by **LAYOUTMAN**

from small beginnings . . .
how a Hornby-Dublo layout grew

THE OWNER and engineer of Hornby-Dublo layout shown in the pictures is *M.M.* reader R. Mabey, of Solihull, who writes that he was about three years old when his father brought home the set in question. Thus he had the advantage of starting young in the Hornby-Dublo hobby—no bad thing—with all the benefit of his father's interest and encouragement.

With this advantage the railway was bound to grow, and in its earlier stages of expansion was installed on a table in a large bedroom. Soon it outgrew the table, so it was moved to the loft, after it had been adapted for the purpose.

Since then, the railway has seen two complete rebuilds, with the result that the present system takes full advantage of the generous space, approximately 20 ft by 15 ft, afforded by its location. A double track main line, roughly rectangular in form, runs close to the outer limits of the baseboard structure throughout and affords maximum 'mileage' for train running. Along one stretch, the main line passes through a fairly long tunnel and near each tunnel entrance is a double junction leading in each case to a terminal station. One of these stations is named *Oakham* and the other is *Braintree and Bocking*. Each has its system of sidings, separated from the actual station tracks, yet readily accessible from a single long loop or avoiding line. This line linking the two stations is useful not only for freight movements to and from both yards, for light engines and empty stock, but also as a diversion route for up or down traffic if necessary.

Each of the terminal stations is well laid out to give arriving trains a choice of platform while those departing can readily be routed to reach the appropriate main line track at one or other of the double junctions previously mentioned. Since the goods sidings at each station are all directly connected to the avoiding line mentioned earlier, this line can be used as a headshunt, or shunting spur when long trains are being dealt with.

Train services are provided on a generous scale. In addition to Hornby Corridor Coaches for making up standard express trains, there is a set train of Pullman Cars for luxury express services. For stopping train services, apart from those worked by steam-type locomotives, the No. 3250 Electric Motor Coach, and the corresponding Driving Trailer No. 4250, with several Suburban Coaches between them, make a splendid multiple-unit set. The hardest main line passenger

turns are shared by a Deltic Diesel and various Hornby-Dublo steam-type 4-6-2s, including a S.R. '*Dorchester*'. L.M.R. 2-8-0 B.R. 2-6-4 Standard Tank Locomotives maintain a high standard of power for freight and residential services. A Castle 4-6-0 and other types of locomotives represent W.R. practice.

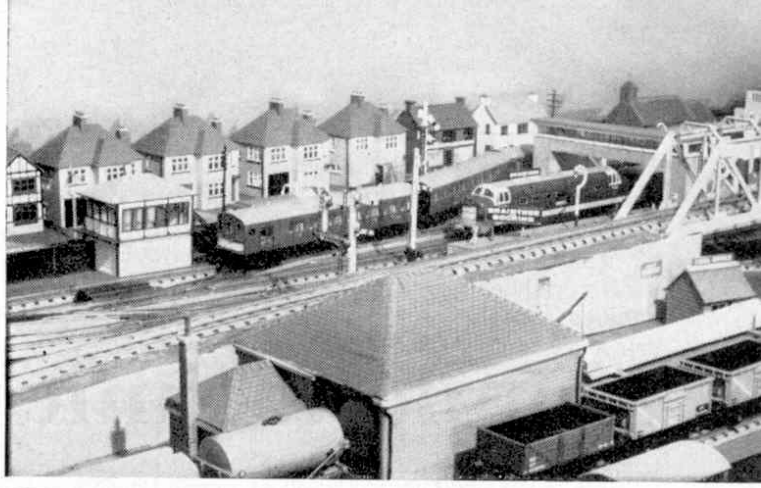
In the station areas, points and crossings are used together in such a way that a train approaching either terminus can be run into any of the platform tracks. Similarly, a train leaving any platform can make its way to the required main line track to continue its journey. This is a great asset from an operational standpoint, particularly if special or extra trains are being run.

