# Extract from "Lotus the Early Years" Peter Ross

## How the Allen brothers met Colin

Towards the end of 1950 they had noticed a young man driving slowly past their house on a number of occasions. Sometimes he was in an ancient Austin Seven fabric saloon, and on other occasions in the tourer version, the Chummy. One day he stopped in the Chummy and introduced himself.

"I'm Colin Chapman, and I've noticed that you are working on an old Austin Seven. It's too heavy to race - you've got to alter it". Michael and Nigel were quick to assure him that they had no thoughts of racing it.

"Oh yes, you MUST race it", said Colin, "I'm building a car to take part in the new 750 Club formula, let me tell you all about it". The Allens proudly showed him their lovely workshop, and Colin must have blessed the day he stopped at their house; this was exactly what he needed to make a proper job of his new car! He was soon sitting in the Allen's garage, eating cake and drinking tea, the first of many such occasions in the following 12 months. (see photo)

Chapman poured out his considerable charm and they both found themselves swept along by his irresistible enthusiasm. They soon agreed not only to help build his new car in their workshop, but indeed to build a team of three so that they could all race at the same time! His would be the fastest because he'd got a special thing he wanted to do to the engine. Colin left his home address and office telephone number with them, written in pencil on their garage wall. Later he added the ambitious target date of their first race venue - Castle Combe on 12th May.

Michael recalls: "I think Colin couldn't believe his eyes when he saw all the facilities. The garage he had at the time was a lock-up behind Hazel's house at 244 Alexandra Park Road, not far from where we lived, and the only tools were an electric drill. Anything that had to be welded had to be taken to Hazel's father's workshop to be welded by Jim, one of his employees. Not the easiest way to build a racing car."

### A Start Is Made

Michael recalls: "We must have started building it in 1950. We started in the smaller garage, and when we laid down three cars this photo was taken in the new garage looking at the front axle assembly, with the drawing board propped up on a brake drum."

The three team members could of course only work in their spare time. Nigel had to go off on most days to lectures, and Michael was supposed to attend his preliminary dental exam. studies (although his heart was not in it), and Colin was working at the British Aluminium Company in the West End of London. Work was carried on in the evenings and at weekends, and the girl friends were roped in to do jobs like upholstery and the steering wheel, the latter being made by Nigel's girl friend Pauline Gooch who he was later to marry. It went without saying that Hazel Williams was there too, and there may have been occasional help from Johnny Teych, Bob Hester and Dave Kelsey when they were not working on Johnny's own car, the JVT Special.

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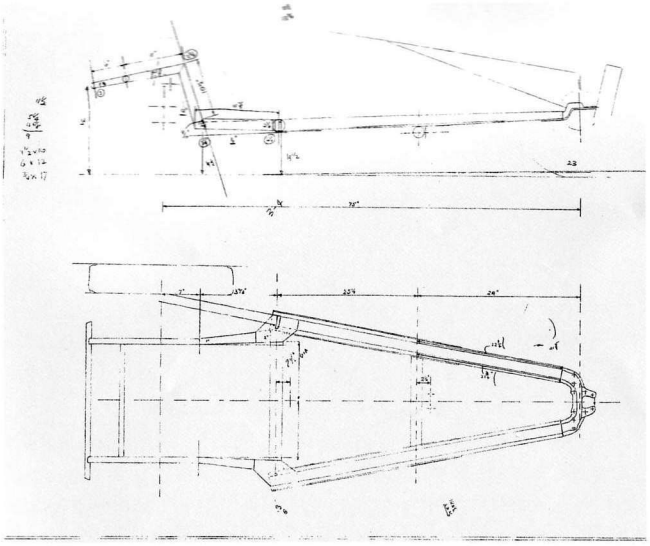
After they had built the three chassis frames, bought the three engines and modified the axles, it became clear that there would not be enough time before the season started to complete all three cars. The decision was taken to concentrate on just the one car, and build up the others as time permitted. They split the responsibilities as follows:

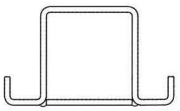
Michael would do all the mechanical work on the engine and gearbox. Nigel was the chassis man, and was responsible for all welding, cutting work, and the suspension parts. Colin was in charge of general design, development and body work, which left him time to sit on the meditating box, and work out how to do the next stage. Nigel reckons that the smallest part of any unstreamlined car is the bodywork. "Meditating boxes" were old Army or RAF lamp bulb wooden boxes which, when not being sat on, were useful for supporting the car during construction. They still use them!



