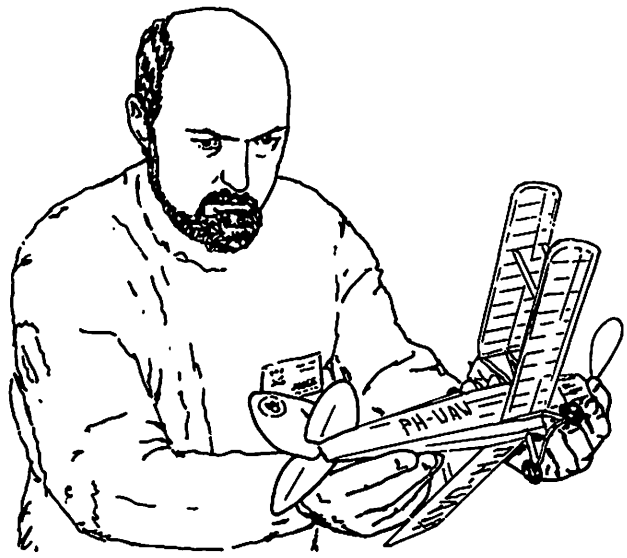
Indoor News



Issue 39,40 November 1996

RECORDS

33'04 EZB (US rules) unoff. World Record Cat. IV
Laurie Barr (GBR) Cardington , Aug 25, 1996

56'05 F1D World Record Cat. IV
Jim Richmond (USA) Akron, July 6, 1996

Jim Richmond submitted a claim for improvement of the Cat. IV indoor world record to the FAI. No official information is available yet, but apparently Jim used his 1979 Starwalker design to set this record. On Sept. 1 he again flew at Akron and made a flight of 56'35 reportedly with another (larger) model and large VD prop.

63'54 F1D	**unofficial World Record Cat. IV**
Steve Brown (USA)	**Santa Ana, Sept. 1, 1996**

Yes, the magic One Hour Flight is there!

Over to Steve Brown for his story:

I am writing with some news you may find of interest. On September 1 at Santa Ana (MCAS Tustin), Hangar 1, I was able to fly an unlimited microfilm model for 63 minutes, 54 seconds. I believe this was the first time an indoor model has flown for more than one hour.

A few indoor fliers who attend our Santa Ana contests have been urging me to build a record model for some time. With the World Championships behind me I found time to build a larger model with its associated jigs and travel box. I completed the model just prior to the flying session and I anticipated that I would spend the day adjusting the new model. Conditions in the hangar were very good with an air temperature of 30 degrees C and 55% humidity. I used a 546 mm variable pitch prop weighing 0.221 gm. This was an F1D prop and it seemed likely that it would be too small for the 952 mm span model. A ¼ motor test flight of 15'11 at an altitude of 7.6 meters and an average RPM of about 39 encouraged me to try a full length motor.

The model climbed to about 33 meters in its initial climb, cruised for several minutes and lost a few meters, then climbed to a final altitude of about 43 meters. The second climb ended at about 38 minutes and the model cruised at maximum altitude for about 15 minutes before beginning its descent. The model finally ran out of turns at about 12 meters. Two short steers were necessary to move the model from the sides of the building, near the catwalks, to the middle at 40-45 minutes. No prop stop was recorded.

I had two timers for the flight but no record sanctions were in place, so I'll have to try again for an official record. The model has a wing area of 20.6 dm^2, is 876mm long and weighs 1.196 gm.

POSTAL/PROXY EVENTS

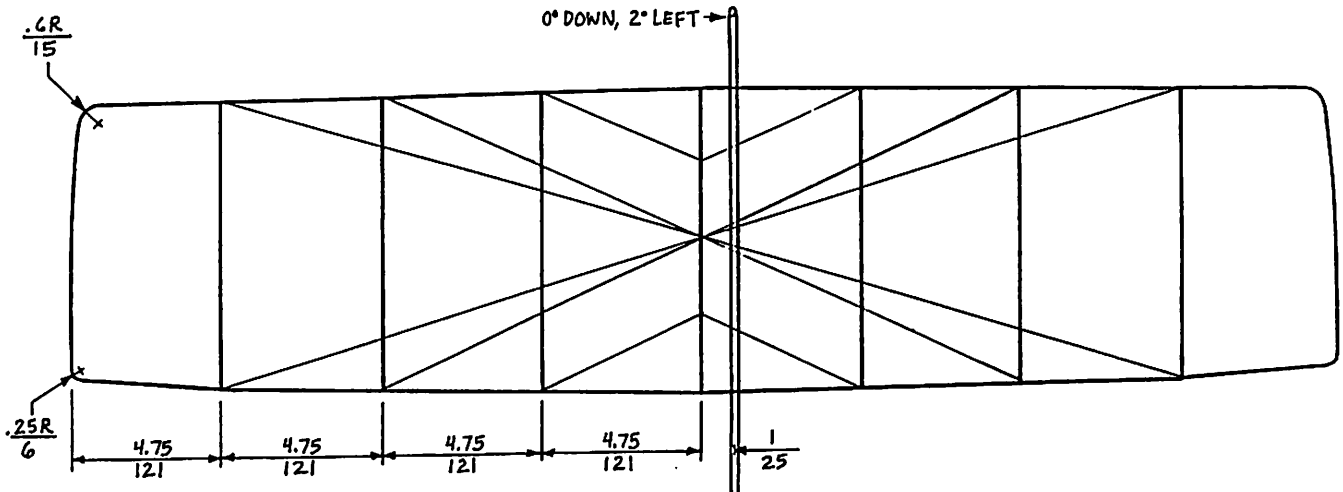
from now till Jan. 19, 1997	**Pistachio Postal InterGnats,** organised by the Hangar Pilot. Fly indoors and send in your time. Send a photo of your entry and it's weight without rubber. On the back of your photo: name, address, model, weight, and time. The Hangar Pilot, 2180 Tigertail Ave., Miami, FL 33133, U.S.A..
Nov 1 till April 30, 1997	**Flying Aces Peanut & No-Cal Postal Meet**, Indoor and Outdoor, FAC-GHQ, 3301 Cindy Lane, Erie, Pa. 16506, USA. You may enter as many models as you wish in any of the events. Every time you better a previous time with a particular model send the time in. Contest times also count.

COLOPHON
Indoor News is published at least four times a year and covers all types of indoor models, from peanuts to microfilm. Texts can be sent in Dutch, English, German and French. Please type your texts on 12,5 cm width. Texts can be sent on floppy disk (3½ or 5¼) in any text format. I can make drawings, if you are no draftsman.

Payment of subscriptions is preferred per eight issues. When paying by Eurocheque, International Postal Money Order or with bank notes no additional bank fees are required. Please add NLG 6,50 for bank fees when paying by Eurogiro or NLG 20,00 with foreign checks. The Eurogiro account number is 4406860.

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First model that has flown for more than one hour

63 min. 54 secs!

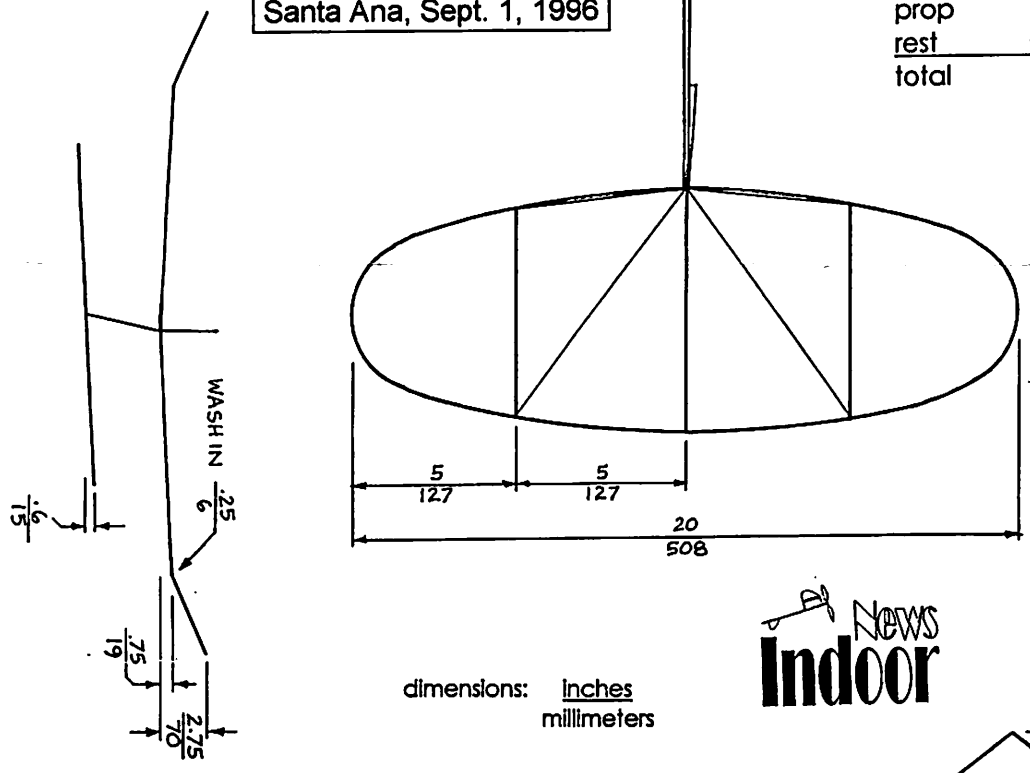
Santa Ana, Sept. 1, 1996

TIME TRAVELER

by Steve Brown, U.S.A.

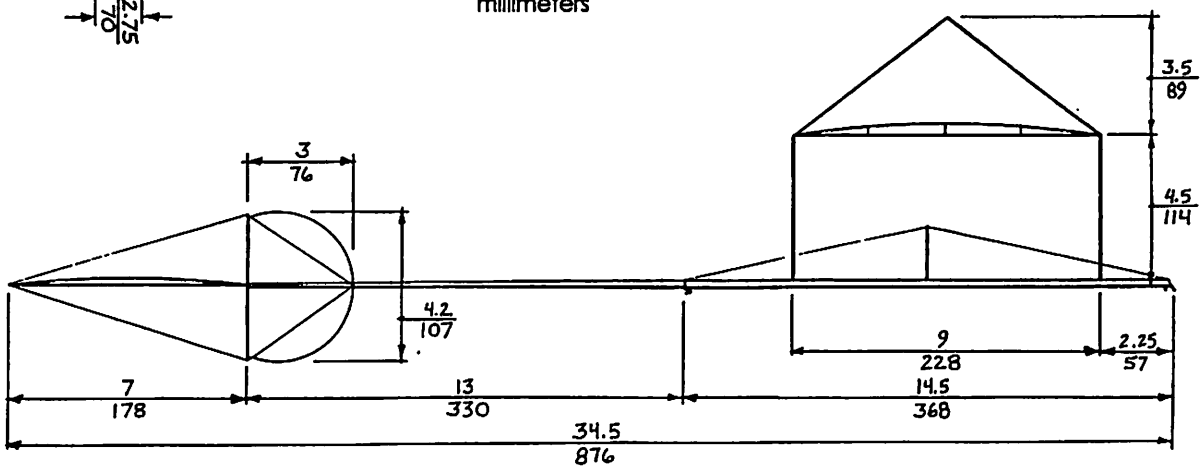
weights (grams)

wing	0.408
stick	0.312
prop	0.221
rest	0.255
total	1.196



dimensions: inches
millimeters

News Indoor



Indoor News

Wing

spars, front		.034 X .043 6.0 lb.
spars, rear		.031 X .043 6.0 lb.
tips		.030 X .037 5.4 lb.
middle ribs		.028 X .043 5.2 lb.
compression ribs (2)	top:	.028 X .028 5.2 lb.
	bottom:	.035 X .026 5.2 lb.
	uprights:	.004 boron
wingposts		.035 X .053 4.9 lb.
		(3) .003 boron, full length
cabane		.035 X .044 → .030 X .035 5.4 lb.
bracing		.0003 tungsten
airfoil		3% ellipse, 1.5% ellipse at tips

Stabilizer

spars	.028 X .048 → .024 X .028 5.4 lb.
center rib	.028 X .044 5.4 lb.
outer ribs	.025 X .032 5.2 lb.
bracing	.0003 tungsten
airfoil	2% ellipse

Fin

vertical	.028 X .050 → .028 X .040 5.4 lb.
outline	.0004 boron

Motorstick

tube	.013 4.1 lb. (4) .0004 boron
webs	.018 4.2 lb.
cap	.013 4.1 lb.
bracing post	.048 X .048 → .035 X .035 X 1.9 7.0 lb
hook	.012 music wire
bearing	Harlan F1d, modified
bracing	(1) .001 tungsten

Boom

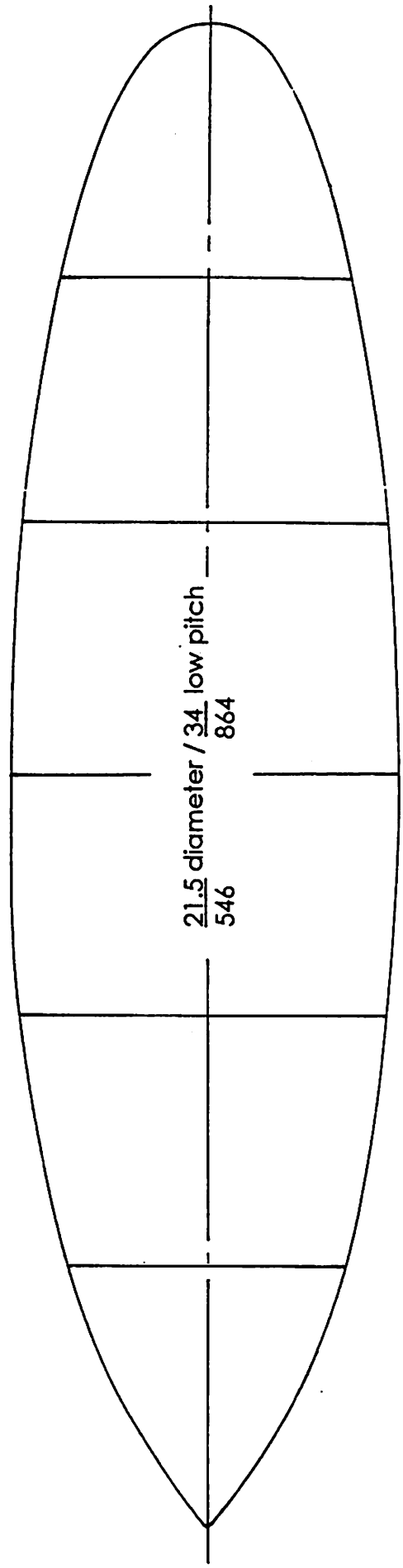
tube	.008 3.9 lb. .230 i.d. → .130 i.d.
	(2) .003 boron 6, 12 o'clock

Variable pitch propeller

spars	.068 X .075 → .030 X .030 5.5 lb.
center spar yoke	.068 X .040 → .068 X .100 5.5 lb.
	(2) .005 aluminum bearings
screw arm	basswood
screws	00-90 nylon
spar actuator arms	.007 music wire
yoke	.010 X .040 X .400 beryllium bronze
shaft	.013 music wire
outline	.024 X .024 4.5 lb.
ribs	.024 X .024 4.5 lb.
spring	.009 guitar string

Motor

August 1993 Tan II: .069 X .045 X 18.0 = 1.84 gm.
2530 initial turns - 50 backoff = 2480 launch turns, 0 left = 38.8 average RPM



IMPRESSIONS OF LIEGE '96

Thursday, Aug. 22 and Friday, Aug. 23

by David Lentink (NED)

I regret I can't tell you the whole story, because so many nice things happened during these four days and, as a competition flier, I did not have sufficient time to see everything that happened, that's why I will give again an *impression* this year.

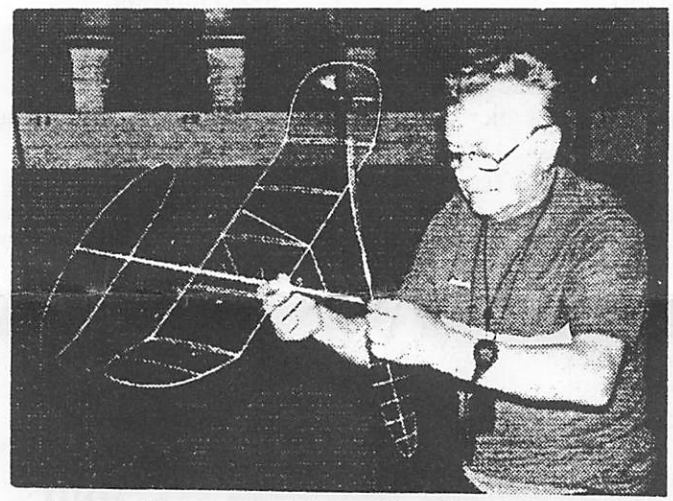
The legendary international indoor contest in Liège was held this year for the 19th time and it looks like it will be held every second year in the future, alternately with Interscale which will be organised in the other years. This year there were competitors from Poland, Germany, Holland, Great Britain, France, Belgium and Czech Republic.
The dimensions of the hall are:
- 12 meter under the lights, it is a Cat. II hall.
- about 1.5 meter between the lights and the catwalk that hangs above the lights.
- the floor area is very big so there is enough space to fly more models at the same time.

There are many differences in "air quality" in the hall (concerning draught, turbulence and temperature). The best conditions exist between 13:00 and 17:00, then it is nice and warm up above, at the level of the lights and the air is relatively calm. Of course the situation changes completely when there is wind or rain. That makes the conditions worse (like in almost every hall) but more constant, which makes flying easier.

This year there were quite a lot of junior competitors in the duration classes, but of course NOT enough. I hope that in the next years more senior competitors will take the juniors from their countries with them. This contest is a feast for every indoor flier. The perfect organisation, the many classes and participants and above all the fact that there is no friction between scale and duration fliers guarantee four fabulous days off. The atmosphere around the actual contest is very nice as well, you meet new people, very good indoor fliers, old friends and enthusiastic beginners, not to mention their models!

This year five junior fliers participated in the F1D-Beginner contest. Those placed 2 to 5 were real beginners who made some very good flights. Number one was an old hand, Jeroen Wackers. He has been flying for many years and is a very constant flier. Because of this and his killer instinct he has won the Dutch *overall* F1D-Beginner championships three times, so it is not really surprising he won. F1D-Beginner Senior went like we all expected. Werner Nimptsch (GER) won by making only two flights, almost a tradition. Jeroen flew so well he would have placed third in the senior class. I didn't really fly bad as well. I became second and flew a new unofficial Dutch record. In addition, this was the first contest I flew with my recently developed VD props that functioned well. Werner Nimptsch flew a VP prop that worked perfectly, at the best moment of the contest, like it is meant to be... but his technique of steering the model towards the highest point of the hall above the grandstands (a tradition as well) isn't really appreciated.

The F1D contest was really thrilling. Edward Ciapala (POL) was an unexpected visitor (for me) and he made a first flight of 35'25, a new hall record, minutes longer than the previous. Werner Nimptsch followed with a nice 33'34 flight. It was going to be exciting. Thedo André made a flight full of suspense that arrived, just like Werner and Edward, above the lights. But he had a stroke of bad luck and the flight ended in a crash. Thedo didn't make any more good flights because he didn't have enough helium (the tank was probably not completely closed the day before) so he was not able to steer with a balloon owing to lack of line tension. The necessary fishing rod steering ended in disaster and plane number two was destroyed. He didn't really have good luck.