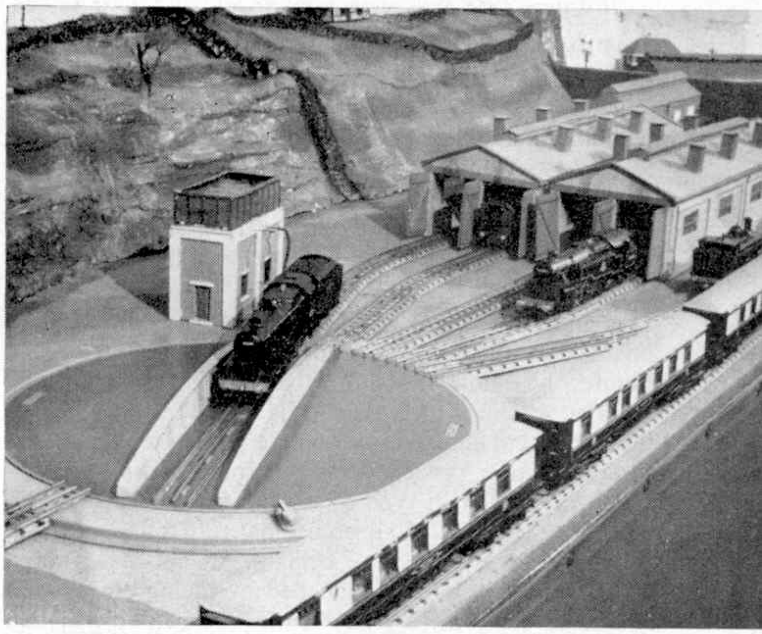
Ready access from one track to another helps in the disposal of 'empty' long-distance trains, and the necessary movement of light engines. Tender locomotives do not run round their trains on arrival, but have to use either of two turntables. There is one of these near to each main station and each turntable serves a locomotive depot. One situated at baseboard level stands a little way from *Oakham* Station; the other is on a high-level structure above the carriage sidings at *Braintree and Bocking*—a novel, space-saving situation.

This arrangement, however, involves an exceptionally steep climb so that the shed approach track clears the avoiding loop. Still, as engines alone have to negotiate this, no special difficulties in working are encountered. There are in real life one or two places where locomotives have to contend with this sort of thing on their home premises, so the scheme in miniature is not unreasonable. It is certainly justified from the point of view of space and siding accommodation, as it is necessary to store, on the layout, the 23 locomotives in service, with some 50 coaches and 90 wagons. Of the two engine sheds, one has been built up from the standard Hornby-Dublo No. 5005 Kit, with the No. 5006 Extension Kit added to make up a four-road shed. The other has been built up from balsa wood.

Balsa has also been largely used in the construction of the two stations, with the addition of units from various kits. The completed results are quite convincing. A miniature town—a pleasantly varied kit—assembled combination of houses and one or two shops, part of which you can see in one of our pictures—forms the background to *Braintree and Bocking Stations*. There is as yet little actual scenic background, although no doubt this will come in time. But there is some well-executed modelling over the tunnel which conceals the main line tracks alongside *Oakham* locomotive sheds. Over the tunnel bore, screwed-up newspapers, covered with wire mesh, have provided the basic shapes for the final surfacing of plaster of Paris, which has been suitably coloured.

From the control point of view the layout is particularly well equipped. There are two main control panels on which are grouped the controllers for the movement of the trains, the section-isolating and point- and signal-operating switches. All points—there are more than 40 of them—and signals are electrically operated, and the track is divided almost throughout into isolating switch-controlled sections. By this means practically any section can be isolated at will.





Top: A striking view at one end of 'Braintree and Bocking' station on the Hornby-Dublo layout of R. Mabey, of Solihull, described in this article. Co-Co Diesel 'Crepello' is leaving the station, while a Suburban Electric makes its way into a side platform.

Middle: A realistic view of 'Oakham' motive power depot, showing a 2-8-0 Locomotive coming on to the Turntable, from which the shed tracks radiate. Pullmans are passing on the inner loop line.

Bottom: S.R. 4-6-2 'Dorchester' arriving at 'Oakham' with an express. The continuous main line is in the background, while in the front of the picture is a line of vehicles ready for express freight working.

Opposite: 'Oakham Branch Junction', with Hornby-Dublo 'Dorchester' on the main line. Private-owner wagons in the foreground are Peco products, the other vehicles being Hornby-Dublo.

by **LINESMAN**

Simple techniques for scenery

THIS ARTICLE is the first of a series of three intended to show readers the why and wherefore of scenery construction. They will cover every facet of scenery construction including hillmaking, treemaking, roadmaking, embankment construction, track ballasting, bridge construction, and many other subjects. I will give, wherever possible, a choice of several different techniques, so that you may employ the method that suits your particular needs best.

