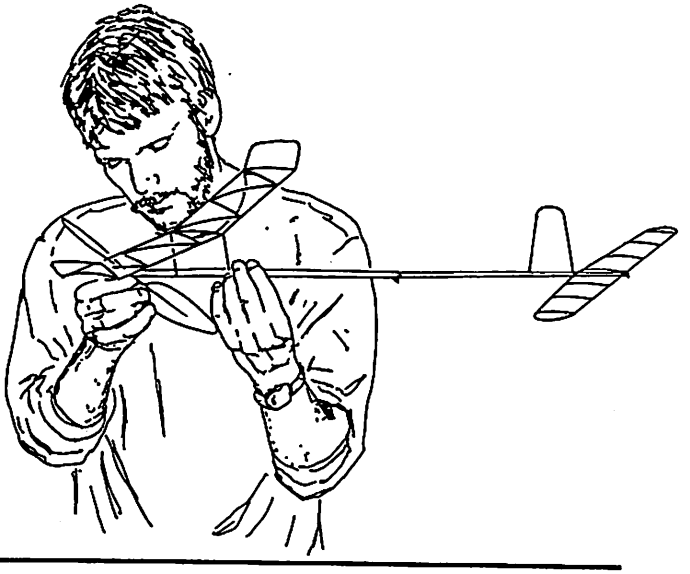
Indoor News



Issue 34,35 November 1995

DIARY

Jan-Mar '96 **International Mini-Stick Postal Contest**, Larry Coslick, 4202 Valley Crest Hills Drive, St. Louis, Missouri 63128, U.S.A..

May 26 - June 1 Johnson City USA **U.S. Indoor Championships**, Abram van Dover, 112 Tillerson Drive, Newport News, VA 23602, USA, (804)877-2830.

Aug 4-8 Moscow Idaho USA **Kibbie Dome Annual**, Andy Tagliafico, 10039 S.W. Quail Post Road, Portland, OR 97219, USA, (503)452-0546. + 1996 WC ?

see page 12 !

European Championships cancelled

From FFn: The 1995 F1D Euro Champs were due to have been held last month in the salt mine at Slanic Prahova, Romania. The Champs were cancelled because of significant damage caused to the mines by heavy rains during the summer. The unofficial information is that the main damage concerns the lift and lift shaft rather than the full expanse of the flying cavern. It is understood that repairs will be carried out at the end of the year.

RECORD TIMES

This year has been a particularly good flying season. Especially in the United States a lot of new records have been set and many flyers improved their personal bests. Record flights were made in Johnson City, at the Kibbie Dome Annual, at the Team Selection Finals in Akron, at competitions in the Lakehurst Hangar and at several other places. Steve Brown set a new U.S. F1D Cat IV record of 49'23 on July 12 and improved on that on August 6 with an unofficial 52'15 in Santa Ana, probably the first 50 minute flight with a 65cm F1D model. The official record then went to Richard Doig at the Finals on Sept. 6 with two flights of 50'41.
Ray Harlan improved the ornithopter record twice (18'13 to 19'44), but then Roy White did a most impressive 21'44. Other new U.S. records are:

Cat IV Penny Plane	Jake Palmer	15'09
Cat IV Limited Penny Plane	Jim Grant	18'00
Cat IV ROG Stick	Larry Coslick	22'49
Cat IV Intermediate Stick	Larry Coslick	41'48
Cat II Intermediate Stick	Larry Coslick	31'37

Site records were broken in Johnson City:

ROG Cabin	Larry Loucka	27'30
LRS	Laurie Barr	12'33
Penny Plane	Dan O'Grady	17'04
Hand Launch Stick	Bernard Hunt	46'14
No-Cal	Larry Loucka	8'02
LPP JR/SR	Vlad Linardic	15'53

Bob Eberle raised the unofficial LRS world record to 13'39 at Lakehurst. In Europe Andras Ree (HUN) flew 36'27 with F1D in a 7 meter hall in Stuttgart, but the report in Thermiksense notes that just a few weeks before this would have been a world record. Apparently Lutz Schramm (GER) has made a longer flight in Dillingen, but the exact time is not known nor whether it is an officially recognized Cat. I World Record or not.

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 (I can read the latter two, but not write them). Please type your texts on 12,5 cm width. Texts can be sent on floppy disk (3½ or 5¼) in Wordperfect or ASCII format.

I can make the drawings, if you are no draftsman. I prefer payment of subscriptions 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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Subscription: (per 8 issues)

Holland NLG 28,-
Europe NLG 30,-
Airmail USD 20,-

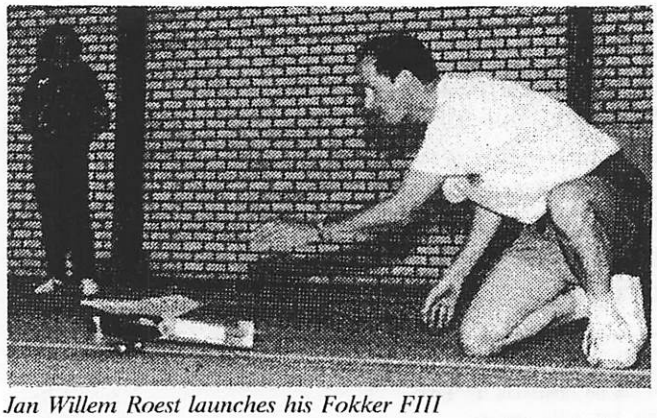
INTERSCALE '95

Maastricht, 19-29 August, 1995

Report by Reg Boor (GB)

Scale grass! None of us expected that, but there it was, as part of six green-carpeted and soft-floored indoor tennis courts at the Dousberg Parc Sportel. This was the site of Interscale '95 and quite the most attractive place in which I have ever flown. Large and very well lit with a clear flying height of 7.4m, more than adequate for the F4D and F4E flyers. Possibly the out and out duration flyers in F4F and Pistachio would have liked a little more height but as flight times of 80 seconds were achieved it was obviously possible for the experts in these classes to trim for the conditions.

There was some outstanding flying in F4D rubber. Doug Hunt's large Hawker Hart trainer in its bright yellow colour scheme with shiny metal cowlings looked and flew beautifully. Lubomir Koutny's ME109 looked very realistic in the air, this is a well-tried model which rarely lets him down. Richard Granger's asymmetric Blohm and Voss 141, another large model, flies well and is a most impressive sight. As will become clear, Richard flew the two most unusual prototypes of the meeting. Divs Masters and Mike Hadland flew their F4F Peanut models in F4D. An SE5 and an Isaacs Fury, which although they flew nicely were possibly too small in this competition to do well against the larger models. Antonin Alfery's Fairey Firefly in plastic foam, with all the panel lines lightly inscribed and in the naval colour scheme was lovely and flew as we have come to expect his models to do. Han van Leeuwen achieved a good flight with his Lacey and Jan Roest made his Fokker FIII fly well. This model was the "logo" for Interscale '95.



Jan Willem Roest launches his Fokker FIII

Third place in F4D went to Mike Goldby flying a very nice Farman Moustique in the usual bright red colour scheme. Second place fell to Richard Crossley with his twin rubber Junkers 88G in night-fighter camouflage. This model had not flown before the meeting, was made from blue insulation foam as I described in Indoor News issue 33, did have an undercarriage, three people in the cockpit and all the radar antennae. It took-off, flew superbly and is the first rubber-powered twin to place in an F4D contest. Who won? The American Ed Stoll with his Corben Super Ace. This is the model he flew at Interscale '91 with more detail added, it still has the typical US appearance of a stick and tissue model but its flying qualities won the day. It appears to fly extremely slowly, but this is because most of us are flying much too fast for scale speed. Ed's win was a very popular one and he was obviously surprised and delighted. He had shown that a model which flies well can snatch victory from the museum models.

There was not as much consistently good flying in F4E CO_2/Electric, although the standard of model was higher than ever. Perhaps this is the problem. Non-scale readers should realise that in F4D and F4E the total possible score is divided equally between fidelity to scale, the static score, and flight realism, the flying score. Consequently, the modeller must choose where to place his emphasis. There are some modellers, Alfery, Goldby, Newman, Tornkvist and others who can, and do, build museum quality prototypes that fly well enough to challenge less detailed models. Most of us, perhaps not always deliberately, compromise. Another point, the requirement for a 15 second flight might seem trivial to F1D and F1L flyers. I must assure them that a "nice" flight of 15 seconds with a good scale model that can take-off is just as much of a test as 20 minutes in F1L or 40 minutes in F1D.

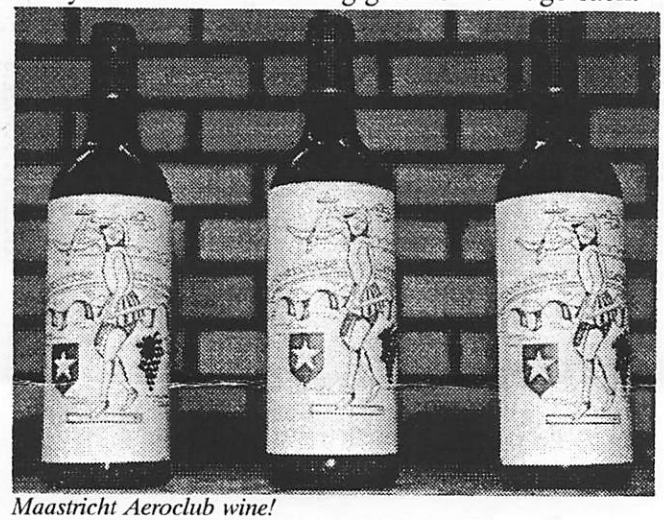
But we must return to Interscale '95. Charles Newman's CO_2 SE5a was magnificent, looking perfect in every detail. He flew it well enough to achieve second place. Although he was understandably nervous and placed numerous "catchers" around the hall during his flights. As far as I know this was the first time out for this model for I haven't seen it at a UK meeting. Antonin Alfery brought a twin electric Vickers Vimy which was too heavy at 170gms to be allowed to compete, but he demonstrated it. A long straight take-off diagonally across the hall, it circled in one corner very realistically and then landed back down the diagonal! Unbelievable. But Tonda won F4E with his trusty Spad XIII, another model that flies slowly enough to be at scale speed. Third place in F4E went to Mike Goldby flying his Bristol Fighter, still flying from hand-launch but a most beautiful model, it has dominated contests in the UK for some time.

A little history. In 1930, two brothers named Gran-

ger, after much experimenting, finished and flew a tailless aeroplane which they called the "Archaeopteryx". This aircraft, under the care of the Shuttleworth Trust at Old Warden aerodrome in the UK is still flying and has earned a place in the hearts of aviation enthusiasts everywhere. One of those brothers was the father of Richard Granger. Richard brought to Maastricht a large electric-powered model of the Archaeopteryx and flew it successfully in F4E. It was exciting to watch and must have been a source of great satisfaction to Richard, who has been saying he would do this for a number of years. We look forward to seeing it again. George Tornkvist flew a nice Tiger Moth but was unfortunate enough to have what would undoubtedly have been his best flight caught by the flight judges! Mike Green's Anec 1a is always a consistant performer and I know gives him great pleasure. Roger Aime flew a Morane Saulnier A1 and Peter Smart flew the L model. George Kandylakis flew a Sopwith Pup in the contest but practised most of the day with a strutted, pusher CO_2 flying-boat. Barry Hotham's Puss Moth was superb but wouldn't fly for him after hitting an obstruction flying outdoors some days before, following an otherwise perfect flight. As we have come to expect of all his models, Barry Hetherington's 3-motor Caproni, with only the centre engine powered, flew well. Kevin Wallace suffered the most disasterous crash of the meeting when his CO_2 Super Ace touched a roof beam and dived to the floor. The F4F Peanut, and the Pistachio competitions were the usual happy and relaxed affairs, with a number of blue foam models in evidence. But none of them placed. Tonda Alfery won F4F, with Mike Hadland second and Lubomir Koutny third. The Pistachio contest, to everyone's delight was won by the Dutchman, Gert Brendel, with Divs Masters second and George Tornkvist third.