Great performance in F1D by Edward Ciapala (POL)

Edward and Werner were able to make good second flights. Thedo flew traditionally with an advanced, well functioning VD prop while Werner and Edward flew with very small VP mechanisms. It struck me personally that Edward's mechanism was so small that it must have been very light. It struck me as well that the starting pitch of the VP prop was enormous. Edward went as far as he could, he banked his model so far during take-off that on Thursday the model didn't climb at first but spiralled down a little. To be short, everyone did his utmost to win the contest. Michael Green's achievements were remarkable. He took part in F1D, F1D beginner, F1L and Sainte Formule, with good results in all classes. I took part in F1D myself with an F1D-Beginner, on the off chance of getting a third place because in the previous years the level of the lower part of the ranking was so low that I would have been 3rd with my F1D-Beginner. I'm glad to say I didn't have a chance this year, so the contest was nice and exciting and I have been able to learn a lot about VP propellers.

In Micro 35 Werner was unexpectedly beaten by Edmond Roch (FRA) who made two good flights under

difficult conditions. Although Werner made the longest flight of 14'55 he was not able to make another flight like that. Junior Yannick Grange (FRA) made some very good flights, he would have been third in the senior contest... as a junior he was first! I can't understand the F1L (EZB) class anymore, 0.5g U.S. models and worse at the other side of the big pool and I thought I saw VP props at this side. As an insider, I felt like an outsider because I don't know what the rules are anymore, you can't follow what is happening. What I do know is that a class that was once meant for beginners has been thoroughly overtaken by experts. It became an expert class rather quickly, now it is an expert class indeed, this is nothing for beginners! Pity. However, the results were very good. Edward Ciapala won making two good flights. Yannick Grange (junior) was also able to do well in this class. As a senior he would have placed somewhere in the middle of the ranking.

The last class is Sainte Formule. This year the rules were changed, the minimum weight was increased. It used to be 2 g in almost all countries, except for Holland (3g). This year the Belgian rules have been changed to 3g. This made Sainte Formule more like a fun class and better for beginners. But the times were very high and of course the Dutch had an advantage. Sainte guru Gé Brouwer won the contest, having made a best flight that was just as long as Gert Brendel's, who became second. The difference between Gert and Gé was only two seconds, so it was a real thrilling contest!



Fernand van Hauwaert (BEL) repairing his Sainte Formule model

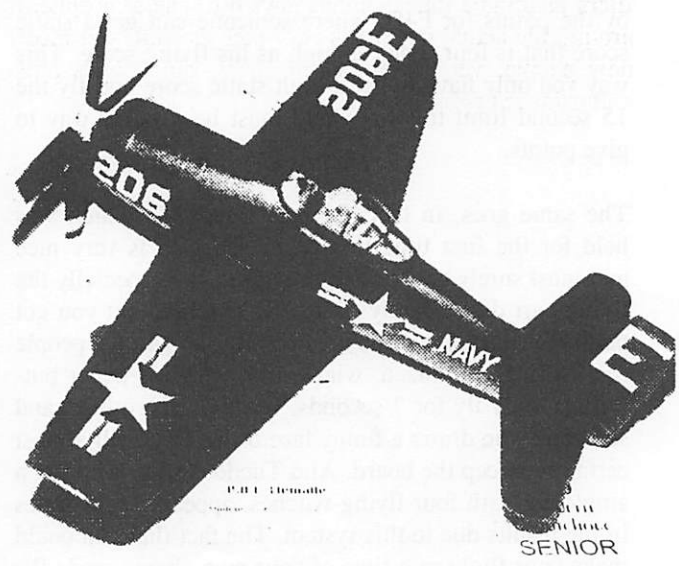
In the junior class Martin Alberts made some very good flights, although he flew a Sainte only for the first time. However, he borrowed a model from Marian ter Horst. She was so kind as to lend him her Sainte so Martin could take part. Marian was the only senior female competitor in the duration classes and Natalie Ganzenboom the only junior. Conclusion: all female and 6 of the 7 junior competitors came from Holland. I suggest a new competition: which country brings the most junior and female competitors. That country will get a nice bonus in each ranking. All right, bad idea, but you (the readers) might at least take many juniors and women with you. I count on you! (Not because I would be glad that Holland performed better because of that bonus, but because I think it is so PITIFUL that there are so few junior fliers and that even less take part in contests!).

The scale contest

Saturday, Aug. 24 and Sunday, Aug. 25

by Jeroen Wackers (NED)

At this year's scale contest there were many models we've often seen before, but as well some new ones. More and more models are constructed with foam and they look excellent. F4D open rubber was won by Antonin Alféry (CZE) (who else?) with a large Bearcat made of foam. The model flew perfectly, it only made a few bumps in the air after take-off. The most impressive was the way it managed to land exactly in the corner of the hall. Divs Masters (GBR) was second with one of his S.E. 5a's. This highly detailed model got a high static score but less points for flying. Third place was for David Prior. His Sopwith Baby seaplane looked nice, but it didn't get many points for flying, as it was unable to ROG. Aad van Dijk (NED) placed fourth. His Lambach HL2, a replica of an aerobatic plane built by students from Delft University (NED), flew well according to the Dutch team but didn't get many points for flying because of its somewhat bumpy landings.



Alféry's spectacular Bear Cat (photo doesn't do right to the quality of this model)

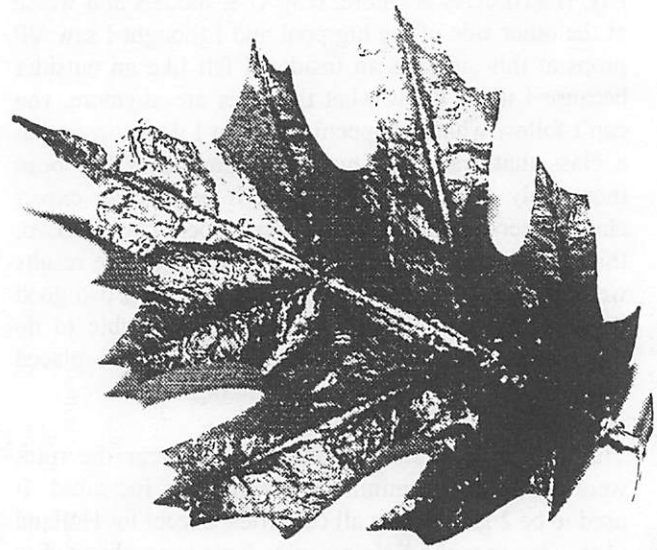
F4D Open CO_2/Electro was convincingly won by Alféry with his well-known Spad, which climbed almost to lamp-height. Second was Michael Green (GBR) with an Anec 1A and Theo Ganzeboom (NED) placed third. His model, a Monocoupe, doesn't have many details, but flies nicely. The other two participants were unable to make any flights, but Divs Masters came close to flying by holding his model in his hands and walking, loudly humming, towards the jury. He didn't get any points for that...

Antonin Alféry won F4F Peanut as well, by beating himself on the second, third, fourth and fifth place. "Best of the others" was Divs Masters. Alféry had some new models from foam, like an Aichi Sciran, a Japanese seaplane, that climbed until it was between the lamps without difficulty. All his Peanuts fly good and long. He won with a (foam) Mustang. The weather in the hall was bad for long flights on Sunday. It was cold in the hall, because of heavy rainfall on Saturday and Sunday. On Saturday afternoon, when there were Peanut and Pistachio flights as well, it was warmer, so it was possible to fly longer.

Pistachio was, for a change, not again won by Alféry. He joined the honours with Gert Brendel, the winner of Interscale last year. He flew the Volksplane with which he won Interscale '95, a model that is very light and makes long flights. Only the Fikes and Laceys flew longer. Alféry flew a Vought Kingfisher, a (foam) model, that attracted much attention with its red fin and yellow wings. Third was Peter Frostick (GBR) with a Lacey and the fourth and fifth place were for Divs Masters with his two?! S.E. 5a's. Pistachio junior was won by Jeroen Wackers, who didn't need to beat anybody, as he was the only competitor.

The organisation of the scale contests was good, everything went, apart from a few minor slips, with the smoothness of much experience and I think that everyone had the possibilities to fly well. But I was amazed by the points for F4D, where someone can get a static score that is four times as high as his flying score. This way you only have to get a high static score and fly the 15 second limit to win. There must be a fairer way to give points.

The same goes, in fact, for the "Fun Fly", which was held for the first time this year. The idea is very nice and must surely be repeated next time, but especially the flying part didn't really come off. The fact that you got points for duration made it impossible to win for people like Durk Steenhuizen, who could, with his paper butterflies, only fly for 7 seconds, while on the other hand someone who draws a funny face on an F1D will almost certainly sweep the board. And Thedo André, who did a single act with four flying witches, appeared four times in the results due to this system. The fact that you could make your flight at a time of your own choice made the contest less interesting for the spectators. It will be better when everyone makes his flight one by one, just like F4D. This is more interesting for spectators, as they can follow the flights better. Nevertheless, the Fun Fly is a nice event and the organisation sure must continue with this.

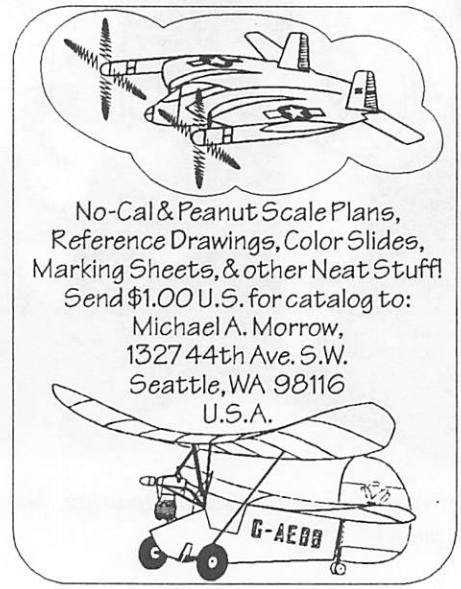


Wijnand de Joode (NED) entered this Gasparin-powered "Falling Leaf" in the Fun Fly, but had great difficulty trimming it!

All too soon the four happy days were over. Now we have to wait for two years for the next edition. Mssrs. van Hauwaert, Delhalle, and all the other helpers, thanks a lot for a job well done!

Foam Scale Models

Several readers have written to Indoor News for information about the new technique of building scale models from foam. Thanks to the efforts of Reg Boor you will find a 12 page booklet about this subject as a supplement to this issue of Indoor News, written by the experts who developed the technique. I am very grateful to author David Deadman for his permission to publish the booklet.



19th International Indoor Competition Liège (B)

August 22-25, 1996

F1D Microfilm	5 flew							
1. Edward Ciapala	POL	**35'25**	27'27	**35'15**	13'02	9'30	10'40	**70'40**
2. Werner Nimptsch	GER	20'01	**33'34**	27'48	**31'56**			**65'30**
3. Thedo André	NED	9'39	**13'35**	**27'42**	6'59			**41'17**

F1D-Beginner Senior	11 flew							
1. Werner Nimptsch	GER	**12'59**	**13'35**					**26'34**
2. David Lentink	NED	9'10	6'46	6'36	11'16	**12'01**	**11'50**	**23'51**
3. Francis Patat	FRA	**9'30**	5'22	**9'23**				**18'53**
4. Michael Green	GBR	4'25	8'48	5'22	**9'37**	6'56	**9'02**	**18'39**
5. Ebele Schouwstra	NED	7'18	7'32	**7'47**	7'36	**946**		**17'33**

F1D-Beginner Junior	5 flew							
1. Jeroen Wackers	NED	8'42	**10'02**	9'25	**9'34**			**19'36**
2. Martin Albers	NED	3'09	3'12	2'35	**4'13**	3'34	**4'05**	**8'18**
3. Natalie Ganzeboom	NED	1'46	3'08	**3'10**	**3'30**	2'57		**6'40**

F1L (EZB) Senior	9 flew							
1. Edward Ciapala	POL	7'34	**10'16**	0'19	10'04	0'13	**11'26**	**21'42**
2. Michel van Vyncht	BEL	2'35	3'39	**9'06**	8'21	**9'21**		**18'27**
3. Néry Bernard	BEL	8'43	8'29	**9'07**	**8'59**	8'56		**18'26**

F1L (EZB) Junior	1 flew							
1. Yannick Grange	FRA	7'15	**7'41**	**9'15**				**16'56**

Micro 35 Senior	6 flew							
1. Edmond Roch	FRA	**10'24**	**9'59**					**20'23**
2. Werner Nimptsch	GER	2'49	**5'23**	**14'55**				**20'18**
3. Emile d'Hondt	BEL	5'34	5'35	**7'01**	6'19	**7'25**	6'53	**14'26**

Micro 35 Junior	2 flew							
1. Yannick Grange	FRA	**8'28**	7'08	**8'23**	5'37			**16'51**
2. Roel Lucassen	NED	**3'21**						**3'21**

Sainte Formule Senior	16 flew							
1. Gé Brouwer	NED	3'14	**3'52**	2'32	3'38	**3'53**		**7'45**
2. Gert Brendel	NED	3'38	3'18	**3'50**	3'29	**3'53**		**7'43**
3. Michael Green	GBR	2'43	3'26	0'38	**3'41**	**3'38**	3'36	**7'19**
4. Peter Frostick	GBR	3'11	2'46	**3'16**	**3'35**	3'03	2'40	**6'51**
5. Roger Dechamps	BEL	**3'29**	2'02	1'53	**2'56**	**3'11**	3'09	**6'40**

Sainte Formule Junior	2 flew							
1. Martin Albers	NED	0'45	0'52	0'53	**1'04**	**1'02**	1'01	**2'06**
2. Natalie Ganzeboom	NED	0'15	**0'43**	**0'44**	0	0'26		**1'27**

F4D Rubber Scale Senior	9 comp.	Model	Best flight	Static	Total
1. Antonin Alféry	CZE	Bearcat F8-F2	553	1507	**2060**
2. Divs Masters	GBR	RAF SE5a	386	1578	**1964**
3. David Prior	GBR	Sopwith Baby	334	1497	**1831**
4. Aad van Dijk	NED	Lambach II	469	1159	**1628**

F4D CO_2-Electro Scale	5 comp.	Model	Best flight	Static	Total
1. Antonin Alféry	CZE	Spad S.XIII C1	541,5	1459	**2000,5**
2. Michael Green	GBR	Anec 1A	481	1003	**1484**
3. Theo Ganzeboom	NED	Monocoupe	409,5	348	**757,5**

F4F Peanut Senior	38 entries	Model	Best flight	Place	Static	Place	Total
1. Antonin Alféry	CZE	P51H Mustang	207	1	175	7	**8**
2. Antonin Alféry	CZE	Aichi Seiran	144	7	192,5	3	**10**
3. Antonin Alféry	CZE	Zlin Z. 50M	189	2	170,5	9	**11**
Antonin Alféry	CZE	Bell P39 Airacobra	164	4	175	7	**11**
4. Antonin Alféry	CZE	Fairey Firefly	183	3	159,5	10	**13**
5. Antonin Alféry	CZE	Heinkel He. 70G	207	1	143,5	13	**14**
6. Divs Masters	GBR	RAF SE5a	80	14	198	2	**16**
7. Francis Patat	FRA	Caudron Luciolle	85	13	189,5	4	**17**
8. Francis Patat	FRA	Farman 450	106	11	144,5	12	**23**
9. Antonin Alféry	CZE	Avia BH.25-J	163	5	115,5	21	**23**
10.David Prior	GBR	Sopw. Baby Seapl.	29	27	222,5	1	**28**
Peter Boys	GBR	Hamilton NH.47	102	12	124	16	**28**

Pistachio Senior	17 entries	Model	2 best flights	Place	Static	Place	Total
1. Gert Brendel	NED	Volksplane	154	3	86	6	**9**
Antonin Alféry	CZE	Kingfisher	150	4	96	5	**9**
3. Peter Frostick	GBR	Lacey M.10	167	2	76	8	**10**
4. Divs Masters	GBR	RAF SE5a nr.1	71	7	107	4	**11**
5. Divs Masters	GBR	RAF SE5a nr.2	41	10	109,5	3	**13**

Pistachio Junior	1 entries	Model	2 best flights	Place	Static	Place	Total
1. Jeroen Wackers	NED	Flybaby	124	1	97,5	1	**1**

Fun Fly: Flight Score	27 entries	Static	Flight	Total
1. Roger Dechamps	BEL	67	376	**443**
2. Francis Patat	FRA	79	107	**186**
3. Emile d'Hondt	BEL	52	121	**173**
4. Martin Albers	NED	37	131	**168**
5. Gert Brendel	NED	67	98	**165**

Fun Fly: Public's Choice		Model	votes
1. Antonin Alféry	CZE	Vickers Vimy	**9**
2. Wijnand de Joode	NED	Falling/flying Leaf	**8**
3. Antonin Alféry	CZE	Chance Vought Flying Pancake	**6**
4. Peter Frostick	GBR	Helicopter	**5**
5. Jeroen Wackers	NED	3cm helicopter	**4**



The ever patient timekeepers .....

FAI RECORDS *(from FFu)*

This item about FAI matters concerns records - not exactly of the same immediate impact and importance as rubber motor heaters and F1C engine runs, but a background item on which views would be welcome.
A CIAM Working Group has been set up to consider the records section of the Sporting Code section 4. This arose mainly from questions relating to duration RC records, such as definitions of how many people can fly a model during the flight and for how long and whether team records are recognised. This does provide a reason to consider the situation with regard to FAI free flight world records and I would welcome your views.

The current outdoor record categories with their reference numbers are as follows:

type	propulsion	duration	distance in straight line	height	speed
aeroplane	glider	17	18	19	-
aeroplane	rubber	1	2	3	4
aeroplane	piston motor	5	6	7	8
seaplane	rubber	40	41	42	43
seaplane	piston motor	44	45	46	47
helicopter	rubber	9	10	11	12
helicopter	piston motor	13	14	15	16

The indoor records are for only duration with rubber power and are subdivided into categories according to ceiling height: I less than 8m, II 8 to 15m, III 15 to 30m, IV over 30m.

The models allowed are effectively open models in all classes - not the standard FAI classes - they have only general guidelines on extreme loadings and weights

The questions that arise include:

How many people have any interest in outdoor free flight records? There has been very little relevant activity outdoors, whereas there has been a succession of duration records set in the controlled conditions of indoor flying.

Is there any point in retaining such things as seaplane and helicopter records in any category, let alone all four?

Would it improve matters if the models - outdoor and / or indoor - be restricted to the FAI competition rules for the relevant model type, or remain "open" ?

