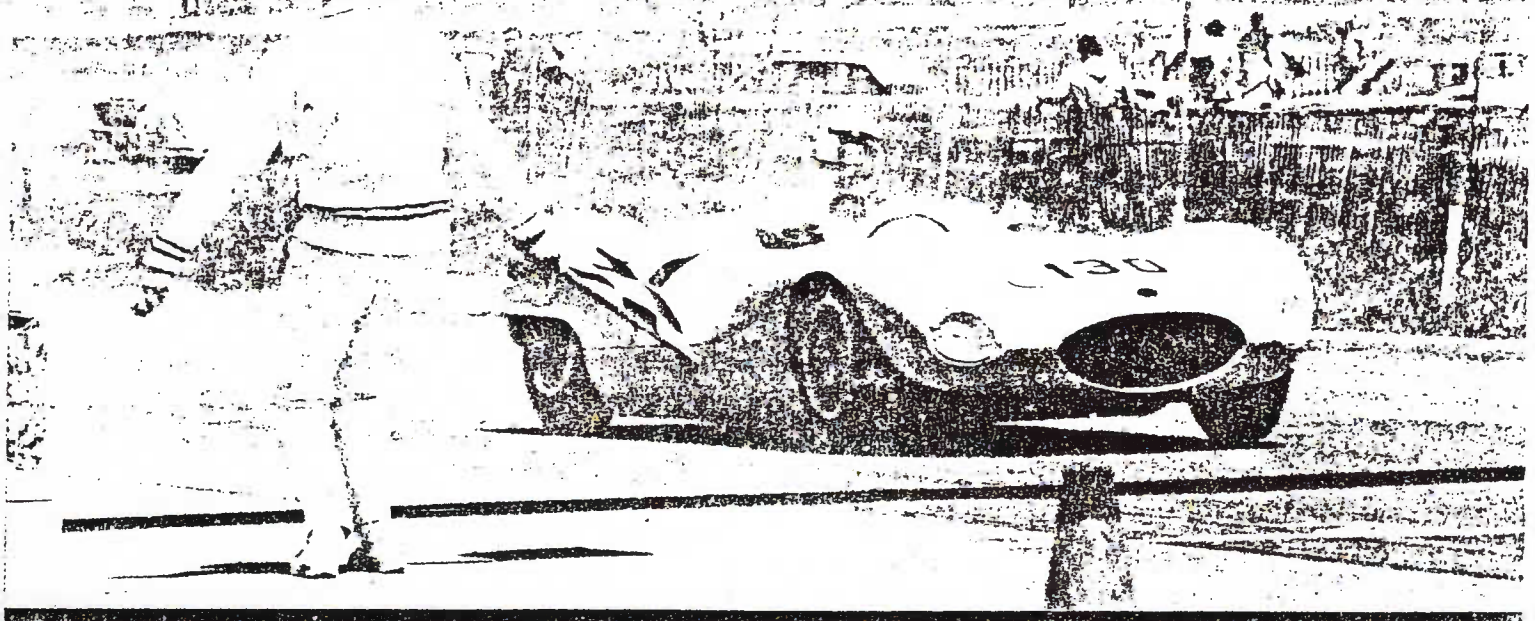
