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Welcome

Has it really been a whole year since we published our first *Scale Modelling - Step-by-Step*?

The magazine was hugely successful and received warmly by beginners and those returning to the hobby after a long break, but even old hands found something to inspire them... or valued the reminder of basic skills often forgotten. This year we took the decision to cater for more experienced modellers who wish to 'up their game' in terms of using after-market products and more advanced techniques. Scenic modelling is something

we can all appreciate when studying a well-produced diorama or vignette, and the genre is explored here in terms of methods, scratch-building, weathering and how to portray natural and man-made environments in a convincing manner. Nothing enlivens a good model like a well-executed base and surrounding scenery.

Many modellers will acknowledge the fact that our hobby has been invigorated massively by the advent of photo-etched metal and resin detail parts, mixed media kits and other forms of after-market

products. The materials and their employment do need extra thought, practice and, in some cases, special tools and techniques. Beginners or even fairly well seasoned modellers have shied away from such pursuits, due to their perceived difficulty or complexity. Here, we seek to demystify the process and provide builders with the confidence and inspiration to take the plunge... and get much more from their hobby in the process.

We also explore the realm of special finishes, such as wood on biplanes, whitewashed armour and bare metal aircraft. The skills and materials involved in these methods are relatively cheap, but can make the world of difference to a basic styrene kit and bring much artistic satisfaction.

Our author and modeller, Toni Canfora, has yet again provided sage advice and high-quality instruction. For those who have not seen Toni's work before in *Airfix Model World* or elsewhere, this Swedish-Italian is a founder of the Nordic Edge modelling collective, whose style is emulated worldwide. Toni's skills lie not just in fine modelling and painting, but also in imparting his knowledge in an easy-to-understand manner. I must congratulate Toni on bringing us yet another fine body of content.

Chris Clifford
Editor

Chris

Scale Modelling
step-by-step advanced

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Distributed by: Seymour Distribution Ltd,
2 Poultry Avenue, London, EC1A 9PP.
Tel: 020 7429 4000. Fax: 020 7429 4001.
Printed by: Warners (Midland) plc, Bourne.
Printed in England (ISSN 1471-0587).

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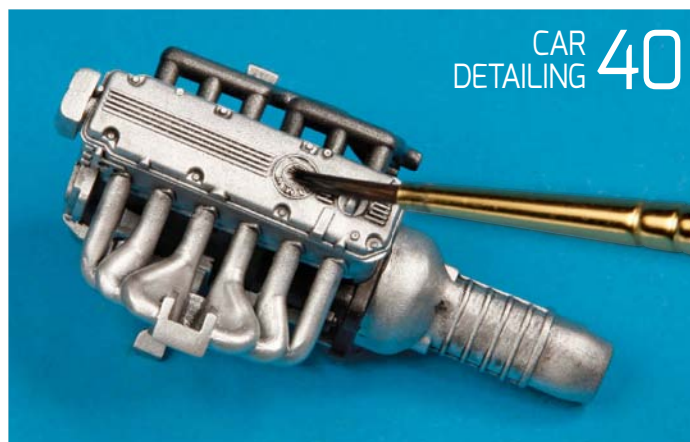
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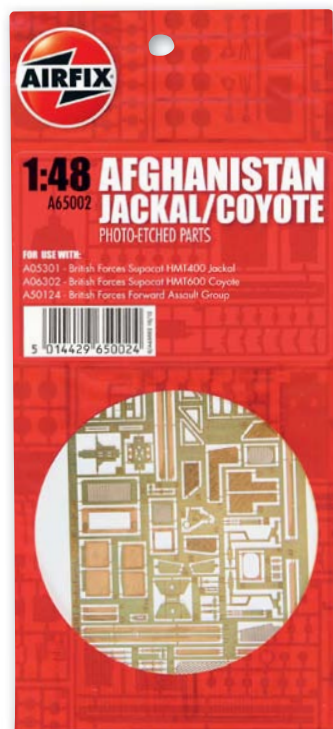


Getting Technical

The modelling industry offers a huge supply of improvement products...isn't it time you attempted a more challenging project?



▼ The stunning results seen on this Dragon 1/35 StuG III, by Toni Canfora, involved a wealth of photo-etched brass parts and careful weathering.



▲ Airfix has joined the multi-media fray with photo-etched brass parts for its 1/48 Jackal and Coyote kits.

For many modellers, simply cleaning up and assembling a standard all-plastic kit, and applying a respectable paint job, is more than enough to satisfy their artistic desires.

Some, however, feel that it's time to progress, learn new techniques and to tackle more challenging projects. Yes, there are kits with a great many styrene components that take considerable time to build, but the best way to really develop one's skill-set is to adopt the use of after-market parts and scratch-building. This is a broad church in terms of what's possible; usually it's a great deal. It could be as simple as adding more detail to a cockpit, or converting a particular aircraft sub-type to an earlier or later example. If time and budget is less of a consideration, one could start with a base kit but transform it with a wealth of resin and/or

photo-etched metal details, and go all out on the weathering. The sky's the limit these days, due in part to the massive growth of the after-market business. Arguably the biggest reward lies in the fact that most after-market parts offer unrivalled detail, far better than that provided in the base kit alone.

Eastern Europe innovation

Undoubtedly, the one company responsible for making modelling what it is today is Eduard. The Czech firm was one of the original innovators of photo-etched (PE) metal parts. It seemed that in no time at all, we were spoilt by the sheer weight of cockpit and external detail sets for any number of aircraft kits, but armour, car and ship modellers also had access to bigger and better in terms of embellishment for

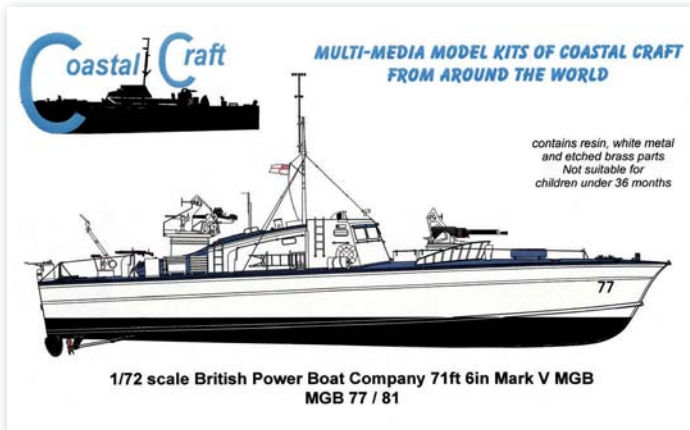


their models. Eduard's kits are always festivals of multi-media modelling with PE, resin and tape masks with which to render show-stopping replicas. The company's ethos and products inspired other entities to create after-market products. There at the birth of mixed-media modelling was Verlinden, which catered for armour and aircraft modellers alike and was one of the first to release all-resin kits. British stalwart Aeroclub also helped to set the trend with its white metal ejection seats, undercarriage units, propellers and more. These days, though, the choice and quality of after-market products is staggering

and it arguably accounts for more spending in the hobby than actual kits themselves.

With all this lovely stuff comes the necessity to know how to use it, and to master the sometimes specialist tools involved. PE parts, for instance, often require complex folding, rolling and bending, and there are specific gadgets to help one achieve this. Multi-media materials also demand different adhesives, such as cyanoacrylate (Superglue and others), epoxy glue and PVA. One must quickly learn what's most appropriate for these after-market parts, to ensure they stay where they should and look the best they can. Some PE experts

▼ The fast Royal Navy vessels produced by Coast Craft are perfect examples of the multi-media genre, featuring resin, white metal and photo-etched metal.



▼ The popularity of weathering powders has rocketed in recent years. Humbrol has created its own range, in a variety of tones.

have taken to soldering metal parts to ensure greater strength and bonding.

Home-spun details

While there are many resin and metal products that can enrich one's building experience, the arena of scenic modelling offers a whole other field of creativity. Whether it's in the form of home-made buildings, roads and groundwork, to special effects such as snow and water, there's much to learn and employ. Most modellers would agree that a subject is more eye-catching if it's on a base, featuring appropriate and interesting examples of its environment. Scenic modelling allows the use of more traditional materials and methods, such as plaster, papier mâché, but

these still may not have been explored by many who previously shied away from such modelling. Whole buildings can be built from scratch as long as one chooses the right mediums and has good references, but for the less adventurous or those short on time, dwellings and other constructions can be purchased ready-made, such as the recent resin products from Airfix. They still require the proper finishing and weathering though, and these skills can rely on staples such as oil paints and natural contents, or the newer pigments and ready-mixed washes. For anyone who wishes to expand their modelling enjoyment and learn new methods, the world is their oyster and the following pages are a useful example. ◻

▲ With careful use of after-market parts (such as the ladder and airbrakes), this 1/48 Lanser by Tarangus has been turned into a show-stopping model.



▲ Basic plastic kits can be enhanced with resin details such as these from Neomega, designed to fit the Esci/Italeri Macchi MB.326K.

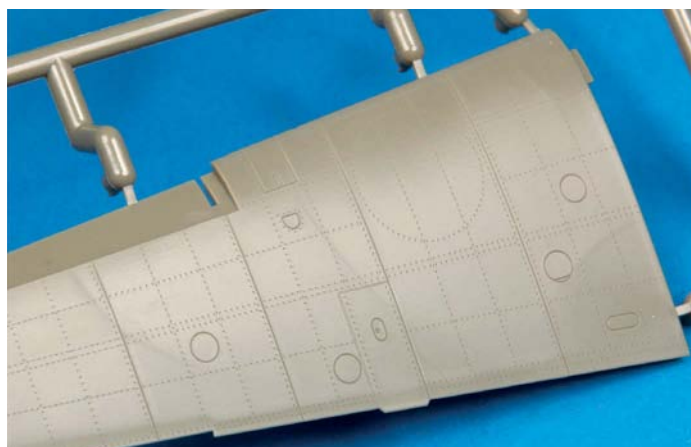


Skin-Deep Detail

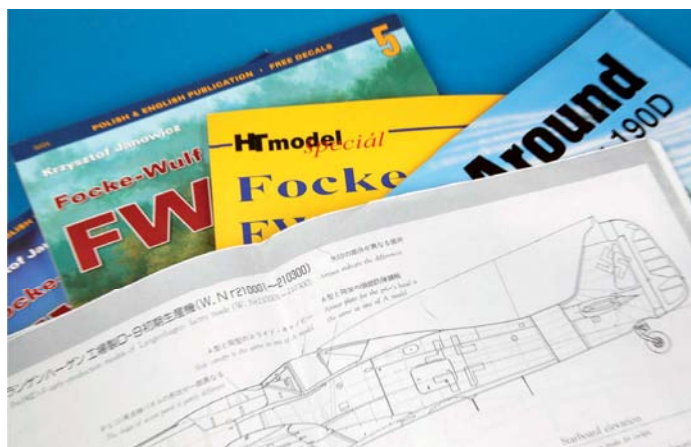
Improving the look of a model's surface can make all the difference, but it does involve special tools

Today, we see an extremely high level of detail in modern kits and it seems manufacturers are trying to outclass each other with what the modeller can enjoy straight from the box.

Full interiors, engines and engine bays are more and more common and the moulding possibilities are ever improving. No matter how detailed the kit there is one area, though, that is often overlooked and that is the actual surface detail of aircraft.



▲ State-of-the-art surface detail such as on this excellent Eduard Bf 109 is far from standard, even on modern plastic kits.



▲ Good references are essential before the rivet making process can begin, and will make the task significantly easier.



▲ Rivet wheel rollers are the quickest way to make rivet rows. Here are options for 1/72, 1/48 and 1/32 scales.



Dymo tape is a cheap and useful aid for guiding the rivet roller, but also to protect the surface if the roller slips.



▲ The roller is slowly pushed along the Dymo tape with gentle and constant pressure. Tests should be conducted on a spare model before starting.

Most of today's kits sport recessed panel lines as opposed to the raised versions that were standard some 15-20 years ago. The benefit of this is that they are more realistic for one, but also easier to paint and weather as the recesses look very attractive once panel line washes are applied. On real aircraft though, each panel has an adjacent row of rivets which, in reality, is what holds the sheet metal onto the airframe. These rivets could be raised or recessed, depending on manufacturer and type of aircraft. On plastic kits,

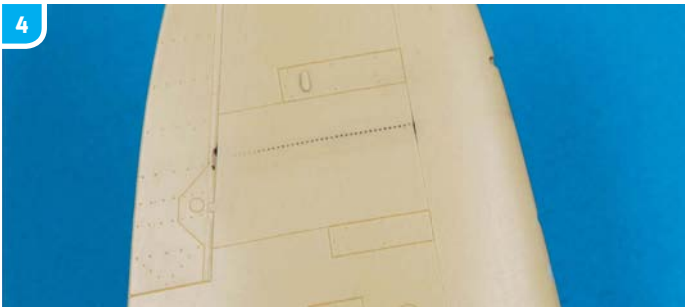
these rivets are rarely represented well (if at all) in 1/72 scale, but more often in 1/48 and 1/32 scales. Some brands have made it their new standard to always include rivets, while others have stuck to the simpler solution and left them off. This, of course, leaves room for improvement for the critical super-detailer who is not satisfied with second best.

Tools for riveting

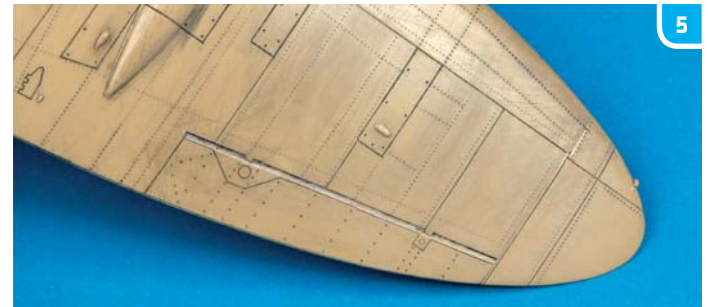
Rivet rows can be created in a number of ways depending on scale and, more importantly,

the modeller's patience. The most common way is to use a dented wheel roller, which can be homemade although several brands now offer good quality tools for all scales; for instance Radu Brinzan Productions and Rosie the Riveter. Another technique which is far more time consuming, but more correct for certain types of rivets, is to use a jeweller's punching tool, which is suitable mainly for 1/32 scale. UK manufacturer Model Design Construction makes a very good set with

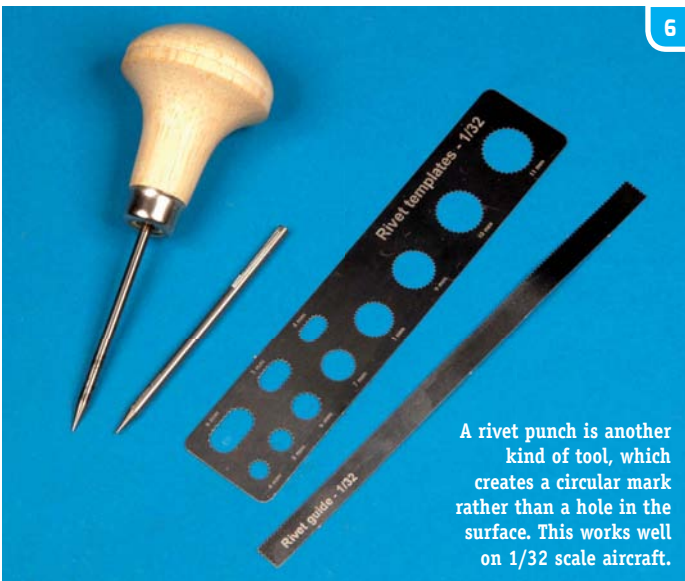
two different punches and a comfortable wooden handle. This tool doesn't create a hole like the rivet roller, but instead a very fine circle, although rivets have to be applied one by one. Regardless, the choice of tools and technique, good references, careful study and planning are absolutely necessary with this type of work. Detail photos and, more importantly, line drawings showing the rivet rows will make the job easier. A third and relatively new technique to apply rivet rows comes in the form of ▶



▲ The rivet row is done, following the panel line. Diluted black paint was used to highlight the rivets in this photo.



▲ The wing riveting almost completed, with many rivet rows bisecting each other. It's important to work on small areas at a time to avoid losing focus.



A rivet punch is another kind of tool, which creates a circular mark rather than a hole in the surface. This works well on 1/32 scale aircraft.



▲ The steel guide in this set from Model Design Construction has a saw-tooth pattern at the edge, to ensure the rivets are set at the correct distance.

The punch is pressed into the slots one by one along the guide, with the guide held firmly in place to keep a straight line.



8

decals, where the row is printed onto the decal sheet to create a fine raised row. An example is that of those available from Mike Grant Decals.

Keep rolling

The biggest challenge when creating rivet rows is to keep a straight line and to avoid rolling the riveter too far, thus creating rivets in the wrong places. To keep a straight line, Dymo tape is a perfect aid. This plastic tape is thick enough to serve as a support for the wheel, and as protection for the kit surface should the wheel come out of

place. Dymo can usually be found in office supply stores. A steel template can also be used, preferably fixed to the surface with masking tape. The first step of the work, though, is to identify the rivet rows on the drawing, and then locate the corresponding area on the model. This may sound easy but panel lines are not always correctly represented (or even present at all) so care should be taken here. Next, the Dymo tape is fixed to the surface, along the panel line, with enough room left for the panel line and the tape. The wheel roller is then

pressed and moved forward at about 5mm per second and with constant pressure. How hard the pressure should be depends on the plastic, so test rows should be created on the inside of the fuselage (or spare model) where they will not be seen. When the first rivet row is done, the Dymo can then be moved to the next panel line and the procedure repeated. As the work needs a lot of focus, only small areas at a time should be riveted. The rivet rows can sometimes be hard to see and as the surface gets full of them, they often cross each other. To make matters easier, heavily diluted black paint can be brushed over the rivets to highlight them. The rivet roller creates a small raised area around each rivet. Depending on which type of rivet used on the actual aircraft, the rivet rows can either be sanded flush with a polishing cloth or super-fine abrasive, or kept as they are with the raised detail intact.

a close look would reveal if the rivets were just holes in the plastic or raised circular rings. For the latter, common on German World War Two aircraft, the punch gives the most realistic result. The procedure is a little different than that of the wheel roller, as each rivet is made one-by-one. The first step, however, is similar...with the rivet row on the drawing being located on the model. A steel template is then taped in place along the panel line and the work can begin. The template had a saw-tooth edge, with the correct space between them to represent actual rivet rows, and served as a guide. The puncher was then pushed into the plastic in one of the slots of the edge, then moved to the next slot and pushed again until a complete row was done. This can be very time consuming and demands much patience, concentration and a steady hand. The result however, can be very convincing and any small irregularity can make the look even more realistic as on real aircraft, where the rows often were far from perfect. 1/32 scale is just large enough to represent this effect properly.

Punch by punch

In 1/72 and 1/48 scales there is little chance of spotting the difference in the style of rivets on a model. In 1/32 however,



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▲ The result is a neat row of circular rivets. The procedure is slow and can be tedious, but rewarding in the end.



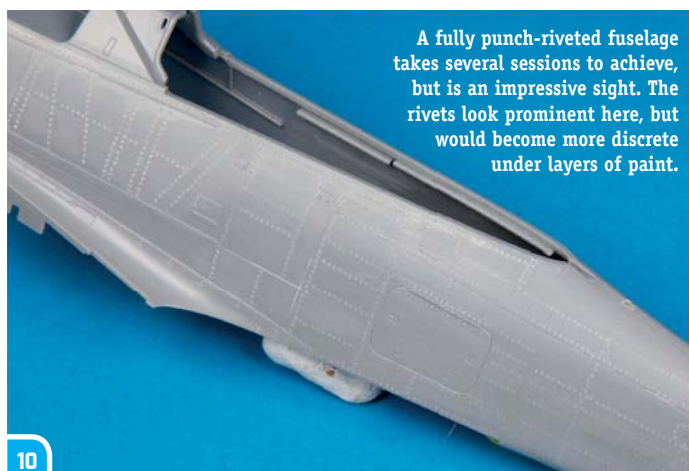
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▲ If pressured too hard, the rivets will stand out and would benefit from light sanding with fine abrasive paper.



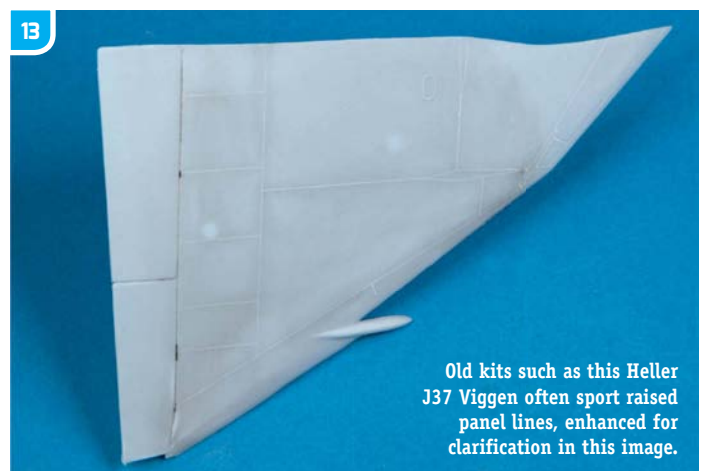
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▲ Templates for circular shapes were also included in the set, and were of great help when making rivets around service hatches.



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A fully punch-riveted fuselage takes several sessions to achieve, but is an impressive sight. The rivets look prominent here, but would become more discrete under layers of paint.



13

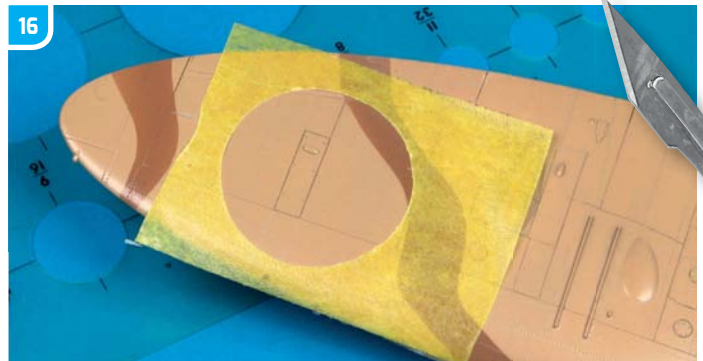
Old kits such as this Heller J37 Viggen often sport raised panel lines, enhanced for clarification in this image.



▲ The raised lines were sanded until they were barely visible but still could serve as a guide for new panel engraving.



▲ Again, the useful Dymo tape acted as a guide for the rivet scriber. It also protected the surface should the scriber slip.



▲ One way to prevent decals from obscuring the surface detail is to simply paint the markings instead. These were cut from wide masking tape for demonstration purposes, but pre-cut commercial sets are also available.

Re-scribing oldies

As mentioned, modern plastic kits are in most cases very delicately moulded; fine, recessed panel lines have become standard. Many older kits do show their age, though, and still satisfy a need until better substitutions are released. Some can be more than 30 years old. Kits of this age almost inevitably carry raised panel lines rather than recessed. The downside with raised panels, apart from that they are incorrect compared to an actual aircraft, is that they are easily sanded away, when (mating fuselage halves for instance) and are hard to re-create. The remedy for this is to re-scribe the entire surface detail which, in fact, is not as difficult as it may sound. Since the panel lines are already there, they can serve as a template for the new recessed panel lines.

Firstly, raised detail should be sanded until barely visible but some may prefer to sand it away completely, and then draw new guidelines with a pencil. Dymo tape is then placed just along the panel line, and a scribing tool used to scribe the plastic. To avoid scribing too far, more Dymo tape can be attached to serve as a stop for the scriber. When scribing plastic, the edges of the new panels often become slightly rough, so a 6,000-grade polishing paper can be used to smooth the surface when all scribing is done. A coat of fine primer will also help reveal any flaws.

Rivet enhancing

Rivets are tiny things, and much of them would disappear under the paint, making the work done in vain. There are a

few easy ways to enhance them though. Pre-shading is a proven technique used to create depth to panel lines, but it serves just as well for fine rows of rivets if applied carefully. Another way to accentuate rivets before painting is to apply a black wash over the entire model, which is then wiped off so it only stays in the recessed areas. The most common way, however, is to use washes after the basic paint has been applied. Washes are simply brushed over the riveted surface and allowed to dry for a while before the excess is wiped off.

Now, a few words on decaling: although many decals are extremely thin there are still many older sets on the market and older kit decals especially can be notoriously thick. The best way to prevent the obstruction of the rivet is to paint the markings instead of using decals. In the example here, the masks were homemade, but Montex makes a great number of sets that are easy to use. Furthermore, the benefit of painted markings is that they can be weathered and chipped just as with the rest of the aircraft...well worth trying!

MATERIALS

Model Design Construction:
www.modeldesignconstruction.co.uk

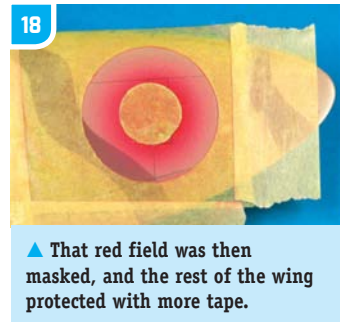
Montex masks:
www.montex-mask.com

RB Productions:
www.radubstore.com

Mike Grant Decals:
www.mikegrantdecals.com



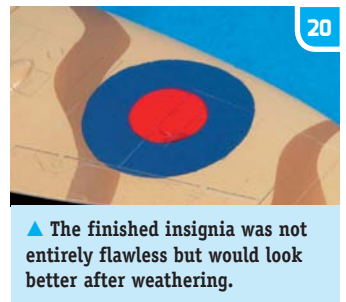
▲ The red field which would make up the centre of the insignia was applied with an airbrush.



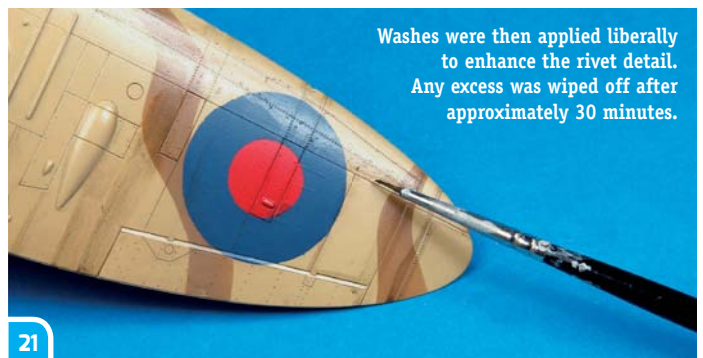
▲ That red field was then masked, and the rest of the wing protected with more tape.



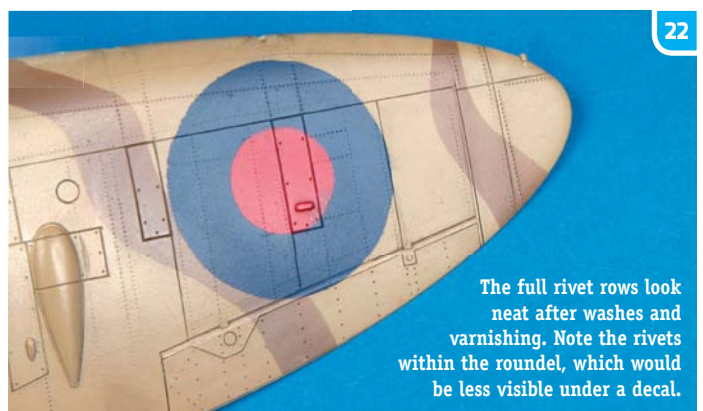
▲ Blue was then applied on top of everything. Thin layers prevented build-up of paint.



▲ The finished insignia was not entirely flawless but would look better after weathering.



Washes were then applied liberally to enhance the rivet detail. Any excess was wiped off after approximately 30 minutes.



The full rivet rows look neat after washes and varnishing. Note the rivets within the roundel, which would be less visible under a decal.

Photo-etched Focus



Regardless of the moulding quality and level of detail in a plastic kit, it can never match the delicacy offered by photo-etched metal (PE).

Thin hatches, tiny tool clasps, lifting hooks and the like simply can't be moulded convincingly in plastic, at least not for smaller scales, despite the still amazing quality of styrene kits today.

There is plenty to choose from

when it comes to PE update sets, and the most popular models often prompt dozens of sets available from various manufacturers. Some are complete packages, while others may focus on one area of the aircraft such as the interior, the flaps, or the engine. As always, it's the modeller who sets the limit for what they want to invest, in terms of money and time. One of the most important

steps when working with PE is to study the instructions very carefully, to identify the parts on the plastic kit to be replaced... and how to prepare the actual PE parts. Good metal sets often refer to a specific plastic part number in the instructions, which makes the work much easier, but it's often necessary to double-check with references to get everything right. Some plastic parts are meant to be replaced entirely,

while others only need partial replacement. It should also be pointed out that despite the best will of the manufacturers, some PE parts are actually less accurate than those in plastic kits, with the most common problem being that they are sometimes not to scale.

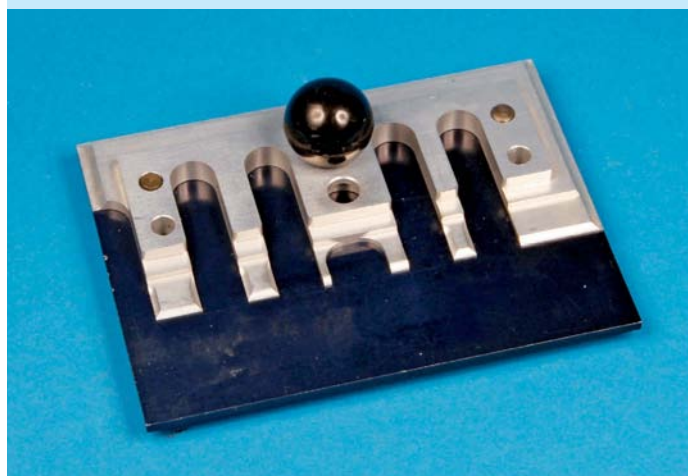
Tools, glue and soldering

Working with, and painting PE is a little different from

▼ The tools required when working with PE. From left, a CA glue applicator, a hobby knife with various blades, fine tweezers and sanding medium.



▼ For more complex construction, a folding device such as an Etchmate or Hold and Fold will be of great help.

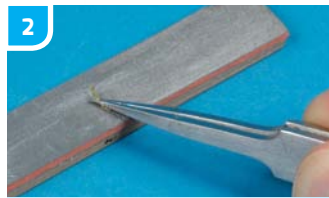


Toni Canfora explores photo-etched metal detailing and builds Airfix's 1/48 Lynx HMA.8 with PE additions



working with styrene plastic, although many of the tools are the same. The parts break very easily, hence they require more careful handling than plastic components which are more easily replaced if broken. Special care should be taken with parts that have slots where they are supposed to be bent, because too much bending back and forth, will make them break clean off. A very sharp scalpel, or a chisel

tool is the best way of removing PE parts from the fret, and the cuts should be made as closely as possible to the PE part. There will inevitably be at least a small amount of excess left, and this is best removed by filing or sanding the part against fine abrasive paper while held with fine tweezers. A tricky part when working with PE is how to glue it; PE parts require cyanoacrylate (CA) adhesive, as plastic glue



▲ The remnants can be sanded off against a flat and solid sanding stick.



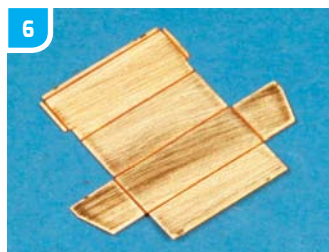
▲ Fine tweezers are absolutely vital for handling and bending small PE items, such as this clasp.



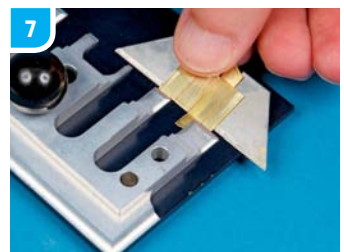
▲ Three-part tool holders are very common on German World War Two vehicles.



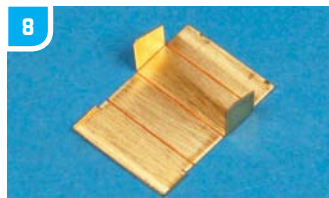
▲ Careful folding and assembly resulted in a delicate little piece, which would enhance the model.



▲ A more complex part could be a toolbox, in this case for a German Panzerjäger 38t, from Eduard.



▲ The flat item was placed in the folding tool and the edges were bent to create sharp folds.

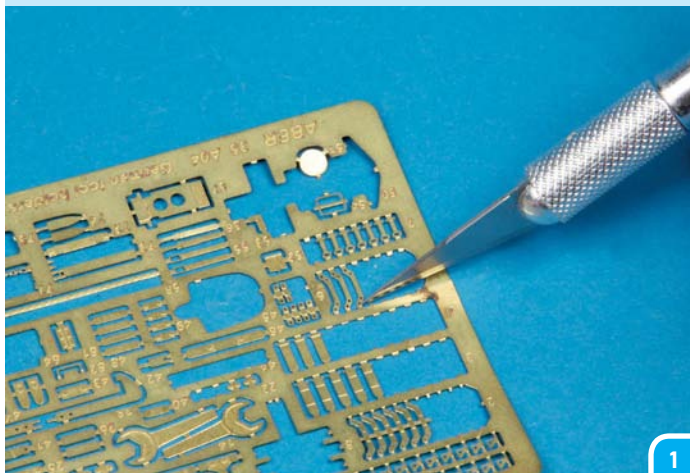


▲ Plan carefully the order of the folds, as an already folded side won't fit in the tool.

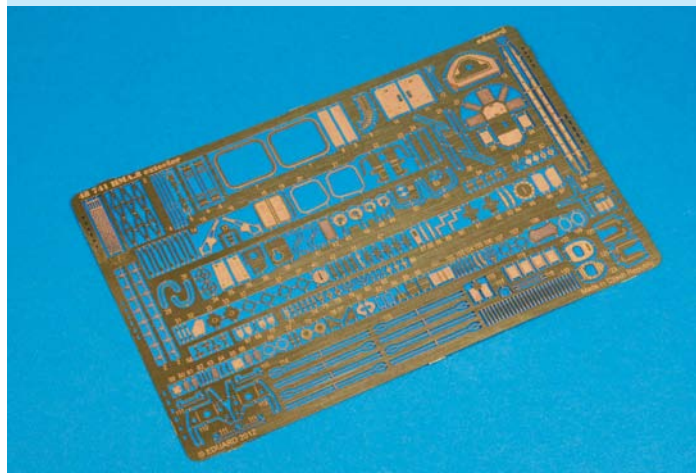


▲ The finished result looks impressive. Battle damage can be replicated by denting the edges.

▼ PE parts are best removed with a sharp blade. The cut should be made as closely as possible to the item to avoid a lot of sanding to remove the excess.



▼ Eduard's exterior set for the Airfix Lynx HMA.8 included most of the obvious improvements that can be made to the kit.





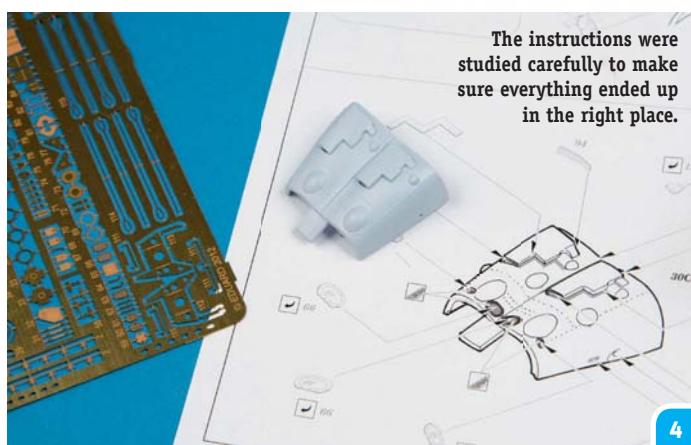
▲ The first step was to address the engine housing, which had surface detail moulded on one piece.