Would it be of interest to introduce competition world records for all categories? This could be on the basis of total official flight time in any competition which was on the FAI Sporting Calendar - that is an open international or world or continental championship. For F1D there could also be a category for the total of 6 flights in a competition, as well as single and 2-flight competition total. For indoor EZB (F1L) records could also be added (noting Laurie Barr's unofficial world record claims for Miller Lite)

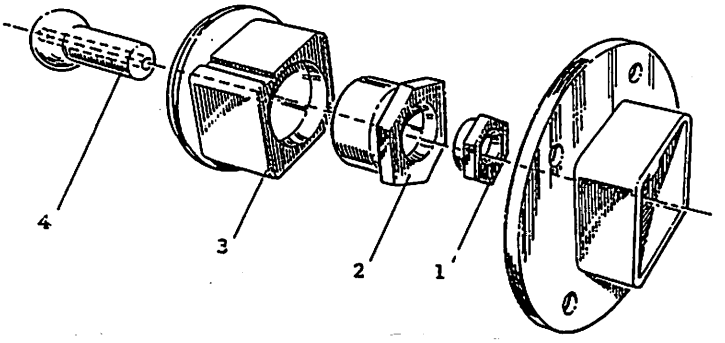
Ian Kaynes

F1D-Beginner plans requested

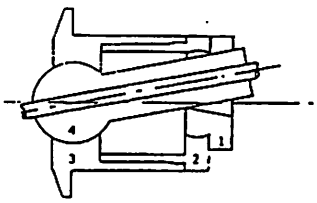
Kai Halsas asks for plans of F1D-beginner competition models of the type with longer motorsticks than the typical Moustique design. Not necessarily very detailed plans, just the general lay-out with main dimensions, propeller and rubber motor data is sufficient. Send your plans to Indoor News.

F1D Indoor Supplies

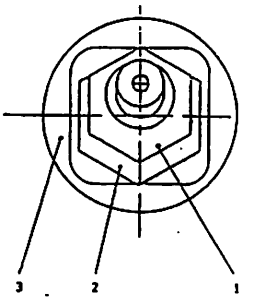
John Tipper has added adjustable nose buttons to his range of indoor supplies. The nose buttons are suitable for all types of small rubber models. Cost is £2.00 each or £3.00 for two; post and packing £0.60 worldwide. Payment can be Eurocheque or international money order made payable to J. Tipper. French francs, U.S.A. dollars and Sterling cash are also accepted, NO foreign cheques please.



Knight & Pridham Ltd,
Adjustable nose button.
Drawing by Jim Newman.



Location Ring.
Fixed to model.



Assembly

Carefully remove all items from the sprue.

Press item 1 into 2 and then these into 3, locate 4 into 1 and press fully into 3, this is a tight fit.

The assembly is located in the model in the location ring which may be glued in place. Note there is a small ridge and groove to locate the button within the ring.

This position gives the maximum amount of angle app. 10 degrees If 1 is rotated 90 degrees then app. 5 degrees of down and side thrust is obtained. When 1 and 2 together are rotated 45 degrees from the vertical a combined side and down thrust of app.6½ degrees result. When 1 is rotated 180 degrees then there is none.

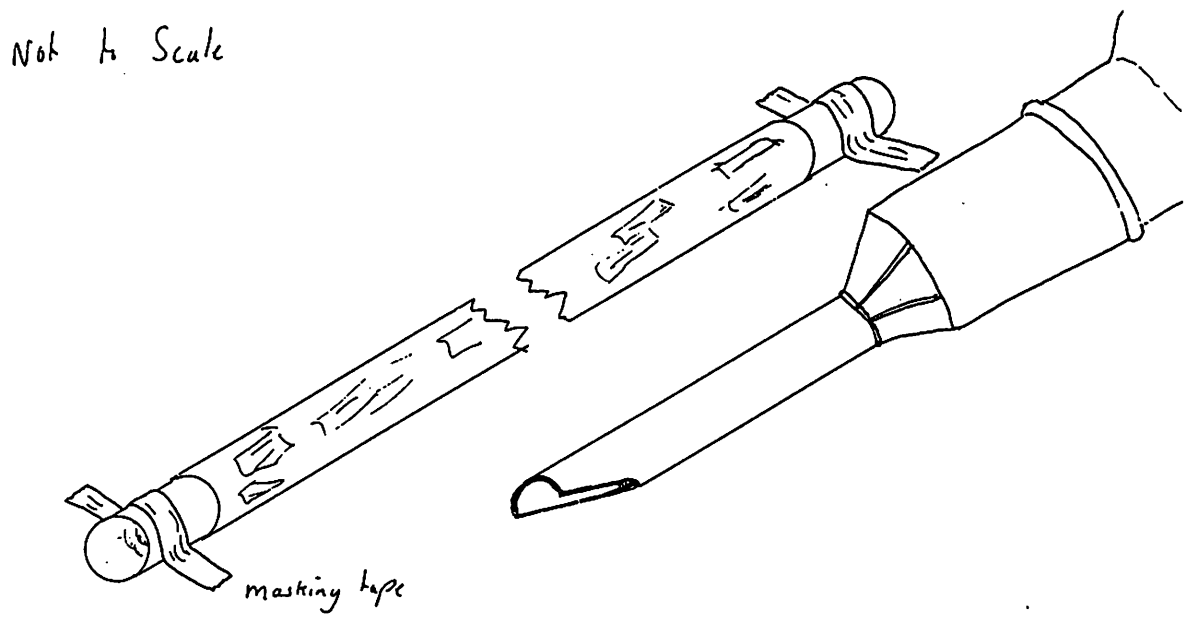
Glue guns as used by John for attaching boron (see article elsewhere) are available for £2.00 each. These are of the soft plastic bulb type and fitted with a very small size 24 gauge hypodermic needle. He also offers lightweight plastic for window material for lightweight scale models. For fixing use Balsalock or contact glue, e.g. Evostick. Will send a sheet 360x600mm to anyone who sends a club sticker, post free. F1D Indoor Supplies, 23 Green Lane, Chichester, West Sussex, PO19 4NS, England.

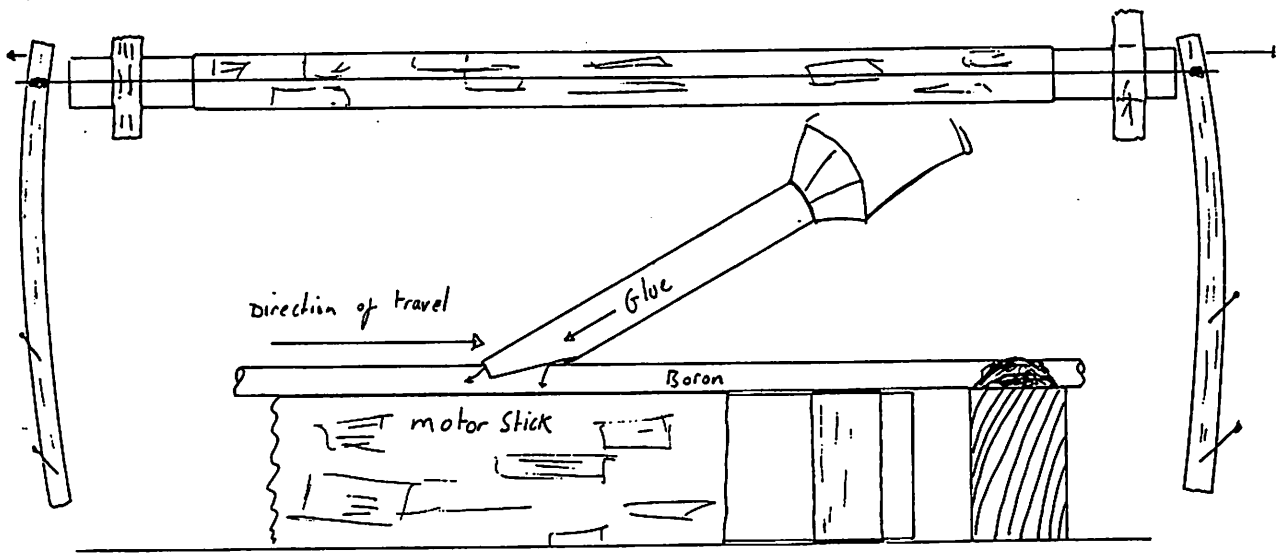
Applying boron to motorsticks

by John Tipper (GBR)

I have tried many different methods to apply boron to motor sticks and have found this one to be the best. The boron stays on straight and has never parted from the motor stick. The weight penalty is only about 2mg for 16ins of boron - a small price to pay for a much stronger motor stick.

1. Tape motor stick down to work bench by the mandrill.
2. Select two pieces of medium balsa 5mm wide x 120mm long, the depth to be the overall diameter of the motor tube.
3. Glue balsa sticks onto each end of boron and allow to dry - this joint needs to be very secure. Carefully file off the point on a 24 gauge hypodermic needle (see drawing). This will leave a half round groove in the end of the needle. I use a small high speed drill and fine cut-off blade for this, so as to leave a clean edge on the needle.
4. Pin balsa sticks to work bench so that boron is under tension and in the correct place on the motor stick.
5. Apply about 8-10 dots of glue along boron to secure in a straight line and allow to dry.
6. Mix up a solution of 20% Duco and 80% Acetone and fill glue gun (glue guns available from F1D Indoor Supplies).
7. Position the half round section of the needle onto the boron and run a bead of glue along the length of the motorstick. The needle will run along the boron like on rails. The glue will coat the boron and form a very small fillet along its length. Allow the glue to dry before cutting end of boron from balsa sticks, then repeat procedure as above for other boron positions.





CIRCULAR ARC AIRFOILS.

KAI K. HALSAS ANTTI T. JOLMA

Sections of a circle can be used as airfoils for Indoor Models. A suitable circle line is drawn eg. with a compass and a section the length of the wing chorde, is separated with a ruler. This methode is not very practical for wide wing chordes. A chorde of 200 mm and a camber of 6 % needs a circle radius of 423 mm.

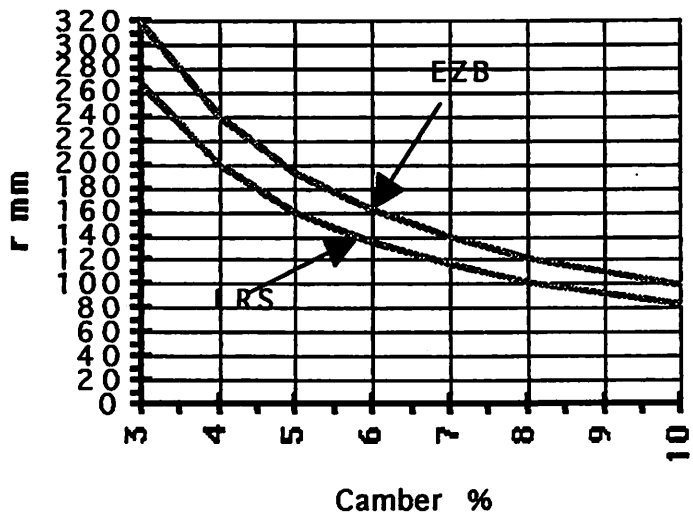
Table No 1

Circle radii for different airfoil cambers.

LRS Chorde	63,5 mm							
% camber	3	4	5	6	7	8	9	10
Radius, mm	266	200	160	134	116	102	91	82,6
EZB Chorde	76 mm							
% Camber	3	4	5	6	7	8	9	10
Radius, mm	318	239	192	161	138	122	109	99

With the help of a computer and a CAD progrsm it is possiblöe to calculate and draw the corresponding circles. In the enclosed Table >No 1 are shown circle radii for cambers 3 - 10 % for LRS and EZB wing sections.

Fig.1



The relation between circle radius (r) and camber (%) is shown in Fig. No 1

Fig. 2

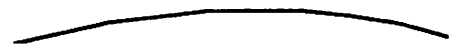
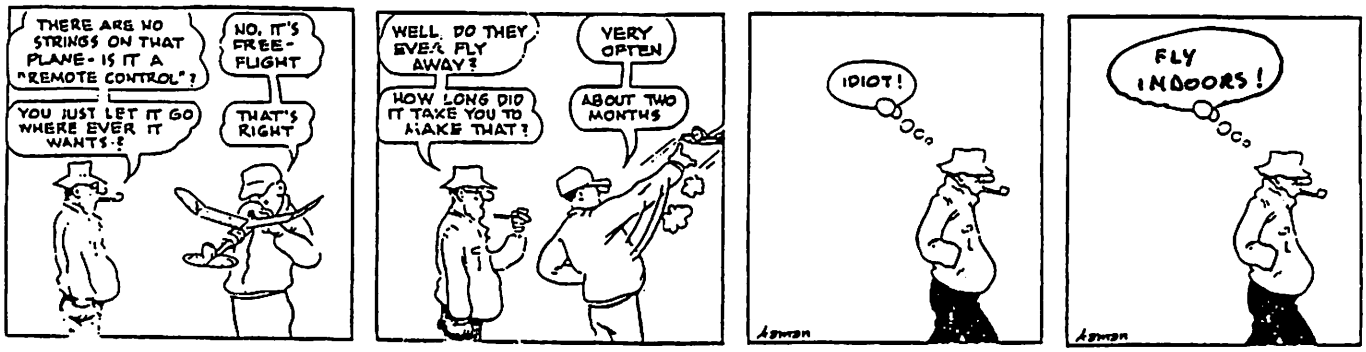


Fig. 2 shows a 7 % camber (4.45 mm) circular airfoil for a 63.5 mm chorde LRS wing.



2.Co - ordinates for circle arc airfoils

STA	0	10	20	30	40	50	60	70	80	90	100
UPR	0	3,7	6,49	8,5	9,6	10	9,6	8,5	6,5	3,7	0

STA	0	10	20	30	40	50	60	70	80	90	100
UPR	0	3,3	5,83	7,6	8,7	9	8,7	7,6	5,8	3,3	0

STA	0	10	20	30	40	50	60	70	80	90	100
UPR	0	2,9	5,17	6,8	7,7	8	7,7	6,8	5,2	2,9	0

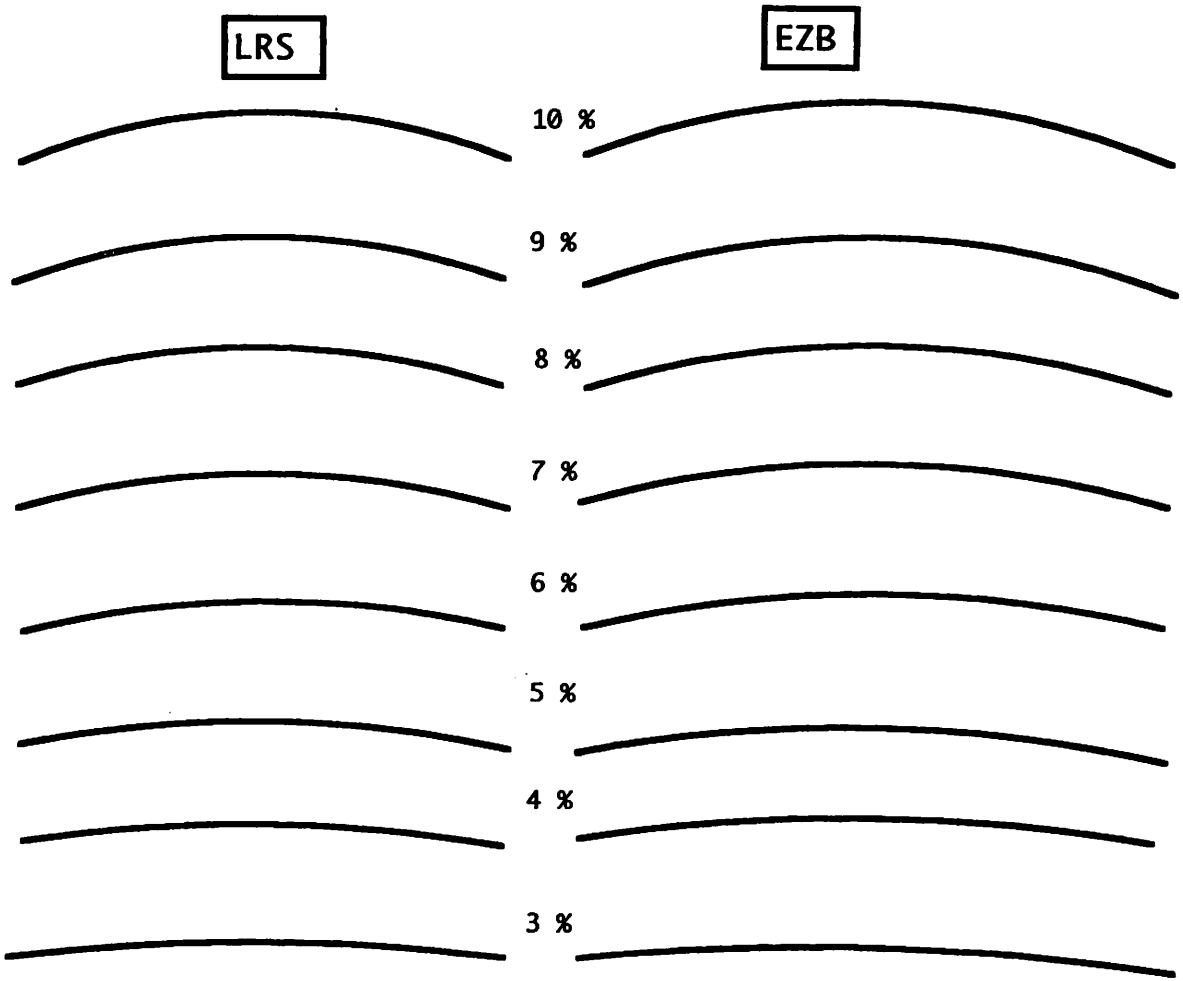
STA	0	10	20	30	40	50	60	70	80	90	100
UPR	0	2,6	4,51	5,9	6,7	7	6,7	5,9	4,5	2,6	0

STA	0	10	20	30	40	50	60	70	80	90	100
UPR	0	2,2	3,86	5,1	5,8	6	5,8	5,1	3,9	2,2	0

STA	0	10	20	30	40	50	60	70	80	90	100
UPR	0	1,8	3,21	4,2	4,8	5	4,8	4,2	3,2	1,8	0

STA	0	10	20	30	40	50	60	70	80	90	100
UPR	0	1,5	2,57	3,4	3,8	4	3,8	3,4	2,6	1,5	0

STA	0	10	20	30	40	50	60	70	80	90	100
UPR	0	1,1	1,92	2,5	2,9	3	2,9	2,5	1,9	1,1	0



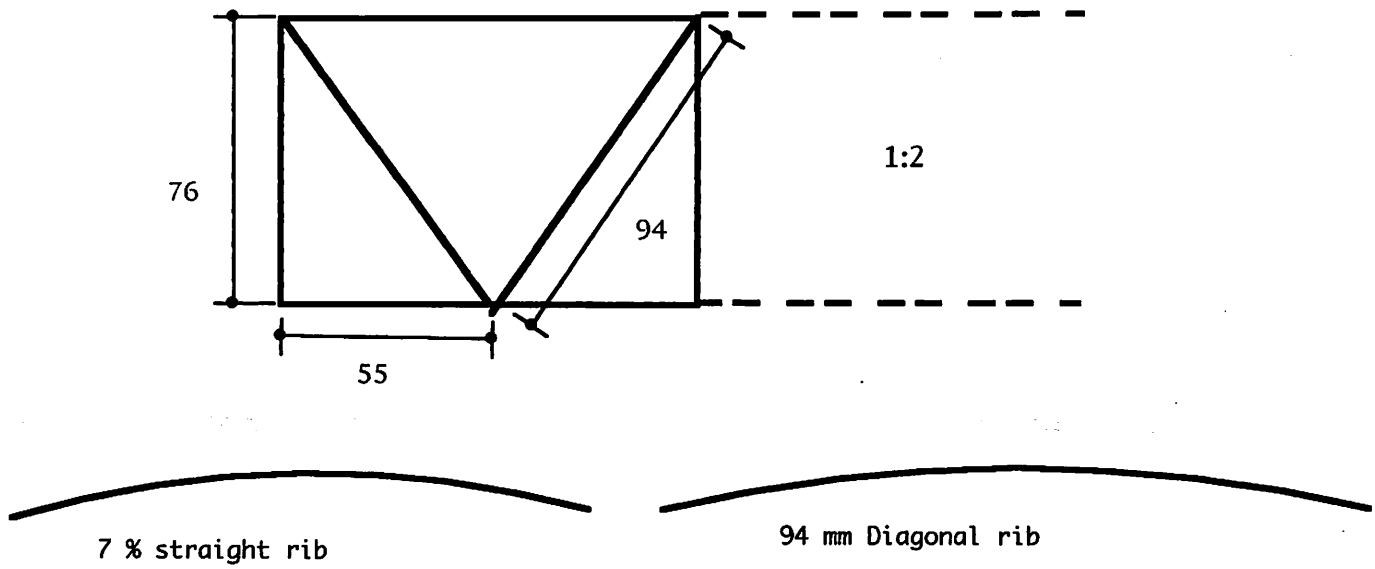
Circle arc airfoils can also be drawn from co-ordinates, either manually or with a computer program. Enclosed are shown the co-ordinates for airfoils with a camber between 3 and 10 %. STA = station gives the co-ordinates for the X-axis and UPR = upper gives the co-ordin tes for the Y-axis.
All figures are expressed in % and must be converted to eg. mm for each particular airfoil.