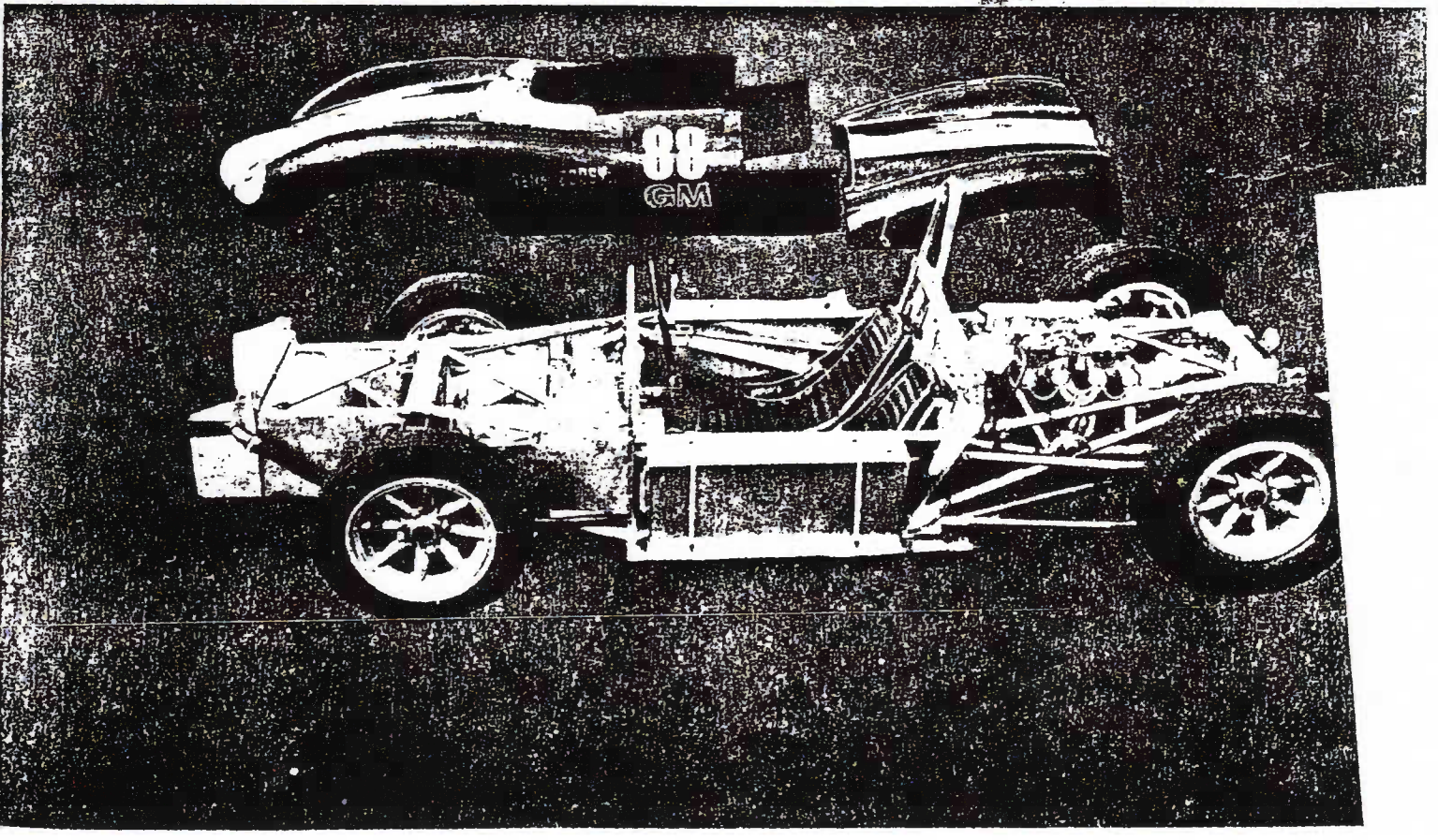
TECHNICAL REPORT

