

# BASIC AVIATION MODELLING



Series editor JERRY SCUTTS

The complete  
**"how to"**  
modelling guides

# **BASIC AVIATION MODELLING**

## **Compendium Modelling Manuals Volume 1**

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COMPENDIUM

# Compendium Modelling Manuals

## Basic Aviation Modelling

This edition published by Compendium Publishing Ltd  
1st Floor, 43 Frith Street, London W1V 5TE

Printed in Spain

Designed by Compendium Design and Production

Reprinted 1999

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A CIP catalogue record for this book is available from the British Library

ISBN 1 902579 04 6

© Accion Press, S.A.

C/Ezequiel Solana, 16, 28017, Madrid, Spain

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## Modelling Guide 1

No attempt has been made to specify the brands of paint used throughout this book. The basic mixes are, as indicated, much to the modeller's individual choice based on local availability of paints and inks as well as the reference material used. Ranges of oil-based enamel and water-based acrylic paints and inks suitable for use on polystyrene plastic are available in kit retail outlets in most countries.

# ASSEMBLY OF A PLASTIC KIT

One of the most popular aspects of modelling is that of constructing replicas of aeroplanes. In this first chapter we examine the secrets of good assembly of kit parts, attention to fine detail and the use of body putty. Painting with an airbrush will be touched upon and by following simple rules and with the appropriate use of materials and tools, we show how excellent results can be achieved by almost anyone, regardless of age.

In the succeeding chapters two skill levels in modelling will be covered and any difficult areas examined to overcome these. Initially we assume some experience of the hobby on the part of the reader and later on, some of the challenges faced by the beginner.



Once we have decided to assemble a kit of an aeroplane, different preferences in choosing one particular model come into play. While some people build models from all eras, others stay loyal to aircraft which have an intrinsic appeal as regards shape, those with history behind them or a special fondness stemming from having flown in that type, even as a mere passenger.

Having chosen the model to build, the second phase begins the search for the kit most suitable to the individual's skills. With a popular aircraft type, multiple kits will be available from a variety of manufacturers. The beginner would be wise to opt for the most economical kit, as a new modeller usually needs to work up to a good standard and should

anticipate less than satisfying results from a few cheap kits before that goal is achieved.

That said, the most expensive kits are not necessarily the best. Therefore our task is to check to see that the component parts are 'flash' free with no 'sink' marks in the plastic surfaces, that there are no deformities in the moulded parts and that all sprues are complete. The choice of a kit is usually based on a quality/cost ratio so that in the event of the beginner spoiling a cheap model, it can easily be replaced.

## CHOOSING THE SCALE

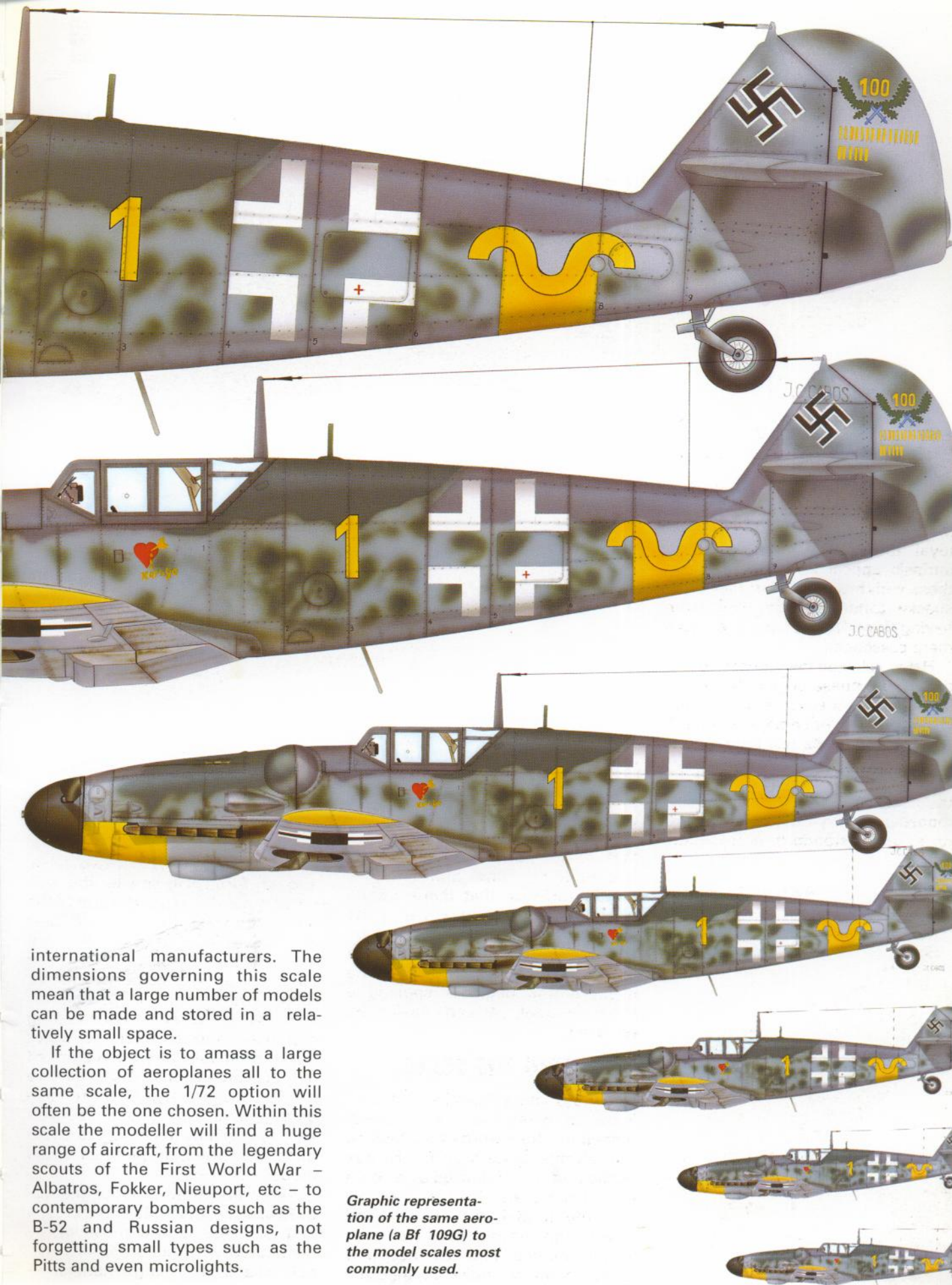
The first thing a modeller needs to know is what the term 'scale' means in other words that fraction that always appears on the kit box as the figure '1' followed by a colon or oblique mark. It means simply that the model has been scaled down from the original machine a specific number of times: a scale of 1/100 therefore indicates that the

model has been reduced 100 times, the scale of 1/72, seventy-two times, and so forth. The smaller the variable figure, the larger the size of the model. Knowing these scale figures is useful in two ways: firstly it enables the modeller to build different kits to a constant, comparable size which is particularly important when constructing dioramas, and secondly to check that the manufacturers have scaled out the dimensions of the full-size original accurately. With reliable data to hand, only a simple conversion sum will be necessary to determine the correct proportions of the model.

There are three most commonly used scales – 1/72, 1/48 and 1/32. The first of these is the most widely distributed with hundreds of available kits from a large number of

*A fine model of a Pitts biplane in 1/72 scale. It is shown at actual size.*





international manufacturers. The dimensions governing this scale mean that a large number of models can be made and stored in a relatively small space.

If the object is to amass a large collection of aeroplanes all to the same scale, the 1/72 option will often be the one chosen. Within this scale the modeller will find a huge range of aircraft, from the legendary scouts of the First World War – Albatros, Fokker, Nieuport, etc – to contemporary bombers such as the B-52 and Russian designs, not forgetting small types such as the Pitts and even microlights.

*Graphic representation of the same aeroplane (a Bf 109G) to the model scales most commonly used.*

A Kingcobra in 1/72 scale from the French firm Hi-Tech incorporates photo-engraved small parts for interior detailing. Below: A striking model of a Vought F7U Cutlass.





*Junkers Ju 87B Stuka in 1/32 scale. A model of impressive proportions ideal for meticulous detailing.*



*Messerschmitt Bf 109E. A Hasegawa kit in 1/48 scale, this example has been finished in Spanish Civil War colours.*

*An ideal complement to this kit is a Verlinden conversion set, intended for superdetailing the interior and engine using photo-etch and resin parts.*

## EVOLUTION OF THE SCALES

Despite the advantages of 1/72 scale it will soon be realised that much of the detail work done does not stand out well. If the modeller's interest is primarily detailing and careful painting, with less emphasis on quantity, the ideal size is therefore 1/48. This scale has recently seen renewed interest by manufacturers and many superb kits have appeared on the market.

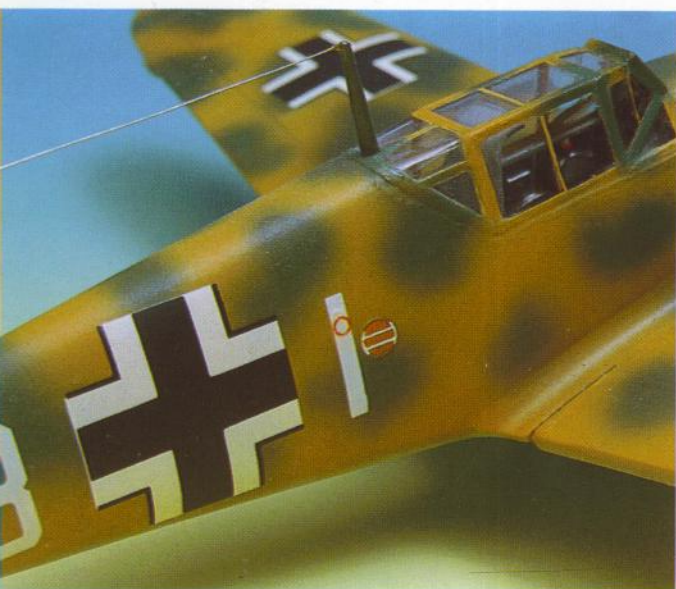
A more considered step by the novice modeller is to tackle models in 1/32 scale. In this scale the range of subjects is noticeably reduced - single-seat fighters and some twins predominate.

But in choosing a large scale model the individual can do as much work as desired with a final option perhaps of motorising the kit.

Even larger are the aeroplane kits to 1/24 scale. Within the field of miniatures it is relatively uncommon; some of the available models have disappeared from catalogues although the size has intrinsic value in that a vast amount of superdetailing can be carried out including adding practically everything the real aircraft can carry.



The Messerschmitt Bf 109 is without doubt, the one aircraft that manufacturers and modellers have seemingly endless fascination for. In this case the kit is an Airfix Bf 109F in 1/48 scale.



Typical Luftwaffe tropical camouflage of sand, green and blue carefully applied with an airbrush. Note the careful paint blending and attractive overall finish.



The cockpit interior has been improved by reducing the thickness of the seat and pilot's protective headrest. The Gruppe badge appropriate to this aircraft was specially made.



## TOWARDS PERFECT REPRODUCTIONS

Until a few years ago 1/24 scale was the largest scale for plastic model aircraft but in the last decade the Japanese manufacturer Hasegawa launched a Museum Series - aeroplanes to 1/8 and 1/6 scales. These perfect reproductions of their respective subjects are limited to aircraft of the First World War and the Wright Flyer I. Kit materials are mixed and include plastic, wood and metal components.

From these giant scales, one can go to the exceedingly small models in 1/100, 1/144 and 1/200 scales. The aeroplane kits in these sizes obviously have less detail but they are useful for dioramas of air bases, or models of aircraft carriers. There are few enthusiasts who make such models with aims other than those mentioned.



## AIRCRAFT MODELLING POSSIBILITIES

It can therefore be seen that an enormous spectrum opens up for the enthusiast aviation modeller who has both quantity and quality available to him from a huge selection of injection moulded plastic kits, all of which can be enhanced by a range of photo-engraved brass, resin and vacuum-formed additions, not to mention a great many alternative decals offering hundreds of colour schemes.

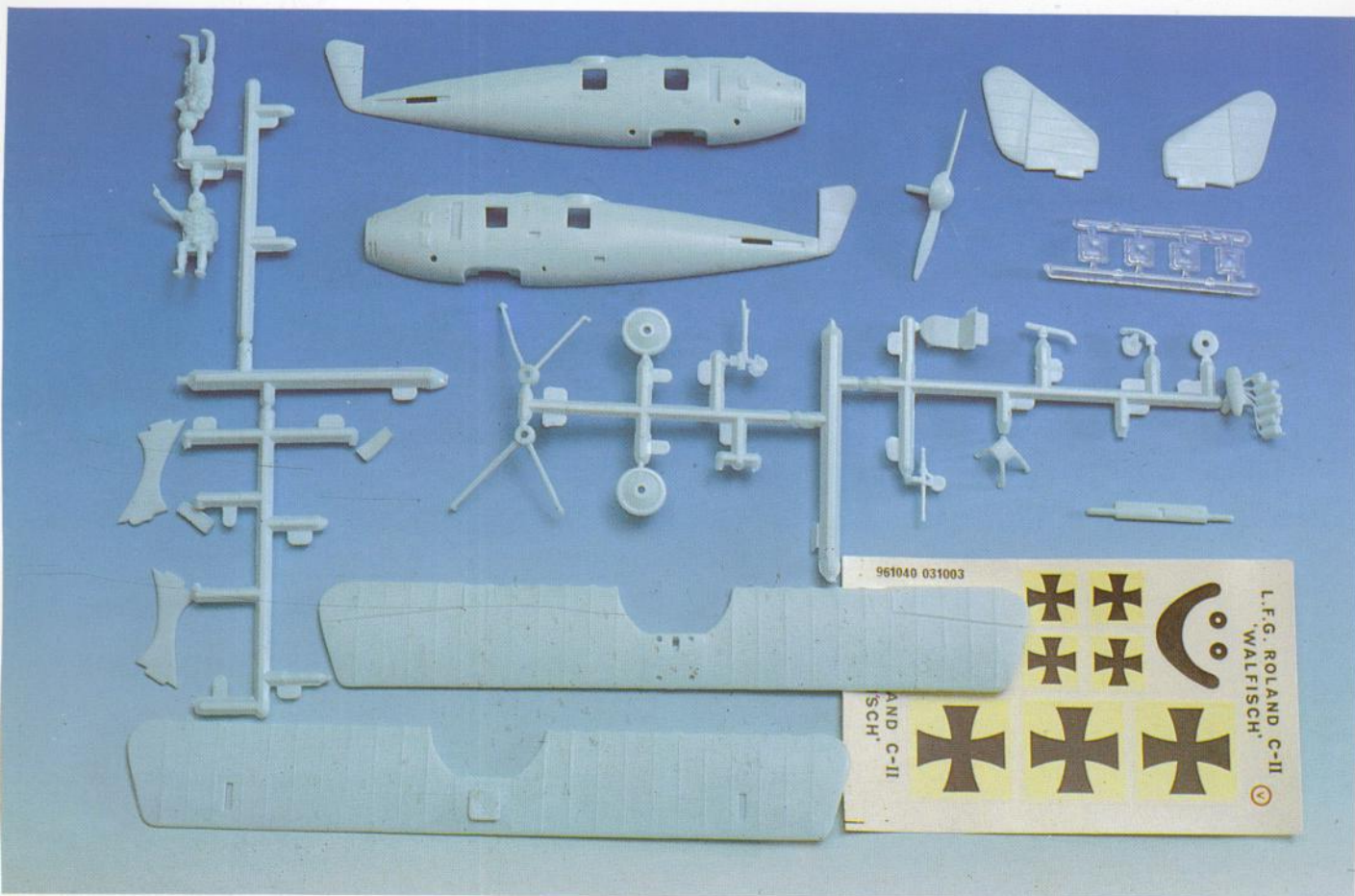
*Hasegawa's 1/32 scale Hellcat is a quality model with a multi-part engine. A realistic paint finish was achieved with an airbrush and some hand painting.*

*Breguet XIX painted in the colours of Nationalist Spain. A vacuum-formed kit, it is produced by Vacukit in 1/48 scale.*

*The 'Jesus del Gran Poder', another Breguet XIX with distinctive fuselage markings.*



# STEP BY STEP CONSTRUCTION



replica. Any model from this era of aviation – in any scale – will make similar demands on the builder's skills. A model can be built 'straight from the box' but by adding detail, the finished result can be much improved.

Basic construction will be covered first; later the painting process is explained, along with the techniques used. We have already chosen a brighter colour scheme than that suggested by the manufacturer, one that we feel better matches the Roland's aesthetic appeal.

## Roland C.II in 1/72 scale

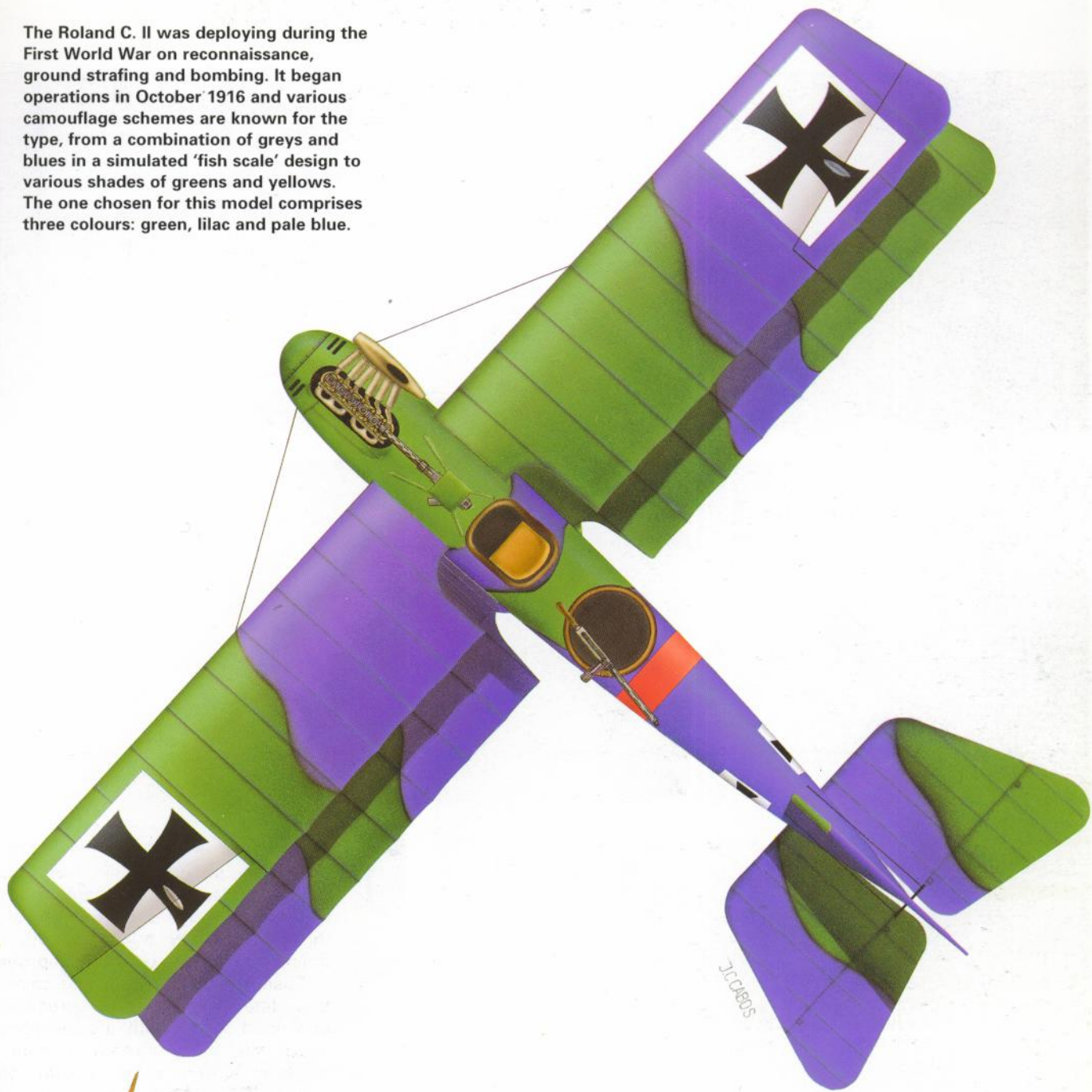
**F**irst World War aeroplanes, with their relative simplicity, make particularly attractive models. Although their assembly does not involve any special difficulties, the final rigging of any biplane can be a challenge. In this first part of the building process we will analyse construction, making minor improvements to the basic kit along the way. The Roland is a good subject as it encompasses all the problems likely to be encountered in building a biplane

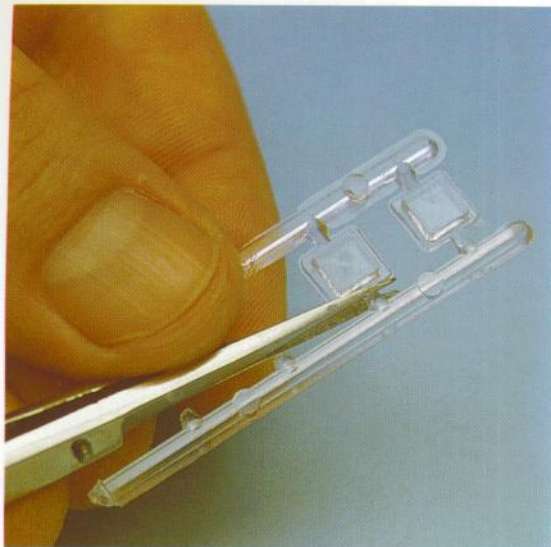
Once the components are detached from the sprue, the first job is to paint the cockpit interior a medium brown shade.

Both front fuselage halves are finished in black after the engine is painted.

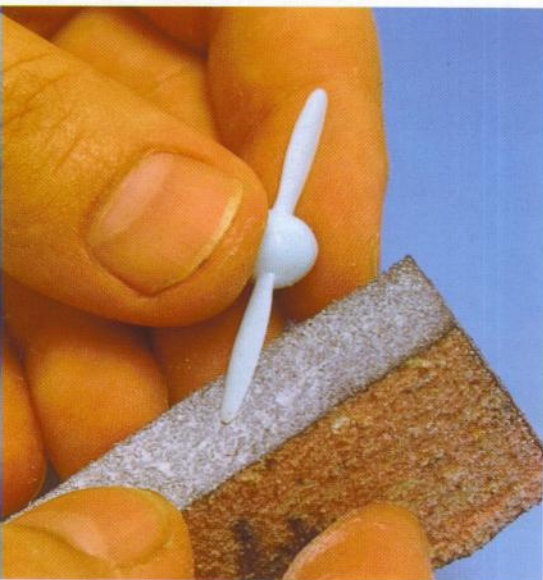
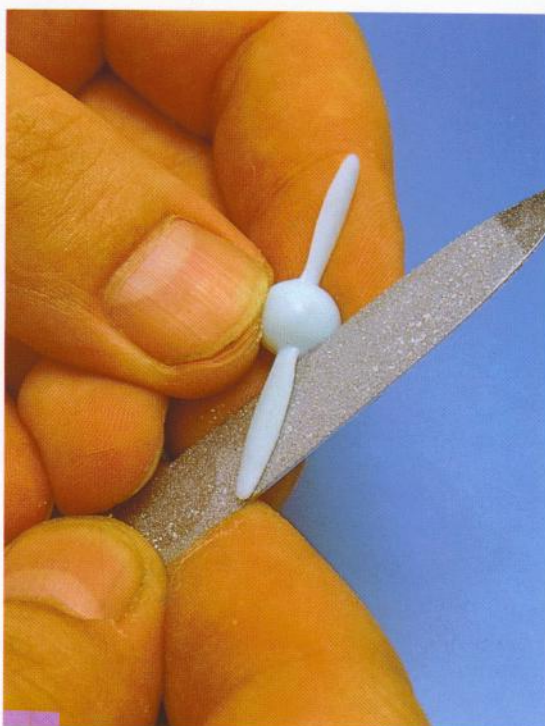
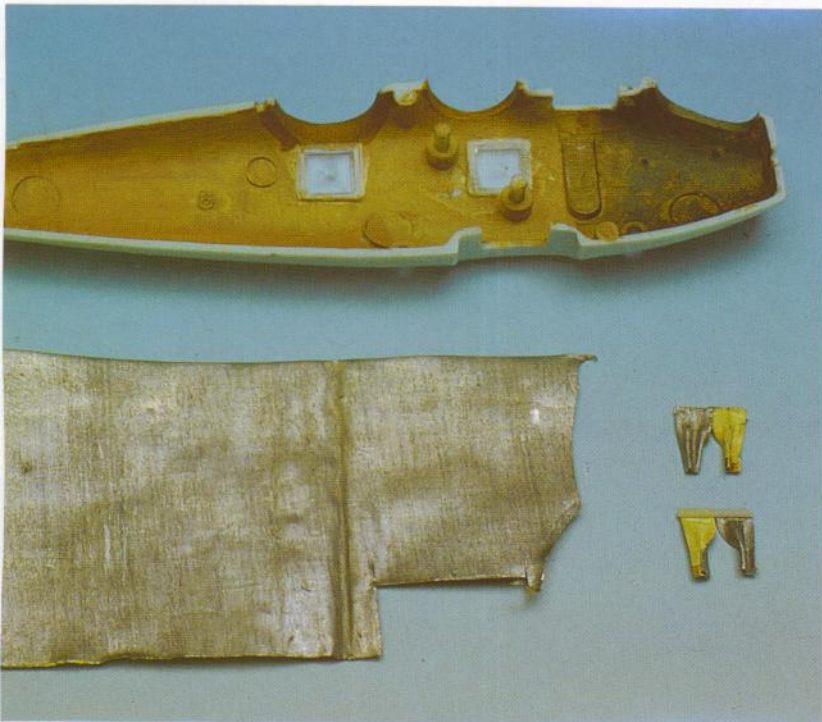
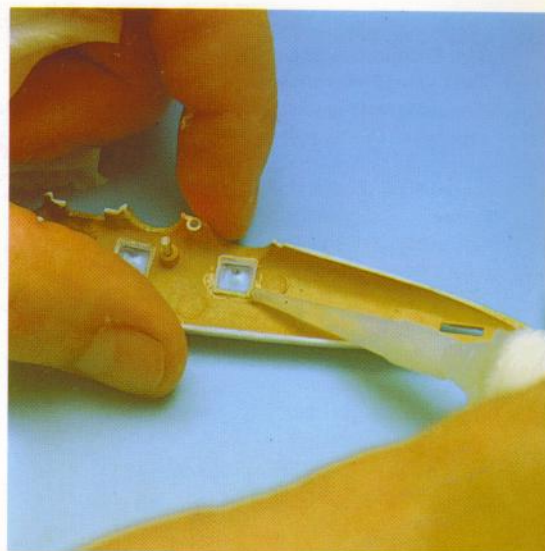


The Roland C. II was deploying during the First World War on reconnaissance, ground strafing and bombing. It began operations in October 1916 and various camouflage schemes are known for the type, from a combination of greys and blues in a simulated 'fish scale' design to various shades of greens and yellows. The one chosen for this model comprises three colours: green, lilac and pale blue.