It is not possible to mention everyone, but nobody brings a bad model to an Interscale meeting. Yet as I have said earlier, flying them is no easy matter and the disasters as well as the triumphs are all part of the charm and atmosphere of indoor scale. Those of us who did not fly for long enough, or did not fly well enough, determine to return and try harder next time. Richard Granger organised the Air Races. These were absolutely hilarious, strongly contested and enjoyed by a large crowd of spectators who joined in the fun by cheering the flyers and returning any models which strayed from the flight circle. During the two-day meeting the ladies enjoyed a specially planned programme which took them on a guided walk around historical Maastricht together with a visit to the market on Saturday, and on Sunday they cruised on the Maas, with pastries and coffee on board the boat after a visit to the ancient caves. We rather envied them in the caves at 8°C. The flying halls reached a staggering 31.7°C on Saturday. But this made the ever open and very welcoming bar all the more attractive.

We had an opening ceremony at which the anthems of all the competing nations were played and their flags displayed, the Mayor of Maastricht welcomed everyone and launched the Interscale '95 aeroplane, an electric model, suitably decorated and constructed by Wijnand de Joode. It didn't want to come down and got stuck in the beams after a long flight, much to the delight of the Lady Mayor. The closing banquet was delicious and to cap it all Santa Klaus (Hammerschmidt) gave everyone an aeromodelling gift from a huge sack!



Maastricht Aeroclub wine!

The rules for F4D, F4E and F4F have "provisional status" with the F.A.I. and the object of the Interscale meetings is to demonstrate that indoor scale flying has a sufficiently large, consistant and enthusiastic following to be granted full World class status at some time in the future. Ton Schippers and his team contributed greatly to that aim and they are to be congratulated on a most enjoyable and memorable meeting.



David Lentink convincingly won the Fun Fly

INTERSCALE 1995 MAASTRICHT
RESULTS F4D
INDOOR SCALE MODELS WITH EXTENSIBLE MOTORS

NAME	NAT.	MODEL	STATIC+(BEST FL. x BONUS)	TOT.
1. Edward STOLL	USA	CORBEN SUPER ACE	1293+(1854x1)	3147
2. Richard CROSSLEY	UK	JUNKERS 88	1351.5+(1544.5x1.15)	3127.675
3. Mike GOLDBY	UK	FARMAN MOUSTIQUE	1493+(1546.5x1)	3039.5
4. Antonin ALFERY	CZ	FAIRY FIREFLY V-173	1303.5+(1584x1)	2887.5
5. Richard GRANGER	UK	BLOHM & VOSS 141	1100+(1736.5x1)	2836.5
6. Michael HADLAND	UK	Mr ISSACS FURY	1393.5+(1273x1)	2666.5
7. Divs MASTERS	UK	SE 5A	1487.5+(1174.5x1)	2662
8. Doug HUNT	UK	HAWKER HART	1092+(1545x1)	2637
9. Barry HETHERINGTON	UK	CAPRONI CA-2	987.5+(1572x1)	2559.5
10.Peter SMART	UK	MOSQUITO	1175.5+(1097x1.15)	2437.05
11.Jan Willem ROEST	NL	FOKKER F-II	875+(1522.5x1)	2397.5
12.Charles NEWMAN	UK	SE 5A	1788+(600x1)	2388
13.Andrew HALSTEAD	UK	PILATUS PORTER	1026+(1209x1)	2225
14.Paul BRIGGS	UK	BLERIOT	1383+(785x1)	2168
15.Reginald BOOR	UK	HAWKER FURY	1071+(810x1)	1881
16.Fred MOOK	NL	LIBELLE	792+(1073.5x1)	1865.5
17.Han VAN LEEUWEN	NL	PIPER VAGABOND	677+(932.5x1)	1609.5
18.Lubomir Koutny	CZ	ME 109	201+(1224x1)	1425
19.Derek KNIGHT	UK	C.VOUGHT KINGFISHER	1112+(0x1)	1112
20.Michael GREEN	UK	KAWASAKI HIEN KI-61	900+(0x1)	900
21.Vybes MASTERS	UK	LACEY M-10	762.5+(0x1)	762.5
22.David LENTINK	NL	BEBE JODEL	638.5+(0x1)	638.5
23.Aad GOUDSWAARD	NL	FOKKER F-II	606.5+(0x1)	606.5
24.Aad VAN DIJK	NL	FARMAN F-370	120+(0x1)	120

INTERSCALE 1995 MAASTRICHT
RESULTS F4E
INDOOR SCALE MODELS WITH CO_2 OR ELECTRIC MOTORS

NAME	NAT.	MODEL	STATIC+(BEST FL. x BONUS)	TOT.
1. Antonin ALFERY	CZ	SPAD XIII	1564.5+(1812x1)	3376.5
2. Charles NEWMAN	UK	SE 5A	1702+(1456.5x1)	3156.5
3. Mike GOLDBY	UK	BRISTOL FIGHTER F2B	1668+(1437x1)	3105
4. George TORNKVIST	SWE	TIGER MOTH	1728+(1369x1)	3097
5. Michael GREEN	UK	ANEC 1A	1026+(1977x1)	3003
6. Derek KNIGHT	UK	AVRO 560	1299+(1561.5x1)	2860.5
7. Richard GRANGER	UK	ARCHEOPTERYX	1548.5+(1263x1)	2811.5
8. Peter SMART	UK	MORANE SAULNIER "L"	1328+(1476X1)	2796.5
9. Lars TOLKSTAM	SWE	TIGER MOTH	1606.5+(1190x1)	2796.5
10.Kevin WALLACE	UK	CORBEN SUPER ACE	1116.5+(1644x1)	2760.5
11.Divs MASTERS	UK	SE 5A	1574.5+(936x1)	2510.5
12.Agios DIMITRIOS	GR	SOPWITH PUP	954.5+(1401x1)	2355.5
13.Barry HETHERINGTON	UK	TRAVEL AIR	1356+(612X1)	1968
14.Roger AIME	FR	MORANE SAULNIER "N"	615+(1152x1)	1767
15.Paul BRIGGS	UK	BLERIOT	1454+(0x1)	1454
16.Barrie HOTHAM	UK	PUSS MOTH	1347.5+(0x1)	1347.5
17.Johan SVANESTRAND	SWE	PIPER CUB	1321+(0x1)	1321
18.Georgios KANDILAKIS	GR	SOPWITH PUP	1050.5+(0X1)	1050.5
19.David HANKS	UK	F.W. 189 TWIN BOOM	812.5+(0X1.15)	812.5
20.Andrew HALSTEAD	UK	L'ARC EN CIEL	0+(0X1)	0
21.Emile D'HONDT	BEL	GEBE ASCENDER	0+(0X1)	0

INTERSCALE 1995 MAASTRICHT
RESULTS F4F
INDOOR SCALE MODELS PEANUT FORMULA

NAME	NAT.	MODEL	STATIC	RANK	FLIGHT	RANK	TOTAL
1. Antonin ALFERY	CZ	AVIA BH 253	205	1	81.66	2	3
2. Michael HADLAND	UK	TIGER MOTH	198	3	62.23	5	8
3. Lubomir KOUTNY	CZ	ZLIN 50 M	170.5	6	71.36	3	9
4. Francis PATAT	FR	CAUDRON LUCIOLE	202	2	45.20	10	12
4. Tommy WESTLIN	FIN	ALBATROS DR 3	171	5	57.50	7	12
6. Peter FROSTICK	UK	LACEY M 10	155	12	87.57	1	13
7. Mike GOLDBY	UK	PIPER CUB F3J	173.5	4	44.94	11	15
8. Richard CROSSLEY	UK	HAWKER TEMPEST	163.5	11	52.96	9	20
9. Roger AIME	FR	HEINKEL HE 64	170.5	6	33.45	15	21
10.David LENTINK	NL	BEBE JODEL	140.5	16	61.18	6	22
11.J.C. BOURDEAUD'HUI	FR	POULLIN JP 30	121	19	67.74	4	23
11.Paul BRIGGS	UK	BLERIOT PARASOL	170	9	41.19	14	23
13.Reginald BOOR	UK	AVRO 560 MIL.	142	15	44.06	12	27
13.Divs MASTERS	UK	SE 5A	146.5	14	43.07	13	27
15.Marian TER HORST	NL	PIPER SUPER CUB	168	10	25.00	19	29
16.Niels BRENDEL	NL	FOKKER F-II	147	13	29.07	17	30
16.Bernard DELHALLE	BEL	HURRICANE	170.5	6	0	28	30
18.Michael GREEN	UK	LENINGRADEC	96	23	56.04	8	31
19.Gert BRENDEL	NL	PIPER CUB J3	136.5	17	25.12	18	35
20.Vybes MASTERS	UK	LACEY M 10	133	18	22.13	20	38
21.Peter SMART	UK	BARRACUDA	0	24	28.30	16	40
22.Jeroen WACKERS	NL	PIETENPOL AIRCAMPER	117.5	20	15.89	22	42
23.Bryan STICHBURY	UK	FARMAN F 170	110.5	22	18.74	21	43
24.Derek KNIGHT	UK	HAWKER HUNTER	112.5	21	8.93	23	44
25.Albert JANSSEN	NEL	MILES M 6	0	25	0	25	50

INTERSCALE 1995 MAASTRICHT
RESULTS F4 PISTACHIO
INDOOR SCALE MODELS PISTACHIO FORMULA

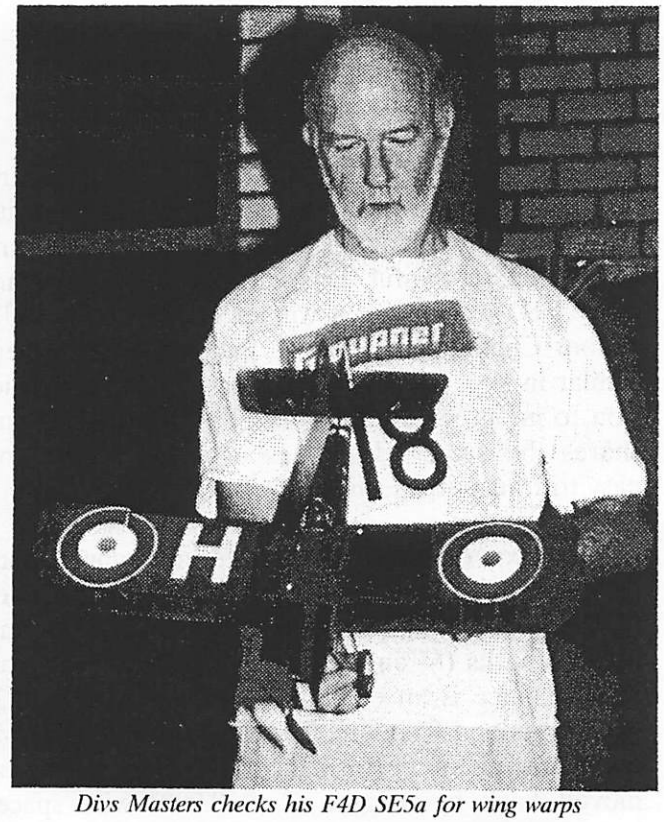
NAME	NAT.	MODEL	STATIC	RANK	FLIGHT	RANK	TOTAL
1. Gert BRENDEL	NL	VOLKSPLANE VP1	99.5	3	154	2	5
2. Divs MASTERS	UK	FOKKER D-VII	123	1	104	5	6
3. George TORNKVIST	SWE	POBER PIXIE	110.5	2	90	9	11
4. Jeroen WACKERS	NL	FLY BABY BIPE	99	4	92	7	11
5. Peter FROSTICK	UK	MARTIN BAKER 5	98.5	5	92	7	12
6. Antonin ALFERY	CZ	CANARD DRZEZWIE CKI	79	11	136	3	14
7. Lubomir KOUTNY	CZ	SONERAI	62.5	15	170	1	16
8. David LENTINK	NL	BEBE JODEL	65.5	13	132	4	17
9. Derek KNIGHT	UK	SUP. SWIFT	88.5	8	80	10	18
10.David HANKS	UK	SE 5A	96.5	6	50	14	20
11.Richard CROSSLEY	UK	HEINKEL HE 162	81	10	77	12	22
11.Peter SMART	UK	FW 190 D	83.5	9	52	13	22
11.Paul BRIGGS	UK	BLERIOT	94	7	44	15	22
14.Tommy WESTLIN	FIN	BRISTOL SCOUT	77.5	12	79	11	23
15.J.C. BOURDEAUD'HUI	FR	POTTIER 100	57	18	97	6	24
16.Bryan STICHBURY	UK	FARMAN F 170	60.5	16	35	16	32
17.Andrew HALSTEAD	UK	PZL-DROMEDA	64.5	14	0	19	33
18.Francis PATAT	FR	FIKE-E	60	17	0	19	36

AS ANNOUNCED AT THE INTERSCALE 1995 BANQUET IT IS POSSIBLE TO ORDER A VIDEO TAPE OF THIS EVENT.