BOBSY Mk. I

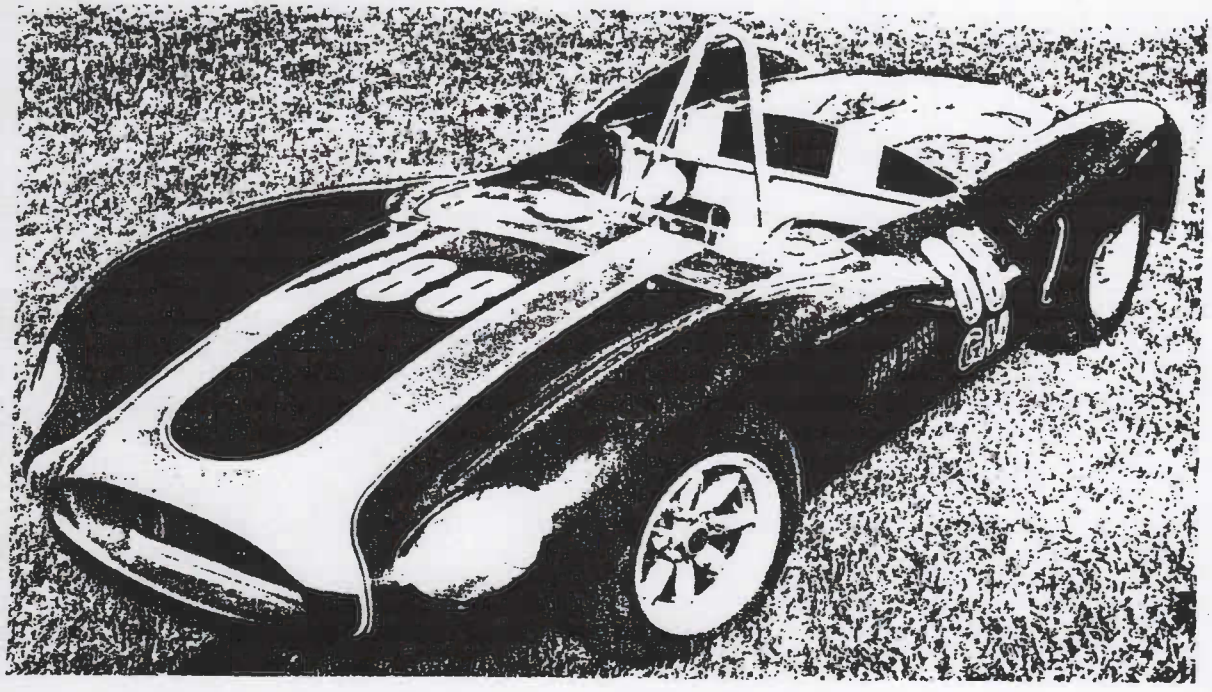
It's an American-built winner with





TEXT & PHOTOS: WALLACE HUSKONEN

very bright future!



West Coast version (far left) uses Osca engine for Class H Modified. Pit work is made easy by removeable sections of body, at bottom left. The photo at near left shows the Bobsy's neat lines and cast wheels.

NEWEST ENTRY IN THE HIGHLY COMPETITIVE FIELD OF SMALL BORE RACING CARS is a lightweight called the Bobsy. It's light because it is built mostly of aluminum. In G Modified class racing trim, it weighs only 740 pounds, or as much as 150 pounds less than its competition.

Until recently there were only three Bobsy's in existence. One of these, designated the Mark II, was driven by Chuck Dietrich to the 1963 G Modified SCCA National Championship, the first time an American-built car has won this class. Dietrich's season record was five wins, two Seconds, and a Third, which gave him such a commanding lead that he didn't even enter two of the ten Nationals.

Prime mover behind the Bobsy building project is Jerry Mong who designed and built the first three in his garage in Medina, Ohio. He has moved into new quarters nearby and now is building several more Mark II's.

The project all began three years ago when Mong and two friends were looking for cars to go racing in. The friends were the Hier brothers, Kaye and Allyn, who wanted to replace their tired Siata with something more competitive in H Modified. Finally it was decided that Mong would design and build two H Modified cars and the Hier brothers would finance the project and help with the construction.

Mong admits that he took inspiration from the successful lightweight specials of Martin Tanner when he decided to build the cars on aluminum chassis. Initial designs were put on paper in the fall of 1961 and the cars were finished the following Spring, after six month's of spare-time work, just in time to make their debut at Cumberland.

The Hiers and Mong campaigned the two cars in a total of 18 races during 1962. Although they compiled no remarkable record of wins, they suffered only one DNF, caused by a blown engine. From a weight standpoint the cars were competitive, but the 750cc DKW engines were somewhat unreliable and down on power.

With this building and racing experience behind him, Mong decided he wanted to make a business of building cars. He found a backer for the venture in C. W. Smith of Detroit. With the finances taken care of, he sold his carburetor and ignition repair service and formed the Bobsy Division, C. W. Smith Engineering Co. By the early part of February in 1963, he began construction of the prototype of the Mark II. Working with him was Ron Bachman, a mechanic and former employee. From the very beginning, the plan was to build a car which would win the G Modified National Championship.

Six weeks later, the car was finished and tested briefly on an abandoned landing strip. Chuck Dietrich, who was an experienced hand at G Modified racing, was nominated to drive the car.

The opening National race was at Marlboro and the car immediately attracted attention when Dietrich placed Third in the very first competition for the car. Two weeks later, Dietrich brought the car into the winner's circle with a win at VIR. He repeated at Cumberland, Meadowdale, Lake Garnett and Watkins Glen.

Not only did the car win in G Modified events, but it went well in the F Modified class also. For example, as soon as Dietrich wrapped up his G Modified title at the Glen, the 1100cc engine was pulled out and replaced with a 1500cc pushrod Ford

—all in the few hours between the race for G and H Modified in the morning and the modified sports car finale in the afternoon. He won the class, going away from a field of Lotus 23's, Elvas, and Porsches.

He also placed fifth overall, using the larger engine, in the Road America 500, driving the entire distance himself. In the last USRRC event, at Mid-Ohio, he ran Second for a good part of the race until the radiator cap came loose, making it necessary to stop in the pits for water.