▲ Surface detail was scraped off with a curved scalpel, which made it easier to follow the contours.



▲ The remains were then sanded off with the help of a round sanding stick.



The instructions were studied carefully to make sure everything ended up in the right place.



▲ A small amount of glue was applied with the help of a CA applicator.



▲ With the aid of fine tweezers, the PE component was placed on the kit part.



▲ The finished engine housing looked great with the additional PE parts to add more refinement.



▲ A very neat service hatch was included in the Eduard set, but it needed to be bent into shape.



won't give any 'bite' against the plastic.

The problem, however, is that the mating surface is extremely small in most cases and the amount of glue needs to be kept to a minimum to avoid mess. A good tool for this is a CA glue applicator, which looks like a two-pronged fork. The applicator is simply dipped into a small amount of CA glue, and the glue is then collected at the tip and can be distributed over the desired area with control.

A cheap and easy alternative is to use toothpicks but these can only collect a small amount of glue and it can quickly build up at the tip.

Some PE assembly can be rather complex, such as an entire set of stowage boxes along the side of a military vehicle, or large aircraft control surfaces/flaps. To ensure straight angles along

longer-edged sub-assemblies, it's recommended to use a folding aid. The common brands are Etchmate and Hold and Fold, which have grown in popularity - but several other brands have become available in recent years. More complex PE assembly can benefit from soldering instead of gluing, and the techniques for that are covered later in this publication.

Preparing the surface

PE parts can rarely be placed straight from the fret onto the plastic. If a surface item is already moulded to the plastic, it has to be removed to accommodate the PE part. The best way to do this is to use a curved scalpel blade and carefully scrape off the surface detail, little by little. This can then be followed by sanding. For larger parts such as entire hatches, it may be necessary to use a fine saw blade. Other items



may require the plastic surface to be drilled out, for instance, when an engine mesh cover is to be replaced by a PE version.

A common problem when replacing plastic parts is that the kit has moulded holes or slots, dimensioned for a plastic part to be added and not the PE part. This can result in gaps around the PE part which will need careful filling and sanding.

Improving a Lynx

The 1/48 scale Airfix Lynx HMA.8 is a follow-up to the brand's excellent Army version (see Airfix Model World, Issue 18). As with its sister kit, it is very well detailed, has beautifully replicated riveted surfaces and is generally a rather easy

build...at least for a helicopter. However, there is always room for improvement and, as ever, Czech PE wizard Eduard was quick to offer interior and exterior details; the latter was used on this build.

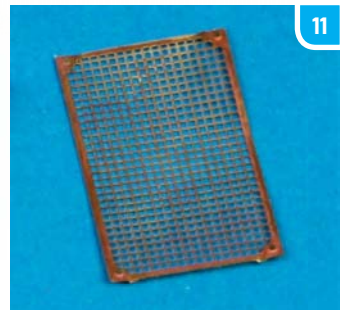
Interior parts were assembled and needed surprisingly little work. It all came together with no major fit issues, and the painting and decaling was straightforward. With the interior done it was time to add the first PE parts, which were for the engine housing. This required minor surgery, as some of the air outlets were cast onto the cowlings. The surface detail was scraped off with a scalpel, and only needed careful sanding with a round sanding stick, which helped to follow the



▲ The hatch was held against a finger and formed by rolling, with the help of a brass rod.



▲ Once in place, the hatch was a pleasing detail and better than on the original kit part.



▲ Air intake covers came as transparent parts in the kit, but would be replaced by a scrap piece of PE mesh.



▲ The mesh was pressed around the kit part, which served as a useful template.



▲ The shape looked fairly correct already at this stage, but still needed fine-tuning for accuracy.

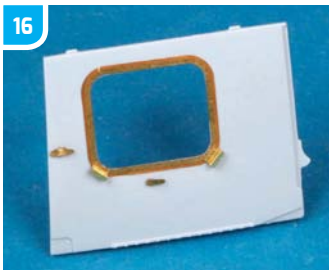


▲ Excess mesh was cut away and the part was shaped further to fit the kit.

▼ Frames were made from lead foil, which was cut to length carefully and glued in place with cyanoacrylate. The result was not perfect, but a great improvement over the kit part.

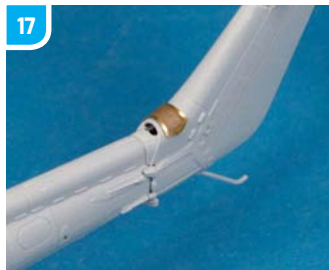


16



▲ Some of the most pleasing details in the Eduard set were for the window frames and handles for the main doors.

17



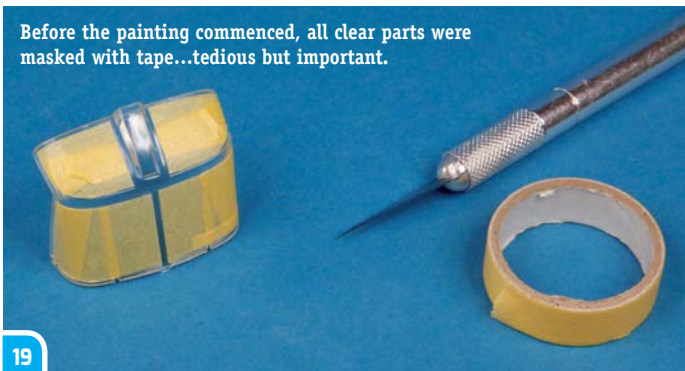
▲ Another great item was the mesh for the tail section. Details such as these are difficult to mould realistically in styrene plastic.

18



▲ This overall view of the almost-finished build, before painting, shows all the small details that were replaced or added.

Before the painting commenced, all clear parts were masked with tape...tedious but important.



19

20



▲ Transparencies for the doors were left off, and the opening was masked from the inside and the door held in place with Blu-Tack during painting.

contours of the plastic part. A small amount of CA was then transferred to the surface with the help of a CA applicator, and the PE part was attached with tweezers. With the small air outlets in place, assembly continued with the large service hatches on either side of the rotor. This part had an S-shape but naturally, it came flat on the PE fret. The component was cut off the fret and the edges cleaned up with a fine sanding stick. It was then time for the actual shaping. The hatch was placed on a finger, and then a thick brass rod was pressed against it to create a bent shape. It can sometimes be necessary to heat larger PE parts before bending them, but this part was very thin.

When the S-shape had been created the hatch was placed against the plastic to make

the final adjustments to the final shape, and it could then be glued in place.

Scratch-building

The Royal Navy Lynx sports very prominent covers for the large air intakes but, surprisingly, these were not included in the Eduard set. Suitable mesh was found on a surplus PE fret actually meant for a Tiger tank! The Airfix kit contained a transparent part to replicate the cover, and this was used as a handy template. The PE mesh was pressed over it to create the correct shape, and the excess was then cut off. The mesh needed much test-fitting and adjustment but finally it fitted almost perfectly. Frames were then cut from lead foil and the new intake covers were installed...a very obvious enhancement of the kit.



21



▲ The glass areas were first painted black so that the inside of the frames didn't need painting, as the black colour showed through the glass.

Moving on

Other pleasing details on the Eduard fret were window frames and handles for the main doors. The window frames were easy to install as they didn't demand any surgery of the Airfix plastic, but could be installed on top of the kit frames. The handles were carefully sanded off and the PE items were glued in for a very neat result. The fret also included folding parts for the wheels' suspension. These needed careful cutting of the kit part and were quite difficult to get right, but they made the wheel struts look much more detailed and interesting.

Another good feature of the Eduard set was two sections of mesh covering for the tail section and for the top of the nose, just in front of the cockpit. In these areas, the original kit plastic was reduced slightly with a scalpel,

and the PE mesh glued on top of them for a crisp appearance.

Several more small items were then applied to finish off the build and it was ready for paint.

Going grey

PE almost always benefits from a solid coat of primer, and this was no exception. Many colours can adhere to PE without primer, but they come off easily during handling or weathering.

In this case, grey primer was the obvious choice as the Lynx was going to be painted grey anyway. The primer revealed no major flaws and it covered the PE adequately, but not too thickly to obscure any detail.

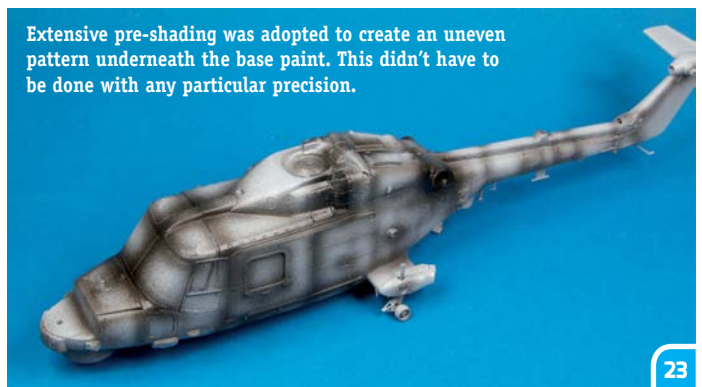
Grey may be considered dull by some modellers and it can be challenging to make it look interesting...but there are simple tricks that help a lot. In this case, all panel lines were given ▶

22



▲ A coat of grey surface primer was applied from an aerosol can, covering all the PE parts to provide grip for the following paint.

Extensive pre-shading was adopted to create an uneven pattern underneath the base paint. This didn't have to be done with any particular precision.



23

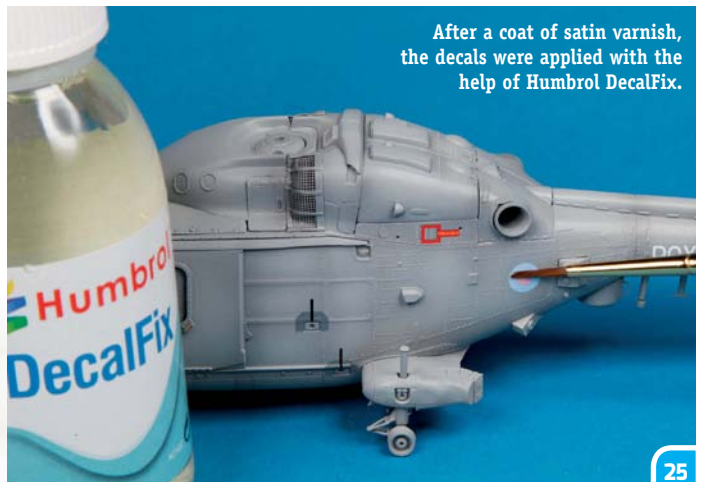
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▲ To further emphasise the shadows and variety, post-shading was carried out with a thin mix of black paint airbrushed at low pressure. This should be done very carefully, to avoid exaggeration of the effect.

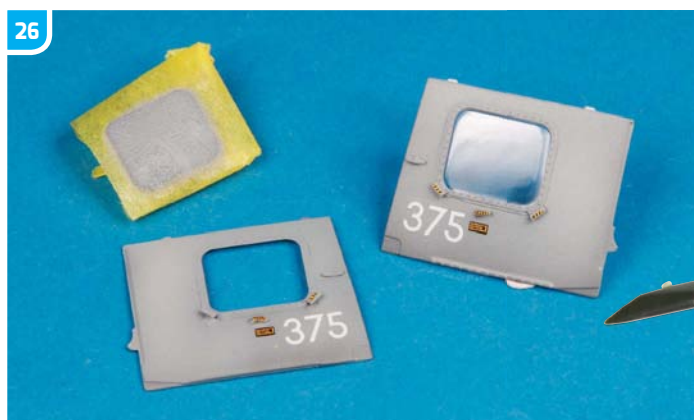


After a coat of satin varnish, the decals were applied with the help of Humbrol DecalFix.



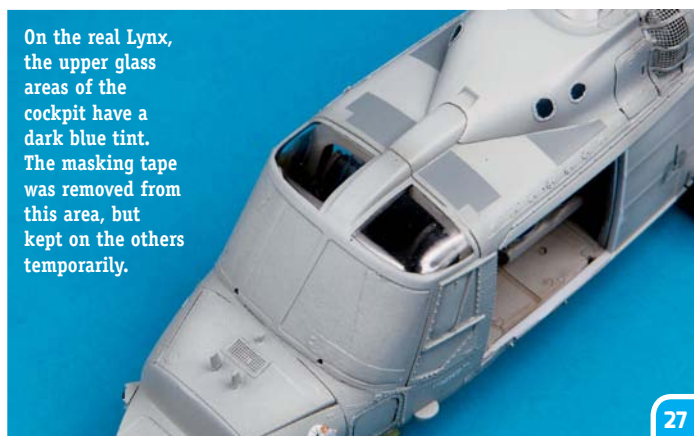
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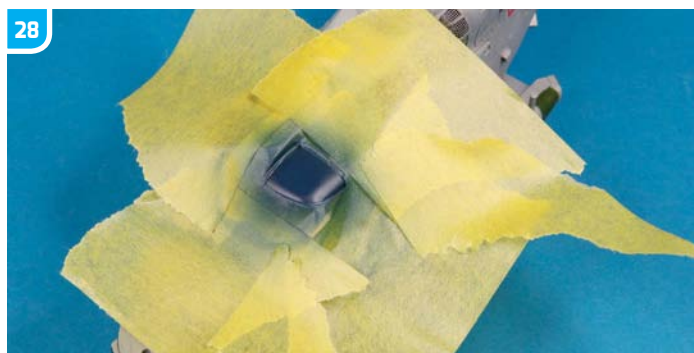
▲ When the masking tape was removed from the main doors, it was easy to attach the transparencies with Humbrol ClearFix.

On the real Lynx, the upper glass areas of the cockpit have a dark blue tint. The masking tape was removed from this area, but kept on the others temporarily.



27

28



▲ The area was masked and a mix of clear gloss and dark blue was applied, making it slightly transparent.

29



▲ The procedure was repeated on the other side. The glass looked opaque but light would show through once the masking tape was removed.



a rather heavy pre-shade with black. This served as a shadow to show through the actual grey paint, and it was applied by airbrush at low pressure.

Next, the first coat of grey was applied, and for this Tamiya's XF-83 Medium Sea Grey was chosen. This was applied in a thin layer, which allowed some of the pre-shading to show through. Individual panels were picked out with a lighter nuance, by adding a hint of white to the camouflage grey (this was concentrated on larger, flat areas). To add further variation and depth to the surface, post-shading was adopted. This is basically the same thing as pre-shading but done more subtly after the camouflage has been rendered. A very thin mix of

black was applied at low pressure around hatches and other surface details, to create a slightly grimy and faded grey surface.

Decaling and weathering

With the grey 'uniform' in place, the model was given a thin layer of satin varnish in preparation for the decals. These performed brilliantly with the help of Humbrol DecalFix setting solution, and conformed well to the riveted surface. Another thin coat of satin varnish then sealed the decals. Royal Navy Lynxes are kept fairly clean and they show limited effects of weathering. However, most models benefit from at least some effects such as light grime and enhancement of surface detail. So, a mix of oils and

30



▲ Washes from oil paint and the Humbrol range were used to enhance surface details and bring them to life by creating contrasts.



Humbrol black and brown washes were used to create some of these effects. A fine brush was used to apply the washes around rivets and along panel lines, as well as to emphasise wheel hubs, hinges and so on. The final touch was to apply a light coat of soot around the engine exhausts with the help of an airbrush.

Finishing off

As with all helicopters, the rotors were a very important part of the model. These were surprisingly easy to assemble despite their rather complex design. The rotor blades were painted separately, as well as the hub before its assembly. The large decals once again performed very well, which was vital on such a prominent

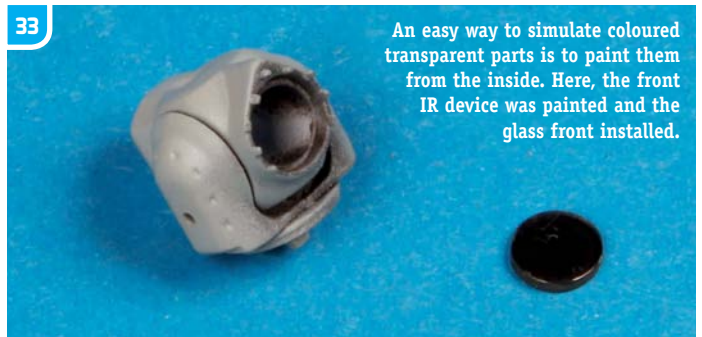
part of the build. Masking was then removed from the airframe windows and it was time to add the final details. The windscreen wipers came as very delicate PE parts and replaced the kit items...and added a really pleasing detail aspect. The Lynx has an antenna wire on its lower fuselage and this was created from the amazing EZ-line, a flexible elastic thread often used for rigging biplanes, and it was anchored easily with CA glue.

This build could be considered as being a 'medium' on the level of difficulty when it came to working with PE. It required more work when compared to an out-of-the-box build, but the extra detail certainly made all the difference and enlivened an already great kit.



32

▲ Rigging antenna wires can be quite tricky, but with the flexible EZ-Line it all became much easier, as no tension was needed to straighten it.



33

An easy way to simulate coloured transparent parts is to paint them from the inside. Here, the front IR device was painted and the glass front installed.



34

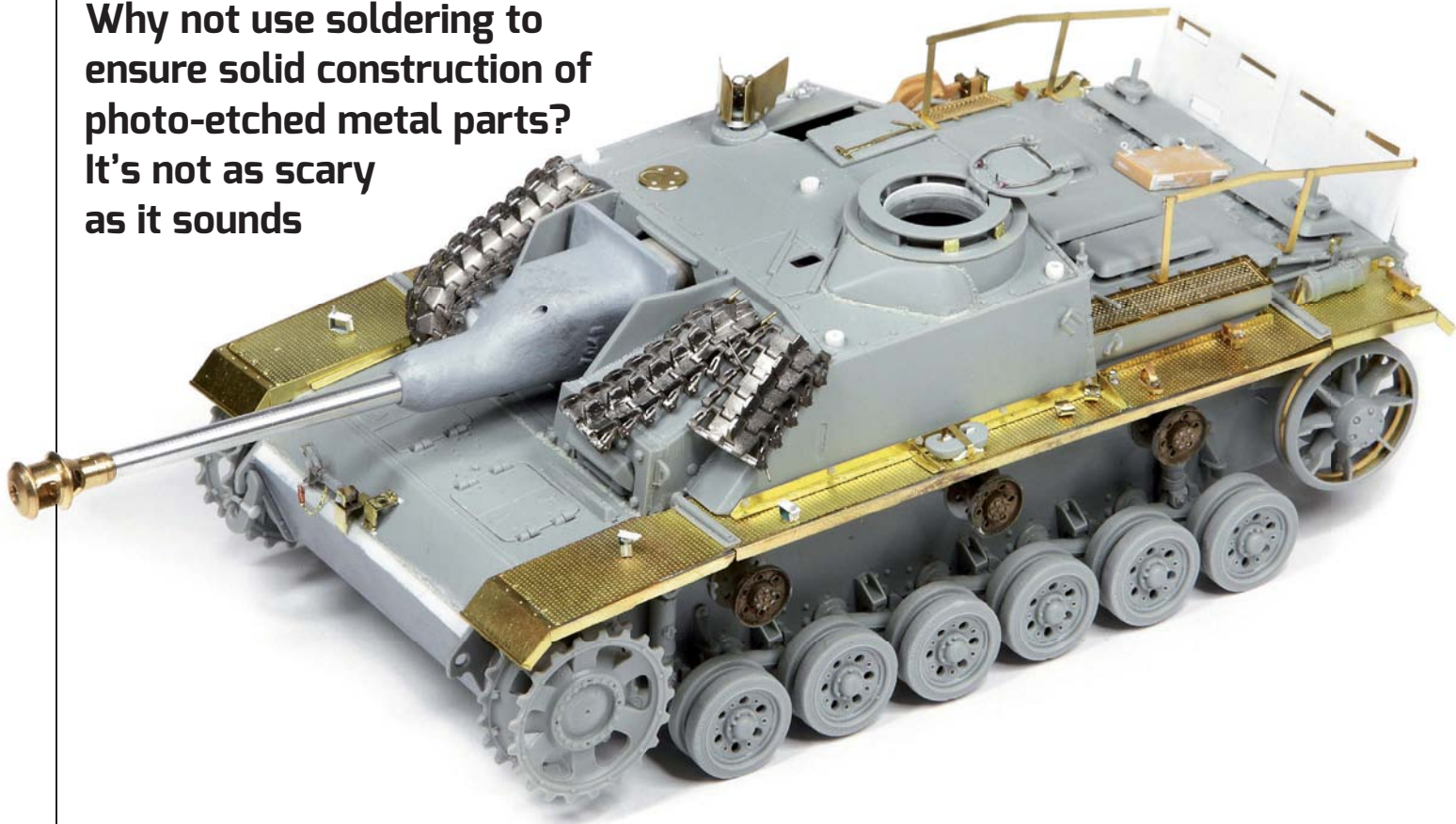
▲ The beautifully detailed main doors looked great with the black and yellow warning signs, and subtle weathering.



31

▲ Many photos of real Lynx helicopters reveal a trace of soot around the exhausts. This was recreated with black paint sprayed at very low pressure.

Why not use soldering to ensure solid construction of photo-etched metal parts? It's not as scary as it sounds



Metal to Metal

Most modellers use cyanoacrylate (CA) glue to assemble metal components, at least for smaller parts which works perfectly fine. For larger and more complex assemblies, however, it's often necessary to

provide a much stronger bond. Examples include scratch-built constructions such as railings, or PE fenders for vehicles, which are often intricately designed.

Soldering is the perfect solution for jobs such as these and, if executed correctly,

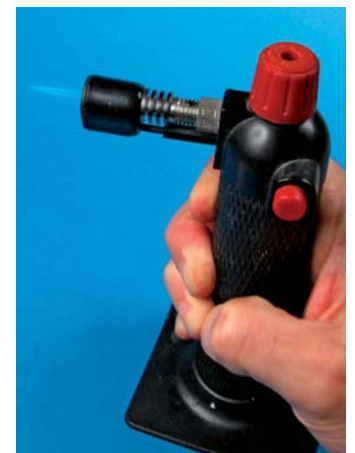
the modeller won't have to be afraid of fragile constructions that are difficult to handle, during painting for instance. The technique can simply be described as being similar to welding. Solder works as a bond between the two elements to be

assembled and, with the help of a heat source, the tin is melted. There are two major ways to solder brass and the most common is the use of a soldering iron as a heat source; these are normally used for soldering electrical components. The other

A typical soldering iron, which can be found in hardware stores or electrical component shops.



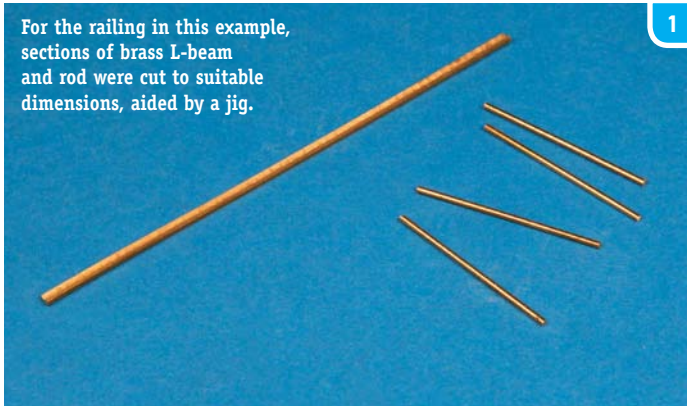
▲ The torch is a rather different tool compared to the soldering iron, but produces a much higher temperature.



▲ The torch was first tested to understand the power of its flame, which can be regulated with a gauge.

For the railing in this example, sections of brass L-beam and rod were cut to suitable dimensions, aided by a jig.

1

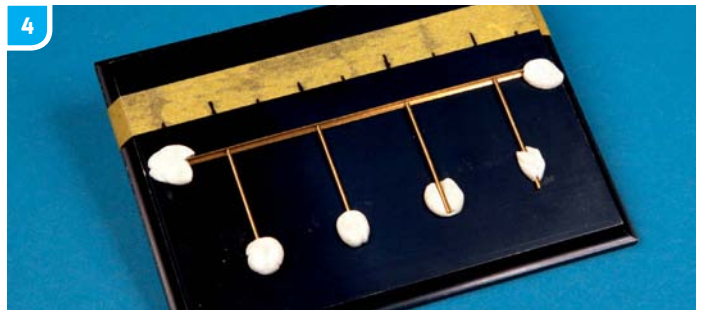


2



▲ The top beam was placed on a metal plate and a piece of tape with markings served as a guide for the alignment of the supports.

4



▲ The supports were placed in their correct position and held firmly in place with the help of Blu-Tack.

5



▲ Flux was then placed around the appropriate join with the help of a fine paint brush.

6



▲ A small amount of solder was cut. Too much will not make the bond stronger, so frugality is fine.

7



▲ The tip of a blade also helped to place a small amount of solder on each side of the support beam

8



▲ The torch flame was then placed over the join quickly until the solder melted.

3



▲ Solder is of course essential and comes in various dimensions. The grease-like flux helps to clean the metal surface and to smooth out the melted solder.

technique is to use a mini-torch instead of a soldering iron...the procedures differ slightly and one or the other can be better suited, depending on the task.

As mentioned, a soldering iron or a torch is needed for soldering, but the actual solder and a medium called flux are essential. Flux works as a cleaner for the brass surface and helps the solder to smooth out. Care should be taken, though, to ensure that the solder and flux are compatible. A metal plate is also necessary to support the work while soldering, as any

other surface would be damaged by the heat.

Preparation

The starting point with soldering is, of course, to have a plan for what to solder; in this case a small section of railing was used for demonstration purposes. The first step is to prepare the actual components. A brass L-beam for the top rail and four sections of rod for the supports were cut to the appropriate length, with the help of a jig. The sections were then fixed to the metal plate with the help of Blu-

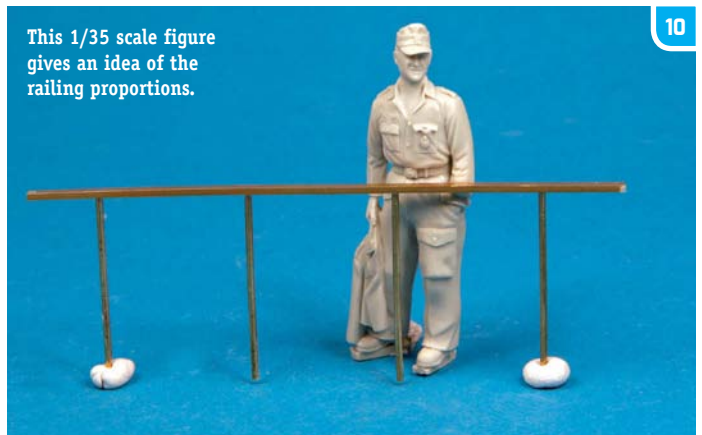
The procedure was repeated over all four joints and the result was a neat piece of railing, perfect for any building.



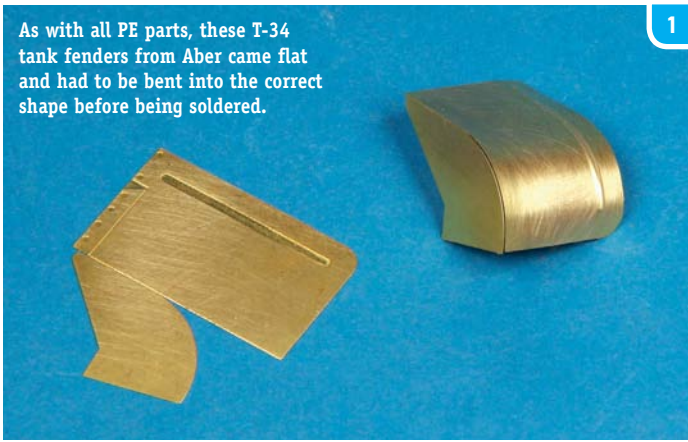
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This 1/35 scale figure gives an idea of the railing proportions.

10



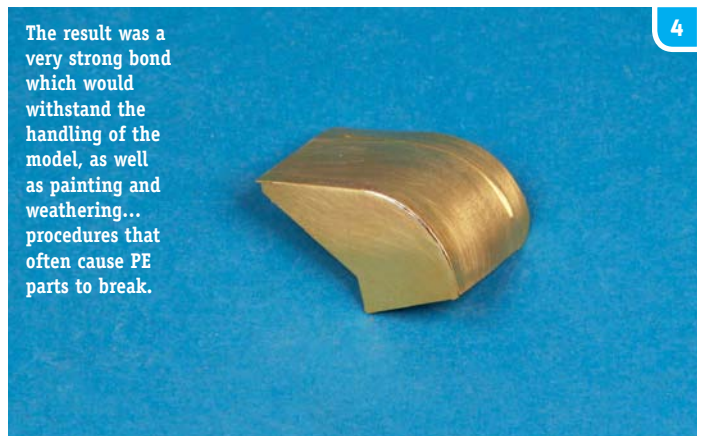
As with all PE parts, these T-34 tank fenders from Aber came flat and had to be bent into the correct shape before being soldered.



▲ The fender was placed onto a metal plate with the help of Blu-Tack, and a string of solder was placed onto the seam. Flux was first brushed onto the seam itself.



▲ The soldering iron was then placed just over the solder to melt it, and then gently pushed into it to smooth it out.



The result was a very strong bond which would withstand the handling of the model, as well as painting and weathering... procedures that often cause PE parts to break.

Tack, and a piece of tape with the correct alignment for the components, marked with a pen, was also applied.

Soldering with the torch

Next, a small amount of flux was applied to the join area of

the brass with a brush. Then, two tiny pieces of solder were cut with a sharp scalpel and placed on either side of the first support rod. The torch was then lit and placed over the joint until the melting flux sizzled audibly (which usually

only takes a second) and then quickly removed. The solder melted perfectly to create an almost invisible bond between the parts. The same procedure was repeated for the other joints. A useful tip when soldering several joints that are close to each other, is to place another metal object between them, which can lead the heat away to prevent it from melting the previously-soldered join.

Soldering iron

The actual physics of this technique are the same as with the use of a torch, namely to melt the solder to create a bond between metals. The procedure is a little different, though, as the torch produces a much higher temperature than the soldering iron.

The example here was a brass fender for a T-34 tank. This came as a flat part which was first bent to its correct shape by rolling it around a metal rod, over a semi-soft surface. CA

glue might have been sufficient to hold the bend in place, but soldering would provide a much stronger bond. Flux was brushed along the entire seam and then a thin, but solid strip of solder was placed in the seam itself. The soldering iron was then placed over the solder until it started to melt, and the iron was gently pushed into the joint to help the solder smooth out. The tip should not be moved around in the melted solder as it will then collect much of it.

As with most modelling techniques, whether painting or construction, it's recommended to become acquainted properly with the tools and how to use them. It's easy to practice on PE leftovers or scrap brass rods and beams to see which techniques works best, and what can be achieved with them. Soldering can look complicated and slightly daunting at first glance, but will prove useful for advanced modellers and scratch-builders in particular.



▲ This archway is a good example of the unique results that can be achieved with careful brass soldering.



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Quest for Detail



Resin parts have revolutionised kits in terms of detail, whether they come supplied or via the after-market

▼ These Aires resin update sets were used on the Airfix Lightning seen in this feature, and replaced the kit's cockpit, wheel wells and jet exhaust nozzles. They all offered a remarkable level of detail.

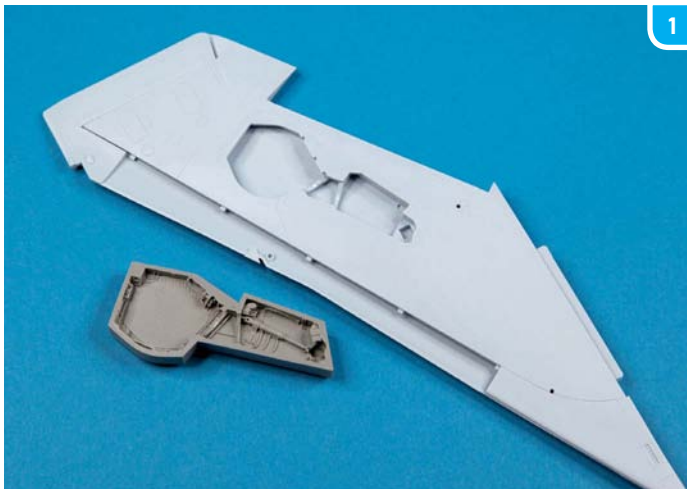


Plastic kits of today are generally of good quality, with decent detail and in most cases they are fairly accurate when compared to the original vehicle or aircraft. However, despite the fact that the manufacturing of kits has come a long way,

many parts would simply be too difficult or expensive to replicate in injection-moulded plastic. Moreover, large numbers of kits on the market were produced decades ago, and simply don't live up to today's standards. For many years, modellers who wanted to upgrade or super-

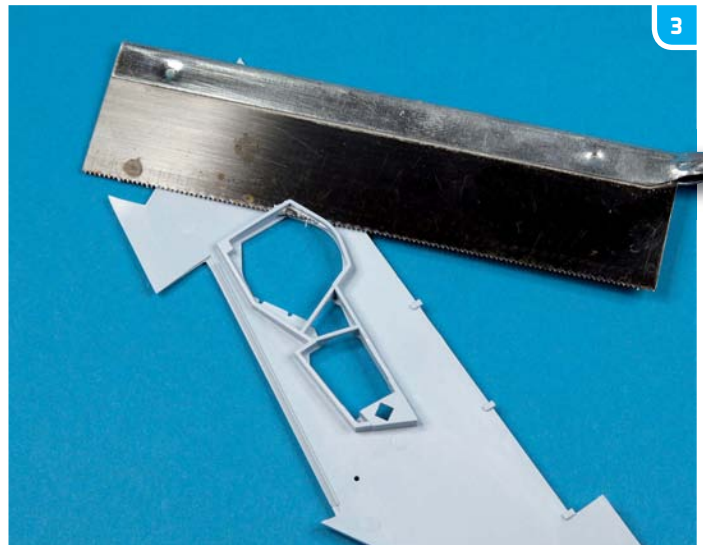
▼ Good tools make working with resin much easier. A razor saw is the best choice for separating delicate parts from casting blocks, while a bigger saw can tackle larger blocks. A variety of sanding mediums will also be vital.





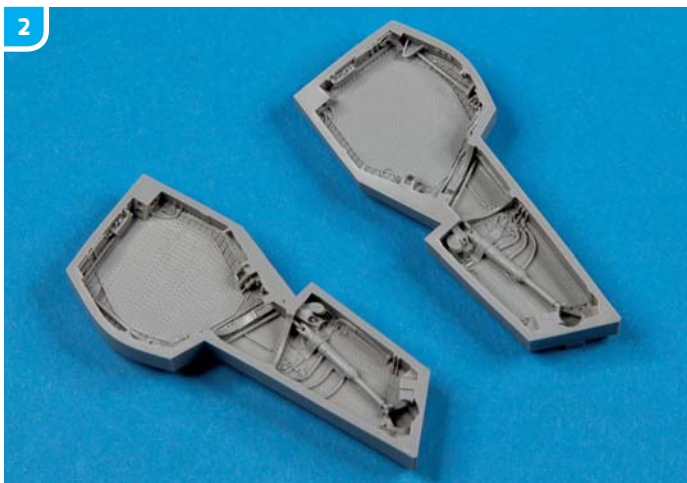
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▲ First to be tackled were the wheel wells. Note the significant difference between the rather Spartan kit well interior and the stunning resin alternative, which was adorned with cabling, pipework and actuators.



3

▲ Kit parts were trimmed to accommodate the resin replacement. The first step was to saw off the wheel well walls on the lower wing halves.



2

▲ A quick comparison was made to make sure that the correct parts were used, because left and right looked very similar.



