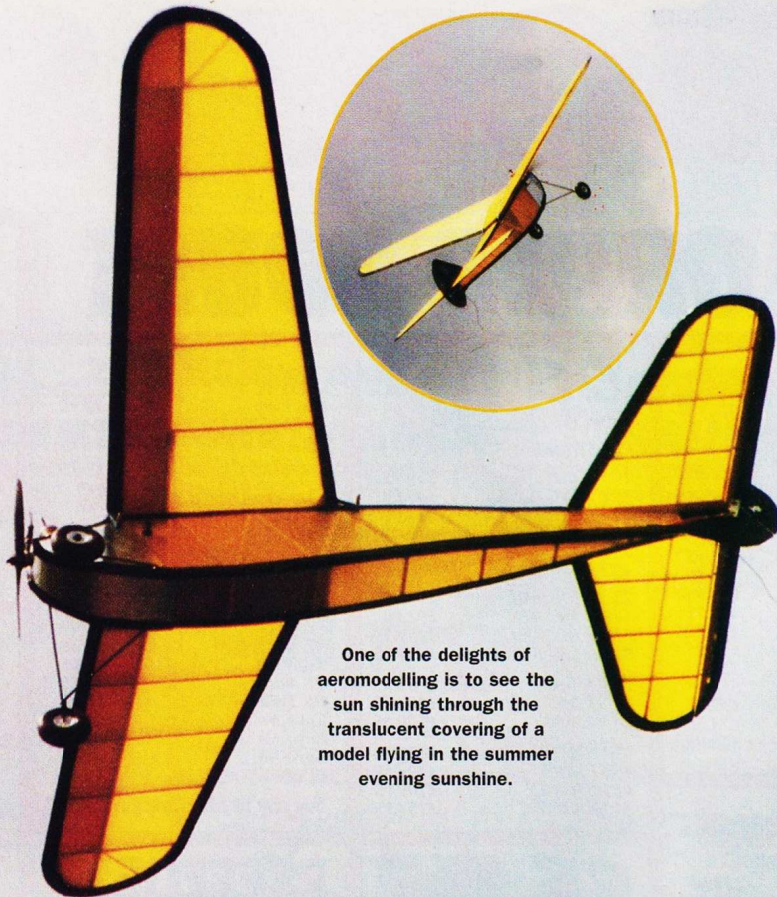




Fred Taylor shows off his pride and joy



One of the delights of aeromodelling is to see the sun shining through the translucent covering of a model flying in the summer evening sunshine.

# Vintage Classic Appeal

*Designed for free flight or simple R/C conversion for 1.5cc-2.5cc engines,  
Fred Taylor builds The Challenger from Ben Buckle*

The original Challenger model was designed in 1941 by Mr HA Thomas for his sister Mary Louise. She had won an Ohlsson 23 in a rubber competition and needed a model for the engine (it must be nice to have a brother like that). The Challenger continued her winning trend and after flying it I can see why.

It is difficult to explain the appeal of this simple model, but they do say that beauty is in the eye of the beholder,

and its combination of curves and straight lines gives it its own appeal. It is also one of the delights of aeromodelling to see the sun shining through the translucent covering of a model flying in the summer evening sunshine.

The kit as supplied is for a free flight model. Therefore it is necessary to supply all the usual accessories for a radio controlled model. The control surfaces for the rudder and elevators

are shown on the plan, but I made two additional modifications. When we are flying with radio control we tend to put relatively high G-forces onto our models, and we need to take this into account.

Firstly, I changed the wing hold-down method from the wire hook set-up shown, to the more usual wing dowels. Secondly, I lined the inside of the forward fuselage with 1/64" ply in order to give a greater gluing surface for the servo mounting rails, and to ensure that the receiver and battery do not fall out of the bottom causing great embarrassment.