As with the H Modified cars, aluminum was used in the chassis for lightness. Another factor is that it is easy to work with: to cut, to form, and even to weld (so long as heli-arc process is used). The three cars have run nearly 60 races to date, all without any problems which can be attributed to the use of aluminum. As a matter of fact, Mong can't understand why other builders haven't used aluminum also. With his present experience, he fels that much larger cars could be built on aluminum chassis.

Strength in a racing car should come primarily from design, he maintains, and not from the material. In his opinion, Indy roadsters are prime examples of obtaining strength from the use of expensive materials rather than from thoughtful design.

With the Bobsy, the frame is a rigid, fully triangulated structure. Most of it is 1¼-inch OD 6061-T6 aluminum tubing with 0.065-inch wall thickness. Front and rear stiffening hoops are welded box sections fabricated of sheet aluminum. Except for nuts and bolts, there are no ferrous metals used anywhere in the chassis. Total weight of the frame, complete with all brackets and hangers attached, is only 44 pounds. Mong has such confidence in his design that he warrants each frame against failure due to engineering or workmanship.

Wheelbase of the car is 88.5 inches and the track is 49 inches, front and rear. Height at the top of the engine compartment is only 27.5 inches. It is 121 inches long and 54 inches wide. All dimensions comply with FIA Appendix C regulations.

The theme of lightness is carried out in the aerodynamic-type body which is thin reinforced glass fiber. All body panels can be removed for accessibility to the chassis. The front section is fastened down by six aircraft bolts, with a removable panel provided for making adjustments to the foot pedals and front suspension. The rear section is held in place by four locating pins and a spring-type latch situated between the seat backs, an arrangement which permits quick access to the engine compartment.

An air scoop on the right side just behind the driver allows cool air to enter a duct to the oil cooler. One of the vents on the rear deck is the opening for the cold air box feeding the carburetors. Headlights are faired in smoothly to preserve the aerodynamic lines.

All interior paneling, including the floor, is aluminum sheeting. The two gas tanks, of 14-gallons total capacity, also are aluminum. They are mounted outboard of the frame, one on each side. The filler openings are accessible when the doors are opened.

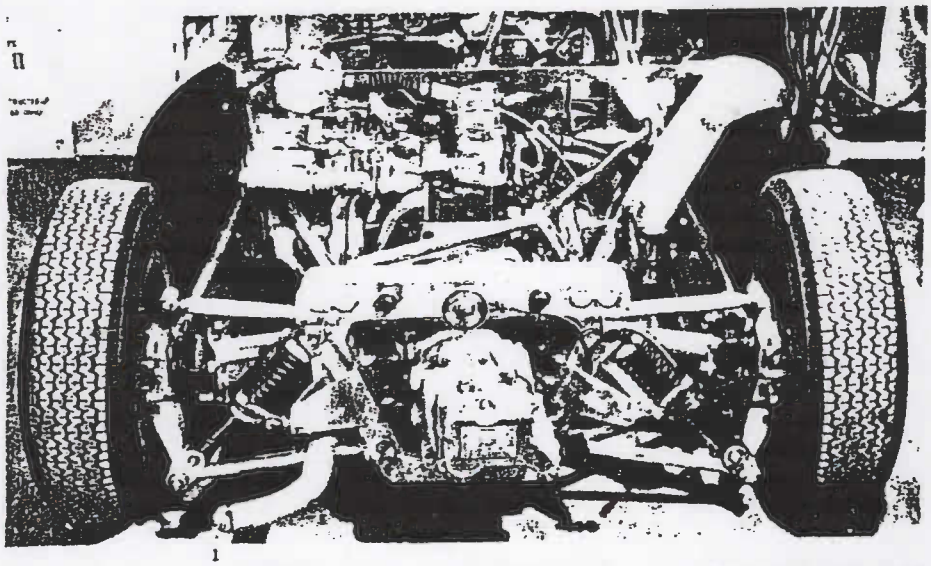
The driver's seat is fully adjustable, both laterally and vertically; an important consideration for the larger driver. The 13-inch steering wheel can be adjusted for height to suit the driver. Fitted on the dashboard, to the left of the steering wheel, are a tachometer, oil and water temperature gauges, and an oil pressure gauge. The shift lever is mounted in a comfortable position to the right of the driver and it is easy to operate.

The front suspension consists of unequal length control arms with a tubular A frame upper and a fabricated lower control arm. The fabricated lower arm has been replaced with a casting on subsequent cars. Adjustable, concentric coil spring-shock absorber units are mounted in a conventional position between the control arms. The shocks are Gabriel; the springs are specially wound for the Bobsy.

