FREE FLIGHT news

CONTENTS

FFn DIARY
No contests during July

Lost Hills 2018, Malcolm Campbell

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ACTIVITY

By Andrew Crisp

You asked what we've been doing during the lockdown. Actually, I've been quite busy, aeromodelling wise.

I've finished off a L'Etienvre Vintage Coupe. Built a Mad's Dream Classic A/2, incidentally striking a large acquaintance gap with the designer, Brian Dowling, whom I knew from the Watford Wayfarers club back in the '60s. I have also made an own design basic F1B. The sort you build to get Plugge points! Finally, the piece de resistance, a Thermic 72x glider from a Jetco kit given to me by an (evidently) famous yacht designer many years ago. The 60 year old wood was in beautiful condition – quarter grain and all – although the die-cutting was so-so, without any numbers on the parts. This gave some interesting building problems with the typical Zaic gull shaped wing.

I gave the original tissue a miss, and covered the whole with light weight Modelspan over fine Salzer tissue. It said on the box that it should weigh 16 oz. Rather generous for an A/2 sized model, I thought. My finished example came out at 18 oz! So much for good intentions. We shall see. No flying as yet – social distancing.

In recent years many plans for the E36 class have been published. It seems to me, as one whose knowledge of things electric is limited to operating a bike lamp, that we've been here before. Back in the '60s and '70s, when the TD 049 was paramount, there were 36" span 1/2As all over the place, virtually aerodynamically and structurally similar to what we have as E36 now

For example

006 ½A by Mike Green Telstar 2 by George Stringwell	} 1964-65 Frank Zaic Year Book
De-Wizz by Dave Wiseman Episode by John Bailey	} Northern Area News
The Limey by Dave Linstrum	} Aeromodeller Annual 1970-71

I also include a couple of my own designs from the period which were never published, but drawn up "from memory"!

"King Bee" was lost after a flyoff at Chobham. "Hide Away" had several minor placings and survived to the give-away stage. The names are from R&B hits of the period.

NEWS FROM BMFA FF TECH COMMITTEE

All correspondence re this news to the FFTC Secretary:

Stephen Philpott, 14 Durley Drive, Sutton Coldfield, B73 6QT. Tel 0121 354 4448 mob 07939 205047. Email srphilpott@aol.com

The FFTC held an internet virtual Zoom meeting from their homes on 24 June 2020.

Coronovirus – Covid -19

The Government restrictions do not allow the organising of any model Competitions at this time. You can go flying as an individual if you have a site that is available, and have the site owner's permission. Remember you must comply with social distancing and any other Government rules. All of the MOD sites remain absolutely out of bounds until further notice. We are currently negotiating access to some MOD sites for trimming. If you live in Scotland, Wales or Northern Ireland we recommend you follow the guidelines set out by the relevant Regional Governments. We will issue an update towards the end of August and inform you of any changes.

2020 Contest Calendar

With so much uncertainty there is no point in updating the published Contest Calendar at this stage. All contests have been cancelled up until September 1st at the earliest. When contests are legally permitted once again the calendar will pick up from that point. If we are able to access MOD sites prior to that date we will make an announcement via the website that access is available for trim flying. If we get the go ahead for such use the site access fee for those days will be waived and paid for by the FFTC. As previously notified, the Plugge and Senior Championships will not be awarded for 2020.

Team Selection Trials – F1ABC and F1E

The team selection for 2021 has been postponed until the Spring of 2021.

Ed:-: Interesting information at the meeting was that the potential EASA CAA regulations changes due in July have been postponed to December. The CAA Registration scheme remains in operation and is mandatory for all models over 250g. 20,000 BMFA members have registered, but the surprising overall total of people registering is 132,0000.