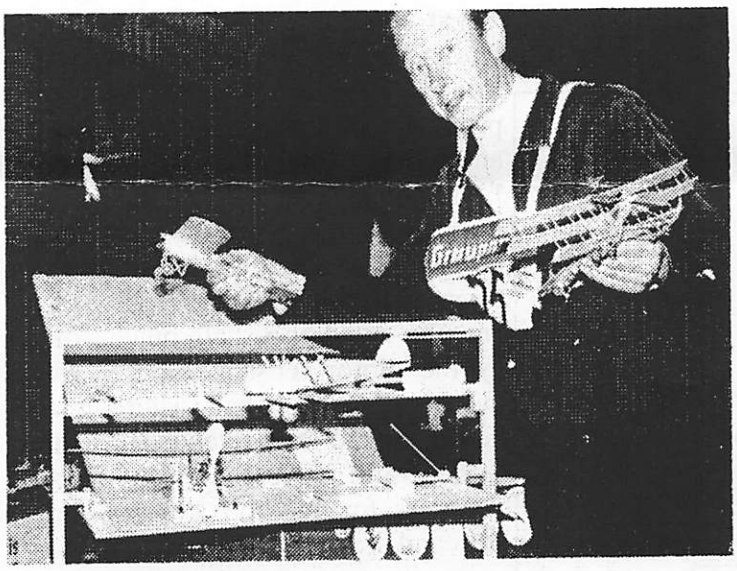
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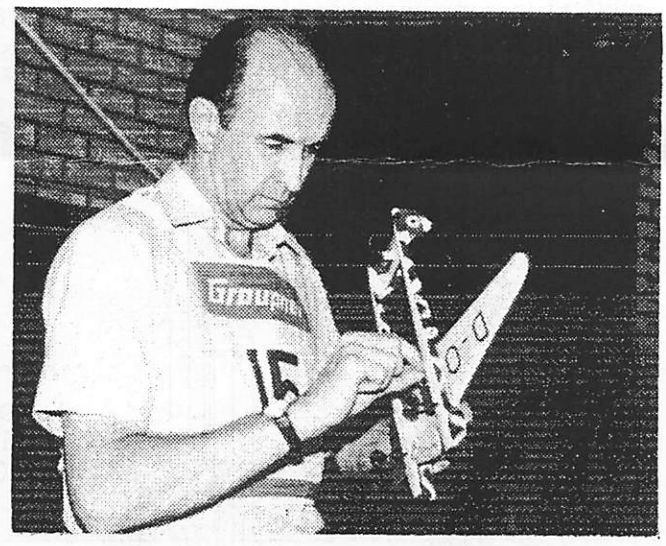
Lars Tolkstam adjusts his beautiful Tiger Moth



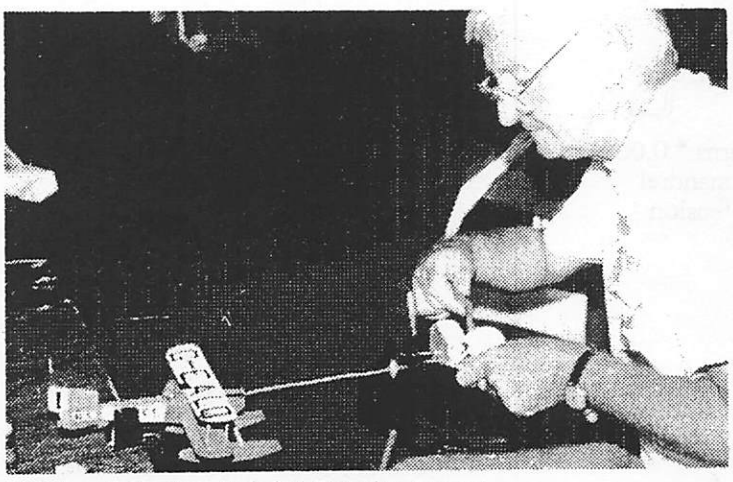
Divs Masters checks his F4D SE5a for wing warps



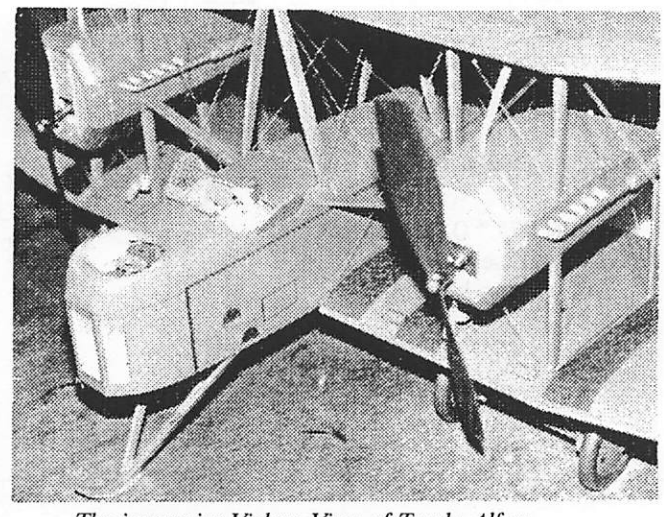
Francis Patat brought 17 beautiful models, but the rules allowed to enter one only



David Hanks entered this most rare Junkers FW189



Lubomir Koutny winds hid Pistachio Sonerai



The impressive Vickers Vimy of Tonda Alfery

TRUE TANDEM F1D

by Bernard Hunt (GB)

DESIGN and CONSTRUCTION

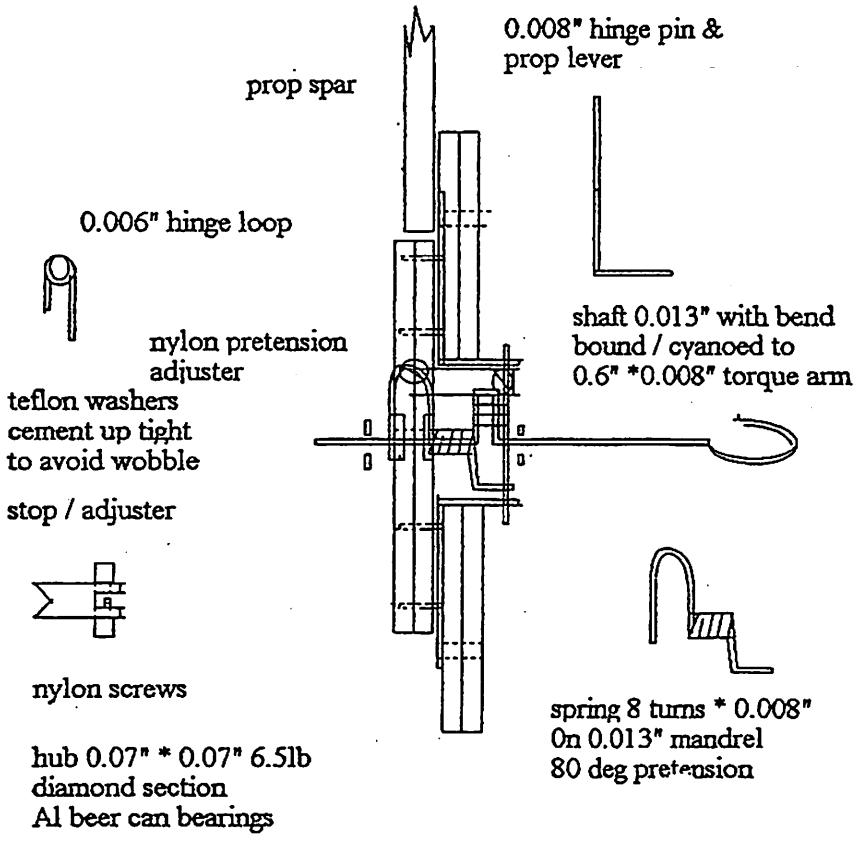
There are not too many true tandem designs (wing and tail the same span/area) in the world of aviation, either modelling or full size, and hardly any have been successful. Despite this, the "True Tandem" F1D design was a winner at the US and UK Indoor Championships in its first season. It is very similar in size (total area 265 sq. in.) and construction to my previous "No Hassle" unbraced F1D and shares the same advantages of being robust and easy to transport in small boxes.

I have experimented with different wing shapes (elliptical with more sweep on LE), wing chords (4.5"-5.5" av), wing post heights (1", 2" and 3") and boom lengths (6" and 8"). It looks like the best all round choice is an elliptical planform, with stiff 2" wing posts and 8" boom. The CG position, which is quite critical for performance and stability, can be moved back by using a 2" * 0.009" wire spacer between the prop hook and motor. I use this method to compensate for heavy props or elliptical wings (which effectively move the wing backwards).

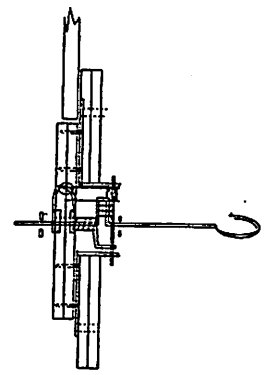
I have had some problems in achieving a tight turning circle needed for some sites which was eventually cured by stiffening/shortening the wing posts and increasing the tail skew = tipfin offset from the 0.1" shown to 0.3" (this looks a bit odd but is theoretically sound and works well).

The key components are the main spars for the wing and tail. I use super quality 5lb wood tested for Young's modulus but if in doubt use 5.5 or 6 lb wood. It is also important to get the correct tapers. I cut an 18" wedge of 1/8" or 1/4" sheet model shop wood to 0.075" at the ends and 0.125 at the midpoint and then sand the middle 3" to 0.115 and the ends over the last 2" to 0.065". I strip off 0.035" spars using a mini version of Jim Jones stripper. The tail uses the same method but smaller sizes. You could cut the spars from thinner indoor stock in the normal way but you would not be able to select from hundreds of sheets. I use lap joints for fitting the main spars to the outside of the premade tips/dihedral rib and try and leave the spars under tension so they are trying to unspring - this helps avoid the starved horse effect.