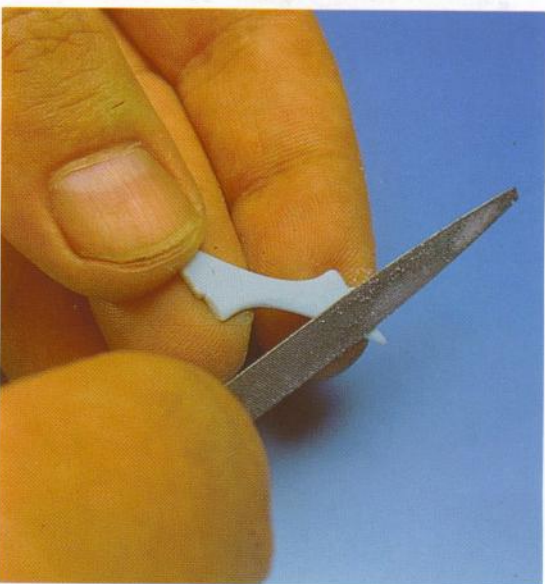
The plastic used for the clear parts is very brittle and it requires carefully separating from the sprue by making a clean cut with sharp scissors or a scalpel. The windows are glued into the fuselage with cyanoacrylate. Rolands had small 'curtains' at the windows and thin card or foil can be used to simulate them.



The propeller is thick and rather crudely reproduced, so reshape to obtain a cleaner aerodynamic shape.

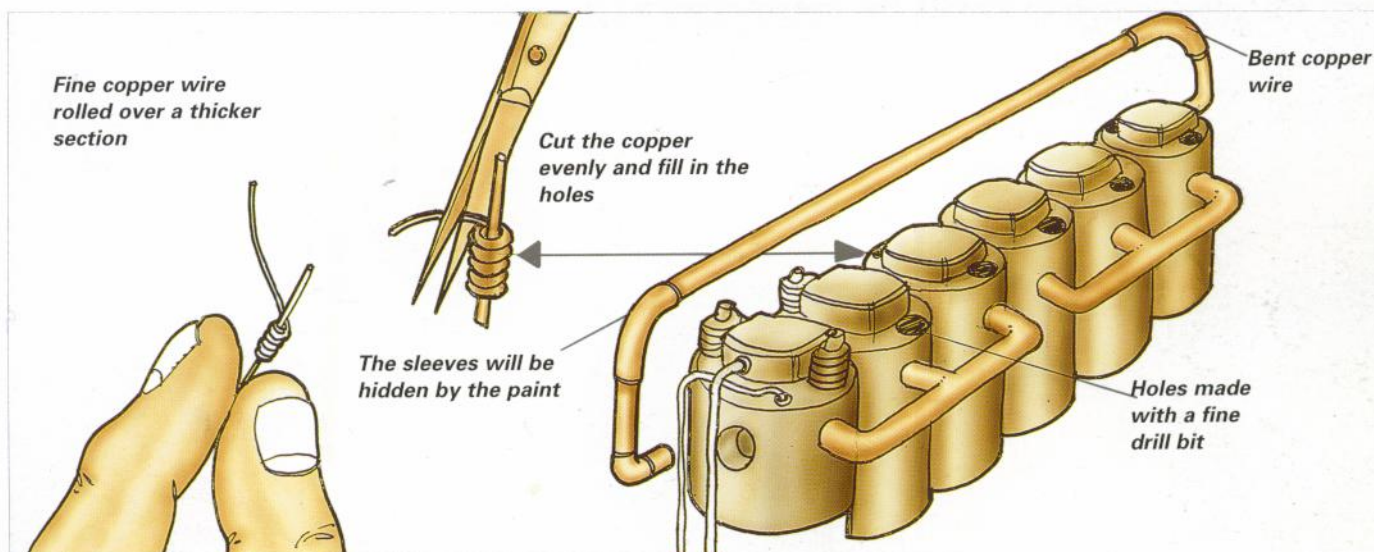
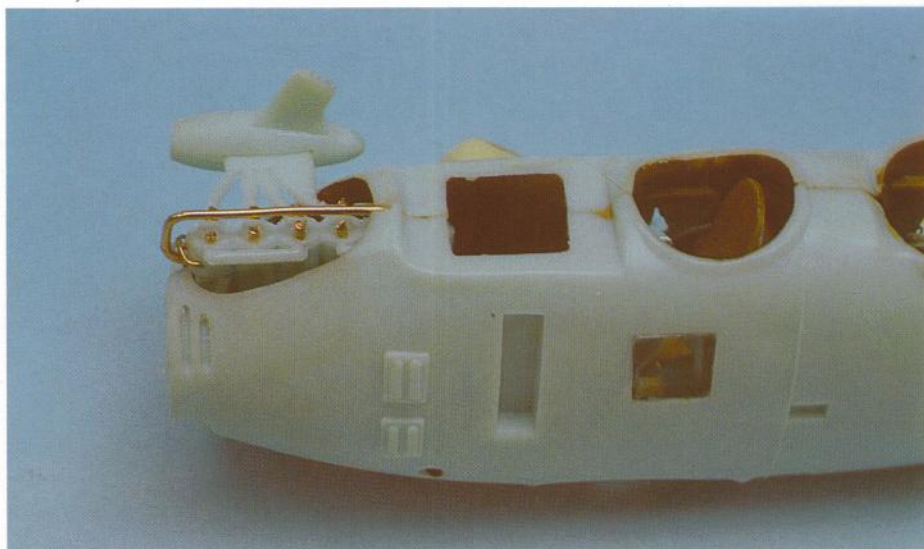
Final finishing with fine grade 'wet and dry' sandpaper attached to a flexible backing block.

Wing struts are treated in the same way, using a half-round file which follows the contours quite easily.



## ENGINE DETAILING

The Roland C.II had a 160 hp Mercedes D.III, an engine which is represented very crudely in the kit. Immediate improvement will be apparent by adding small details using copper wire in different thicknesses. The exhaust pipes, cylinders, rocker arms and so forth can all be represented with wire. Once located, these 'extras' are painted black with the engine block picked out in aluminium using the dry brush technique. The exhaust pipes join a bulky silencer which looks realistic when painted with a mixture of silver and brown applied with a dry brush.



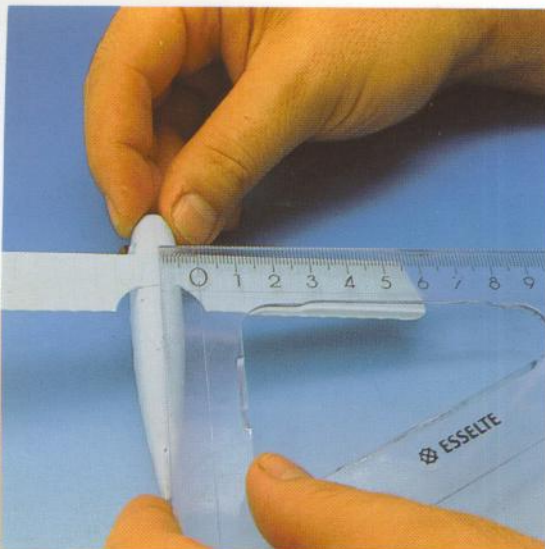
*Use of body putty is often necessary to achieve invisible joints.*

*Some putties are dissolved in acetone and a double container is useful when applying these.*

*A putty or palette knife is used for filling the larger gaps whereas a brush is adequate for smaller ones.*

## KEY MATERIALS

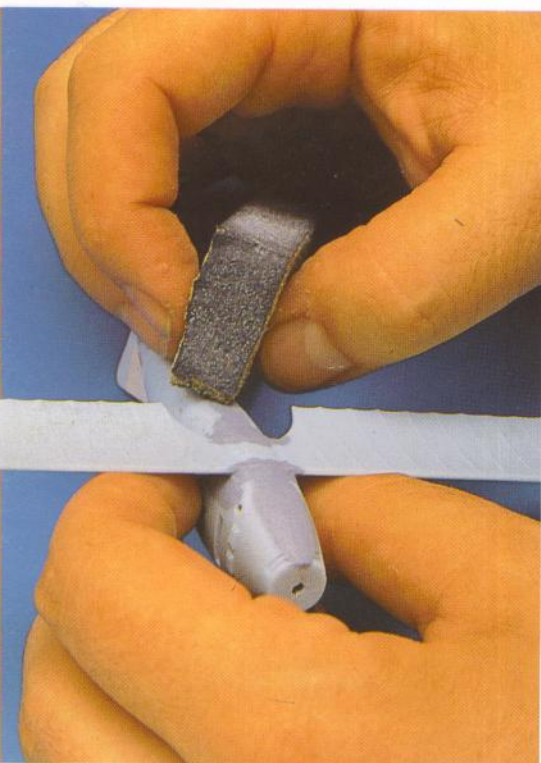
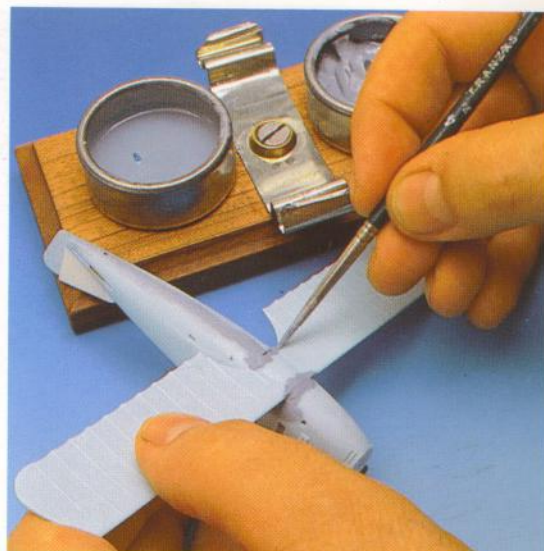




*Join the fuselage halves and glue the lower wing sections together, checking correct alignment with a set square.*

*Using putty, every gap or seam can be sealed.*

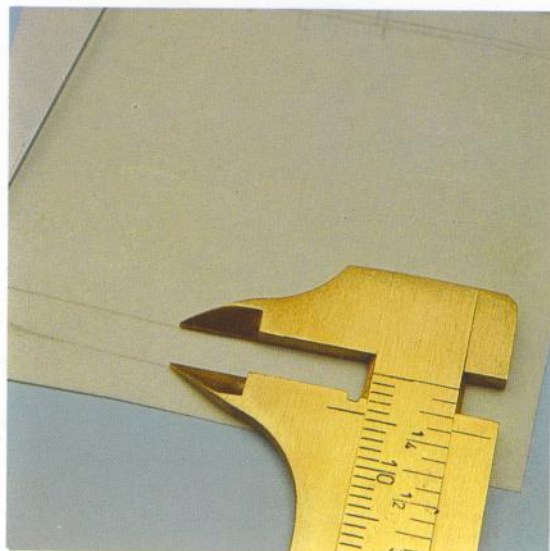
*Once the putty has dried all surfaces are lightly sanded.*

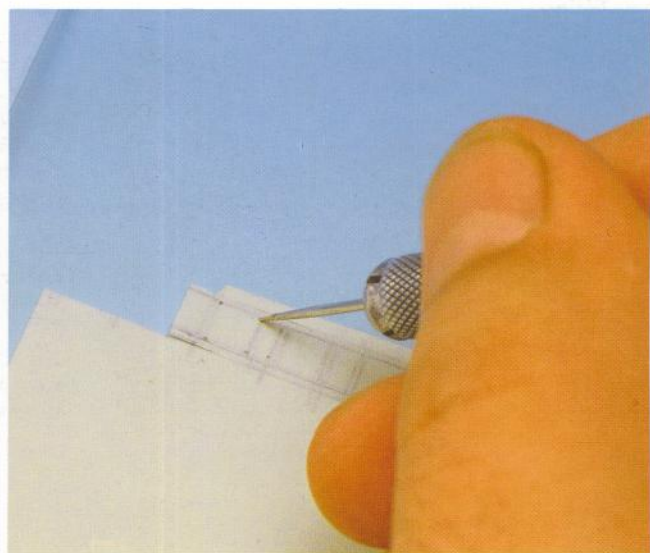
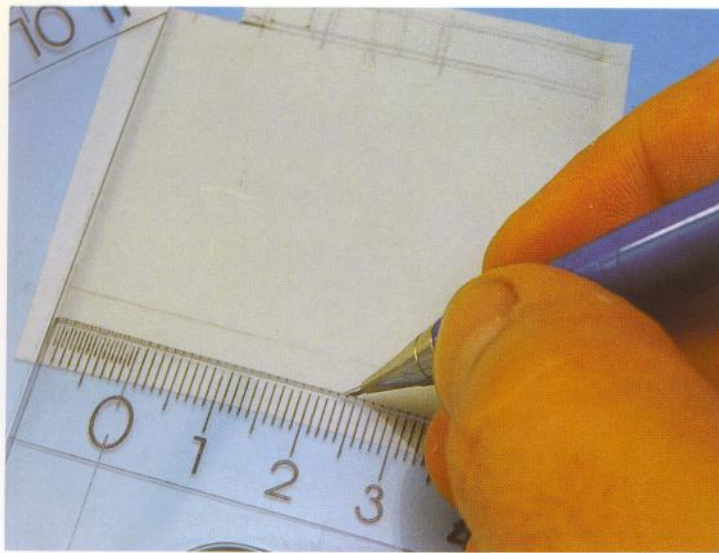


*The upper wing sections are glued together, again checking alignment.*

*When making frames for the fuselage windows, a small calibrator is useful.*

*The dimensions are traced onto fine (0.2mm) plastic card.*





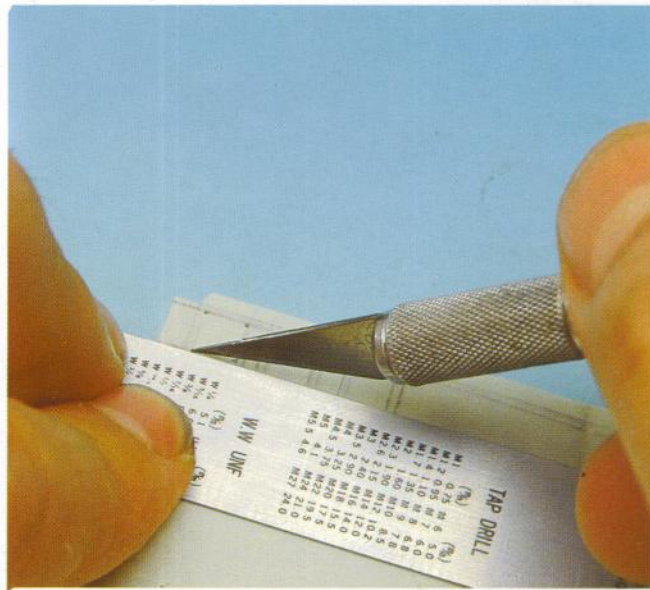
## FINE DETAILS

Making some small additional pieces, in this case window surrounds and mainwheel covers, is not difficult. Very thin plastic is required and if this is not available from specialist hobby shops, it is relatively easy to adapt domestic plastic packaging such as detergent containers.

*Using a pencil and rule, draw parallel lines the size of the window frames.*

*Mark the corners to be cut with a punch.*

*For a clean cut, use a small steel rule and a sharp modelling knife or scalpel.*



Cooling collector

Piston rings

Oil cooler

The entire front section of the fin and its supports

Windscreen

Fastening cable on ammunition drum

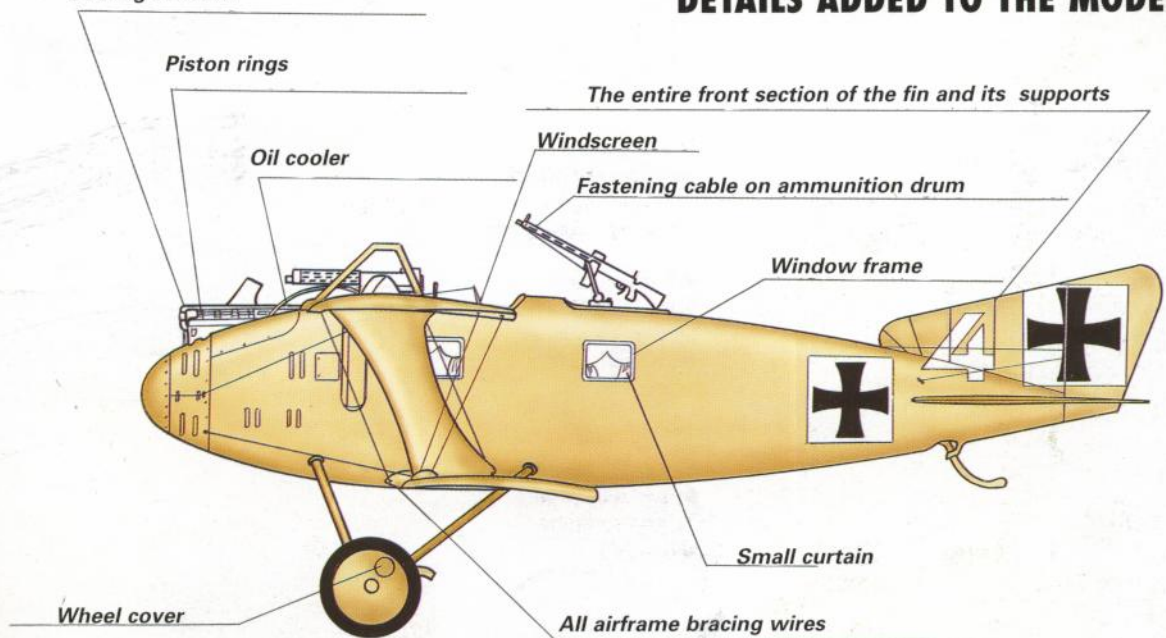
Window frame

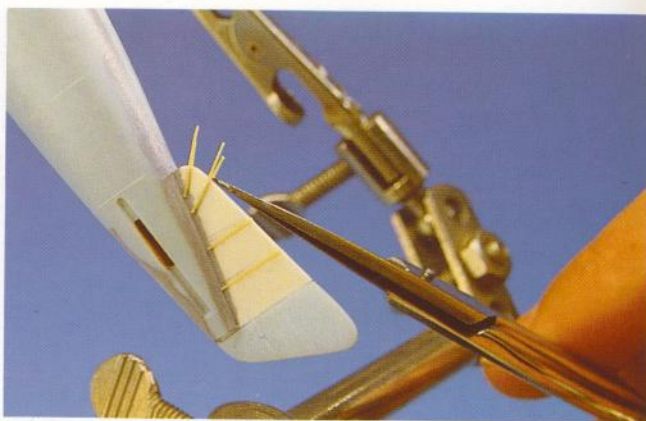
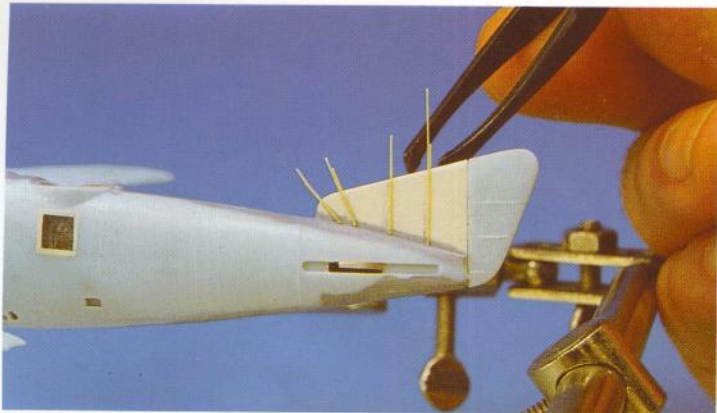
Small curtain

Wheel cover

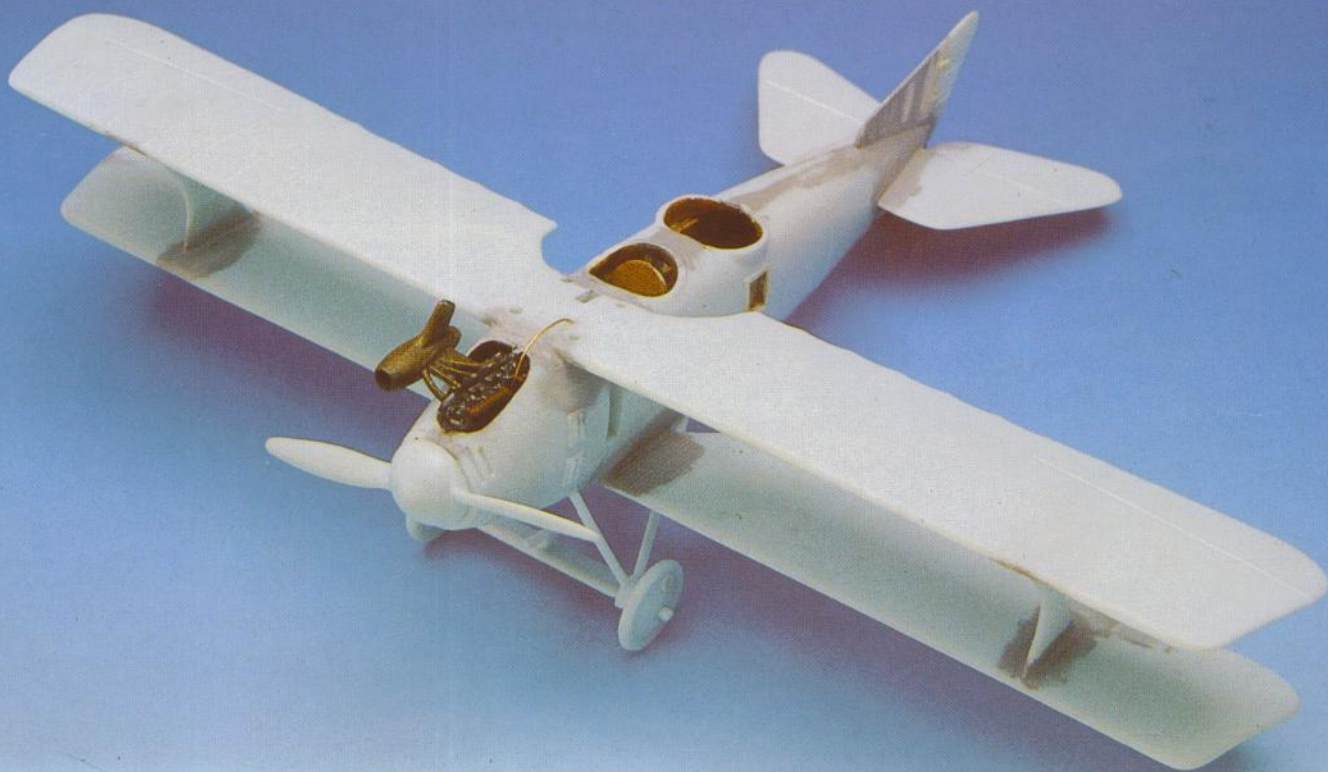
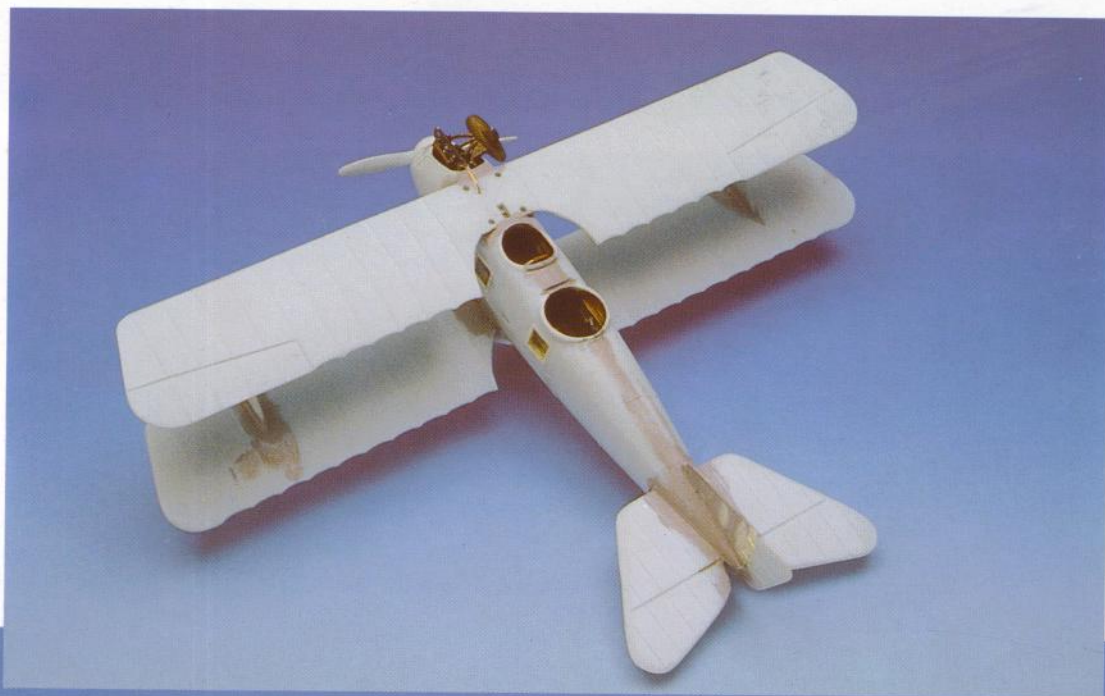
All airframe bracing wires

## DETAILS ADDED TO THE MODEL





*The fin in the kit is inaccurate and in order to correct it the original has to be cut away from the fuselage and replaced, new wire braces being made from very thin plastic strip. All excess plastic was finally removed with fine scissors. Once the wing struts are in place, the model is finished and ready for painting.*



# APPLYING THREE COLOUR CAMOUFLAGE



*Wing areas where the black crosses will be applied are painted white rather than using decals.*

## Masking procedure

Although the kit includes decals, we preferred to paint some areas, particularly the square ground for the crosses.