CIAM CHAMPIONSHIPS

The two Championships scheduled for 2022 with single bids from Romania have now been confirmed by the CIAM Bureau as awarded to Romania. The current list of confirmed Free Flight Championships is:

March 22-25 2021	F1D World Championships Slanic Prahova, Romania
July 17-20 2021	F1E World Championships Turda, Romania
August 14-21 2021	F1ABC World Championships and F1ABP Junior World Championships Moncontour, France
March 14-17 2022	F1D World Championships Slanic Prahova, Romania
August 1-4 2022	F1E European Championships Turda, Romania

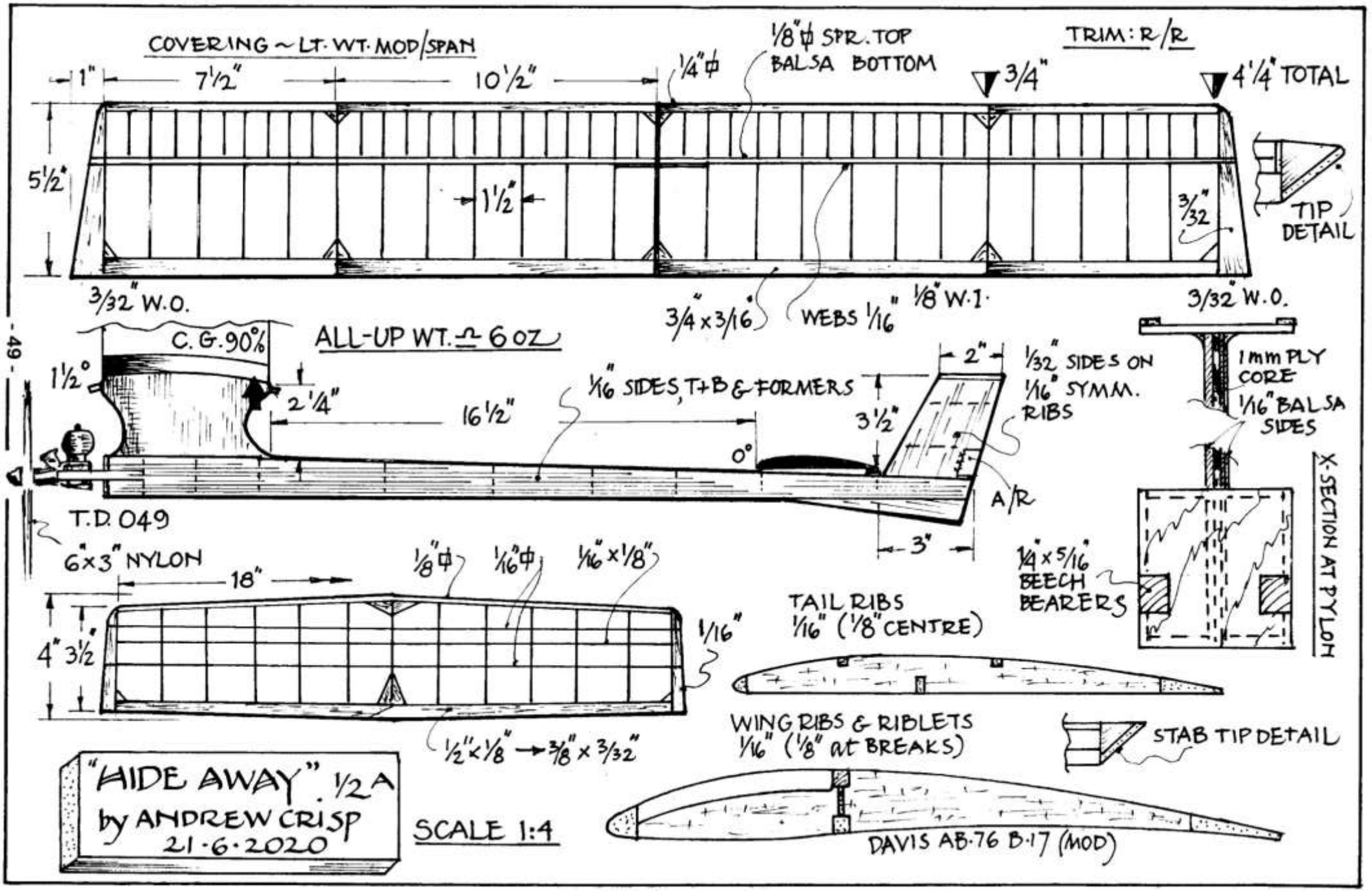
The 2022 European Championships F1ABC is to be decided between bids from Ukraine and North Macedonia. The 2022 Junior World Championships F1ABP is to be decided between bids from Bulgaria and Russia.