I used a vp prop at Johnson City because of the huge performance advantage (5min+) in such a low site. The key features of a vp prop are that it should be robust and easy to adjust rather than light. I used a standard Banks/Randolph mechanism but with wire pin and loop hinges instead of mylar, and I covered the prop blades in Polymicro. To avoid the shaft pulling out by the motor tension, I put a top hat bend in the shaft where it is kevlar bound and cyanoed to the torque arm. I used nylon screw adjusters for the top stop, bottom stop and spring pretension.



vp prop mechanism



approx full size

TRUE TANDEM F1D by Bernard Hunt

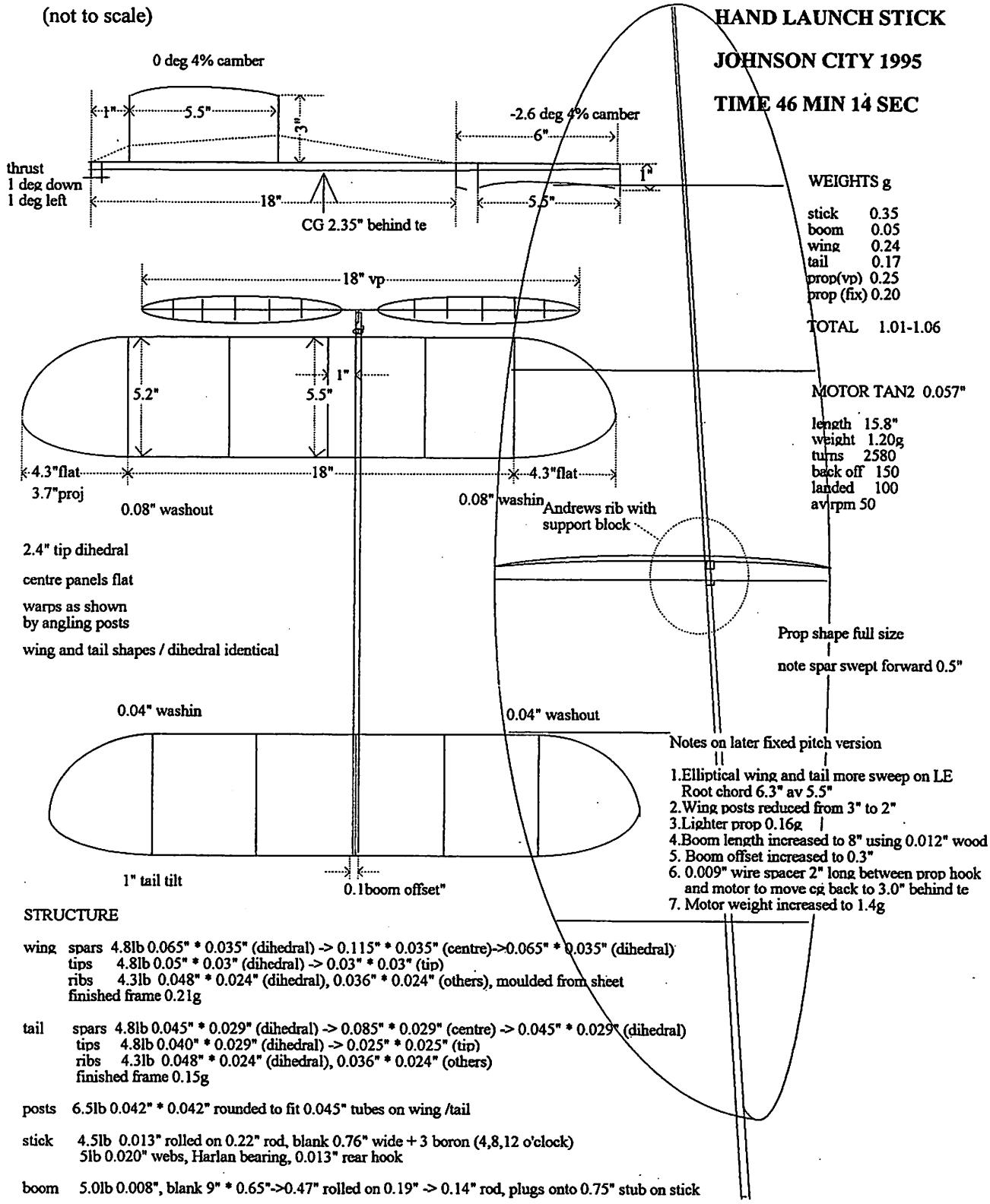
WINNER

HAND LAUNCH STICK

JOHNSON CITY 1995

TIME 46 MIN 14 SEC

(not to scale)



WEIGHTS g

stick	0.35
boom	0.05
wing	0.24
tail	0.17
prop(vp)	0.25
prop (fix)	0.20
TOTAL	1.01-1.06

MOTOR TAN2 0.057"

length 15.8"
weight 1.20g
turns 2580
back off 150
landed 100
av rpm 50

Notes on later fixed pitch version

1. Elliptical wing and tail more sweep on LE
   Root chord 6.3" av 5.5"
2. Wing posts reduced from 3" to 2"
3. Lighter prop 0.16g
4. Boom length increased to 8" using 0.012" wood
5. Boom offset increased to 0.3"
6. 0.009" wire spacer 2" long between prop hook and motor to move cg back to 3.0" behind te
7. Motor weight increased to 1.4g

STRUCTURE

wing spars 4.8lb 0.065" * 0.035" (dihedral) -> 0.115" * 0.035" (centre)->0.065" * 0.035" (dihedral)
tips 4.8lb 0.05" * 0.03" (dihedral) -> 0.03" * 0.03" (tip)
ribs 4.3lb 0.048" * 0.024" (dihedral), 0.036" * 0.024" (others), moulded from sheet
finished frame 0.21g

tail spars 4.8lb 0.045" * 0.029" (dihedral) -> 0.085" * 0.029" (centre) -> 0.045" * 0.029" (dihedral)
tips 4.8lb 0.040" * 0.029" (dihedral) -> 0.025" * 0.025" (tip)
ribs 4.3lb 0.048" * 0.024" (dihedral), 0.036" * 0.024" (others)
finished frame 0.15g

posts 6.5lb 0.042" * 0.042" rounded to fit 0.045" tubes on wing /tail

stick 4.5lb 0.013" rolled on 0.22" rod, blank 0.76" wide + 3 boron (4,8,12 o'clock)
5lb 0.020" webs, Harlan bearing, 0.013" rear hook

boom 5.0lb 0.008", blank 9" * 0.65"->0.47" rolled on 0.19" -> 0.14" rod, plugs onto 0.75" stub on stick

bracing 1 of 0.0015" tungsten or 2 of 0.001"

prop spars 6.5lb 0.06" * 0.06" -> 0.025" * 0.025" rounded
outline 7lb 0.02" * 0.02", ribs 7lb 0.03" * 0.02" -> 0.02" * 0.02"Andrews
vp mechanism Banks' style but with wire hinges, 3 screw adjusters
bottom stop 29" pitch, top stop calc 36" pitch but looks more
blades covered polymicro

model designed to fit 27" * 9" * 7" box with 3 similar models (see NFFS Sympo 1993 for details)

TRIMMING

1. Build the wing and tail flat and set the warps by angling the posts on assembly.

2. With no motor on, set the wing with slight washin on the right wing tip and the tail with slight washin on the left tip, 1" tilt, slight negative incidence (0.2" on rear post) relative to the wing and 0.3" skew = tip fin offset. Fit motor and check CG near 2.5" behind wing TE.

3. Test on a quarter motor with a three quarter length spacer and preferably a fixed pitch prop. Using low power (250 turns back off 25), adjust the elevation on the rear tail tube and the turn by tail tilt to give a nose up cruise and 30-40' circle. Now try high power (600 turns back off 30) and if the model tucks-in the right tip, correct with more opposite warp (loosen and reset one of the wing posts). Crabbing to the right requires less opposite warp. If the model goes flat/dives try more elevation (0.02" steps) but if this gives a stall at cruise you need to alter the effectiveness of the stick bracing by raising the brace point on the rear post in 0.1" steps and resetting the tail incidence again. Fixing a power stall is the opposite of this.

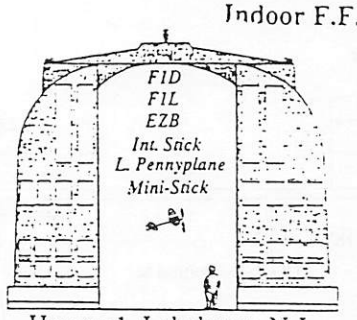
4. In the event that the model is just too sensitive to changes in elevation, then the CG is too rearward. The easiest way to change this is to use a 2" * 0.009" wire spacer at the rear of the motor or even better extend the tail boom by 1".

5. Now switch to a full motor and repeat the low power trimming but use a full wind (2500 turns) but big back off (600) to recheck elevation and circle at a safe height. Finally, you can try a full power flight but do be cautious and reduce the back off in steps down to the ultimate 150, adjusting elevation and tail tilt to give the perfect pattern and height.

6. For a VP prop, initial trimming is carried out as above on quarter motors with the prop locked into bottom stop or slightly above if you can. You then set the top stop roughly right (guess!) and adjust the spring pretension between flights till the cruise and letdown looks OK (more pretension makes the prop increase rpm sooner and slows descent). At this stage you can change the rubber size so that all the turns are used. Finally, you set the top stop so that you get the right height with a minimum backoff. I find it takes 10-20 quarter flights to get a prop anywhere near right and then at least 6 full motor flights to zero in fully. Clearly it is a big advantage to have a hall for long practice!

HIGH TIMES AND NEW CAT. IV RECORDS FEATURE LAKEHURST JULY 1-4 CONTEST

Third Annual Pete Andrews Indoor F.F. Contest



Hangar 1, Lakehurst, N.J.

Lots of good flying... lots of high times....two new Category IV AMA National records....a good contest ...in one of the world's best indoor sites. The F1D Event also was an East Coast Regional qualifying contest. Here are the results:

MINI STICK

Bob Eberle	*11:09*
Ray Harlan	*11:05*
Stan Fink	*10:40*
Tony D'Alessandro	*10:33*
Karl Von Bueren	*8:59*
Vic Gagliano	*8:02*

LIMITED PENNY PLANE

Bob Eberle	*16:13*
Tom Green	*15:29*
Rob Romash	*15:16*
Jim Grant	*14:12*
Rob Eberle	*13:32*
Steve West	*12:42*
Stan Fink	*12:42*
Karl Von Bueren	*12:41*
John Ganser	*11:53*
Tony D'Alessandro	*11:30*
Doug Barber	*10:11*

EASY B

Ray Harlan	*23:42*
John Kagan	*23:12*
Rob Romash	*22:03*
Tony D'Alessandro	*21:29*
Rob Eberle	*19:58*
John Ganser	*17:56*
Dan Marek	*17:56*
Jim Grant	*17:31*

INTERMEDIATE STICK

Jim Grant	*31:37*
Dan Marek	*24:19*



F1D

Gary Underwood	*44:37*	+ *43:53*	=	*88:30*
John Kagan	*35:10*	+ *35:01*	=	*70:11*
Joe Krush	*25:50*	+ *20:45*	=	*46:35*
Dan Marek	*25:54*	+ *18:50*	=	*44:44*
Jim Grant	*19:13*	+ *10:32*	=	*29:45*

F1L (International Easy B)

Rob Romash	*19:43*	+ *18:23*	=	*38:06*
Rob Eberle	*19:20*	+ *17:09*	=	*36:29*
John Ganser	*16:12*	+ *16:04*	=	*32:16*
Joe Krush	*17:02*	+ *15:04*	=	*32:06*
Dan Marek	*17:43*	+ *12:10*	=	*29:53*
Steve West	*12:47*	+ *12:35*	=	*25:22*