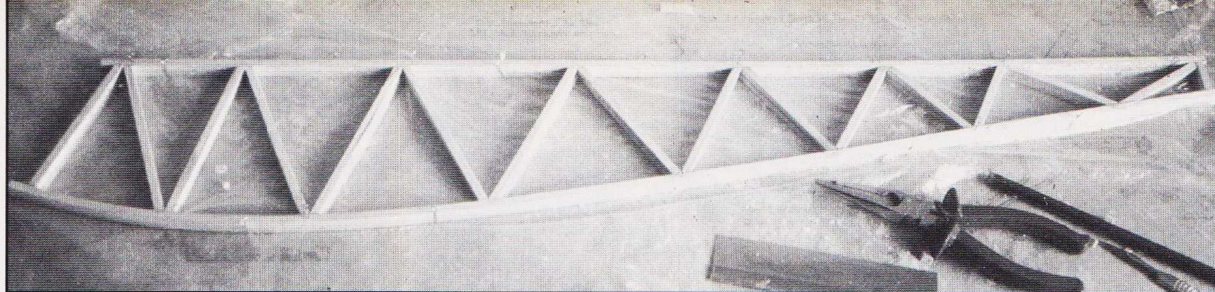
After a few unpleasant experiences with models that had uncontrolled engines, I decided to fit three servos including one for the throttle. This also gives the option of being able to fly gentle circuits with 'touch and goes' as well as climbing into the wide blue yonder to look for thermals.

The engine range shown is for from 1.5cc to 2.5cc, and one of the new CS Micro 2cc diesels would go well, but I don't have one, and in any case I wanted a throttle, so I fitted my faithful 1.5cc PAW.

Fred's model in pristine condition.

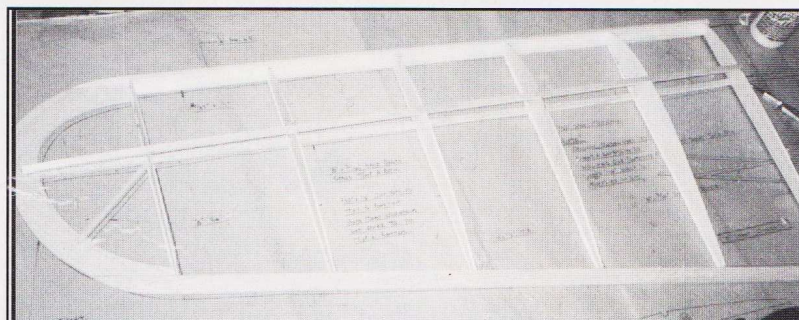


The second side of the fuselage is built over the first to ensure that they are identical.



## Inside the box

The kit is just as one would expect from a traditional free flight model. There is a bundle of strip wood, wing ribs and tips, fuselage former, tailplane and fine parts. The ply fuselage sides are band sawn and tissue is provided to cover the finished model. The plan and a booklet of instructions complete the contents.



Port wing almost complete.

## Construction techniques

This model is built in the traditional way. It's first necessary to bend the longerons; the instructions suggest steaming, but my automatic kettle overheated when I tried, so I used ammonia instead. It's the first time I've used this method, but it works well. Be careful with the top longeron, as it is not straight and the bend does not start from the point shown on the plan.

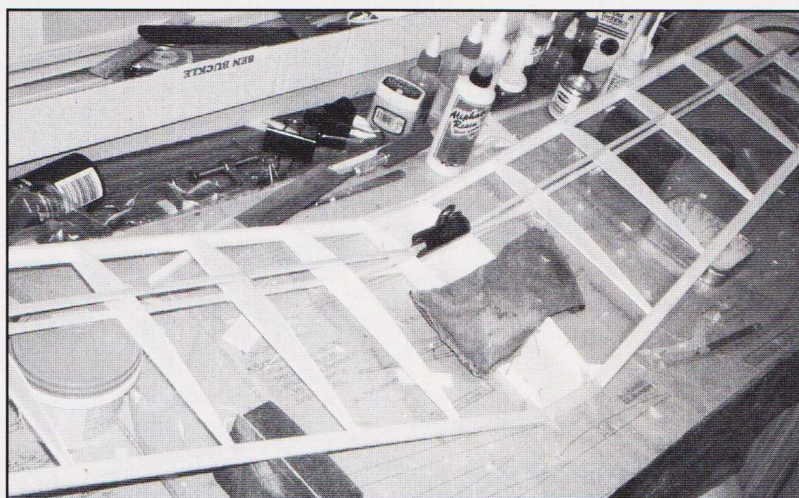
The cross pieces were then fitted, and when the first side was completed, the second was built over the top of the first. The sides were then removed and separated and the ply outer skins glued to the sides. Be careful to build one left and one right side.

The inner skins were now fitted, a sharp pair of scissors cut these well (but don't tell my wife). The next step was to construct the front former. This is a combination of balsa and ply. I then decided to construct the engine mount and former as a separate structure. The angles are not right angles, and I therefore made a simple jig to ensure that the angle was correct. The bearers were arranged at the correct width for my engine, and to keep them at the proper angle jigs were used. I had intended that these should be removed, but the glue had spread and they are still 'enjoying' their free flights.

