

choke Stromberg gasworks. Front end by Bowden, modified to give a 50" track and 5 camber. Back end, softrides on to a '38 5.125 Ruby axle, shockers fore and aft by Newton. Chassis is a '37 Ruby extended to give a 7' 3" wheelbase. Wheels by West London, 15" of course. The body, when mounted is designed to give the car the appearance of a 3/4-scale Lotus. And a very nice piece of panel-beating it is. I think it was the hand-beaten Ally noseowl that impressed the visitors more than anything. Scattered tastefully around the stand were Mike Ware's photo's. These being the ones originally shown at the annual dinner.

An enormous amount of interest was shown by visitors to the show all sorts of bods dragging their girl friends and wives over to goggle at the car. Questions ranged from the intelligent to the downright ridiculous, but a lot of people were good enough to say that the stand was the most interesting thing they had seen in the whole show. Publicity-wise, I think we can say that the exhibit was a success. Even though the reporter from the "Southend Standard" didn't give us the write-up he had promised—but that's probably due to the fact that the next issue of the paper was full of the subsequent Carnival.

Tony Poole Mk. II.

More U.2 News

By Arthur Mallock

(OCT 1962)

The number of new cars actually to appear on the track this year has been rather disappointing. Domestic problems inevitably seem to delay production, but Peter Finney proved that it can be done, by appearing on the track six weeks after taking delivery of his chassis, and apart from brake trouble was right from the word go. With virtually no front brakes, and new tyres it lapped Silverstone at 1-13.6 on its first outing.

The steering in particular was delightful. Until recently, bad steering has been the major fault of the U.2. Last year the two works' cars used Standard 10 steering boxes and the excessive backlash, made any quick precise corrections impossible, making "on the limit" driving on bumpy surfaces or in high winds a decidedly hazardous occupation. John Harwood then reported from Germany that he had converted to cantilevered Rack and Pinion from a Lloyd 600 with a really sensational improvement, so towards the end of the season, we built up a Triumph Herald unit. At first, the very light steering and kick-back were rather disconcerting, but my dice with Ian Bailie's Aston Martin in the Clubmans Championship, when I had to change line about three times on every corner proved conclusively we were on the right lines. With a straight drop arm, the rack bearings were only about 4" apart, and the degree of overhang on full right lock was rather more than good practice could tolerate, so on the production units we used an L-shaped arm copied from the Lloyd, which increased the bearing spacing by 50%.

The caster angle was increased from 4° to 6° and on Peter Finney's car the Ford front wheels give less centre point off set. All of which added up to an extremely satisfactory solution.

Magnesium wheels have rather more off set, so that further improvement was sought on my car by reducing the negative camber

from 3½°—2½° and going to a lot of trouble to eliminate bump steer. Many special builders tend to treat this rather light-heartedly, but one of our foremost racing car designers told me that its complete elimination is considered vital. Not only can bump-steer not be eliminated on the drawing board, but even after the prototype has been experimentally adjusted, production copies can still be drastically out.

Fortunately it can be easily measured. Remove the springs, and measure the variation of toe-in with wheel movement. Anything over 1/16" for a 3" wheel movement is excessive, 1/13" is a good target to aim at. Correction can usually be achieved by varying the height of the inboard track-rod joints, e.g. varying the height of a rack and pinion by 1/16" can often make a significant difference.

Finney's big problem was brakes. The manufacturers foretell all sorts of dire consequences if one does not use their own fluid, but this is rather contradicted by the fact that Esso fluid is claimed to be of universal application, but Lockheed systems normally work at a higher pressure than Girling, so that with a single master cylinder, fore and aft ratios will almost certainly be out unless one indulges in some very crafty juggling with wheel cylinder sizes.

If you must mix the systems, then probably the best way is to use two completely separate front and rear systems each with its appropriate master cylinder probably 5/8" for Girling and 3/4" for Lockheed. Many constructors get in trouble with their rocking bar assembly. Some don't rock at all, others rock too much. I copied the Lola system which is very simple, neat and effective. A Rose joint is used on the end of each push rod and a Uniball in the middle of the cross bar, which consists of a 5/16" bolt. Fore and aft ratio is adjusted by moving washers from

side to the other. Finney used mixed springs, but to spoil the story somewhat, he got much better results when the two leading shoe rear were converted from two trailing shoe rear. This included moving his front Cooper 8" 2 LS brakes to the back and fitting 9" to the front. Also making a wrap around screen. Unfortunately, some of the Continental organisers (particularly Italian) object to the home made appearance, and having been offered a LOLA at a give-away price, he has sold his U2, to Dr. Bolt. The latter proposes to widen the body and convert it to 1172 Formula.

Roger Fry's "Poor Man's" version which cost him about £240 was due to make its debut at the 750 Silverstone, but unfortunately fell off its trailer on the way to the circuit. It should be racing by the time this appears.