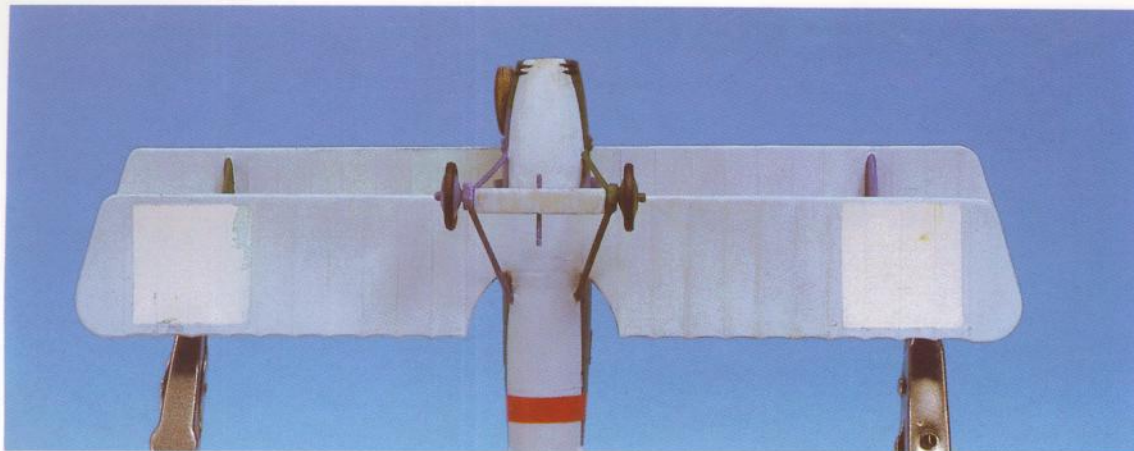
The first step is to paint the white squares on wings and fuselage and then prepare masks using transparent adhesive masking film of the type supplied for airbrush painting. If this material is not to hand, masks can be made up with several layers

## PAINTING A ROLAND IN 1/72 SCALE

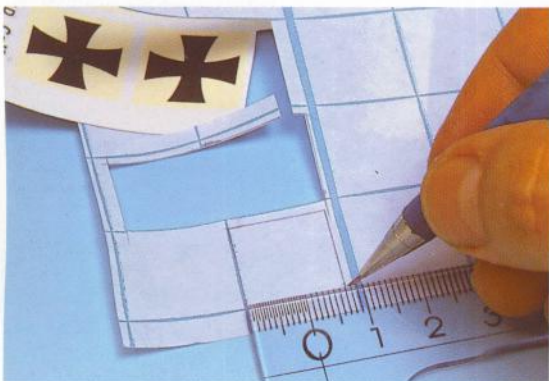
In finishing this model, all types of paint application have been employed. In conjunction with brush painting, self-adhesive drawing masks were used for numerals and the insignia and the band of colour on the fuselage was delineated with Letraline. Maskol was used to cover the small windows while painting proceeded using colour film paints.



*Similar treatment for the fuselage insignia locations. It is better to paint relatively large areas even if decals are provided as the latter are prone to cracking and lifting, particularly if they are thick. Commercial products designed to soften decal film largely overcomes this problem, however.*



*It is not necessary to outline the white patch as the dimensions will be defined by the final colour.*



*Taking the measurements, draw and cut squares on the transparent masking tape or ordinary masking tape with its adhesion reduced.*



*Apply the mask to blank off each square.*

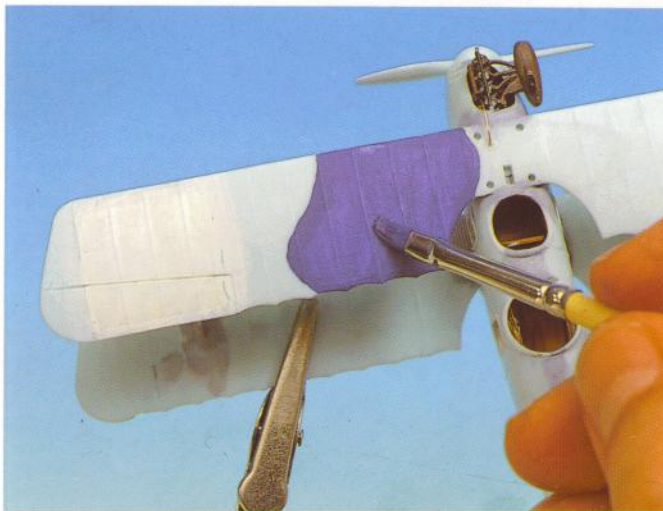
*Mixing blue and red creates the lilac shade that forms part of the camouflage pattern.*



of transparent masking tape stuck together and cut to size.

As some self-adhesive paper is strong enough to lift paint, it needs rubbing between the fingers to reduce stickiness. Masking tape has just the right amount of adhesion but some pressure is usually needed to prevent paint creeping under the edges.

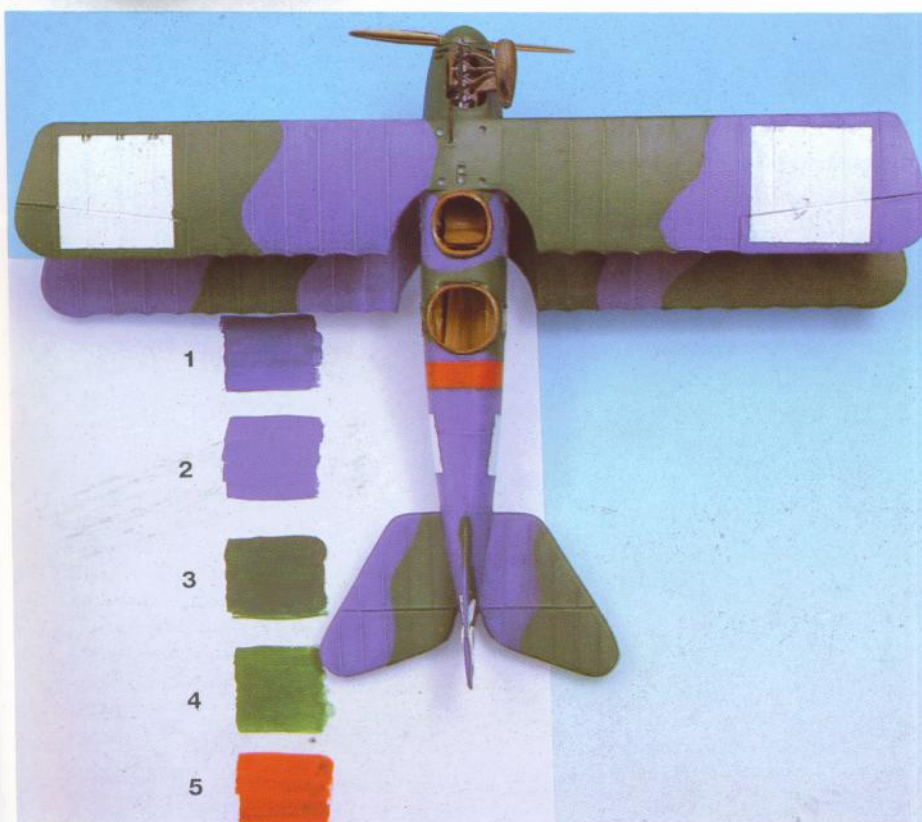
Our first camouflage colour is blue-lilac, obtained by mixing a strong blue and a little bright red. The paint is thinned to ensure that no brush marks are visible. A No 3 flat brush and a No 2 round brush are used, the latter for blending the



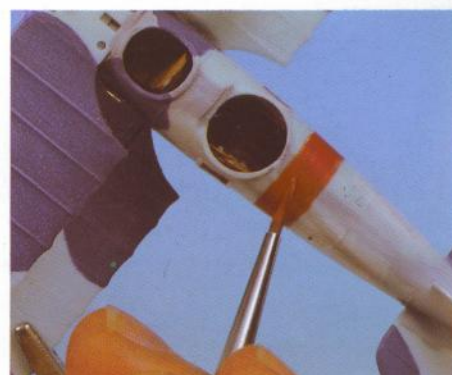
*Flat brushes are ideal for large areas and contours can be followed with pointed brushes, applying a final coat with a flat brush.*



The windows are covered with Maskol liquid mask.



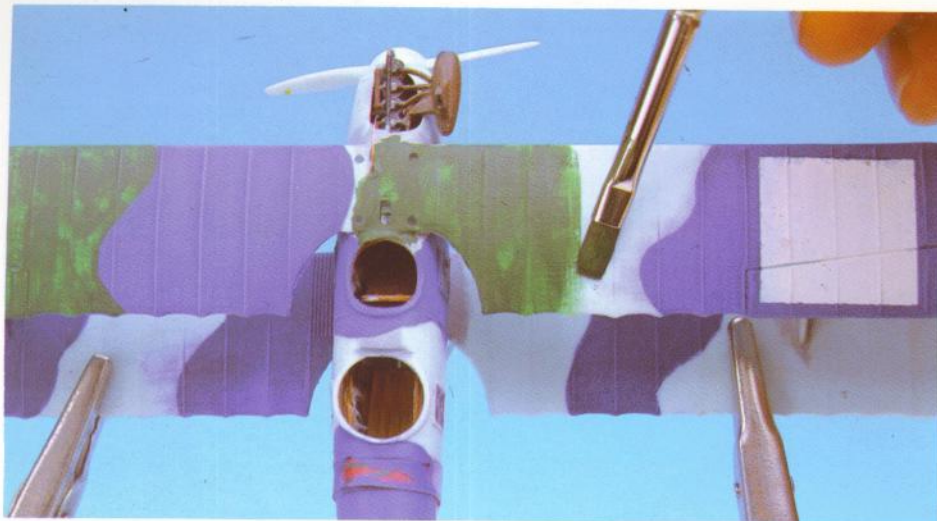
The full range of colours, thinned down for application with a dry brush:  
1: Dark purple 2: Medium purple 3: Dark green 4: Medium green 5: Red (for the band)



At this stage the red fuselage band is painted without worrying about the outlines.



The red band is subsequently masked with flexible tape.



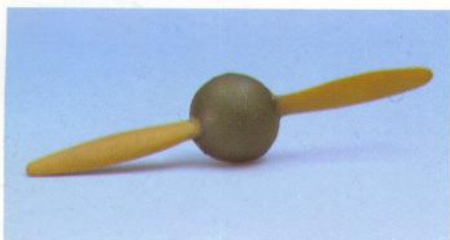
*Painting on the green colour, starting with a slightly darker mix than the final coat. Two coats will be necessary for good coverage.*

The green used is a mixture of olive green with a little black. It is applied as previously although at this stage more care should be taken where the edges of the two colours meet to avoid a thick build-up of paint along the demarkation lines.

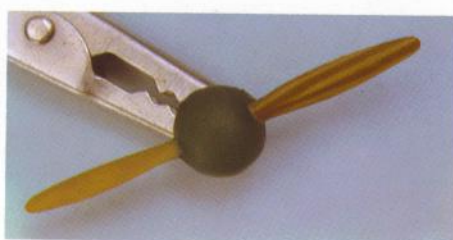
## Painting the propeller

Green is also applied to the propeller spinner; the blades themselves need to have the effect of laminated wood.

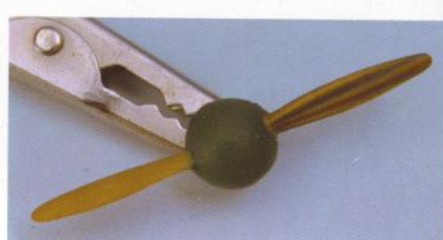
A base coat of light brown is applied to the entire blade area. With brown sienna, lines are made to indicate the first layer of wood, taking care to keep them uniform as



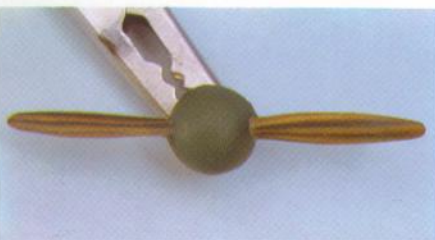
*A base coat of medium brown is applied to the propeller blades to simulate wood.*



*Dark brown is used to indicate the plywood composite of the real propeller.*



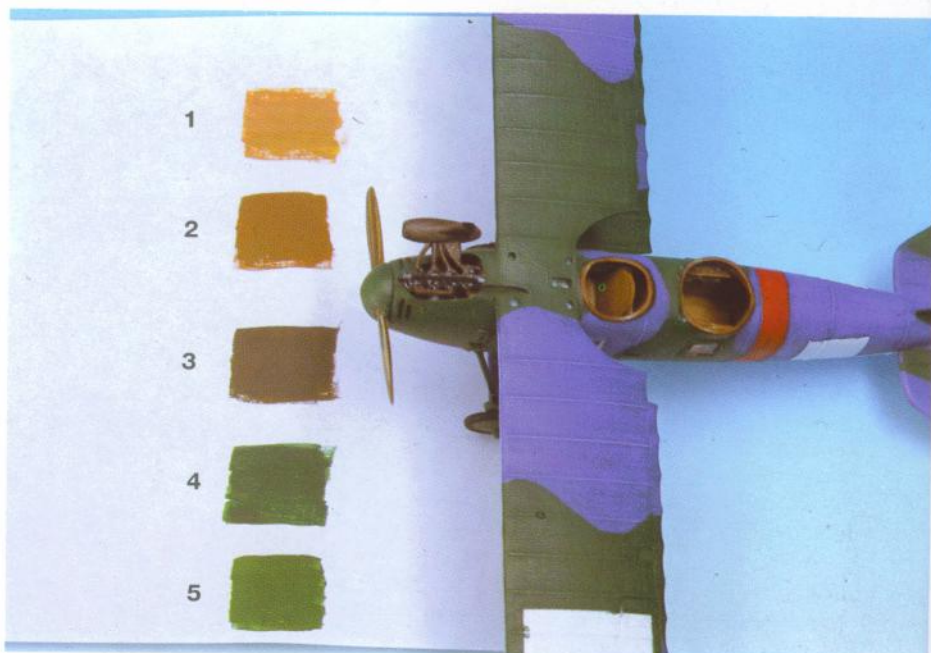
*A darker brown enables a wood grain effect to be achieved.*



*As a finishing touch, clear varnish is applied to the propeller blades.*

edges of each colour. The model is held steady with articulated tweezers.

Paint is brushed on evenly without leaving marks, and applied in two thin layers which will allow surface detail to show through. The small windows are protected by Maskol before the fuselage is painted, the red band being painted freehand as this will be masked with tape when the green shade is applied.



*In order to achieve a realistic reproduction of plywood, three or four colours will be needed: medium brown, dark brown (for the grain), very dark brown (also for the grain) green camouflage and finally a green for dry-brushing.*



*Discharge of paint over a cloth or paper in preparation for dry brushing.*

*With very little paint on the brush, the surface is rubbed over quickly and lightly.*



full size propeller blades were usually made from laminated strips of wood. The next colour, a dark coffee brown, is partially superimposed on the lighter shade. Finally, a lighter colour is used for outlining on each blade.

## Dry brush

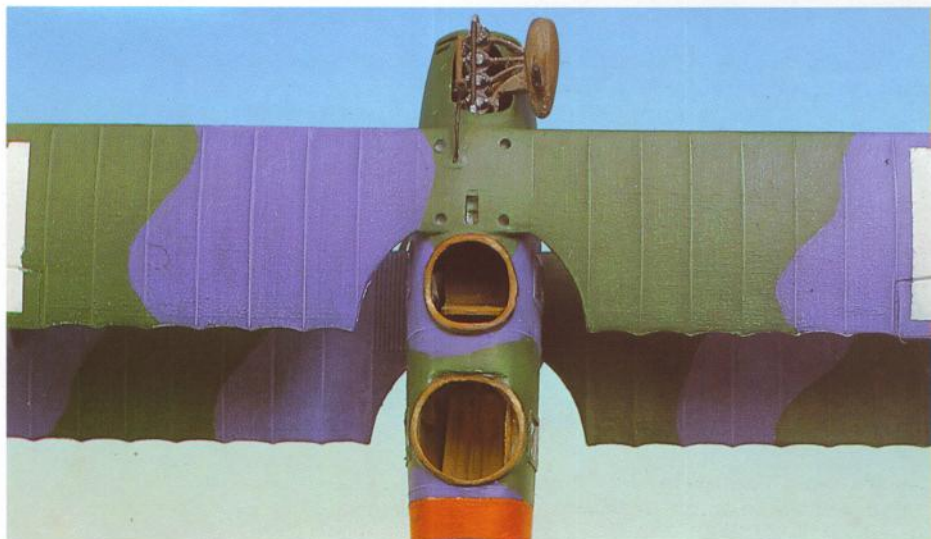
This technique, widely used on models of tanks and vehicles, can also enhance the texture of fabric



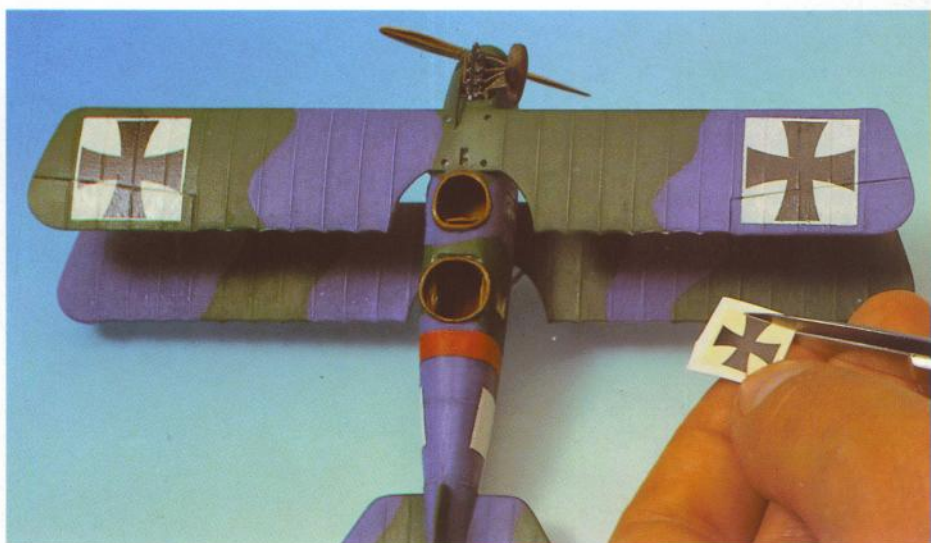
*White areas behind the crosses are now retouched to straighten the edges.*

surfaces and the shape of the ribs of wooden aircraft. Using a very soft brush and rubbing with the fingers will usually be sufficient, although a light touch is necessary to ensure that the effect looks realistic.

For each base colour a corresponding lighter shade is employed: from olive green mixed with black to pure green thinned to



*Dry brushing with the contrasting lighter colours uses the same technique.*



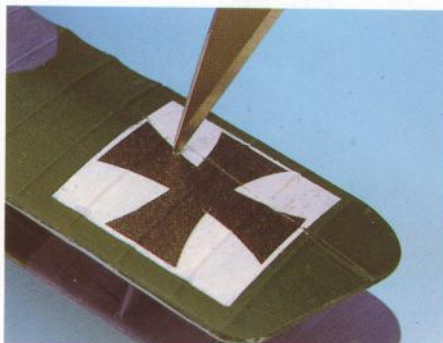
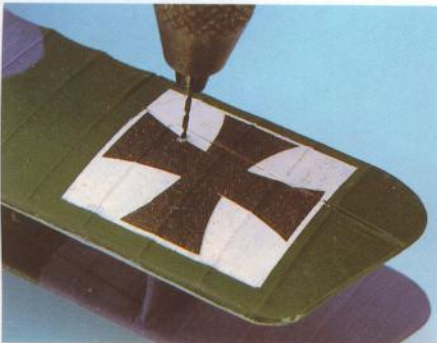
*Using pointed scissors, the decal images are cut as close as possible to ensure that no transparent film remains.*



*The number is drawn on a piece of paper, transferred onto a self-adhesive mask and cut out. It is then placed on the model ready for painting.*

The white rudder square, due to its confluence with the fuselage, is better painted with a brush. Trying to use templates in this area would invariably involve some retouching. Before applying the decal crosses these are carefully cut around and placed on their white squares. Use Micro Set and Micro Sol to keep them pliable and allow them to 'flow' over the rib contours.

The aircraft number '4' is drawn separately on paper, cut out to form a template and painted on with a brush. Care is needed when lifting off the mask as some paint may creep under the edges, necessitating retouching – indeed this is a common problem when using masks as their edges tend to lift off in places. It is advisable to keep a supply of matching paint to hand if retouching proves to be necessary.



*A hole is made in the wing surface to take the bracing wire supports. The hole is widened slightly in order to insert a piece of plasticard which is glued and cut.*

an almost clear wash. Letting paint dry on the brush so that the bristles hardly move enables dry brushing to proceed on flying surfaces. Little by little the fabric and ribs appear in relief, highlighted by the almost dry paint.

A similar procedure is followed for the lilac colour and the lower surfaces, which are finished in a very pale blue. To bring out some the inevitable wear and tear of a front line aircraft, a very soft ochre water colour wash can be applied with final dry brushing using white slightly tinted with brown.



Adding bracing wires constitutes that final, special touch that sets biplane models apart. A number of very fine strands of stretched plastic sprue will be required and it is a good idea to make more than needed in case of breakage.



millimetres. On the wings, location of the bracing wires is most convenient when working from the fuselage outwards.

To secure each wire a small area of paint is scraped off using a modelling knife and a small drop of cyanoacrylate is applied to the end of the wire to secure it to the paint-free area. Once this has set the total length of the wire can be determined and cut as necessary. It is important to keep the wire taut and not allow it to bend. This operation is repeated where the wire is to be secured at



The logical way to position bracing wires is from inside to outside. The strips are glued by cyanoacrylate at one end, allowing for a little extra length for trimming at the other end.