3. DIAGONAL RIBS

When diagonal ribs are used they must have the same camber in mm (not %) as the straight rib. This will give the wing an even top surface, without disturbing high points. We take as an example the EZB wing in Fig. 3. The straight rib has a max. camber of 7 % or 0,07x76 = 5,32 mm. The diagonal must now have the same camber in mm. The % camber of the diagonal is (5,323/94)x100 = 5,66 %. Calculations show for a straight 7 % rib a circle radius of 138 mm and for the 5,66 % diagonal a radius of 199 mm.

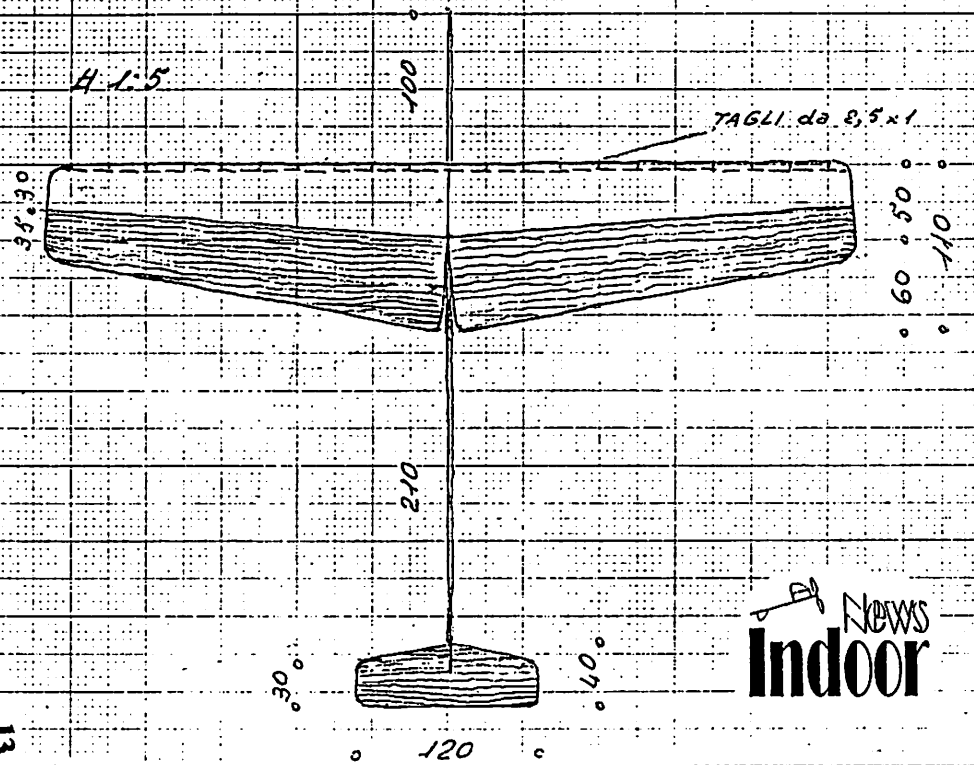
The diagonal airfoil can also be drawn from co-ordinates.The Y-axis (UPR) co-ordinates for the diagonal rib are the 7 % airfoil Y-axis co-ordinates multiplied by 76/94 = 0,809.

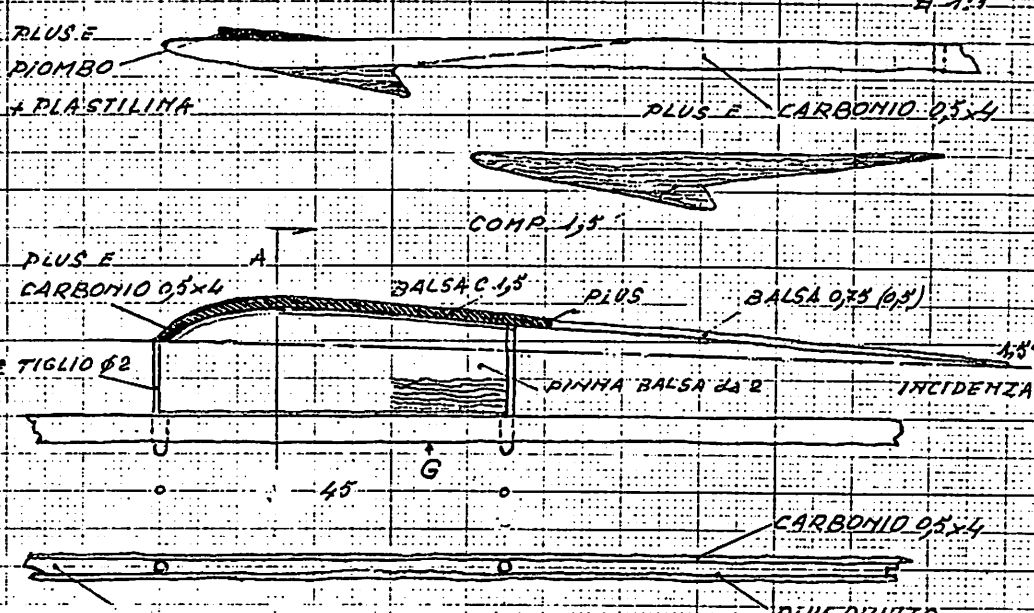
Fig.3

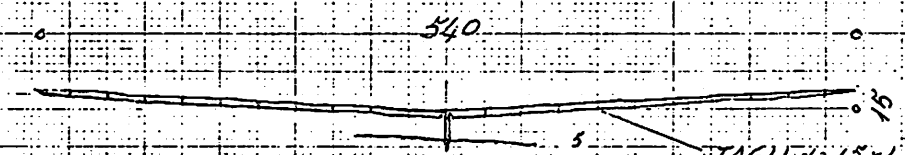


Diagonal ribs have no standard length. Therefore it is not possible to draw a collection of diagonal ribs beforehand. They have to be calculated and drawn separately for each particular wing.

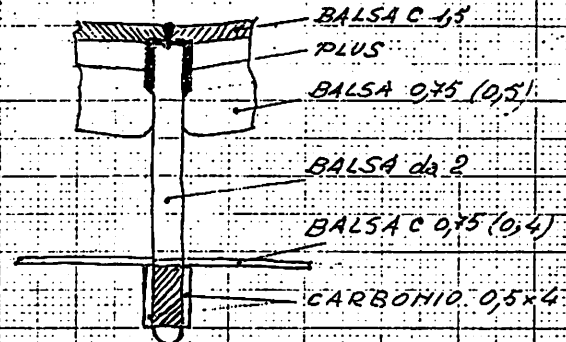
Some writers in Model Newsletters have expressed their concern about too much mathematics in some articles. For this reason all formulas and calculations are left out from this article.



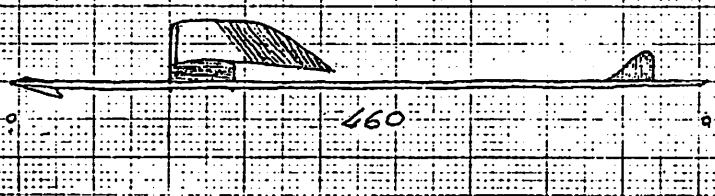




SEZ. A. H 2:1



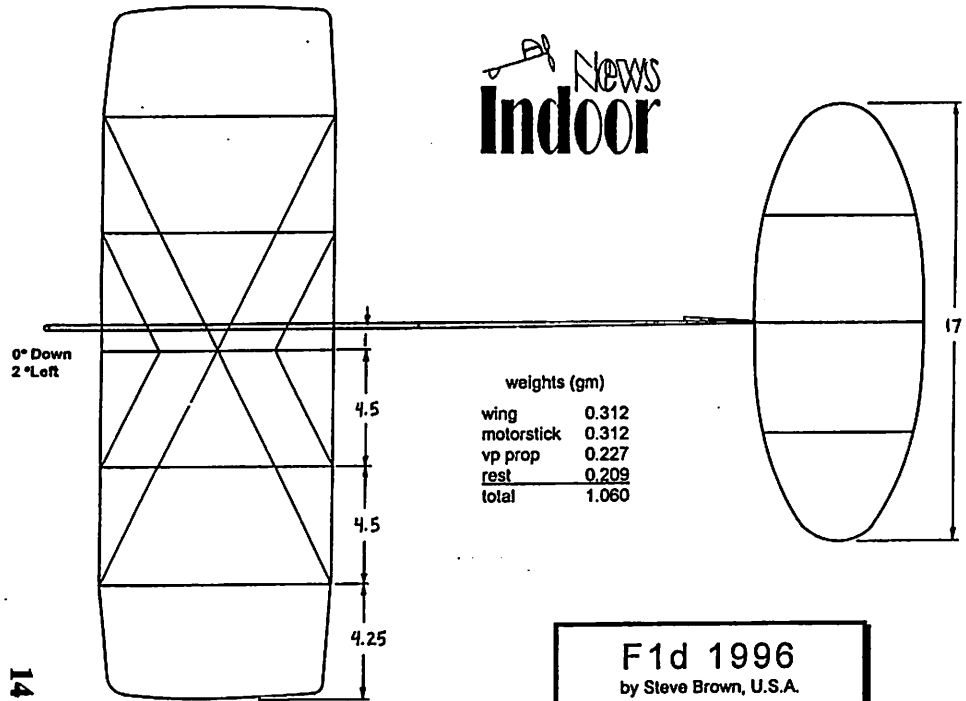
FRONTE



I. MARC.

INDOOR	A	540
A FIONDA.	L	460
VIRATA	S_4	4,52 dm²
A DESTRA	Q	10 g
	Q'_S	2,2 g/dm²

MICHELE IANNACCI
8-IX-1994



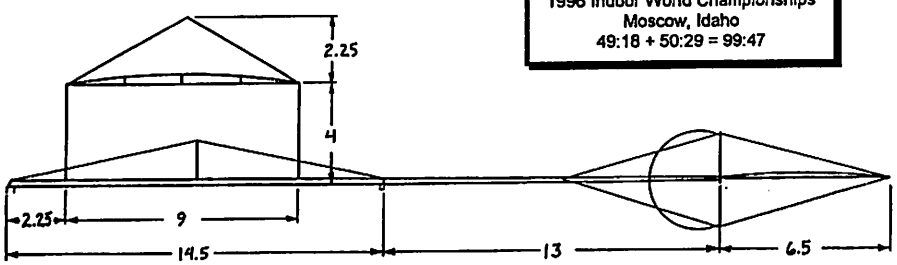
weights (gm)

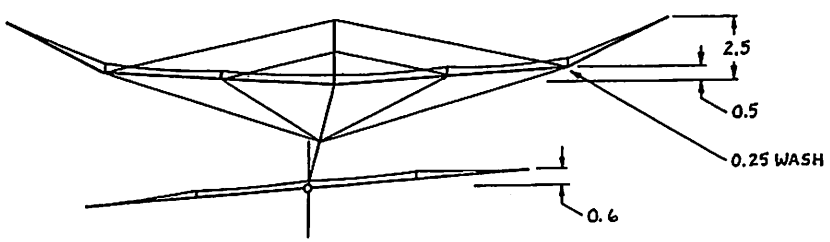
wing	0.312
motorstick	0.312
vp prop	0.227
rest	0.209
total	1.060

F1d 1996

by Steve Brown, U.S.A.

First Place
1996 Indoor World Championships
Moscow, Idaho
49:18 + 50:29 = 99:47





Wing

spars		.035 X .042 6.0 lb.
tips		.030 X .037 5.2 lb.
middle ribs (3)		.028 X .042 5.2 lb.
compression ribs (2)	top:	.028 X .028 5.2 lb.
	bottom:	.035 X .024 5.0 lb.
	uprights:	.004 boron
wingposts		.035 X .055 → .035 X .045 5.0 lb.
		.003 boron full length, (3) front, (2) rear
cabane		.030 X .045 → .030 X .035 5.2 lb.
bracing		.0003 tungsten

Stabilizer

spars	.028 X .048 → .024 X .032 5.4 lb.
center rib	.028 X .042 5.4 lb.
outer ribs	.025 X .032 5.2 lb.
bracing	.0003 tungsten to rear of center rib only

Fin

post	.028 X .050 → .028 X .040 5.6 lb.
outline	.0004 boron

Motorstick

tube	.013 4.1 lb. (4) .0004 boron 3,6,9,12 o'clock
webs	.024 4.3 lb.
cap	.013 4.1 lb.
bracing post	.045 X .045 → .035 X .035 X 1.75 6.8 lb.
hook	.013 music wire
bearing	Harlan F1d, modified
bracing	(1) .001 tungsten

Boom

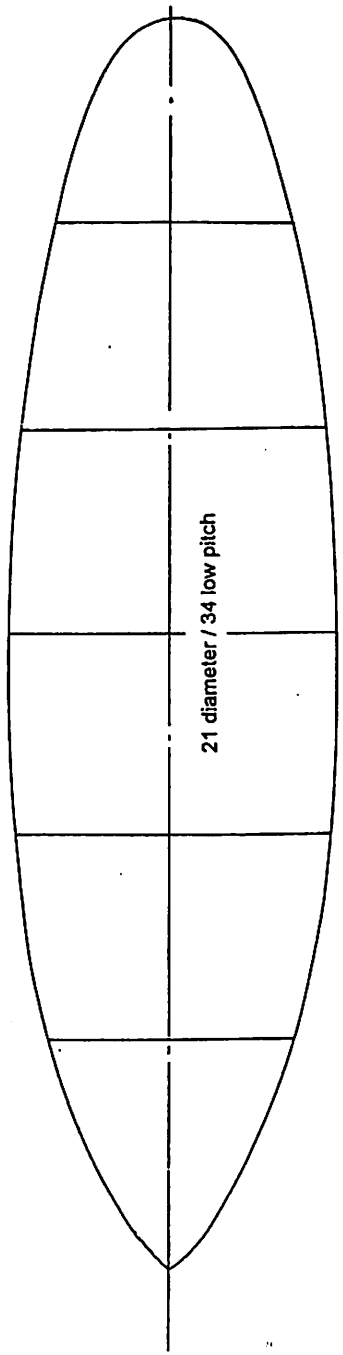
tube	.008 3.9 lb. .230 i.d. → .160 i.d.

Variable pitch propeller

spars	.068 X .075 → .030 X .030 5.5 lb.
center spar yoke	.068 X .040 → .068 X .100 5.5 lb.
	(2) .005 aluminum bearings
screw arm	basswood
screws	(2) 00-90 nylon
spar actuator arms	.007 music wire
yoke	.010 X .040 X .420 beryllium bronze
shaft	.013 music wire
spring	.009 guitar string
outline	.024 X .024 4.5 lb.
ribs	.024 X .024 4.5 lb.

Motor

.046 X .069 X 16.5 = .058 oz., August 1993 Tan II
2310 launch turns, none remaining, 45.8 average RPM



August 16, 1996

Thedo Andre
Indoor News

Dear Thedo,

The 96 World Champs are over and I thought you might be interested in the results. I was fortunate to be able to win again, with Cezar Banks placing a close second and Rene Butty third. Bernard Hunt was fourth, Thomas Merkt fifth and Gary Underwood sixth. All of these competitors flew VP props.

The practice days were windy, When there is wind outside the Kibbee Dome there is wind inside as well. Both days were of limited value since 1/4 motor test flights were flown in such turbulent air that nothing could be learned. I set up two models, one a relatively new model with a 330mm stick and a 545mm VP prop. That combination was very light, barely over a gram. I also set up a second model, older, with the same 530mm prop and 368mm stick that did 52:46 at Santa Ana last November.

The first contest day was calm and 23 degrees C. I selected the short motorstick model. Everything looked fine until 12:07 into the flight when the model exploded in mid-air. The motor had worked its way off the prop hook.

In round 2 I used the older model and the motor from round 1. I washed the motor and examined it under magnification for cuts. It looked OK and, I reasoned, it was "just getting broken in." Again the flight looked good until 37:19 when one strand of the rubber broke about 100mm behind the prop. There was no damage to the model.

I began the second contest day with the thought that things couldn't get any worse than day one. Both flights were good, with a 410mm loop posting times of 48:22 in round 3 and 49:18 in round 4. Cezar Banks, however, had his models perfectly set up and was able to get flights of 48:47 and 49:50. I ran out of turns on both flights at about 4 meters altitude and I new that i would need a longer loop of rubber if I was to have any chance of bettering Banks' times.

Also flying well were Rene Butty, who had a 48:01 in round 4; Thomas Merkt, a very young flyer, who posted a string of forty minute flights; and Bernard Hunt with his tandem. U.S. team newcomer Gary Underwood also made a super effort adjusting his new VP prop to post several 40 minute flights. Gary had little experience with the VP and had to learn both the prop and the building's characteristics.

On the last day I made a longer motor of 420mm weighing 1.64gm. Since there was no practice time on the 3rd day I made what I hoped were "educated guesses." To compensate for the heavier motor I made slight adjustments to the VP prop, slightly reducing the high pitch to increase the climb and increasing the "pre-tension" to make the prop start to reduce pitch a little earlier in the flight. Fortunately, the changes all worked, and the model reached a safe altitude of about 37 meters and cruised under the rolled tennis nets. Only one brief steer was necessary during the descent at 25 meters to move the model away from a bank of lights. The time was 50:29.

Banks was then in second place and he too was faced with the question of which changes to make to increase his flight time. His sixth round flight almost touched the floor after launch but climbed very slowly to about 25 meters. Unfortunately, the model failed to fly its normal flight profile and the final time was only 42:17.