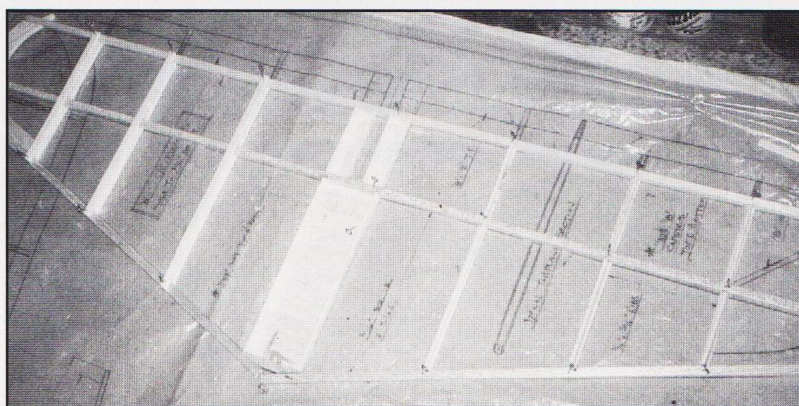
It was now time to join the sides together, and to make this a little easier, I used a false former at the trailing edge position. The rest of the fuselage was completed in the normal way, but when it came to fitting the undercarriage the second problem was found. Both undercarriage legs are shown as having the same length passing through the fuselage, but the front of it is tapered and therefore is shorter. I had to bend up a second leg to get a good fit.

## Wings and things

The wing construction is perfectly normal with the exception of the method of arranging the dihedral angle. I have not used this method before, but it works very well and stands up to the test - the wings did not clap when the plane flew. After looking at the



Wings joined together. The extra spar is used to establish the dihedral angle. note, the 'high-tech' clamps in use. The sandbag helps to keep it steady.



Tailplane nearing completion. The completed section weighed just 20gm.

completed wing for some time, I decided that discretion was the better part of valour, and I glued braces between the wing spars to give added strength.

The tailplane and fin were constructed as shown on the plan, and although it takes some time, the finished items are light and strong. In order to keep everything as light as possible, the elevators were built using the sheet core method. This paid off because the finished model required no ballast.

In order to preserve peace within the Taylor household, I did not use the tissue. For the first time I used Litespan, and although it takes longer the film to cover the aeroplane, it works well, and there are no smells around the house. The colours chosen reflect my old RAF squadron, even to the extent of the black fin and they show

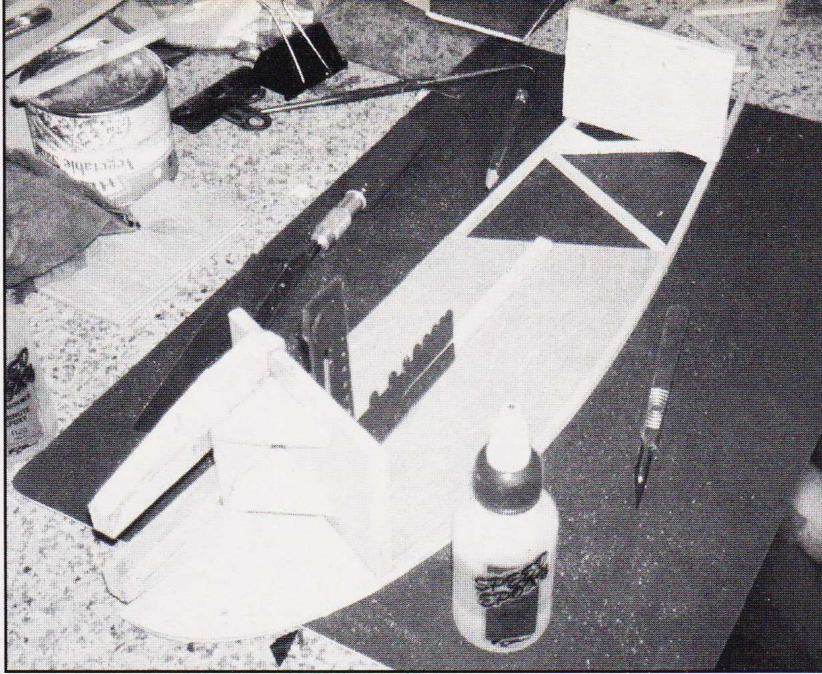
up well in the sky. But we have to see what happens when it lands in a rape field!