## Bracing wires

An essential detail on models of First World War aeroplanes is to add wing, tailplane and undercarriage bracing wires under the correction tension. Although various types of wire and sewing threads have been used in the past, the best results are obtained by very thin strips of heat-stretched plastic, usually made from the sprues which carry the main component parts. When strips of sufficient size have been made these are measured with a calibrator or rule and trimmed to the required length, allowing an extra three or four



Once the right length is obtained, the wires are cut and glued.

the other end, the drop of cyanoacrylate being most easily applied with the aid of a toothpick or similar tool rather than directly from the tube or tin. This can be a delicate operation, but with practice excellent results can be achieved.

The joint will be somewhat obvious so it needs painting over with the tip of a fine brush. Varnishing the model will also ensure that the bracing wires stay tight.



# FIRST STEPS IN MODELLING



## ASSEMBLY OF A MiG-29

**H**aving invariably spoilt a few cheap kits we move on to build our first 'quality' model. It is better to choose a kit that presents the least problems so look for a subject that has easy assembly of parts and good surface detail such as the Hasegawa MiG-29 Fulcrum in 1/72 scale.

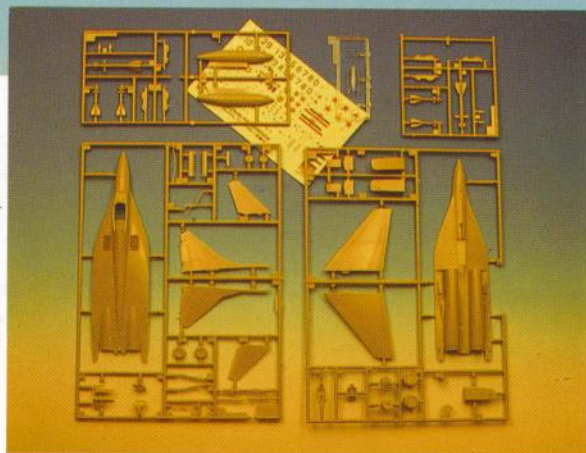
In addition to its ease of assembly this kit has clear instructions, a choice of camouflage schemes and a comprehensive decal sheet. Because the cockpit has to be painted before the fuselage halves are joined, we recommend starting with the interior using enamel or gouache paints.

## AIRBRUSHES IN ACTION

Airbrushes are precision instruments capable of remarkable finishes and effects but the beginner needs practice to develop a technique.

*Kit parts that make up a modern Russian jet fighter exemplified by the Hasegawa MiG-29 Fulcrum in 1/72 scale. The component mouldings are excellent and there is no complex assembly work.*

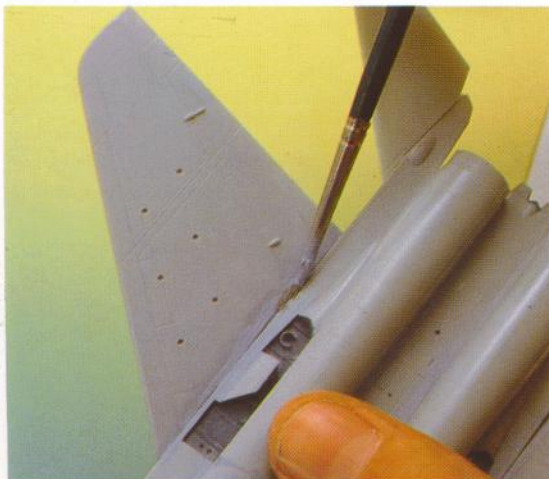
*The first step is to paint the cockpit and pilot figure with acrylic gouache which mixes well and has good covering properties.*



## KEY MATERIALS



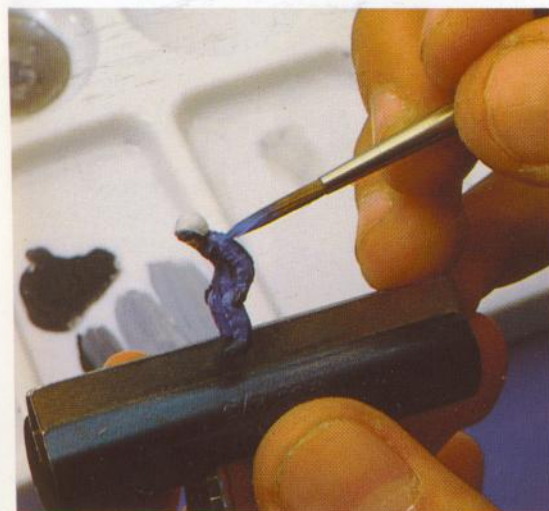
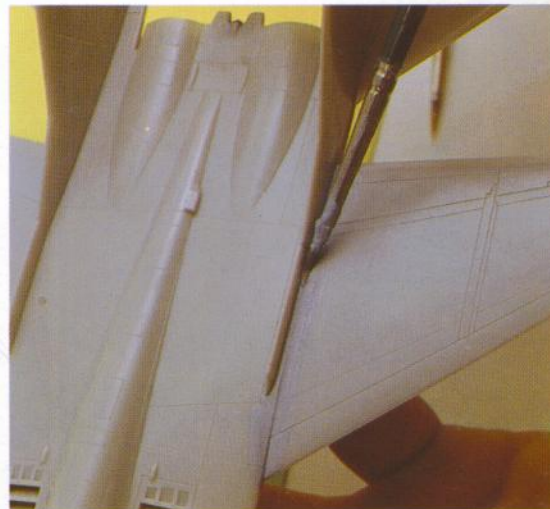
Other important modelling tools include flexible sandpaper blocks. These foam rubber pads come with the abrasive material attached in the form of a different grade of sandpaper on each side. Two types are available, giving a total of four different grades of paper. Dry body putty is easily rubbed down using a flexible sanding block as it adapts easily to curves. For a final polish of filled areas, a sponge pan scourer is ideal.



On this kit the only areas that require filling are minute sink marks on the wings and rudders.

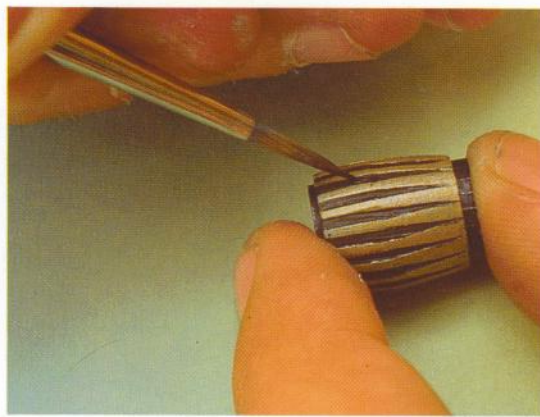
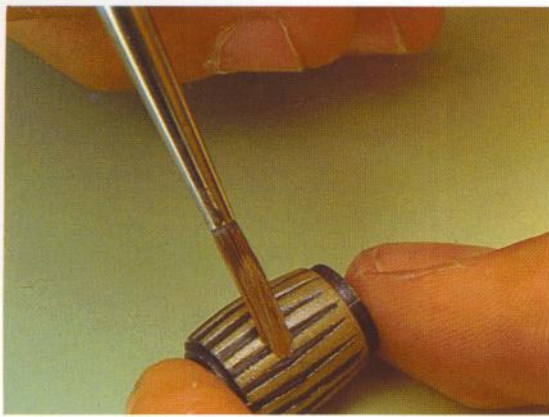
Putty has to be applied both above and below the wing.

Paint the pilot's flying suit in deep blue, using a small amount of white to bring out creases, pockets and so on.



Before applying the instrument panel decal, the cockpit interior is painted black and finished in medium grey using a dry brush.





The jet nozzles require a specific treatment: after they are highlighted in black, a mix of silver, brown and black is applied using the dry brush technique.

An airbrush represents a considerable investment and it requires great care both in use and maintenance if we want it to last.

To obtain good airbrush performance a reliable supply of air is essential. A compressor is by far the best but good painting results can be obtained with individual canisters of air. With airbrush and propellant to hand the right paint solution is vital. In general paint will flow well through an airbrush if it has the consistency of milk and this is the procedure followed to paint our MiG-29.

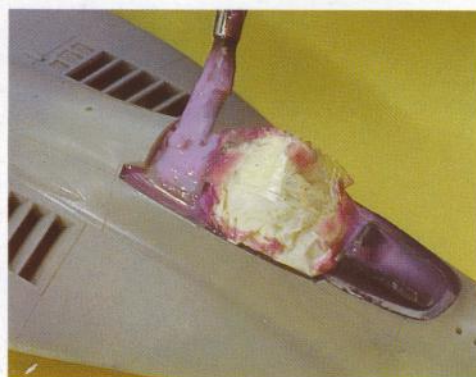


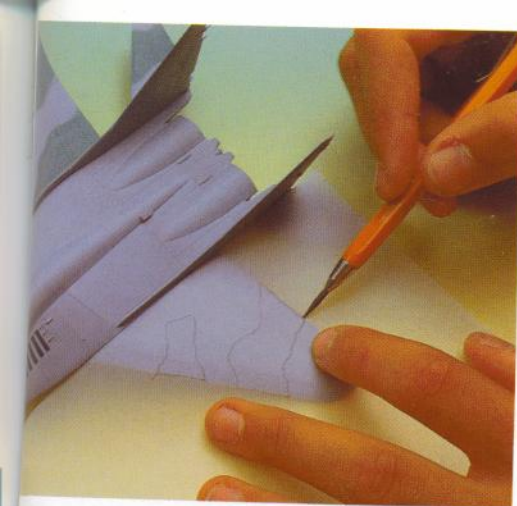
The result is a dark metallic effect that gives the convincing appearance of heated metal.

The best way to paint a model of a modern aeroplane is with an airbrush. Start with lighter colours, in this case a soft grey.

Don't forget to mask the finished cockpit area before spraying.

Cockpit masking is with masking fluid and tissue paper.

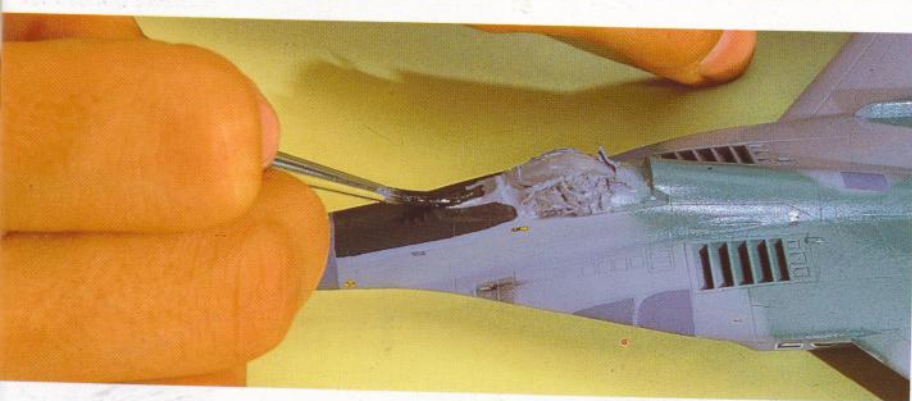
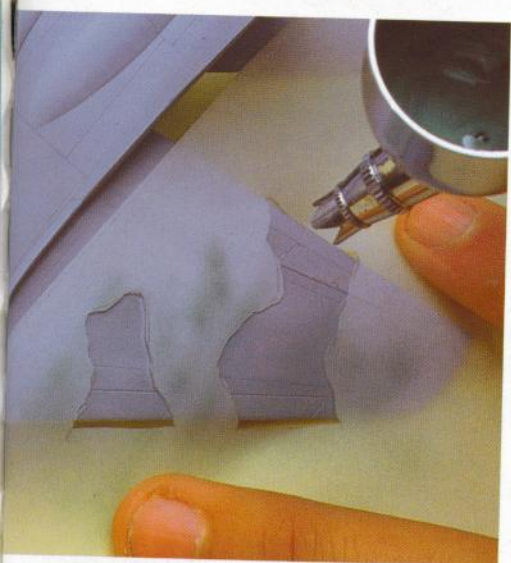
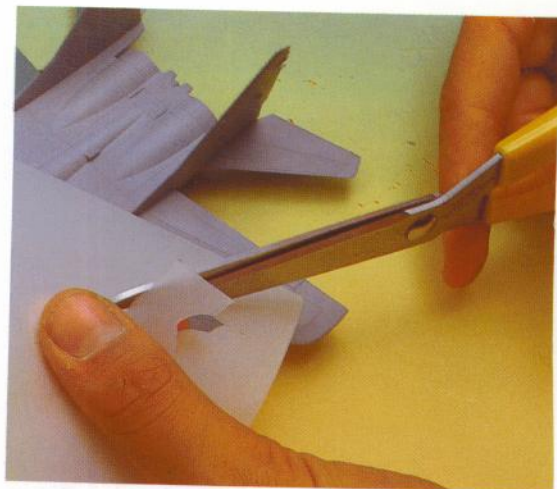




*Before applying the second colour, outlines of the camouflage pattern are drawn on translucent paper.*

*Cut out the shapes, leaving only the area to be painted. Hold the paper mask steady.*

*To obtain soft edges it is sufficient to hold the mask 1-2mm away from the model surface.*



*The aircraft's anti-glare panel is painted black using a freehand brush.*

*Wet the decals slightly and just before they come completely free of their backing paper, position them on the model in the correct locations according to the instructions.*

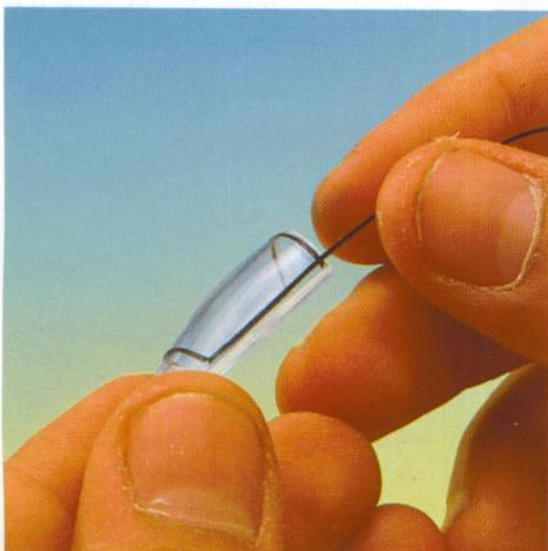


We used acrylic paints on the MiG, these having the advantage of being soluble in water. Brushes can be more thoughtfully cleaned in alcohol which is quite cheap to buy.

Each airbrush had different characteristics but ideally the one chosen for modelling purposes should be capable of spraying a variety of line thicknesses from about 0.05 mm to 8 or 10mm wide. A versatile airbrush will enable large areas as well as fine lines to be sprayed quickly.

If you have a steady hand, patches and other small areas can be painted freehand; grip the wrist of the brush hand in the other to improve steadiness. Don't worry if you tremble and make a ragged line, as raised or elevated masks can be used to cover any mistakes by going over a particular area a second time. In hand-painting as well as airbrushing, the rule of light colours first applies. Clean the airbrush thoroughly after every painting session.

To prevent the acrylic finish wearing or being scratched, it is



*This model includes a large number of small decals.*

*Some decals are positioned with the aid of small tweezers.*

*In order to paint the cockpit framing it must first be masked with tape.*

*Maskol is applied to all transparent areas prior to painting.*



## BEGINNERS' MISTAKES

*The completed MiG-29 is compared with a Mirage made by the same individual when he lacked modelling experience. On a close comparison some important points emerge.*

*Analysis of the mistakes made by the beginner:*

*Obvious gaps and seams where parts have been joined reveal that no filler has been used.*

*Shiny decals contrast with matt paintwork due to not varnishing the model to obtain uniformity.*



*Cockpit framing badly painted, or not painted at all.*

*Badly applied paint has led to some variation of camouflage colour.*

*Made up colours due to a lack of reference material.*



*Only the external stores remain to be painted and placed on their appropriate pylons.*

*The finished MiG-29 looks very impressive, well representing the current high 'state of the art' regarding quality of plastic kit moulding.*

advisable to apply a coat of gloss varnish. Decals adhere better to a gloss surface with their own gloss finish blending in well, but a final coat of satin finish varnish gives a better look to a high-performance jet fighter. A bonus is that a varnished model will never lose its decals and neither will sunlight fade or yellow these with the passing of time.

The foregoing procedure is that followed by a 13-year old model maker, so large numbers of modellers will be equally able to complete kits to this standard. There are however, many methods and 'tricks of the trade' to improve the process and these will be explained throughout the following chapters.



# STEP BY STEP CONSTRUCTION



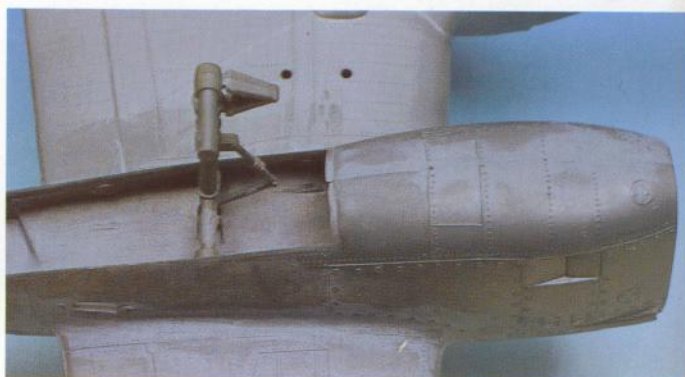
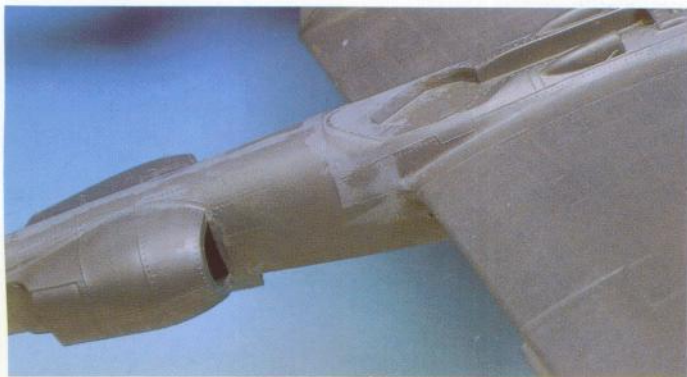
*Filling indentations between the fuselage and rudders with putty.*

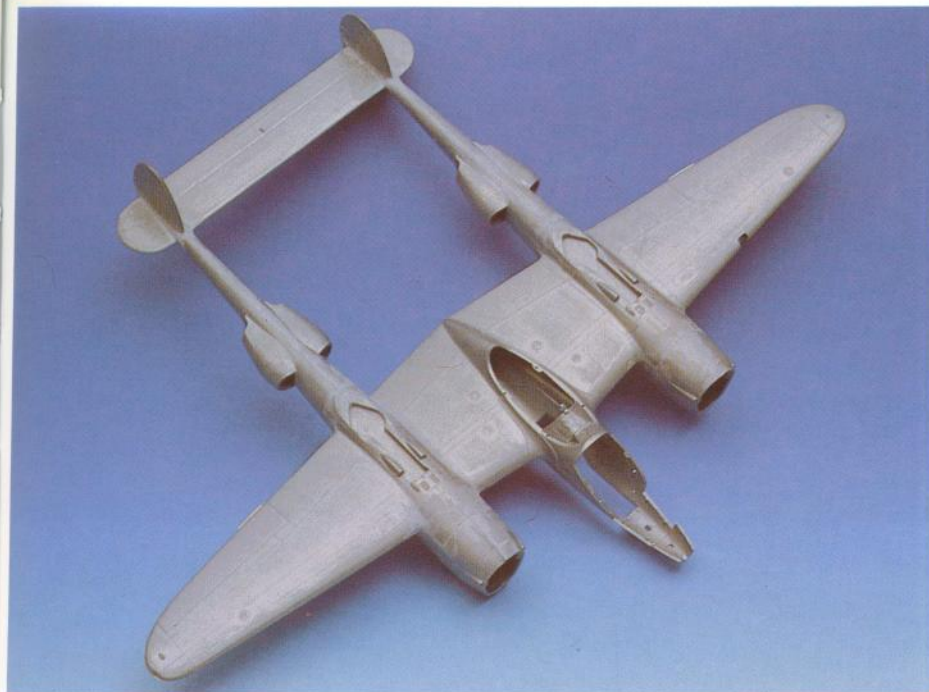
*The wing joint has to be sealed and sandpapered.*

*Use a scribe and punch to restore any rivet and panel line detail that may be erased when rubbing down.*



**A**fter carefully constructing the model, the final touch is to fill any gaps in the sub-assemblies with putty and rub down thoroughly. It is often the case that wing to fuselage joints, tailplane junctions, fairings and so on will not mate exactly, so a body putty treatment is necessary for a smooth finish. Mastering the application of putty using a brush and acetone will bring pleasing results with no visible seam lines or gaps. Bear in mind that putty tends to shrink when drying and a second application

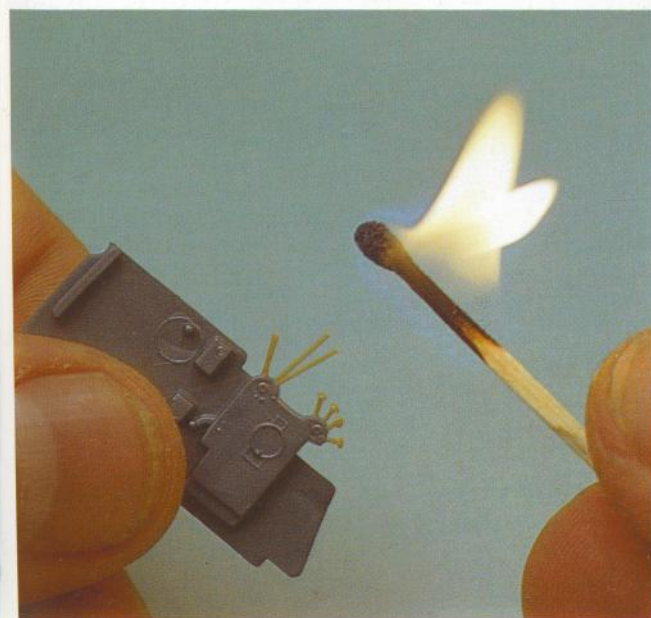
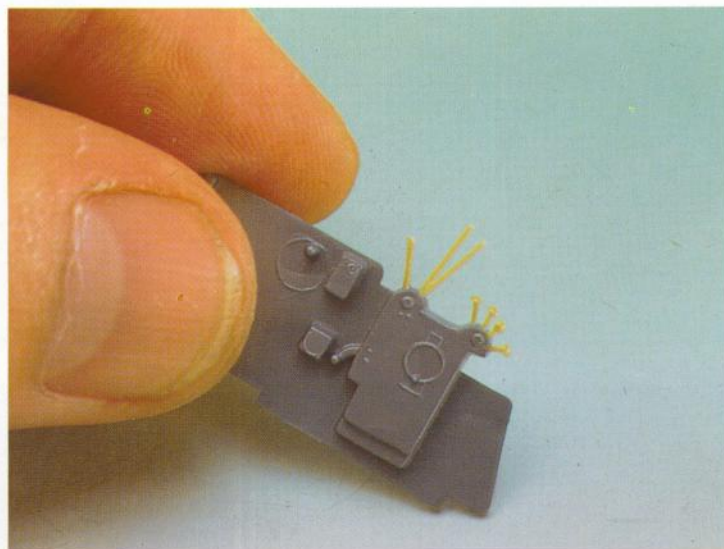
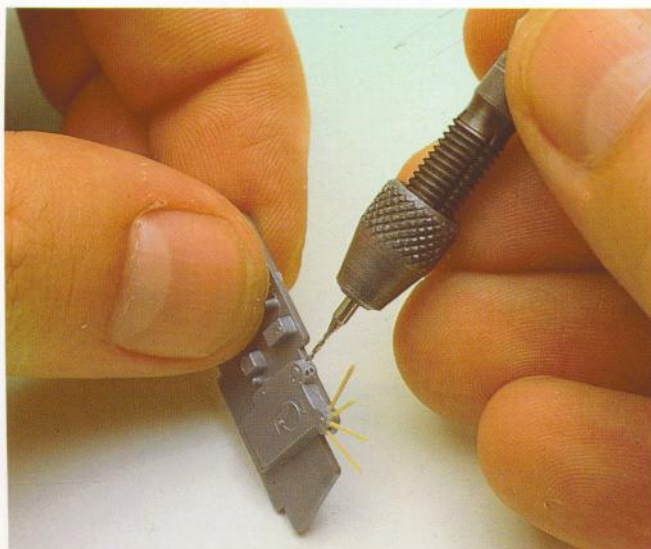




may be required. Alternatively a generous amount with some over-spill will do the job, the excess being rubbed down with fine, No 600 grade wet & dry sandpaper until every irregularity is smoothed over.