4

▲ The remains of the walls were sanded level with the rest of the inner wing surface. A coarse sanding stick with extra 'bite' expedited the task.

detail their kits were left with no option but to scratch-build the items they needed, and plastic and brass were commonly used for this. In the 1980s the so-called 'cottage industry' began to produce upgrade sets in limited numbers, but the quality of these early sets rarely justified the price in comparison with today's products. Since then, manufacturers have become more professional and steadily improved the quality, as well as expanded their ranges. Today, almost everything can be improved on a stock plastic kit, with the help of resin and photo-etched (PE) metal sets.

The proper tools

Preparation of resin parts is rather different when compared to working with styrene plastic. The parts are generally more fragile, and they are sometimes

difficult to remove from their casting blocks without being damaged. As always, good tools will make the task much easier.

Saws are an absolute must, and they are the best choice when separating parts from their blocks. It's recommended to use two types of saw blades, depending on the job. The most common saw is, of course, the general hobby version, such as X-Acto, and they are widely available. These saws work very well when cutting thick resin parts that are not so fragile. A much finer option, though, is the razor blade saw which, as the name suggests, resembles a razor blade. However, instead of a sharpened edge it has very fine teeth. Since the blade is extremely thin, very little damage is done when the parts are removed from the casting block.

Hobby knives are also essential. Resin parts often have casting

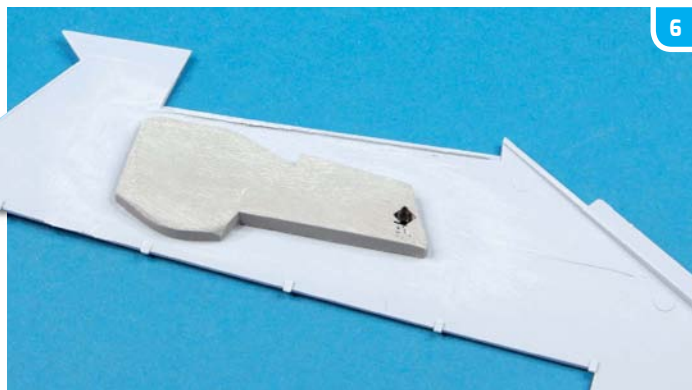
seams and flash and these are best trimmed with a sharp blade. These are also good for re-opening small holes, which

can become clogged during casting. Another good use of knives is to thin the plastic parts to receive the resin items... ▶

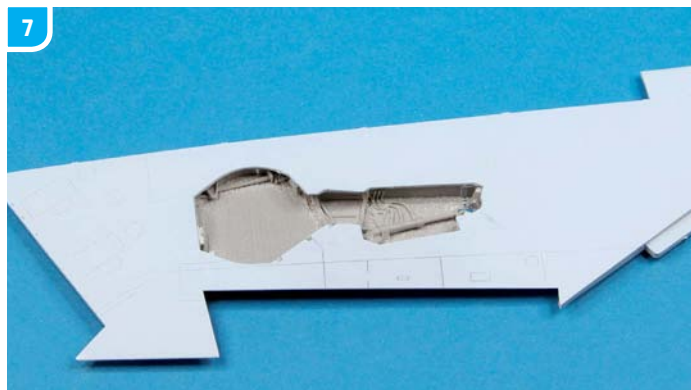
▼ The plastic was then thinned as the resin part was thicker than the kit wheel well. A motor tool hastened the process, but care should be taken not to sand right through the plastic. Goggles, or safety glasses should also be worn.



5



▲ When the plastic was thinned enough, the resin part was placed in the correct position. Note that the resin component has also been trimmed to remove the casting excess.



▲ The resin part was then glued in place with cyanoacrylate (CA) glue but epoxy glue would work just as well (although drying times are slower unless using the five-minute variety).

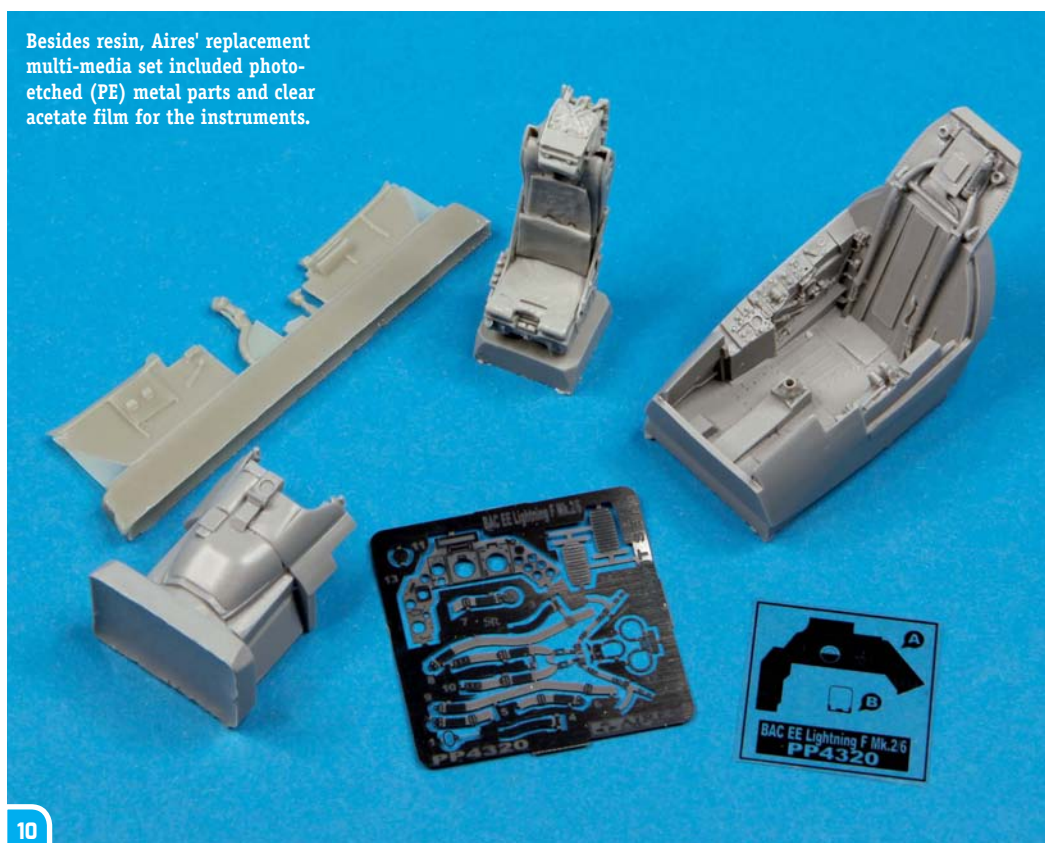


▲ It all looked very neat once the wings were glued together and attached to the fuselage. The more detailed replacements stood out straight away, but could also be highlighted later with oil or acrylic paint washes.



▲ When painted, it all blended in beautifully and looked just like the real thing. At this stage a first weathering wash was applied to create depth in the surface, and to highlight the detail.

Besides resin, Aires' replacement multi-media set included photo-etched (PE) metal parts and clear acetate film for the instruments.



this is best done with a flat or rounded blade, in a scraping motion. Sanding mediums are just as important for resin parts as they are with plastic, or perhaps even more so as the resin is usually a much harder medium. Abrasive paper such as Wet and Dry, and sanding sticks, are used for removing excess resin and to shape the contours of parts. Diamond files are perfect to reach into the inner surfaces of bent shapes and also when sanding 90-degree angles. For heavier work, a motor tool can save time when removing large amounts of excess resin, but also for polishing sanded parts. A word of caution though; resin is toxic and the sanding dust should not be inhaled. Water can be used to wet-sand larger areas to help contain the dust. The work area should also be cleaned frequently, and it's wise to use both eye protection and a good quality face mask.

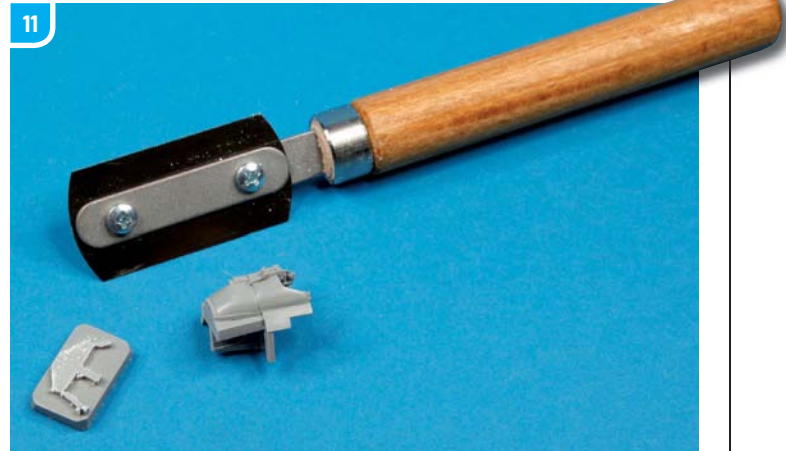
Improving Airfix's Lightning

This kit has become a classic since its release in the mid-1990s. It has very fine surface detail and fine, engraved panel lines – and is considered fairly easy to build. A few weak spots were soon pointed out by experts, however, and after-market producers responded to the demand for improvement sets. For this build, the following improvement items were used, all from Czech producer Aires; cockpit set, wheel wells and jet exhaust nozzles.

First to be tackled were the wheel wells. These were beautifully cast and incorporated all the fine detail missing on the kit parts. Hydraulic lines, textured inner surface, electric cables and other features were all

replicated. However, as is often the case with resin sets, making them fit between the wing halves needed a lot of work. The first step was to remove the casting blocks which were cut off with a razor saw, and the cut surface was then sanded further.

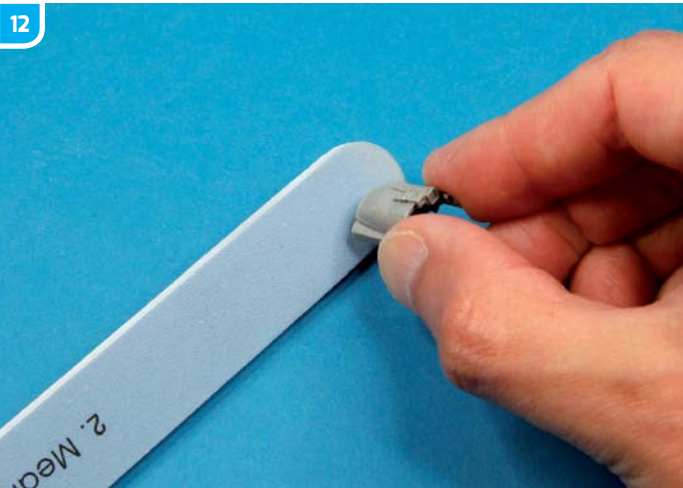
Then, the kit parts needed preparation to accept the resin components, and this began with having the wheel well edge sawn away and sanded smooth. The resin part was placed in position and its contours were drawn with a pencil. The plastic of the upper and lower wing was then thinned with regular abrasive paper, but also a motor tool was used to speed up the process as a significant amount of plastic needed to be removed. When doing this, care was taken so that the motor didn't



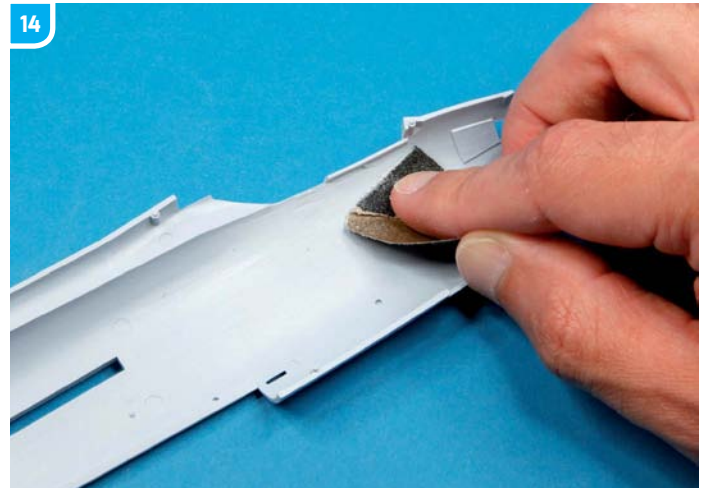
▲ The parts were carefully removed from the casting blocks with a razor saw, which minimised the risk of damage.

work its way through the plastic completely...which is easily done when the styrene becomes very thin. Repeated test-fitting was conducted to remove enough,

but not too much, of the kit's plastic to make the wing halves mate with the new resin part in between. Cyanoacrylate (CA) glue was then used to fix the



▲ The remains of the casting blocks were sanded away and the cut surface was smoothed with a flat sanding stick.



▲ The interior of the fuselage also needed preparation. Here, abrasive paper was used to sand away the kit's interior side wall detail.

▼ With all the parts prepared, a test assembly was carried out to see how the parts fitted together. In this instance only minor adjustments were necessary...but not all resin can be readied this quickly.



13

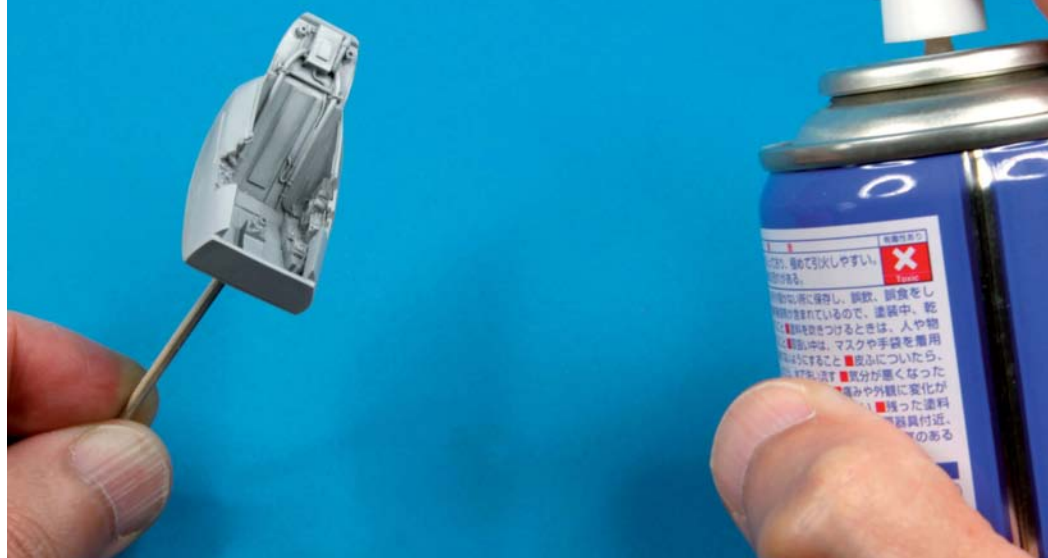
▼ As always, test-fitting was crucial with use of an upgrade set. The cockpit tub was held in place with Blu-Tack and the fuselage halves were taped together.



15

16

The cockpit parts received a coat of surface primer in preparation for painting. Primer also helped to cover minor surface flaws.



resin wheel well in position and the wing halves were glued with standard plastic cement.

Upgrading the 'office'

The second set used on this build replaced the cockpit. It featured an amazingly high level of detail, with flawless casting, and was broken down into the following parts; ejection seat, tub, instrument panel and two side walls. The set also featured PE details for the seat straps, instrument panel and ejection seat handles, as well as a clear acetate film with instrument dials printed on it.

The biggest challenge, as with most cockpit sets, was to actually make it fit inside its injection-moulded host. In some cases this could mean a significant amount of work, depending on how cleverly the resin kit is designed, but also on the complexity of the cockpit. In this case, Aires had gone to great lengths to make the construction as simple as possible.

Firstly, the front area incorporating the instrument panel was removed from the casting block with a razor saw. It was then sanded lightly and attached to the tub with Blu-Tack and test-fitted. When the fit was adequate the cockpit side walls were removed carefully from the casting blocks and these were also fitted to the

tub with Blu-Tack. The crucial part was to get the tub in the correct position, as it would affect the fit of the remaining components. Interior detail on the fuselage sides had to be removed completely and thinned,

and this was done with Wet and Dry paper, and scraping with a round-bladed hobby knife. The tub was supposed to sit on top of the kit's air intake channel so this had to be glued in place first. The bottom of the tub was

▼ The instrument panel comprised resin, PE and acetate film for the dials. Careful painting and assembly resulted in a realistic piece of the interior; the printed acetate fitted behind the PE instrument panel to provide an authentic appearance.



then sanded with coarse abrasive paper, as much of it had to be removed. When the position seemed correct, the kit's fuselage halves were held together with tape to ensure the cockpit fitted properly between the halves.

At this stage some trimming had to be done on the side walls, mainly as the entire unit was too wide. Test-fitting was repeated, as well as the trimming of the side walls. With the cockpit prepared it was time to paint them. Resin often has a slightly glossy surface (and sometimes casting release residue), which can impair paint adhesion, so it's recommended to give all parts a coat of surface primer...this goes for PE components, too. The cockpit details were then picked out with acrylic paints and the help of reference photos. Acetate film for the instrument dials was cut to shape and glued on top of a white-painted background before the PE panel was attached on top of it, and the result looked very convincing.

The ejection seat was a little masterpiece, with every small detail remarkably well replicated, right down to the rivets of the frame and the wrinkles on the pads; it was cast in one piece and didn't even need any clean-up, while the harness was supplied in the form of PE parts. The seat straps required work and careful handling, but with the help of good references it was fairly quick. After receiving a layer of primer the seat was hand-painted with acrylics, followed by dark brown oil wash to enhance all the lovely detail.

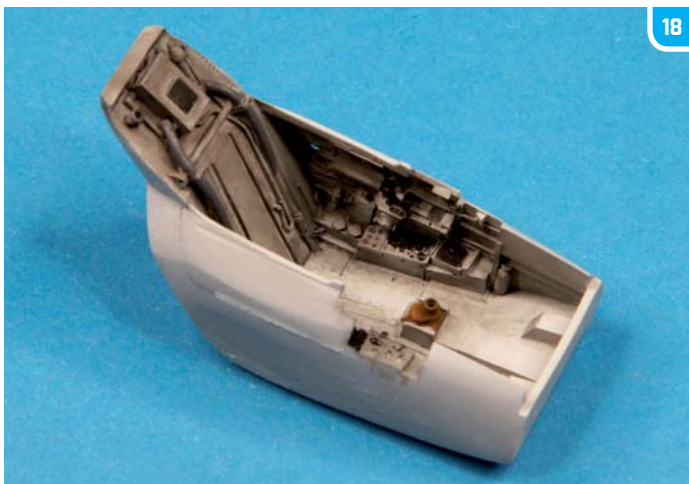
With all parts painted, final assembly was carried out with CA glue. A test-fit of the entire cockpit unit revealed that minor sanding was needed, for a perfect sit between the fuselage halves. When the last adjustments were made it was time to fix the

PRODUCTS USED

Airfix
• Lightning F2A/F6 (A09178)

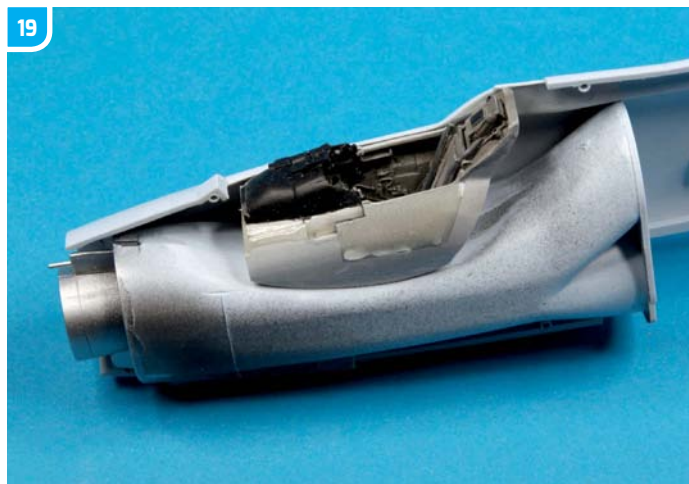
Aires
• Cockpit (4320)
• Exhaust Nozzles (4318)
• Wheel Bays (4319)

17



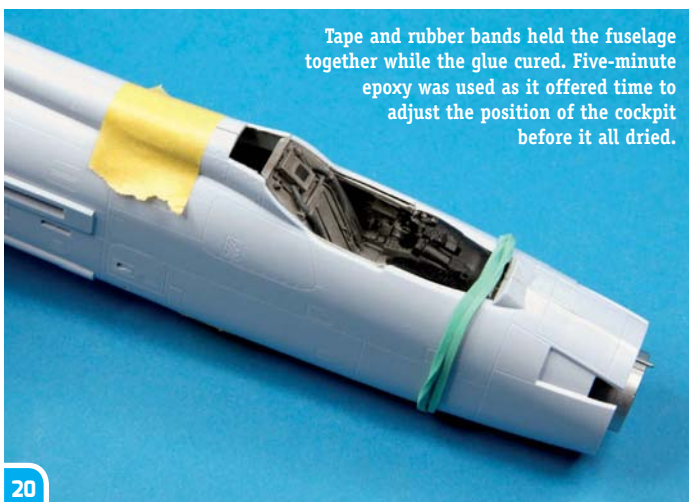
18

▲ The rest of the cockpit interior was also hand-painted with a fine brush, followed by a wash of diluted dark brown oil paint. The latter technique is highly useful for accentuating all manner of raised and engraved detail.



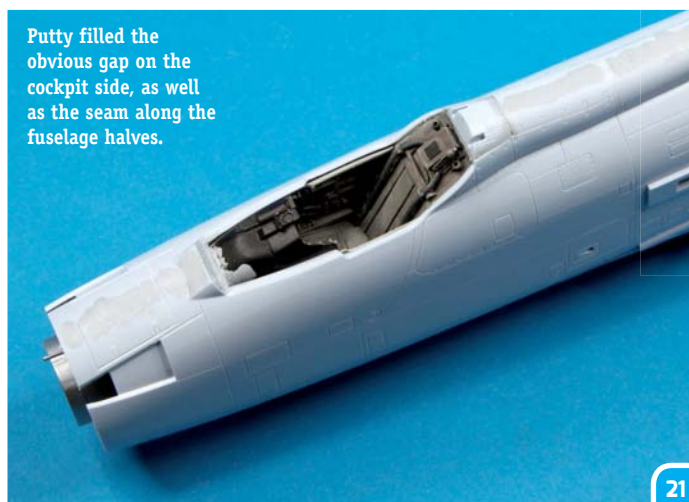
19

▲ The assembled and painted cockpit was glued in place on top of the kit's air intake part. Further sanding had to be carried out on the bottom of the cockpit tub for a proper fit.



Tape and rubber bands held the fuselage together while the glue cured. Five-minute epoxy was used as it offered time to adjust the position of the cockpit before it all dried.

20



Putty filled the obvious gap on the cockpit side, as well as the seam along the fuselage halves.

21

unit in place, and five minute epoxy glue was used for this. The benefit of using this type of adhesive was that the position of the cockpit unit could be adjusted after the fuselage halves were mated. Elastic bands and tape helped to hold it all in place while it everything cured.

Detailed flame-throwers

The final set used was the jet nozzle set. This was a very straightforward update which required minimal work, mainly due to the clever casting of the parts to ensure a straight swap between the original kit items and the resin replacements. The set also included photo-etched metal fans for the engine exhaust channel but, ultimately, very little of this was seen on the finished model. Unfortunately, that can be said for the exhaust nozzles as well, but they still presented a great appearance for those with an eye for detail.

A luscious Lightning

Upgrading this plastic kit with resin sets required some extra work, and the total cost was also higher than that of Airfix's kit itself. In the end it's up to the modeller's own desires with

regard to whether the work and extra money is, ultimately, worth it. It was clear, however, that the sets used on this build significantly improved the overall impression and took it to a higher level. For those aiming to

create an accurate replica of an actual vehicle or aircraft, or even for those with high engineering interest, the upgrade would be essential. In the end, it's the modeller alone who decides where to set the limit. ◻

▼ A coat of primer covered the entire seat before the details were highlighted with a very fine brush.



22

▼ Resin jet nozzles were easy to fit and added a pleasing touch. They only needed a coat of matt black and a highlight of gun metal metallic paint to help bring out their detail.



23

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The Styrene Alternative



Here's how to build and paint a full resin kit in 1/35th scale, in this case, Sovereign 2000's Humber

Resin kits are produced mostly with limited resources when compared to mainstream plastic kit manufacture...and produced in smaller numbers.

They do, however, fill an important void in the arsenal of plastic kits, as they mainly depict models considered less

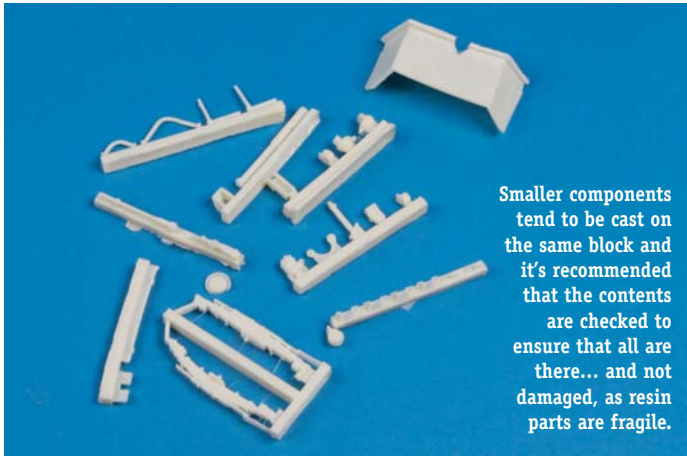
mainstream to the general styrene market. The quality of the castings can vary from rather poor to excellent, but most kits produced today are good, and not at all as they were back in the late 1980s-90s when they made their debut to a wider audience. Resin kits are most commonly available for armour modellers due to the



▲ The kit contents of the sample built for this article came packed neatly in plastic bags. The entire hull was cast in one piece for ease of construction.



▲ It's vital to study the instructions of any resin kit carefully before assembly starts, because they are generally not as clear as those with mass-produced injection-moulded products.



Smaller components tend to be cast on the same block and it's recommended that the contents are checked to ensure that all are there... and not damaged, as resin parts are fragile.



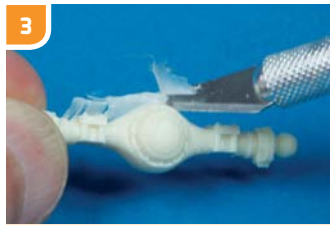
Resin part surfaces are often greasy from mould release agent, so should be cleaned with soap, water and kitchen paper.

1



2

▲ It's not uncommon to see excess resin, similar to flash that can appear on injection-moulded parts.



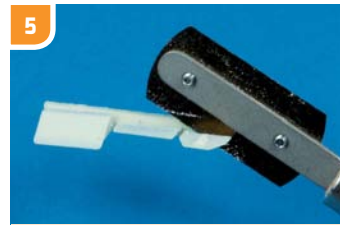
3

▲ The excess was first cut away with a fine scalpel, moving along the edge of the kit part.



4

▲ A sanding stick or abrasive paper can then be employed to smooth the seam.



5

▲ A razor saw is a must when working with fine and delicate resin parts.

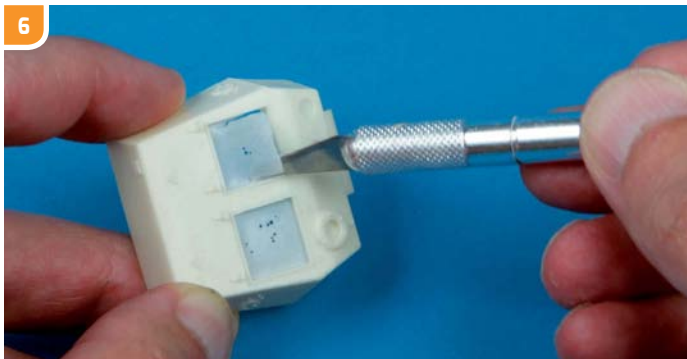
great variety of military vehicles produced through the years. But full aircraft, race car and ship kits can also be found, as well as diorama accessories such as cranes, trailers, buildings and more. Techniques for working with resin details were covered

earlier on this publication, where the crucial step was to incorporate the resin with a plastic kit. The same tools are used, but building a full resin kit, however, is different in several ways. The first and important step was to check that all the

kit parts were included. They were also checked against the instructions which were studied carefully before construction began to avoid any surprises. Limited-run kits such as these can often have very simple instructions, incorporating

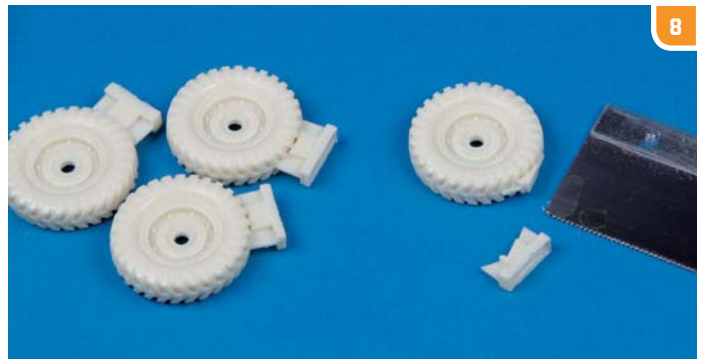
photographs and a sparse amount of explanatory text, so fastidious preparation is vital.

The resin had a greasy surface so to help both glue and paint to adhere better, the main parts were cleaned with soap and water and dried with tissue. ▶



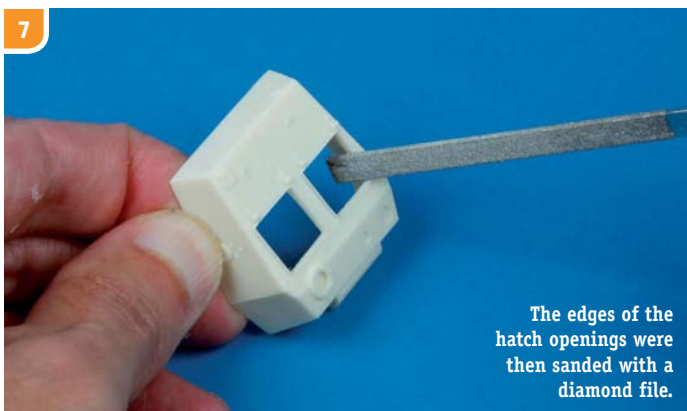
6

▲ A thin film of resin covered both the turret openings but was easily removed with a scalpel.



8

▲ A larger saw was used to remove the casting blocks from the beautifully-rendered wheels.



7

The edges of the hatch openings were then sanded with a diamond file.



9

▲ The wheels were scraped against coarse abrasive paper to remove the remains of the block.



10

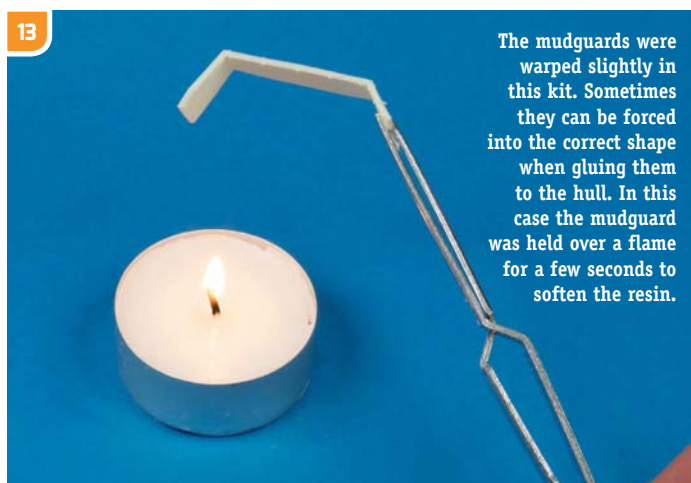
▲ A fine sponge-style sanding stick was used to obtain a completely smooth finish.



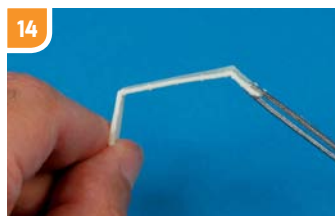
▲ Minor air bubbles and imperfections on the surface were filled with putty and sanded. This is a common task with resin kits.



▲ Flat areas such as on this stowage box are best sanded in a circular motion while on a flat surface.



The mudguards were warped slightly in this kit. Sometimes they can be forced into the correct shape when gluing them to the hull. In this case the mudguard was held over a flame for a few seconds to soften the resin.



▲ While still soft, the part was bent to the correct shape and held still until it had cooled.



▲▶ The result was a perfectly-angled mudguard which would fit properly to the kit hull side.

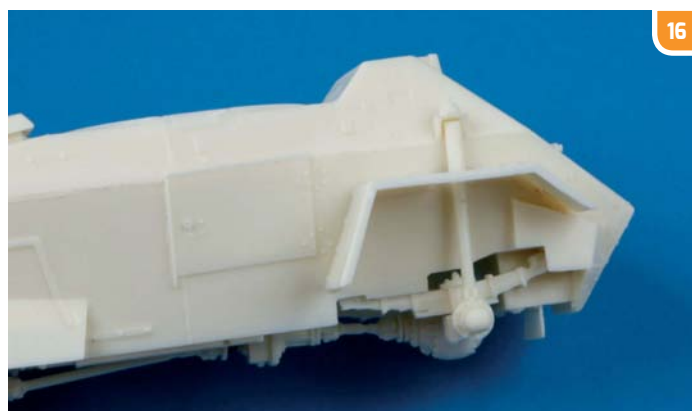


Chassis and hull

Construction started with the chassis, with its feather suspension and axles. The latter showed a significant amount of excess resin, not at all uncommon for this kind of kit. This was easily removed though, with a scalpel, followed by a sanding stick. The instructions were a little unclear on how to construct the front axle and steering, so several reference images proved useful. The mudguards were thin and well cast, separately from the hull itself. However, two were slightly warped. This could be solved by either dipping the part in hot water, or holding it over an open flame. The first option is safer but the latter was chosen and the problem was solved quickly

when the kit part was heated and bent into shape. The outer edge of one of the mudguards was damaged when removed from the casting block, despite the use of a razor saw, and more care should have been taken. To repair this mishap, a thin strip of styrene was glued along the edge then sanded smooth. A little filler was also needed to cover several cracks. At this stage a small air bubble was also noticed on the engine hatch so this was also neatened with filler and sanding.

There were a number of tools and stowage boxes in the kit and these were all prepared and glued in place. The larger boxes had a surface that needed to be absolutely flat, and the best way to do this was to sand them in a circular motion against an





abrasive on a flat surface.

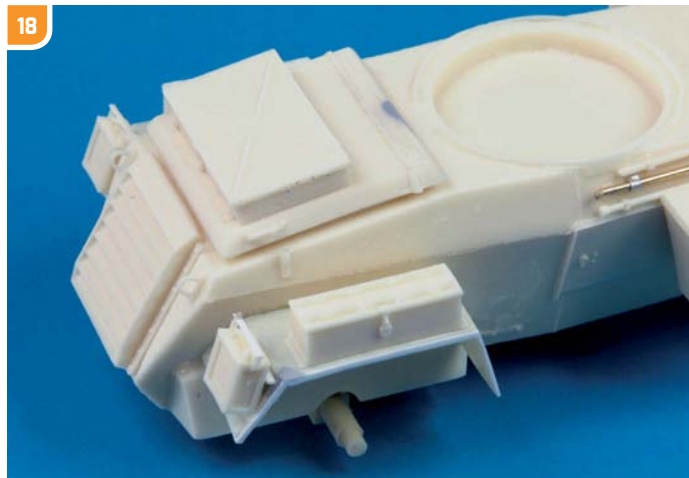
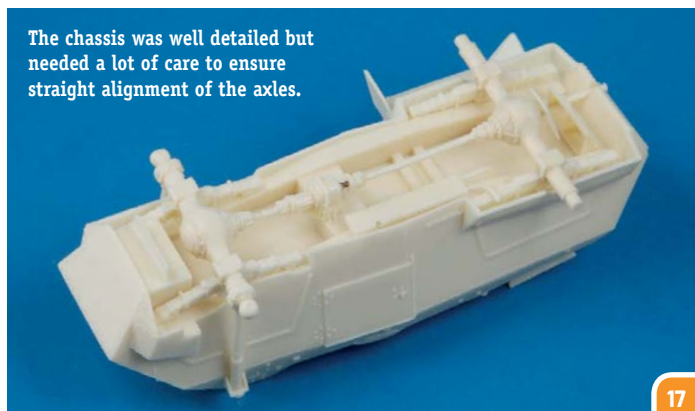
The Humber sported protective rails over the front lights and the instructions pointed out that these had to be made from wire. In this case, copper wire was heated over a candle then bent with the help of pliers. It was slightly tricky to get the angles right so a few attempts were made until the proper shape was achieved. The mirror stems were also cut to an appropriate length and glued in place.