NEW NATIONAL RECORDS

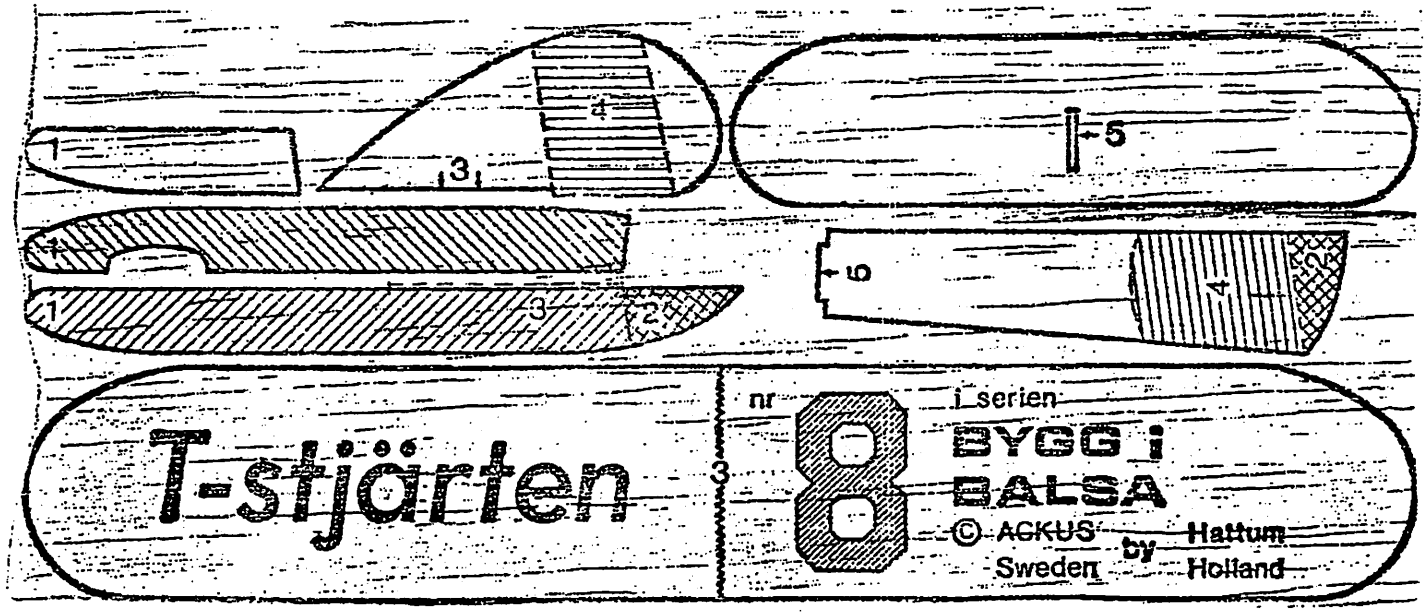
MANHATTAN	*Jim Grant*	*15:17*	*July 3, 1995*
ORNITHOPTER	*Ray Harlan*	*19:44*	*July 3, 1995*

* * * * * *

---------FAI INDOOR TEAM SELECTION FINALS -- LORAL AIRDOCK, AKRON, OHIO -- SEPT 2-4, 1995--------

CONTESTANT	ROUND 1	ROUND 2	ROUND 3	ROUND 4	ROUND 5	ROUND 6	ROUND 7	ROUND 8	ROUND 9
Rich Doig	00:40:11	00:45:09	00:47:52	00:46:08	00:50:41	00:44:19	00:39:24	00:47:42	00:50:41
Gary Underwood	-	00:25:54	-	00:32:48	00:48:52	00:49:51	-	-	00:42:31
Cezar Banks	00:45:41	00:16:20	00:10:18	00:47:12	00:44:54	00:49:47	-	-	00:45:03
Bob Randolph	-	00:42:37	00:41:12	00:40:50	-	00:40:29	00:21:45	00:45:42	00:49:31
Don Slusarczyk	00:42:31	00:44:39	00:45:30	00:14:02	00:48:10	00:44:07	00:16:49	00:37:38	00:43:05
Larry Loucka	-	00:31:56	00:41:45	-	00:42:29	00:44:16	-	-	00:46:14
Stan Chilton	-	00:34:43	00:44:27	00:43:15	-	00:40:38	00:24:50	00:45:27	00:44:55
Jim Richmond	ATT	00:18:45	00:35:11	00:40:21	00:45:26	00:42:36	00:01:27	00:42:28	00:40:46
Bill Hulbert	-	00:30:11	00:19:58	00:37:27	00:42:43	00:20:08	00:39:10	00:42:12	00:41:53
Jesse Shepherd	00:14:19	-	00:30:28	00:32:25	00:37:50	00:22:50	00:21:37	00:40:33	00:24:26
Larry Mzik	00:33:32	00:36:50	00:26:34	00:33:07	00:39:07	ATT	00:32:57	00:35:02	00:38:35
John Kagan	00:31:21	00:14:37	00:35:48	00:33:30	00:36:20	-	00:35:34	00:31:49	00:37:40
Jim Clem	-	-	00:30:35	00:16:31	-	00:32:32	00:34:41	00:06:10	00:39:27
Tom Vallee	00:30:52	00:35:58	00:32:04	00:20:03	-	-	00:24:59	00:36:40	00:36:52
Bob Gibbs	-	00:14:10	-	00:35:16	00:31:28	-	00:21:22	00:26:32	-
Rob Eberle	-	ATT	00:36:33	00:16:16	00:28:26	-	-	-	00:25:21
George Chabot	00:27:59	-	00:34:59	-	-	00:24:49	00:17:34	00:23:52	00:27:52

CONTESTANT	BEST FLIGHT	2ND FLIGHT	TOTAL (Best 2)	FINALS PLACE	FINALS POINTS	REGIONAL POINTS	TOTAL POINTS	TEAM PLACE
Rich Doig	00:50:41	00:50:41	01:41:22	1	1000.00	100.00	1100.00	1
Gary Underwood	00:49:51	00:48:52	01:38:43	2	973.86	100.00	1073.86	2
Cezar Banks	00:49:47	00:47:12	01:36:59	3	956.76	100.00	1056.76	3
Bob Randolph	00:49:31	00:45:42	01:35:13	4	939.33	97.82	1037.15	4
Don Slusarczyk	00:48:10	00:45:30	01:33:40	5	924.04	100.00	1024.04	5
Larry Loucka	00:46:14	00:44:16	01:30:30	6	892.80	100.00	992.80	6
Stan Chilton	00:45:27	00:44:55	01:30:22	7	891.48	100.00	991.48	7
Jim Richmond	00:45:26	00:42:36	01:28:02	8	868.46	97.85	966.32	8
Bill Hulbert	00:42:43	00:42:12	01:24:55	9	837.72	96.64	934.35	9
Jesse Shepherd	00:40:33	00:37:50	01:18:23	10	773.27	100.00	873.27	10
Larry Mzik	00:39:07	00:38:35	01:17:42	11	766.52	86.66	853.19	11
John Kagan	00:37:40	00:36:20	01:14:00	13	730.02	80.19	810.21	12
Jim Clem	00:39:27	00:34:41	01:14:08	12	731.34	76.39	807.73	13
Tom Vallee	00:36:52	00:36:40	01:13:32	14	725.42	76.08	801.50	14
Bob Gibbs	00:35:16	00:31:28	01:06:44	15	658.34	100.00	758.34	15
Rob Eberle	00:36:33	00:28:26	01:04:59	16	641.07	84.32	725.39	16
George Chabot	00:34:59	00:27:59	01:02:58	17	621.18	83.28	704.46	17

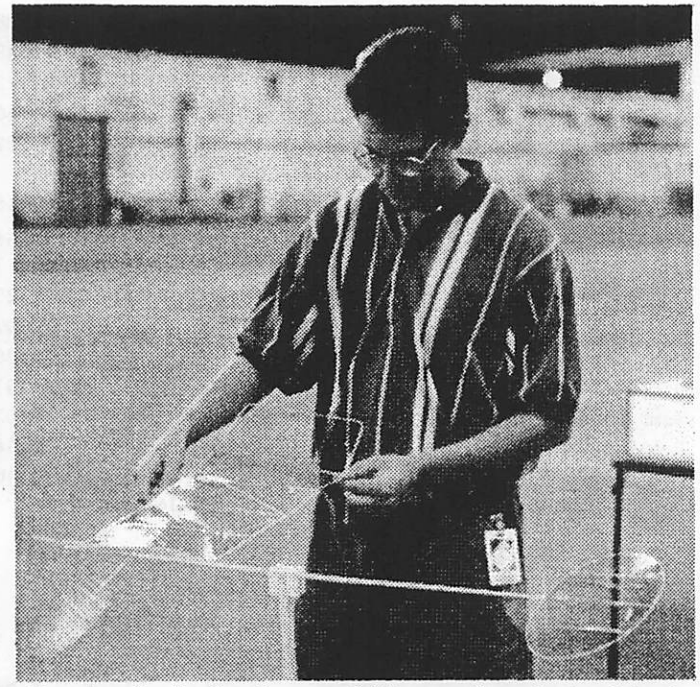


1995 United States F1D Team Selection Finals

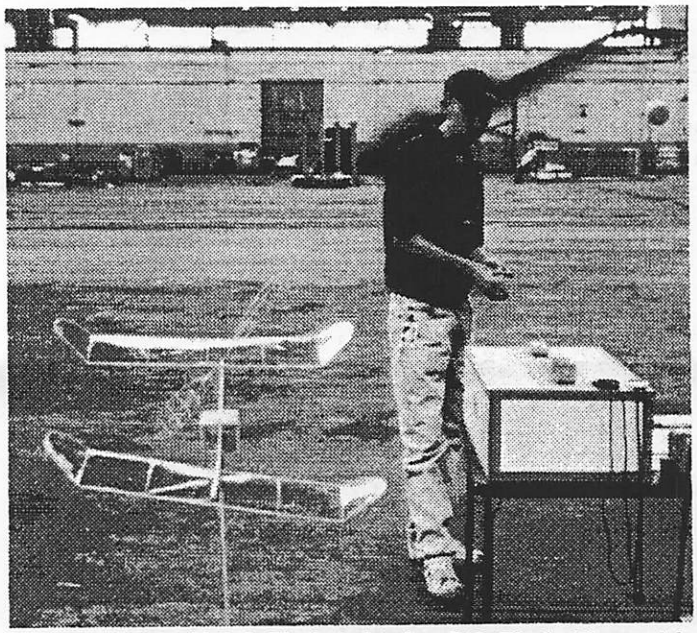
(Photographs by Richard Doig)



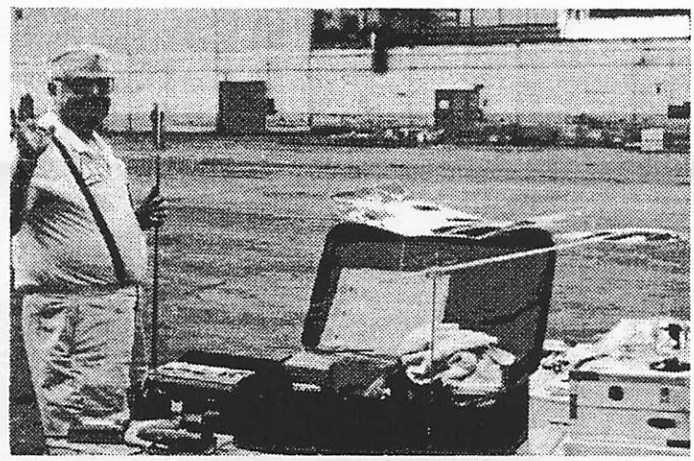
Richard Doig's "Garfield Lite" F1D scored the first ever 50+ minute flights in competition with two identical flights of 50'41



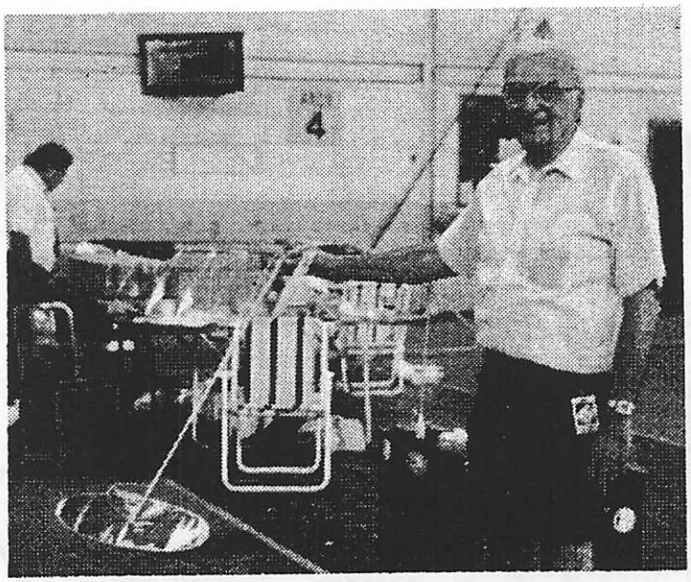
First time finalist Jim Kagan unfolding a collapsed wing. John is part of a new group of young flyers who fly regularly at Lakehurst



Seventeen year old Rob Eberle in his first F1D Finals. The model is an unbraced tandem similar to Bernard Hunt's design



Bob Randolph finally put it together in the later rounds, barely missing a team spot. His 9th round flight of 49'31 exceeded the old record, but his two flight total still wasn't enough to make the team.