## RECONSTRUCTION

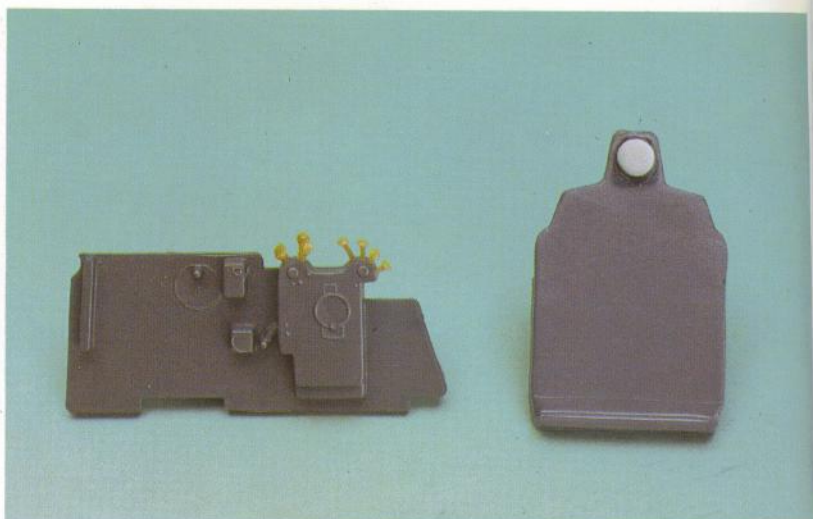
It is not unusual to find when checking the component parts to make up a cockpit interior that although the manufacturer has provided some parts, others have been omitted. If the differences are only in detail, it may only be necessary to fabricate the missing items – but some kits provide only the barest of cockpit furnishings, leaving the modeller to build up instrument panels, consoles and seat detail from scratch. Plastic card is invaluable for making cockpits



*Correcting design errors and omissions in kits can take time and effort but the end result is more than worthwhile. Extra detail such as control levers can be added by stretching plastic strip under a low heat in a match flame to create a small ball representing a control knob.*

look more authentic, as is the stretched sprue method. Control detail can be added by drilling out a suitable receptacle, inserting a piece of card strip and gently heating this in the flame of a match. Under heating the plastic will form a small ball. Any number of these can be made to represent handgrips on control levers, these being drawn out to the required length.

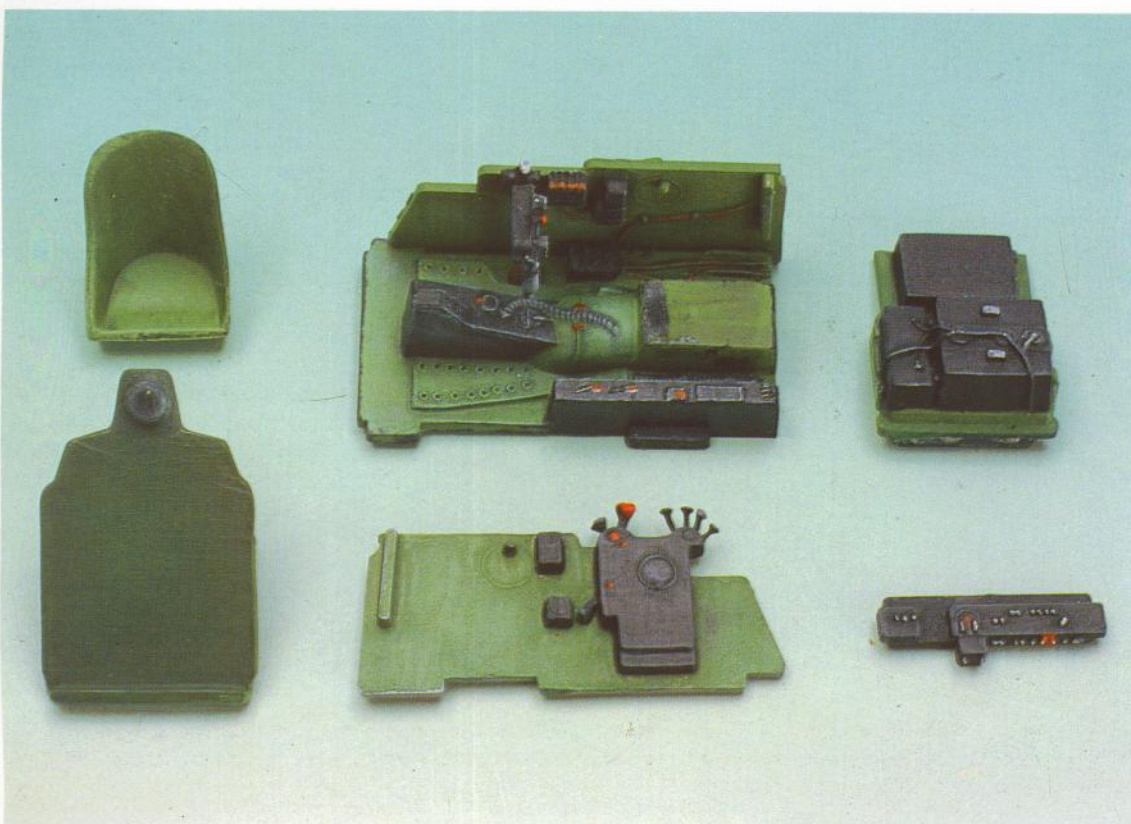
Milling cutters can be used to drill out holes where necessary, reducing the thickness of the plastic incrementally. A hand drill is preferable as electric drills can soon become too hot and will melt the plastic. Drills with slow speed controls overcome this problem.



*A milling cutter is used to hollow out controls that are moulded 'solid' in the kit.*

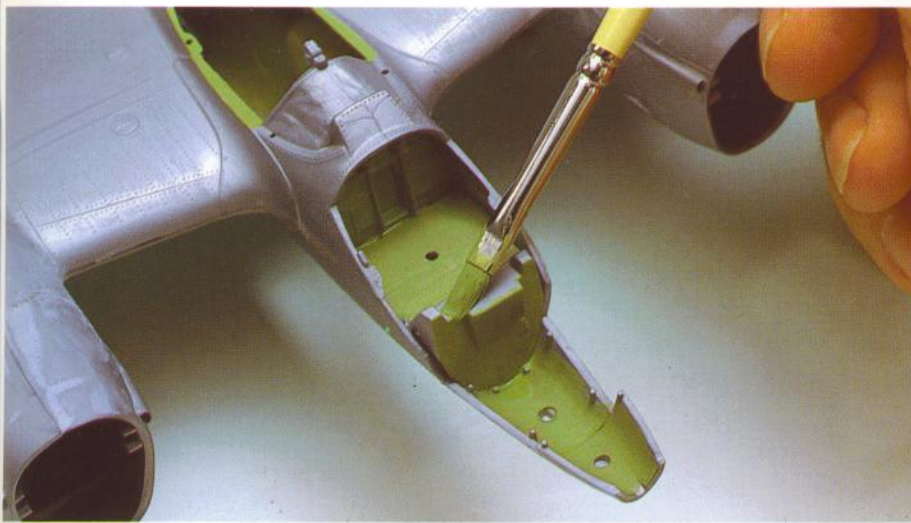
*The seat is improved by adding the headrest cushion.*

*Batteries and consoles are partially painted.*



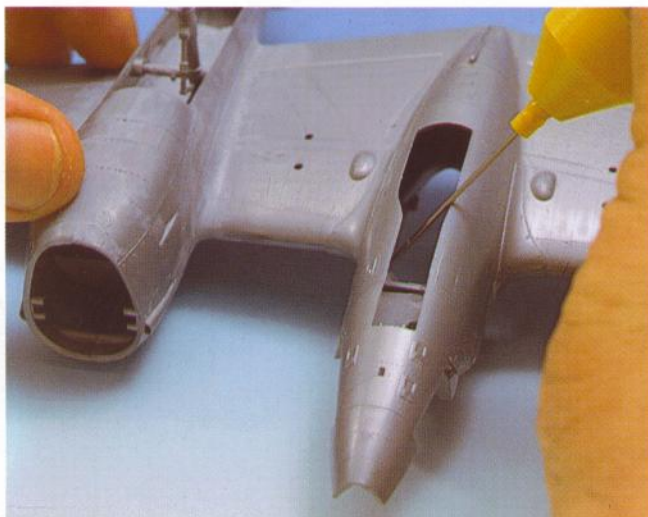
*Cockpit interior sub-assemblies are pre-painted using the dry brush method.*

*note electrical wiring and control lever additions and 'used' look of consoles.*



*The entire interior is painted with anti-corrosive primer, in this case with an apple green hue.*

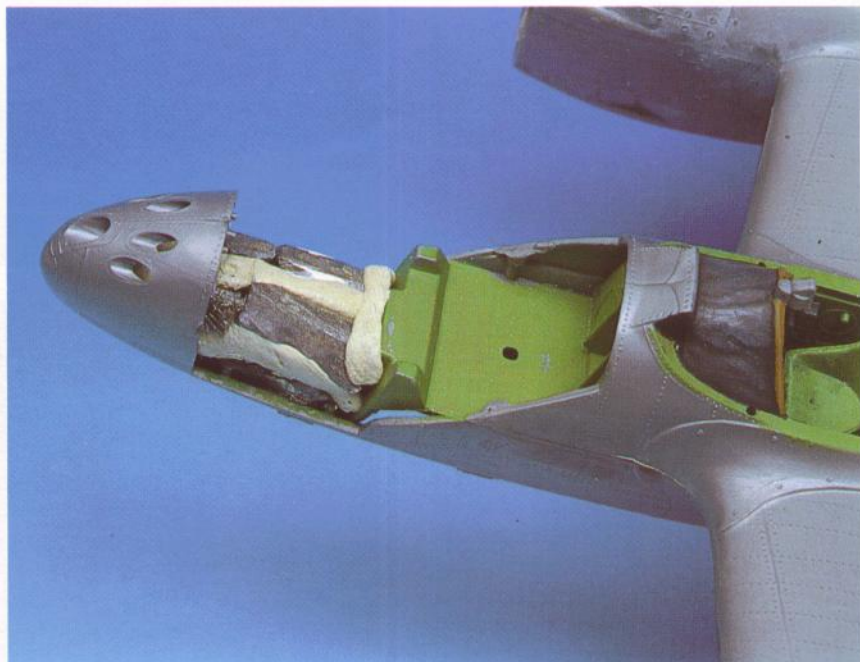
*Adhesive with an injector tube is ideal for sticking undercarriage components together.*



## PAINTING THE INTERIOR

One of the unavoidable steps in the construction of an aeroplane kit is the painting of the interior. This means that all visible cockpit walls, wheel wells and fuselage areas where windows give an inside view must be coated in an appropriate colour. In the case of this P-38 Lightning and other American aircraft of the Second World War period a special coating known as zinc chromate primer was applied as an anti-corrosive. This had two distinct casts, yellow and green both being quite bright. Some modellers prefer to grey down zinc chromate so that it does not stand out although most primed areas of the model will be hidden by interior fittings. Dry brush again helps to give some effect of wear and to bring out detail on black-painted fittings.

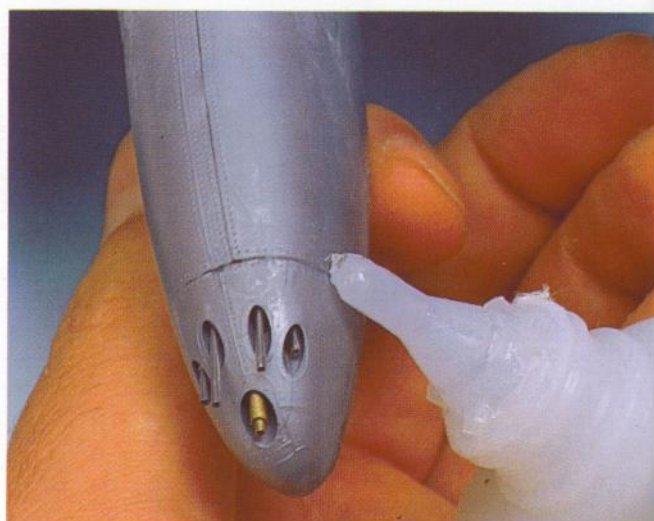
On models of aircraft with tricycle landing gear there will invariably be a tendency for tail sitting. This is overcome by adding weight into the extreme nose or engine nacelles – if there is sufficient space.



*The cockpit interior and the instrument panel are painted matt black with an olive drab lower edge. As it is a tricycle gear aircraft, a weight such as lead embedded in Plasticine is added to the nose to restore balance. The lead weights have to be well distributed and 'moulded' into the nose. Secure with putty if necessary.*



*Machine guns and cannon supplied in the kit are substituted by brass tubing and hypodermic needles held in place by epoxy putty.*



*Modern cyanoacrylate adhesives are strong enough to use as putty.*

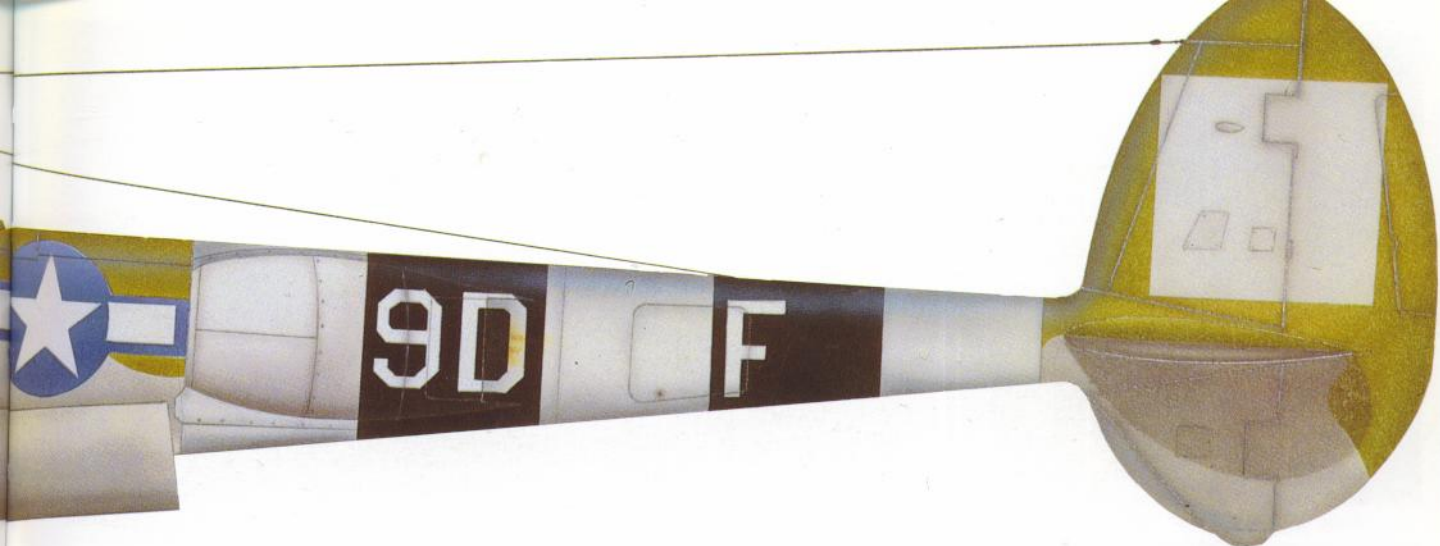
*Use of a cyanoacrylate hardening agent ensures immediate drying.*



## WEAPONS

Unless kit machine guns and cannon have very well moulded barrels these are best replaced by brass or plastic tubing. Hypodermic needles cut to length also make good gun barrels.

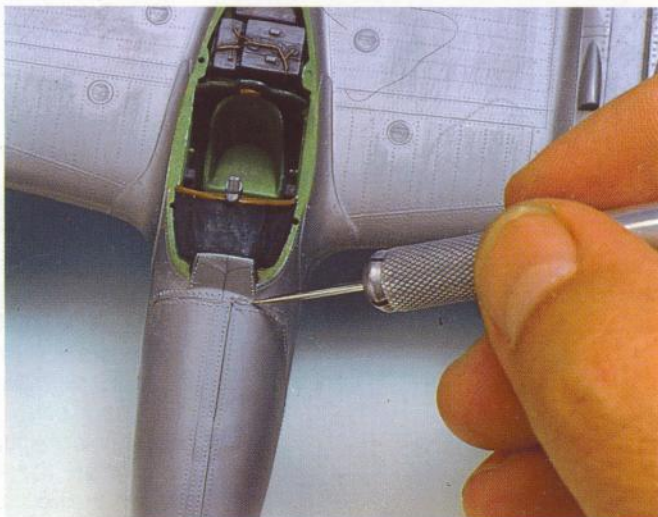
Hypodermic needles come in different thicknesses, some of which will be adaptable to 1/72 and 1/48 scale models. Shortening the needles may present a few prob-



*Rubbing down an ill-fitting panel with wet and dry sandpaper.*



*Remember to remark rivet and panel line detail lost when sanding down.*

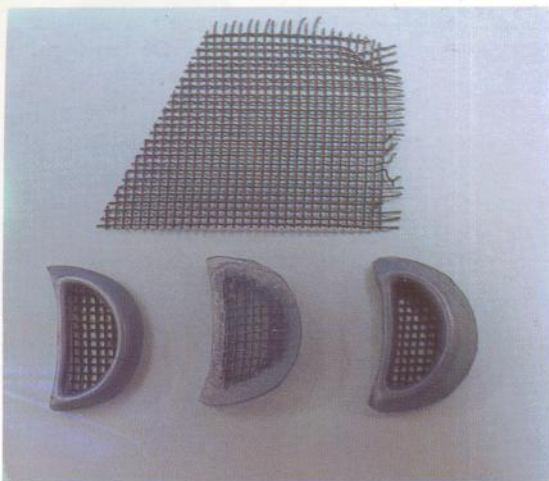


lems although special cutting disks for just this purpose are supplied with mini drills. Alternatively, a triangular section watchmakers' file will enable the metal to be weakened enough to break it. Either procedure requires that the needles are held firmly in a vice and the clamp protected by small wooden wedges.

## **SECURING OPENING PANELS**

On models that incorporate opening gun bay doors and hatches, affixing these in the closed position may reveal gaps. When glued in place careful use of sandpaper will help make them flush with the surrounding area.

If some gaps remain, these can be filled with putty or thick cyanoacrylate but if the latter is used a good hardening agent is essential. Quick drying adhesives such as these enable final rubbing down to be completed without delay. Loss of detail when rubbing down models in 1/72 scale is acceptable as this is often too heavy as moulded. Larger kits, to 1/48 scale and above, need to have rubbed away rivet and panel detail rescribed.

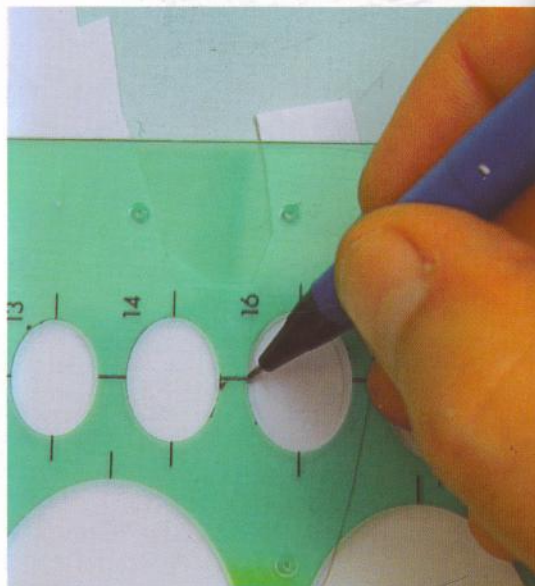
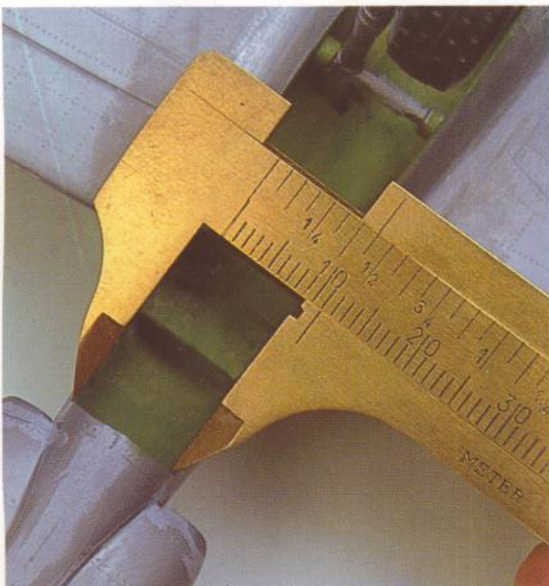
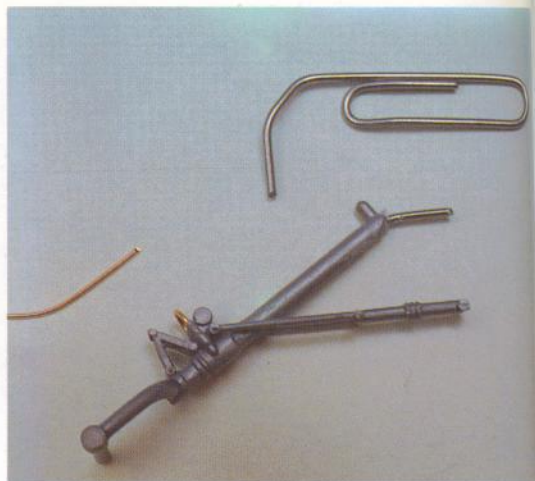


Air intake grilles help hide the fact that no engine is fitted - place the mesh inside before glueing.

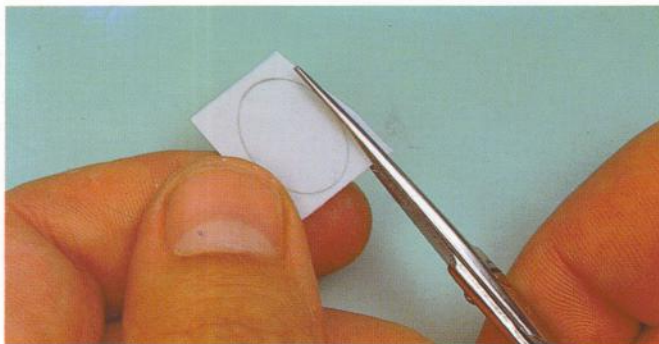
Landing gear legs are enhanced by copper wire and paper clip sections representing braces and hydraulic brake lines. Both help strengthen landing gear oleos.

The rear end of each fuselage boom is hollow in the kit and both need blanking plates. First measure the width required.

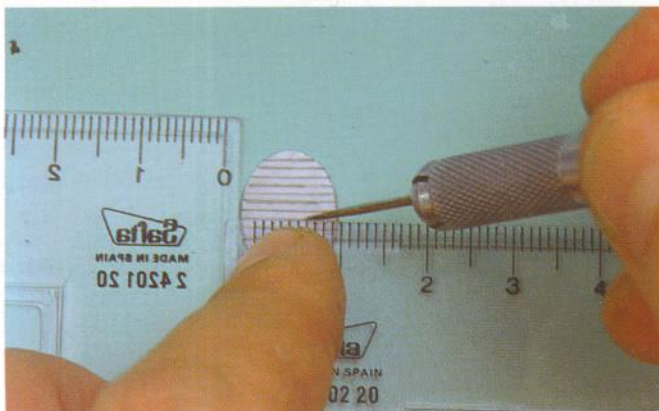
An oval template comes in handy here as one will match the diameter of the P-38's tail-booms almost exactly.



With fine scissors, cut the oval as neatly as possible out of plastic card. Sandpaper will improve the shape.



With the help of a square and punch, rivet and panel lines are scribed.



## OTHER COMPLEMENTARY ITEMS

The P-38 model we are building is basically accurate and does not demand many changes. However some detail reinforcement of the airframe will improve it considerably. Fine mesh is inserted into the air intakes to represent metal grilles on the full size engines and some extra detail is added to the landing gear.

Oval-shaped plastic card pieces will serve to fill the holes in the fuselage booms. Measure their diameters and find the nearest equivalent in an oval template sheet. Once the right size has been found, trace this onto the plastic card and cut two blanks out with scissors. Profile with sandpaper and draw detail to be scribed with a rule and punch. Finally cut front and back plates to blank off the wheel well and place them in the wells.