Both camber and alignment are adjustable, with standard settings at 1½ degree negative camber and ⅛ inch toe-in. Caster angle is 4½ degrees positive. The front anti-sway bar also is adjustable. Roll center for the front suspension is four inches.

The rear suspension also consists of unequal length control arms with a single tube as the upper arm and an A-frame beneath. Springing and damping are handled by units similar to those used in front. Two leading arms run from each cast hub carrier forward to the chassis at the front of the engine compartment. Standard camber setting is 2½ de-

BOBSY Mk. II



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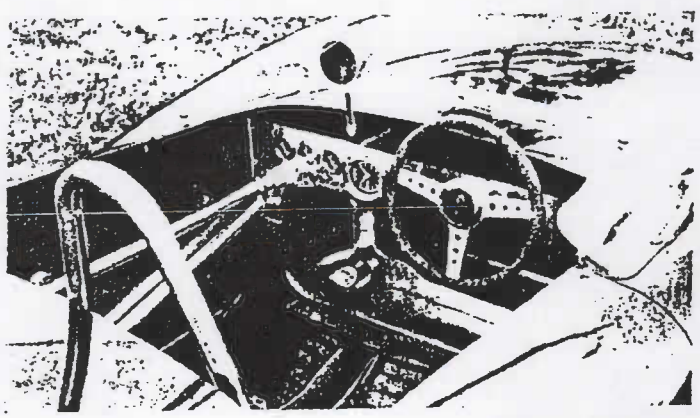

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grees negative and this is adjustable at the upper control arms. Roll center for the rear suspension is 4½ inches, but this also can be changed if necessary. Toe-in on the rear wheels is ⅛ inch, as in the front.

The engine is a Ford 105 with 1100 cc displacement, modified by Holbay in England to produce 100 horsepower. It mounts two 40DCOE2 Weber carburetors and features a full extractor exhaust system. Cooling is handled by a four-row cross-flow copper-finned radiator mounted in the front of the car. As was mentioned, the oil cooler is in the engine compartment and cooling air is ducted through it from a scoop. Motor mounts fastened to the center of the engine are bolted to a junction of two frame members on each side of the chassis. A removable Y-brace over the engine adds strength to the engine compartment.

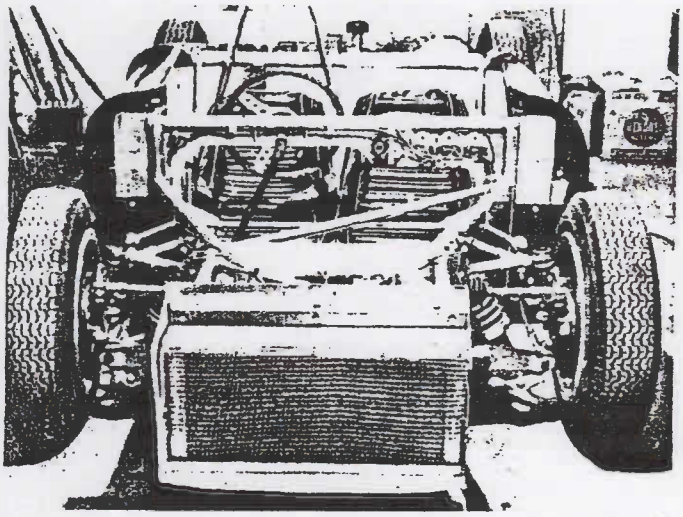
The transmission is a Hewland-modified VW unit with five speeds forward. The transmission is bolted to the rear bulkhead; these mounting points serve also as rear motor mounts. Gearing changes in the transmission can be made relatively quickly because of its exposed position.

Rubber U-joints are used at both ends of the half shafts, and take up not only angular motion, but end motion as well. This practice eliminates the need for splined axles which tend to bind when the shafts are carrying a heavy torque load, restricting to some extent the motions of the rear suspension. Also, the rubber joints are lighter than conventional joints and splines.

Wheels are 13-inch cast magnesium, with eight spokes and a four-bolt hub pattern. In keeping with modern race car design, the rims are wide (6 inch) to keep maximum tread on the ground. Tires mounted are 4.50 x 13 on the front; 5.50 x 13 on the rear. Better than adequate braking is provided by Airheart dual caliper units mounted outboard all around. Discs are 9½-inch diameter and are cast of Meehanite to Mong's own design.