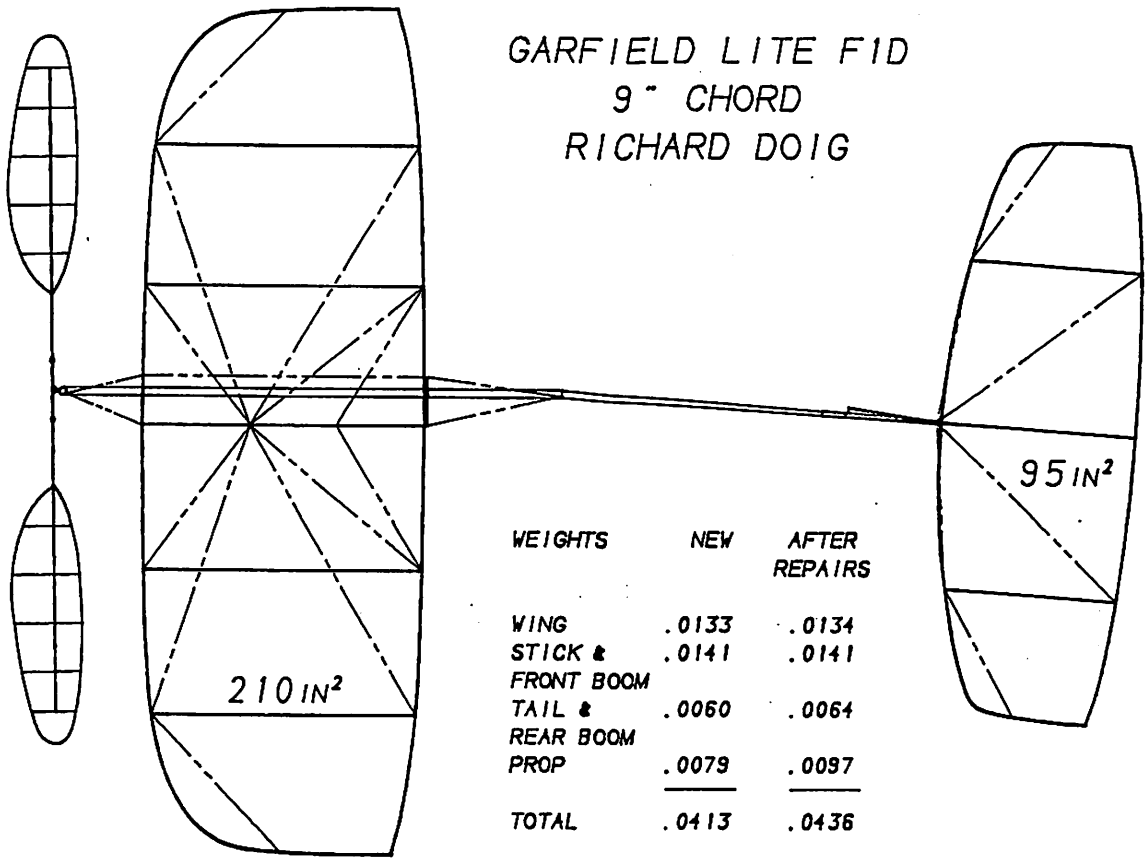


Stan Chilton's models were flawless. With flights in the mid 40's, he placed seventh.



Gary Underwood left every-one stunned as he rallied after a first day slump to post 48'52 and 49'51 in the fifth & sixth rounds, earning his first team spot in only his second Finals, and barely missing 50 minutes.

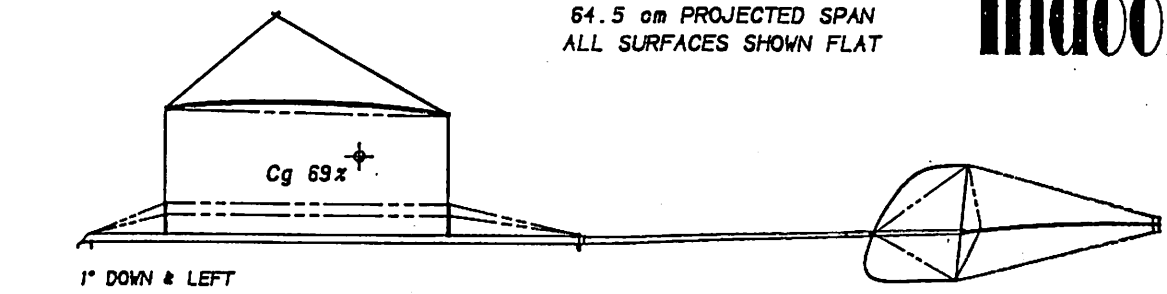
GARFIELD LITE F1D
9" CHORD
RICHARD DOIG



WEIGHTS	NEW	AFTER REPAIRS
WING	.0133	.0134
STICK & FRONT BOOM	.0141	.0141
TAIL & REAR BOOM	.0060	.0064
PROP	.0079	.0097
TOTAL	.0413	.0436

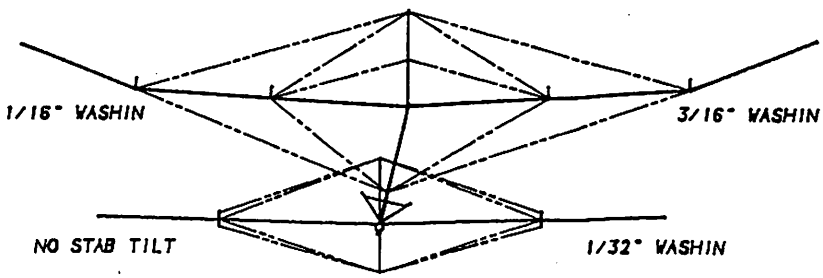
VARIABLE DIAMETER PROPELLER
21-15/16" DIA EXTENDED
18-5/16" DIAMETER RETRACTED
36" HELICAL INITIAL PITCH
64.5 cm PROJECTED SPAN
ALL SURFACES SHOWN FLAT

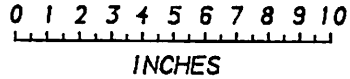
News Indoor



POWER - .068" x .042" FAI TAN-II
16-1/4" LOOP - .052 oz.
2600 TURNS MAX
BACKED OFF TO 2510 @ LAUNCH

1ST PLACE
1995 USA TEAM FINALS
50:41 + 50:41 = 101:22





**** NEWS FLASH! ****

1996 WC F1D not in Czechia, but possibly in Kibbe Dome, U.S.A.

To all my European friends. 16th October 1995

I understand that the offer to host the 1996 Indoor World F1D Championships in the relatively small hall in Brno in the Czech Republic, has been withdrawn, due to various difficulties.

The Americans have offered an outstanding alternative site, the Kibbe Dome, in Moscow, Idaho, U.S.A.

Bernard Hunt & I have flown there last year, and it is just superb! The floor area is the size of a Football pitch, and the ceiling is approx 45 metres high.

The air quality is very good, and flights with both fixed pitch, and variable pitch props, can be made in the 40 mins to 50 mins range.

The local amenities are very good, and it is a very pleasant place to be.

As I understand it, the Americans will offer dates of from 1st August to 8th August 1996, allowing 2 days practise, 2 days competition for W/Champs, followed by (Optional) International contests for various other classes, including an all in EZB competition! They hope that a bus service will be provided free, to get you from Seattle (The nearest major airport), across country to the Kibbe Dome (A long days drive)

There will be accommodation for those countries with small resources, within the University campus, and a bedroom with 2 occupants will cost as little as approx $25.00 per day.

The American offer is being put forward to the FAI/CIAM meeting in December, and I hope you will all ask your representative to vote for it!

I look forward to seeing you all there!

Laurie Barr. Herries Cottage, Winter Hill Road, Pinkneys Green, Maidenhead, Berkshire, England. SL6 6PJ
Tel 01628.487544.

Laurie Barr.

1995 Wally Miller International EZB Contest

Kibbie Dome, Moscow, Idaho - July 14

1. Larry Coslick	27'09	26'31	**53'39**
2. Larry Calliau	26'38	26'17	**52'55**
3. Mike Palrang	24'44	24'28	**49'12**
4. Earl Hoffman	24'58	22'49	**48'47**
5. Andy Tagliafico	23'55	23'00	**46'55**
6. Dick Hardcastle	23'38	22'50	**46'28**
7. Ed Liem	22'41	22'21	**45'02**
8. John Lenderman	22'00	21'58	**43'58**
9. Wally Miller	23'41	19'51	**43'32**
10 Ed Barry	21'15	20'59	**42'14**
10 Lew Gitlow	21'22	20'52	**42'14**

1995 AMA INDOOR NATIONALS

Kibbie Dome, Moscow, Idaho - July 15

F1D

1. Steve Brown	49'23	48'41	**98'04**
2. Darryl Stevens	36'57	35'33	**72'30**
3. Ed Liem	35'21	34'31	**69'52**
4. Charles Dorsett	34'03	26'57	**61'00**

Indoor Hand Launch Glider

1. John Alling	109.7
2. Darryl Stevens	108.5
3. Bruce Kimball	105.7

Standard Catapult

1. Ed Liem	103.4
2. Charles Dorsett	102.1
3. Mike palrang	73.0

Unlimited Catapult

1. Herb Robbins	103.7
2. Bruce Kimball	100.1
3. Charles Dorsett	98.4

EZB

1. Larry Coslick	26'58
2. E. Hoffman	24'37
3. M. Palrang	23'18
4. W. Miller	23'10
5. B. Kimball	22'12
6. E. Liem	22'07
7. J. Clem	22'01
8. D. Hardcastle	21'19
9. B. Tenny	15'40
10.K. Johnson	11'10

Bostonian

1. Larry Coslick	10'39
2. Charles Schaaf	8'35
3. Earl Hoffman	6'43

Autogiro

1. Bob Rovick	6'06

Ornithopter

1. Larry Coslick	18'01
2. Gene Joshu	12'22
3. Mike Palrang	12'07

Intermediate Stick

1. Larry Coslick	37'27
2. Dick Hardcastle	31'17
3. Warren Williams	26'47
4. Earl Hoffman	26'12
5. Bruce Kimball	22'34

Penny Plane

1. Dick Hardcastle	16'16
2. Gene Joshu	15'34
3. Bruce Kimball	13'51
4. Darryl Stevens	12'55
5. Bud Tenny	12'47
6. Jim Clem	12'43
7. Charles Schaaf	11'27

Penny Plane Senior

1. Jake Palmer	15'09

Penny Plane Junior

1. John Schaaf	11'45
2. Nick Leonard	9'47

POLYMICRO FILM can be used to cover your model surfaces SMOOTHLY by either of TWO METHODS. In either case the adhesive should be applied to the surface or outline and allowed to dry and then ACTIVATED after the outline and the film are in contact. The film can be used as is or it can be CRINKLED by compressing it into a ball in your hand and then pulling it apart.