This instalment deals with typical construction methods involved in making hills, slopes, and other types of rise. Figures 1-7 show the sort of embankment formed by different qualities of ground. Fig 1, for instance, shows the flat embankment found where ground composed of seeded loam is predominant. A shale cutting is illustrated in fig 2; this type of cutting is usually grassless, with the exception of an occasional tuft found near the crest. Rock of this nature tends to jut out in flat, even layers, and may best be modelled by slicing plaster that is almost dry with a sharp knife. The hollowish cliff shown in fig 3 is usually a yellowish colour, with grass growing in occasional tufts on the embankment. This material is stiff clay, and is never used to form steep banks because of its tendency to slip. Fig 4 gives an example of an excavated cutting, which is usually seen as high, sheer cliffs, the cutting having been hewn from the solid rock. Cliffs such as that shown in fig 6 are prone to landslips, due to the nature of the soil, and a result of such a landslip is illustrated in fig 5. The embankment shown in fig 7 is the sort on which trees are likely to grow, and is the type of embankment which may well be seen on many a country line.

Give it depth

A hill placed at the rear of the board, preferably with a smaller hill, or slope, at the front will give depth to a scene, and will make the track in the centre look longer. There are many other situations where there should, or should not be, hills. A trap to avoid is the placing of a high hill at ninety degrees across a baseboard. This will reduce the apparent width of your baseboard and destroy any illusion of spaciousness you may have been trying to create. Hills are permissible at the ends of baseboards under special circumstances. One is that the surrounding scenery is of the same height and character, and the other that a hill in this position must be built to cross the baseboard at an angle.

Let us, think about methods with which to make the type of hill that will relieve the monotony of a bare expanse of track and baseboard. The three favourite methods in use vary in strength, effectiveness, and simplicity. The first of these is the oldest known to the model railway world, and employs a backing of hardboard, plywood or any other material that is reasonably stiff. As shown in fig 8, a contour is cut along the top of the backing which is then nailed on to the rear of the baseboard. When this is completed, newspaper is crumpled up and placed ready for use. Brown paper is glued to the top of the contoured backing, and to the baseboard—forming the beginnings of a hill. The newspaper is then pushed under the brown paper as tightly as possible, and the brown paper is sized with a glue solution to stiffen it. When this is dry the brown paper is painted with a flat brown undercoat, preferably a burnt umber or similar colour, and sawdust, which has been previously dyed, is sprinkled on. The sawdust should be dyed in batches of several colours to give variety. I would suggest a light green, a yellow green for ordinary grass, a light green of a slightly bluish shade, a dark green, and browns of about three different shades. It must be remembered that grass is yellow green, not blue green, which is more suitable for tree foliage.

The sawdust is placed in a bag and left in a pan of dye and water for the period recommended by the maker. It is then dried in an oven.

Two variations

This method of scenic construction is a little old fashioned, but many modellers still use it. There are two interesting variations which you may consider a little easier to follow. In one, the brown paper is built up as before, but medical lint is applied instead of sawdust. This is glued into position, and a light green water colour is either sprayed on or, if no spray is available, brushed on lightly. This gives a scale grass effect, and will not result in grains of sawdust leaving the hill and depositing themselves on the floor over a period. The disadvantage of medical lint is that it is by no means cheap, and a certain amount of skill is needed to prevent the fluffy part of the lint from lying flat when painted. Another variation of this method is the application of plaster instead of lint or sawdust, but because the preparation of plaster is a subject by itself, I shall describe it later.

The third recognised way of landscaping hills is to use *papier-maché* on a base of fine chicken wire. As this method is one in which it is all too easy to become covered in plaster, sawdust, glue and other materials,

