By Dennis E. Ortenburger

The Speedwell Sprites

Teardrops chasing speed records

In 1957, a group of enthusiasts including George Hulbert, Graham Hill, Len Adams and John Sprinzel formed a company named Speedwell Performance Conversions Ltd. Based in London, the group first specialized in the unlikely Austin A35 and A40 sedans. They recognized the diminutive 948cc BMC engine as having considerable potential and with careful blueprinting, balancing and clever head work transformed the staid sedans into surprising performers. The factory raced these cars to test its ideas on engine and suspension modifications and winning became part of the Speedwell reputation. The rest came from excellent workmanship and attention to detail.

When the Austin Healey Sprite was introduced in 1958, the firm turned its efforts exclusively to the new bug-eyed sports car. Based on its experience with the Austin engine in the sedans, Speedwell knew the Sprite would respond to its engine and suspension refinements but felt even more performance could be gained by doing something about the car's peculiar front end. The idea was to produce a replacement bonnet combining aerodynamics, light weight and forward opening for improved engine accessability.

George Hulbert recalled, "We approached Frank Costin and asked if he would be interested in doing the design. It was just good luck that he said yes; as is common with most geniuses, in order to get them stuck into a project it is absolutely essential that the project be one which strikes the fancy."

And strike his fancy it did. Costin had taken notice of Speedwell's outrageously fast sedans but more than that he was delighted by the atmosphere of its organization. The group enjoyed itself immensely, and it occurred to Costin that the directors were involved as much for fun as they were for fame and fortune. Although he was chief designer at Lister at the time, there was no conflict of interest in doing this outside job and besides, in terms of aerodynamics and Speedwell's requirements, the front end of the Sprite presented a real challenge.

Speedwell wanted a replacement bonnet only; nothing else could be altered from stock. Costin pondered the limitations which were the scuttle and engine heights and the sheet metal inner wheel wells which were part of the chassis. These restrictions notwithstanding he produced a set of drawings in a matter of days and a prototype was built in aluminum. Although unable to calculate the shapes in the manner he preferred, the front end was immediately recognizable as 'Costinian.' The air intake was a small ellipse and fully ducted, the fender lines angled outward and the leading edge was nearly parabolic in curvature.

Hulbert's goal was to transform the Sprite into a tiny but efficient grand touring car, hence the name Speedwell GT. To complete the job a proper coupe was needed and Costin obliged. Great care was taken with its contours and the windscreen attachment. Besides a greater rake than the stock Sprite the screen was more curved and fit nearly flush into the top. The prototype of this piece also was formed in alloy as both would be used to fabricate the molds for fiberglass replicas. The hardtop was faired in with the bodywork at the windscreen but retained a seam at the rear. The appearance was such that many observers thought it removable but in fact it was permanent. The Speedwell GT became a very good seller, partly due to the increased performance from a lower drag factor and the engine modifications, but also because it looked remarkably like the Lotus Elite. To Elite owners, however, the real embarrassment came on the race tracks where the Speedwell harrassed them unmercifully and on some occasions actually beat them. In its own class the GT was nearly unbeatable, and in 1959, John Venner-Pack won 14 out of 19 starts and broke the lap record in every race. Len Adams raced a works car and between them they never finished lower than third overall.

While Hulbert and Costin were working on the mini-grand touring car, news came from the salt flats in Utah that a supercharged, teardrop bodied Sprite had captured the Class G land speed record at 146.95 MPH. As Hulbert recalled, "The thought in both our minds was to further develop the Speedwell prototype and take a crack at some records ourselves. The sheer cheek of nudging the Utah results with an unblown standard engine was irresistible." As with the GT, the primary limitation to an extremely low drag shape was the height of the Sprite's scuttle. The decision was made nonetheless to maintain the stock chassis and utilize as much of the standard Sprite bodywork as possible. This meant a considerable sacrifice in cross-sectional area but Costin and Hulbert believed, "If you call it a Sprite it should bloody well resemble one."