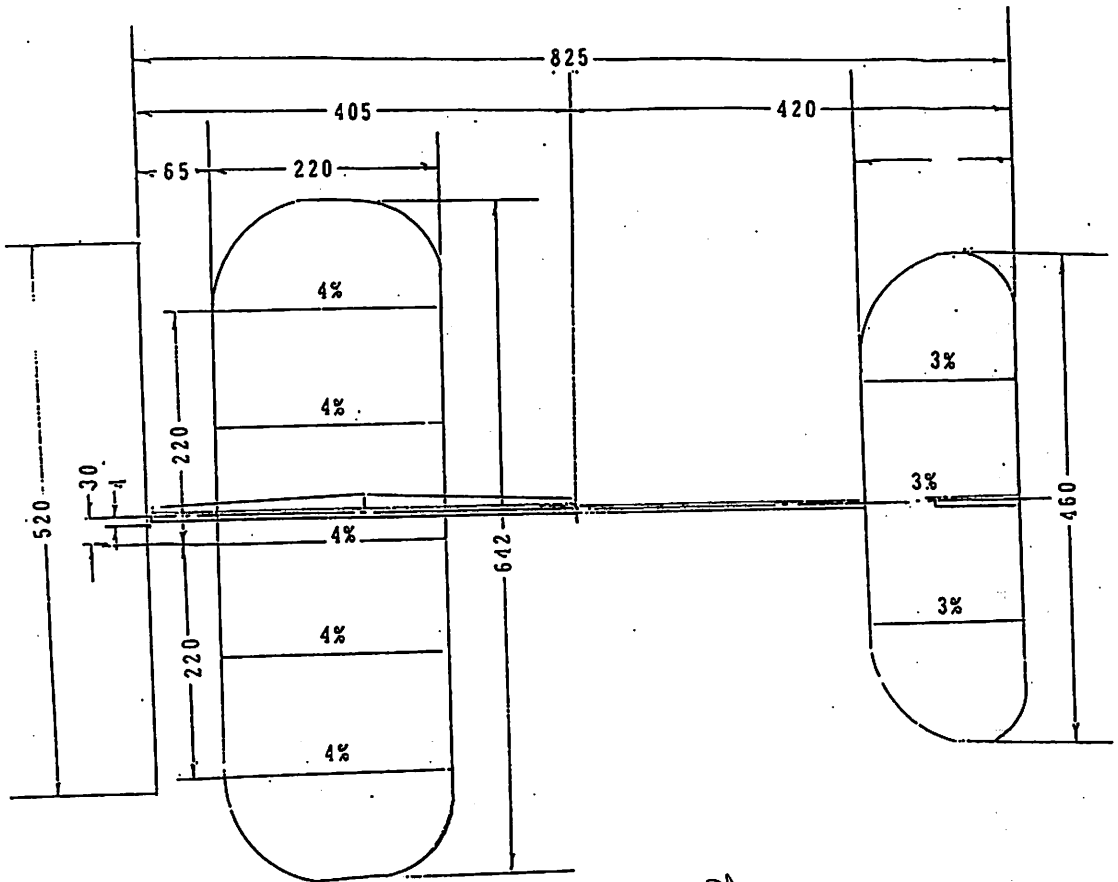
As the contest wound down the Canadian and British teams were fighting for second place. Bernard Hunt's 6th round flight secured the silver medal for his team.

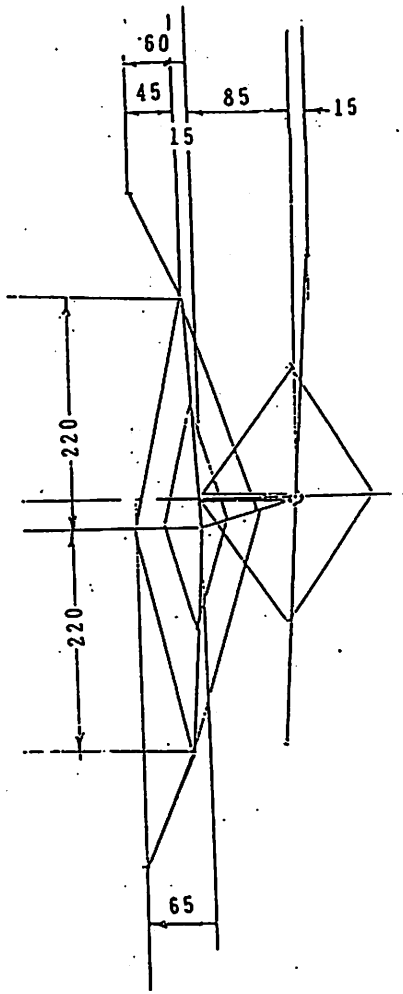
This contest saw the continued emergence of new flyers at the top of the standings. A majority of contestants were flying VP or VD props. The variable props offer tremendous potential and, in my view, are the best thing to happen to microfilm flying in years. They allow the flyer to control altitude and to fully utilize all the turns in significantly longer motors.

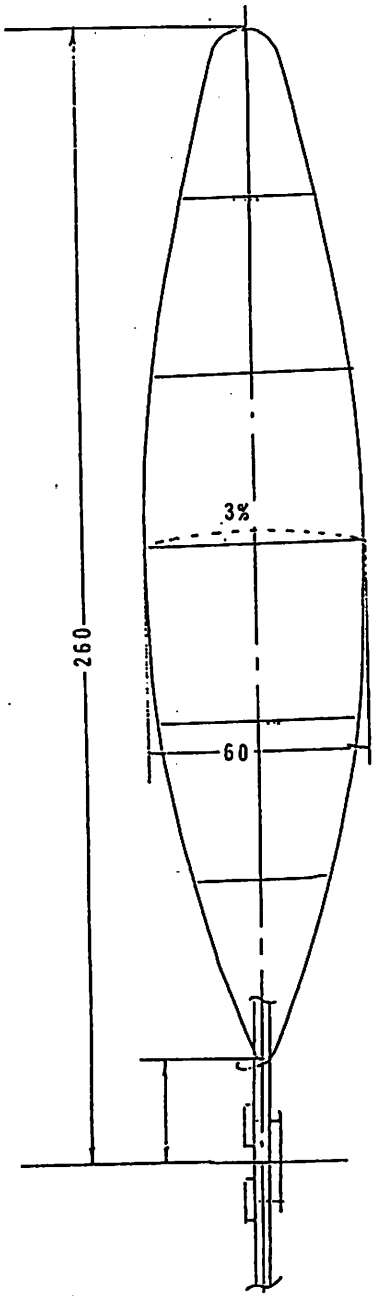
The contest organization by Andrew Tagliafico and the facilities were very good. Several European competitors seemed to agree with this assessment. I hope more modelers will make the trip to Moscow in the future.

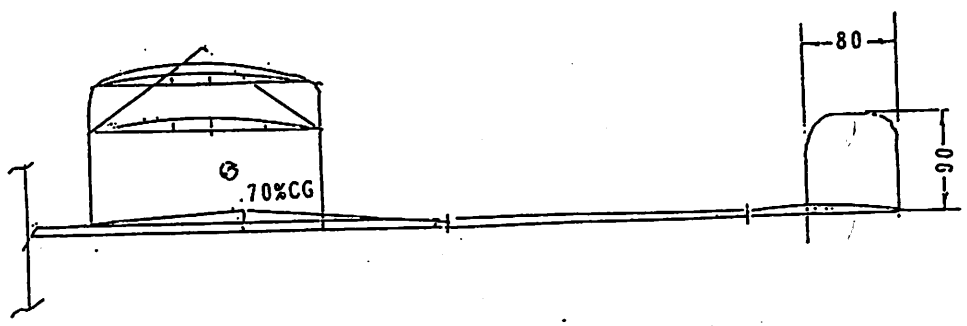
Sincerely,

Steve Brown









第三角図法　スケール 1／5
単位　ミリメートル

スケール 8／10

World Record 38m 38s
KAZUMASA KIHARA

設計製作　KIPC　木原一正　1995-10-13　FID 日米通信競技

公式立会人署名捺印

WALLY MILLER INTERNATIONAL
EZB COMPETITION

Sunday, August 4, 1996

KIBBIE DOME, MOSCOW, IDAHO

ROUNDS

NAME	1	2	3	4	5	6	BEST	2ND BEST	TOTAL	STAND-ING
BARR, Laurie (UK)	18:56	22:05	22:15	21:17	28:19	29:00	29:00	28:19	57:19	1
CAILLIAU, Larry	2:40	25:47	28:48	27:02	27:26	28:24	28:48	28:24	57:12	2
PALRANG, Mike		25:57		28:27	:18	28:29	28:29	28:27	56:56	3
COSLICK, Larry	25:58	27:46	28:39	27:46	25:11	22:44	28:39	27:46	56:25	4
HUNT , Bernard(UK)	25:22	11:05	28:11	27:13	27:02	23:49	28:11	27:13	55:24	5
TIPPER, John (UK)	21:07	23:09	23:54	25:16	26:11	26:08	26:11	26:08	52:19	6
DeSHIELDS, Bob	23:06	26:59	2:36	1:30		25:14	26:59	25:14	52:13	7
TAGLIAFICO, Andrew	25:15	24:44	22:00	10:02	25:10	26:03	26:03	25:15	51:18	8
VanGORDER, WAlter		24:11	24:33	19:55	18:59	25:53	25:53	24:33	50:26	9
BAILEY, Bob (UK)		23:12	22:52	26:32	9:01	20:53	26:32	23:12	49:44	10
GITLOW, Lou	20:25		23:12	25:09	23:55	23:35	25:09	23:55	49:04	11
KAGAN, John	19:47	25:11	15:36	22:11	21:21	23:00	25:11	23:00	48:11	12
MILLER, Wally	24:04	23:41	23:06	20:41	21:09	24:05	24:05	24:04	48:09	13
THOMPSON, Mike	19:54	21:02	19:34	24:33	:04	23:16	24:33	23:16	47:49	14
TAYLOR, Tim	15:18	22:30	19:35	5:56	21:38	24:44	24:44	22:30	47:14	15
LENDERMAN, John	16:47	21:22	23:59	22:37	6:56	21:01	23:59	22:37	46:36	16
Dorsett, Charles	13:58	20:27	18:09	21:06	22:41	22:47	22:47	22:41	45:28	17
JOSHU, Gene		23:06	20:25	19:52	19:51		23:06	20:25	43:31	18
BERRAY , Ed	17:22	17:23	5:37	13:44	20:38	20:38	20:38	20:26	41:04	19
STEVENS, Darryl		14:43	16:52	20:44	19:29	19:24	20:44	19:29	40:13	20
YATES, Davee (UK)	17:21	17:23	19:24	18:47	17:26	20:27	20:27	1924	39:51	21
HOFFMAN, Earl	18:48	:06		18:28	20:32	15:28	20:32	18:48	39:20	22
WILLIAMS, Warren	16:13	:06	4:50	2:42	19:40	:05	19:40	16:13	35:53	23
COLLING, Mike (UK)	14:44	15:35	14:51	15:45	15:38	16:30	16:30	15:45	32:15	24
SAMUELSON, Pete	10:03	15:10	4:48	14:10	16:12	9:21	16:12	15:10	31:22	25
ROCH, Edmond (Fr)	14:28	10:29	6:48	9:58	15:09	:18	15:09	14:28	29:37	26
ClEM, Jim					20:36				20:36	27



NEW FROM RUNWAY! Compiled by Bill Hannan

PLANS & 3-VIEWS INTERNATIONAL, Volume 2

At last, the second volume in the "planned" series. Similar in format to our popular *Peanuts & Pistachios*, *Model Plans & 3-Views International* features construction plans, documentation drawings, instruction articles, model and full-size aircraft photos, plus whimsey to inspire and entertain model builders.

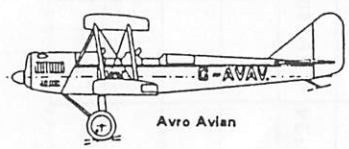
An eclectic assortment of subjects including a flying scale biplane and low-winger suitable for rubber, CO_2 or electric power, plus a realistic Bostonian, and two rubber powered autogyros. And yes, there is a difference between an Autogiro and an autogyro - See examples of both here!

HIGHLIGHTS OF P & 3 II:

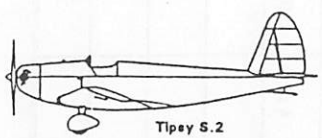
MODEL CONSTRUCTION PLANS:
- ◊ 1930 Avro Avian Peanut by Ken McDonough (England)
- ◊ 1935 Tipsy S.2 Peanut by Siegfried Glöckner (Germany)
- ◊ The Boston Aristocrat Bostonian by Bill Hannan (U.S.A.)
- ◊ Georgyro simple autogyro by Bill Hannan and Georges Chaulet (France)
- ◊ Fakir, profile autogyro by Bill Hannan and Georges Chaulet

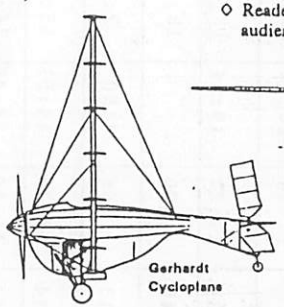
DOCUMENTATION DRAWINGS:
- ◊ 1923 Gerhardt multi-wing Cycloplane by Bill Hannan
- ◊ 1928 Cierva C.17 Autogiro
- ◊ 1930 Avro Avian, by Ken McDonough
- ◊ 1932 Kay 32/1 Gyroplane, by Bill Hannan
- ◊ 1932 Pitcairn PA-19
- ◊ 1935 Tipsy S.2, by John Underwood
- ◊ 1935 Curtiss-Wright Technical Institute Bunting I, by Harry Robinson (England) including the Jimmy Allen connection

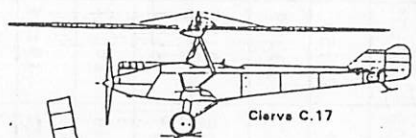
MISCELLANEOUS:
- ◊ Anyone for Autogiros? by Bill Hannan
- ◊ Gee Bees Galore photo gallery
- ◊ Reader feedback - extracts from audience responses to previous publications

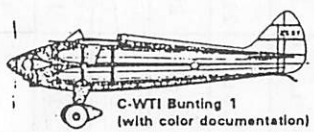


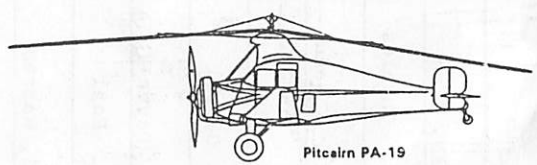
Avro Avian


Tipsy S.2


Gerhardt Cycloplane


Cierva C.17


C-WTI Bunting 1 (with color documentation)


Pitcairn PA-19

FORMAT: 8½" x 11", softbound, 26 pages, 46 photos, 7 documentation drawings, 5 model plans, plus cartoons and whimsey, printed on superior quality stock for long life.

Fall/Winter 1996

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Many thanks to our loyal customers and contributors who make these publications possible.

W.C. Hannan's Whirlybirds: Model Plans & 3-Views International Vol 2 1996

Book Review by Dave VTO Linstrum

We can't figure out who is the greater autogiro/autogyro afficionado- Georges Chaulet of France or well-known William C. "Bill" Hannan in the USA? They seem equally avid- but perhaps Hannan is the more enamored of the odd & exotic whirlybird that is the "Missing Link" between fixed wing aircraft and helicopter.Upon their introduction to the USA in 1928, autogiros captured wide attention in the press, from the Wall Street Journal to The Saturday Evening Post. Now "Whirling Bill" features the type on the cover of his latest 26 page planbook. The elegant , yet curiously awkward (at rest) Avro-Cierva C.17 appears ready to take to the skies and amaze everyone. Inside, full size construction plans for the simple all-balsa GEORGYRO (an FM reprint) await your building pleasure. It protests "I am NOT a Helicopter" on one rotor blade ! As you might expect, it was named by Hannan after his Ami Chaulet. Another balsa whirlybird is the Hannan FAKIR, which was taken to Europe and later published by Chaulet in the French Le Modele Reduit d'Avion mag. Both are flying models.

If you get dizzy easily and prefer wings that don't whirl (maybe flex a bit) then you will love the other cover subject: Hannan's Boston Aristocrat, with so much Charisma it will blow away the competition. Compared to the current ugly but long flying wide-body Bostonians, it is a breath of fresh air. When Ed Whitten wrote the Indoor Bostonian Rules (and Walt Mooney modified them for Outdoor) they intended to create a contest class where models resembled full-scale craft. The Hannan design is modeled after the General Aristocrat, a boxy, radial engine high wing monoplane of the Thirties. Full size centerfold plans for this 10g or 14g beauty (with the word GENERAL on wing, tip to tip!) will allow you to create your very own Charisma Point Collector. Wide Body Bostonians are a disgrace. Echh!

If you admire innovation, you will dig the 1923 Gerhardt CYCLEPLANE, a "scientific curiosity" which reportedly flew on pedal power. Photos of this weird 7 wing craft, along with a Hannan 3-view, will absolutely astound you. Another truly Obscure Aircraft is the 1935 Curtiss-Wright Bunting I, which was once a Jimmy Allen kit. The one prototype was built by C-W Technical Institute students with a loaner 36hp engine, making only test flights 'til the engine was reclaimed by the Aeronca C-3 owner! The Bunting is a stylish, curvy ship- worth a look.

The more well-known 1935 Tipsy S.2 sport monoplane and the 1930 Avro Avian bipe are rendered in Pnut Plans by Germany's Siegfried Glockner (my Ace proxy flyer for Pistachios in Europe) and England's Ken McDonough. Both would be tough competitors in any Flying Aces Peanut Scale competition.

There is much more- news of Florida's GeeBee replica, reader responses and yet another whirlybird: the 1932 KAY 32/1 GYROPLANE in its sheep pasture home. This book can find a home on your bookshelf / building board. Order it today from Hannan's Runway, Box 210, Magalia, CA 95954 USA Phone 916-873-6329. Send $ 10.95 plus $2.50 p&p First Class in USA or call with credit card info. Inquire for postage outside USA and info on other publications. Then sit back and wait to hear that strange whirling noise in your mailbox !!!