I have not seen John Mangolies Hill Climb special, but it sounds quite a fearsome device with a semi "Works" B.M.C. Junior engine mounted about a foot further back than normal, in the interests of traction. It has Merlin front wheels and wide rims so should be quite a power in the hill climb world. John Smalley and Bob Beck are building "full House" 1172's with Merlin front wheels, Austin 7 Gearboxes and wide rims at the back. John Smalley has gone a stage further with 6" rear rims and suspension converted to "Works" specification, i.e. Coil springs at the back and front roll centre lowered 1½". There is a good chance this will be racing this year.

The main developments on my own car this year have been coil spring rear suspension, and a more reclined driving position. At first sight, the reclined driving position appears unnatural and might be expected to impair control, but the reverse is actually the case. I no longer have to shift my weight from side to side to counteract cornering force and the comfort and all-over support of my Lotus 18 seat give a wonderful feeling of confidence. The Lotus 25 suggests that we have by no means reacted the limit in this respect, and next year, we hope to be further down still. The coil spring suspension has so far proved rather a mixed blessing. It certainly rides the bumps better but excessive understeer has resulted in lower cornering power. At Oulton, this can be tolerated, and on a wet track is actually an advantage, but elsewhere, especially Brands Hatch, the results have been hopeless.

The coil springs are the same rate as the ones they have replaced, but the "Torsion Bar" effect of the ¼ ellipsis and geometric quarrels between them and the trailing arms probably gave a higher roll stiffness. This week I shall be experimenting with softer front springs, which I hope will be a cure. The majority of British circuits have very few bumpy corners, and in these circumstances the ¼ ellipsis give excellent results,

finishing fourth (still with the Jack French head), which more than paid for all his winter mods. This included moving his front Cooper 8" 2 LS brakes to the back and fitting 9" to the front. Also making a wrap around screen. Unfortunately, some of the Continental organisers (particularly Italian) object to the home made appearance, and having been offered a LOLA at a give-away price, he has sold his U2, to Dr. Bolt. The latter proposes to widen the body and convert it to 1172 Formula.

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but for a very fast bumpy corner like the Silverstone outer circuit Woodcote, a softer ride is needed and ¼ ellipsis become rather impractical when a static deflection over 2½" is required.

My own experiments, combined with current trends in Formula 1 and Junior designs, suggest that the absolute ultimate in independent suspension would be swing axle with the axles overlapped to give a length of about 2/3 track. I intend to experiment with this next year on the front.

The Mk. III U2 chassis is now in production. The main differences are that the nose is 2" lower, and better triangulation and the use of coil springs at the back gives an overall weight saving of about 15 lbs., which should be worth about ¼ sec. a lap at Silverstone. The engine is 3" further back, which allows the use of an Austin 7 prop shaft. Provision is also made for the use of crossed over swing axle I.F.S.

The first two customers are P. Green and J. S. MacEwan of Bristol, who are building a pair of "Full House" cars, mainly with an eye on Formula III.

The Austin 7 gearbox would seem to be the best, and mine is a very primitive affair fabricated coming thing for 1172 Formula, even allowing from an old silencer.

LETTERS TO THE EDITOR

"THE SPIRIT OF THE FORMULA"

Dear Sir,

Having read the article by David Morgan and Peter Harris, "The Spirit of the Formula", and remembering previous letters on the subject, I feel it time to air my views on the way the formula seems to have changed.

We started racing some five seasons ago in the heyday of Dave Rees and company, with a car built strictly to the formula. It weighed some 11½ cwt., and needless to say was a complete failure, however, having seen how the opposition went about it we started again to build a similar sort of car to what we had seen, irrespective of what the regulations said down. The car was started from a Ford "8" van bought for £80s. Od. and still has the main mechanical components. The result was a car with which we could compete on equal terms with the best, but also with equal inconvenience getting through the Scrutineering Bay. To use a favourite quote "This is a bit near the bone".

Since those days, however, the formula has progressed still further and we took the usual steps to try and keep up. Half way through the project it became apparent that we were spending a lot of money (1172 formula cars these days have magnesium wheels and many other expensive components), and yet when finished we would still only have a Ford 10 Special. The obvious thing to do was to spend the same amount of money in pursuit of one of the more rewarding types of Motor Racing, at present undecided, and although we shall probably go Formula Libre, Formula One was considered, although this is little more expensive than 1172 formula.

No matter what formula is laid down for Motor Racing, people will try harder and spend more money to win. This has resulted in the very high standard of performance from the cars this season and the much more erratic driving, numerous cars seem to spin off in formula races these days. The progress of the formula seems to have left too big a jump from the 750's and produced a sort of side valved, two seater Formula Junior.

This is how the formula appears to me. The other members may see it differently, especially drivers of Terriers, Lotos, Pegasus, Rejo, etc. If anybody wishes to buy a second-hand One-off Trophy winner at a give-away price, with Ford V8 Transporter thrown in for free, we will be pleased to oblige.

Yours faithfully,

for W. G. LOMAS.