Turret

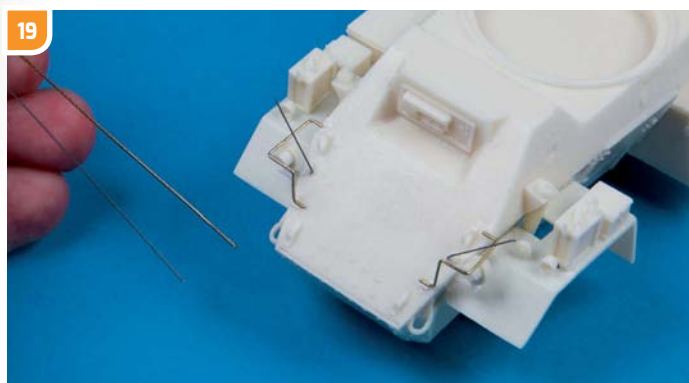
With most of the hull completed, the project continued with the

turret, which comprised upper and lower parts, the mantlet, gun and turret hatches. A few small details also came separately. Construction was straightforward, but a thin resin film on the turret openings had to be removed with a scalpel and diamond file. The mantlet and gun fitted very well and the only extra work was to drill out the tip of the gun barrel. The hatches were delicate and, having learnt from the mistake with the mudguards, they were removed gently from the casting block with a razor saw; just a little filler was need on the edges. ▶

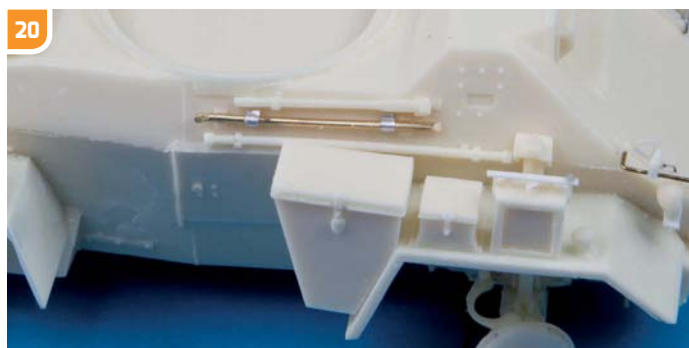
The chassis was well detailed but needed a lot of care to ensure straight alignment of the axles.



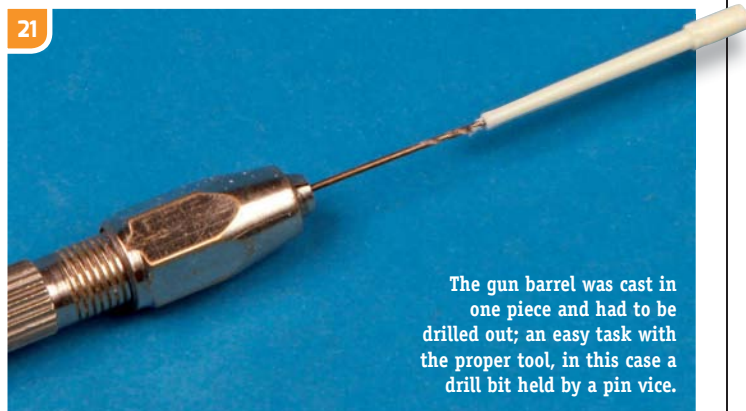
▲ One of the mudguards was damaged slightly so styrene strip was cut to the proper length and glued along the edge. Putty was also needed to finish the task.



▲ The kit didn't include headlamp protectors or rear-view mirror stems, so these had to be made from wire.



▲ One of the exterior tools snapped off during handling so a new item was created, also from fine wire.



The gun barrel was cast in one piece and had to be drilled out; an easy task with the proper tool, in this case a drill bit held by a pin vice.

22

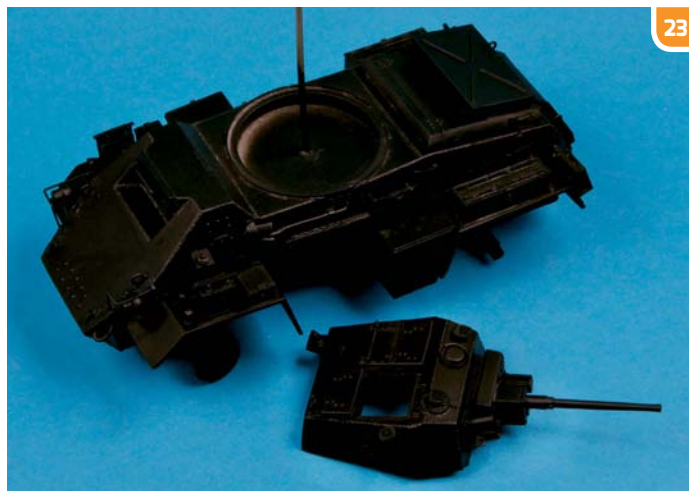


▲ The model ready for paint. Note the smoke dischargers beside the gun, which were missing in the kit and so were fashioned from styrene tube.

Wheel confusion

The wheels had been left separately and would not be glued in place until after the painting and weathering, but were prepared at this stage. Hub and tyre patterns were beautiful and casted flawlessly, but the large casting block needed to be removed. This was done with a saw, and followed by a gentle pressing of the wheels against a coarse abrasive to remove the remains of the block.

It should be pointed out that the wheels should be mounted so that the rubber pattern points in a certain direction. On most plastic kits they would probably have been moulded in a way so that they could not be fixed incorrectly, but here, trust was laid in the modeller's hand. As it happened, the front wheels were eventually glued with the left wheel onto the right axle and vice versa. Since cyanoacrylate glue was used it was impossible



23

▲ The entire model received a coat of black primer to serve as a key for the following paint, and to provide depth to the final finish.

to chance this without severe damage to the fragile axle joints, so they had to be left as they were. This is a timely reminder of the importance of patience and careful study of the instructions when modelling in general, but more so when working with resin kits.

In summary, the build was quick when compared to plastic kits, at least a detailed one. Much of the time was spent on preparing the parts, test-

fitting and careful study of the simplified instructions. Some minor repair work and extra detailing also had to be done but with the help of reference photos it was a fairly easy task. In the end, the reward was a well-detailed model of a relatively rare subject.

Bring on the colour

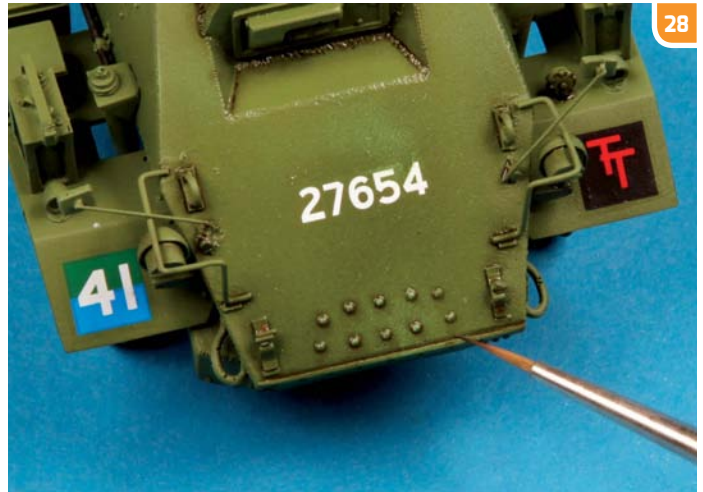
There were no painting instructions provided in the kit, but a colour photo on the





24

▲ The green base colour was applied in several layers, with more white added subsequently to create highlights and shadows.



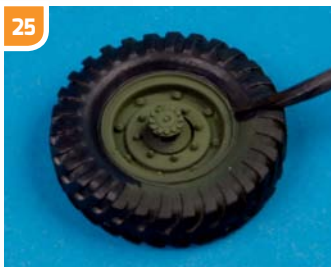
28

▲ Dark washes helped to accentuate surface detail. A fine brush was used to flow the wash around surface embellishment, hull joints and weld seams.

box cover served as guidance, as well as reference photos. As mentioned earlier, resin often has a glossy surface and a primer is necessary to make the colour stick to it properly, especially when acrylics are used. In this case, a black primer was chosen. This provided grip for the paint, and covered minor surface flaws; it also helped to create depth and shadows for the following layers of paint.

When the primer had dried

properly it was time to apply the green colour. A variety of Tamiya acrylics were mixed to an olive green nuance and airbrushed in a thin layer, which allowed the black to show through. For the next layer, a touch of white was added to the mix and again a thin coat was applied, mainly from above the model. The black was now barely visible and only created a subtle shadow. To emphasise further the three-dimensional impression, an



25

▲ The tyre portions of the one-piece wheels were hand painted carefully with black-grey acrylics, after they had received the green base coat.



26

▲ On-vehicle tools were also hand painted. As seen here, the first layer of sand yellow is being applied on the wood areas, and black for the metal.



27

▲ This was followed by red-brown oil paint for the shaft, and gun metal for the blade.

SOURCING MARKINGS

As is often the case with resin kits, no decal sheet was included, or instructions on how the real vehicles were marked. Study of the box art and reference photos helped to demystify the situation and the hunt for appropriate solutions began.

The unit insignia were taken from an old Tamiya kit, and the vehicle's registration code and white star were sourced from Archer Dry Transfer sets. In the end, the markings were not completely accurate but close enough to settle with.





▲ Humbrol enamel paint and washes, as well as Vallejo pigment powders, were used for the dusting of the vehicle and to simulate dried mud.

even lighter mix was painted on the large flat surfaces on the upper hull, turret and large side stowage boxes. Tools were hand-painted carefully with acrylics, followed by oils for the wooden sections, and silver printer's ink for the metal sections.

Dust and dirt

With the markings in place it was time to give the model an impression of dirt, wear and tear. The model featured convincing weld seams and rivets and to make them stand out, dark brown and black Humbrol enamel washes were applied around them and along the edges. Other surface details and the wheels received the same treatment, with a more concentrated application to certain areas. The overall result of the washes was that the vehicle looked grimy and the base colour was less stark and new-looking.

Next, scrapes and chipped paint were simulated by painting them with a very fine brush, loaded with black-brown acrylic paint. This was concentrated mainly to the edges of the hatches, stowage boxes and mudguards. Care was taken not exaggerate this effect...subtly should be the key. Vehicles in operational service quickly attract mud, dirt and dust and models always look more authentic when this is reflected. In this case, a coat of dry mud and dust was simulated with Humbrol enamel washes and Vallejo pigment powders, as well as standard Humbrol enamel paint.

A light coat of diluted Humbrol 26 Khaki was applied with an airbrush, and this was concentrated to the chassis and lower hull. Very thin layers were used, to ensure that the effect was not overdone and too monotone. The wheels and chassis



▲ Highly-diluted Humbrol 26 Khaki was airbrushed onto the chassis and lower hull, to replicate surface dust.



▲ Washes were then applied around details of the hull and into corners to simulate accumulated dust.

▼ Scraped and chipped paint was simulated with black-brown acrylic paint applied with a very fine brush.

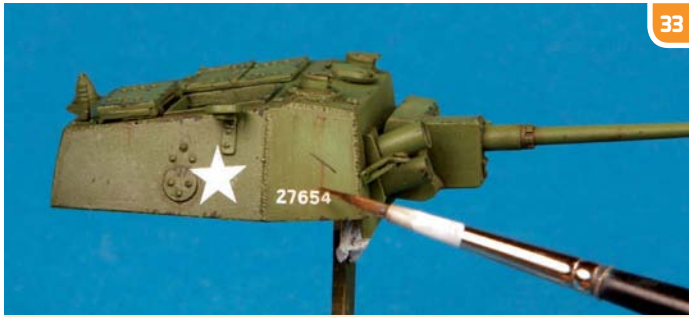


31

▼ The wheels were brushed liberally with washes and pigment powders and set to dry, then excess was wiped off with a thinner-moistened cloth.



32



33

▲ Rain marks are an effective way to make a vehicle look used and exposed to nature. They were created with diluted oil paint on this model.



35

▲ The antennae were made from thin wire, cut to the appropriate length and glued with CA adhesive.



34

▲ Washes can also be used to simulate splattered mud stains, easily applied by flicking the mix from the bristles of an old brush.



36

▲ The searchlight was cast in one piece, so the front surface was painted silver and coated with gloss varnish.

then received a liberal coating of powders mixed with enamel washes to mimic a coat of dry mud, with the powder adding texture. The wheels were left to dry before excess was wiped away to make the contact surfaces clean, showing the rubber colour.

A fine brush was then used to apply a light brown wash around surface details of the hull, to simulate accumulated dust often seen on vehicles in service for a period of time. The same mix was also applied carefully around the turret detail and mantlet, being just barely visible.

The final step of the weathering was to create rain marks along the vertical surfaces. This technique is very effective and immediately gives any vehicle a more varied and interesting appearance. Small dots of black and brown oils were placed randomly on the surface, and then a damp brush was used to smooth them out in a vertical motion.

Final details

The paint job and weathering was all done, and the only task that remained was the attachment of small details previously left off for easier handling of the

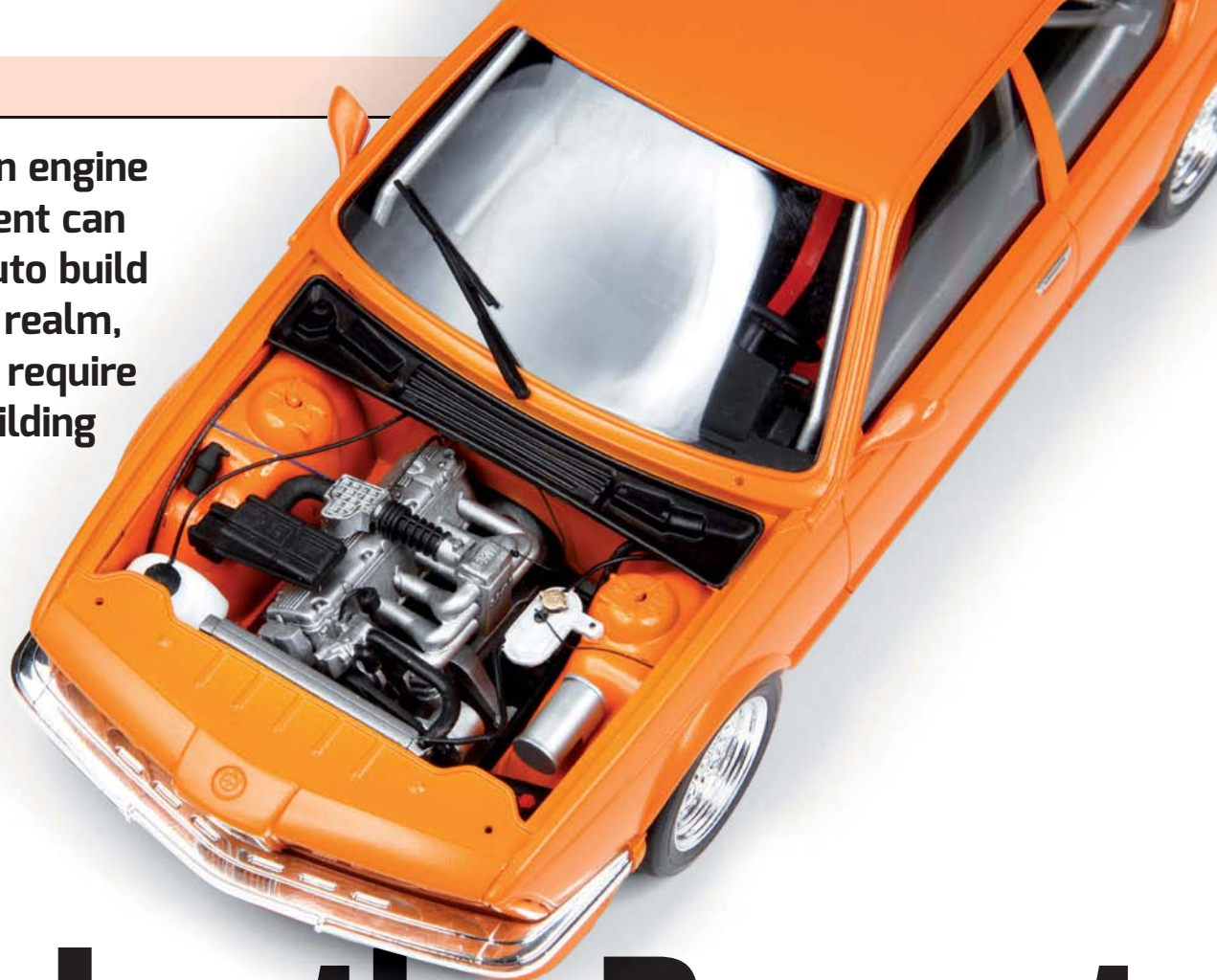
model. The antennae were made from wire, cut to the appropriate length while the glass area on the turret's searchlight was painted silver and gloss-coated before being glued in place.

Another option could have been to drill out the light and replace it with a clear lens. The final result was a realistic, combat-worn armoured car from this charming little kit which, despite

its challenges, was well worth the effort. With any resin kit, careful study of the instructions and the employment of good references will ensure enjoyable and trouble-free modelling. ◻



Detailing an engine compartment can carry an auto build to another realm, but it does require scratch-building know-how



Under the Bonnet



▲ Soft lead wire is available in a variety of diameters, and works perfectly for electrical wiring and other cables.



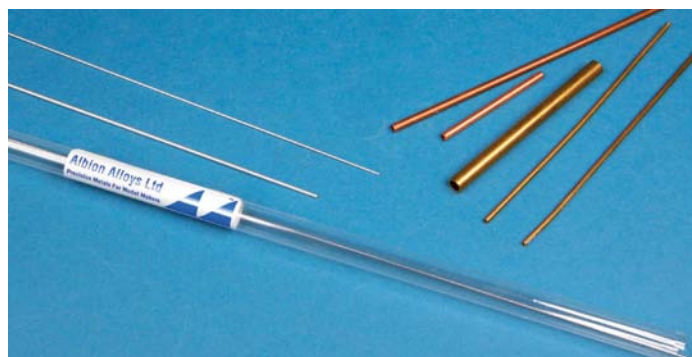
Styrene plastic is a versatile material well suited for detailing and scratch-building.

One of the most striking facts when studying the after-market today is how surprisingly few accessory and conversion kits are available for cars, compared to military vehicles and aircraft. It becomes stranger when the actual number of civilian cars available is considered...there are literally hundreds of them. So, had the market echoed that for the military and aviation modeller, there would have been a wealth of engines, wheels, exhaust systems and so on.

There are brands that offer detail parts for cars modellers, and the quality of these sets is usually very high. But it must be considered rather odd that there are more engine sets for a World War Two Tiger tank than for a modern race car or a series-produced Ford!

Materials

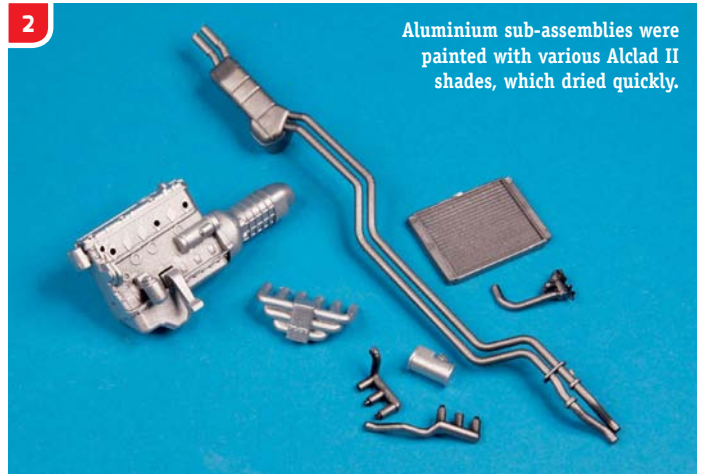
So, that leaves the modeller very much in the world of scratch-building one's own details, or at least upgrading the kit. This is basically done with the same



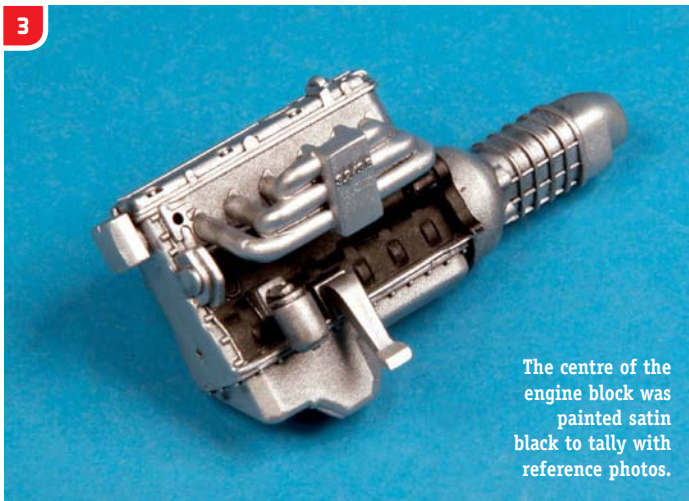
▲ Aluminium and brass rod and tubing is perfect for plumbing. Brass also has the benefit of being able to accommodate soldering.



1 The kit parts were primed black and grey for the metallic-shade areas and body respectively.



2 Aluminium sub-assemblies were painted with various Alclad II shades, which dried quickly.



3 The centre of the engine block was painted satin black to tally with reference photos.



4 Dark washes made an attractive contrast on the shiny aluminium surface.

materials as used by military and aviation modellers:

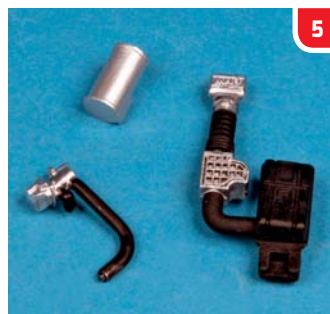
- Styrene plastic. This has, for decades, been a versatile medium for scratch-building, and it comes in all sizes and shapes. Sheet styrene is ideal for larger parts such as boxes, or body parts. The most useful items, though, are arguably the many diameters of plastic rod, which can be used for all tubular-shaped parts.
 - Brass rod and tube. This is ideal for plumbing, and for making more rigid constructions. A benefit of using brass is that it can be soldered easily.
 - Lead wire. To simulate flexible plastic tubing and electrical wiring, lead wire works perfectly thanks to its soft nature. This allows it to be shaped and it stays in the desired form, and doesn't flex back as, for instance, copper wire does.
- There are, of course, numerous other materials that can come in handy for detailing, and a scrap box with surplus parts

from other builds can be a real treasure, particularly if the modeller sticks to one scale or subject area.

Retro BMW

The Tamiya kit used for this tutorial (Jägermeister BMW 635CSi, no: 24322, available in the UK via www.hobbyco.net) was initially moulded around 20 years ago and has been re-released several times due to its popularity. The kit is good and rather well detailed even by today's standards. It includes a replica of the 3.5lit engine, but as is often the case it is rather simplified and only major components are represented.

Construction started with the engine itself, and the first step was to give all the components a coat of black primer. Next, the metal parts were painted with various Alclad II shades. These dry very quickly, which is ideal when working with sub-assemblies that require a lot of handling. The central part of the engine block was then painted satin black, as



5 The smaller kit parts were hand painted with a fine brush. Printer's Ink was used for the metal parts.



6 The kit didn't include a radiator fan, so this item had to be scratch-built from styrene strip. Fan blades were first cut to length.



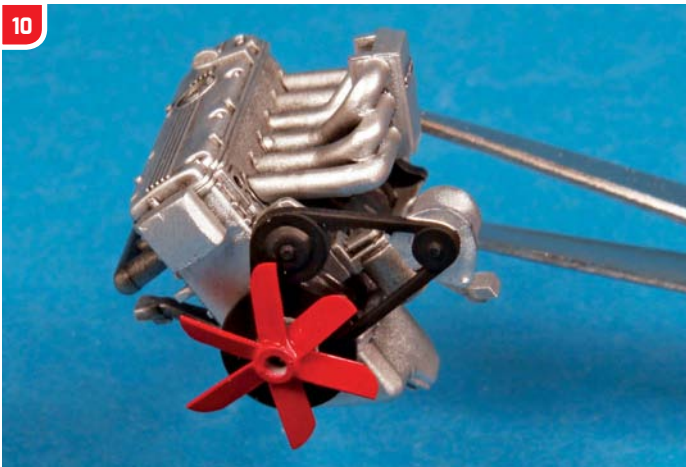
7 The tips of the blades were then easily rounded with a finely graded Flex-I-File sanding stick.



▲ The blades were glued at an angle towards the shaft centre. Once all were in place the fan was given a coat of primer.



▲ This was followed by a coat of gloss red, which added a racy dash of colour to the black and aluminium-coloured engine.



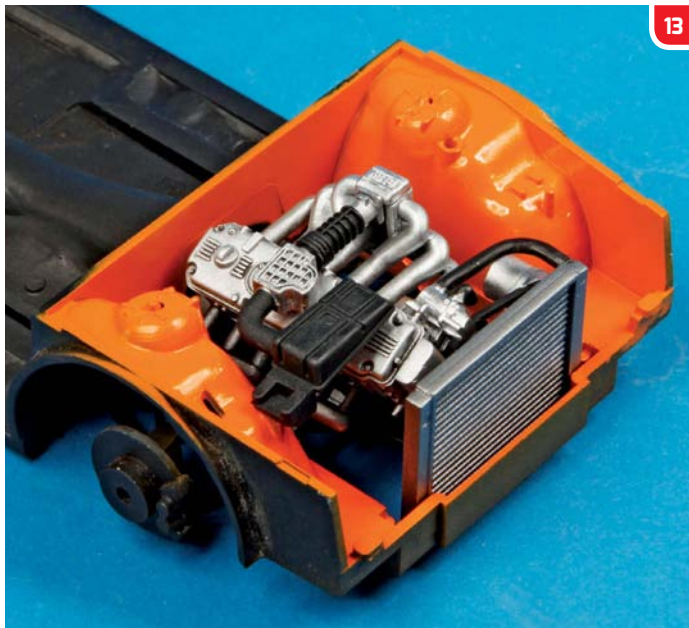
▲ The power unit complete with the radiator fan was an impressive sub-assembly, ready for instalment.



Orange was applied to the engine compartment, as this was going to be the car's main colour.



▲ The 3.5lit engine was then installed carefully and connected to the drive shaft.



▲ Next, the radiator was attached in front of the engine. Sadly, it covered much of the cooling fan...but we know it's there!

were the rubber parts as hoses. Next, the engine and other metal components were given a wash of black oil paint to make it look somewhat grimy and to highlight the details of the bright aluminium surface... the wash made a big difference. Before the engine block could be installed, the engine bay was painted orange as the rest of the car would later be. It's vital to have a clear plan of which order things should be tackled when detailing and painting a cramped area such as this, because some parts will be impossible to reach once they are installed.

Detailing the engine

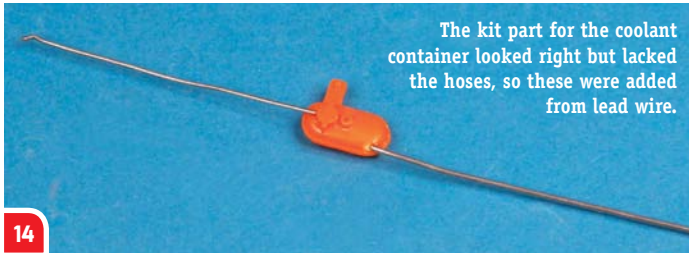
With the engine block in place, the detailing could begin. In

preparation for this, sections of lead wire were prepared for ready use. Four different thicknesses were selected after studying reference photos. These received a coat of primer and were then painted black, yellow, green, blue and red to simulate different electrical wires and hoses.

First to be approached for detailing was the container for the coolant fluid. This came as a decent kit part, but in reality two hoses and a wire should be connected to it. Holes were drilled for these and lead wire was installed. The unit was then primed before it was hand-painted with black and white, and copper for the lid.

Next, a





The kit part for the coolant container looked right but lacked the hoses, so these were added from lead wire.

14



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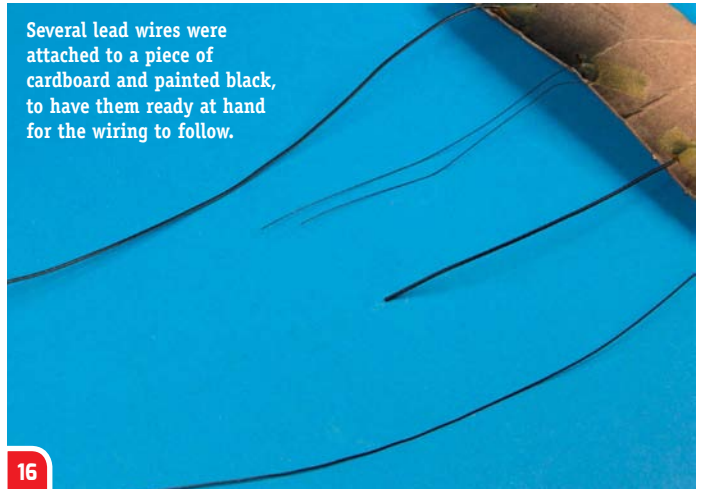
▲ Careful hand-painting brought out the details, and reference photos were used as a guide.

cooling fan for the radiator had to be built from scratch as none was included in the kit. It would be barely visible ultimately, but still made an accurate and pleasing addition. Fan blades were made from plastic strip which was cut to equal lengths, and the top edges were rounded off with the help of a sanding stick. Once all the blades were in place the unit was primed and painted gloss red, which added a vivid touch of colour.

Cool running

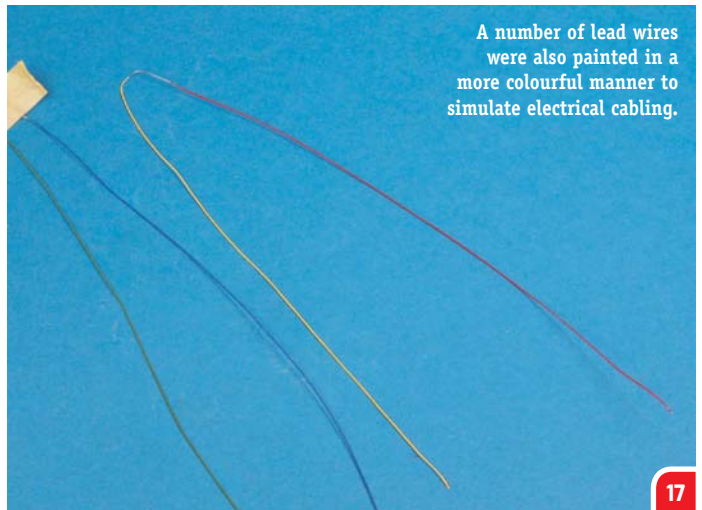
The radiator was then installed in front of the engine, and

connected to it with one of the kit parts. One of the hoses from the coolant tank was then attached to it in accordance with a reference photo. The same image showed a package of electrical wiring running along the firewall. To replicate this, lengths from the prepared selection of wires were cut and twined together. To mimic the gloss black electrical tape that held the wires together, strips of masking tape were coloured with a broad felt pen and then wrapped around them. The package was then attached to the firewall with CA glue. ▶



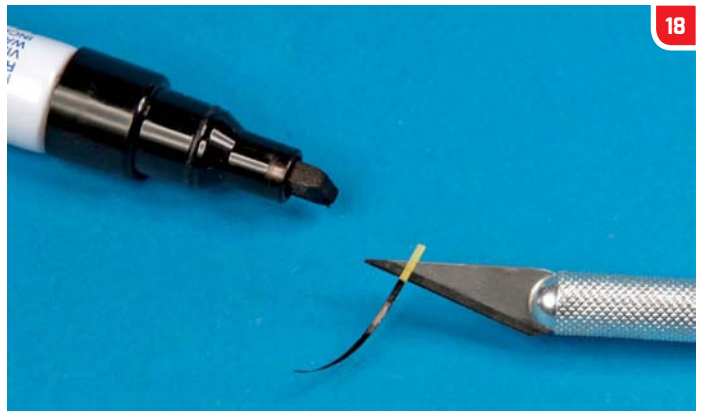
16

Several lead wires were attached to a piece of cardboard and painted black, to have them ready at hand for the wiring to follow.



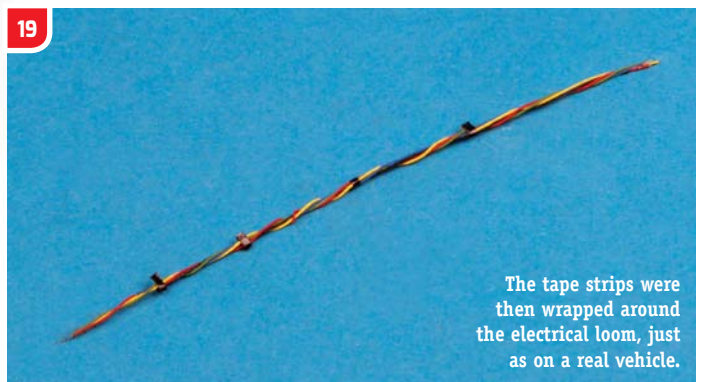
17

A number of lead wires were also painted in a more colourful manner to simulate electrical cabling.



18

▲ A quick and easy way to simulate glossy electric tape is to use strips of masking tape, 'painted' with a felt pen.

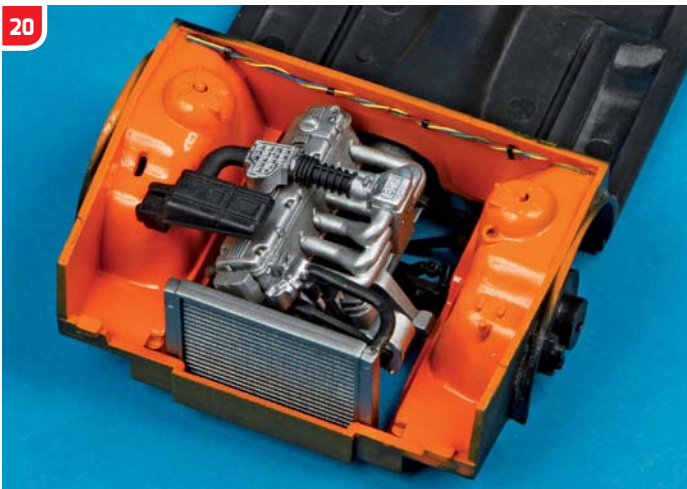


19

The tape strips were then wrapped around the electrical loom, just as on a real vehicle.



20



▲ The wiring loom was then attached to the rear firewall of the engine compartment, with CA glue.

21



▲ A round socket was scratch-built from a piece of plastic rod, and lead wire was attached. It was then glued in place, just beside the engine top block, and painted black with a fine brush.



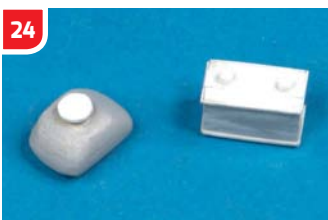
22

▲ There was no battery or washer fluid container in the kit. They were created from layers of styrene sheet.