ADHESIVES such as 3M 77 and thinned rubber cement work well and rubber cement thinner or nitrate thinner can be used to ACTIVATE the cement by going around the outline with a fine brush and thinner. Water base contact cement can cause the outlines to expand and distort and therefore not recommended.

CUTTING THE FILM is accomplished with the new super sharp platinum razor blades, or heat from a 10 Watt soldering iron or a battery powered cautery.

DIHEDRAL BREAK SLACK can be removed with a WET fine brush along the rib.

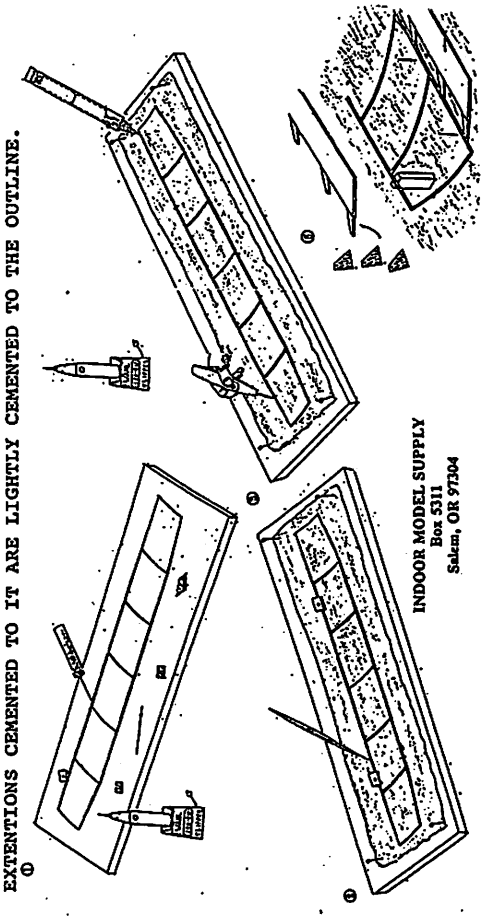
THE TWO METHODS ARE: 1. Place the FILM ON TOP of the outline, FIRST ATTACHING IT TO A FRAME with cement, or 2. to place the OUTLINE ON TOP of the film. No. 2 is described below and is similar to covering with microfilm.

POLYMICRO FILM IS ABOUT THE WEIGHT OF RED-GREEN MICROFILM.

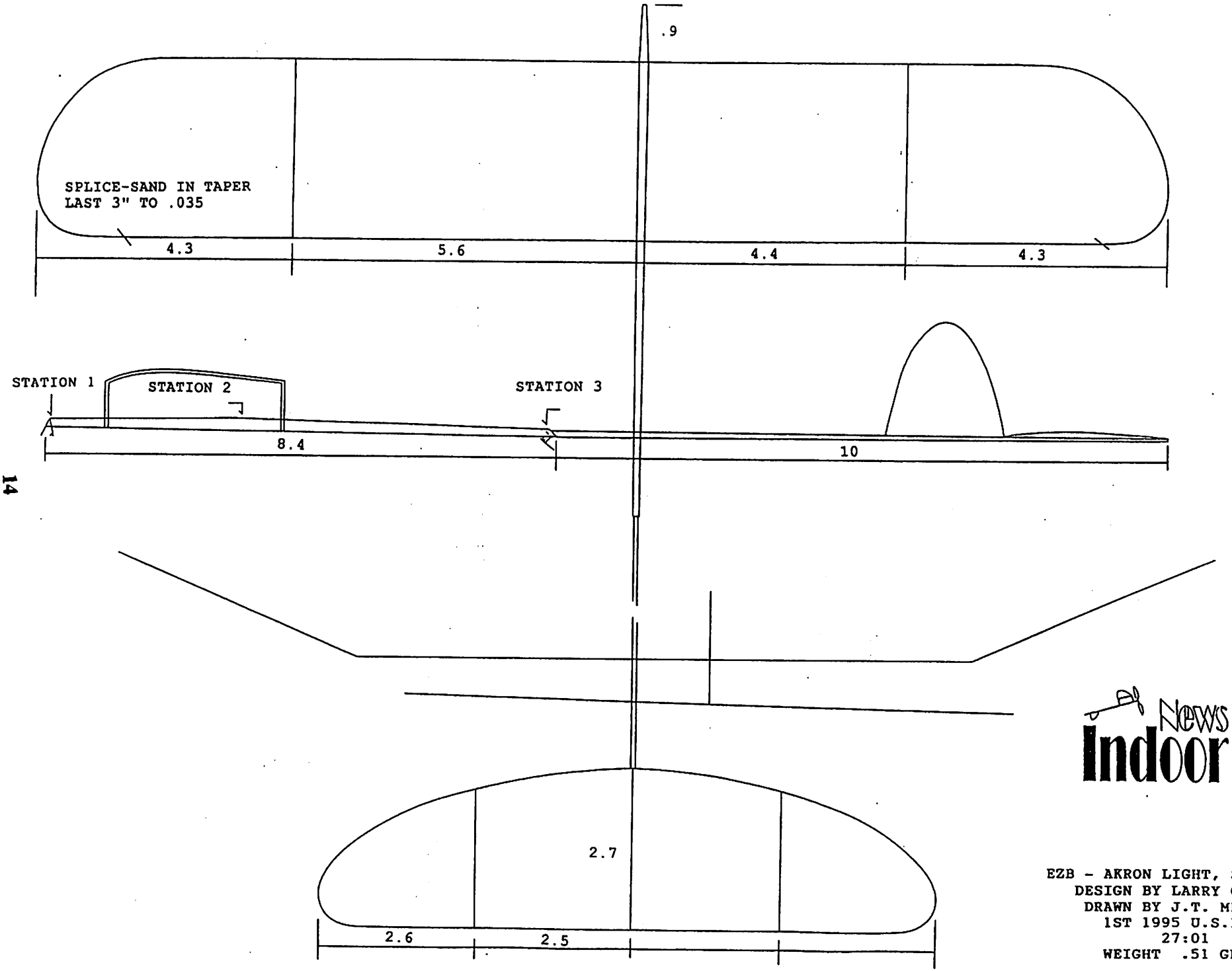
ULTRA FILM	.0045 oz./100 sq. in.	.00006" thick.
ULTIMATE	.00366 oz./100 sq. in.	.000047" thick.
POLYMICRO	.00285 oz./100 sq. in.	.0000353" thick
MICROFILM	.001-.0015 Oz./100 sq. in.	

USE A WIDE BRUSH TO SMOOTH OUT THE FILM BEFORE IT IS ATTACHED TO A FRAME OR BEFORE PLACING THE OUTLINES ON IT. ELECTRON BUILD UP CAUSES PROBLEMS A TIMES. SPRAYING THE FILM WITH WATER WILL REMOVE THE CHARGE, THE ELECTRONS LEAVING WITH THE WATER MOLECULES.

FIG.5 SHOWS HOW TO LIFT VERY LIGHT STICKY OUTLINES AND KEEP THE SPARS AND OUTLINE STRAIGHT AND TRUE. A STRAIGHT EDGE WITH EXTENTIONS CEMENTED TO IT ARE LIGHTLY CEMENTED TO THE OUTLINE.



POLYMICRO PRICE 15 ft. = $ 12, PLUS shipping: in U.S.A $3.50
Outside U.S.A. AIR $55.50 WITH AN PRICE is $15.
Rolled on 1/8" x 17.5" TUBE so wood orders are well protected.

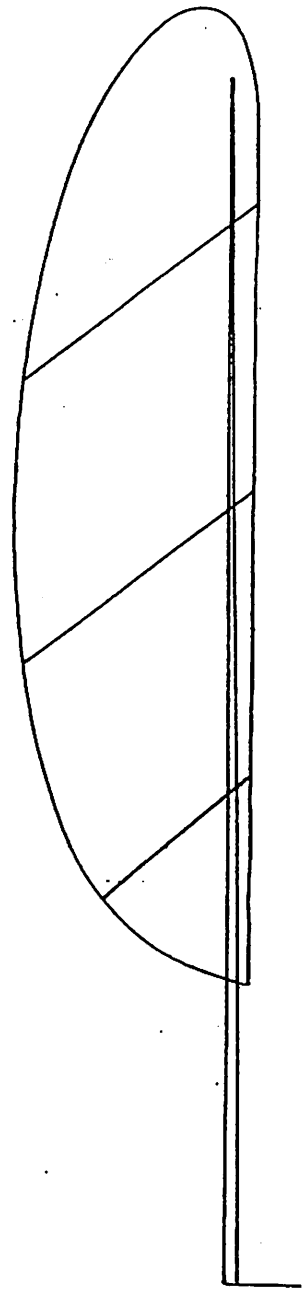


News Indoor

EZB - AKRON LIGHT, SERIES II
DESIGN BY LARRY COSLICK
DRAWN BY J.T. MERSEAL
1ST 1995 U.S.I.C.
27:01
WEIGHT .51 GRAM

AKRON LIGHT

WING		
L/E CENTER SECTION	.063 X .028 NO TAPER	6.5 LB
T/E CENTER SECTION	.053 X .028 NO TAPER	5.5 LB
L/E TIP	.022 X .063 TO .035	4.0 LB
T/E SEE WING OUTLINE FOR TAPER		
WING RIBS (3)	.017 X .055	4.0 LB
WING DRY WEIGHT		90 - 95 MG
WING COVERED		140 MG
WING COMPLETE		155 MG
WING POSTS	.047 X .85	6 LB
STAB	.020 X .028	4.0 LB
STAB RIBS	.016 X .028	4.0 LB
STAB DRY		15 MG
STAB COVERED		33 MG
STAB TILT 1/4"		
FIN	.020 X .020	4.0 LB
FIN COVERED		5 MG
BOOM 10" FRONT	.093W X .060D	
REAR	.030W X .030D	30 MG
M/S 8.4"		4.22 LB
STATION 1	.150W X .100D	
STATION 2	.185W X .100D	
STATION 3	.120W X .100D	
CUT WEIGET		160 MG
M/S COMPLET		177 MG
PROP SPARS - FROM IMS 12" TAPERED STOCK		
CENTER	.040W X .070D	
TIP	.020W X .020D	
WIRE PROP HOOK .009		
SPAR AND WIRE HOOK		30 MG
PROP BLADES .006		70 MG
PROP COMPLETE		110 MG
PROP	13.25" X 23P	
POWER 8/93 TAN II	.037" X 13"	



Championnats de France Vol d'intérieur 1995.