FIG 1

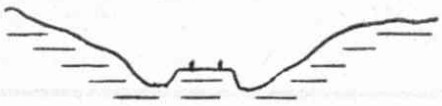


FIG 2

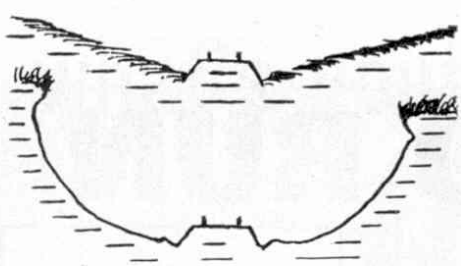


FIG 3

FIG 4

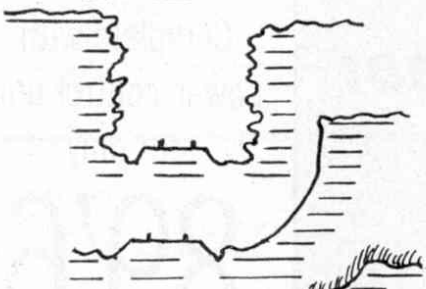


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FIG 6

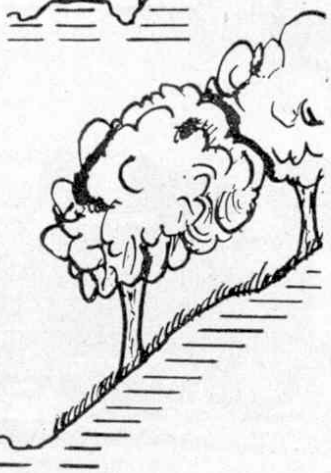
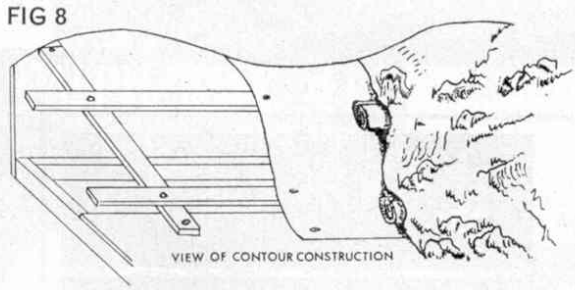
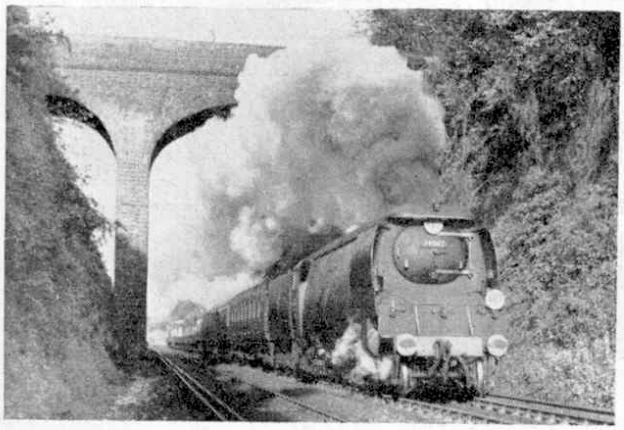


FIG 7

FIG 8





I would strongly advise you to wear an apron. The basic *papier-maché* is made by simply boiling newspaper, previously torn up, in a panful of water. Plaster and glue size are added from time to time. When this mixture becomes a whitish grey spongy mass, it is ready to be applied roughly. Slice and shape the mixture with a knife where rocks or other formations are required. When the *papier-maché* has dried—a process which should take two days—you can colour it with paint, or you can paint it, or coat it with glue, and then sprinkle either fine sand or sawdust on the surface while it is still wet. (More detailed instructions on the making of *papier-maché* will be given in an article next month.)

The last method I intend explaining this month is my own favourite method, and although it is not the easiest, it is certainly the most effective. It involves the use of wire mesh and *papier-maché* once again, but *papier-maché* of a different type. Instead of the 'saucepan system' described above, this method of producing *papier-maché* does not involve any great upheaval of domestic life. It is, in fact, much easier, quicker and simpler. It involves tearing newspapers into strips and glueing them on to the wire mesh with Polycell or any of the well-known wallpaper pastes. The paper should be built up to about three or four layers, and should be allowed to dry completely before covering with an earth mix.

Earth mixes

Many materials are used for earth mixes, and I could probably devote a complete article to the different mixes that may be used. I shall, however, give a rule of thumb method for those of you who desire a little more than just ordinary plaster as a covering surface. My own preference is Polyfilla, which dries a lot more quickly, and is, indeed, stronger and less prone to cracking than ordinary plaster, which usually leaves an embarrassing white scar across your scenery if any temperature change, or movement, takes place. To give a reasonable earth grass appearance I would mix about the same volume of sand to that of Polyfilla, which should be stirred thoroughly in a vessel before applying on top of the *papier-maché*.

You have before you the most popular methods by which scenery is built. I leave it to you to choose the one to which your modelling skill is most suited. Next month, I hope to show you how to paint scenery, carve rocks, and build up the ground from the baseboard surface.

And don't forget; there will be complete and detailed instructions on the making of that invaluable substance, *papier-maché*, in next month's *Meccano Magazine*.

(*Photograph*): This real-life cutting will show the modeller the sort of lineside scenery he can hope to emulate. The picture, from the days of steam, shows Battle of Britain class 4-6-2 locomotive No. 34077 '603 Squadron' on its way to London from Ramsgate. Photograph by S. Creer.

UNIVERSE IN miniature

the behind-the-scenes story of Fireball XL5

by David Bennett

'OK, VENUS?' 'OK, Steve.' The mighty rockets begin to roar. The sleek, shining body of the spaceship plunges forward, gathering speed and belching vapour as it surges up the launching track. The boosters give a final blast and Fireball XL5 is slicing through the atmosphere and out into space, on its way to another adventure in Sector 25 of the universe beyond the solar system. This is how 'Fireball XL5' appears on the screen: vital, realistic and enthralling. But what is the behind-the-scenes story of this fascinating, internationally-famous television space series?

Its heroes (and villains, come to that) are, of course, puppets—but not ordinary ones for they are electronically controlled. Their heads are made of fibreglass and contain solenoid cells which automatically control their lip movements as they react to the vocal pitches of the human voices speaking the words. Each voice, which is pre-recorded, is wired to the respective puppet 'actor' and is played back via the control room.

Star of the series is Steve Zodiac, the blonde, virile and handsome captain of the spacecraft. His voice is provided by Hollywood actor Paul Maxwell, who has starred in many popular TV shows such as 'Danger Man', 'Ghost Squad', 'Alfred Hitchcock Presents', and 'Harbor Command'.

Also on board the spaceship is an attractive blonde girl called Venus, who accompanies Steve on his explorations and adventures. She is a doctor of space medicine and has her own laboratory in the craft. Responsible for her fascinating continental voice and other female parts is Sylvia Anderson, who is the producer's wife.

The voice of Professor Matthew Matic, the navigation mathematics expert on XL5, and of Lieutenant 90 of Space City are contributed by David Graham. John Blathel (Fagin of Lionel Bart's 'Oliver') is the voice of Commander Zero, the man in charge of Space City, base of the World Space Patrol fleet.

Robert the Robot, another regular character, has no 'human' voice. He is a transparent mechanical man and automatic pilot of the spaceship. He has one eccentricity: if his orders are changed or if anything goes wrong, he literally gets steamed up—the steam is set off electronically from his head.

The 'Fireball XL5' films, each half-an-hour in length, are made by AP films at their studios at Slough. Because of the out-of-this-world techniques involved, a special effects studio, manned by a skilled crew of experts in this

Above: Venus, doctor of space medicine, and Steve Zodiac's constant companion.

Opposite page, top: Fireball XL5 during one of its short stays at Space City.

Bottom: Landfall on an unknown planet. What perils await the Fireball's crew on this new world?

field of film making, had to be added to the existing studio.

This studio within a studio is complete in every detail. It was here that the unique scenes required for making the first-ever puppet series dealing with life in outer space a hundred years hence were constructed and shot. Here that Space City—complete with revolving sky-scraper, enormous control tower, laboratories and equipment for propelling the ships into space—was built, enabling dramatic close-ups to be shot of the spaceships being fired from their rocket bases and returning safely to land. Here that the model makers created the numerous planets that have featured in the series, with their unusual surfaces shown in minutest detail. Here that every type of special effects procedure, from special planet atmospheric conditions to explosions in miniature, was carried out.

The AP studios are probably the most advanced puppet film studios in the world. The producers had the advantage of the research that went into the making of 'Fireball XL5's' popular predecessor, 'Supercar'. The same basic techniques were used but with many improvements.

One of the major problems of filming puppets is that, because of their miniature size compared with human actors, the cameras must be almost at floor angle. This makes it difficult for the director to judge exactly how each shot will appear on the screen. Normal viewfinder methods are quite inadequate.

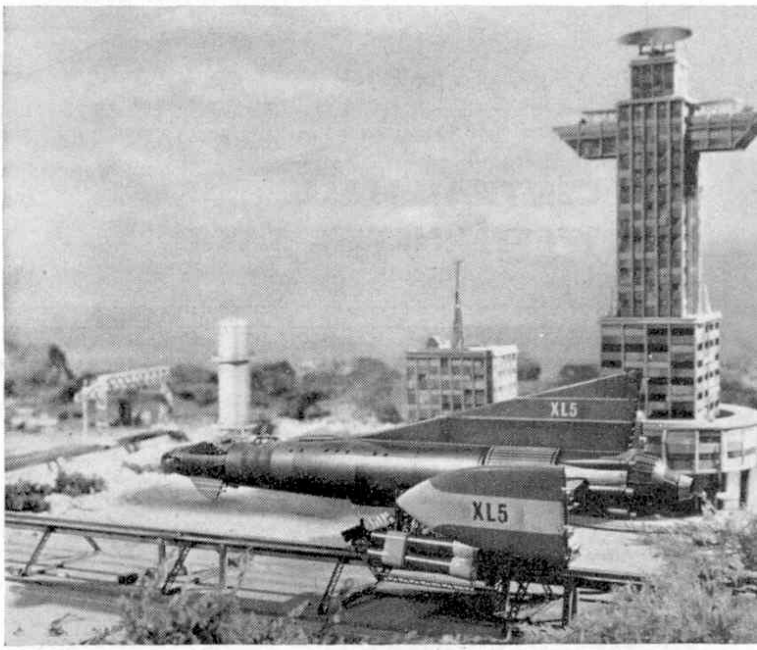
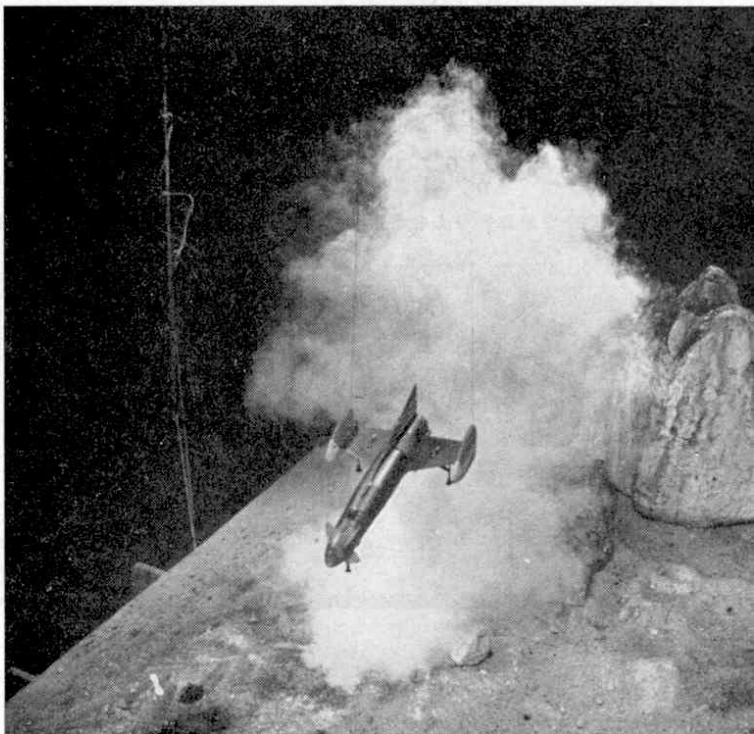
This is how the 'Fireball XL5' production team overcame this problem. Instead of being on the studio floor as is the case with normal films, the director operated from a control room in which he watched everything on television screens. This TV was on a closed circuit and came direct from the various cameras that were being used.

The director, therefore, worked in much the same way as a television producer, in that he could see on his screens exactly what the cameras were photographing. He communicated to the production crew by means of loudspeakers. There were also monitor screens on the floor and in various parts of the studio so that all concerned could see what was being filmed.

Before each episode went into production, all the dialogue was pre-recorded on magnetic tape. Four channels were used in the control room and as the tape was run through each of them, the lip movements of the puppets, as described earlier, were synchronised electronically.

The puppets were actuated by a team of experienced puppeteers who operated from 6 feet high gantries. The average height of the puppets was 20 inches and the wires operating them were so thin—only 5,000th of an inch—that they were almost completely invisible.

Who are the people responsible for creating 'Fireball XL5'? The four founder members of AP Films were Gerry Anderson, the producer and executive head, whose film career had been spent largely in the cutting rooms, and had then become a TV film director and worked on two puppet series on his own account; Reg Hill, the art director and a wizard with special effects, model work and painting; John Read, who began his career in cartoon films and worked on special effects and as a cameraman; and Sylvia Anderson, ex-continuity girl who takes care of the scripts and voice side of the operation.

They began in an old mansion in Maidenhead where they made a pilot film of a puppet series called 'Four Feather Falls'. The series was accepted and so began a whirlwind conversion of a disused factory at Slough into the first all-puppet studio in Britain. All they had was an empty space. They worked days and nights, scarcely stopping to eat ('We could hardly afford to eat, anyway!' they say).

They completed 'Four Feather Falls' and on the strength of this series put up the idea of 'Supercar'. Even in their more optimistic moments, they could scarcely have anticipated that this series would make such a world-wide hit. But it did and the outcome of the success was 'Fireball XL5', their most ambitious project to date.