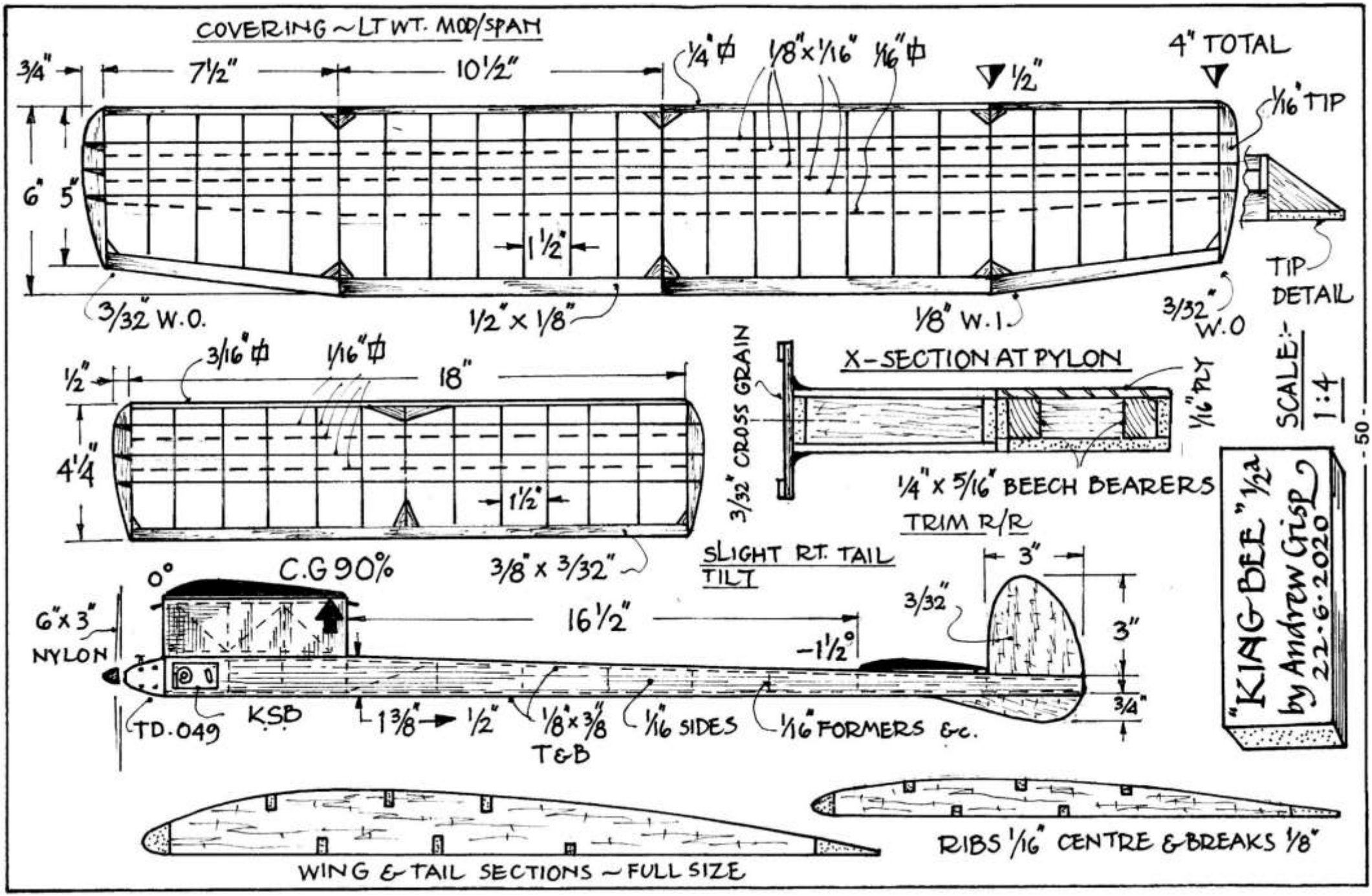
CIAM COMPETITION CALENDAR

The list published in FFn last month indicated my latest information at that time. Since then, France has reversed their decision to postpone events to 2021 and now the Hispano-Francia and the Moncontour 2 min may be run as an open international on August 10-11 2020 and Poitou on August 7-8 as a 14 round competition over the two days. The announcements reserve the possibility to cancel the events at last minute if virus regulations change.

NOTICEBOARD

WANTED. Peter Martin: : Old editions of NFFS Sympo and BMFA FF Forum Report. Please contact peter_m7uk@yahoo.co.uk if you can help."


COVERING ~ LT. WT. MOD/SPAN
TRIM: R/R
1"
7½"
10½"
¼"ϕ
⅛"ϕ SPR. TOP
BALSA BOTTOM
¾"
4¼" TOTAL
5½"
1½"
3/32"
TIP DETAIL
3/32" W.O.
¾"x3/16"
WEBS 1/16"
⅛" W.1.
3/32" W.O.
C.G. 90%
ALL-UP WT. ~ 6 OZ
1½°
2¼"
16½"
1/16" SIDES, T+B & FORMERS
2"
1/32" SIDES ON