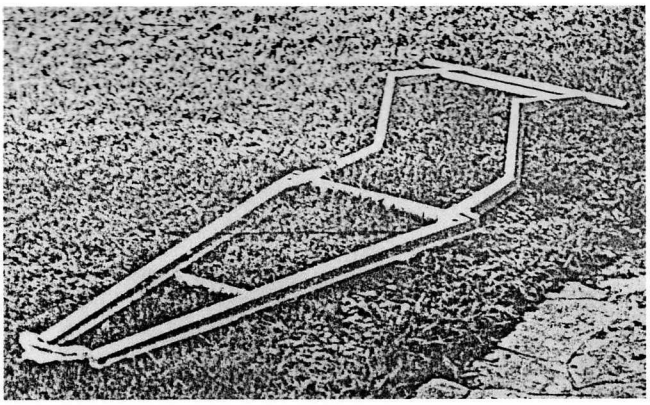
The regulations for the 750 Formula were intended to keep the cost as low as possible, and required the use of the Austin Seven chassis side frame members, engine, gearbox and back axle. There was no restriction on what could be done to the engine (apart from not allowing overhead valve conversions and superchargers). The cars had to be driven to the event under their own power. It was not obligatory to drive them home again - crashes and breakdowns were permitted!

## The Chassis

Colin decided that a really stiff chassis with soft springs, well damped by telescopic shock absorbers was essential to get good road holding, so the Austin Seven Top Hat section chassis side members were boxed in by welding a plate across the open side (see diagram) and circular tubes, welded in place, replaced the flimsy riveted-on channel section cross members, which had virtually no



torsional resistance. The first one, was boxed in with strips welded full length, but when they cooled off the weld shrunk and caused the frame to arch upwards, so the later ones were only welded at intervals. At the rear a structure was created to take the seat back, petrol tank, body, and the rear shock absorbers; whilst at the front there was a hoop which acted both as a body, radiator support and the location for the upper end of the front shock absorbers. Finally there was a central body hoop to locate the body and the upper end of the steering column. The steering was modified to make it more suitable to actuate the swing axle front suspension. Colin did more than one layout for the Lotus Mk III as it was eventually called (after being called just an Austin Special on the first drawing).



Nigel. "As can be seen from the photograph above, Colin had already made a start on the first Mark 3 chassis, and it just had the top hat section boxed in with mild steel strips gas welded in place. The top chassis section had numerous hammer marks where attempts had been made to take out the bow in the chassis side members by brute force! I can't remember if we used this particular chassis or whether we used one of the other two, both of which had the boxing in done by electric welding (a recent innovation at that time)."

Michael: "The second chassis frame cost £3. We went all the way to somewhere near Gloucester to get it, and brought it back on the roof of the Big Seven. The next cost us only ten bob; that was the because it wasn't so clean!"

As described above, boxing in the side members was best done using an electric welder as gas welding heated up the chassis too much and caused the side members to bend. So the two frames were loaded on top of the Allen family Armstrong Siddeley and driven up to Muswell Hill to the workshops of Hazel William's father Vic, where Jim welded them up using his equipment. Colin's old friend

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Johnny Teych had got wind of this plan, and as he wanted to build a special of his own using a Ford engine in an Austin Seven, Colin got him an Austin Seven Ruby van which he stripped to get the chassis frame and they put it on the roof as well so that they were all boxed in together.