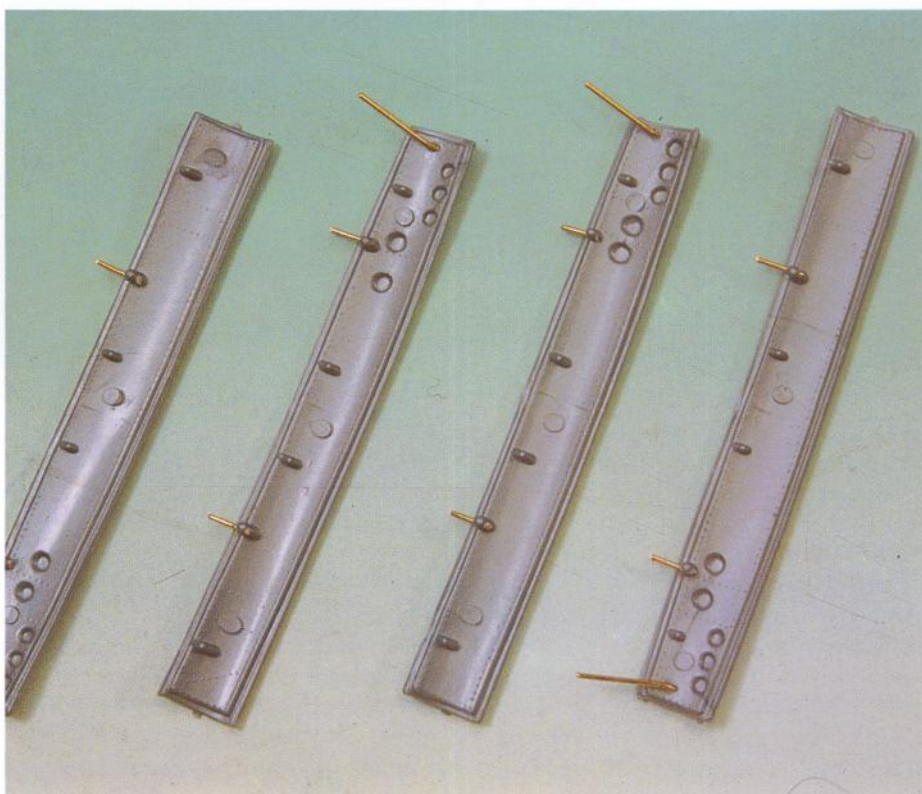
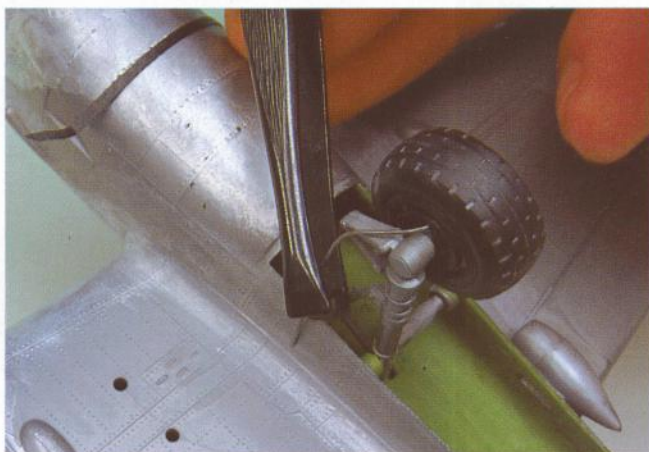


*Additional oleo leg supports are added, ensuring that the angle of the leg is retained.*

*Drilling a hole in the oleo before positioning the hydraulic brake lines.*

*The thin metal line is attached to the wheel disk and secured on the inside of the leg well.*

*The wheel well doors are reinforced with short lengths of copper wire to prevent them coming adrift.*



# MIXED MEDIA TECHNIQUE WITH HAND HELD-MASKING



*Paint the areas where the aluminium paint shows through.*

*All lower surfaces are painted with two coats of medium grey.*



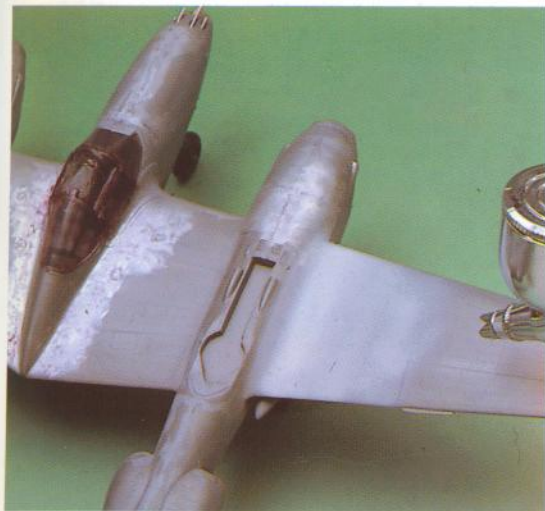
## **PAINTING A P-38 LIGHTNING IN 1/48 SCALE**

A model of this classic aeroplane of the Second World War represents a number of finishing techniques applicable to the type in general. Using hard and combined masking, plus freehand painting, a new scheme not suggested by the kit decal sheet is easy to achieve. The

subject chosen is a P-38J of the 401st Fighter Squadron, 370th Fighter Group of the 9th Air Force. On the model the finish will reproduce the peeling paint and general weathered appearance of the original, initially by painting aluminium areas where the camouflage paint has worn off. Maskol fluid is lightly applied with a toothpick to show the scratches as thin irregular shapes.

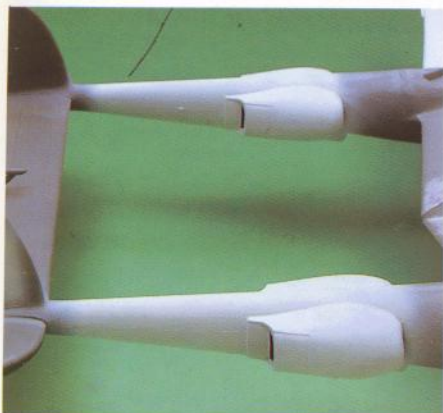
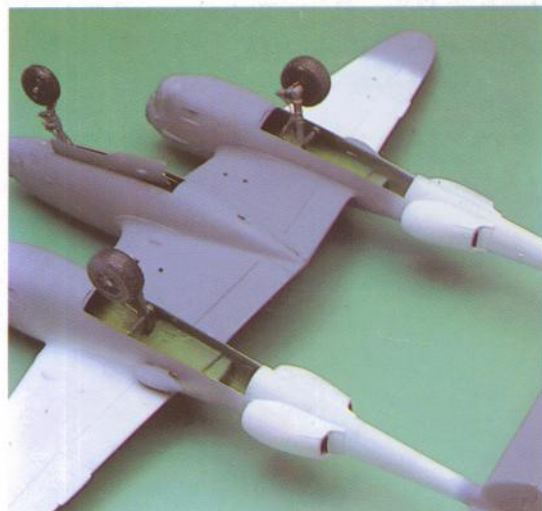
Once the cockpit has been masked with tissue, the painting phase starts. Using enamels the underside colour is prepared by taking two parts of grey for each part of white. The grey covers all lower surfaces except where the black and white 'Invasion stripes' are applied. These white areas are painted first.

Wings and fuselage boom sections are painted white, as are the



*White areas are painted without masking.*

*White usually requires two or three coats to cover fully*



*White is also applied to the vertical tail surfaces in the shape of squares.*

*Before applying the next colour, white areas are marked out with Letraline and masked off with adhesive paper,*



tail surfaces where the white square markings appear. All these light areas are carefully masked off with tape and an adhesive mask before applying the camouflage colour. Also cut and apply a mask for the white squares on each fin and rudder and assemble and mask the main cockpit components.

The upper surface colour is a dark olive green obtained by mixing three parts of olive green and one of pearl grey. Apply the paint as two coats, an initial light coat which is allowed to dry being followed by a final one. The soft demarkation line between the green and grey shades is achieved with an airbrush used freehand although raised masks can be used if required.

Follow these guidelines and work slowly and carefully when applying paint schemes that are a little complex.



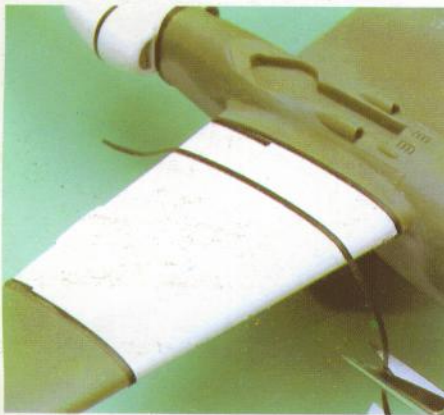
*Areas where paint will be shown peeling off are masked with Maskol. Only a thin application is required.*



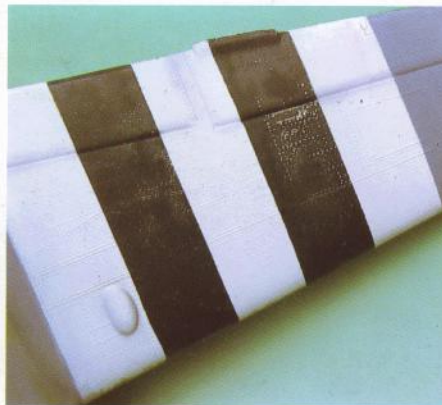
*Applying green on the sides of the engine nacelles over the greyish base shade requires care; the main fuselage and the booms need a wavy demarkation line with soft edges.*

## Hue richness

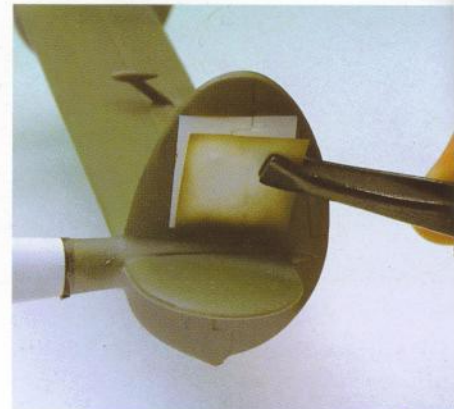
Although paint is usually applied to a model in a single coat with perhaps some dry brush work as the final stage, in this case some extra tone has been added to the base colour. The objective is to achieve a paint finish that shows up well in photographs. The model should exhibit the various tonal differences as a result of weathering effects and surface fading from spillage of oil, grease and fuel. A basic colour tone is achieved by applying olive green to the base green with additional tonal values achieved by painting in soft, longitudinal bands towards the area where a faded blotch appears. A small quantity of white is added to the second colour to paint the wing surfaces, the sides of the engine



*Use Letraline to mark out the areas where colour variation will occur.*



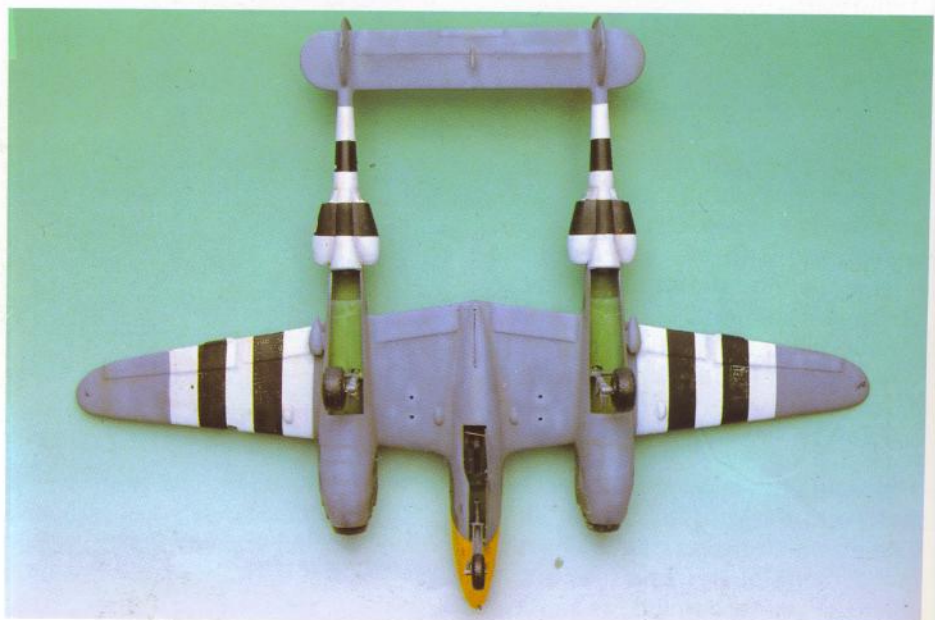
*To show where the paint has peeled, slightly folded masking tape is used to lift off the black paint.*

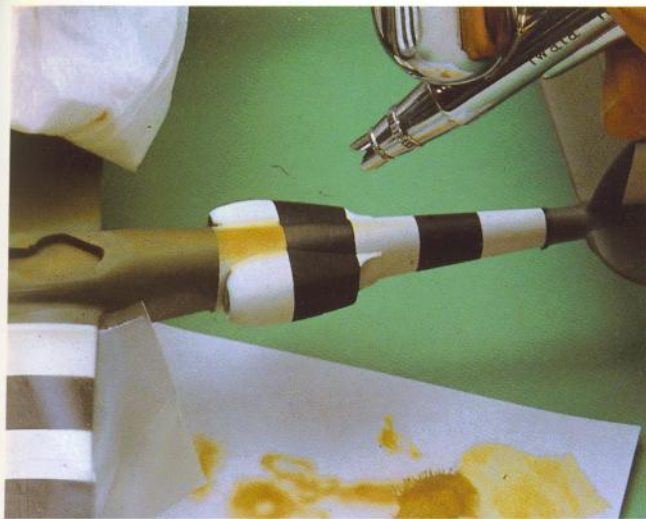


*When the mask is removed, a well-defined white square remains.*



*When the mask is removed, a well-defined white square remains. A mask for the yellow nose area is made with transparent adhesive paper. The dry base colours have a faded look as a result of tinting the paint.*





*The superchargers of the P-38 soon resulted in exhaust burns along the top of the fuselage booms. White ink with sienna mixed in will reproduce this effect.*

bright it can be dulled with a coat of grey to obtain the desired effect. The turbosuperchargers are painted matt black with a darker chocolate brown mixed with black applied with a dry brush to highlight detail. A last application is to airbrush a white-sienna mix to achieve an authentic 'used' effect.

Finishing the propellers involves simply masking off the yellow tips and painting the blades black.

With the model painted it is ready to have numerous small stencil decals applied. Eliminating an excessive amount of whitish decal surround is one of the traditional problem areas in modelling. There is



*The best way to remove Maskol is with an eraser rubbed lightly over the treated area. When the masking agent disappears the aluminium surface is revealed. Treat this with a water-based green or grey paint if it appears to be too bright.*



cowlings and the fuselage booms including the vertical tail sections.

Before painting the black stripes, mark out with Letraline and protect the white areas with an adhesive mask.

Do the same for the nose area, most of which is in yellow. To give an 'operational' look to the turbochargers, mix inks, one part opaque white to three of sienna. Spray the tops of the booms from the turbo-charger housing almost to the rudders. Use grey to highlight the embossed detail on the kit parts. Lastly, remove the Maskol on the wings with an eraser to reveal the aluminium skin showing through the worn camouflage paint. If the Maskol application was a little too thick in places, retouch with a fine brush and green paint. If the metal appears too

*Oil colours are very resistant to wear and can even be sanded and polished.*





*Peeling paint on the underside of the P-38's fuselage pod, the wing leading edges, the engines and even the propeller blades give an 'in service' look. To complete this weathering process, aluminium paint can be applied with very fine brush strokes.*



*Turbo superchargers are painted black then dry-brushed in brown.*

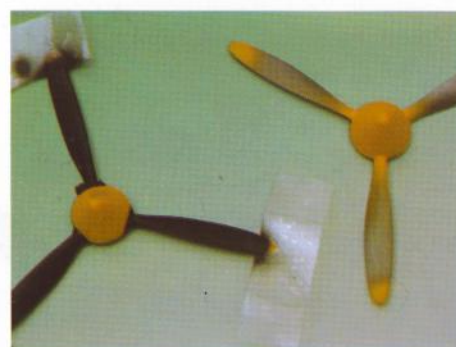
no complete solution as the problem tends to get larger as the decals get smaller! One way to overcome the problem is to use top quality commercial decals although some items may not be directly applicable to your chosen colours and markings scheme. Another alternative is to apply gloss varnish to the entire model or to those areas where the decals will go. Allow the varnish to dry, apply the decals and allow these to dry with the aid of Mirco products. Firstly use Micro Set which clears the adhesive film from the decal backing sheet, then use Micro Sol which softens the decal and allows it to fit very snugly even over a raised or indented panel line. One danger in using Micro Sol

is that the decal can completely wrinkle up. If that happens, leave it to dry out and the wrinkles should disappear. Applying all the decals to the P-38 takes time but once complete, a realistic model will result.

Because we chose an alternative colour scheme for this P-38 model some of the kit decals will not be used. To complete it, some alternative sources will have to be found such as 1/48 scale sheets of USAAF letters and numbers from Verlinden which have the advantage of being 'dry' decals which need no wetting. The best method of applying dry decal squadron markings is to rub each one down onto the model with a toothpick or other pointed imple-



*The turbochargers are positioned in their locating holes and finished with ink using a white-sienna mix.*



*All propeller blade tips are yellow with the rest painted black.*



*The top surfaces are now finished with the peeling paint area, weathered camouflage and slightly dulled white stripes showing up well.*

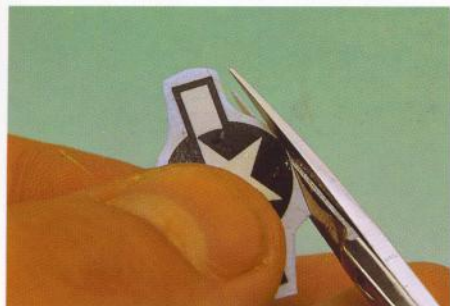
ment. Lift the backing sheet away and finally press the letter down with a soft cloth. Press the decal into any joint line to prevent cracking. A coat of varnish will keep everything in place.



We used Verlinden decal sheets for our model. These are easily transferred by cutting out the required letters and rubbing them down on the model with a toothpick.



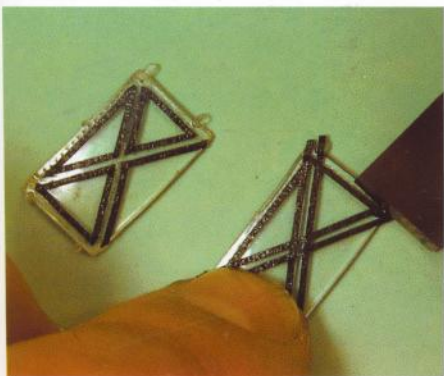
Rub each letter over gently and ensure that all of it comes away from the backing sheet without any corners cracking.



Cut each decal subject closely with sharp scissors to prevent an unsightly film surround appearing on the model.



Micro liquids complement decal application: Micro Set removes adhesive film while Micro Sol softens and prevents decals yellowing over time.



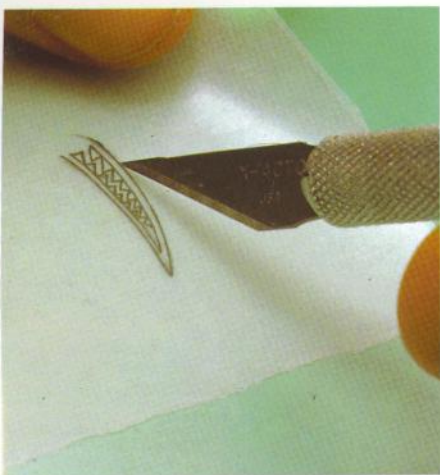
Cockpit framing can either be made by applying painted strips of fine adhesive tape or the tape is used as a straight line guide for brush painting.



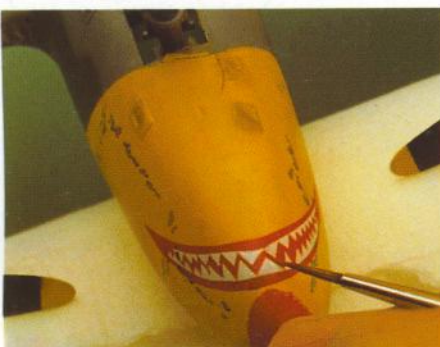
Use a fine pointed brush to paint the actual frame if this method is preferred. Several coats may be necessary to completely cover the transparent plastic.



Always hand paint with a fine pointed brush. Several coats of paint can be applied to obtain depth of colour.



On this P-38 a thin sharkmouth appeared on the nose underside. This is drawn out and two templates are made, one for each side of the nose. Completion is in two stages using one of the templates for the mouth outline and one for the teeth.



To join the mouth shape accurately, a fine brush is necessary.



A painted sharkmouth does not have the problems that might be associated with applying a decal around a curved surface.

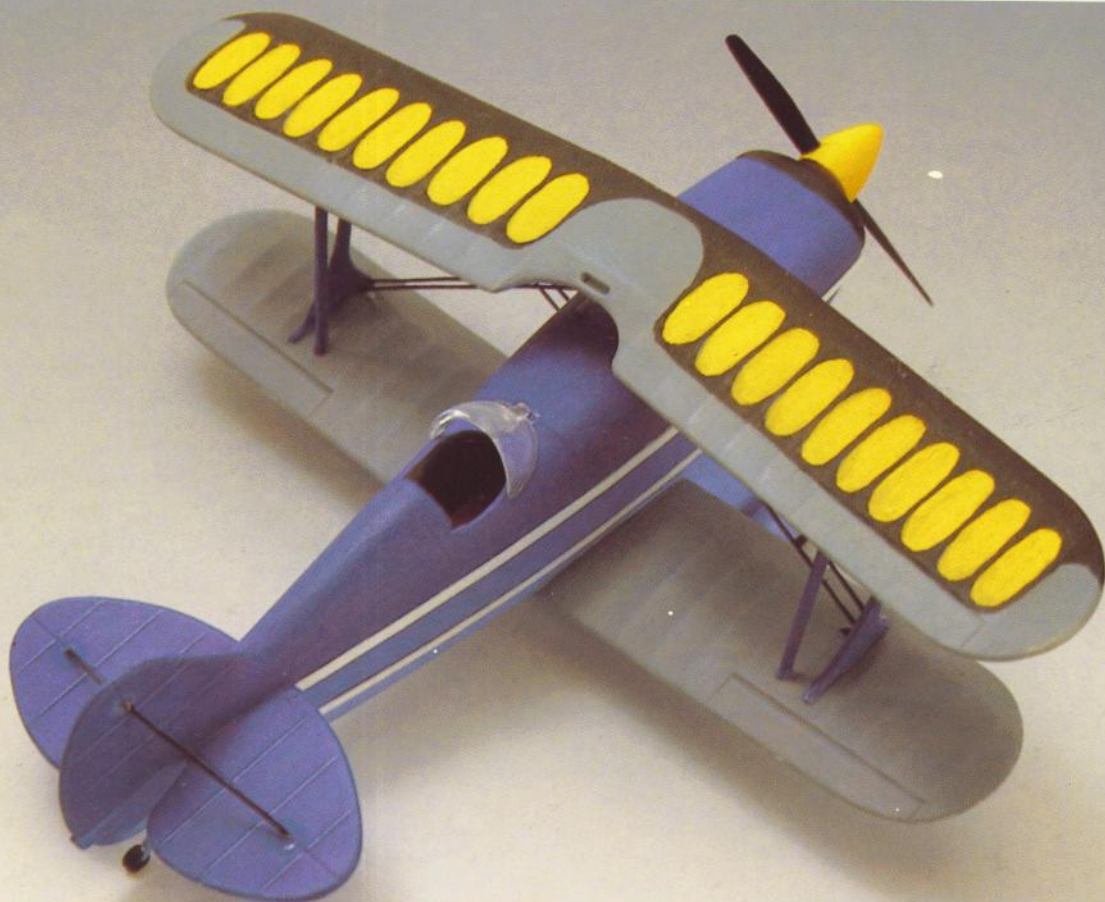




## **PAINTING AEROPLANES WITH A BRUSH**

A great number of plastic modellers especially older ones, started by assembling aeroplane kits in series from manufacturers such as Airfix and Frog. Kits were mainly to 1/72 scale apart from those produced by Lindberg and Revell with their indeterminate scales - but aircraft of the Second War soon emerged as firm favourites whatever the scale. Painting these models was something of a challenge as few specialised paints were available. The introduction of ranges of enamels was therefore very welcome and the first authentically painted models began to be seen. Models were generally hand painted with brushes, a technique that remains highly effective and more versatile than many people might think.