1/16" SYMM.
RIBS
3½"
0°
A/R
3"
1mm PLY
CORE
1/16" BALSA
SIDES
X-SECTION AT PYLON
T.D. 049
6"x3" NYLON
18"
⅛"ϕ
1/16"ϕ
1/16"x⅛"
1/16"
4"
3½"
¼"x5/16"
BEECH
BEARERS
TAIL RIBS
1/16" (⅛" CENTRE)
WING RIBS & RIBLETS
1/16" (⅛" at BREAKS)
STAB TIP DETAIL
½"x⅛" → ⅜"x3/32"
DAVIS AB-76 B-17 (MOD)
"HIDE AWAY" ½A
by ANDREW CRISP
21·6·2020
SCALE 1:4


COVERING ~ LT WT. MOD/SPAN
3/4"
7 1/2"
10 1/2"
1/4" ⌀
1/8" x 1/16"
1/16" ⌀
1/2"
4" TOTAL
1/16" TIP
6"
5"
1 1/2"
TIP DETAIL
3/32" W.O.
1/2" x 1/8"
1/8" W.1
3/32" W.O
3/16" ⌀
1/16" ⌀
1/2"
18"
4 1/4"
1 1/2"
X-SECTION AT PYLON
3/32" CROSS GRAIN
1/16" PLY
1/4" x 5/16" BEECH BEARERS
TRIM R/R
SCALE:- 1:4
3/8" x 3/32"
SLIGHT RT. TAIL TILT
C.G 90%
0°
3"
3/32"
3"
6" x 3" NYLON
16 1/2"
-1 1/2°
3/4"
TD.049
KSB
1 3/8" → 1/2"
1/8" x 3/8" T&B
1/16 SIDES
1/16" FORMERS &c.
"KING BEE" 1/2A by Andrew Gisp 22.6.2020
WING & TAIL SECTIONS ~ FULL SIZE
RIBS 1/16" CENTRE & BREAKS 1/8"