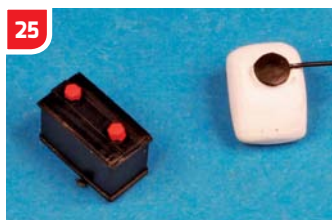
23

▲ The fluid container was then sanded into shape and the box's edges were softened with a sanding stick.



24

▲ The lid for the container was stamped from styrene sheet with a punch-and-die set and the battery connectors were from plastic rod.



25

▲ Once painted, these simple items looked convincing. A hose was added to the washer fluid container.

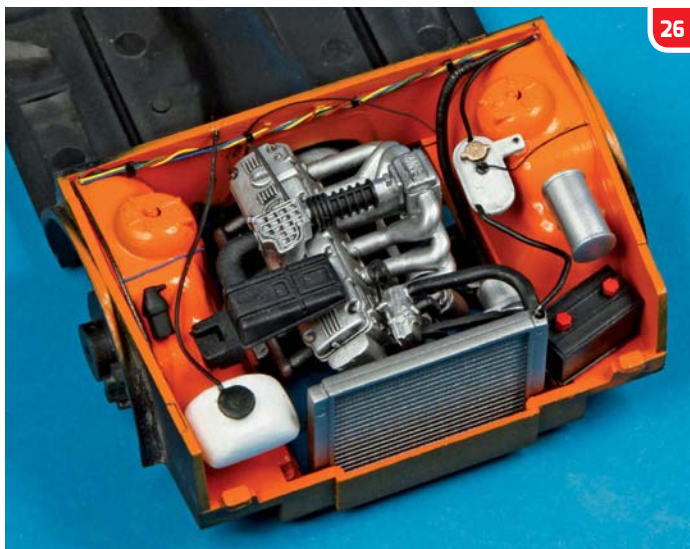


Further wiring was created with different thicknesses of the lead wire. Another type of hose evident in the reference photos was a ribbed example. This was created by winding thin wire around a thicker length of wire, glued at the ends to prevent it from sliding off. It could then be painted black and installed in the engine bay.

At this stage it all began to look more crowded but two major components missing in the kit were the battery and the windscreen washer bottle. Here, styrene plastic came to the rescue. For the battery, a box-shaped design was created

from wide strips. This was further detailed with narrow strips to simulate the rims at the top and bottom. The cord connectors were made from an octagonal piece of rod, cut to a few millimetres in length.

The washer bottle required a little more work. To build up volume, several layers of thick styrene sheet were glued together. When dry, they were sanded with a coarse sanding stick to roughly achieve the proper shape. This was followed by a coat of diluted putty to smooth the surface. The lid was also made from styrene, punched with a circular tool.



26

▲ When installed they filled the obvious gaps in the front area of the engine compartment.



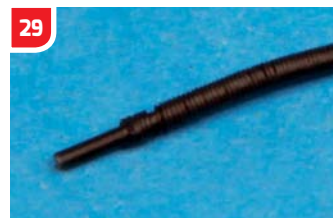
27

Reference photos also showed a flexible ribbed hose. This was created by winding thin wire around a thicker example.



28

▲ CA glue helped to secure the thin wire to prevent it from sliding off the thicker core.



29

▲ The hose was then painted black and was ready for installation.

Both units were painted black and white respectively and were ready for installation.

The final component to be added was a circular socket with in- and out-going wires in two diameters, sitting just beside the engine top block. The socket was cut from styrene rod, and the

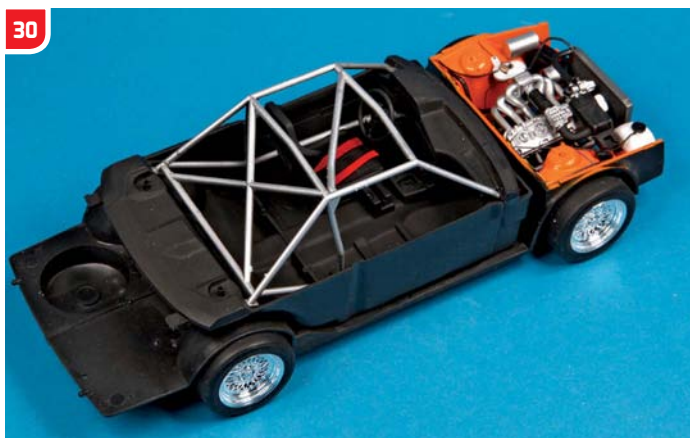
two wires attached from each side. The unit was painted black and the wires cut to a suitable length and carefully glued in place with CA.

Journey's end

With the engine and its wiring and plumbing in place, the

engine received further washes and was considered completed. The interior of the car was left as it came with the kit, apart from seat belts made from lead foil. The body was then attached and the area surrounding the engine compartment was painted satin black. Clear parts were painted

red and orange from the inside and carefully installed. Other exterior details such as the wing mirrors and licence plate were also added, and chrome details were hand-painted. The bonnet was left off as a separate part to allow the engine to be displayed properly. ◻



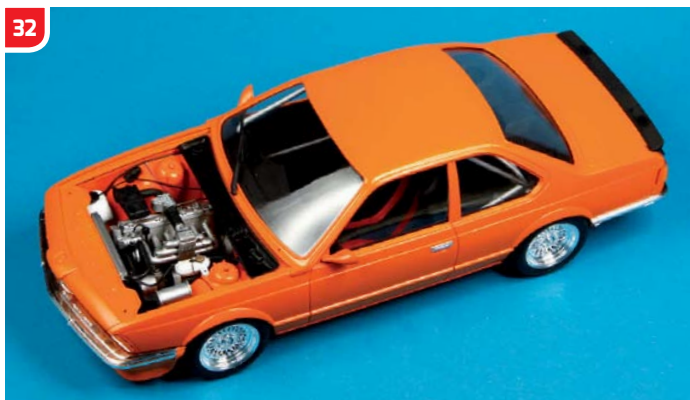
30

▲ With the engine done, the rest of the construction continued. Here, the interior and roll cage have been attached.



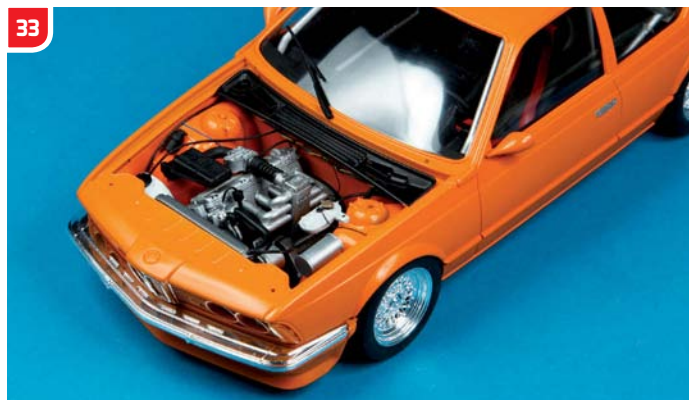
31

▲ The car body was airbrushed with Tamiya acrylics in several thin layers to obtain a smooth finish.



32

▲ The finished BMW 635CSi model: its bonnet was left off to expose the much-improved engine bay detail.



33

▲ The engine compartment looks busy with all the wires and hoses, although it could have been detailed even further if desired.



▼ Tarangus 1/72 Saab J29 Tunnan, by Anders Isaksson



▲ Tamiya 1/72 Mosquito B Mk.IV, by Anders Isaksson



▼ Dragon 1/35 OT-34, by Andreas Grewin



▶ Bronco 1/144 Type VIIC U-boat, by Anders Isaksson



◀ Wingnut Wings 1/32 Fokker D.VII, by Mikael Terfors

▼ Jon Smith Modellbau 1/16 World War One German Soldier, by Mikael Terfors



▼ Tasca 1/35 'Jumbo' Sherman, by Andreas Grewin

Metal finishes are vital for aircraft modellers who wish to build across a broad spectrum. Here's how to get flawless results



Model Metallurgy

Achieving a realistic bare-metal finish is often considered one of the most challenging tasks for modellers.

For many years, the choice of paints was limited to basic staples such as silver or gunmetal, but not much more. A way around

this for those who wanted an ultra-shiny finish was to use real metal foil to cover the model, but this was a tedious and difficult process. The major problem with most metallic paints is that the pigment is too coarse, which can result in an unrealistic appearance...but then

Alclad II came into the picture. This manufacturer specialises in metallic lacquers and has become the major brand for both aircraft and car modellers, and offers a wide range of metallic shades. The bonus with these is that they come pre-mixed, ready for use and have an extremely

fine pigment which resembles mercury; they are much thinner in their consistency than normal enamel-based paints.

Preparation

It's crucial to give the model an absolutely smooth surface if it is to receive a natural metal finish.

▼ The built model is seen with the canopy masked, ready for paint. Note that smaller details were left off for separate painting.

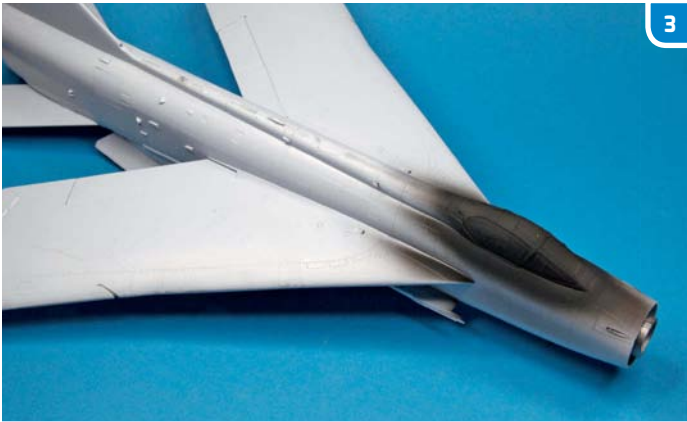


1

▼ A selection of mediums used for painting the Lightning. Primers, Alclad II, silver printer's ink and Humbrol Gloss Varnish.



2



3

▲ The canopy was painted black so the inside of the frame would not need to be painted, as the black would show through the transparent plastic.



4

▲ The model was primed with satin grey primer, which helped to reveal imperfections such as scratches and glue marks.



5

▲ Abrasives and sanding pads with very fine grades were used to polish the first primer coat and correct the flaws. A second layer was then sprayed and also lightly polished.



6

▲ Various Alclad II paints were considered but in the end, just four were used on this project; Polished Aluminium, Dark Aluminium, White Aluminium and Pale Burnt Metal.

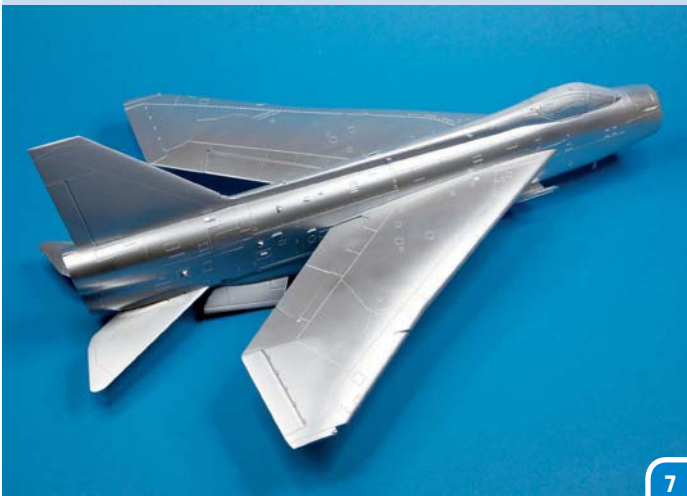
Any imperfections would make the model look less realistic, and here, flaws cannot be hidden under a dark coat of camouflage paint. Airfix's 1/48 Lightning was the perfect subject on which to demonstrate Alclad II. Once the construction of the model was completed, a first layer of surface

primer was sprayed over it. This coat revealed various scratches from sanding, as well as small traces of glue. These areas were smoothed with very fine grain sanding pads before a new layer of primer was applied. Primer always leaves a certain amount of dust on the model's surface

and although barely visible it usually forms a key for the paint layers to come, but the effect would have simply been a grainy surface when applying a metal finish. To prevent this, the entire model was polished gently with a 12,000-grade sanding pad and a piece of cotton cloth. For those

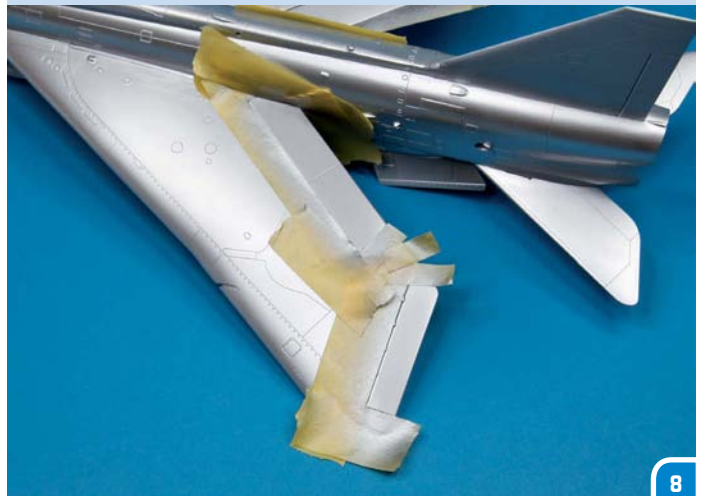
who desire a high-chrome finish the common recommendation has been to use a gloss black undercoat for Alclad lacquers. Alclad offers such a primer in its range but any black primer, followed by a coat of gloss varnish, will do. It's wise, though, to always test whether the

▼ After several coats of Polished Aluminium the model assumed a solid and shiny appearance. Fortunately, Alclad paints are fast drying.

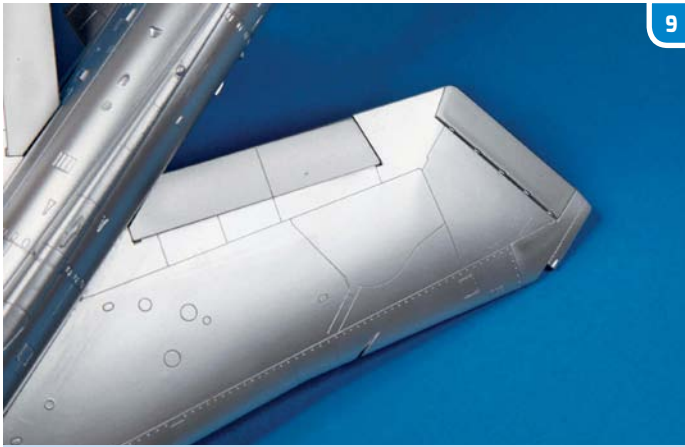


7

▼ Control surfaces were masked with Tamiya tape in preparation for the Dark Aluminium.



8



9

▲ The contrast was evident but not overdone. Should the effect have had too much contrast, a quick overspray of a lighter colour would have lessened it.



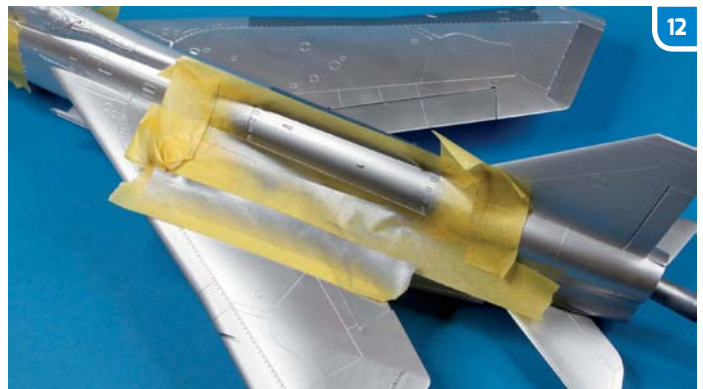
10

▲ Leading edges of the wings were masked in the same manner. Photos of real aircraft showed that these areas usually displayed this nuance on both wings.



11

▲ The result was a very neat demarcation between lighter and darker areas. The model should be inspected from various angles as the light will reflect differently.



12

▲ Panels on the fuselage were also masked and painted in a darker tone for variation. Selected small hatches were also masked accordingly and painted with subtly different shades.

chosen primer and Alclad are compatible and do not result in a reaction...lacquer is strong stuff!

Under pressure

The big secret in achieving a great result with Alclad, surprisingly, lies with the air pressure. Modellers who have previously expressed their disappointment with Alclad, saying they are often left with a grainy surface, have generally

used too high an air pressure. A general recommendation would be 1 psi (0.06 bar), as opposed to the more usual pressure for regular paints which is around 2 psi (0.13 bar).

Using a high pressure would result in lacquer particles bouncing off the surface and then drying in the air, before landing again. In reality, this would look like a small dust cloud and often occurs with regular paints as well

if the pressure is set too highly. As with any painting, tests should be carried out on a scrap model before one tackles the actual subject.

Initial shine

For the 1/48 Airfix Lightning, Alclad II Polished Aluminium was used for the basic coat. Several layers were subsequently applied, and care was taken to ensure that paint didn't build up too much on

the surface. Alclad paints do not provide proper density with just one layer, so repeated coats were required. During the painting it's vital to handle the model carefully and use a good stand for it, to avoid accidental finger prints which would mean extra remedial work such as sanding, re-priming and, of course, further painting. Fortunately, Alclad lacquers are fast drying, which minimises the risk of accidents.

▼ Pale Burnt Metal was used to simulate the discoloured area around the engine. This was applied freehand, without the masking of any panels.



13

▼ With all the metal done, blue was applied in accordance with the instructions. Tamiya XF-4 Blue mixed with gloss varnish was used here.



14

15



▲ The anti-glare panel was then carefully masked and painted satin black, together with the canopy.

For this model, a long paint brush shaft was inserted into the engine channels, to making it easy to turn and twist the subject during airbrushing.

Panel variation

During operational service, aircraft such as the Lightning often had panels replaced due to metal fatigue, damage, modifications or exposure to heat. On most aircraft of that era, a variety of metals were used and all had their own look. All these factors are evident when studying real aircraft. From a distance they may appear to be rather uniform but closer inspection will, in many cases, reveal a patchy surface. Additionally, bare metal aircraft will show the same signs of weathering as camouflaged examples, with oil stains, leaks and fuel spills. Thanks to the wide range of Alclad lacquers it was a fairly easy job to create these panel variations on the Lightning model. With the help of tape, individual panels were

masked after studying photos of actual aircraft for inspiration and guidance. Selected control surfaces were painted Dark Aluminium, while others received the lighter nuance White Metal. After two sessions of masking and painting the aircraft showed a much more interesting surface, but it was not to stop there. Alclad offers a shade called Pale Burnished Metal, a slightly yellow-tinged metallic colour perfect for simulating the often worn look of the metal surrounding the engine of jet aircraft. The panels were not masked for this, but instead the paint was applied freehand for a more random and non-solid appearance.

Extra colour

When all the metallic shades were in place it was time to give the model its unit identity. One of the kit's decal options was chosen (92 Squadron, RAF) and the colour profile for it showed that the aircraft had a blue spine and tail. This colour could have



16

▲ Oil washes were used to accentuate small details such as rivets. The opacity varied depending on the amount of thinner used.



▲ Washes were also applied liberally over panel lines and left to dry for approximately 30 minutes.

been applied before the metallic finish but it was considered easier to mask the metallic area instead of the spine and tail. Moreover, many layers of Alclad would have been required to cover the blue fields properly. To achieve the semi-gloss blue finish, Tamiya XF-4 Flat Blue and XF-22 Clear were mixed to a 60/40 ratio and applied with an airbrush.

Before moving to the decals, all

Alclad surfaces received a light coat of clear varnish. This was perhaps not necessary as the Alclad had a very smooth and glossy finish, but by adding a clear coat the surface would be protected during handling. ▶





18

▲ With the help of a cotton bud, excess wash was removed. Oil streaks and leakage can also be simulated this way, with a more concentrated wash mix.

The decals were then applied with the help of decal setting solution, and thankfully the kit markings printed by Cartograf performed brilliantly. Decaling was then followed by another coat of gloss varnish to protect

the entire model during the weathering process to follow.

Creating depth

At this point the model had really taken shape and already looked impressive with its shiny surface and colour contrasts. The only problem, though, was that it looked like a toy. As with most models, the quickest and easiest way to get a more worn



19

▲ Over larger areas, fine tissue was a better choice than the narrow cotton bud to leave fewer streaks.

and varied look was to employ washes...much-diluted paints, whether they are enamel, acrylic or oils. In this case, brown and black examples of the latter were mixed with thinner to varying consistencies and applied to panel lines. The model was then allowed to dry for approximately 30 minutes, before excess wash was wiped off with cotton buds and fine paper tissue.

The operation was repeated on selected areas for a heavier effect, around vents, the landing gear, and undercarriage bays.

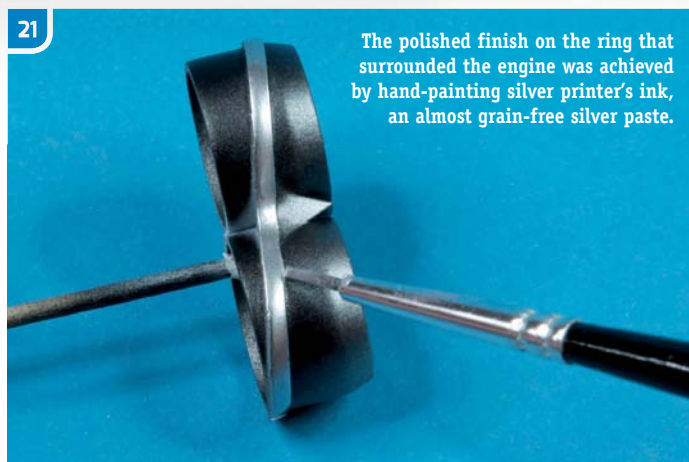
Adding character

As always, it was a matter of personal taste with how far the weathering was to be pushed on this model. With a number of washes the subject already appeared more life-like than



20

The result of the washes: panel lines took on greater accent and the entire airframe looked more used and less toy-like.



21

The polished finish on the ring that surrounded the engine was achieved by hand-painting silver printer's ink, an almost grain-free silver paste.

22



Another way to create a deeper and shinier appearance was to paint the kit part gloss black, in this case the nose ring...

23



...which was followed by a coat of Alclad and then gloss varnish for better shine.

24



▲ The beautifully detailed jet nozzles were also painted black; a light coat of Dark Aluminium was then misted over them to highlight the detail.

without any weathering. Another technique was incorporated, however, to 'push the envelope'... post-shading. As the name suggests, this technique helps to bring about a more three-dimensional look to the model, and will make it appear more like a dirty war machine in frontline service. The technique itself is simple, but does require a steady hand and plenty of patience.

The key to successful post-shading is to use an extremely thin mix of paint, in this case Tamiya X-19 Smoke, which has a greasy semi-gloss look. The airbrush was set to a very low pressure so that it could be used from a distance of only 5-10mm, and the mix was then sprayed in thin lines to accentuate the panels. The effect should be barely visible, as an overly-strong rendering will look exaggerated – but it was easy to repeat the operation in certain areas to vary the results. This was the case around the engine panels and vents, where exhausts and leaks

would most likely appear on the real aircraft. Another typical effect seen on many jet fighters are streaks on the wing surfaces, caused by hydraulic fluid and oil being smeared over the wing during high-speed flight. This trait was also simulated with the thin Tamiya Smoke mix.

Metal magic

So there we have it...an Alclad II bare metal aircraft, weathered with oil washes and post-shading techniques. A few finger prints were discovered after the handling of the model during the weathering (no-one's perfect!)...a reminder that protective gloves should be used at this late stage of the painting process. Fortunately, the prints could be wiped off with a cotton cloth. The final step was to give the entire model a very thin coat of Humbrol matt varnish to mute the shine, which was rather too prominent in some areas, and this immediately promoted a more realistic look.

25



▲ Post-shading was used to accentuate panels and bring them to life. A very thin mix of Tamiya XF-19 Smoke was used for this, at low pressure.

26



▲ Post-shading was applied more heavily around vents and exhausts to create a sooty and greasy look.

27



▲ To create chord-wise streaks on the upper wing surfaces, the thin Smoke mix was sprayed quickly from the leading edge backwards, to prevent the paint from building up too heavily.

One part that had been omitted until now was the engine nozzle covers, and these included a polished metal ring which is clearly visible on the real aircraft. To replicate the shine of this item, silver printer's ink was used. This paste-like paint is almost grain free and can be diluted with Humbrol thinner

to the desired consistency. With a fine-tipped brush, the ring was carefully painted by hand. Other small sundries such as the canopy, missiles and pitot tube, also left off during weathering to avoid damage, were then glued in place to complete this iconic British interceptor.



Realistic rendering of improvised winter camouflage can bring a whole new dimension to one's military modelling

Shades of White

When one examines the history of warfare, it's striking to see how flamboyant the uniforms and equipment often were, with shining armour or brightly coloured battledress. It was not until the mid or late 19th

century that main armies started to dull down their coloured uniforms and hardware. The reason for this change was, of course, the tactics and nature of the battle. Earlier, the visual impression was supposed to scare the enemy and make the army look impressive, and there was

no attempt at hiding. Secondly, on a large, open battlefield with no radio communications, it was vital to be able to recognise friend from foe. Today much has changed; the art of camouflage was developed extensively during World War Two, which inspired many new types of

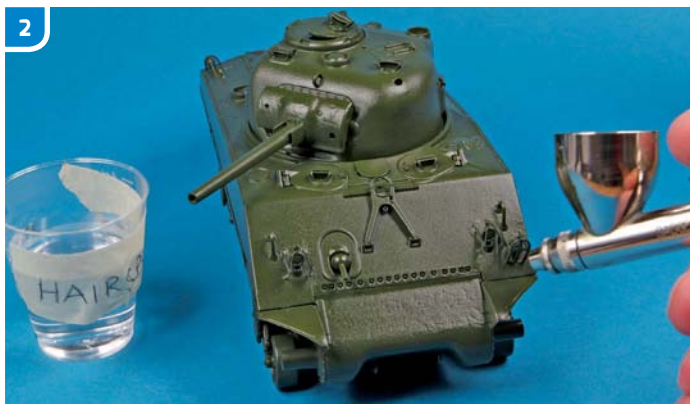
colour schemes. For instance, the German war department conducted advanced tests to develop the ultimate camouflage for its impressive Tiger II tank, and focussed on an intriguing three-tone pattern. The problem was, however, that many units changed their battle grounds



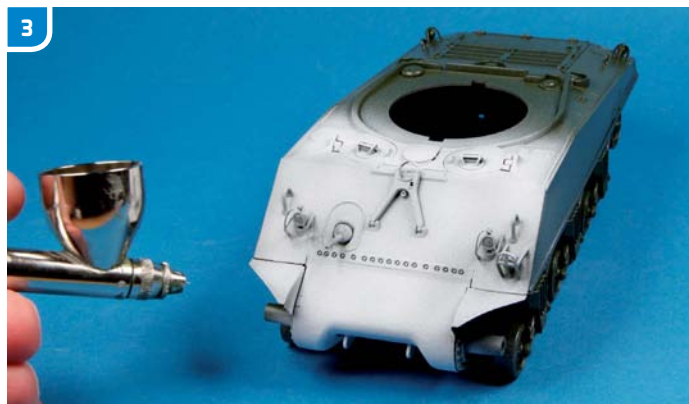
▲ All that was needed for this technique was hairspray, white acrylic paint, enamel wash, water, an airbrush and paint brushes.



▲ The model was given a solid coat of olive green before a generous layer of gloss varnish sealed the surface.



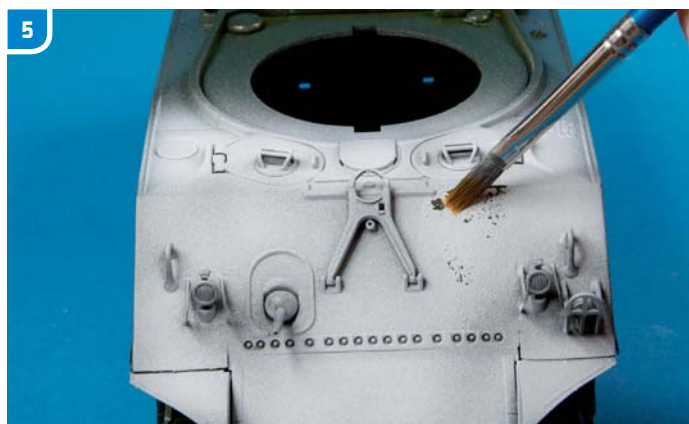
▲ Hairspray was then decanted into a cup and applied with an airbrush to work as a barrier. It's important to work on small areas at a time.



▲ A thin layer of acrylic white was then applied. Note that only acrylic paints will work for this technique.



▲ The hairspray was then dissolved with water on a wet, flat brush worked in a rubbing motion. This should be done carefully to avoid overdoing it.



▲ The flakes started to come off after further rubbing. Pressure and the amount of water determines how much paint can be removed.

and, while for instance a North African desert may look the same much of the year, parts of Europe will experience hot, dusty summers and icy, snow-laden winters. For the troops this was a challenge, as more or less everything pops out when placed on a white background. As a result, improvised white camouflage was applied over uniforms and vehicles. Everything from white

bed sheets, to white paint or lime washes were employed to quickly cover often dark surfaces. This was not precision work in any way, and there are photos showing crew members whitewashing their tanks with buckets and brooms!

Winter camouflage in miniature

There are many ways to simulate whitewash on models. Some

prefer to simply paint the white colour with a brush, washes can be used to simulate a thin and worn layer of paint, or the model can receive a solid white coat on which scrapes and chips are hand painted.

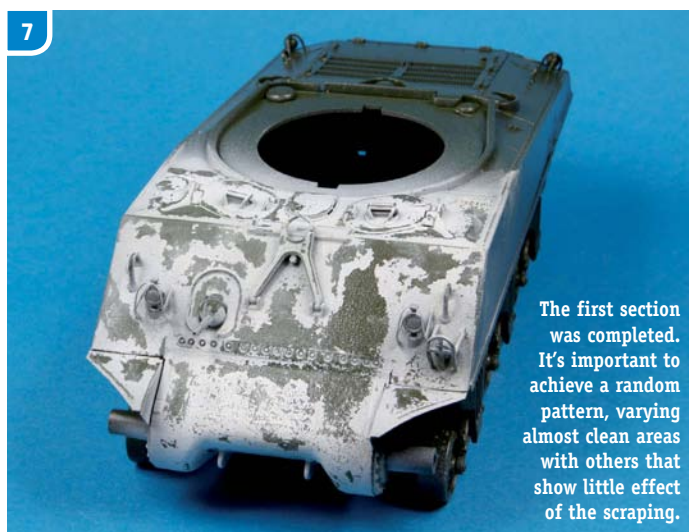
One of the most common methods today is the hairspray technique, which was used on the Sherman portrayed here. The effect of this technique was, in theory, very simple with the

hairspray working as a barrier between the base coat and final whitewash.

On this model, a base coat of olive green was applied and then sealed with a liberal coat of gloss varnish. The varnish would help to protect the surface for the coming treatment, and make the actual techniques easier to conduct than when on a matt surface. The modelling alchemy which defines this type of



▲ For smaller flakes and scratches, using a fine paint brush or toothpick is perfect as the effect is easy to control.



The first section was completed. It's important to achieve a random pattern, varying almost clean areas with others that show little effect of the scraping.



8

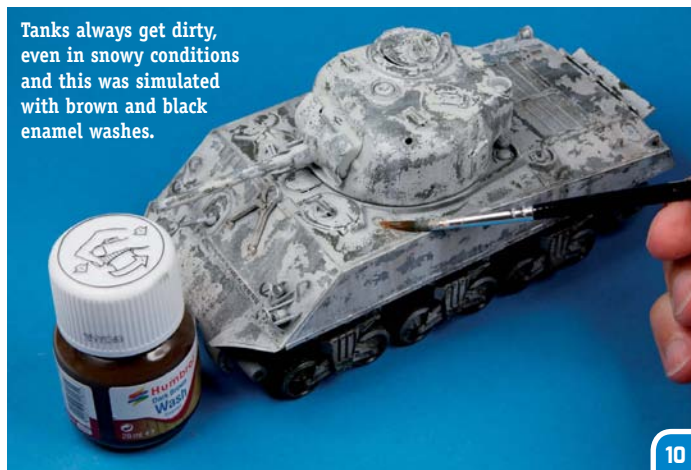
▲ The entire model was done and ready for the next steps. This work took approximately three hours in total.



9

▲ Humbrol White Enamel Wash was applied to mimic dissolved paint along the hull sides, and to make the chipped camouflage look less stark.

Tanks always get dirty, even in snowy conditions and this was simulated with brown and black enamel washes.



10

paint technique was used next. Hairspray was decanted from an aerosol can into a plastic cup and applied on limited areas of the model, as it is vital to work on small sections at a time. The hairspray was left to dry for approximately five minutes, before a thin layer of white was laid on top of it and left to dry for a few minutes. It was absolutely necessary to use acrylic paints, as they needed to dissolve with the hairspray.

The fun then began and the sought effect was to mimic a flaked paint layer, often seen in wartime photographs. A flat brush was dipped in water and rubbed carefully towards the

white surface. The water slowly dissolved the hairspray and paint, and flakes came off. The harder the rubbing, the more paint was removed. For finer scratches and smaller chips, a toothpick or a fine brush was used instead of the flat brush. When the first area of the model was tackled, the procedure was repeated on another small areas and all in all, five sessions were required to cover the entire model.

Washes

When the hairspray technique was completed, the model looked somewhat stark. To remedy this, Humbrol 34 Matt White enamel was applied to simulate



11

▲ The rubber areas of the running gear were painted with black-grey acrylic paint.



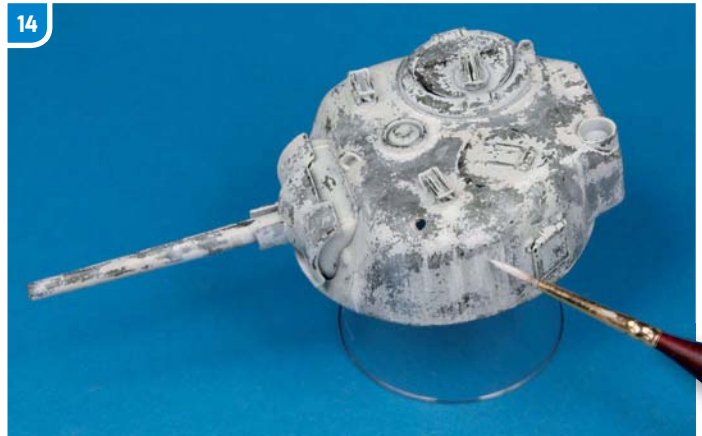
12

▲ The wheel rims experience constant friction against the tracks, which results in a shiny metal surface. This was simulated with silver paint.





▲ Bare metal along the edges of the turret hatches and hull were painted with a fine brush and dark grey acrylic.



▲ Again, white enamel wash was used to add touch-ups and to create variation on the turret's surfaces.

paint that had been dissolved and streaked along the hull and turret sides, as these water-based paints and whitewashes often were. The result looked more convincing but still a little too clean when compared to how a battlefield tank in winter would really look. Therefore, dark brown and black enamel washes were applied with care along the chassis - and as rain marks along the hull to simulate dirt.

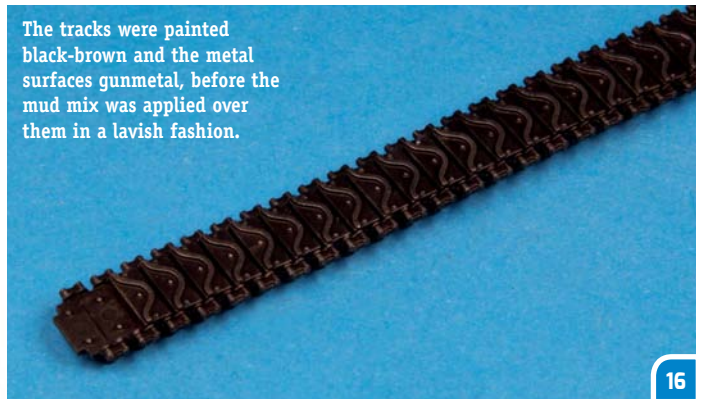
Wear, tear and mud

To create further weathering on the tank, small chips of bare metal were applied along the edges of the hatches and hull sides, with dark grey acrylic

paint. The wheels were painted rubber black and the rim edges silver to replicate bare metal, which was a result of friction against the tracks. Next was the application of mud. A mix of Humbrol enamel washes and weathering powders was smeared onto the chassis and running gear, and lower hull and then stippled with a stiff brush to create texture. Washes were also splattered onto the lower chassis and hull sides with a brush. The tracks were painted black-brown and dry-brushed in gunmetal before the same mud mixture was brushed liberally onto them and left to dry, before the excess was wiped off with a cloth.