Le BOISAVIA B.80 "Chablis"

The French Arachide

Biplace étudié par Lucien Tiélès
prototype réalisé par M. Maillard
équipé d'un moteur Continental 65cv

Documentation : les Ailes 1301 Aviation Magazine Air Progrès

Maquette Volante taille "Peanut"
Envergure 13" = 330 mm
Dessiné par E Fillon
Aéromodéliste

Excellent appareil pour concours de durée indoor peut être réalisé à 4gr

Prototype 02

F-WBGO

N° 01

Couleurs : Jaune, flèche rouge capot Alu Matricule noir

Immatriculation du N°02 F.BGYF

Caler les pales à 45° de l'axe au rayon 40

Bloc avant balsa dur

Fil dacron 01

Centrage

prototype 02

bambou 1,2x1,2

balsa 1,2 profilé

Position train à l'échelle

Dièdre 10° Scale 6

Roue ⌀ 20

Palier nylon

doigt d'entraînement cap 3/10 soudé

tube ⌀ 2x3 Alu ou Plastique

Joint torique

Axe cap 5/10

Rondelles laiton
Rondelle téflon ou Graphite

balsa ⌀ 8/10

Recouvrement papier condensateur tendu à l'alcool ou Japon leger tendu à l'enduit très dilué

Moteur caoutchouc suivant poids du modèle ; une boucle de long 400 poids 1,2 à 2,5gr lubrifié

bambou ⌀ 8/10

Contours dérive à l'échelle

balsa 1x15 profilé

D3

D2

balsa 1x2

D1

Pare brise acétate 2/10

Mats balsa dur 1x5 profilé

S2

S3

S4

S1

1°30'

1

2

3

4

5

6

7

balsa 1

Toutes les baguettes balsa 1x1

balsa 1x5

balsa 1x2

balsa Léger Styrofoam

F1

F2

F3

F4

F5

F6

F7

balsa 2 + cp 5/10

Paille ou bambou ⌀ 8/10

Faux couples balsa 8/10

Non recouvert

Nervures balsa 6/10

Moule pour pales d'hélice bois dur 7o

1°2'

Pale d'hélice 2 ép balsa 8/10 collées en forme sur moule à la colle à bois vinylique

7 lisses paille ⌀ 8/10 ou balsa dur 0,8x0,8

Broche arrière tube alu ou plastique

⌀ 2

⌀ 3

13

2

Recouvrement balsa 4/10

Nervures d'aile balsa 6/10

Tous collages Cellulosique

bambou ou bois dur ⌀ 2

Contours Stab à l'échelle

balsa 0,8x0,8

bord d'attaque balsa 1,2x1,2 profilé

Balsa 1

longeron balsa 15x1

balsa 1,2x1,2

Contours ailerons

Position mats

balsa 1,2x1,2 profilé

bambou ⌀ 8/10

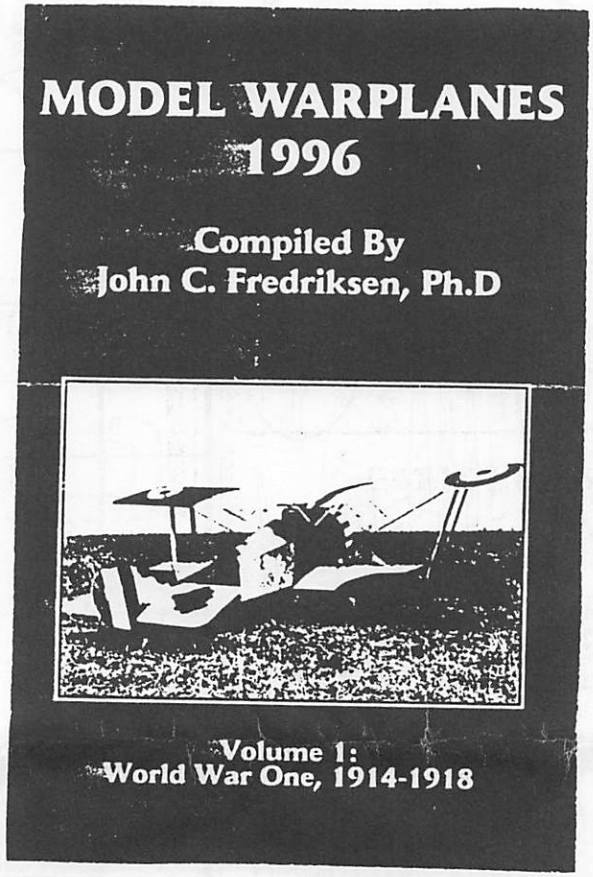
bords de fuite balsa 1x2,5 profilé

Echelle 1/36,66

EF 88

MODEL WARPLANES, 1996

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48

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[220 aircraft types, 192 kits, 1,388 plans, 155 sources]

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[272 aircraft types, 155 kits, 1,361 plans, 200 sources]

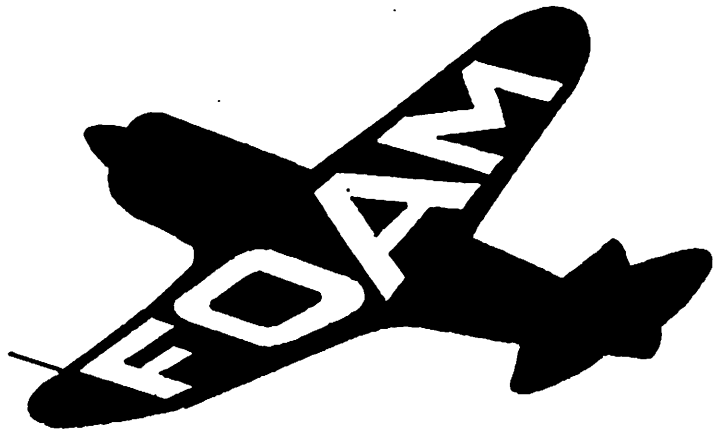
Vol. 3: World War 2, 1939-1945-Axis (Available May, 1996)
[143 aircraft types, 281 kits, 628 plans, 204 sources]

Vol. 4: World War 2, 1939-1945-Allied (Available May, 1996)

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Richard Crossley, Peter Smart
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Foam flies further

INTRODUCING FOAM

So many people have asked how we make our foam scale models that we thought an information sheet might persuade more modellers to try the material for themselves.

Foam is the ideal way to reproduce stressed skin aeroplanes such as those flown in WW2, or any structure where compound curves appear.

The skills required to work foam are different from stick and tissue, but they are learned quickly with practice. The material is cheap, readily available and of a consistent quality. Foam is lighter than balsa but not as satisfying to work. However models in foam do take shape very quickly and they can be cut and modified easily. Foam is also flexible and forgiving in a crash, with the benefit of easy repair.

You only need a 3 view to start building. There's no need for any construction drawings and this makes available a whole range of prototypes.

THE MATERIAL

Floormate 200 is available from Sheffield Insulation who have branches in most cities. Sheet size is 600 x 1200mm (2x4 ft) and 25mm (1in) thick. The cost is just £5 per sheet, which means you can build several models for less than a fiver.

There is a multitude of different foams, some close-grained, some lighter, some heavier, pink or white, but Floormate 200 is light blue, carves and sands well and seems best suited to the models we build.

In case of difficulty, the manufacturer is Dow Chemicals.

CUTTING

Basic shapes are best cut out with a Hot Wire cutter. You can make one yourself (see later). Alternatively a Dremel or a Vibro saw may be used. You can get by with a hack saw, Stanley knife, fret or coping saw.

Richard Crossley's peanut Hawker Tempest was built and hollowed out using only hand tools - and it can do 55 seconds indoors.

SANDING

There will be an awful lot of sanding and we do suggest you wear a mask to cover your nose and mouth. We have no reason to believe the dust is harmful.

You will need a range of sandpaper from very coarse to 1200 grit for finishing. Make a range of sandpaper files including some half round shapes. Large flats, say 50mm (2in) wide, are useful as they can 'plane' away material quickly.

For final finishing work with the paper in the hand and cut it to an oval shape to stop scuffing the material. The foam is very fragile and it needs practice to get a good surface. It helps to work on a soft work surface - a rubber sheet or a spare piece of foam - to avoid denting the smoothed surface. Keep brushing away fragments and dust - off the work and off the work surface.

Static makes this difficult, but it helps to lay off for a while so that the static will gradually subside. Like balsa, foam will take on a curve if you sand only on one surface. It will straighten again if you give a few strokes to the other side.

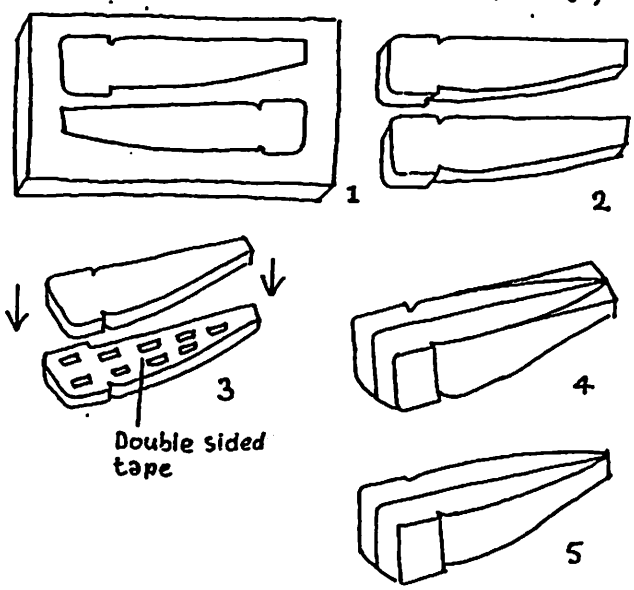
You will find that Hot wire leaves a welded surface, which has to be sanded through before you can get a very smooth finish.

ADHESIVES

A good sandable white glue or aliphatic resin will do for most joints. Cyno must be the odourless type and avoid accellevator - it melts the foam. Epoxy is fine but heavy.

FUSELAGES

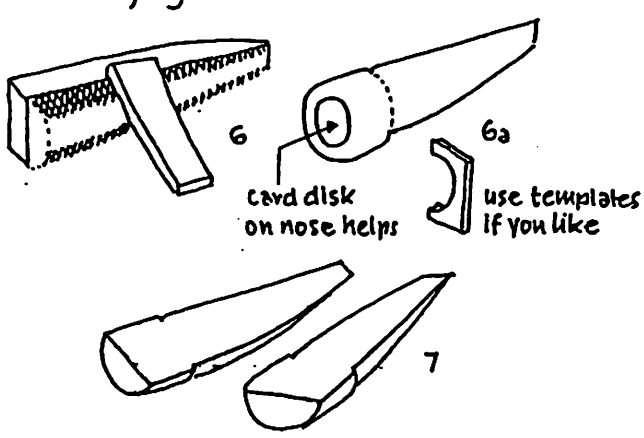
Draw the side elevation on the foam and repeat - handed (1). We make card templates and draw round them, or use spare Xerox prints cut out and spray mounted onto the foam. Cut out the side elevations (2) and stick them together with small patches of double sided tape (3). Draw the plan view on the block (4) and cut out the plan (5)



Now cut and sand the block to shape (6) with constant reference to photos and plans.

Omit all details like intakes, canopies, radiators etc, just try to get the basic shape.

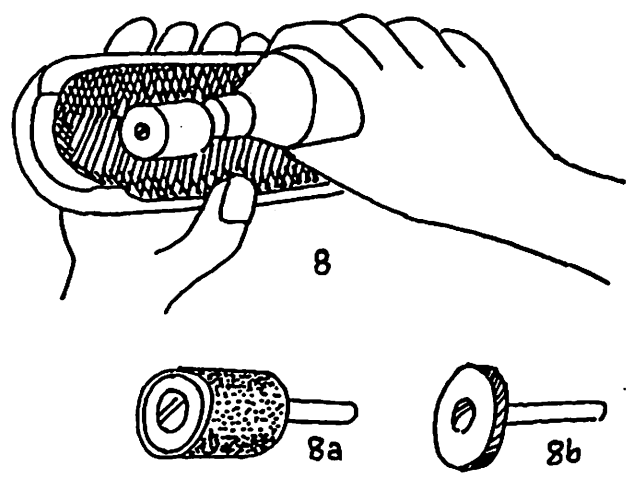
Use a new scalpel blade to carve and then work with the sandpaper down to the finest. Make templates if you want, we find it better to work by eye.



When satisfied with the shape and finish, separate the halves. If they are reluctant, spill lighter fuel on the joint. (7)

(8) The two halves must now be hollowed out to a thickness of approx 1·5mm (1/16in). With practice this is not as difficult as it sounds. Our early models were hollowed by hand by making deep V cuts in the foam and slicing out wedges, finishing off with coarse, then fine paper.

These days we use a small power drill (8) starting with a carborundum drum (8a) and smoothing with a grinding wheel (8b) holding the job up to a light constantly to check on progress and feeling between thumb and fingers. You can tell when the foam is very thin because it begins to look white as the light shines through. Use the tools like a brush and you will soon get the hang of it. Don't worry if you get too thin in places - so long as you don't burst through. (If you do you will have to put a patch inside)

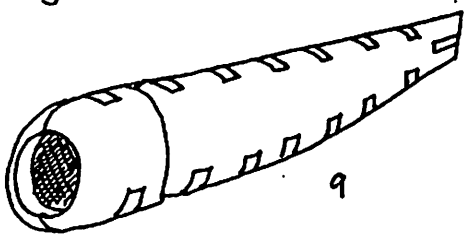


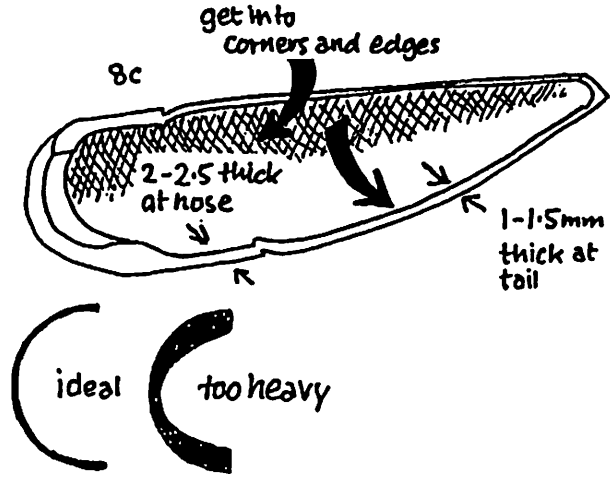
Aim to get the tail areas as light as possible but leave the nose a little thicker to help with the C/G. (8c) Do try to get into the edges and corners so that it is all thin.

Finish off by stroking with fine paper feeling for any high spots.

The secret of the success of these foam models is largely due to this hollowing out. If you do it well it will pay dividends in sheer performance.

When both sides are hollowed clean up the edges and smear both edges with white glue. Assemble the two halves, holding with strips of masking tape. (9)



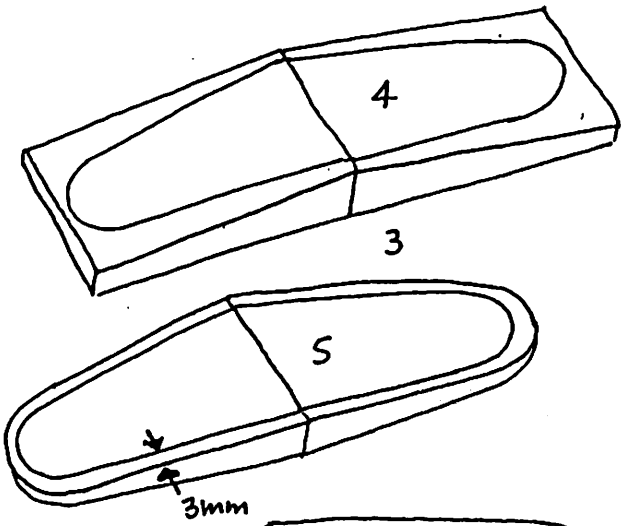


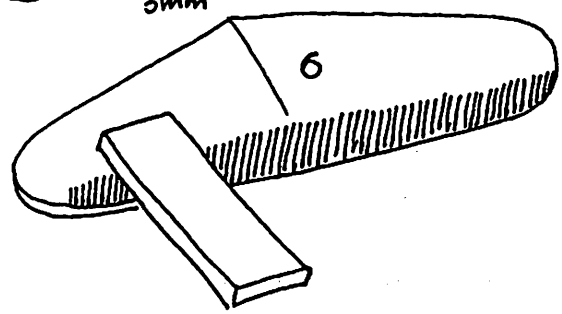
WINGS

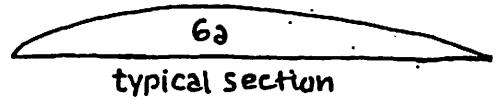
Cut a block of foam (1) about 5 mm (1/4in) larger than the wing. Make card templates to create the taper of the wing (2) and hot wire (or sand) the blank to shape (3). Draw on the outline of the wing (4) then cut away to leave 3mm (1/8 in) all round. (5)

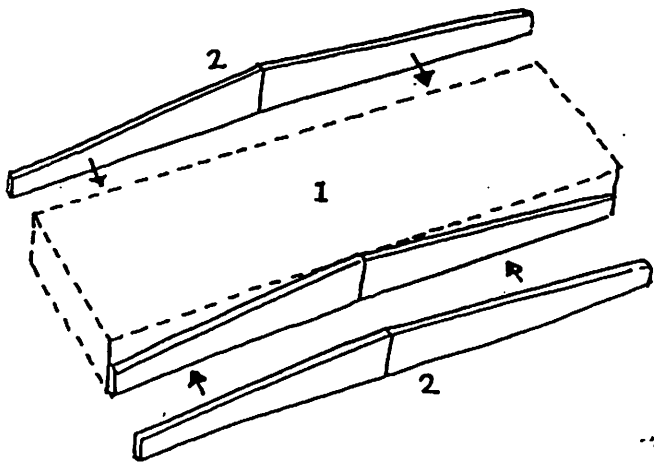
Using a coarse sanding file sand away the top surface to create a section (6a).

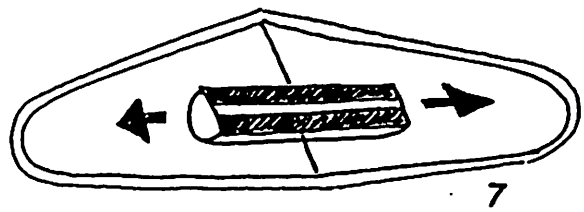
When the top surface is finished you must now make the undercamber by (7) using half round files, or paper wrapped arround the fingers. Aim for a section like 7a and extend the undercamber out to tips. Feel all over with the fingers to find high spots. Do try to get the wing as thin as you dare but don't go too far near the tips.

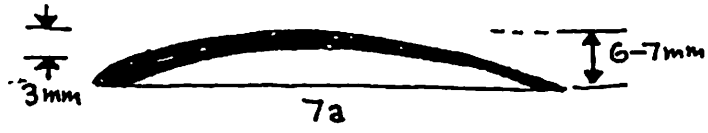








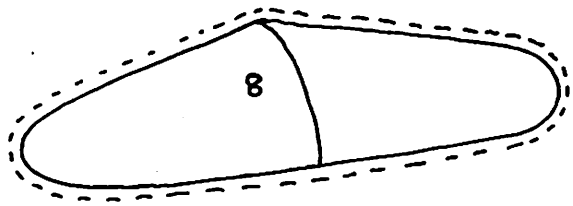


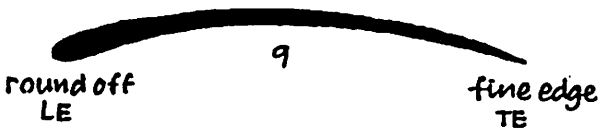


On a typical peanut wing the depth of the section would be approx 6-7mm (1/4in) but the thickness at the point of maximum camber might be only 3mm (1/8in), tapering to 1·5mm (1/16) at the tips.

When satisfied cut the wing out to its (8) final shape, round off the LE and taper the TE to almost a knife edge (9)

Finally balance the wing on a knife edge to see if one wing is heavier and sand accordingly.

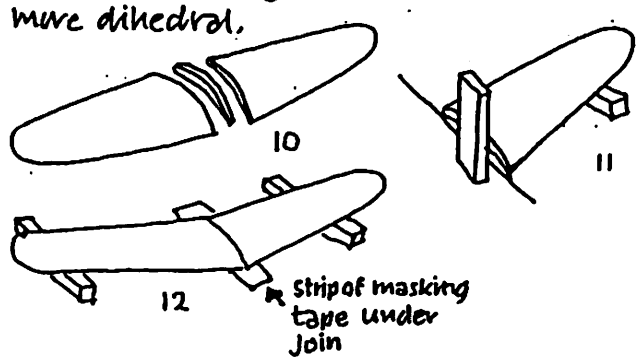




Now cut the wing in half in such a way as to leave a thin 'rib' of the section. This will be useful later on (10).