While Costin got on with the job of designing the streamliner, Hulbert tended to the engine, suspension and chassis preparation. The original GT nose section was retained but with the headlights removed. This area was recontoured using correctly radiused fillets. The passenger compartment was covered with an alloy tonneau. Since George would do the driving in the record attempt, precise measurements were taken of his height in the driver's seat and the width of his head. A plexiglass canopy was molded that faired into a headrest. Both the width and height of the canopy corresponded to George's dimensions. The angle of the canopy was so radical it took several tries at forming to obtain one that was close to being optically correct.

The undertray was fully enclosed by an alloy panel, and the front and rear wheels were shrouded. To control air flow as far rearward as possible, the rear deck was raised slightly and the Sprite's gentle fins were covered to remove drag. The back end was then cut off in abbreviated Kamm fashion. With the exterior bodywork completed by Williams and Pritchard, Costin and Hulbert began testing the streamliner. Wool tuft observations and pressure readings were taken which indicated the shape was very slippery indeed.

Ducting was extremely important in the record car and due attention was given to air entry and exit. Costin decided to partition off the passenger area and use it as part of the ducting.

While the streamliner was being detailed and painted, Hulbert and Costin compared notes. Combining bhp figures, transmission and tire friction losses and the aerodynamics, Costin reckoned 128 MPH should be achieved. Arrangements had been made to make the record attempt in Belgium on the Antwerp-Liege auto route. The Belgian Auto Club agreed to close and marshal the road and the Belgian Federation had offered to do the timing. George remembered how completely tractable and reliable the streamliner was on the road, and "To add insult to injury, we decided that the car should be driven to Antwerp and back."

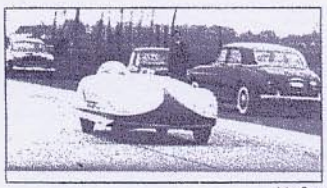
Besides the streamliner, Speedwell took a normal GT along also. The car was John Venner-Pack's, but on this outing Graham Hill was elected to do the driving. Before the run to Belgium the GT was put on Speedwell's dyno and power output was found to be 62 brake horses on pump gasoline. The target speed would be a sustained 100 MPH. The streamliner, on the other hand, was putting out 92 brake on a blend of methanol and nitromethane and, as noted earlier, 128 MPH was the goal.

The Speedwell entourage arrived at Antwerp on April 13, 1960. The weather was dry but very windy and the preliminary runs saw both Graham Hill and George Hulbert using most of the road on encountering sudden gusts. Both men felt the conditions were dicey but not hazardous enough to abort the attempts. The results exceeded all expectations, with Graham Hill achieving a new Belgium Class C record of 110.9 MPH on gasoline. Hulbert went out and set a new record as well with an average speed of 132.2 MPH over the flying mile.

Costin and Hulbert immediately began discussion about the possibility of an out and out 1,000cc record breaker. Using the smallest wheel size available and building a car around the frontal area of the engine they believed 250 MPH would be possible. Some calculations were done but the press of other business separated the two men and the project was shelved. The twinkle in Hulbert's eye remains, however: "The project is still available with a good deal of work done already; with some time and a little cash . . ."

Speedwell Photo

John Ross



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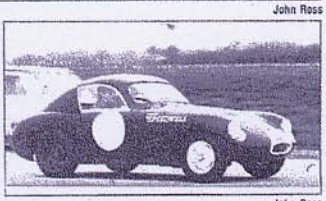

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Photos courtesy of the George Hulbert Collection

Top: George Hulbert in the Speedwell streamliner; middle: Venner-Pack's Speedwell prior to record run; bottom: Hulbert on record run on the Antwerp-Liege auto route (left) and Graham Hill setting new Belgian Class G speed record (right).

This article was excerpted from the forthcoming book, Automobile Aerodynamics: The Work of Frank Costin, *by Dennis E. Ortenburger.*