Assembling the tail sections took some thought and not a little planning. It's a bit like a jigsaw puzzle. The tailplane without the elevators, is first attached to the fuselage, then the fin (to which the rudder has already been attached), is added. The wire elevator connector is passed through the fin and the elevators are attached. I used hinge points and R/C Modellers Glue. They are still firmly in place and there was no danger of gluing up the hinges.

## Test flight

As it is such a light model, it took a little while before the weather conditions were right for the test flight. Finally we had a fine day without too

Right: Bulkhead complete with engine bearers, epoxied to the first side. Note the temporary second bulkhead glued to the first.



Far right: The second side is attached to the two bulkheads and the tail joined. Note that it is necessary to fit the undercarriage before the second side is attached.



Above: Finished and ready for covering.

To sum up. This is a good kit of a good model. It's a kit for those modellers who enjoy building, but not those who want instant success. Colin Buckle tells me that the mistakes on the plan will be put right. The Challenger could make a useful flying 15 aircraft if light weight radio equipment is fitted.

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## Datafile

### Kit specifications

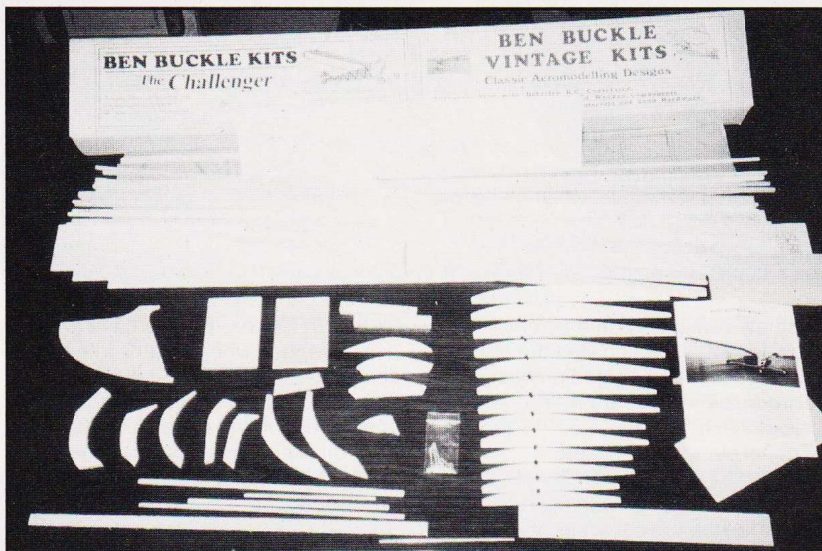
<b>Name of model</b>	The Challenger
<b>Model type</b>	Vintage
<b>Manufactured by</b>	Ben Buckle
<b>Retail price</b>	£36.20
<b>Available from</b>	All good model shops
<b>Wing span</b>	49"
<b>Wing chord</b>	11" root; 6 1/2" tip
<b>Wing area</b>	400sq "
<b>Fuselage length</b>	32"
<b>Tailplane span</b>	23 1/2"
<b>Tailplane area</b>	150sq "
<b>Side thrust</b>	0°
<b>Down thrust</b>	0°-3° added
<b>Specified balance point</b>	Non shown
<b>Actual balance point</b>	On spar
<b>No of channels</b>	Not mentioned: 3 used
<b>Engine range</b>	1.5-2.5cc
<b>Control functions</b>	Rudder and elevator shown on plan

### Construction materials

<b>Fuselage</b>	Balsa and ply
<b>Wing</b>	Balsa and ply
<b>Tail surfaces</b>	Balsa
<b>Other</b>	Litespan used for covering

### Other data

<b>Engine used</b>	PAW 1.49 R/C
<b>Radio used</b>	Futaba
<b>Weight ready to fly</b>	35oz
<b>Wing loading</b>	12.6oz per sq ft



What you get inside the box

much wind. The PAW was started, the radio checked and it was time to go. Even after all this time, the first flight of any model is always a thrill.

It climbed into the sky like a homesick angel.

There were a few problems, but they were down to me and not the model. Because the rudder was so small, I had put a lot of throw onto it - too much. The combination of the large dihedral angle and the excessive rudder throw caused

the model to Dutch roll like a drunken sailor. But after taking care not to put in too much movement the Challenger climbed until it was just under a cloud and the only way I could get it down was to put it into a spiral dive. I did not fancy a long walk over and through fields to find my model, that's why I put radio in!

After the first flight, the rudder throw was reduced and the wing trailing edge packed up about 1/16" and the next flights were much more relaxing.