Prop up the wing halves to the dihedral you want and sand in the root angle (11). Prop up both tips and join the wing permanently (12).

The amount of dihedral is important if you are to have a reasonably stable model. We go 'overscale' on a subject with a fairly flat wing, but scale on one with plenty of dihedral. One advantage of foam is that you can cut it all apart and try again if test glider show you need more dihedral.

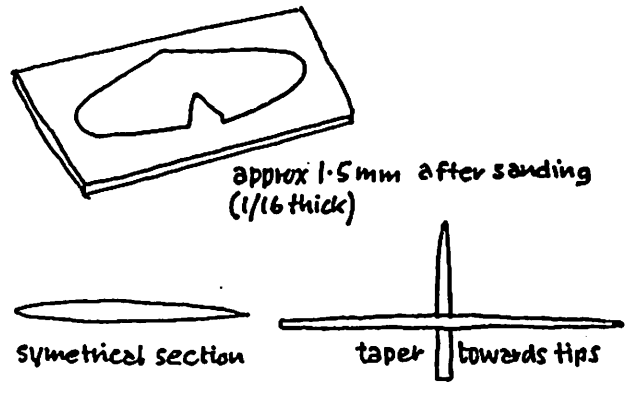


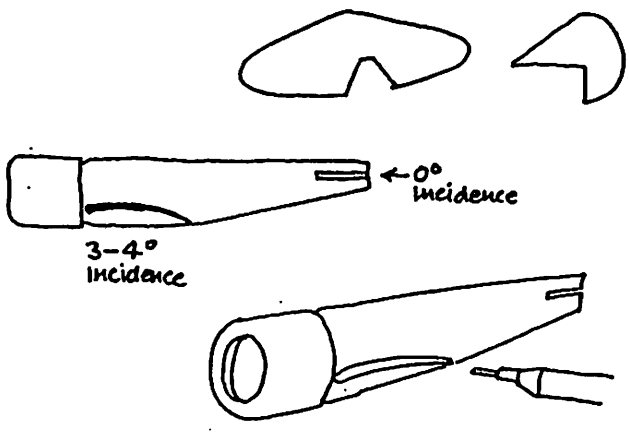
TAIL SURFACES

Cut or sand some thin sheets (say 2mm (3/32in), and draw on the shapes. Cut out and sand to section, with some taper towards the tips.

We tend to enlarge tail surfaces - 5or 10% to aid stability. If you do enlarge areas adjust the chord and the span to keep the same proportions.

Rudders and elevators will be bent for trimming later, so keep them thin.

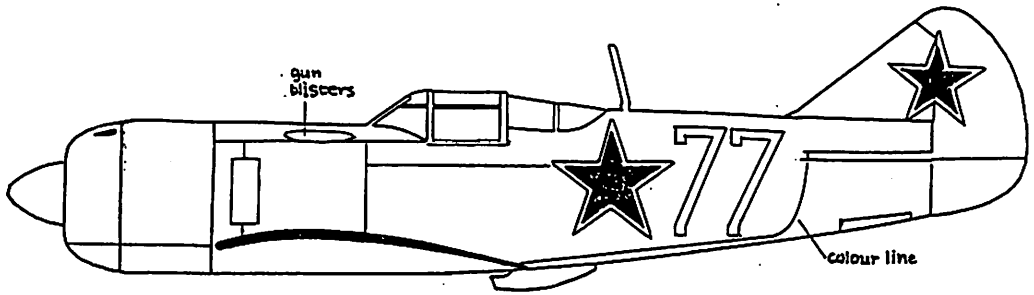




ASSEMBLY

Cut away the bottom of the fuselage (for a low winger) using the discarded 'rib' as a guide. Because of the compound shape this can be difficult to get right. Adjust bit-by-bit and take your time.

Keep the piece of fuselage to refit later on. The wing should have an incidence of 3-4°. Cut slots for the tailplane or fit it to the fuselage top if more appropriate.



Lavochkin LA7

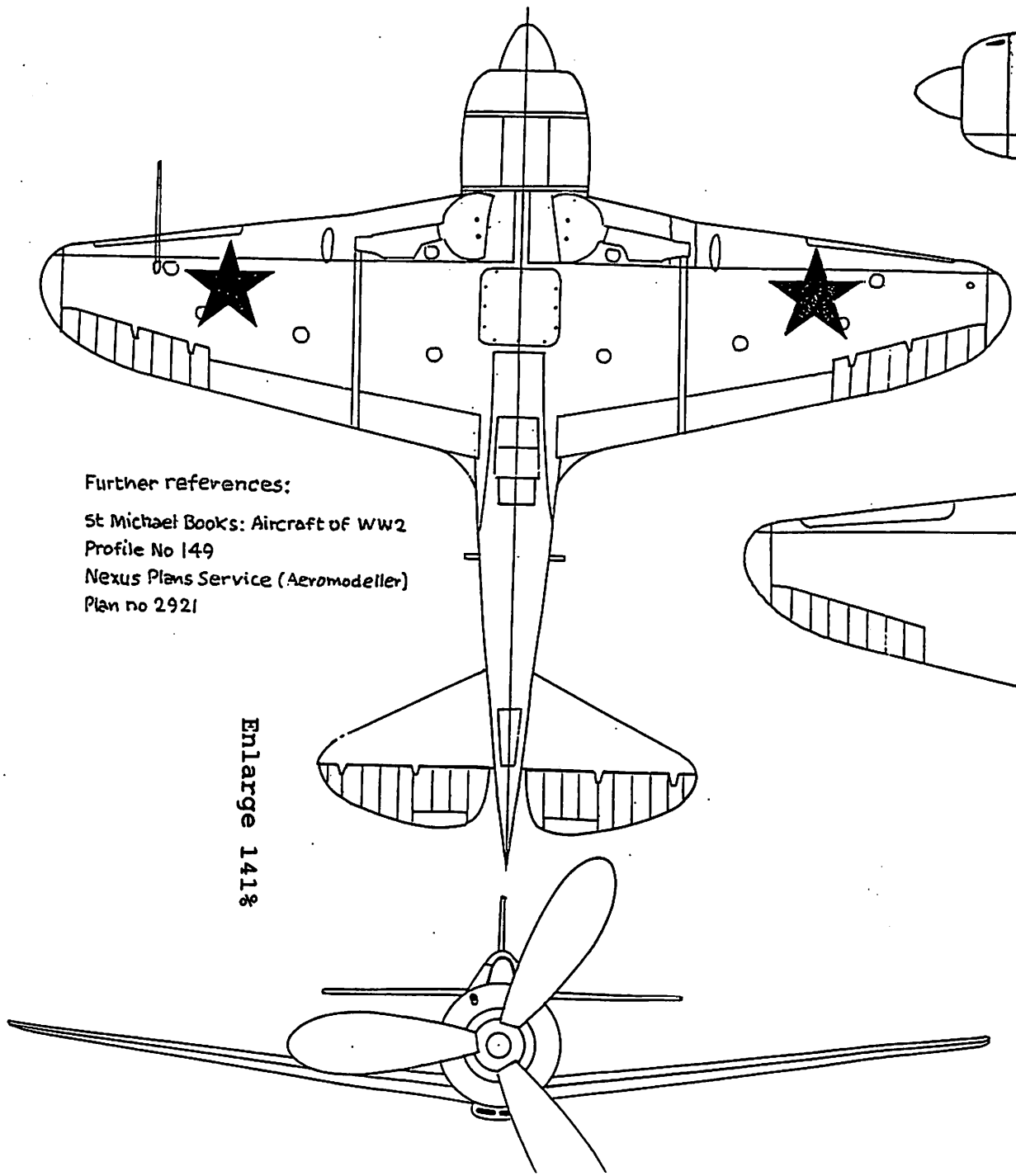
Enlarge to 330mm (13in) span
for Peanut model
or 203mm (8in) span
for Pistachio model

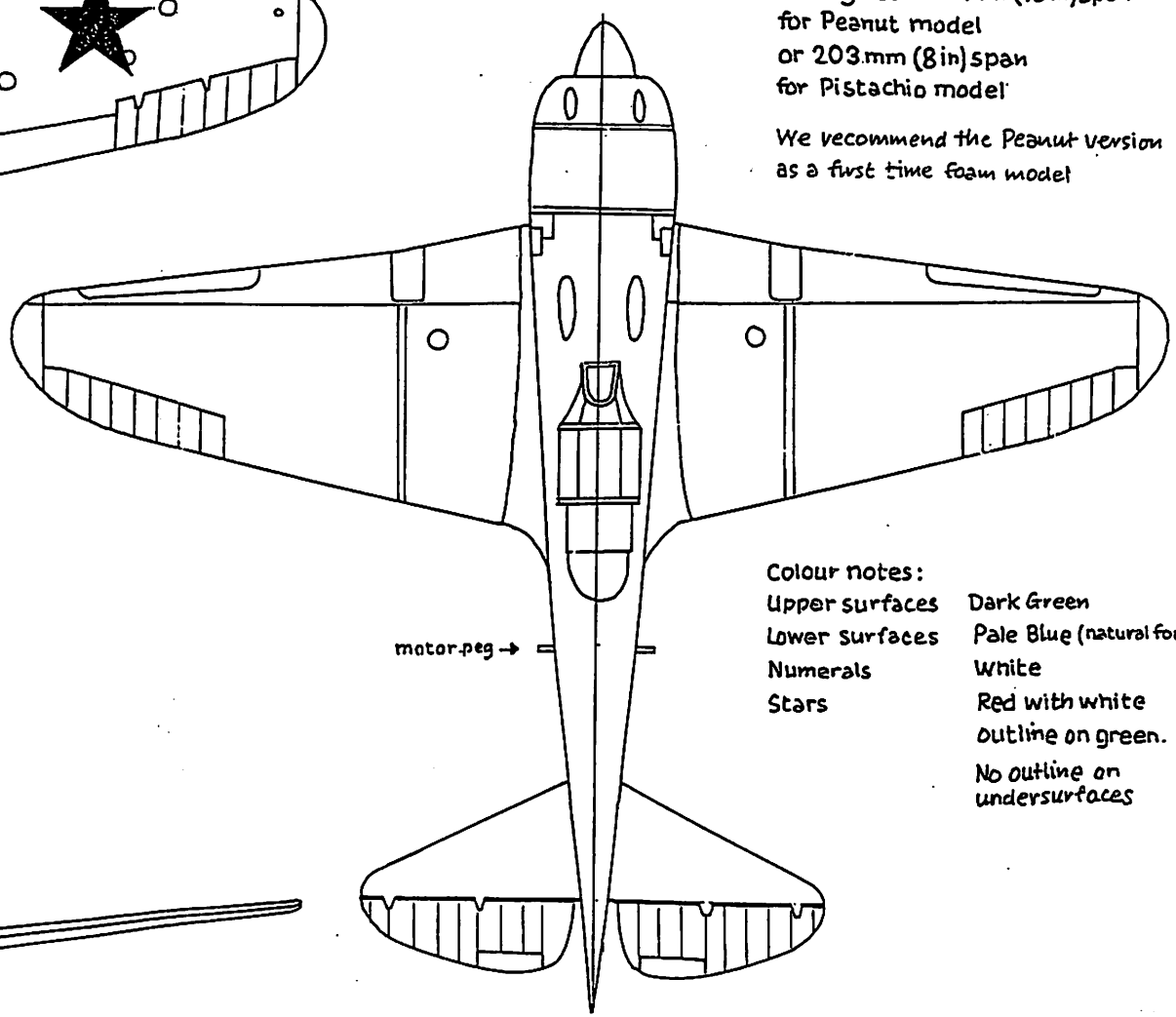
We recommend the Peanut version as a first time foam model

Further references:

St Michael Books: Aircraft of WW2
Profile No 149
Nexus Plans Service (Aeromodeller)
Plan no 2921

Enlarge 141%





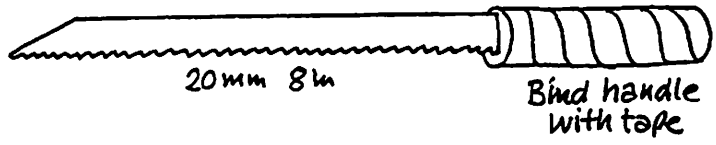
Colour notes:

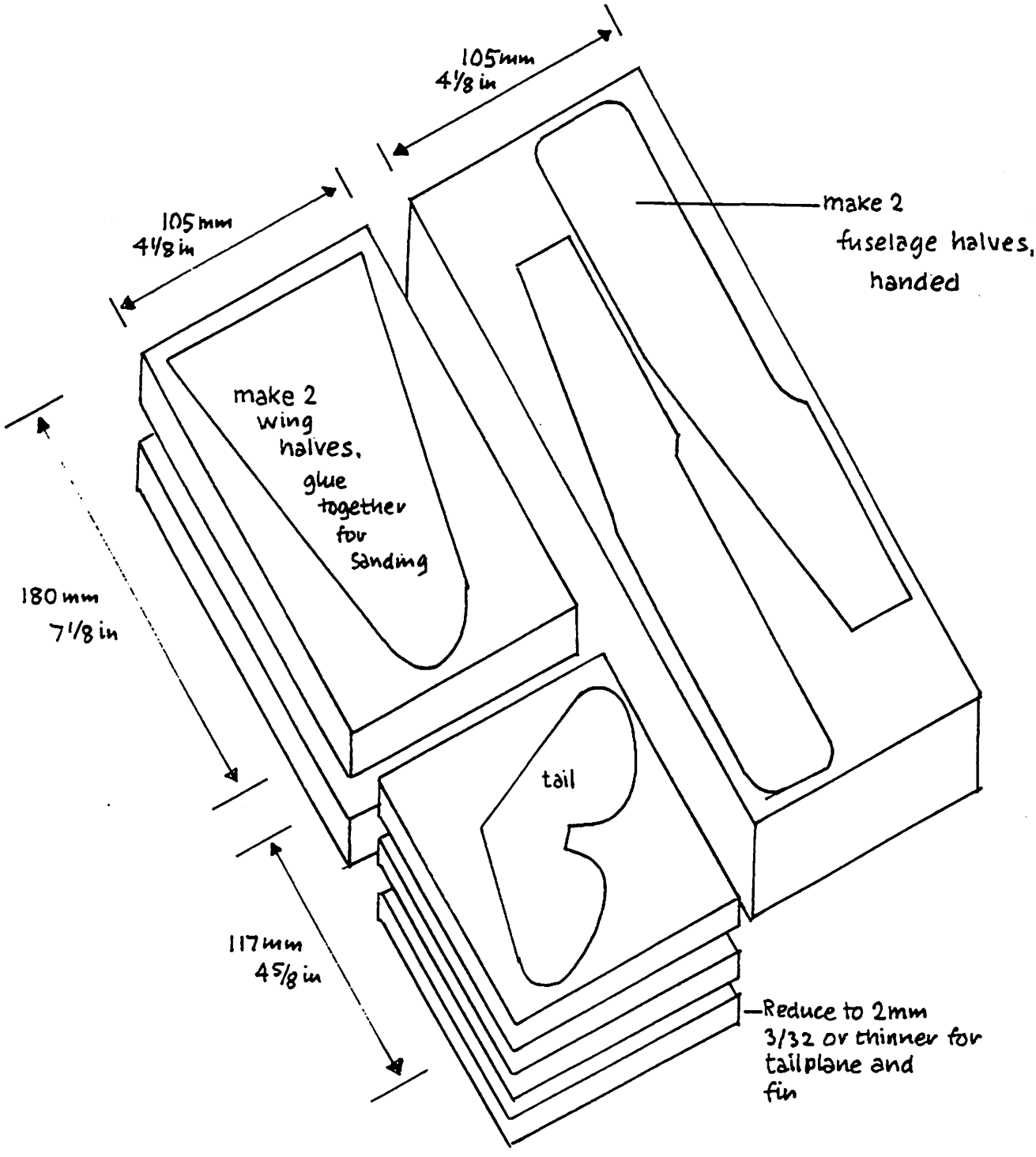
Upper surfaces	Dark Green
Lower surfaces	Pale Blue (natural foam)
Numerals	White
Stars	Red with white outline on green. No outline on undersurfaces

Foam cutting guide

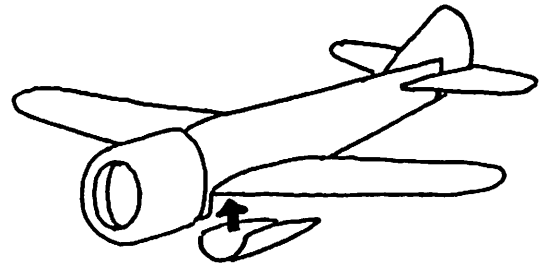
for peanut Lavochkin LA7 featured in the booklet.

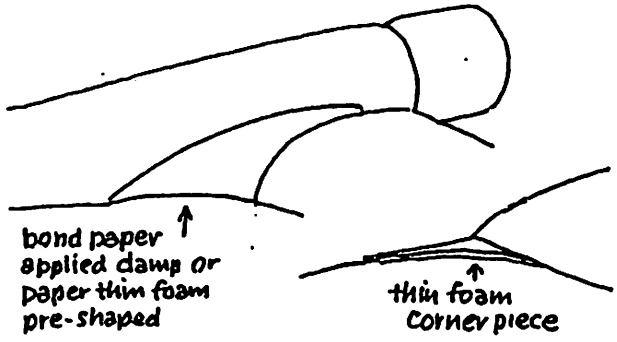
Use hot-wire cutter (see instructions inside on how to make your own)
Alternatively use hack saw blade with pin broken off and tape handle for comfort





Now you have made a foam model aeroplane you can weight the nose and do some test glides. If you have made it very light you will be amazed how slowly it will glide. Aim for a nice smooth glide and note the C/G position should be at approx 25-30° chord.



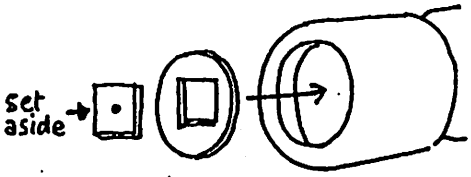


WING FILLETS

These are tricky to make but worth the effort. Some of us work with blue bond paper worked damp with white glue. Others cut paper thin foam and bend it to shape by stretching it in the fingers (very clever).

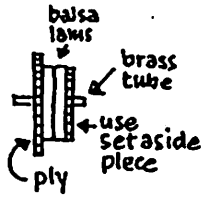
NOSE DETAIL

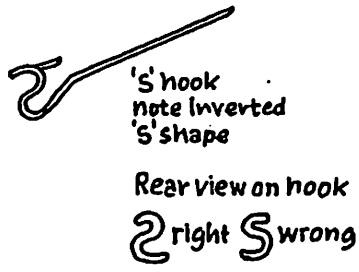
For a radial engine cut a 1/32 ply disk to fit the nose aperture and glue in place, recessed slightly.



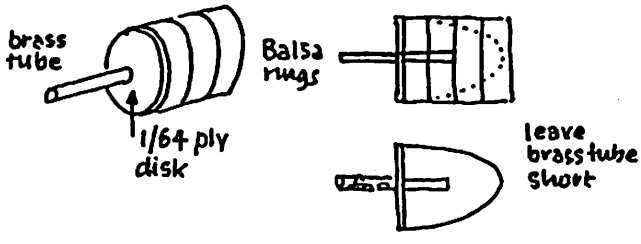
Make the nose bearing from laminated hard sheet balsa with ply facings.