Only minor changes were made on the prototype during the season; the cars being put together now essentially are duplicates of the original Mark II. Demand for this type of car has been good and Mong expects it to continue. Last year's experience with the new SCCA production category rules taught many people about how expensive it is to be competitive in a production sports car. As they compare their costs last year with the costs of winning in a modified racing car, the fields of small bore racing cars will grow, he feels.

The Mark II is suitable for F, G, or H Modified competition and it can be supplied with a Ford engine of suitable displacement for any of these classes. Mong also expects to sell Mark II's for competition in the successful United States Road Racing Championship series in the under-two-liter class. Dietrich proved it was competitive and his car was using only a pushrod Ford engine for power. With a Ford twin-cam, Alfa Romeo, or Coventry Climax two-liter engine, the Bobsy will be hard to catch.



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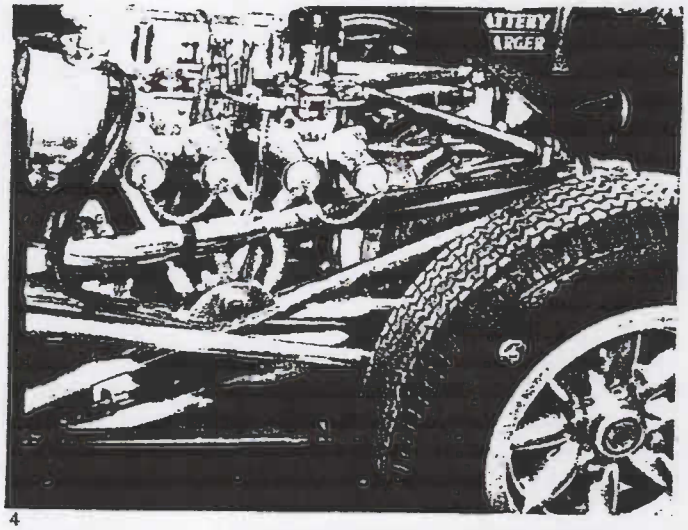

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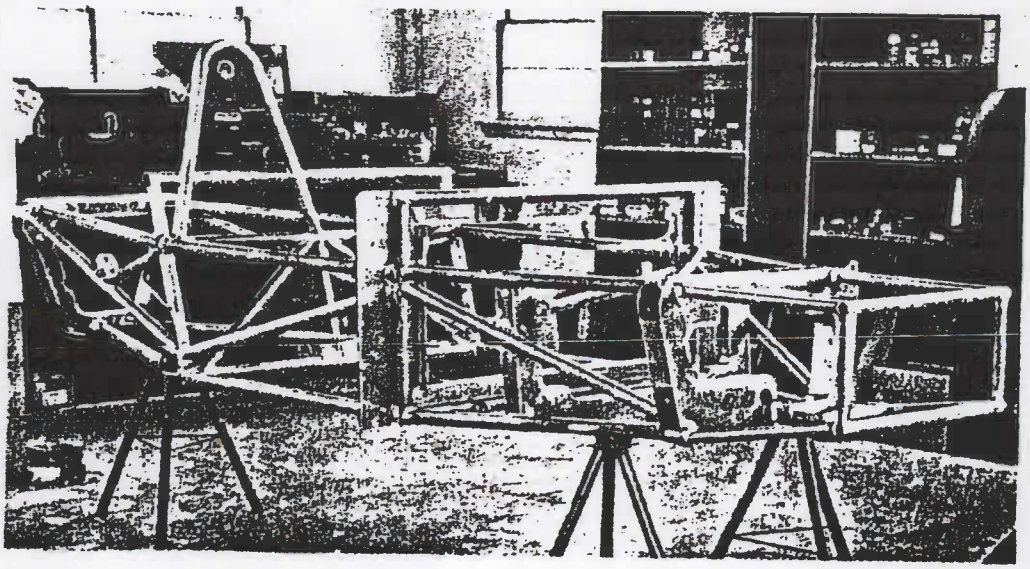

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1 – Coil shocks are extremely tilted; outer joint are Mouton rubber. Oil cooler is ducted to right of engine.

2 – Clean work throughout the Bobsy is obvious in this view of the cockpit.

3 – Front springs and shocks are nearly upright, work with unequal length upper and lower control arms. The disc brakes are outboard front and rear.

4 – The engine is a Holbay conversion on a Ford, mounting two dual throated Webers using straight velocity stacks.

5 – Space frame is relatively simple but unique in the extensive use of boxed bulkheads to aid its rigidity.