# FIRST STEPS IN BRUSH PAINTING



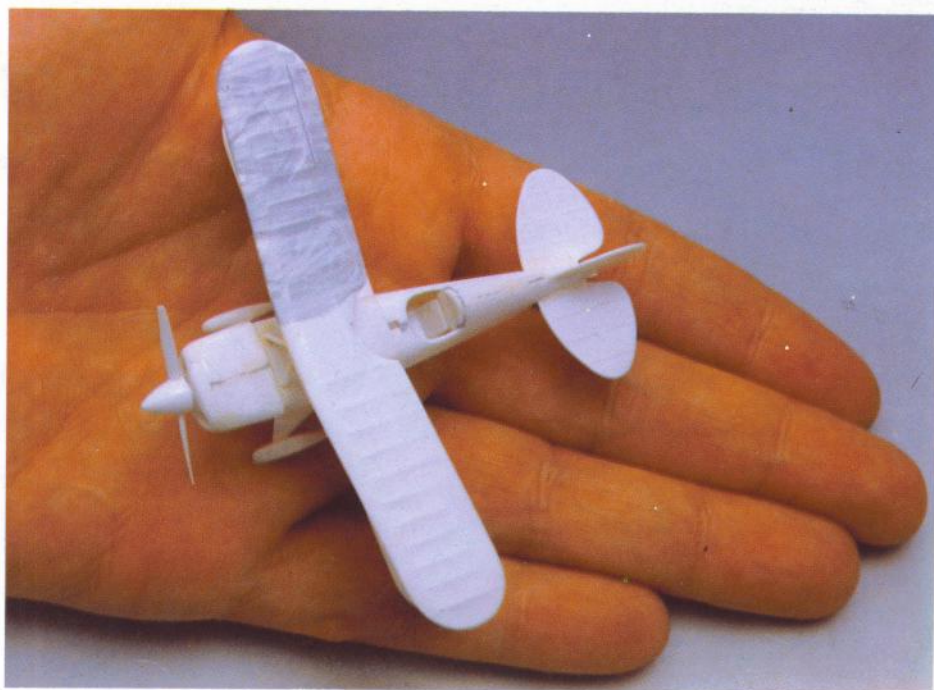
## PITTS S2A

Civil aeroplanes and small light aircraft in particular are a little overshadowed by the massive interest in military types. There is however a number of fine models of light aircraft that can be built, many to 1/72 scale for ease of storage.

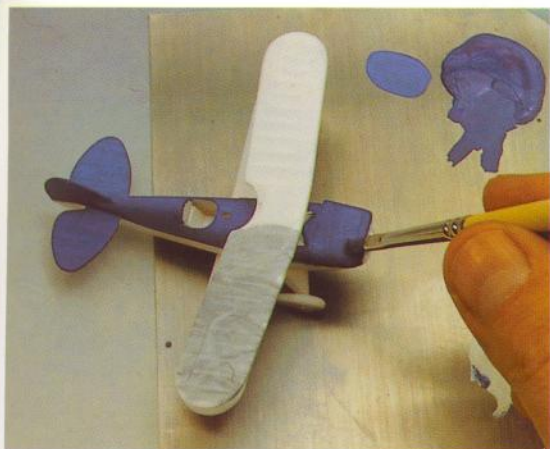
Painting a model with fuselage dimensions no greater than eight centimetres from propeller spinner to rudder is akin to painting a butterfly! Only microlights, which are also modelled in 1/72 scale, are smaller. The Pitts is from a small series from the Japanese LS range and these tiny replicas can look most attractive, particularly if a number of them are arranged together in a display case.

The fun thing about civil aeroplanes is the freedom of painting – if desired, paint schemes can be made up and applied without the restrictions governing military camouflage and markings.

Taking our lead from nature we

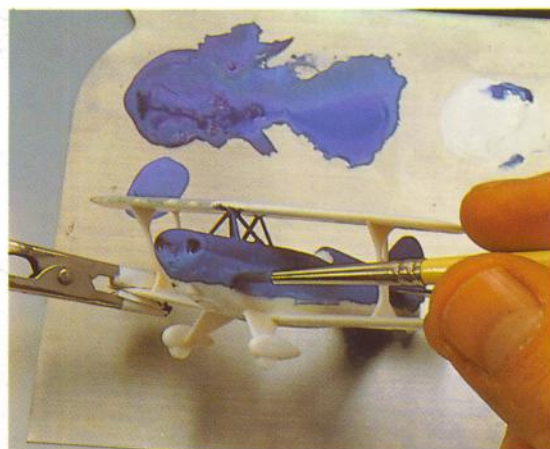


*Tiny Pitts S2A in 1/72 scale from LS which includes small sport biplanes in its kit catalogue. All have very vivid colours which make a striking display, suitably different to other types of aircraft. Assembly is easy apart from the rigging.*



*A fanciful colour scheme on an aircraft that can be 'owned' by the modeller.*

*The fuselage is painted in acrylics in gradations of blue.*



used a butterfly as our inspiration for painting the Pitts. Three shades of blue were chosen for the fuselage with yellow and black for the wings. Start with a strong blue for the upper half of the fuselage, adding white for the central stripe. More

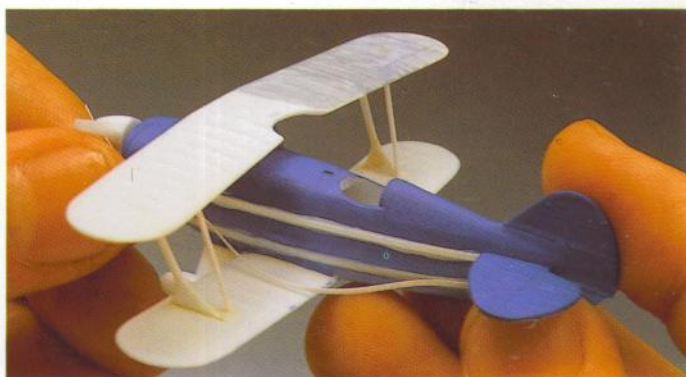
white produces an even lighter blue for the lower half of the fuselage and undersides of the wings. Creating such a hue gradation involves a first coat with diluted paint to 'stain' the plastic. When this is dry a second coat is added to cover. The white

stripe separating the two colours is difficult to hand paint so a Letraline mask is used to complete the job properly.

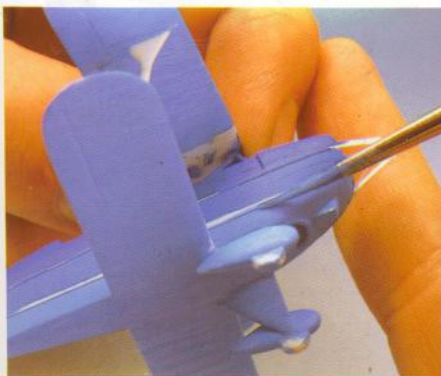
First paint the stripe without worrying about how straight it is. Add the tape mask to cover the



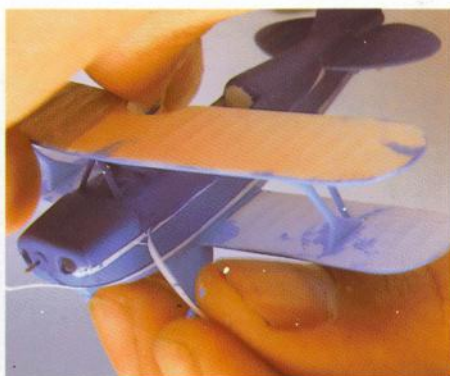
*A white stripe separates the two blues. Any shakiness can be overcome by using a mask afterwards.*



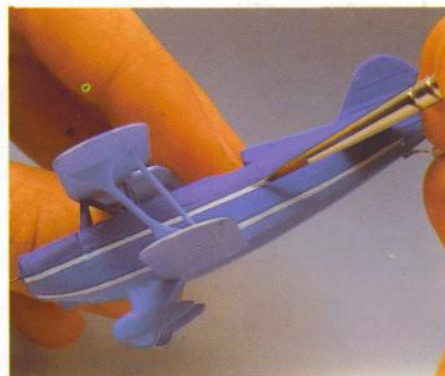
*Letraline adhesive tape protects the white stripe.*



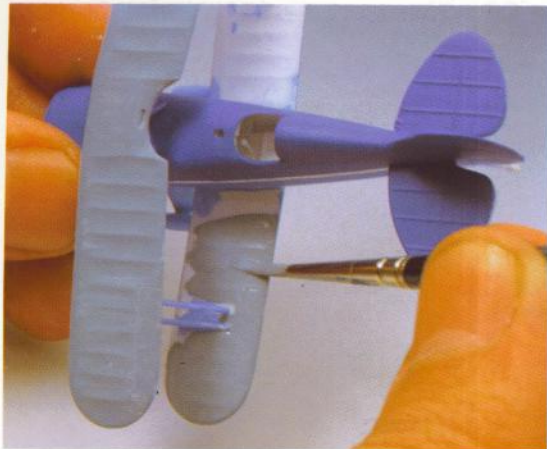
*Retouch both the blue shades where necessary.*



*Removal of the mask reveals a perfectly straight white stripe.*



*If any blue has encroached on the white stripe, retouch with a brush.*

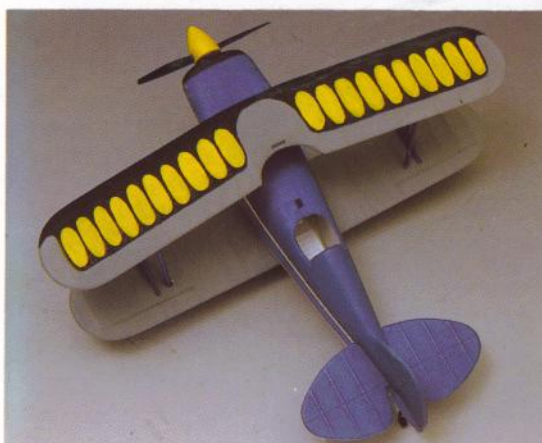
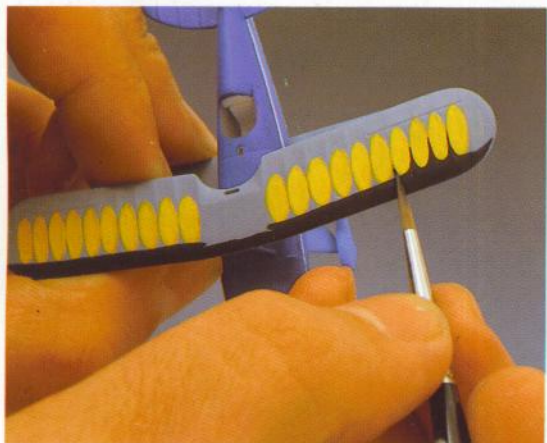
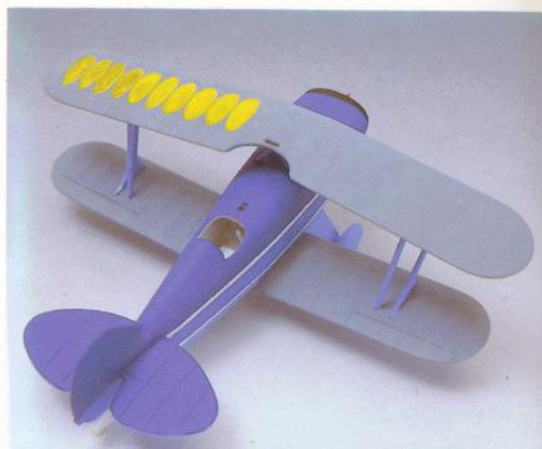


*By mixing black and white, a medium grey is prepared for applying to the wing upper surfaces.*

*Yellow patches are drawn on top of the grey.*

*The patches are outlined in black.*

*Brush strokes have to be very neat and precise in this small scale.*



*The entire lower surfaces of the fuselage and wings are in pale blue. The front of the engine is black and the propeller spinner is yellow.*



colour, the second coat has to be brushed on with the strokes always going in the same direction.

On the wings and rudder, the colours can be given a very light dry brushing to bring out the rib detail.

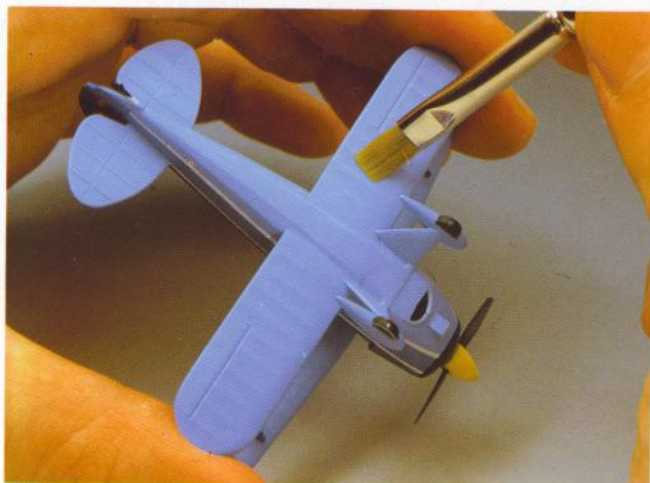
white stripe and paint both blue shades up to the mask.

Paint has to be thin to prevent accumulation of paint at the edges of the mask.

Both wing upper surfaces are painted grey, two coats being applied using a No 2 brush with a good point. This brush is also used for the yellow and black decoration. Brush strokes should be even and continuous. The visible part of the cockpit interior is painted grey with the seat in mixed browns to simulate leather.

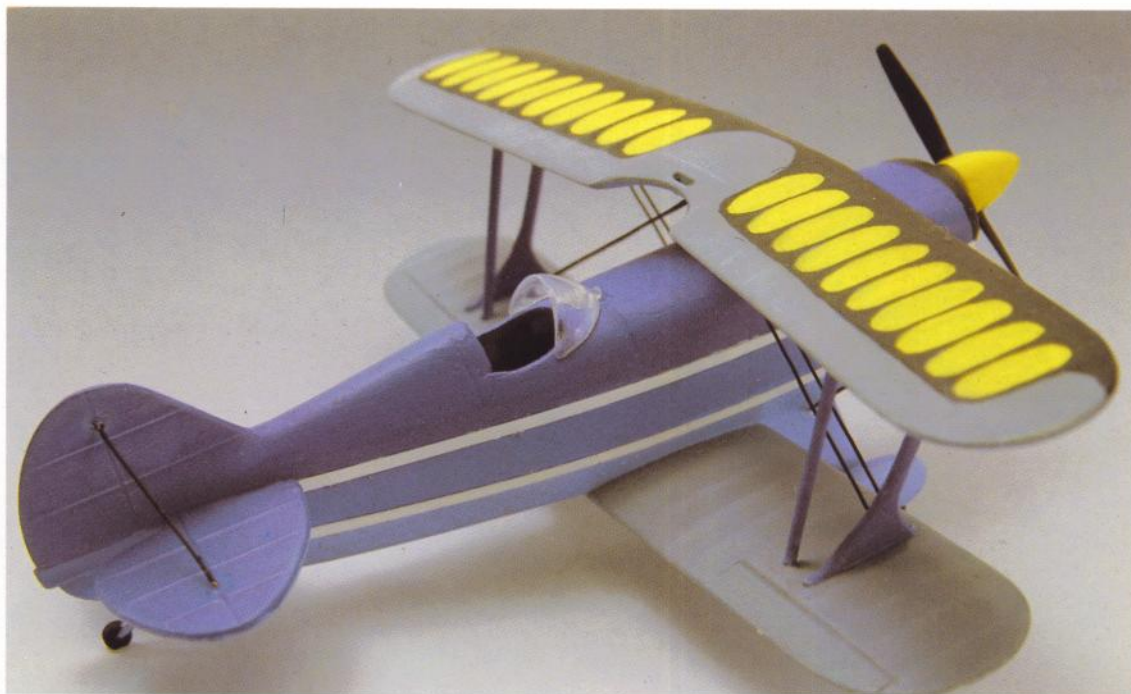
In order to retain uniformity of

*A flat bristle brush used 'dry' is ideal for bringing out rib detail.*

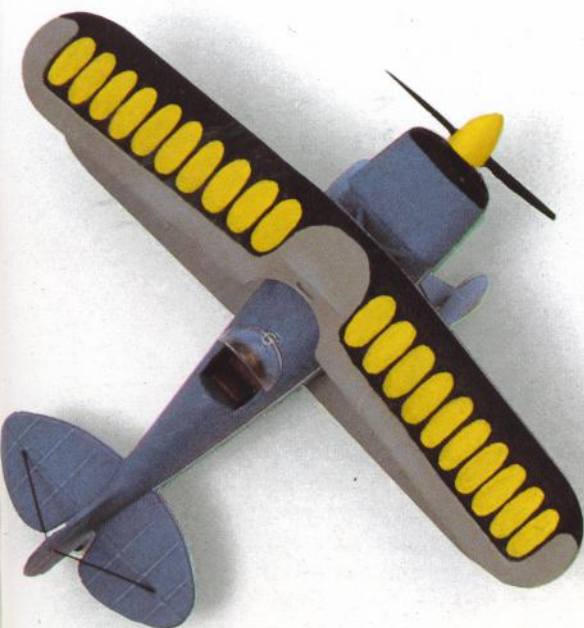


All the rigging wires were fabricated from plastic strips, the Pitts having them on the elevator as well as the wing.

An option for decorating models which incorporate stripes is to use suitable decals, as shown here.



All the colours used are acrylics, mixed to obtain the different colours required.



Blue + White 50%



Yellow



Blue + White 30%



Black



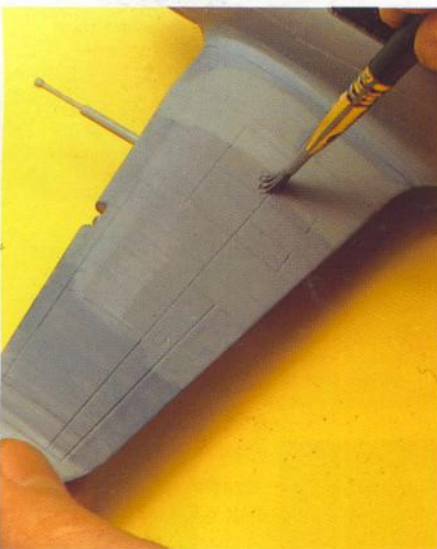
Blue



Grey - mix White and Black

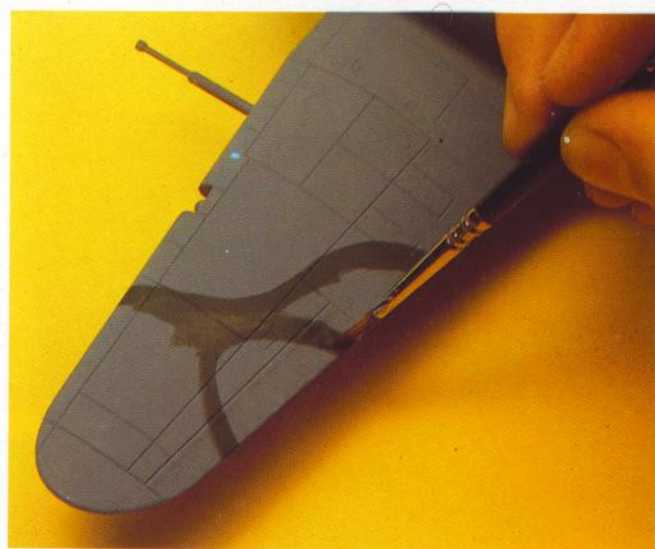


# PAINING USING DIFFERENT TECHNIQUES



*A flat brush is used to paint large surface areas. Layers are applied with watered-down paint in two or three coats as necessary depending on the opacity of the paint.*

*To cover smaller areas, outlines are drawn and then filled in.*



## HAWKER HURRICANE MK II

**T**he whole range of possibilities – and limitations – of brush painting is encompassed in the techniques employed on this model Hurricane. A 1/48 scale Hobby Craft kit, it has good surface and interior detail and construction is straightforward.

The painting methods used here can be taken as a guide for many First and Second World War aircraft models and in general for any warplane that has undertaken combat sorties and been exposed to the effects of weather. One constraint we have imposed is to make camouflage demarcation lines sharp.

We started with a basic grey, a mix of white, black and a small amount of red, well blended for colour uniformity. When choosing the right brush to use, the very best quality is recommended. A flat marten hair brush was used here, careful strokes in the same direction ensuring that no brush marks appear. Two coats of paint were



*If the thin coats of colour are applied in regular brush strokes, a perfectly flat finish should result.*



*Painting with acrylic grey. Some acrylic paints are supplied with their own solvents which should be used for thinning.*

applied.

The first coat of paint is quite liquid but should cover the plastic well. The second coat is a little thicker (although not too thick) and in some areas, a third coat will be needed.

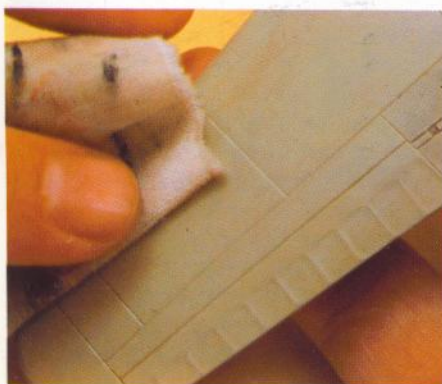
The second colour has a green



*A general 'weathering wash' using brown enamel is applied.*



*Colour uniformity should be evident throughout the entire surface of the model, avoiding any build up or patches. When using a brush, painting should be completed quickly to ensure even drying out over the entire surface.*



*After five to ten minutes the model is rubbed over lightly with a clean cloth to eliminate any excess paint.*



*The ailerons and control surface lines can be picked out with the tip of a brush and very liquid paint.*

hue obtained by mixing brown, yellow and dark olive green. As this colour is used for definite areas, the edges are painted first and then filled in, following the same rules regarding paint fluidity.

The entire underside of the aeroplane is painted in light blue which meets the camouflage on the wing leading edges and lower parts of the fuselage. The join line can either be painted freehand or masked with Letraline tape.

When applying light colours, any dry brush application will barely be seen so we used a very thin wash of brown enamel to simulate dirt on the wings.

When applying colour ensure that

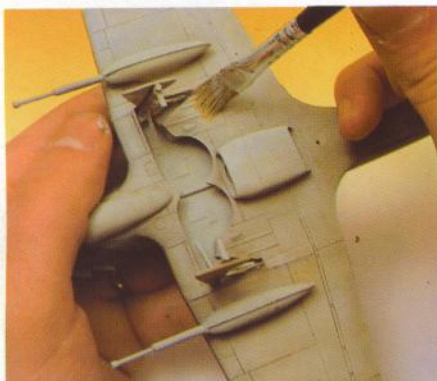


*Once the base colours have dried, the dry brush technique is used to create wear. The grey has white added to it to give contrast.*

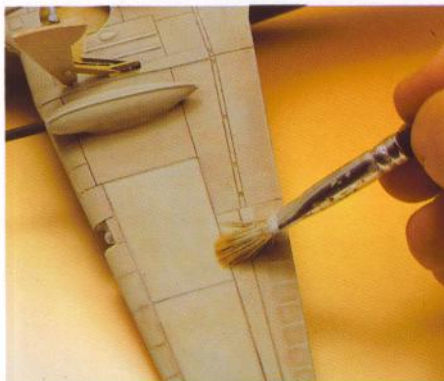
it flows into all panel lines. The model is left to stand for some minutes before enhancing the panel detail with a thin wash of black that flows easily and brings out the surface detail.

## Dry brush techniques

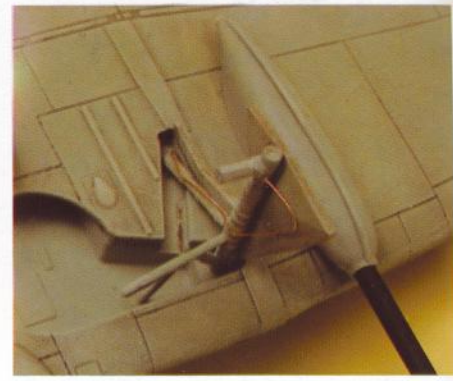
Once the first phases of painting are complete, the dry brush technique is employed, starting with the under-sides. The base colour lightened by a small amount of white is used to apply a light and realistic patina of faded patches and streaks to simu-



*Concentrate on rubbing over those areas which will show maximum contrast.*



*As the surface is rubbed over the scribed lines reappear.*



*Thin copper wire is used to detail the oleo legs*

late wear and weathering effects.

Upper surface colours are treated with the dry brush in much the same way, adding a lighter green to the original dark shade. Concentrate on the centre part of each camouflaged section to maintain the depth of colour.

Similarly, the undersides are dry brushed over using the grey base colour lightened with white.

Yellow is applied to the Hurricane's wing leading edges but as this shade does not cover well, three or four coats will probably be required. Navigation lights and other small items are painted in appropriate colours, red mixed with orange predominating. The model is gloss varnished when all detail painting is completed.

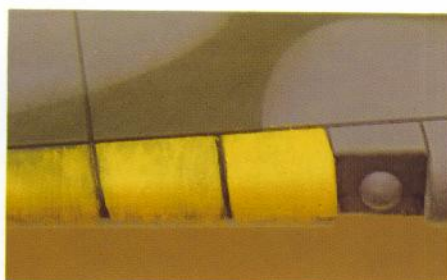
The oxidization of the exhaust pipes is reproduced by applying dark and light browns. The former is for covering, the latter for dry brushing to bring out detail. Exhaust burn deposits can be created by black and brown washes or by buffing the base colour although there is a risk of the result being



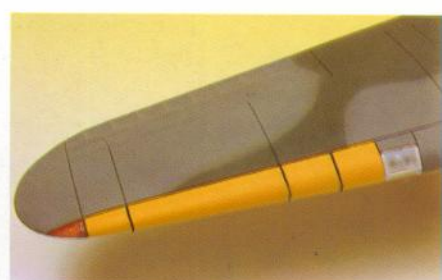
*Using both acrylic and enamel paints produces the desired results.*



*A brush loaded with respectively lightened greens and greys creates the worn look.*



*At least three coats of yellow will be necessary for this shade to cover effectively.*



*Lights will require two shades paint, with the brightest in the centre.*

disappointing. An airbrush is therefore invaluable for these finishing touches.

## Peeling paint

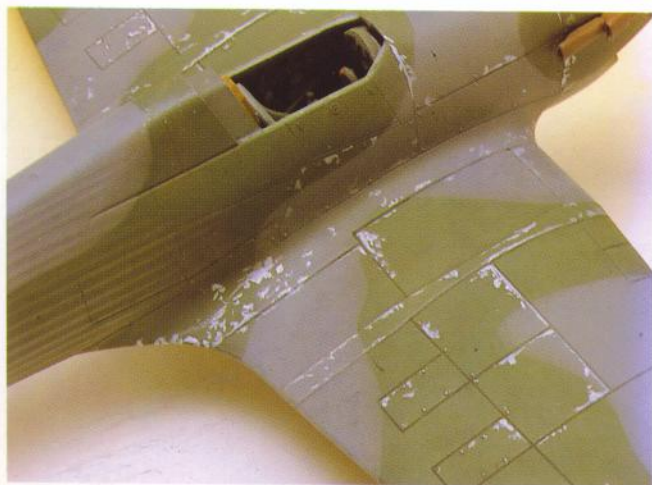
To finally 'age' the model, some chipped paint effects can be created, although this is optional. All combat aircraft exhibit some wear and tear although contemporary photographs will invariably show 'clean' as well as worn examples. Much



*The chipped and peeling paint effect is begun by painting small patches in black.*



*These patches are painted with silver (aluminium) paint, but leaving a fine black outline.*



*Variation of peeling paint is achieved by applying the aluminium directly without any black outlining.*

depends on the war theatre in which the aircraft was operating: carrier-based machines and those flying from jungle airstrips tend to be more weathered than those using a long-established European airfield, for example.

In any event, peeling paint has been incorporated on our model Hurricane. It helps here to have some knowledge of the type of construction followed by the manufacturer of the original aircraft - was

it made mostly of wood, as in the Mosquito, or did it have a fabric covered metal framework as in the Hurricane? Knowing the answers to such questions will guide how we apply our weathering effects.

Weathering starts with black applied to those area where paint would logically have been worn away. Areas more worn have the black applied with the very point of the brush to give a typical scratched appearance. Later silver paint will be used to edge the black areas, leaving a thin outline of metal. Panels treated with aluminium only



*Blanking off the cockpit area with Maskol.*



*Remove the mask once painting is complete.*



Although these worn areas look a little exaggerated, some full size aircraft were equally or more patched-looking. How much weathering to apply to a model is a matter of judgement and personal preference.

create a metal strike through effect, as seen on the full size original. These would include movable panels over gun and engine bays, the canopy runners and the pilot's foot and hand holds. Additionally,

wing and tailplane leading edges and propeller blades all showed wear.

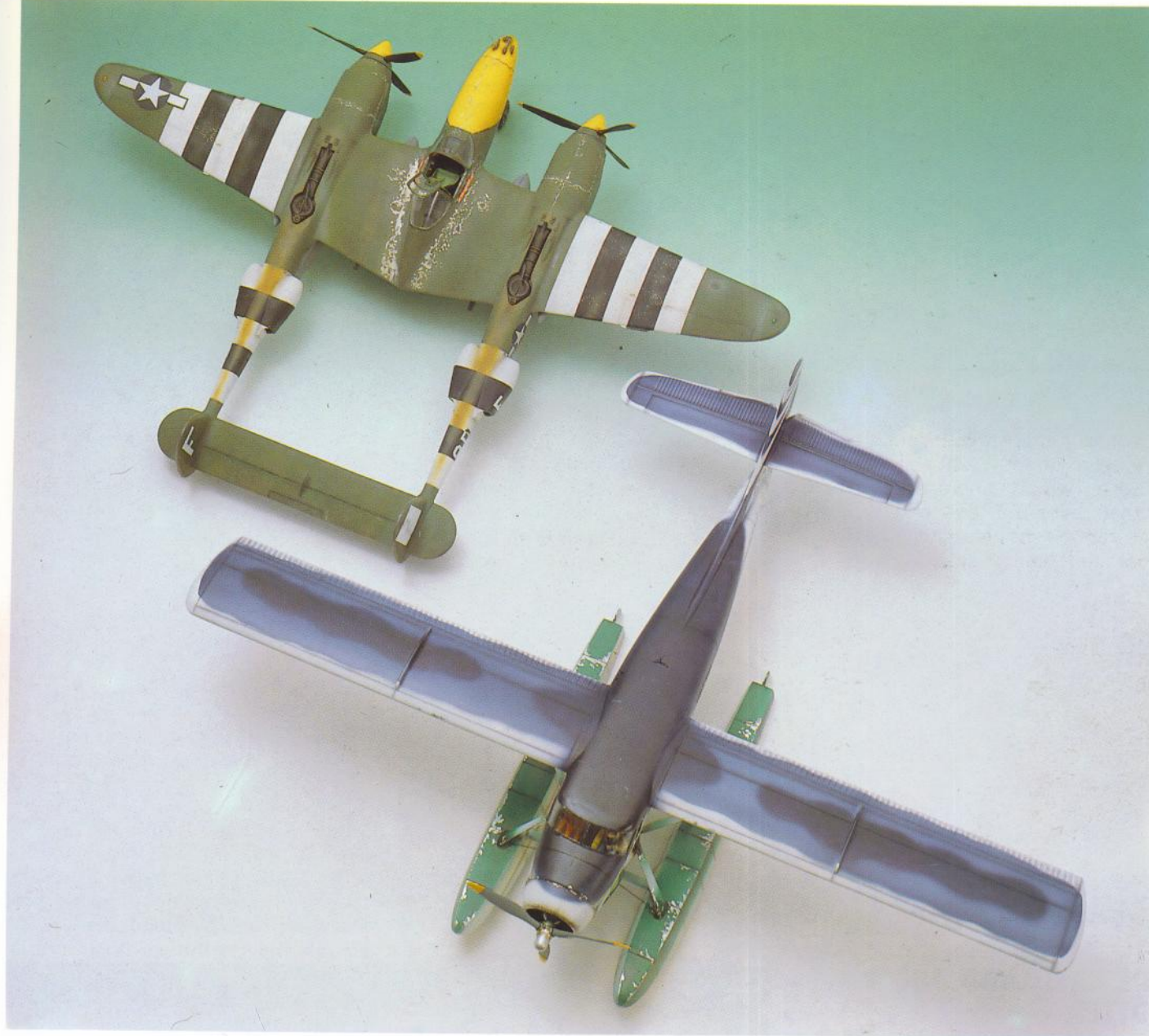
### Decals

To reduce decal surrounds showing up against paintwork, these have

been trimmed as close as possible. They are placed with the help of Micro solvents and once the decals have dried, the model is satin varnished.



A general view of the Hurricane with all the necessary colouring complete, again using enamel and acrylic paint separately rather than mixed.



## AIRBRUSH TECHNIQUES

A modelling revolution arrived with the airbrush. Painting methods improved significantly and a model could be completed in much less time. Those finishes that were hard to achieve convincingly with a brush such as soft demarkation lines on camouflage and the mottle effects common on Luftwaffe aircraft, suddenly became easy. Large flat areas were finished with a remarkable degree of paint uniformity, the expanding range of airbrush-formula paints and inks offering vast possibilities.

Prices stabilised and an airbrush is now an indispensable and relatively inexpensive tool for modelling of any kind, limited only by the imagination and skill of the modeller. On these pages are examples of the possibilities offered by airbrush painting.

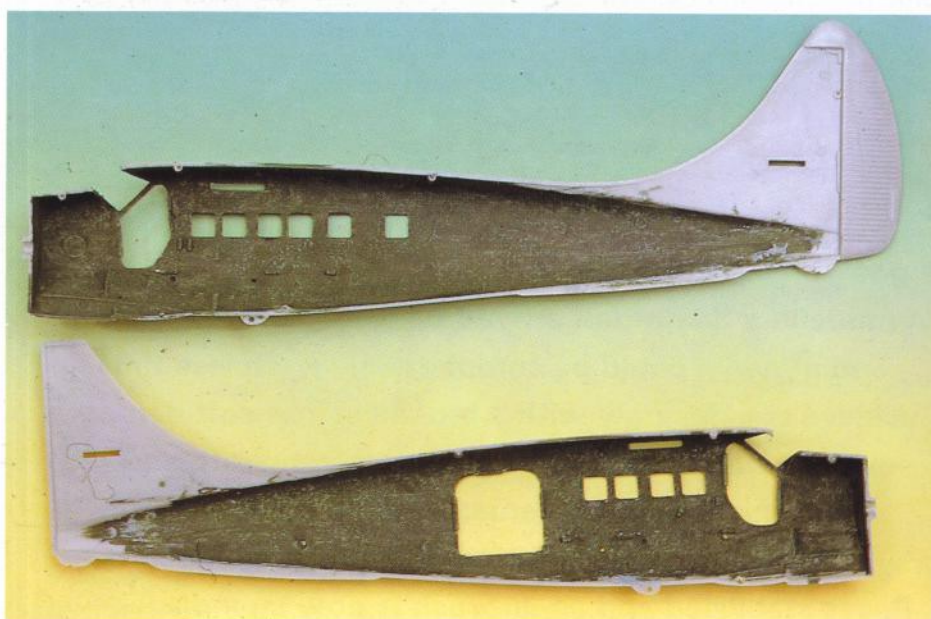
# SEAPLANE PAINTING WITH INKS



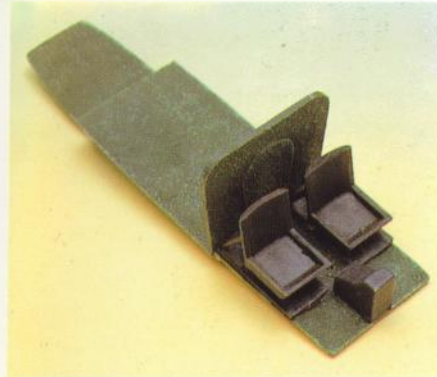
## DE HAVILLAND DHC-3 OTTER

**O**riginally designed for the Royal Canadian Air Force, the DHC-3 Otter found widespread civilian use by agencies such as the Spanish Natural Resources Ministry. The US Army also operated many Otters, the aircraft's extraordinary versatility making it a firm favourite where operations demanded an alternative wheel, ski or float landing gear.

As a model the Otter offers a range of military or civilian paint finishes and enjoying a certain freedom in painting we have imagined a Canadian bush pilot who, having fallen on hard times has emigrated to South America leaving his aircraft to its fate. The paint finish, already becoming scruffy through lack of attention, is gradually deteriorating.



*The interior has been added to by some card sections and has been painted green.*



*The seats are very basic and cushions have been added.*

*For our Canadian Otter, a military pilot figure has been transformed into a civilian. His clothing was altered with the help of epoxy putty and the brim of his hat was cut from foil. A new instrument panel has also been fitted.*



*Detail the engine with copper wire and paint it in the metallic blue.*

The model used here is a Hobby Craft kit in 1/48 scale. Though well proportioned, it lacks detail. The cockpit can be improved and the kit instrument board is best replaced, either from another kit or by scratch-building a new one. The doors and windows can also be improved, some of these requiring putty for a good fit. As on all kits, the cockpit interior has to be painted before joining the fuselage halves. Ours was finished in green and to fill out the rather bare cockpit, we modified the pilot figure by providing him with a hat.

The exterior was painted in a metallic blue which was obtained by mixing silver and a small quantity of standard blue. We found few problems with construction and once the model's main sub-assemblies have been joined the painting can go ahead. In this case some less common modelling aids were used including semi-opaque drawing inks. A coat of white acrylic paint was applied before using the ink.



*General filling with putty and rubbing down. The floats require particular attention in this respect.*



*The airframe is coated in acrylic white before applying the colours.*



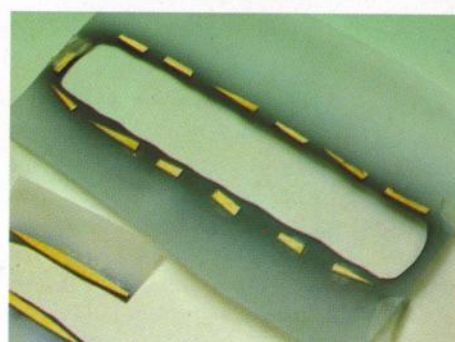
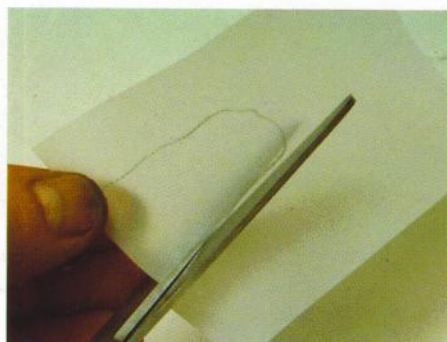
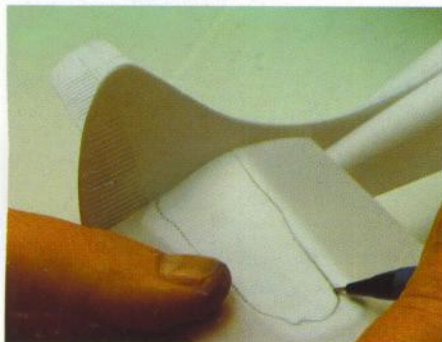
In order to achieve a smooth finish, at least four coats will be necessary. Each will build up the colour to a satisfactory depth. It is advisable to leave the model for twenty-four hours between coats.

## Preparing the masks

Good results with an airbrush are directly linked to correct masking and use of templates. Preparation begins with measuring those areas to be sprayed, drawing the shapes and transferring them as templates. Wing and tailplane templates are made first. As soft paint edges are required, a raised mask will be used, preferably cut from card which gives better rigidity than paper. Toothpicks and small wedges are equally useful for raising the mask two to three millimetres from the surface to be painted. Prussian blue ink which has good non-fade qualities is used as the darker colour.

The mask has to be held firmly because the air source of the airbrush creates a draught that will

*To decorate the Otter, inks in blue, green, red and grey shades are used.*



*To prepare templates first draw onto the surface of the plastic.*

*The drawing is transferred onto firm transparent paper and the templates are cut out.*

*Toothpicks are glued onto the mask to keep it away from the surface to be painted.*

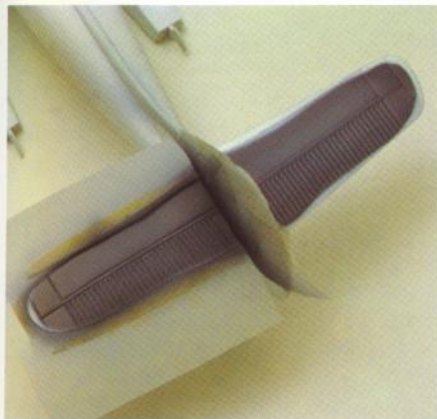


*Paint in longitudinal lines, holding the airbrush the same distance from the surface.*

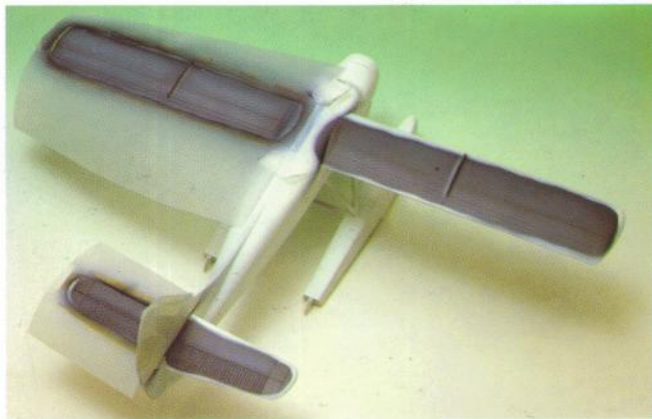
tend to pull the mask away. Masking tape with its adhesive quality reduced is used. Colour is sprayed with the brush held perpendicular to the wing and moved slowly as the surface is covered. Successive passes will strengthen the colour and result in an even surface.

Paint shades will gradually darken as the layers build up, allowing different shades to be achieved where desired simply by varying the flow of paint from the airbrush.

Once the desired paint density



*Uneven weathering of the tailplane can be achieved by concentrating on some areas more than others. Panels can be created by airbrushing up close and following the lines scribed into the plastic.*



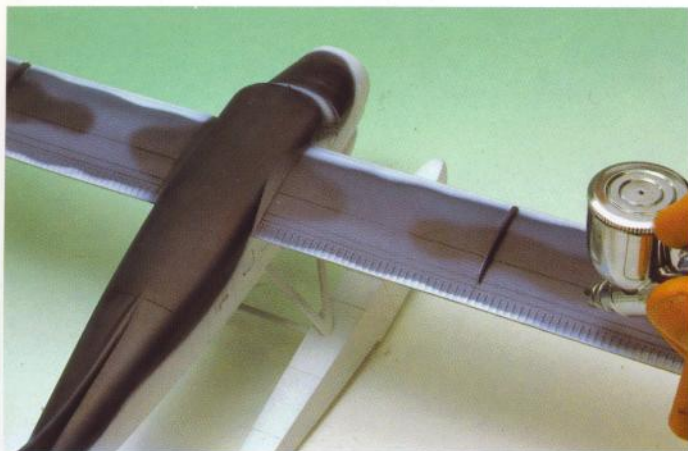
has been achieved we move onto the next colour, the dark blue. Adding red to the lighter blue in a proportion of four parts blue to one of red creates the required shade. This new colour is applied either with a freehand brush in a cloud

pattern or sprayed to give soft edges.

Before painting the fuselage and tail, a mask is cut for the white rudder stripes. For this task, use masking tape cut to size and with its adhesive qualities reduced so that it

does not stick and lift the base coat. The entire fuselage of this model was painted freehand but a template similar to that used on the wings, can be used as desired.

Firstly paint the border of the patch, checking that the paint



*A central cloud shaped patch is created by spraying at a medium distance.*



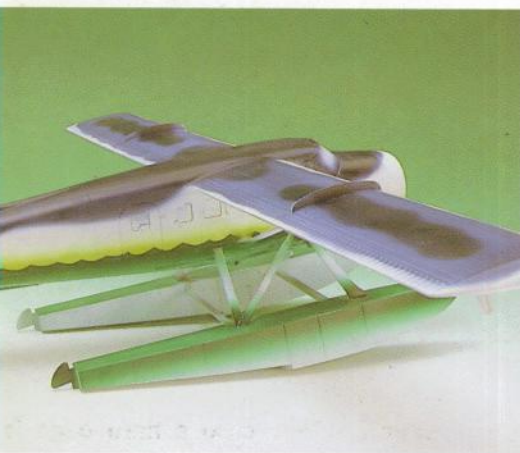
*The blue area of the fuselage is painted by holding the airbrush progressively closer on low air flow. Once the outline is done the rest of the colour is filled in.*



*The same mask is used for the scalloped edge on both sides of the fuselage before a green shade is applied.*



*The floats are painted in gradations of green with the tops being the darkest.*



*A fresh green shade is applied over the wavy edged fuselage colour. A mix of yellow and blue is applied in a graded fashion to indicate wear.*

*Spraying with fade-resistant inks gives a bright, satin finish which will withstand a coat of varnish, if required.*

*Every panel line is marked in grey with a freehand brush. In order to paint very thin lines with an airbrush it is necessary to get very close to the model and regulate the flow of air to that of the paint.*

closest to the demarkation line remains thin. Once the outline has been done fill in the patch until it is well covered either with solid colour or with some visible variation, according to how much weathering is desired.

The lower fuselage is painted in green following the wavy line. A template for the scalloped edge is cut from adhesive mask drawing

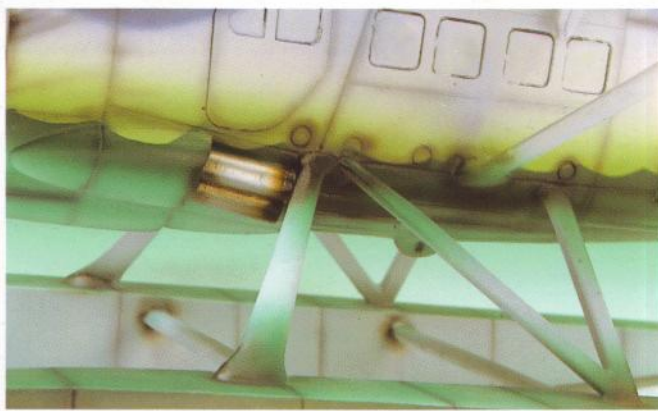


*The propeller hub and the exhausts are painted in aluminium acylic or silver ink from a felt tip pen, brushed on.*



*The exhaust pipes are dirtied with a mix of sienna brown and grey to achieve a burnt look.*

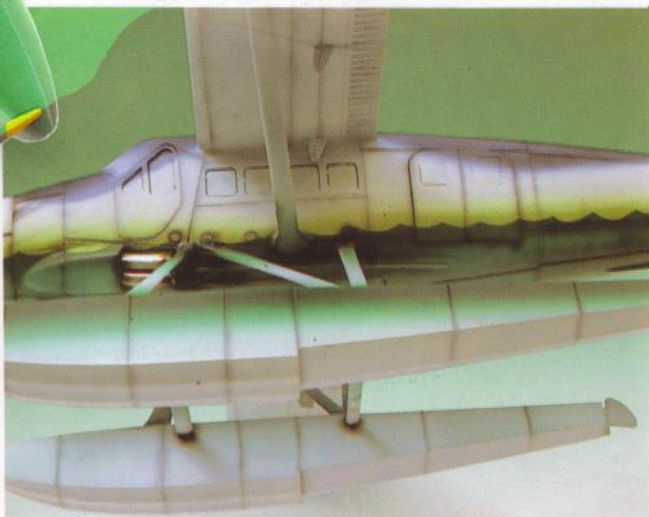
*The lower surfaces, wing struts and floats are treated in the same colours*

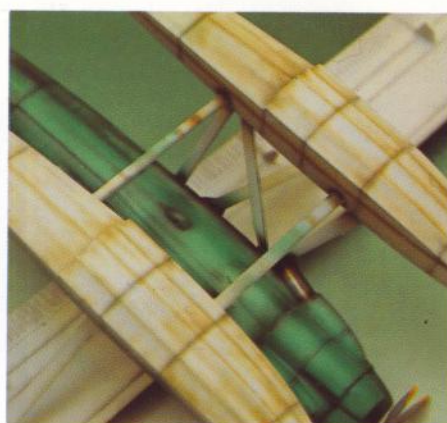
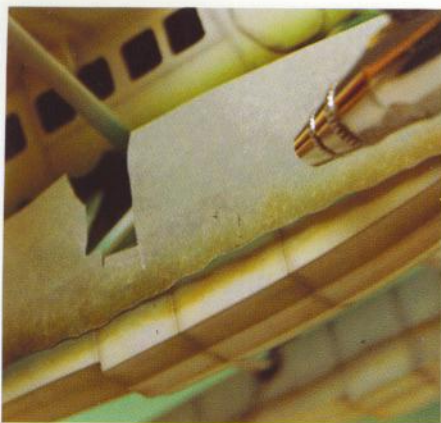


paper. In this case a hard edge is required for affixing to the model so that spraying can be completed quickly. The floats of the Otter also require a gradation of colour, this being achieved by spraying with the brush held away from each float.

A lighter green is used for the wave effect on the fuselage sides

*Extensive wear on the lower fuselage is indicated by a light spray of sepia, graded to achieve the effects of water spray.*





*To replicate accumulated dirt on the floats, they are masked and sprayed in sepia.*

*The lower section of each float gets dirty, especially the areas that are in the water.*

*Faded aluminium is achieved by using aluminium and silver paint.*

and top surface. A mix of one part yellow to one part green is used in this finishing phase and we are ready to weather and dirty the aircraft.

The propeller hub and the exhaust are treated in silver.

The initial layer of dirt is applied in sienna ink to the exhaust pipes, propeller hub, the steps of the floats and panel lines. Grey is then used to enhance the panels, the elevators, fuselage detail, the rim of the engine cowl and the oil cooler.

*The degree of deterioration shown on any model is a matter of choice. A well-used float-plane would have a generally faded look particularly around the floats, engine and doors. After painting is complete, the strut bracing wires are added.*



*General view of the finished DHC Otter complete with weathered finish.*