Form an 'S' hook in piano wire to fit the brass tube and put aside.



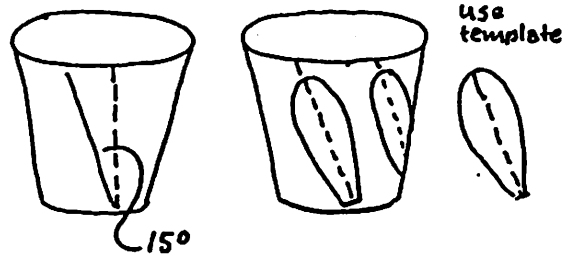


Make a blank for the spinner and 'turn up' the spinner in an electric drill. Alternatively cut and sand to shape.



Prop blades are cut from Yogurt cartons, or cream tubs. Don't chose the thinnest but the slightly firmer variety. You can get 6 blades from a carton.

Mark a vertical on the pot and step off 15° to the left (for a prop that will rotate anti-clockwise). Use a template to mark out the blade shape and cut with scissors. A good blade shape can be got from a Peck or Tern prop, but make the root a little wider to prevent weakness at the root. The natural curve of the pot will provide the correct helical shape to the blade.



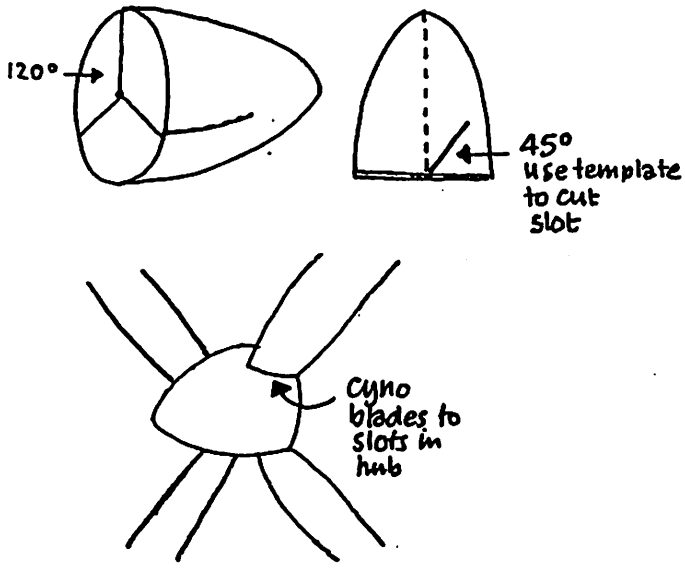
Peanut prop
128 mm approx (5 in) diameter

Pistachio prop
80 mm approx (3¼ in) diameter

For a 3 bladed prop mark-up the spinner at 120° and step off an angle of 45° from the vertical, using a template.

Cut a slot for the blades with a scalpel trying to keep a true angle as you cut. You might want to make a rough jig.

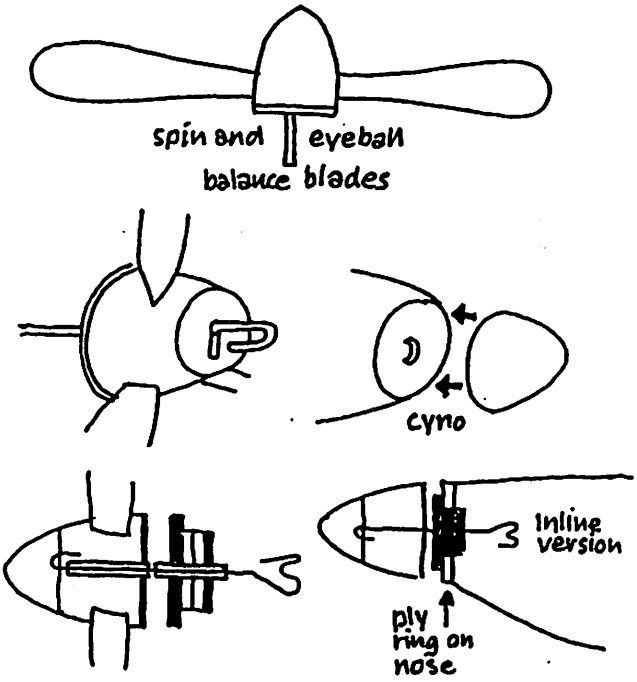
Fix the blades with a drop of cyno after first spinning the prop and getting good alignment and symetry.



Cut off the extension of the brass tube behind the spinner and assemble the prop and nose block as in the diagrams.

Using this method we have made props with from 2 to 5 blades as required.

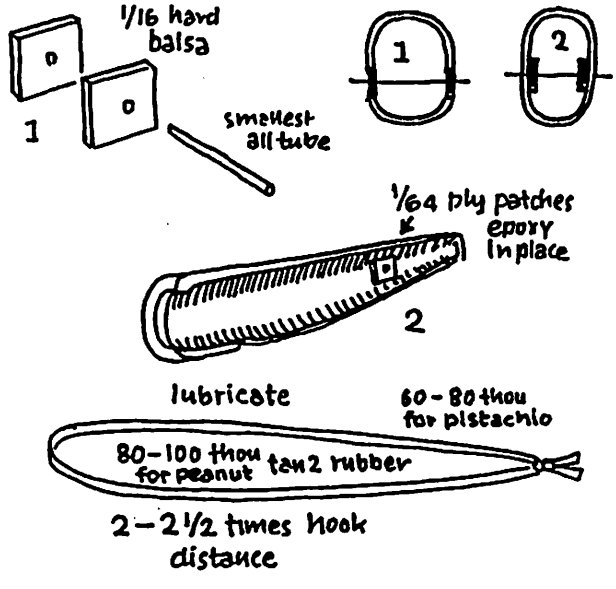
For inline engine types adapt the method slightly to suit.



REAR MOTOR PEG

We find it helps the c/g to place the rear peg not too far back. As a guide we would place the peg half-way between TE of wing and LE of tail.

We have used two methods: (1) make small squares of 1/16 hard balsa, and let these into the sides with a sharp scalpel. or (2) Before you join the two halves epoxy squares of 1/32 ply in place. Drill the holes to suit the smallest alu tube used for the peg.



RUBBER

Use Tan2 rubber, available from SAMS, in thicknesses from 20 thou up to 1/4 in. As a guide a peanut of average weight will require rubber of approx 80-100 thou. but it all depends on weight and drag. The only way is to try.

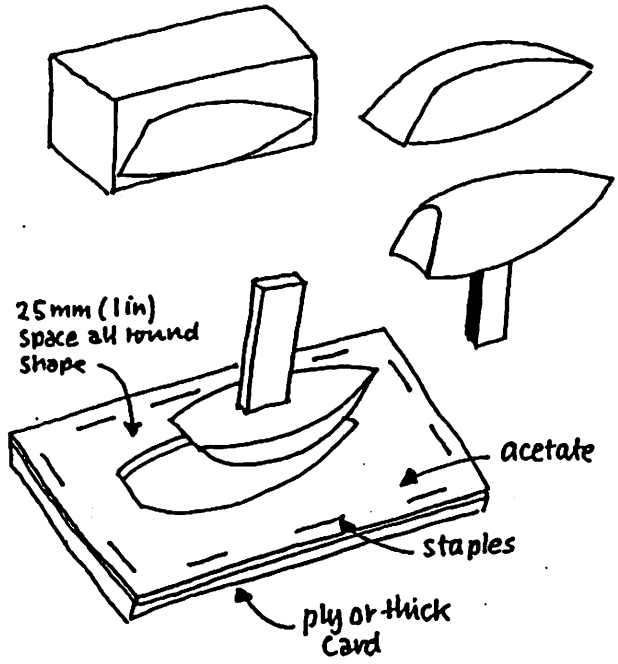
Use a single loop approx 2-2 1/2 X the distance between prop and the rear peg. and lubricate lightly.

CANOPIES

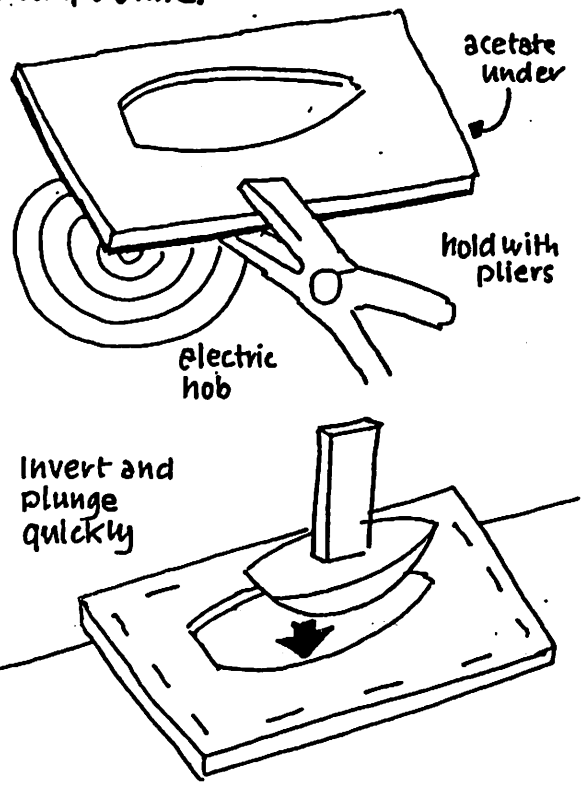
Carve a balsa pattern for the canopy and finish with fine sandpaper. Do not paint or seal the pattern.

Mount the pattern on a handle and make a base plate from ply or even thick card. The apperture in the base should be 2mm (3/32) wider all round than the pattern. Round the edges of the apperture.

Choose a piece of moulding quality acetate (old bubble pack) or clear polystyrene and staple it to the base.



Invert the base over an electric hob, wait till the acetate smokes and sags then quickly turn over and plunge the pattern through. Go too far and the acetate will go too thin. Plunge at an angle and it may be thicker on one side. You may need several goes and it helps to use a material that softens quickly, and moulds at a low temperature.



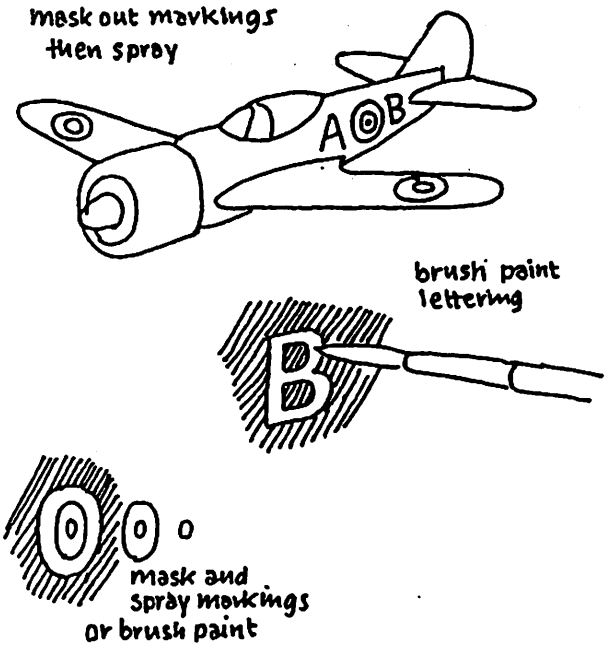
PAINTING & DETAILING

We use Humbrol matt enamels, thinned with white spirit and airbrushed on with very light coats. Do not use gloss paints.

Do not get cellulose anywhere near the foam. It will just melt it away.

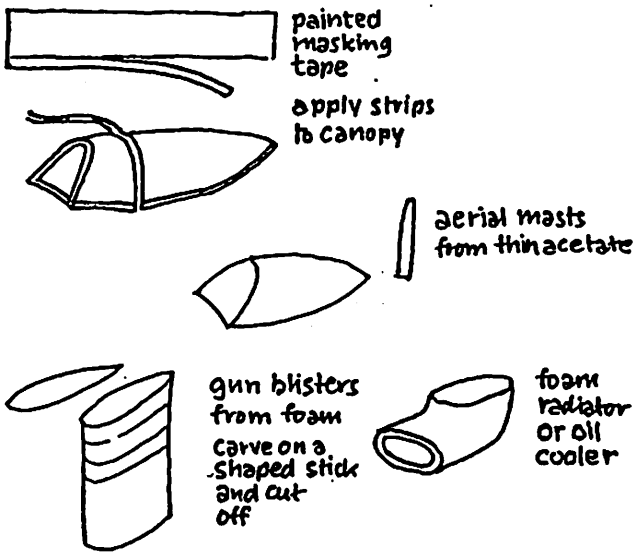
Tamia Colour acrylic may be suitable but we havn't tried it yet.

Light colours, like white or cream in large areas, are a problem because the basic blue shows through. On the other hand greys cover very well and the natural blue is a close match to Hellblau used on German or Russian undersides.

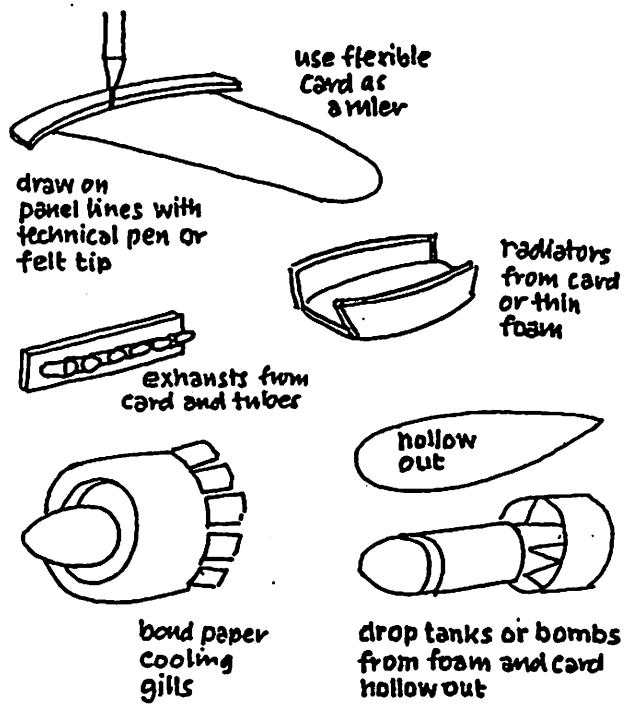


Cut masks from tracing paper and apply using Spraymount, but do wait a few seconds for the propellant to evaporate. Masking tape is fine. Only a waft of spray colour is applied to help keep weight low.

You could paint by brush if you haven't got an airbrush but you will pay a small weight penalty.



Sometimes after spraying you get a build up of paint that feels rough and powdery. It may rub-off on the fingers. When this happens we burnish with paper towel to get rid of the fuzz.



FLYING

Balance the model so that the C/G is 25-30% of the chord, Now try say 350 turns. If it dives try less nose weight, or a little up elevator. It will more likely stall and if it's a bad stall it may even turn on its back. Don't despair - add more nose weight until you get a powered glide. Use left rudder to induce a left turn. Increase turns to say 500, watch very carefully and cure any zooming tendency with more nose weight - unless the model is obviously overpowered in which case use thinner rubber by say 5 thou.

If the model just flops and wallows or won't climb even with 1000 turns it probably needs thicker rubber - increase 5 thou at a time.

If you achieve a steady left turn the model may drop its left wing and tend to spiral in. Try moving the left aeleron down to hold the wing up. Bending the right aeleron up will have a similar effect.

Add more turns. The maximum will be 1000 to 1300 turns. If the model flies well but doesn't climb, experiment with a little up elevator. Cure a power stall with downthrust.

You may be surprised by the length of our motors - 2 - 2½ times the distance between prop and rear peg. This is the only way to achieve the longer durations.

Most of our single engine foam models have the C/G well forward (say 1/4 of the chord) and a little up-elevator. Rudders are usually giving full left turn while the left aeleron is bent down to hold the inboard wing up in the turn.

A well built foam model may approach a minute duration indoors, flying at scale speed with a great air of realism which is, for us, what it's all about.

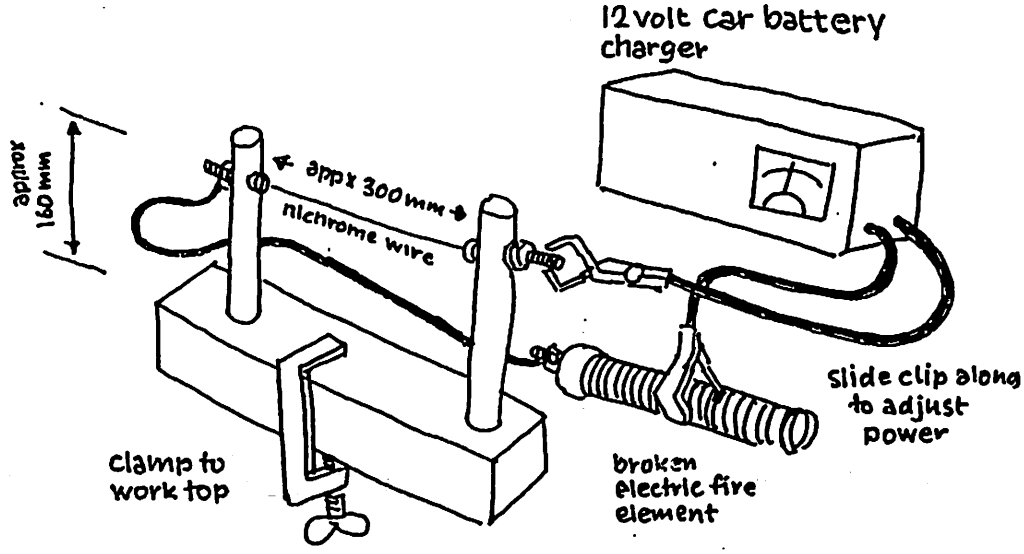
DIY HOT-WIRE CUTTER

Make the uprights from 3/8 dowel and drill into the base. Use the spring in the dowel to make the nichrome wire well taught - like a bowspring.

Use 6 ba brass nuts and bolts to make the terminals. The broken fire elements can usually be got free from your local electrical shop, and you will have more nichrome wire than you need.

Adjust the power by sliding the clip along the coil - it will behave like a rehostat. The wire should be hot enough to cut through the foam without too much pressure and without burning away too much material.

Use card templates both sides of the work to make a guide for the cutter. You will probably want to improve the design and incorporate an adjustable guide to enable square cuts to be made, or thin sheets to be cut.



TAILPIECE - THE NORWICH SCHOOL OF FOAMANIACS

Richard Crossley was the first to be inspired by Peter Frostick's pistachio Spitfire. Now Richard has a range of models from pistachios to peanuts and his 20 inch span Junkers 88 Nightfighter won 2nd place at Interscale 95 after a superb ROG followed by a long cruise and slow landing.

Peter Smart was also quick to see the advantages of foam and he has built a range of models from Abatross to model gliders which he aerotows with CO2 power tugs. But Peter's show stopper is his 28 inch span Lancaster which flies well with all four engines running.

David Deadman was reluctant to turn to building in foam because he was bound up in the traditional stick and tissue. Now however he has a collection of WWII fighters and twin-engined bombers. He is particularly pleased with his peanut LA7 which did 1 minute at Olympia, while at the same venue his Mitchell produced 40 seconds from a hand launch.

Together we have been christened the 'Norwich School'.

There is still plenty of room for more progress and experiment, and lots more prototypes to build which is why we hope you will join us and become another foamaniac.

David Deadman. Norwich 1996