## Chassis Tubing.

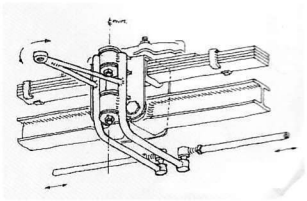
Nigel: "At this time our main family transport was an Austin Big Seven EAF 93 which was our main workhorse. I remember making up a roof rack to fit it and almost every week this motor could be seen at Brown Bros. depot down at Downs Road, Hackney E5 taking on board Truewell welded seam mild steel tubing, and Cold Drawn Weldless steel tube for various jobs on the cars. We never quite realised how lucky we were in having the variety of small firms nearby that we were able to call upon for supplies and parts. I well remember the Griff Battery company at the foot of Archway Hill who also supplied us often at short notice with our batteries, and Silentbloc along the North Circular Road where we were regular visitors.

"In tune with our rapidly developing racing pedigree, the Big Seven soon sported a special inlet manifold with Stromberg carburettor and four branch exhaust with twin silencers. Hydraulic brakes were later added to cope with the improved performance coupled with twin trumpet wind horns on the roof and hand operated windscreen washer jets! (Having seen this feature on a J series Allard in the local filling station). Heady days!!"

## The Front Suspension

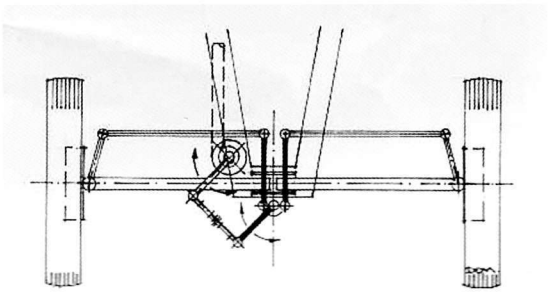
Colin had been pleased with the swing axle suspension on his first two cars. This is often described as Ballamy suspension after the name of the person who first thought of it. His first car had used an Austin Seven axle, but the sharp change of angle as the wheel hit bumps allows the gyroscopic force as the wheels rotate to create enormous loads on the king pins, and these are a weak point on the Austin Seven axle being only 1/2" diameter; so on his next car he used a Ford axle which has much stronger king pins and the axle has more metal around the king pin to resist the tendency to elongate under load. The angular movement was also reduced by increasing the track from 40 to 48 inches. So although it was slightly heavier than the original, it was robust enough to stand up to a hard racing season. When the axle is cut in half short tubes have to be welded on to the centre to take Silentbloc rubber bushes which act as the central pivots for the suspension, and an inverted U bracket has to be made which is bolted under the centre of the front spring to connect the two axle halves to the chassis frame see diagram.

Michael: "Due to the cornering loads and geometry with this type of front suspension, it was quite usual to wear off all the tread on the outside area of a front wheel during a 5 lap race!"



## The Steering

The track rod which connects the two wheels together has to be spit in half and pivoted on the same axis of each half axle, and the geometry of the steering was modified to allow both arms to be actuated from the centre. This is a better system than that usually used in a swing axle conversion where the steering connects to one wheel only, as it gives more precise steering less affected by bumps. See diagram.



Nigel: "I well remember the only time Colin was stumped on producing a drawing. One of my jobs was to fabricate the steering box mounting bracket. I had repeatedly asked him for a sketch with no results. In the end he admitted that this was going to be a difficult thing to draw. I suggested that we balance the steering box on a meditating box supported on plasticene and string, and that he should go to work [at British Aluminium] and leave me to it. I took a large piece of cardboard and a pair of scissors and some sticky tape, and after several hours and many attempts I had a cardboard bracket which I then reproduced in steel plate tacked welded together for approval and testing in time for the evening session! Such was how we made progress, never realising that we were in fact breaking ground which others would follow in the kit car industry in the ensuing years.

"With the steering column and steering box in position it was obvious that there was such a degree of misalignment that some form of universal joint would be required to make it work. The solution was to weld a cross piece on the end face of the column tube with two bolt holes and a corresponding piece on the stub of the steering box. These were joined by a rubberised fabric disc and a very serviceable universal joint was created.

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