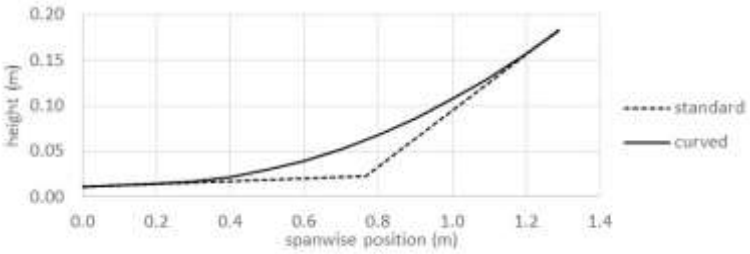
DIHEDRAL

Last winter I build a new F1E model (202) which incorporated detachable curved wing tips. The idea was to keep my standard wing but extend the span and possibly improve the aerodynamics. My usual F1E wings are the maximum size I can accommodate in my box and I did not want to have a larger box or have a joint at the dihedral break. The curved tips were about 250mm span, made from glass covered foam and attached to the wing by a nylon screw between two ply plates. which proved rather fiddly. The model flew quite well when tested at Lost Hills in February - at least it did when I fitted a tailplane with a conventional section in place of the symmetric section one that I had used at first. Even in the lovely weather we had in February I never got to make any comparative tests with and without the tips.

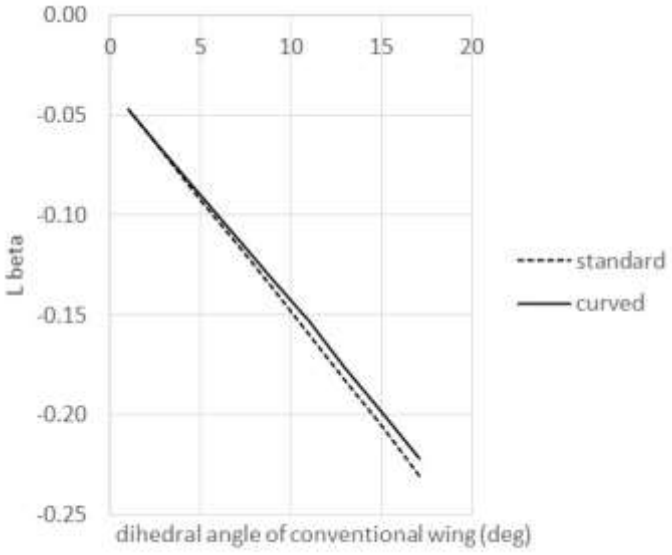
202 wing

After Lost Hills I had to decide which route to take for an extended span model development from this layout. One possibility was a conventional 6 panel wing but it still needed at least one joint. I realised that a 4 panel wing with curved outer panel would allow an easy flat plug-in joint followed by an outer section with gently increasing dihedral, avoiding even the reduced dihedral angle changes of a 3-panel wing.

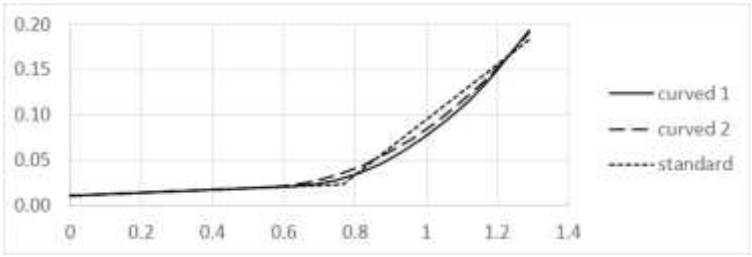
First it was necessary to look at the aerodynamics. I used my vortex-lattice code to evaluate the dihedral effect derivative Lβ, the rolling moment due to sideslip which is fundamental to lateral stability of an aircraft. I started by looking at my standard F1E wing with conventional dihedral against the same wing with a curved tip starting further inboard but reaching the same angle and height at the wing tip. Since this curved panel has a lower dihedral angle just inboard of the tip it is likely to have a reduced rolling moment compared to the conventional wing. The wings are compared here, noting that they are shown with an expanded vertical axis.