Catégorie F1D Beginner

Clas.	Nom	Club	Vol.1	Vol.2	Vol.3	Vol.4	Vol.5	Vol.6	Total
1	VALERY Jacques	A.C. Landes	6.41	11.14	12.04	11.04	12.24	13.15	1539
2	CHAMPION Robert	C.A. Touraine	12.10	4.54	12.22	6.20	12.14		1476
3	NOUGAYREDE Bruno	A.C. Landes	5.24	8.57	11.23	11.41			1384
4	LOUBERE Gabriel	A.C. Landes	11.23	4.29	11.29	10.28	9.37	3.50	1372
5	COMET Jacques	A.C. Landes	11.12	11.27					1359
6	HUA-NGOC Trung	A.S.C.P.A. Pessac	10.02	11.23	7.03	4.13	9.55	10.35	1318
7	CARLES Maurice	A.C. Landes	9.00	9.20	10.16	8.28	10.43	8.07	1259
8	FRUGOLI Jean-Francis	M.A.C. Marseille	1.31	10.11	10.25	4.15	10.02		1236
9	TEISSON Paul	M.A.C. Montpellier	7.52	8.54	9.01	6.55	9.10	10.06	1156
10	ROCH Edmond	A.A. Marcel Laurent	8.11	1.07	6.21	7.44	7.20	6.12	955

Catégorie EZB

Clas.	Nom	Club	Vol.1	Vol.2	Vol.3	Vol.4	Vol.5	Vol.6	Total
1	VALERY Jacques	A.C. Landes	12.12	2.52	13.50	12.08	12.15	13.09	1619
2	FRUGOLI Jean-Francis	M.A.C. Marseille	8.31	13.19	13.11	4.47	5.17	0.49	1590
3	BODIN Jean-Luc	Sèvre Anjou Model.	7.29	9.04	12.36	12.06	10.44		1482
4	HUA-NGOC Trunc	A.S.C.P.A. Pessac	6.58	10.41	11.43	10.48	9.54	12.40	1463
5	CHAMPION Robert	C.A. Touraine	4.51	12.00	11.01	3.34	1.58	11.23	1403
6	CARLES Maurice	A.C. Landes	9.19	11.30	10.24	10.44	11.22	11.35	1385
7	SUISSA Nicolas	M.A.C. Montpellier	10.10	0.51	10.04	11.49			1319
8	ROCH Edmond	A.A. Marcel Laurent	10.00	0.00	5.52	3.25	5.20	7.14	1034
9	BIZET Daniel	M.A.C. Montpellier	5.23	5.36	5.00	6.40	5.50		750
10	GARCIA Gérald	M.A.C. Montpellier	6.06	6.22	3.28	1.05	2.15	5.36	748

Catégorie Micro 35 Cadet

Clas.	Nom	Club	Vol.1	Vol.2	Vol.3	Vol.4	Vol.5	Vol.6	Total
1	LARTIGUE Florent	A.C. Landes	6.52	7.11	7.58	8.18	8.37	2.31	1015
2	MONGIN Olivier	A.C. Landes	7.01	6.54	7.23	0.07	4.00	5.28	864
3	COURTOT Christopher	A.C. Landes	5.38	3.31	5.45	3.45	3.42	4.01	683
4	CAMENEN Glenn	A.A PENAUD	1.50	2.08	1.33	2.51	3.12	3.15	387
5	ANTOLINOS André	A.A PENAUD	1.38	1.45	2.18	1.57	1.47	1.54	255

Catégorie Micro 35 Junior

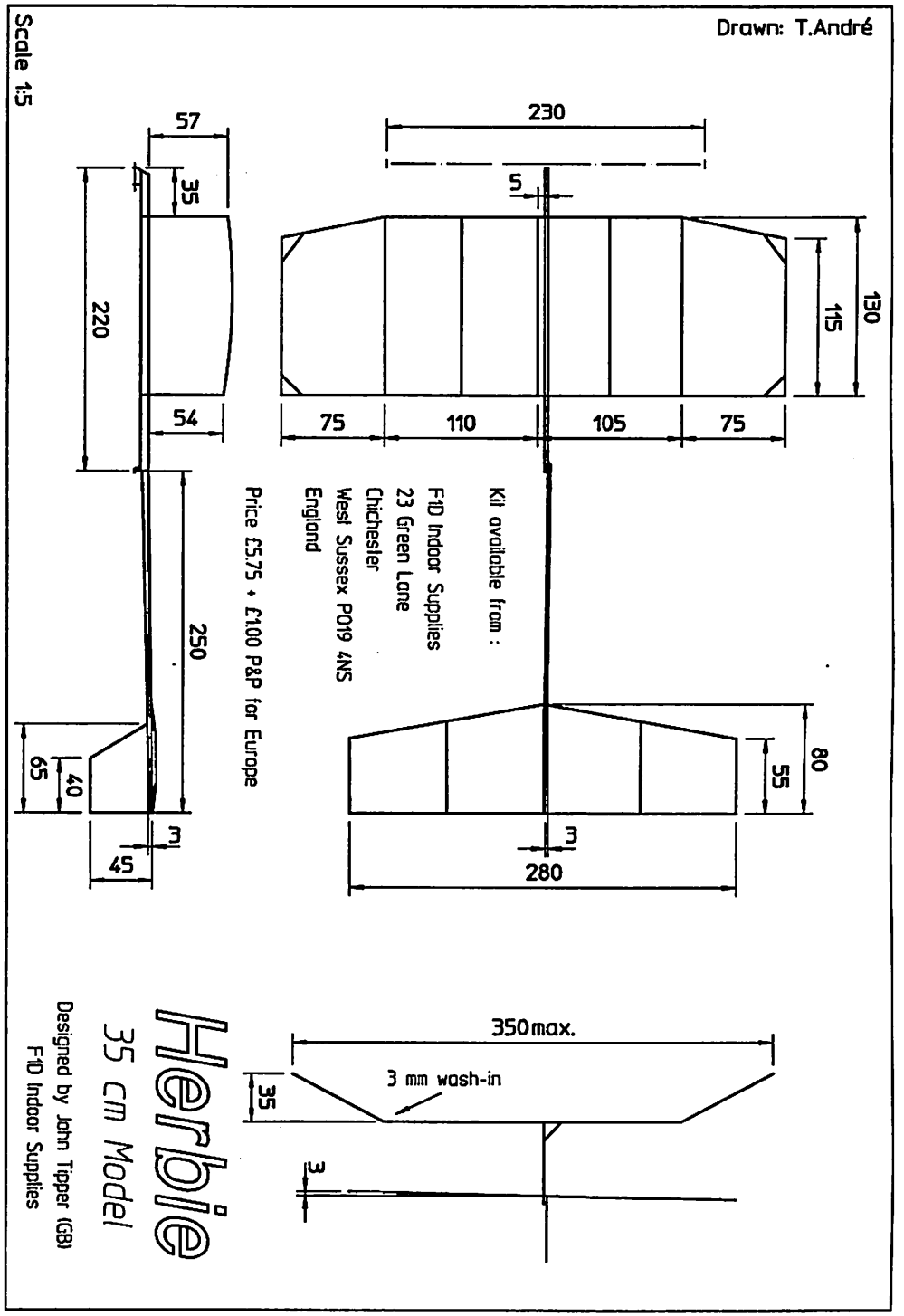
Clas.	Nom	Club	Vol.1	Vol.2	Vol.3	Vol.4	Vol.5	Vol.6	Total
1	CHABOT Sylvain	C.A. Touraine	10.40	11.00	11.00	8.02	9.07	9.09	1320
2	NOUGAYREDE Bruno	A.C. Landes	6.40	7.45	7.27				912
3	SUISSA Nicolas	M.A.C. Montpellier	5.06	5.33	5.27	4.44	3.05	3.02	660
4	TEISSON Paul	M.A.C. Montpellier	4.23	1.28	4.03	1.33	2.33	4.08	511
5	NAIVIN Mickael	A.S.C.P.A. Pessac	2.04	0.15	2.19	3.45	3.18	2.11	423

Catégorie Micro 35 Sénior

Clas.	Nom	Club	Vol.1	Vol.2	Vol.3	Vol.4	Vol.5	Vol.6	Total
1	COGNET Guy	A.C. Poitou	11.40	13.35	15.41	2.39	19.37		2118
2	FRUGOLI Jean-Francis	M.A.C. Marseille	9.52	2.45	13.24	15.38	1.54	13.50	1768
3	CHAMPION Robert	C.A. Touraine	12.44	13.50	13.11	14.42	14.28	13.43	1750
4	BODIN Cédric	Sèvre Anjou Model.	3.31	3.34	2.19	12.28	12.56	14.14	1630
5	COMET Jacques	A.C. Landes	13.05	1.48	13.37				1602
6	HUA-HGOC Trung	A.S.C.P.A. Pessac	9.07	2.44	9.37	12.00	13.36	1.25	1536
7	VALERY Jacques	A.C. Landes	11.31	12.33	0.00	11.43	2.34	7.37	1456
8	ROCH Edmond	A.A. Marcel Laurent	10.59	10.49	11.24	8.57	9.45	9.55	1343
9	GARCIA Gérald	M.A.C. Montpellier	6.21	3.39	7.21	7.28	5.54		889
10	LOUBERE Gabriel	A.C. Landes	5.40	5.23	6.52	7.18	4.17	5.35	850
11	BIZET Daniel	M.A.C. Montpellier	0.04	0.10	4.57	0.40	3.06	4.18	555
12	PAGENAUD Christophe	A.S.C.P.A Pessac				3.27	3.38	3.20	425
13	BODIN Jean-Luc	Sèvre Anjou Molel.							

Catégorie F1D

Clas.	Nom	Club	Vol.1	Vol.2	Vol.3	Vol.4	Vol.5	Vol.6	Total
1	FRUGOLI Jean-Francis	M.A.C. Marseille	18.38	4.10	6.45	19.29	22.02	23.14	2716
2	CHAMPION Robert	C.A. Touraine	11.43	11.09	17.05	19.01	18.20	25.30	2671
3	COGNET Guy	A.C. Poitou	19.14	21.00	19.40	10.55	8.30		2440
4	CHABOT Sylvain	C.A. Touraine	11.29	11.06	11.03	8.42	11.02	14.51	1355
5	VALERY Jacques	A.C. Landes							



INDOOR INTERNATIONAL ORLEANS

Orleans, June 24, 1995

Report by John Tipper (GB)

This is a short report because I was so much involved in my own flying. As you can see from the results, I was having a lot of problems with my models hanging up on the lights. My first two flights in 35cm hung on the lights and I was unable to get my third flight before the end of the round.

My first flight in F1D climbed too quickly and I had to balloon it down. Werner Nimptsch (GER) set the pace in F1D with an opening flight of 30'41. His second flight did not climb very well but still managed 23'00 and his last flight of 35'04 proved that you really need VP props in low ceiling sites. Guy Cognet (FRA) started off with a good opening flight of 24'08. His model was using a similar VP-prop to Bob Randolph. Guy Cognet was having quite a job to get his model to climb through the low level turbulence - his last flight of the second day was 23'32. Bob Bailey started flying in F1D on the second day. His VP prop model was destroyed on the first day by a runaway roach pole, along with one of his F1D-Beginner models. My last two flights needed a lot of steering, so that the models would fly into the lights and drop down on each circuit. Any F1D that flew higher than the lights was pushed up into the roof from the heat of the lights and then hung on the concrete straw lined roof beams. Robert Champion (FRA) and Christoph Hanriot (FRA) both hung on many occasions. Maybe I will build a VP-prop - a task that I am not looking forward to.

EZB, which is normally dominated by Bob Bailey was a close contest for the first three places. Bob Bailey has won many EZB competitions at Orleans. This year saw him knocked down from No.1 position in F1D-Beginner by Werner Nimptsch. Again VP props dominated the top places in F1D-Beginner.

I would like to say just how well the Orleans contest is run. Everyone is so friendly and helpful and all visiting competitors are always made very welcome. They all get a small gift, regardless of their position and all wives are presented with a gift of chocolate liqueurs. They put on a nice prize giving ceremony at the end of the two days flying, with drinks and nibbles afterwards. Many thanks to the organisers for an enjoyable weekend's flying and also the timekeepers who came along for the weekend.

RESULTS

Micro 35 Cadet	**2 flew**			
1. S. Cheron	UAOVL	5'13	7'32	**12'45**
2. S. Magdeleine	UAOVL	5'31	5'42	**11'13**
Micro 35 Junior	**1 flew**			
1. G. de Moncuit	UAOVL	5'28	4'32	**10'00**
Micro 35 Senior	**8 flew**			
1. J. Tipper	GB	22'57	20'22	**43'19**
2. R. Champion	CAT	14'04	14'07	**28'11**
3. J. