

Above, top to bottom. The Spectrum Helicopter used for air transport and armed with high explosive rocket projectiles. Next, the Spectrum Patrol Car which has a top speed of 180 m.p.h. and is used for high speed chases. The aircraft is a general use model, note those realistic panel lines and futuristic look. Above "Melody Angel" being operated on, underneath control in cockpit of Angel Aircraft. Right, note the very realistic wig and false eyes. The lips of this puppet move to match the spoken words which are played during filming sequences. Movement is obtained by the use of a solenoid to actuate an electric lip-moving mechanism.

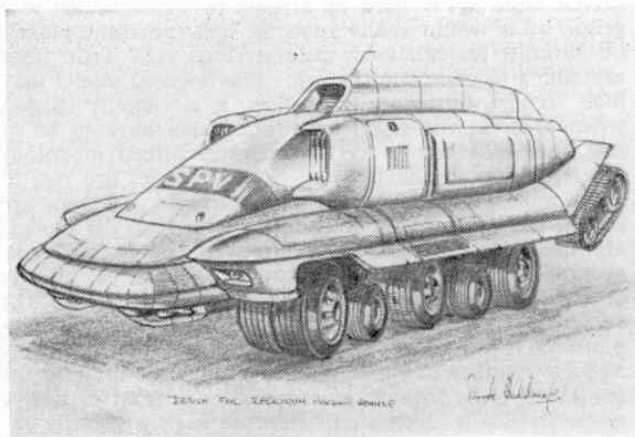
DIRECT FROM CAPTAIN SCARLET AND THE MYSTERONS

AS SO many readers watch television these days, and the Captain Scarlet series is so popular, we decided to find out just how the programme is produced. The technical aspects of production are highly creative and unusual, so read on for the "low down." For those who have not watched the exciting series on television, Captain Scarlet and the Spectrum organisation defend the earth against the attacks of the Mysterons—an alien race from another planet, determined to destroy the earth, after an unprovoked and accidental attack on their city complex by a Spectrum Space Probe.

Produced by Reg Hill, the series, whose Executive Producer is Gerry Anderson, is made by *Century 21* at Slough, Bucks, and we were fortunate to be able to visit the studios, see the models, puppets and advanced filming methods used to bring this series to your screens. This is by no means the first venture of *Century 21* into puppet films, they also produced: *Four Feather Falls*, *Supercar*, *Fireball XL-5*, *Stingray* and the recent *Thunderbirds* series. Captain Scarlet is unique, as it is the first series where the puppets have human proportions, whereas the *Thunderbirds* were caricature puppets and had enlarged heads.

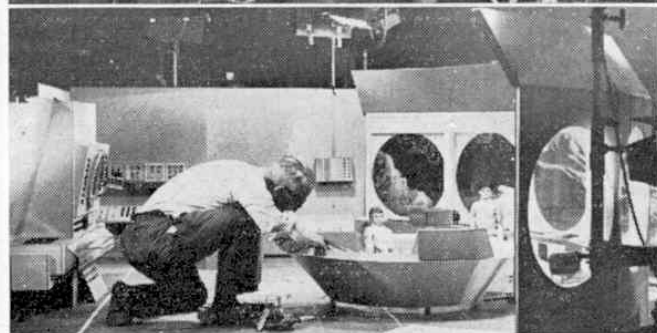
Gerry and Sylvia Anderson created the Captain Scarlet theme from which the other departments designed the characters and vehicles. After the scripts



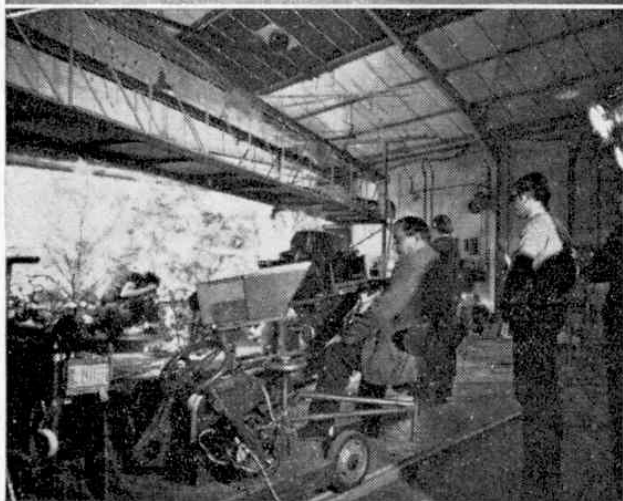
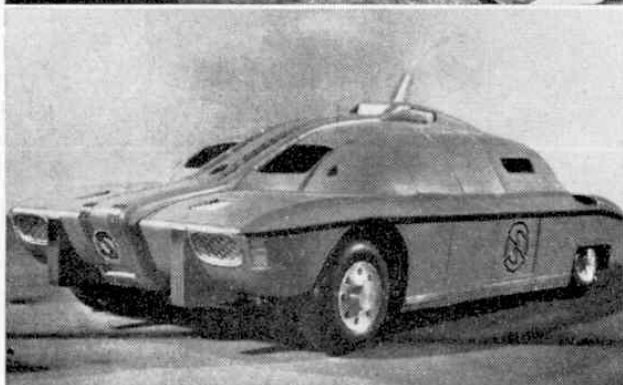


are written, the Special Effects Department decide on the type of background to match the script and which vehicles are to be used. Derek Meddings, Supervising Special Effects Director, created the famous Spectrum Pursuit Vehicle as a pencil sketch, from which three-view model-making drawings were made to enable the Model Making Department to construct a whole range of S.P.Vs. ranging from 1/48 to 1/12 scale, the 1/12 scale model being 24 inches long. Ray Brown, well known for his control line stunt and radio-controlled model flying, heads this department, where every imaginable material is used for model construction. Most are carved from hardwood and balsa with rubber or nylon wheels. When models are required, of the same size, female moulds are formed and fibre glass duplicates reproduced. Whenever possible, commercial parts are used in their construction, i.e. rockets, wheels, etc., from plastic kits and keen modellers may be able to spot these.

Constructing and painting the basic model is only half the job, as they still look like models and *not* like a full-size machine—as is needed for the television series. The Special Effects Department add an array of extra items and dirty the model up for realism. This dirtying-up procedure is in itself a very skilled operation. Paint is applied with an airbrush (a small air-



Top left, the original sketch by Derek Meddings from which the Spectrum Pursuit Vehicle was created. Top right, Special Effects Assistants Alan Berry (on left) and Harvey Walgate, wiring up Jetex fuses in Angel aircraft. Next, Bridge Puppeteer Peter Johns and Floor Puppeteer Rowena White, make a final check on puppets' attitudes prior to a take. Next, Electrician Reg Ives wiring up a console on set prior to shooting. Above, Floor Puppeteer Rowena White, dusting out Colonel White's wires prior to a take. On the left, we see Wardrobe Mistress Iris Ritchins fitting a dummy puppet with a costume.



Above top, a real actress stands in for a puppet when a close-up shot of hands or feet is needed; actors never stand-in for whole puppets. Next, the Spectrum Maximum Security Vehicle, a completely missile-proof and massively constructed vehicle with a cruising speed of 150 m.p.h. Above, a typical Set, seen just before a film take. At right, top, Special Effects Director Shaun Cook inspects a model set immediately after an explosion. Bottom, Puppet Workshop Supervision—Tim Cooksey dressing puppet's hair prior to a stage call. The detail incorporated in these faces is quite fantastic, even the hair, parting, etc., has to be exactly right. Note how the odd heads are stored.

driven hand spray used by artists) to simulate dirt and grime as it would really look, in just the right places, i.e. aircraft jet exhausts, cannon slots, etc. Trim lines are added to complete the job. The finished model may look scruffy, but more important, it is visually correct when seen on the television. They also have to be of just the right colour as the series is filmed in colour for television in the U.S.A. Some vehicles are run in a slot with a guide pin on their underside and some are pulled along to obtain movement. Six to eight models are made each week, in addition to the many background buildings and landscapes. Smoke is usually created with Jetex fuel pellets concealed inside the vehicle in a flameproof tube. Those tremendous explosions you see each week are a speciality of *Century 21*; the tongues of flame leap high into the air and the model explodes into fragments as Petrol Gel explosive is electronically detonated. Because highly volatile explosives are used, and the flammable nature of the background materials, all of the Visual Effects Team are required to have had fire-fighting experience; fire extinguishers and protective clothing are the order of the day when a large model is being exploded. Talking of large, the biggest model ever used by *Century 21* was an 8 ft. long car in Fireball XL-5, some model!

There are two types of puppet, the wire operated marionette and the glove puppet, either being used as film circumstances dictate. All of the Captain Scarlet puppets have human proportions and most are one-third life size, large enough to incorporate plenty of detail. Very skilled model makers create the puppets' faces, which are first moulded in plasticine or clay to the exact shape required, allowing a chin shape that lends itself to easy soft movement of the soft, leather lower face. A rubber female casting is then made from the plasticine head and next a final male fibre glass mould which is painted and rubbed down until the final facial effect is obtained. A whole wardrobe of puppets is kept in stock, the "stars" along with many standard puppets, which are used regularly for background work, by changing the facial appearance and adding glasses, hats, etc., so you will not recognise one from a previous episode. As many as 12 very thin high tensile steel wires are used to control the marionette puppets, operated by two puppeteers standing on an overhead gantry with a closed circuit transistorised television attached to the film camera so the puppeteers can see what they are doing, just as the camera sees it, and not in reverse as they see it from above. The high tensile steel wires are matched to the background by spraying them with colour paint to blend with buildings, landscapes, and it's very seldom these are visible on television. Each puppet has a solenoid in its chest which activates an electric mechanism to move its leather lips by picking up the electronic impulses from the sound track recording, which is made before the film and is played back while the filming takes place; this is how the correct mouth movements to match the sound are obtained. Making the dressings for the puppets is no mean task, with wigs costing as much as £60 each, and eyes constructed in exactly the same way as human false eyes, shoes made from real leather and suits of exactly the right shape and size, creasing in just the right places. If a costume is damaged during filming, another has to be made to an exact colour match, as you can't have Captain Scarlet's suit changing colours if you are watching the series on a colour television!

The background sets are just as involved and difficult to produce. These nearly all have to be to the common one-third scale (except for large buildings, etc.) and everything has to be hand-made. Toy tea-sets

for example may be of nearly the right size, but they do not look real enough to the film camera's critical eye. They also have to construct all the tables, chairs, control panels, radio sets, and glasses to one-third scale.

Unfortunately, not every movement or part can be fulfilled by a puppet and real hands and feet occasionally have to stand in for the puppets. This raises another problem—clothing; this has to be scaled up exactly from the puppet as in the final film both puppet and actor will be the same size, so every button, badge and crease has to be exactly right.

With several sets being worked at once, filming proceeds at a rapid rate, even though each 30-minute episode takes approximately 150 hours to produce, and costs an astronomical amount of money! A new series is well under way, and this promises to be just as exciting as Captain Scarlet. Finally, we would like to thank *Century 21* for their co-operation which enabled us to produce this feature.



INTRODUCTION TO BATTLE

By Charles Grant

THE BRAKES shrieked madly in protest as the three-tonner roared round the bend and slewed to a halt in a cloud of choking dust. From its rear men spewed out onto the road and flung themselves into the shallow ditches on either side. There they lay, clutching their weapons and waiting . . . about them the air was still, and even the sky was empty, the customary drone of aircraft for the moment absent. They were conscious only of the muted boom of a far-off barrage—more felt through the ground than actually heard. The captain slowly raised his head and peered along the road, hardly daring to breathe as he tried to pierce the haze with shaded eyes—could that be a ruined house by the roadside in the middle distance? What did it hide? Was it empty or did the enemy lurk behind its shattered walls? The answer was almost immediate—a blaze of fire from the ruins, a fiendish howl overhead and a shattering explosion from the road behind. A cloud of dust blanketed everything and the men coughed and choked, but it was true then—there was a Mark IV in the ruins—as the recce had suggested—and it had to be destroyed. The captain looked over his section—ten riflemen and a bazooka team—and mentally measured the distance along the road. As his mind raced to solve the problem of approach a second shell burst in blinding red and yellow fire in the field to his right. There was little time to waste, what was to be done?

What would you do?

Yes, indeed, what was to be done, and what would you have done in the commander's place? How would you have coped?

If you think you could have done so, it is the easiest thing in the world to find out—in miniature, that is—with the aid of a few model soldiers and some miniature fighting vehicles, guided by a little knowledge of how fast your little men can get about in relation to, say, the speed of a tank; how far a bazooka shell will travel and, if it hits its target, how effective it will be. All these factors and many more which seem quite obvious, together with others not so apparent, can be worked out and assessed in the form of rules for a game which, for want of a better title, we might call "BATTLE." This game has been played for many years in all sorts of conditions and, in an attempt to reproduce the strategy and tactics of any period you like to name—Ancient Greek, Roman, mediaeval, and Napoleonic—metal or plastic soldiers have marched and countermarched on a multitude of tabletop battlefields (or, let's face it, it could be the floor, which gives a heap more room!). All over the world all sorts of people, of every shape and size, young and old alike, have tried to prove that they could have done a great deal better than Alexander the Great, Caesar, The Black Prince, Wellington or Montgomery—to name but a few.