▲ A mud mix was created from different coloured enamel washes and weathering powders, and then stippled onto the model.



The tracks were painted black-brown and the metal surfaces gunmetal, before the mud mix was applied over them in a lavish fashion.



▲ The finished hull and running gear looked very convincing once the mud was applied.



Old-school techniques for the replication of wooden fuselages shouldn't be ignored

A Slick Approach

Some of World War One's most prolific aircraft were renowned for their wood-clad fuselages... which in fact comprised very thin veneer doped with varnish.

The tone of this veneer could vary from a very pale sand colour to red-brown, and has always intrigued the modeller in terms of mimicking its complexities. There is, however, a simple technique for creating a realistic

wooden surface, which works well for scales from 1/72 to 1/32. This technique didn't require any special paints or tools. All that was needed were acrylic paints, oil colours, gloss varnish and brushes. For the acrylic, which would form the base coat, a light buff shade was selected and for the oils, red-brown and dark brown were most suitable. For those in a hurry, acrylics can also be used although the

short drying time makes it more difficult to exploit this technique fully. As for gloss varnish, it was a question of personal taste, and here, Humbrol Gloss Varnish was a safe choice.

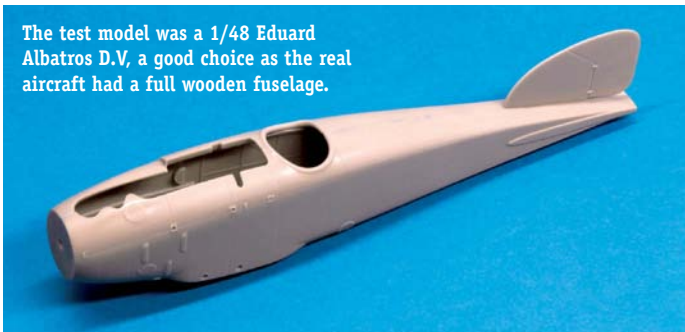
Preparation

For this example, the fuselage of an Eduard 1/48 Albatros D.V was assembled. The basis for the wood pattern was then applied with an airbrush in several thin layers. For greater variety, the panels could be painted lighter and darker side-by-side, but in this case a solid buff colour was employed. This was sealed by a coat of gloss varnish and set to dry properly overnight.

It was then time to create the

actual wood grain pattern. The first step was to apply a layer of red-brown oil paint over the entire fuselage, with a flat brush. This coat was then gently wiped off with paper tissue, but ensuring some of the paint was still left to create subtle colour variation and depth. Next, the dark brown oil colour was applied randomly in small dots over the surface; then the crucial step came. A stiff and rather coarse brush was used to smear the oils over the fuselage in a horizontal motion, to create streaks which would represent the wood pattern, and also to emphasise panel lines. This effect can be repeated for a stronger impression, or

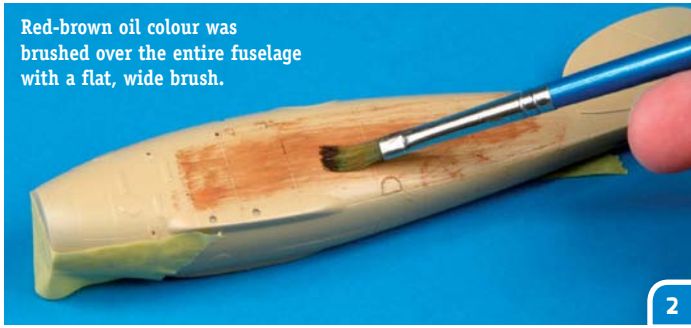
The test model was a 1/48 Eduard Albatros D.V, a good choice as the real aircraft had a full wooden fuselage.



A sand-like colour made up the base coat for the wood and was applied via airbrush.

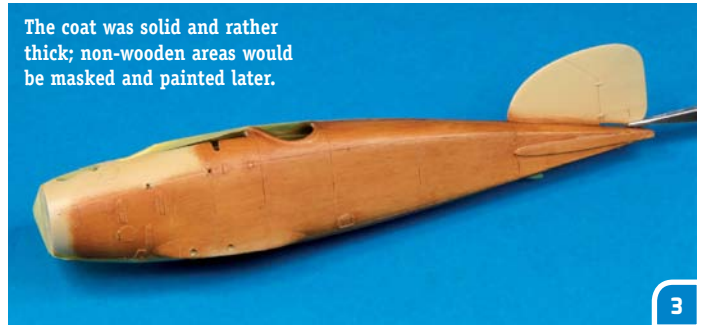


Red-brown and dark brown oil colours were chosen for the wood grain. The colours varied greatly on the real aircraft.



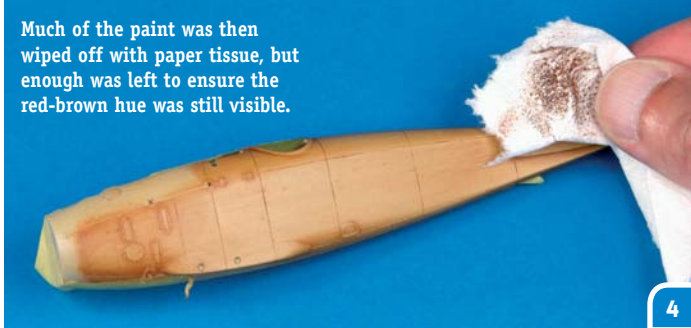
Red-brown oil colour was brushed over the entire fuselage with a flat, wide brush.

2



The coat was solid and rather thick; non-wooden areas would be masked and painted later.

3



Much of the paint was then wiped off with paper tissue, but enough was left to ensure the red-brown hue was still visible.

4



Small dots of dark brown oil colour were applied randomly over the surface with a fine brush.


5

the opposite, the oils could be wiped off if the effect was too stark. The fuselage was left to dry properly, which can take 24 hours or more, before a coat of gloss varnish was applied to seal and protect the surface.

Finishing

With the fuselage completely dry and glossy, it was time to apply the decals. They were simply cut from the sheet, dipped in water and then put in place; decal solution helped

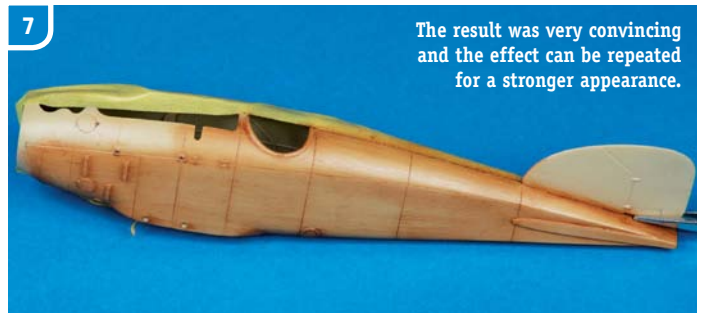
them adhere to the surface. Further gloss varnish sealed the surface and gave the decals the same shine as the wood. To create extra depth and to make the decals blend in, dark brown wash was applied over the

fuselage, concentrated mainly along the panel lines. This was a surprisingly simple technique which didn't take many attempts to master, though it's worth trying it on a scrap model before moving to the real thing. 



A stiff and coarse brush helped to create the wood grain by smearing the oil paint in a horizontal direction.

6



The result was very convincing and the effect can be repeated for a stronger appearance.

7



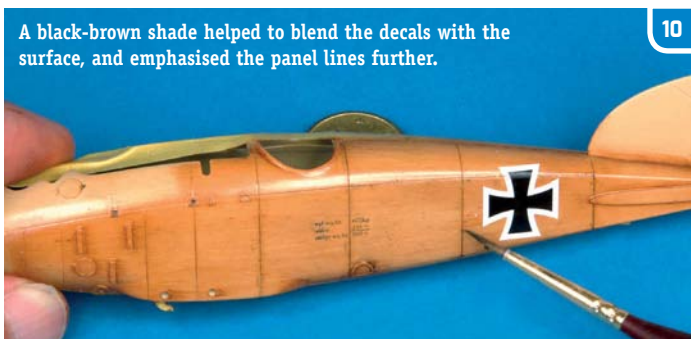
Gloss varnish made the fuselage look even more realistic, as well as sealing the oil paints.

8



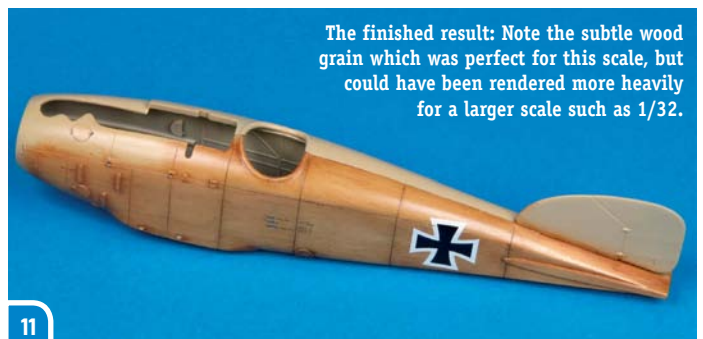
Decals were applied with the help of setting solution, followed by another coat of gloss varnish.

9



A black-brown shade helped to blend the decals with the surface, and emphasised the panel lines further.

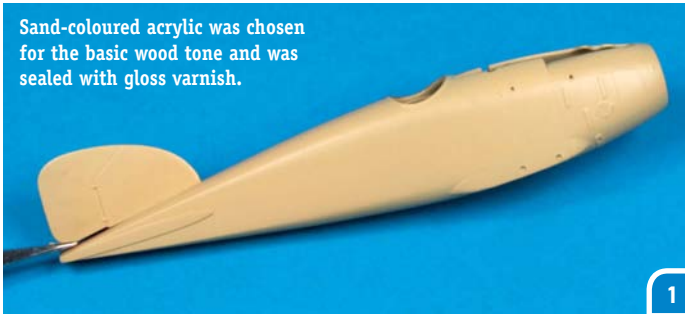
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The finished result: Note the subtle wood grain which was perfect for this scale, but could have been rendered more heavily for a larger scale such as 1/32.

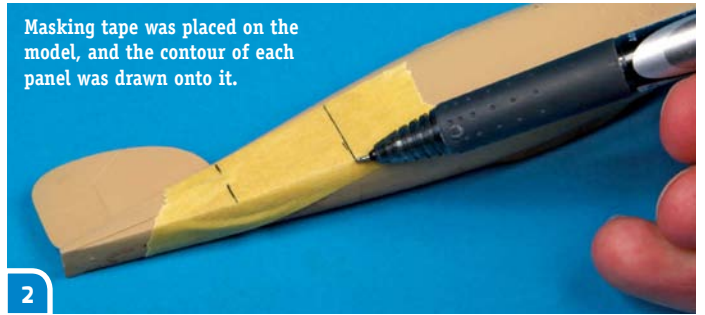
11

Sand-coloured acrylic was chosen for the basic wood tone and was sealed with gloss varnish.



1

Masking tape was placed on the model, and the contour of each panel was drawn onto it.



2

Realism on Paper

Decals can be a superb stand-in for realistic wooden finishes

If the previously-shown oil paint technique was considered old school, this one could be categorised as high tech in comparison.

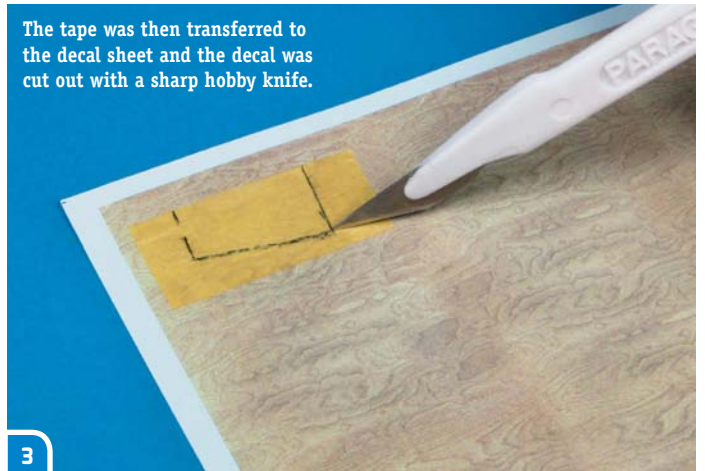
Wood pattern decals began to appear more widely on the market a few years ago, and have slowly begun to win modellers' confidence. For this example, the flip side of Eduard's 1/48 Albatros was used, and the decals were taken from the

Uschi Van Der Rosten range. This manufacturer offers different wood patterns, from coarse grain to smooth and knot free, and they work well on other items such as wooden furniture. In the UK, Uschi's products are distributed by Albion Alloys.

Basic layer

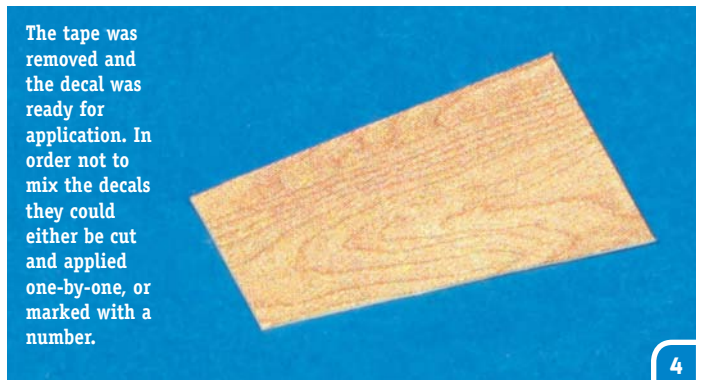
Achieving a good base coat was crucial for this technique, as the decals were slightly transparent;

The tape was then transferred to the decal sheet and the decal was cut out with a sharp hobby knife.



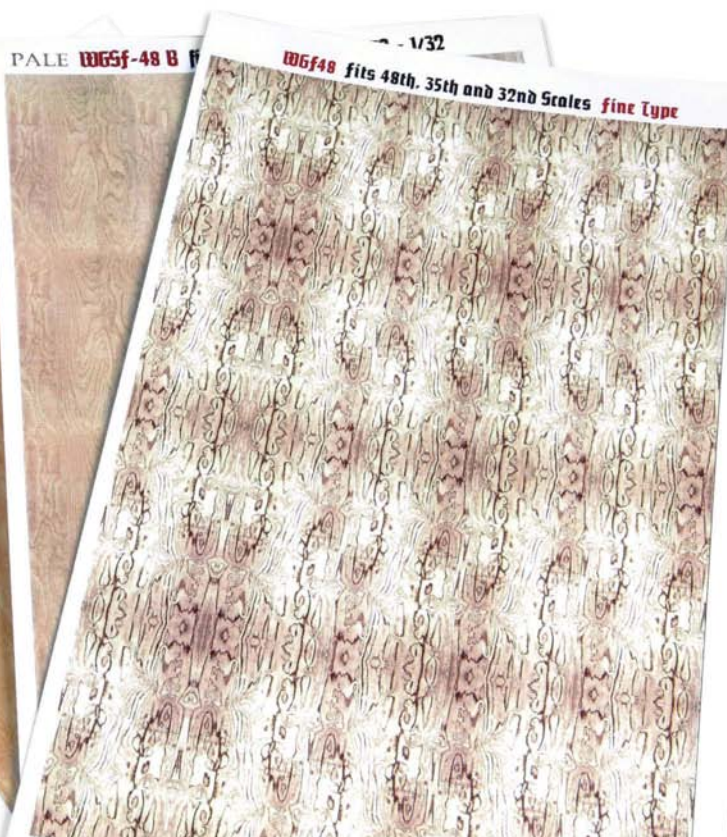
3

The tape was removed and the decal was ready for application. In order not to mix the decals they could either be cut and applied one-by-one, or marked with a number.



4

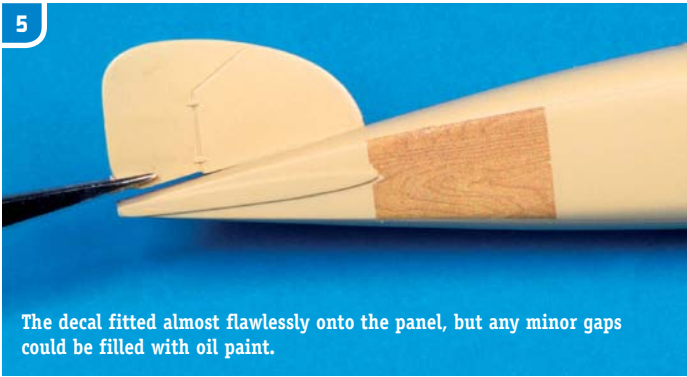
▲ The decal sheets from Uschi Van der Rosten came in a variety of patterns; more, or less prominent.



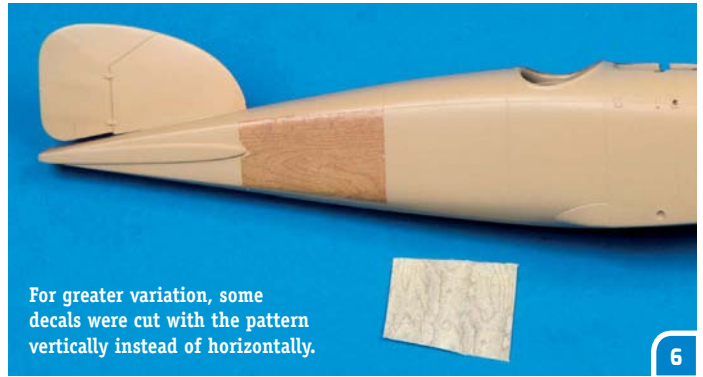
the darker the base coat, the darker the final result. Just as with the oil colour technique, the wood panels can be painted in different brown shades according to the modeller's preference, but here, a solid sand shade was chosen.

Templates and cutting

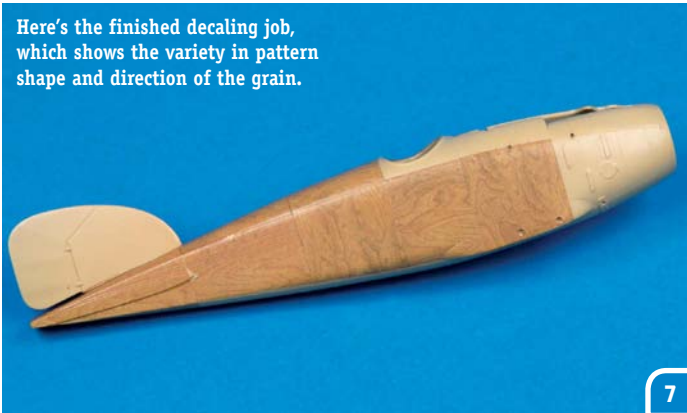
The tricky thing with the decals was that the sheets were generic, so they were not designed for a specific kit. This meant that they needed to be cut accurately to fit the fuselage panels, one by one. In order to cut the decals to the correct dimensions, a very simple method was adopted. Masking tape was placed onto the fuselage, and the contours of the panel were simply drawn onto the tape. The tape was then transferred to the decal



The decal fitted almost flawlessly onto the panel, but any minor gaps could be filled with oil paint.



For greater variation, some decals were cut with the pattern vertically instead of horizontally.



Here's the finished decaling job, which shows the variety in pattern shape and direction of the grain.



Another coat of gloss varnish helped to protect the decals for the coming layers of paint.



A thin coat of red-brown oil paint was applied over the wooden decals to create a warmer tone and variety.



A concentrated mix of dark oils was brushed liberally along the panel lines.

sheet and the decal could be cut along the drawn lines, and the tape removed.

It was then time to transfer the decal onto the model, and this had to be done with much care as the decals were extremely thin and easily broken. The decals were soaked in water and applied with a soft brush to carefully push them into place;

decal setting solution helped them conform. To vary the pattern, some decals were cut so that the grain was vertical instead of horizontal.

Post-treatment

With the decals in place, gloss varnish sealed the surface in preparation for post-treatment. To achieve a warmer tone to the

wood, a thin coat of red-brown oil paint was stroked over the entire fuselage. To create more depth, this was followed by black oil paint, applied heavily along the panel lines, but was deliberately allowed to bleed outside the lines. A cotton bud was then padded against the surface, to soak up much of the paint, but also to blend it into

the panels from the panel line inwards. The effect was subtle but clearly visible. Gloss varnish finished it all and the fuselage was ready for other decals. The wood decals may have been more time consuming and difficult than the oil paint technique, but the reward was an ultra-realistic finish, hard to discern from the real thing.



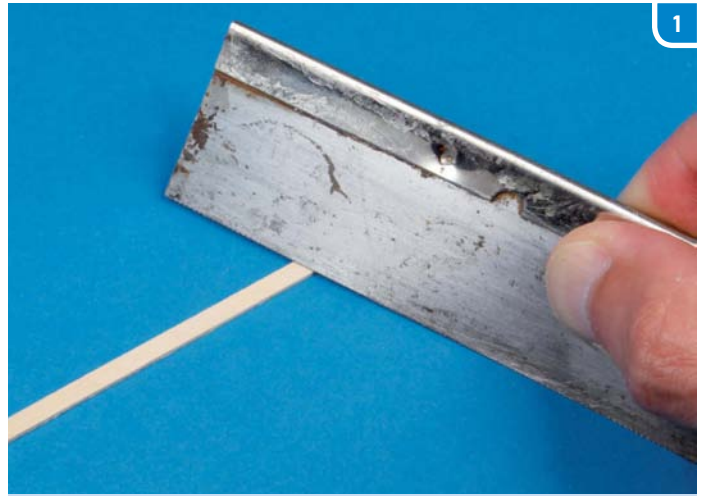
▲ A cotton bud was then padded onto the surface, to absorb much of the paint and to blend it into the panels for greater depth.



▲ The finished fuselage looked splendid. A gloss coat sealed the surface and it was ready for further decaling.



▲ A selection of materials used for the sample builds. Bass wood can sometimes be replaced by coffee-stirring sticks.



▲ The planks were scraped with a saw blade to create a coarse grain pattern. Movement from side to side can vary the pattern.

The Signs of Time

Aged and weathered wood can bring an ultra-realistic dimension to dioramas and vignettes. Here's how to do it

Surprisingly, it's not common for modellers to use real wood, although it has for a long time been utilised by railway specialists. One explanation could be that real wood is not

generally supplied with kits, but also that suitable wood can be more difficult to obtain in hobby shops. Diorama modellers however, are using real wood more frequently and this section will describe a simple, but

effective, way to create faded and chipped wood for buildings, fences and other wooden details.

Materials

Firstly, an appropriate wood type should be selected. A material called bass wood comes in a wide range of shapes and can be found in well-appointed hobby or railway shops, or even on the internet. If bass wood still proves elusive, wooden coffee-stirring sticks can work well. The right tools and paints

should also be organised; a hobby knife, saw blade, 3M Scotch-Brite pads, office tape, acrylic paints, cotton buds, washes, thinner and brushes.

Preparation

To give the wood a coarse and irregular surface, it was first scraped with the saw blade to create a prominent grain. This was followed by several strokes with Scotch-Brite to create finer grain and even out the surface. The wood was then treated





▲ Scotch-Brite was then used to create a finer grain and to even out the torn edges of the planks.



▲▼ Enamel washes were perfect for creating various wood tones, from grey to brown, pale to dark.



▲ A crucial step was to soak the planks in thinner, to hinder the adherence of subsequent paint layers.



with various washes to create a suitable colour. In this case grey, black and brown enamel washes were used, and applied with a wide brush. For a darker look, this operation could be repeated several times. The next step was crucial; the wood was soaked in thinner in order to

make it difficult for the acrylic paint to stick to it...which may seem odd but was actually vital. Then, with the wood still slightly damp, it was time to add the acrylic paint. In this case, a couple of green tones were used and these were applied by padding them on with the help

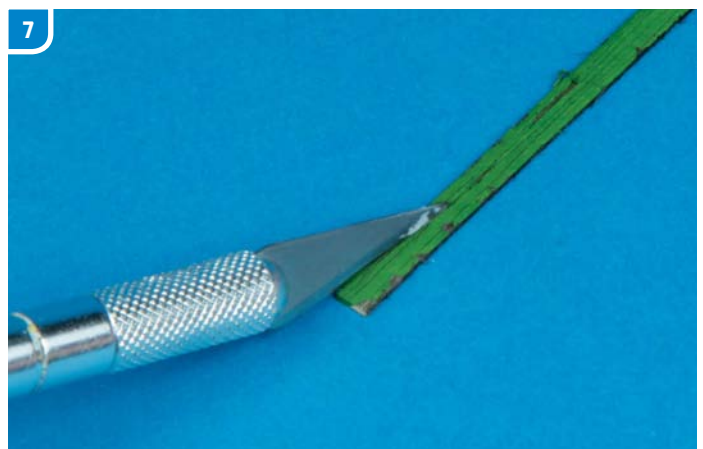
of a cotton bud, to build a thick layer which is necessary for this technique. It's important to vary the tones and to use pale colours in some areas, for instance by adding white. It can be tedious to prepare all the planks but it's easy to work in stages, preparing a few at a time.

Chipping

The planks were left to dry for approximately 20-30 minutes before the next important step. With the help of a hobby knife, the paint layer was cracked vertically from top to bottom, in order to help it fall off more easily. Then it was time for



▲ Acrylic paint was padded on in a thick layer with use of a cotton bud. Various tones were added for a faded impression.



▲ A hobby knife was used to cut vertical cracks into the thick layer of paint. This would help the paint to come off.



▲ To peel off the paint, tape was pressed gently onto the surface. It's important to start with light pressure to avoid over-accentuating the effect.



▲ The paint comes off and sticks to the tape, leaving very realistic flakes behind, and revealing the underlying wood.

the 'magic trick'. Regular office tape was wrapped around two fingers and then gently pressed against the planks. The acrylic paint would stick to the tape and peel off, thanks to the cracks and to the fact that the thinner had prevented it from sticking to the wood properly. The effect was very realistic chipping,

which can be controlled by the amount of pressure put on the planks with the tape.

With the planks prepared, it was time to cut them to the desired length and shape. This could have been done in advance but that would have resulted in many short planks, meaning more work. In this

case, an arch-shaped wooden gate was created by simply cutting the planks with use of a paper template. White planks were also prepared for variation, and a different type of beam was selected for the posts. Hinges were made from brass wire and a simple latch from plastic rod. The final touch was to add the

impression of nail heads by pressing the point of a needle into the wood. This technique was simple and quick to master; its field of use is wide, especially for diorama modellers, but also anyone who wishes to create a well-worn truck flatbed by replacing the kit's styrene planking. □



▲ The planks were cut to suitable length and shaped for an arch-profile gate door, with help from a paper template.



▲ The finished gate looks convincing and would fit perfectly into a diorama or a vignette.

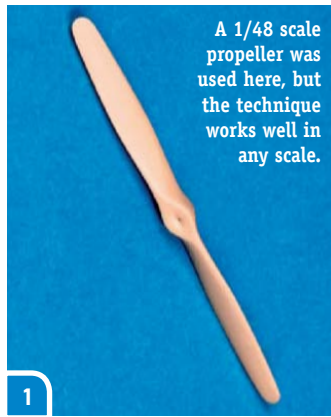


▲ The same technique was used on a wooden fence, in this case with coarser planks, to portray distortion on the edges.



▲ This close-up shot shows how realistic the effect can look. Note the nail head marks in the white planks and the latch made from plastic rod.

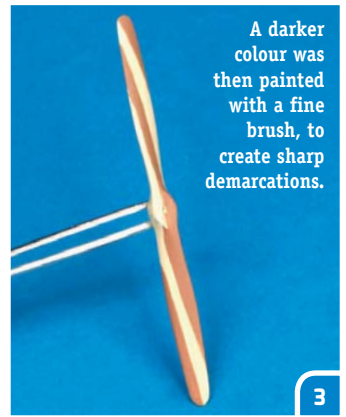
Replicating a laminated wooden propeller is a skill all World War One modellers should learn



A 1/48 scale propeller was used here, but the technique works well in any scale.



A first coat of sand yellow made up the base coat for the wood, to represent lighter-coloured laminations.



A darker colour was then painted with a fine brush, to create sharp demarcations.

Two-Tone Propulsion

Almost every Great War aircraft, as well as many from the 1920s and 1930s, used laminated wooden propellers. These props were left unpainted except for clear gloss varnish, which offered protection from the elements. Re-creating laminated wood is largely the same technique as with any wooden surface, using oil paint. The difference, however, lies in the basic coat...which portrays the actual laminations.

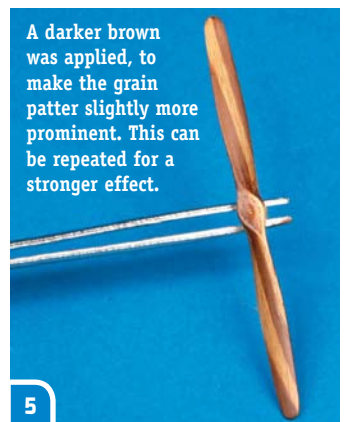
All about layers

To replicate laminating, the entire propeller was painted with sand yellow Humbrol acrylic, in several thin layers. This was then followed by a darker, red-brown shade to simulate the second type of wood. It's vital to make the borders between the colours sharp, as on the real thing, so a thin brush and steady hand were required. Ambitious modellers could also mask the borders with tape and add the two colours with an airbrush.

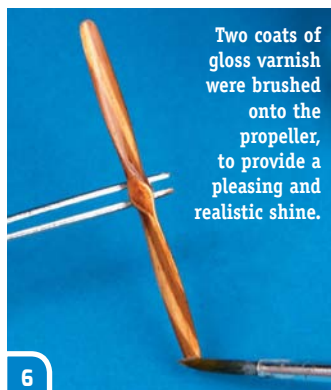
It was then time to create the grain pattern. A red-brown layer of oil paint was applied to the propeller with a stiff brush, for an initial subtle grain. Next, a darker brown was added, ensuring the brush left clear marks in the oil paint, to represent the actual grain. The propeller was then left to dry overnight before two layers of clear gloss were brushed over it. The result was a delicate and shiny little piece, with the same rock-hard look as the real thing.



The red-brown oil layer helped to render subtle grain patterns and gave the propeller a warmer tone.



A darker brown was applied, to make the grain pattern slightly more prominent. This can be repeated for a stronger effect.



Two coats of gloss varnish were brushed onto the propeller, to provide a pleasing and realistic shine.



The final result looked very convincing. Any maker's decals could be applied at this stage.



▲ A typical plastic four-figure set from Dragon, where the subjects comprise approximately six pieces each.



▲ High quality single figures are generally more exclusive and expensive, such as this World War One pilot in white metal from Latorre Models.

Populating the scene

Convincing figure painting makes all the difference when creating vignettes and dioramas

When studying a plastic model, it's easy to be amazed and impressed by the detail or the realistic finish; rust, dirt, soot, oil and other weathering can all contribute to the result.

What the viewer often lacks, however, is something to relate

to which affirms the actual size of the model and its full scale equivalent.

Including one or several figures brings the model to life and, since everyone knows the average human's dimensions, they can immediately appreciate the size of a model, for instance, where a crew member stands in

a tank turret hatch, or where a mechanic climbs onto a wing of an aircraft. There are many books on figure painting available, and the subject is a genre all on its own...and many hours can be devoted to fine-tuning one's skills. In this section it will only be addressed as a first step to choosing the right



Model by Lars Brändström



▲ There are also smaller and cheaper offerings; here's a beautiful little 1/48 mechanic from Hecker & Goros.

▼ One of the relatively new resin figure brands is Tommy's War, which offers the highest level of detail and casting. The firm fills an important gap in the under-served World War One market.



▲ This beautiful Luftwaffe pilot figure from Zoukei-Mura is designed for its He-219 kit. Resin casting has come a long way!

materials, construction, easy conversions and basic painting.

Materials, brands and scales

Figures are mostly sold as separate sets, although kits of vehicles and aircraft sometimes include crews. The most common material is injection-moulded styrene plastic just as with regular kits, but resin and white metal are also common mediums. The benefit of plastic figures is that they are relatively cheap, easy to convert and most subjects are widely available. They usually come in between four and eight parts per figure and can be assembled with regular plastic cement. The downsides are that the detail can sometimes be a little soft, and poses are not always very natural. Plastic figures have come a long way in the past few years, though, and are constantly improving. Most mainstream manufacturers, such as Dragon, offer plastic figure sets but upcoming brands such as MiniArt, Masterbox, AFV Club and Bronco have really interesting and sometimes unusual sets in their ranges.

Figures made of resin are cast in fewer components than their plastic counterparts, sometimes all in one piece. The level of detail is unrivalled thanks to the casting method of using rubber moulds which are very flexible, and resin also holds sharper refinements well. Resin is a fairly easy material to work with, which makes these suitable for conversions and re-sculpting. The price of a resin figure, however,

often equals the price of a four- or five-figure plastic set. Just as with all resin, care has to be taken when cutting and sanding, as the dust is toxic and can cause eye irritation and even affect the breathing. Cyanoacrylate (CA) or epoxy cement is the best choice for assembling resin figures.

The resin figure market has blossomed in the past ten years and the standard today is generally very high, which is more than could be said for when the first sets were released. For armour and diorama modellers, the major brands today are Alpine Miniatures, Tank, Evolution, Royal Model, Stalingrad and Tommy's War, to mention just a few. The market for aircrew and mechanics is by far much smaller, but thankfully, also in a growing phase.

White metal is a traditional medium for figures which goes all the way back to the toy soldier era. It allows for very detailed casting in vulcanised rubber moulds, and its weight is appreciated among traditional figure painters. Converting white metal figures is more challenging compared to those in plastic or resin, and they are usually assembled and painted as they come out of the box. The metal can be polished for shiny surfaces such as medieval body armour, which otherwise would require careful masking and painting with metallic colours. The most common figures for plastic modellers are those that represent a body of troops or a tank crew and, conveniently, they are offered in the



▲ Regardless of medium, test-fitting is recommended. A quick and easy way to trial the assembly and pose is to use Blu-Tack.



▲ Mould seams on plastic or resin figures are easily scraped away with a hobby knife, followed by careful sanding.



Regular poly cement works perfectly for plastic figures, as it bonds parts by melting the plastic.



▲ Metal figures are cleaned up with Scotch Brite, used in a polishing motion.



▲ For metal parts, it's necessary to use cyanoacrylate or epoxy glue. Metal pins can also be inserted between the kit parts for a stronger bond.



▲ The most common replacement parts for figures are heads and hands. Hornet is the major brand with numerous variants, both military and civilian.



▲ To replace a hand on a figure, the original item is first cut off with a saw blade.



▲ The arm is then drilled out with a small bit in a pin vice. Take care not to crack the edge.



▲ A hand is then selected from a resin hand set, which usually offers a number of different poses.



▲ The replacement hand is then inserted and glued in place with cyanoacrylate adhesive.

common scales such as 1/72, 1/48, 1/35 and 1/32. Figure modelling, however, has long been a sub-genre of its own, conducted by what could be more accurately be described as figure painters rather than plastic modellers, where the figure itself becomes the model. These painters often have extremely high skill levels and artistic talent; they usually tackle more advanced historical figures rather than a simple crew member in plain-coloured overalls. Popular periods are the Medieval, Napoleonic era, the American

civil war and both World Wars are often depicted. Figure painters use a wider range of scales, mostly stated in millimetres, and these are mainly 54mm, 75mm, 90mm and 120mm.