The amount of dihedral was varied from one degree up to the nominal 17 degrees and the variation of Lβ with dihedral angle for the two wings is seen to be linear with the curved wing value approximately 4% less than the conventional wing:



The study had the curved panel start at only 0.25m from the centre line, but ideally I wanted similar span inner and outer panels, so I adjusted curvature and start span position to get nearer to this ideal and to give an Lβ equal to that of the standard wing. Two options found were an arc radius of 1.45m starting at 0.625m (curved 1 in the following plot) and radius 1.8m starting at 0.55m (curved 2).. Both of these curved wings finish at a tip height which is almost exactly 4% more than the standard wing, so not surprisingly tip height is directly related to Lβ.

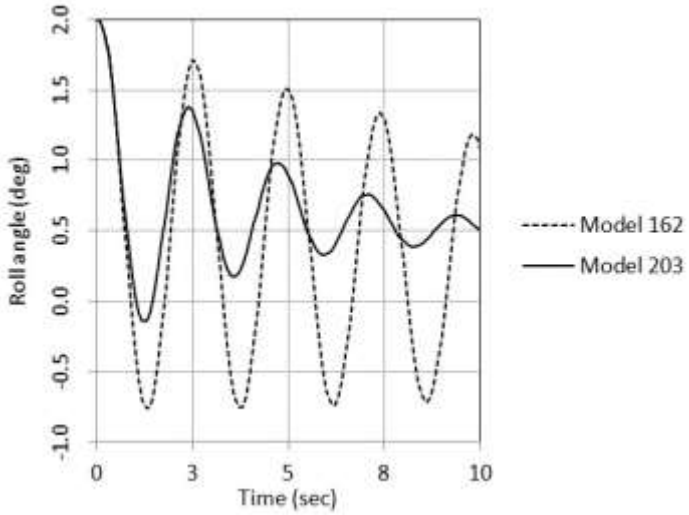


The comparison has been based on a wing the same size as my standard F1E wing, but the aim was to go to a larger span than standard in conjunction with a fuselage and tail moment arm the staying the same as regular models. This changes the aerodynamic moments generated by the wing and changes the roll inertia of the model but without changing the lateral aerodynamic effects of the fin. Consequently it is of less value to look for a specific value of the aerodynamic increments and needs dynamic analysis to look at the combined effect of the changes in inertia and changes of some aerodynamics in conjunction with other parameters unchanged.

I have built a wing with the curve starting at 0.79m span, an arc radius 1.45m for a curved panel with span 0.8m. This wing, to become model 203, is shown here in comparison to 202. With a tip height of 200 the new wing has more dihedral than the standard wing but it is less than the height reached by the extremely curved tips on model 202.

Wings 202 and 203

My standard F1E has a Dutch Roll mode with low damping of 1.4% and a period of 2.43 seconds. The same model was then analysed with aerodynamics and inertia properties of wing 203. It was found that the period of the Dutch Roll is similar at 2.33 seconds but the damping has increased dramatically to 9.3%. This is quantified by a plot of the recovery of the models after launching them with a slight bank angle:-



To produce a curved wing in my conventional construction - that is without any CNC moulds, etc – the first need is a building board of that shape. Having settled on a radius of curvature of 1450mm this was drawn on ply pieces to form the sides of the board. For simplicity these were made in half length (i.e. from the end to the middle) and so four identical parts were required. The other half after each cut was kept for use on the inverse mould, needed for applying pressure to anything on the lower mould. When finished these were screwed and glued to an MDF base.

The two completed mould frames were then filled with blue foam sheets to above the ply sides and this was hotwired using the ply sides as guides. The foam surface was then covered with balsa on the lower mould (for ease of sticking pins into it) and Kevlar cloth was epoxied on to the working face of the upper mould.

Working surfaces were completed by a replaceable layer of thin card and polythene held with double-sided tape, largely to limit damage from stray epoxy, etc.

I will write a bit more in a future FFn about the building processes used on the board in. That will be in next month's issue unless I am overwhelmed by your contributions…