Tools and assembly

The 'armour' required for figure assembly differs little to that needed for regular modelling. Plastic parts will need careful removal of mould seams, which is best done with a fine hobby knife and followed by sanding/filing if necessary. Minor filling of flaws between the different

body parts may also be necessary after assembly. White metal figures are usually very well cast and only show minor seams which can be removed with Scotch Brite and fine abrasive paper. Regular plastic cement would not work with metal, so

CA or epoxy glue must be used. For bigger parts it's recommended that holes are drilled and a metal pin is inserted to make the bond stronger. Resin figures usually require the least preparation. The casting seams are moderate, the parts are few and they are easily



▲► More advanced conversions such as this by Johan Fohlin include major surgery and sculpting of entire body sections, which takes a lot of practice... the result is impressive though, and helps to create a unique scene.



cleaned up in the same way as plastic items...and assembled with CA or epoxy glue.

Improving and converting

Figures can be altered in many ways to change their appearance or pose, to make them fit better into a specific situation; the biggest challenge, apart from actual painting, is to make the figure interact with the vehicle or other figures convincingly. The easiest and most common modification is to change the head for a new one (the Hornet range offers excellent heads, full of character), perhaps with a different expression, or different headgear. Hands can also be exchanged for new items which could be pointing, holding a cigarette or grabbing an item. Several manufacturers offer heads and hands in resin or metal, mainly for 1/35 and 1/32 (54mm).

Altering the actual pose of a figure does require more work and thought. In some cases limbs can be switched for others, but in most cases cutting and re-sculpting is necessary. This is an advanced skill that requires practice, but even small modifications can have a great effect. The most common materials for sculpting are Magic Sulp, Duro and Super Sculpey,

which are formed with sculpting tools and paint brushes.

Painting

Many modellers can achieve fantastic results with a model but find it hard to paint realistic figures, which is a common problem. It's rather like comparing the painting of furniture to painting a portrait, and it is truly an art form on its own. The painting of a plastic model and a figure do have some things in common, however... mainly the use of shadows and highlights. Just as washes and pre-shading creates depth on a model's surface, so does the use of lighter and darker tones to accentuate the three-dimensional effect on a figure. The best way to get an idea of these effects is to study the work of classic painters, such as Rembrandt and Vermeer for instance, who was a master of portraiture and the same techniques can be used for scale miniatures.

Figures can be painted with oils, enamels or acrylics. The first two mentioned were, for many years, used by nearly all figure painters, but the past decade has brought about drastic change in terms of choice of mediums and today, acrylics are the most popular. The theory is the same for all paints, although the actual



1 A good set of brushes will ease the painting process and it's worth spending a few more pounds on them. Here, sizes 00 to 2 are depicted.



2 ▲ For this tutorial, an acrylic flesh set from Andrea Miniatures was used, to make mixing and blending colours much easier for the less experienced.



3 ▲ A piece of metal foil was used as a palette, and the colours were mixed to the desired tone.



4 ▲ Consistency is everything when using acrylics. The paint should be very thin, but still not too watery. Experimentation is the key.





FIGURE BRANDS

The number of figure producers is vast, but here we offer a snapshot of those suitable for inclusion with vehicle and aircraft projects.

Accurate Armour: www.accurate-armor.com

Airfix: www.airfix.com

Alpine Miniatures: www.alpineminiatures.com

Black Dog: www.blackdog.cz

Brengun: www.brengun.cz

CMK: www.cmkkits.com

Dan Taylor Modelworks: www.dantaylormodelworks.com

Dragon: www.dragon-models.com

Masterbox: www.mbltd.info

Master Details: www.masterdetails.com

MDC: www.modeldesignconstruction.com

MiniArt: www.miniart-models.com

PJ Production: www.pj-production.be

Plus Model: www.plusmodel.cz

Royal Model: www.royalmodel.com

Tommy's War: www.tommyswar.com

Wee Friends: <http://eshop.friendshipmodels.org.uk>

Zoukei-Mura: www.zoukeimura.co.jp

Zvezda: www.zvezda.org.ru



▲ A white metal figure from Hornet was cleaned up and pinned to a base for easier handling.



▲ A first layer of flesh was applied, allowing the black primer to show through.

application is different and the technique briefly described in this section covers the use of acrylics. Basically, several semi-transparent layers, subsequently lighter or darker, are applied on top of each other, allowing the previous layer to show through to gradually tone a colour from dark to light, or vice versa. With oils and enamels the same effect is achieved, but by blending the colours into each other to create soft transitions, which can be done thanks to the long drying time of enamels and oils.

Regardless of whether the figure is of metal, plastic or resin, it should be covered with a coat of primer to help the paint adhere to the surface. White, grey or black are most common, but the benefit of using the latter is that it works as a shadow for the following layers of paint, as long

as the paint is kept thin enough to let the black show through.

Theory into practice

When the primer was dry on our example figure, the first layers of paint were applied, very thinly but enough to cover the surface without giving a completely solid layer. Next, a slightly lighter tone was mixed to serve as a first highlight. This was applied on areas that would catch the falling light; on a face it would be the nose, forehead, cheek bones, ears and lips. On a uniform, the edges of a pocket, folds and seams can be highlighted. The same goes for the shadows, but with a darker colour than the first layer of paint. Thin layers were applied under the nose, eyebrows, lower lip and under the cheeks for instance. On a uniform, buttons, folds and collars were details



▲ A first highlight immediately helped to bring out the facial features such as the nose, cheeks and chin.



▲ A second highlight further emphasised the features, and the eyeballs were painted carefully... as well as a discrete shadow.



▲ A third highlight was then placed on the nose tip, cheek bones, around the nose and on the tip of the chin.



▲ The same techniques were used for the uniform. A coat of Uniform Brown was applied, letting the black primer show through.



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The eyes have it

Painting eyes in miniature has always been a difficult task, which usually makes or breaks a figure, as the eyes are the first thing to be noticed when a figure is studied closely. Some prefer to colour the eyes first because a good result would inspire the rest of the paint job, while others prefer to make it the last detail. Either way, the most common mistake is to exaggerate the eyes, making the figure look cow-eyed. On a 1/35 or 54mm figure, the white should be barely visible, if at all, and the eyeball should fill most of the eye just as on a real person. Bright white and black for the eyeball should also be avoided as the eyes will pop out too much, so cream, very light grey and dark blue would work better.

▲ A first subtle highlight and shadow followed, to highlight the edges and folds.

brought out further by the application of shadows. When the first highlights and shadows were applied, the figure was studied from a distance to appreciate the effect. The initial highlights and shadows may not be that prominent, but it's vital to build the effect with several layers.

Next, an even lighter tone of the basic colour was mixed to be used as a second highlight. With a fine brush, it was applied on facial details such as the tip of the nose, on the eyelids, cheek bones and jaw to emphasise these features further. Again, very thin layers were employed to create a smooth transition between the tones. The same procedure was done with the shadows, where a darker mix served as a second highlight on the inner surfaces of the shadows.

When the face and uniform was done it was time for smaller details such as buckles, buttons and insignia, which were accentuated with a very fine brush. A simple way to create depth to a button, for instance, is to paint it black first and then apply the actual colour, followed by a highlight at the upper edge of the button. Some uniform details are available as decals (either waterslide or rub-down transfers) and are well worth trying, especially collar insignia and unit badges because these are difficult to paint by hand. As a final touch, the boots and lower part of the trousers of a figure can be dusted with pigment powders, depending on the environment in which the crew member served.



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▲ Further highlights and shadows were applied and details were accentuated, such as the mug.



13

▲ The edges of the collars and pockets were highlighted, and the insignia applied using decals.



▲ A beautiful example of how much can be shown on just a small base, with a carefully painted figure and some groundwork.



Setting the Scene

The key to any diorama or vignette is to replicate nature accurately... here are some pointers

No matter how good the model, from a technical or artistic perspective, it will almost always benefit from being displayed on a base. One of the most intriguing and interesting aspects of modelling is the creation of scenes, commonly called vignettes or dioramas

depending on their size; these basically depict a slice of the subject's natural environment in miniature, on an appropriate base. The level of detail and composition can vary wildly, from simple sand setting for a desert vehicle, to a full urban sprawl packed with buildings, figures, vehicles and other



▲ Sand is sold in most hobby shops or builder's yards, but can just as well be sourced from nature itself to provide great variety in size and shape.



▲ Ready-to-use grass tufts and scatter material are a quick way to create irregular vegetation.



▲ Static grass and dyed horse's hair are common materials for simulating grass.





▲ PE plants are unrivalled when it comes to the number of offerings and fields of use. Some sets are pre-painted, which saves much time although they do require careful handling.



▲ Laser-cut paper is an ideal product for detailed vegetation and comes in many different versions.



▲ Laser-cut paper leaves will add realism, on any base or when placed randomly on a vehicle.



▲ Plastic plants can look artificial, but with careful painting they work really well in jungle scenes.



▲ These amazing bamboo sticks are from the Joefix range and work well in 1/48 and 1/35 scales.



▲ Here, a bundle of Joefix bamboo sticks have been placed on a Japanese tank, as often seen in wartime photos. They were used as matting for when attempting to negotiate muddy terrain.

components. Dioramas and vignettes are more common among the armour and figure modelling fraternities, rather than in those that deal with aircraft. The explanation for this is probably that aircraft operate in a limited and rather dull environment, basically different airstrips or hangars. Vehicles however, can be displayed in a great number of scenes, which also affects their appearance.

Materials and preparation

Good planning is vital when creating a base and one should have a clear picture of the end

result. The size, height and level should all be kept in mind; they will all affect the presentation and can contribute to a more dramatic scene. A base with even the smallest variations in terrain and structure will look more interesting than an entirely flat example.

The base itself can be a piece of wood on which the scenery is created, or a section of foam board which can be covered with a smart wooden frame or styrene sides for a neater look. On the main example shown here, the latter option was chosen. To create volume on a base, it's

common to use plaster or any papier mâché-like material. Both are easy to work with and dry rather quickly. There are also ready-to-use texturing putties from various manufacturers.

Sand and earth

Just as in reality, the surface of a scenic base is made from earth matter. The best way to simulate this is to use real materials from nature itself. It's easy to collect sand and earth with a couple of swipes of a shovel and the material can later be filtered and sorted into plastic bags or tubs. The colour of the sand and earth

is less important, as the base is usually painted after application. Of course, pre-bagged scenic sand and earth are also available in hobby/railway shops.

Vegetation

While real sand and earth can be taken straight from nature, vegetation is a different game. Dry flowers, roots and other plant matter can be used, but one must think very carefully about its employment and potential to look real in a miniature scene; synthetic materials, paper and photo-etched (PE) metal are far more common and often



▲ PE branches are excellent for foliage on various vehicles, if painted carefully. These are oak boughs from Aber.



A mix of paper, PE, dry plants, roots, grass and plastic plants were used to create this rich jungle vegetation. Several hundred individual pieces were employed.



▲ A base was built from foam board and covered with styrene sheet plastic, as well as a wooden frame at the bottom.



▲ The foundation of the soil was made from plaster and the ground was made higher along the road verge on one side.



▲ The base was painted black to make sure no white spots would shine through the following layers of sand and colour, and it also provided depth to the surface. White glue was then brushed liberally onto the surface. This glue is ideal as it dries clear.



▲ Small areas at a time were covered with fine sand, sprinkled over the surface. A tea strainer is a very handy tool for this.



Next, it was time to add the first coat of fine grass, in this case with pre-bagged static grass.

easier to use. Short grass is best simulated with so-called static grass which, in reality is made from very fine plastic fibres. Pre-fabricated grass tufts are also available in this material. For higher grass, dyed horse's hair has long been a popular product, as well as plumber's seal which can be cut to the desired length. Plants and flowers have been more commonly available over the past decade, with a number of PE sets covering everything from small leaves to full sunflowers. Laser cutting technology has also had great influence on scale vegetation materials, and sets with small leaves, ferns, and brushes are now offered. Resin is also used, for larger items such as tree stems and trunks, but also for interesting little details such as mushrooms. Plastic plants can also be useful, mainly when creating jungle scenery, but they should be employed as a supplement to other products or the base will easily look too artificial.

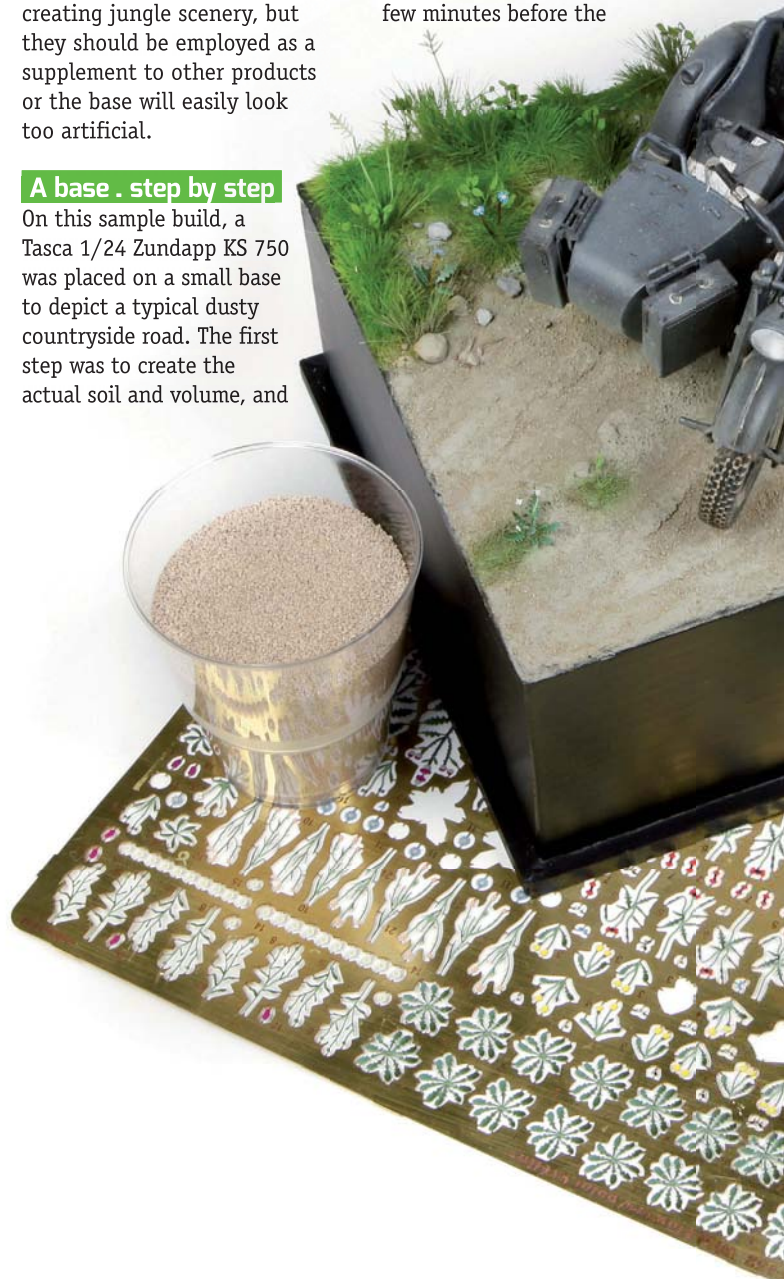
A base . step by step

On this sample build, a Tasca 1/24 Zundapp KS 750 was placed on a small base to depict a typical dusty countryside road. The first step was to create the actual soil and volume, and

this was done with plaster as the weight wasn't a factor on a small base such as this. A rather thick mix of the plaster was applied with a large brush, to form small variations to the surface level. The road strip was made almost flat, while the road verges were made a little higher by adding more of the mix. To speed up the drying process, the entire base was put in the oven on a very low temperature for an hour.

Sand, earth and stones

When the layer of plaster was dry it was time to create the earth layer. White PVA glue is a perfect bonder for sand and other scenic material, as it dries transparent. A rich coat was brushed onto the surface, on a small area at a time. Then, with the help of a tea strainer, fine sand was sprinkled on top of the glue and set to sink in for a few minutes before the



excess was carefully blown off. At this stage, a solid fine grain layer formed the base of the earth, but it looked too lifeless. To add realism and variation, small pebbles were placed randomly along the roadside and in the centre of it, just as many small countryside roads look in reality.

The green stuff

Next, the first vegetation was added. For the fine, short grass, static grass was sprinkled along the roadside and a few patches were also added to the centre of the road. Again, white glue was used to fix the grass to the base. To make static grass stand up straight, static electricity can be created by rubbing a nylon

cloth against a plastic rod, which is then held above the grass to make it rise. The next item involved a product from Joefix Studio, but similar is also available from MiniNatur and other leading brands of ready-to-use grass. These are basically small tufts which look like the real thing. They immediately made the base look more realistic and varied...and were very simple to use and easily fixed.

To bring the vegetation to life further, high green grass from Woodland Scenics was added.

Appropriate lengths were cut and glued to the base in small patches. The grass could be trimmed with scissors once dry. As mentioned earlier, dry flowers and plants rarely look good with models, but Joefix Studios has a set with dry branches which work well for simulating small bushes and lower vegetation; small pieces of this product were placed randomly among the grass tufts.

Painting

Although most of the materials used to this point had rather natural colours, they looked



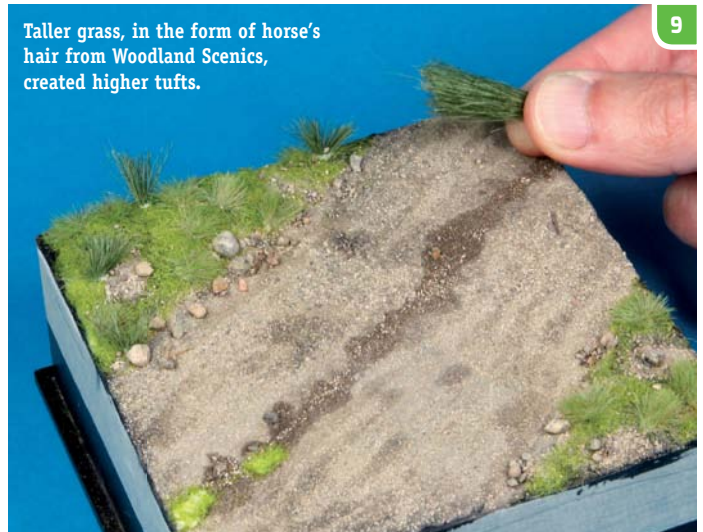
▲ The basic layer of the groundwork was done. Note the irregular patches of sand among the grassy areas.



▲ It was then time to populate the base further; smaller stones and pebbles were placed randomly along the road verges.



Grass tufts helped to detail the vegetated areas and create a more interesting look.



Taller grass, in the form of horse's hair from Woodland Scenics, created higher tufts.

▼ Although dried plants rarely look good on vignettes there are a few that work really well, such as these from Joefix Studio.



▼ The best way to create the impression of a really dusty road is to airbrush the entire area with brown and sand shades.





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▲ The grass areas were also given the same treatment, but with green and yellow tones.



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▲ Stones were then painted individually, to vary the colours from grey to beige and off-white.



14

PE plants enhanced the vegetation further. Here, Eduard leaves and flowers are being glued to the base.



15

▲ The final touch was the addition of paper grasses to break up the surface and give it an even more random appearance.



16

▲ The finished base ready to accommodate the model: note how the variety of vegetation and small pebbles makes it all look more realistic.

rather mismatched. Some may prefer this variation, but it's more common to paint the entire base, and it would also be easier to blend the model into its surroundings at a later stage.

A mix of earth tones was prepared in plastic cups, and then applied with an airbrush over the sand and stone areas and along the edges of the grass. Some overspray was unavoidable but that would be touched up with the following layer. Next, a

variety of green and yellow-green colours were also airbrushed, but this time on the vegetation. This muted the artificial shine and immediately made the grass look more realistic. Again, green overspray ended up on the sand and stone areas. To add further detail and to remedy the overspray, individual stones were painted by hand with a fine brush, and with a great number of colours for variation. Grass areas were also highlighted by dry-

brushing them gently to produce a light green nuance.

Flowers and final details

Once all the basic grass and earth was completed, all that was left was the final detailing of the vegetation. Eduard provides several PE sets with leaves and flowers and these were incorporated into the base. The parts come pre-painted and only need careful cutting to avoid damage to the paint, although

small touch-ups may be necessary. The PE was glued to the base with cyanoacrylate glue. As variation is the key to realistic vegetation, further detailing was added with paper plants. High grass strands were taken from a laser-cut sheet and glued into the vegetation and the base was considered done. The model was then placed on the base and a small amount of weathering powder was brushed onto the subject, and base, to blend them together. □



▲ The Zundapp KS 750 fitted perfectly on the base, leaving no obvious empty areas. It was blended into the base by use of weathering powders.



▲ This close-up shows the realistic PE flowers...and the use of various other materials for the vegetation.

Green Craft

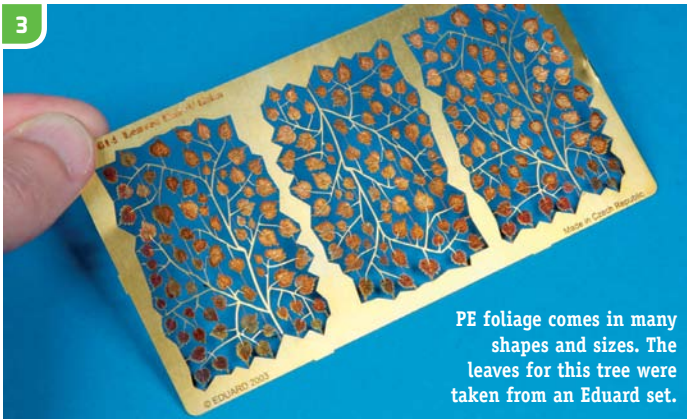
Here's how to make a tree with resin parts and photo-etched (PE) metal foliage



▲ Tree trunks are available in resin from several manufacturers. They can be used as is, or extended with wire and sculpting materials.

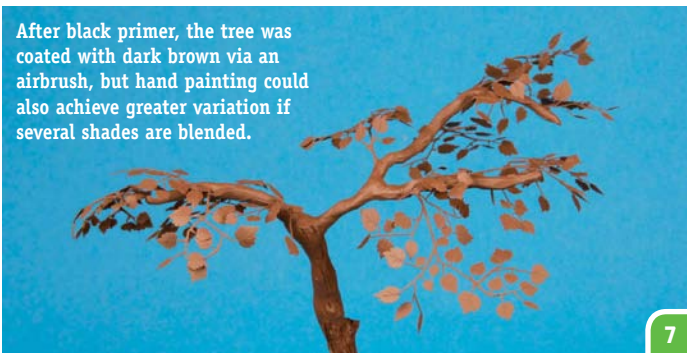


▲ For the extension of a tree trunk, brass rod and sculpting materials are all that are needed. Magic Sculp, or as in this case Duro, are good choices.



PE foliage comes in many shapes and sizes. The leaves for this tree were taken from an Eduard set.

After black primer, the tree was coated with dark brown via an airbrush, but hand painting could also achieve greater variation if several shades are blended.



7



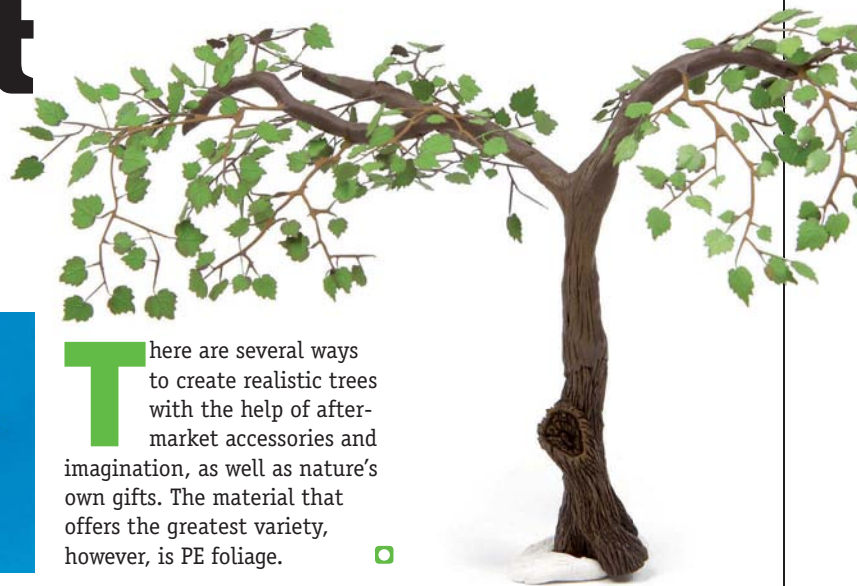
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▲ One by one, the leaves were picked out with a brush and varying green shades. Branches were also enhanced by hand painting with a slightly lighter brown, while the stem was dry-brushed with a lighter brown.



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▲ The tree could be detailed further but it shows what can be done in two evenings, purely with basic materials and PE foliage. Although the figure doesn't fit very well, it helps to give a sense of the tree's size.



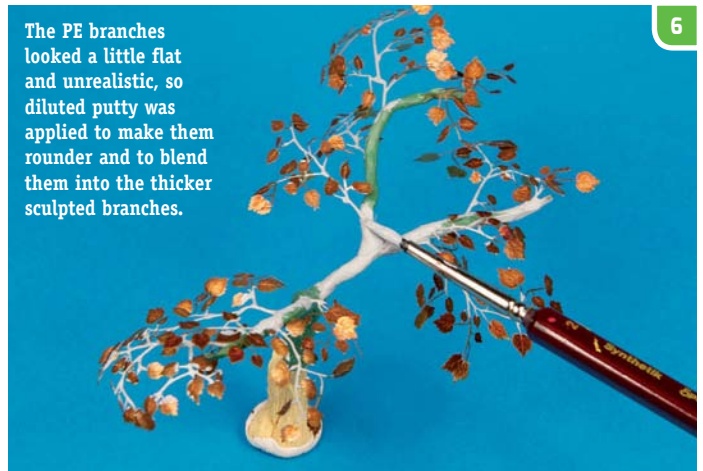
There are several ways to create realistic trees with the help of aftermarket accessories and imagination, as well as nature's own gifts. The material that offers the greatest variety, however, is PE foliage.



▲ Holes for the branches were drilled with a pin vice. It's important to place them as randomly as possible.



▲ Branches are then inserted into the holes and fixed with cyanoacrylate or epoxy glue.



The PE branches looked a little flat and unrealistic, so diluted putty was applied to make them rounder and to blend them into the thicker sculpted branches.



▲ Three different snow products from Deluxe Materials were used for this base.



▲ The glue, or bond, came in both spray can and a regular bottle for application by brush.

Thin layers of plaster built up the structure of the base. When dry, it can be sanded to achieve a perfectly smooth surface.



1

Chilly Coating

Snowy scenes can have real atmosphere, and Deluxe Materials produces just the right products to ease the process

The winter environment is something that many modellers would like to emulate, but rarely achieve. Perhaps it is because of its 'make or break' nature; if it turns out well it will look

stunning, but if not the project will be more or less ruined. It doesn't have to be difficult though. There are several winter scenery products available and, with practice and planning, a typical winter setting for a



tank or aircraft can be achieved easily. For this sample, the products were taken from Deluxe Materials which offers a variety of diorama products, and its snow rendering packs have proved very popular among scenic modellers.

Planning

As with most vignettes or dioramas it was essential to plan the base and to have a clear picture of what effect one wanted to achieve. A base too big and it could look empty, especially a flat snow covered area. In this case a halted Sherman was to be presented on an open snowy field. To make the base look more interesting, it was cut out in an irregular circle shape from foam board. Recesses were also cut out to accommodate the tank's tracks, and to give the impression of a deep snow layer.

The first step in rendering the snow was a coat of plaster to build volume. This was applied to the base with a flat brush and, when dry, sanded almost

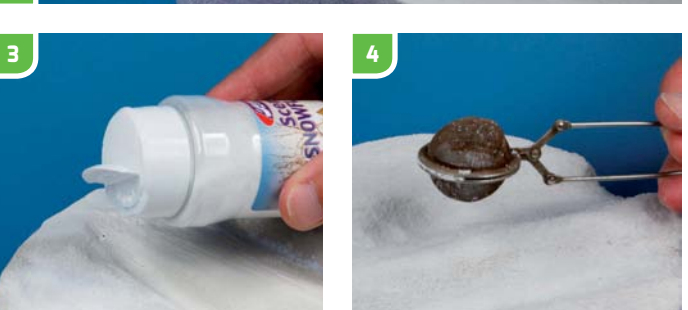
smooth. Next, the first artificial snow layer was applied, starting with Scenic Snowflakes. This product is slightly coarse and good for building volume. The flakes were fixed with 'Scenic Bond', which was brushed onto the plaster, and then also by Scenic Spray Glue which is a pump action fixer that adds a thin mist over the surface. To achieve the look of fine and newly fallen snow powder, the next step was to apply Shovelled Snow. This was an extremely fine powder, almost with the consistency of flour. The powder was placed in a tea strainer and sprinkled over the surface, then fixed with spray glue. The effect was immediate and resulted in a smooth powder-like surface.

Vehicle instalment

At this stage it was time to blend the Sherman tank into the base. A vehicle of this weight would sink deep into the snow and therefore, it was vital that it didn't look as if it was floating on top of the snow. A generous amount of Scenic



2



3



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▲ Scenic Snowflakes were then sprinkled onto the base. It was important to try to keep the surface as smooth as possible.

▲ Next, a layer of Shovelled Snow was sprinkled on top of the first layer, to smooth it out and make it look more like fresh snow.



5

▲ A rich layer of Scenic Bond and Shovelled snow were placed in the tracks marks and the model was then firmly pressed into this.



6

▲ To blend the tank into the base, further bond and snow was applied in a stippling motion onto the tracks and lower chassis.



7

▲ To simulate whirled and accumulated snow, a layer of bond was brushed onto the model.



8

▲ This was followed by Shovelled Snow on top of the bond. The mix was smeared carefully around the hatches, where snow would accumulate.



9

▲ As a final touch, Icy Sparkles were sprinkled on the base and the model to further emphasise the feeling of a truly chilly environment.



10

▲ A couple of thin coats of matt varnish were then misted over the model and base, to fix the powder and sparkles, and dull the shine on the model.



11

▲ The effect of the accumulated and whirled snow is fully evident in these photographs...brrrr!

Glue, followed by Shovelled Snow was placed into the track marks created earlier. The tank was then pressed into the moist surface. To blend in the tank further, Scenic Bond and Snow Powder were mixed in a cup and then applied to the tracks and running gear. On top of this, Snow Powder was sprinkled to simulate whirled snow.

Final touches

With the tank in place, all that was left was to emphasise further the cold, wintery feeling. Firstly, accumulated snow was applied on the tank, again by brushing a mix of Scenic Bond and snow, then

sprinkling a layer on top of it. The excess was then carefully blown away.

Deluxe Materials also offers a product called Icy Sparkles...a powder of fine crystals. This was perfect to get the appropriate shine and sparkle of the snow. The powder was applied over the flat, snowy surface and in small portions over the tank. In order to fix the Icy Sparkles and to knock off some of the tank's shine, two layers of Humbrol Matt Varnish were misted over the entire base and tank with an airbrush. So there it was, a convincing winter setting, created without fuss or home-brewed recipes. □



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The base was cut from thick foam board after planning the scene with the help of a simple house dummy, from cardboard. The figure also helped to achieve a sense of scale.



big or it will easily look empty. A good start is to make a simple sketch on paper, and even a paper/card dummy for a house or a vehicle can help to get the right appreciation of the size of the base. A figure or two will also help, as they are a good guideline when deciding the height of buildings. Most urban areas had some kind of stone paving before asphalt was introduced widely; everything from small cobblestones to larger blocks, depending on the purpose and what was available. It was not

uncommon for materials to vary greatly within the same country. Studying photos will help much in terms of inspiration, but also to serve as a guideline to create realistic scenery on the vignette.

Basic ingredients

There are several materials that are incredibly useful when creating urban environments, and it's generally up to the modeller to work with whatever gives the best results. Several manufacturers also offer ready-to-use bases and paving

Street Scenes

Cork and plaster can be employed to great effect when modelling street dioramas and vignettes

When studying wartime photos, it's evident that warfare during World War Two and beyond has often been executed in urban environments. Known these days as Fighting in Built-up Areas (FIBUA), the process is feared and preferably avoided by soldiers, due to its high cost in life and material. Events in this kind of environment are not commonly depicted in the modelling world, as many see these projects as difficult and time consuming. There are, however, easy ways to create urban settings with relatively meagre means.

Planning

As always with a diorama or vignette, the first step is good planning. A proper base needs to be made, which should be big enough to incorporate the intended items...but not too





▲ Cork is very easy to work with. Individual stone slabs were cut from a 2mm-thick sheet with a regular hobby knife.



▲ The pieces were glued to the base in a staggered pattern. Some of the stones were dented and sanded to look worn and ground down by traffic.



▲ A slightly higher pavement section was added, with larger pieces, as often seen in real urban settings.



▲ A thick mix of plaster was brushed over the surface, making sure it reached into the corners and gaps.

patterns in resin, foam board, plaster or plastic. In this sample project, plaster and cork were the main ingredients. Plaster is cheap, easy to work with and cast, and can be scribed when dry. The downside can be the relatively high weight when cast in solid blocks.

Cork is also a cheap material and can be purchased in sheets, approximately 2mm thick. It's a

very light material which can be cut into precise shapes...ideal for complicated stone or brick. It can be sanded to create variety in the structure, and it combines very well with plaster to depict mortar for instance, and it can be glued with regular PVA white glue.

Casting and scribing

Creating a solid, flat area to replicate stone slabs is relatively

easy. First, a simple mould was created by gluing strips of styrene to a flat styrene sheet, making sure the mould had the proper depth. Plaster was then poured into the mould and allowed to set overnight, and the strips were then snapped off and a solid sheet of plaster was ready. Next it was time to scribe the actual pattern into the plaster. With the help of a

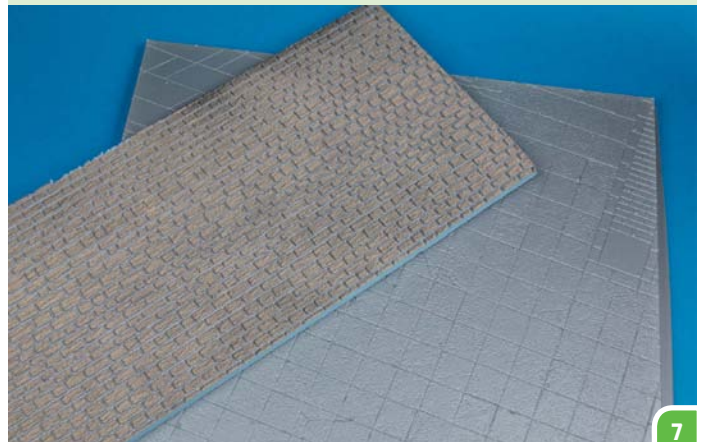
steel ruler and a sharp scribing tool such as a nail, rows of gaps were created in a symmetrical pattern. Next, the width of the stones was decided, and new rows were scribed, this time creating an overlapping pattern. When the scribing was done, the edges of some slabs were slightly dented to look worn, and the surface was made to look rugged with sandpaper. ▶

▼ The excess was wiped away with a cloth and finally a wet finger, and the road section was then set aside to dry.



6

▼ Commercially available stone paving can also be useful. Shown here are pre-stamped foam board from Faller, and styrene sheet from a MiniArt kit.



7

8



▲ Plaster was mainly used for this sample build. Here, a simple mould has been made from styrene sheet and strip.

Cutting and gluing

Cork is the perfect material when creating stone patterns that are more irregular, as it is very easy to work with. All that was needed was a sheet of cork, a steel ruler, a knife, abrasive paper and wood glue. To begin, long strips of cork were cut out from the sheet. Individual stones were then cut into desirable shapes, one by one. This was followed by sanding each individual stone to smooth the edges and to obtain texture. Some pieces were scraped with the tip of the knife to replicate damage and worn areas. Next, the pieces were glued on to the base, in this case a section of foam board, creating a pattern with gaps between the stones.

Finally, a thick mix of plaster was brushed liberally over the surface, ensuring it reached into all the gaps between the pieces of cork. The plaster was left to dry for approximately five minutes before it was wiped off, leaving it only in the gaps, and a very thin layer on top of the cork.

Painting and blending

Neither the plaster nor the cork needed any particular preparation before painting, although some prefer to use primer to feed the plaster surface and make it more solid, as it otherwise absorbs lots of paint and requires several layers. The painting of cork is described later in this article. A key element when painting stone is the choice of realistic nuances and,

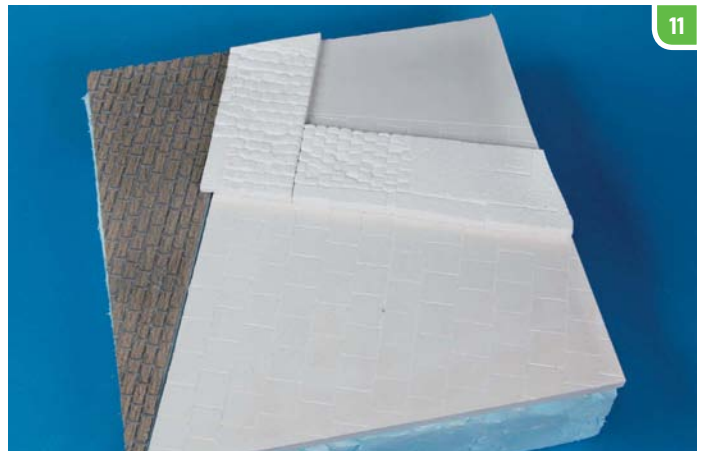
importantly, a variety of them. Even a monotone surface will show some degree of variation of the basic colour. In this case, a dark grey mix was created from various acrylics and painted over the entire surface. Selected stones were then painted in slightly lighter and darker shades to vary the impression. Perhaps the most rewarding step came next, which also made the look of the entire base more realistic.





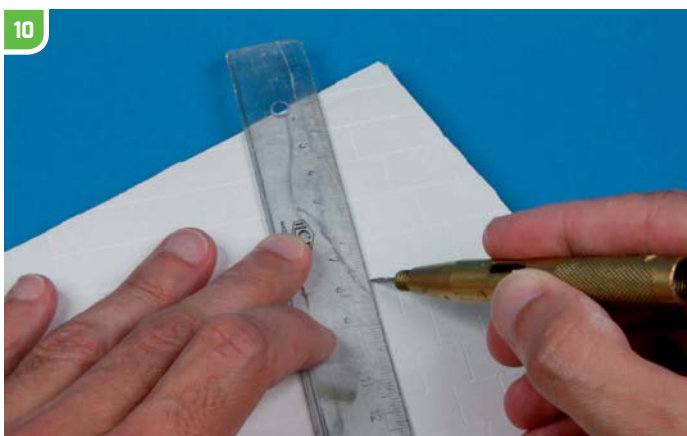
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▲ Plaster was simply poured into the mould and, when dry, the sides were snapped off. The plaster sheet could then be removed.



11

▲ The plaster pavements were taken from the Add On Pats range, which offers various useful accessories. The pattern was highly realistic on these.



10

▲ The stone tile pattern was scribed into the plaster with a sharp tool, such as a nail. The result looked very convincing, although perfectly flat.



12

▲ The sides of the base were covered with styrene sheet for neater presentation, and then painted black.

Diluted wood glue was dripped over the entire surface and fine sand was then sprinkled over it. The sand was brushed into the gaps between the stones and the excess was wiped off with a cloth. The result was a dusty surface with the stone paving blended into the environment, just as on the real thing.

Building structures

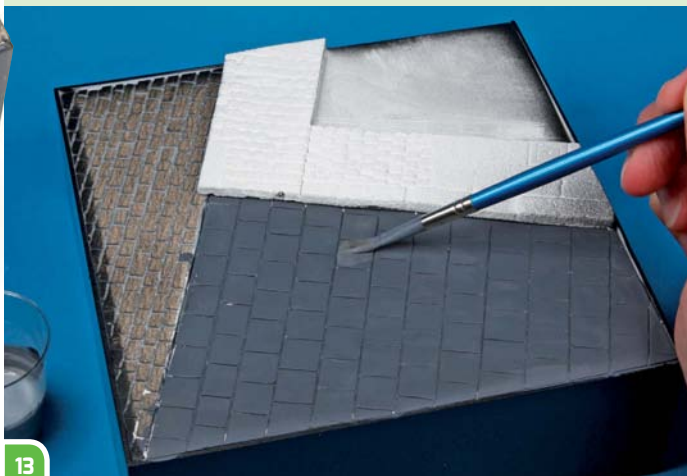
With the base and stone paving done it was time to move to the building; in this case a typical stone block house was the goal. Just as with the stone paving already described, both the plaster and the cork technique would have worked fine, and in this case the latter was chosen.

Contours of the structure were cut out from 5mm-thick foam board. The window frames were then placed temporarily on the board and the mounting of the cork could begin.

The important thing when making an old stone block building is to create variety not just in the pattern, but also in

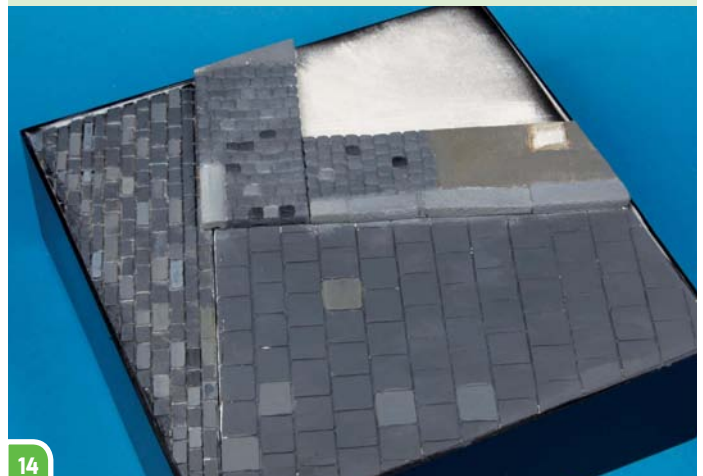
the structure of the stones. To achieve this, strips of various widths were cut from the sheet and then, stones of different sizes were made. Each stone was then sanded, some more and some less, to vary the thickness. Next, the jigsaw puzzle began, with the aim to create a mix of small and larger stones, in a random pattern. ▶

▼ The stone paving first received a solid layer of dark grey acrylics, applied with a flat brush in several thin layers.



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▼ Selected stones were then painted in lighter or darker colours for a more varied look.

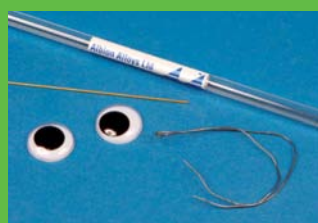


14

ACCESSORIES



▲ There are many useful urban accessories on the market, made from various materials such as styrene, resin, metal and even laser-cut wood.



▲ An easy way to make wall lamps is to use plastic eyes for children's toy pets, brass rod (such as that from Albion Alloys) and lead wire for the electric chord.



▲ The result is very convincing and typical for early to mid-20th century scenes.



▲ This wall advertising was designed on a computer, then printed and cut, and used as a template when airbrushing. Also note the computer-printed wall posters, but ready-made items can be bought on the after-market.



▲ Sewer grates are also a pleasing little detail; this one came from the Plus Model range.



▲ The telephone wire mount was soldered from brass rod, and insulators came from the Aber range. There's no end to the detail one can achieve.



▲ The typical south European roof tiles in this vignette were taken from a Model Victoria resin set with remarkable detail. Window shutters from MiniArt were also used.

Mortar and stucco

If the placing of the individual stone block was deemed time consuming, the filling of the mortar between them could be considered straightforward. A mix of plaster was brushed into the gaps and left to dry for a few minutes, and then wiped off with a damp cloth. It should be noted that the cork could have been painted before plaster was applied, but it's up to the modeller which is the preferred technique. In this case another layer of plaster would be added later on, after the painting. It was decided that the short end of the building should have a solid surface of stucco, instead of exposed stone blocks. If the building had been cast in plaster this surface would be there naturally and would only need painting, but since this building was constructed from foam board and cork, another approach was necessary. A solid piece of cork was cut to fit the entire short end side, and a thin layer of plaster was then brushed on top of it and left to dry and then sanded smooth.

Overhead challenge

Creating realistic roofs for buildings can be tricky, mainly because of the difficulty in making angles and corners fit. Finding the correct and suitable pattern can also be difficult unless a typical tiled roof is depicted but, fortunately, most variants can be found with careful study of reference photographs. In this case, a typical shingle roof often seen on houses in Normandy was sourced from French manufacturer MK35, and it was well cast as a thin sheet of plaster. To avoid mishaps or incorrect cuts, a dummy for the roof was cut from foam board and test-fitted on the house, and then used as a template for cutting the plaster. After minor sanding and touching-up with plaster, the roof parts were fixed together with five-minute epoxy glue for a strong bond.

Decoration

As with the painting of the stone paving, the finishing of the house was much about proper colour selection. Northern France

15



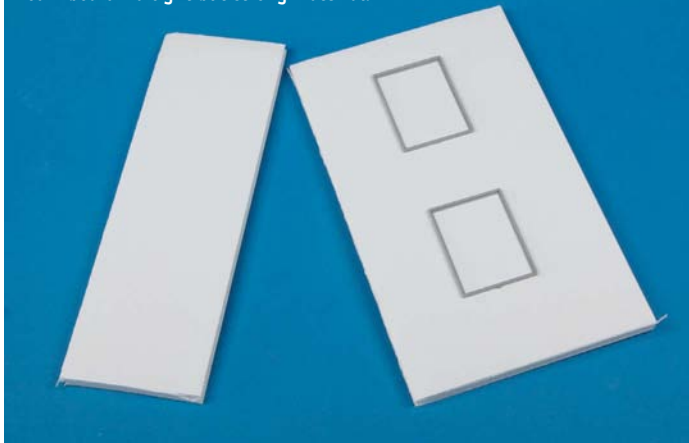
▲ When the painting was done, a coat of fine sand was sprinkled over the surface and fixed with diluted wood glue.

16



▲ A few paper leaves from Plus model, as well as a piece of a newspaper, added further realism and interest.

The structure for the building was cut from thin foam board...a light but strong material.



1



6



7

▲ Another coat of plaster was applied to emphasise the mortar between the stones. Note the added foundation for the building, also from foam board and cork.

▲ The window shutters were then added, the top pair being from MiniArt, and the lower made from scratch. The house was then weathered very lightly with oil washes and pigment powders.



2



3

▲ The cork pieces were added one by one, starting with the window framing. The key here was to create a varied and interesting pattern.

▲ Here's the finished result of the cork rendering; a solid piece was used for the short end of the building to mimic a stucco surface.

stone houses often displayed various sand shades, from light yellow to brown and grey... which stands in rather strong contrast to the dark street paving. Firstly, a basic mix was made from selected acrylics and painted over the entire area to form a base, on which variations of the colour were applied. Stones around the windows were

given a more greyish colour, as often seen on real houses from the area. The process resulted in paint ending up on some of the mortar between the stones, and the stones also looked somewhat stark. To remedy this, a thin coat of plaster was again brushed over the surface, and then carefully wiped off with a damp cloth, to leave just



4



5

▲ The entire building was then covered with a layer of plaster, mainly to fill gaps between the stone blocks.

▲ The stones were painted with different sand/earth shades. The key was variation to make the surface look more interesting.



8



▲ The finished house, with its typical shingle roof attached, would make a pleasing backdrop.

a very light coat. The house was then ready for weathering which, in this case, was kept relatively light with just a few thin washes and pigment powder (described in this publication's

next feature, on painting a 1/76 resin building).

Topping off

With the painting done it was time to add the roof, which had been painted separately. It was fixed to the building structure with epoxy glue and blended in with the help of pigment powder. The window shutters for the top floor of the house were taken from an excellent MiniArt set (35502) which contained window frames, shutters and other useful house accessories, which save the modeller from scratch-building. For the lower window, though, a home-made shutter was created from styrene sheet to achieve variety. The shutters were painted with acrylics and a pale blue colour was chosen for the lower window as a contrast to the discrete natural colours of the building structure. Although time consuming in certain sequences, this was a very rewarding project

which demonstrates that with relatively cheap means and planning, any kind of house can be made from scratch. Despite the more complex nature of an urban setting, it was well worth the effort to make a bespoke version. ◻

HOUSEHOLD TIPS



▲ Buildings can also be made from other materials. This beautiful structure was created entirely from styrene!



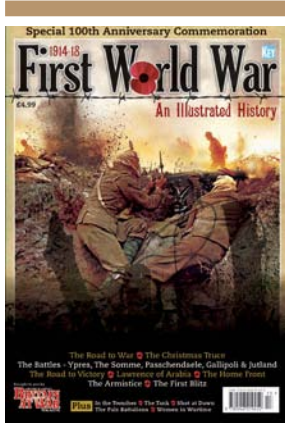
▲▼ An easy way to create different surface levels on plaster buildings is to make a pattern in the plastic mould. The result is a neat raised board around the base, door opening and window.

▼ Separate bricks are available from several manufacturers and can be useful when making walls, but also as debris on an urban diorama.



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Structures in Miniature



Ready-made buildings can be a boon for diorama modellers, but they do require careful painting and finishing

In the early years of modelling, 1/72 and 1/76 scales were very popular among armour enthusiasts, and many kits were produced to suit. They were cheap and easy to build and therefore also attracted a younger audience...and they only made small holes in parents' budgets. The 1970s brought about a revolution when 1/35 scale entered the scene, and this quickly became the mainstream beside the smaller scales. The kits provided a significantly higher level of detail and when figures and accessories appeared on the market, diorama builders got the opportunity to create realistic scenes. Over the years, 1/35's popularity increased exponentially among modellers and most manufacturers released plenty more products in this scale, and today the choice is vast.

Since a decade ago or so, however, 1/76 and 1/72 scales have experienced a revival, and military kits in the decidedly uncommon 1/48 'quarter' scale are also growing in number. Many new kits have been produced and the after-market is now blossoming with accessories for single vehicles and dioramas. One important benefit over the larger scales is that a diorama in 1/76 or 1/72 (or 1/48 for that matter) can be a rather quick project, and it also occupies less shelf space which is a factor not to neglect. A 1/35 scene that perhaps would have taken six months to complete, can now be executed in a fragment of that time when working in smaller scales. This is



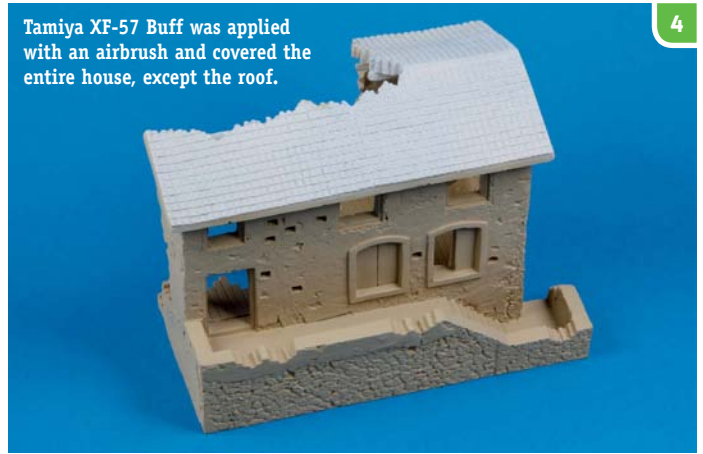
▲ Airfix's resin Italian Farmhouse was cast beautifully, its level of detail was good for the scale and incorporated a realistic tiled roof and stone pattern.



▲ Minor clean-up was needed to remove slight casting seams and excess resin. This was done quickly with a diamond file.



Before actual painting began, the entire building received a coat of grey primer to promote adhesion of the following acrylic paints.



Tamiya XF-57 Buff was applied with an airbrush and covered the entire house, except the roof.



▲ Earth-coloured acrylic paints and enamel washes were chosen to create a colour palette typical for the Mediterranean environment.



▲ A terracotta mix was created from various red and brown colours and painted on the roof tiles in several thin layers, to ensure proper density.

certainly true when incorporating a building into the scene.

A quick start

Small-scale buildings come in kit form and as ready-to-paint offerings in various materials. The former, of course, means assembly, while the latter can be taken more or less straight from the box and painted. In this example, a 1/76 Airfix resin structure was used (A75013 – Italian Farmhouse). The kit was cast in one piece and incorporated a surprisingly high level of detail...and showed only minimal casting seams and excess resin. These minor flaws were easily remedied with the help of a diamond file and abrasive paper.

Basic painting

Before painting commenced, a selection of acrylics in suitable nuances for the façade and small details were chosen. In this case, typical Mediterranean earth colours were combined with white and green decorations. Firstly, though, the entire building was given a coat of grey surface primer to help the paint adhere.

The house's base colour was then applied, in this case Tamiya XF-57 Buff. On a small house such as this, it can be either painted by hand or, as done so here, with an airbrush. The base coat was used liberally to ensure solid coverage as a starting point for the rest of the painting, although it may

have looked rather monotone at this early stage.

Colour is everything

It was then time to start injecting life into the house. The entire tiled roof was painted in a terracotta shade, typical for southern European houses. To

make this area more interesting, four different variants of the roof colour were mixed, with extra hints of red, brown, yellow. Individual tiles were then picked out with these colours.

Next, a suitable green colour was chosen for the window shutters and woodwork. This





▲ To bring the roof to life and make the surface interesting, several variants of the basic terracotta were mixed, some more brown, others more yellow.



▲ Window details were picked out with a fine brush. Note how the choice of green and white immediately signalled this as a Mediterranean building.



▲ The wall and stairs in front of the building also needed variation, so earth tones were applied with a fine brush.

was followed by careful painting of the white window borders and the front and side edges of the roof. The detail immediately made the overall impression of the house more interesting, but also sent a clear signal that it was a Mediterranean dwelling. The

farmhouse also had a beautifully-detailed stone wall in front of it, as well as stairs leading up to the entrance. To create variety, the stones were painted individually in the same manner as the roof tiles, but in this case with beige and grey earth tones.



▲ All the colours were in place, but at this stage the house too neat, especially as it was actually a ruin.

Getting the right feel

At this stage all areas of the house were painted and it looked very neat...too neat, in fact.

To remedy this, and to accentuate further the details of the house, a number of washes were selected. Of course, it's always a matter of personal taste how new a building should look, but in this instance the structure was actually a ruined example for one and, secondly, washes do not necessarily have to make a house look old and dirty. Washes can be created by mixing paint with thinner, or water (depending on the paint brand and format), but many manufacturers today offer ready-to-use products in a great number of shades. Using these will, of course, save time, as well as negate the sometimes messy chore of mixing colours. On this building, use of recently released Humbrol washes was adopted. The entire house, including the roof and stone wall, was given a dark brown wash with emphasis placed on recesses. As the wash accumulated in these areas, the building assumed a more three-dimensional look, which was a very welcome effect on a small object such as this. The wash can also be rubbed into the surface with a flat brush to create further variety and subtleties. To enhance smaller details such as the windows, a wash of black was carefully run along the outer edges. This was also repeated randomly on the roof tiles.

time will eventually show traces of this on its surface, so-called weathering. Rain marks, dust, moss and other elements are examples of this. There are several ways to replicate these effects; with oil paints, enamels, or pigment powders, for instance. On Mediterranean houses the sun has a strong effect and they often exhibit bleached colours, especially on the roof. In this case, small dots of light beige pigment powder were placed randomly over the roof and then rubbed into the surface with a flat brush. This operation was then repeated according to taste, and over the facade surfaces.

Next, rain marks were applied

Signs of nature

Any building exposed to the forces of nature for a period of



10



▲ Dark brown enamel wash was brushed lavishly over the entire building, to make it accumulate in recessed areas.

by placing small dots of red-brown oil paint along the edge of the roof. A paint brush was moistened with thinner and the dots were stroked vertically, to convert them into streaks. On the house walls the same operation was repeated, only this time dark brown oil colour was used.

Ready for its environment

This project was surprisingly quick and required just a few evenings' work. Areas that would normally require a lot of time to look convincing on a 1/35

scale building were covered in just one short painting session; theoretically, an entire village street could have been created in a short time. One's imagination only sets the limits for the use of buildings such as these and, with a little conversion work, many variants can be created from the same basic kits. A building such as this deserves a proper environment, and in this scenic modelling section as a whole, one will learn effective techniques to create highly convincing dioramas and vignettes. ◻



11



▲ Small details such as the windows were accentuated further with a darker wash, in this case black.

12



▲ Rain marks are an effective way to portray age. Red-brown oils were used for the roof edges, and dark brown for the house walls.

13



▲ Pigment powders are a quick and effective way to simulate bleached paint and dusty surfaces. Light beige powder was rubbed into the surface of this building.

H₂O

in Miniature

The reproduction of water can be a key element for scenic and maritime modelling. Deluxe Materials' Solid Water is a handy option

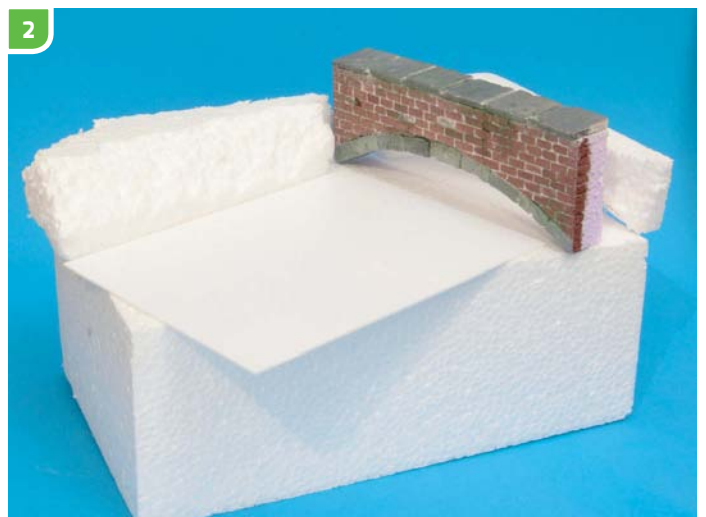
One of the more intimidating aspects of diorama building is that of making larger sections of water, but in recent years many new techniques and materials have become available to modellers. There are several ways of simulating water; some more elaborate than others. It can be made by covering shaped plaster or household filler with paint and clear or tinted varnish; by using clear

industrial-like resin; by painting the bed/part to be covered and then overlaying it with one-part component products from manufacturers such as Vallejo or Woodland Scenics. Or, one can use multi-part mediums with which to form running water, streams and waterfalls (and other moving water) from companies such as Deluxe Materials.

Here is a description of how to create still water with the latter firm's Solid Water.



▲ The ingredients in the Deluxe Materials box; resin, hardener, syringes for measuring and dispensing the former, a mixing cup and stirring stick.



▲ The basic materials for the base construction; styrene sheet, Styrofoam and the previously-built bridge span.





▲ The sides have been cut, glued and primed with Citadel Chaos Black. Having a tall base only adds to the perception of depth.



▲ The first green basecoats have been applied. Any natural-looking green or brown shades could be used, as long as they suit the purpose properly.



▲ Waterproof household filler has been spread over the ground and water's edge areas. Small stones and natural debris were pressed into the wet filler.



▲ Tamiya XF-52 Flat Earth acrylic was used as base paint for the groundwork, but various shades could be employed depending on taste.

Easy does it

One important thing to have in mind when water is to be added to a base, is to resist the urge to add it too early, as it must be one of the the final steps in the diorama creation process. This is to prevent paint and other unwanted substances from ending up on the clear surface.

To begin with a base was constructed from pieces of Styrofoam, roughly shaped with a knife and glued together with PVA adhesive. The bridge span was built and painted separately and attached to the road/bank side. The sides were then made from styrene sheets and the foundation of the stream was made from the same material, and glued to the sides at the same time. The sides were raised very slightly to prevent the resin water from leaking.

When the glued sides had dried they were primed separately with Citadel Chaos Black, as the solvent in this primer melts the Styrofoam. When the primer had dried, the sides were glued to the rest of the base...again with versatile white glue. The base paint for the stream bed comprised a coat of Tamiya XF-26 Deep Green airbrushed in a slightly cloudy fashion. Following this was a mix of the Deep Green with XF-21 Sky, to result in a lighter shade, which was sprayed adjacent to the bank to create a sense of depth.

When the base paint had dried, the shoreline and bank was covered and shaped from waterproof household filler, with small stones, branches and other debris pressed into the wet filler. When the filler had dried, a base coat of Tamiya XF-52 Dark

Earth was airbrushed over the ground areas before grass and different plants were added. To create depth to the groundwork and especially the water's edge, washes of MIG Productions' Dark

Wash, AK Interactive's Fresh Mud and Earth Effects were employed. When this had dried thoroughly, a very thin layer of Tamiya XF-67 Buff was airbrushed on the bank edge to accentuate it further. ▶



▲ Grass and other plants were added; in this situation, the more varied the plants the better.

8



▲ Washes of MIG Productions' Dark Wash, together with AK Interactive's Earth Effects and Fresh Mud increased the depth to the groundwork, especially along the water's edge.

SHOPPING LIST

Solid Water from Deluxe Materials:

www.deluxematerials.com

Styrofoam

A hobby knife

PVA adhesive

Plastic card sheets

Matt black, and various green/brown shades of acrylic paint

Household filler

Weathering washes and pigments:

www.ak-interactive.com

www.migproductions.com

Imitation grass:

www.fredericus-rex.de

www.heki-kittler.de

www.woodlandscenics.com

Mixing magic

Deluxe Materials' Solid Water comes with two syringes and a small mixing pot, but these tools tend to complicate the operation. Instead, the resin and hardener were measured in two plastic cups – one part hardener to two parts resin – and stirred together. The first layer was very lightly tinted with Vallejo 966 Turquoise and 924 Russian Uniform, but any green or brown colour could be used to suit one's project appropriately; just be careful to add a small amount at a time until the desired opacity is attained. This was allowed to set for 36 hours before the second, clear layer was added. Into this, some laser-cut leaves were added, and the base was set aside in a dust-free environment to dry. It's really that simple!



Close Encounters of the Third Reich

◀ Swedish modeller Ulf Blomgren is a master at modelling water and this dramatic scene of his shows just how much can be done with scenic water, when the imagination flows.



KIT MANUFACTURERS

Airfix: www.hornby.com
AFV Club: www.afvclub.com
Atlantic Models:
 www.atlanticmodels.co.uk
AZ Model: www.azmodel.cz
Bilek: www.bilekhobby.cz
Bronco: www.bronco-model.com
Coastal Craft:
 e-mail: coastalcraftmodels@gmail.com
Dragon/Cyber-hobby:
 www.dragon-models.com
Eduard: www.eduard.com
Fujimi: www.fujimi-mokei.com
Great Wall Hobby: www.loanoar.net
Hasegawa: www.hasegawa-model.co.jp
High Planes: www.hpmhobbies.com
Hobbyboss: www.hobbyboss.com
HPH Models: www.hphmodels.cz
HR Model: www.hrmodel.cz
ICM: www.icm.com.ua
Italeri: www.italeri.com
JB Model: www.jbmodel.eu
Kinetic: www.kineticmodel.com
Kitty Hawk: www.kittyhawkmodel.com
L'Arsenal: www.larsenal.com
Masterbox: www.mbltd.info
Meng Model: www.meng-model.com
MiniArt: www.miniart.com
Mirage Hobby: www.mirage-hobby.com.pl
Monogram: www.revell.com
MPM: www.cmkkits.com
PJ Production: www.pjproduction.net
Revell: www.revell.eu
Roden: www.roden.eu
RS Models: www.rsmodels.cz
Special Hobby: www/cmkkits.com
Sword: www.swordmodels.cz
Tamiya: www.tamiya.com
Tarangus: www.tarangus.se
Trumpeter: www.trumpeter-china.com
White Ensign Models:
 www.whiteensignmodels.com
Wingnut Wings: www.wingnutwings.com
Zoukei-Mura: www.zoukei-mura.co.jp
Zvezda: www.zvezda.org.ru

ACCESSORIES

A2Zee Models: www.a2zeemodels.co.uk
Aber: www.aber.net.pl
ADM Models: www.admmodels.co.uk
Aims Models: www.aimsmodels.co.uk
Aires: www.aires.cz
Albion Alloys: www.albionalloys.co.uk
Avonix: www.squadronproducts.com
Barracadacast: www.barracadacast.com
Bits Kreig: www.quickwheel.istore.pl
Brengun: www.brengun.cz
Coastal Craft:
 e-mail: coastalcraftmodels@gmail.com
Dan Taylor Modelworks:
 www.dantaylormodelworks.com
Deluxe Materials:
 www.deluxematerials.com
Eduard: www.eduard.com
Evergreen:
 www.evergreenscalemodels.com
Finescale Model World:
 www.finescalemodelworld.co.uk

Freightdog Models:

www.freightdogmodels.co.uk
High Planes Models:
 www.hpmhobbies.com
JoeFix Studio: www.joefix-studio.be
Kamizukuri: www.kamizukuri.jp
L'Arsenal: www.larsenal.com
Legend Productions: www-legend.co.kr
Limes Model: www.limesmodel.hu
Lion Roar: www.lionroar.net
LVM Studios: www.lvm-studios.com
Maestro Models: www.maestromodels.com
Master Details: www.masterdetails.com
Master Model: www.master-model.pl
Minor Model: www.minor-web.com
Model Design Construction:
 www.modeldesignconstruction.co.uk
Monroe Perdu: www.monroeperdu.com
Neomega: www.neomega-resin.com
OzMods: www.ozmods-kits.com
Plus Model: www.plusmodel.cz
Precision Ice and Snow:
 www.precisioniceandsnow.com
Quick Wheel: http://quickwheel.istore.pl
Royale Resin: www.royaleresin.net
Royal Model: www.royalmodel.com
Scale Aircraft Conversions:
 www.scaleaircraftconversions.com
Skunkmodels Workshop:
 www.luckymodel.com
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Sylmasta: www.sylmasta.com
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Werner's Wings: www.wernerswings.com
Whirlybird e-mail: rgevans@gmail.com
White Ensign Models:
 www.whiteensignmodels.com

DECALS

Afterburner Decals:
 www.afterburnerdecals.com
Aims Models: www.aimsmodels.co.uk
Alley Cat: www.a2zeemodels.co.uk
Archer Fine Transfers:
 www.archerfinetransfers.com
Authentic Decals:
 www.olimpmodelsgroup.com
Aviaeology: www.aviaeology.com
Aztec Models: www.aztecmodels.com
BarracudaCals: www.barracudacals.com
Begamot: www.begamotdecals.ru
Canuck Model Products:
 www.canuckmodels.com
Caracal Models: www.caracalmodels.com
Combat Decals: www.model-craft.co.uk
Dan Taylor Modelworks:
 www.dantaylormodelworks.com
Daco: http://ultra.glo.be/daco
Dutch Decal: www.dutchdecal.nl
EagleCals: www.eagle-editions.com
F-4DableModels:
 www.F-4dablemodels.com
Fantasy Printshop:
 www.fantasyprintshop.co.uk
Fightertown Decals:
 www.fightertowndecals.com
Iliad Design: www.iliad-design.com

IsraDecal: www.isradecal.com

Kits World: www.kits-world.com

Linden Hill Imports:
 www.lindenhillimports.com

Max Decals: www.maxdecal.com

Mike Grant Decals:
 www.mikegrantdecal.com

Pheon Models:
 email: pheon.models@hotmail.co.uk

Print Scale: www.printscale.com.ua

Rising Decals: www.risingdecal.com

Syhart: www.syhartdecal.fr

TigerHead Decals:
 www.tigerheaddecal.com

TwoBobs: www.twobobs.net

Vingtor: www.vingtor.net

Wolfpak Decals:
 www.milkcreekconsultants.com

Xtradecal: www.hannants.co.uk

Yellow Wings Decals:
 www.yellow-wingsdecal.com

TOOLS AND SUNDRIES

Airbrush Company, The:
 www.airbrushes.com

Albion Alloys: www.albionalloys.co.uk

Deluxe Materials:
 www.deluxematerials.com

Iwata: www.iwata-medea.com

MDC: Modeldesignconstruction.com

Sylmasta: www.sylmasta.com

Swann-Morton: www.craftknives.co.uk

X-Acto: www.xacto.com

PAINT/VARNISH/WEATHERING

AKAN: www.lindenhillimports.com

AK Interactive: www.ak-interactive.com

Gunze Sangyo: www.gsi.co.jp

Humbrol: www.humbrol.com

Lifecolor: www.astromodel.it

MIG Productions:
 www.migproductions.com

Pinnacle Modelling Supplies:
 www.model-supplies.org.uk

Tamiya: www.tamiya.com

Testors: www.testors.com

True Earth: www.true-earth.com

Vallejo: www.acrylicosvallejo.com

WEM Colourcoats:
 www.whiteensignmodels.com

Winsor & Newton:
 www.winsornewton.com

Zero Paints: www.hiroboy.com

REFERENCE & MODELLING BOOKS

Ad Hoc Publications:
 www.adhocpublications.com

AirDOC: www.airdoc.eu

AIRfile: www.airfilepublications.com

Albatros Productions:
 www.windsockdatafilespecials.co.uk

Armor Plate Press:
 www.armorplatepress.com

Canfora Publishing: www.canfora.se

Casemate UK:
 www.casematepublishing.co.uk

Crecy Publishing: www.crecy.co.uk

Eagle Editions: www.eagle-editions.com

Fonthill Media: www.fonthillmedia.com

Haynes: www.haynes.co.uk

Histoire & Collections:

www.histoirecollections.com

IsraDecal: www.isradecal.com

Kagero: www.kagero.pl

Mushroom Model Publications:
 www.mmpbooks.biz

Naval Monographies:
 www.avions-bateaux.com

Osprey Publishing:
 www.ospreypublishing.com

Pen & Sword Publishing:
 www.pen-and-sword.co.uk

Squadron-Signal: www.squadron.com

Valiant Wings Publishing:
 www.valiant-wings.co.uk

Ventura: www.venturapublications.com

Windsock:
 Windsockdatafilespecials.co.uk

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 www.aviationbookcentre.com

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 www.aviation-bookshop.com

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Creative Models:
 www.creativemodels.co.uk

Hobby Company, The: www.hobbyco.net

Model Wholesale UK:
 www.modelwholesaleuk.com

Pocketbond: www.pocketbond.co.uk

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Aviation Hobby Shop, The: www.taahs.com

Halifax Modellers World:
 www.halifaxmodellersworld.co.uk

Hatton's Model Centre:
 www.ehattons.com

Hannants: www.hannants.co.uk

Historex: www.historexagents.com

Hobby Link Japan: www.hlj.com

LSA Models: www.lsamodels.co.uk

Lucky Model: www.luckymodel.com

MisterKit: www.misterkit.com

Models2U: www.models2u.co.uk

Models for Sale: www.modelsforsale.com

Netmerchants: www.netmerchants.co.uk

On Tracks: www.ontracks.co.uk

ScaleModelShop:
 www.scalemodelshop.co.uk

Sprue Brothers: www.spruebrothers.com

MODELLING WEBSITES

Aeroscale: www.aeroscale.co.uk

Aircraft Resource Center:
 www.aircraftresourcescenter.com

Armorama: www.armorama.com

Britmodeller: www.britmodeller.com

Cybermodeler: www.cybermodeler.com

Hyperscale: www.hyperscale.com

Internet Modeler:
 www.internetmodeler.com

Missing-Lynx: www.missing-lynx.com

Model Warships:
 www.modelwarships.com

Planet Armor: www.planetarmor.com

Scale Rotors: www.scale-rotors.com

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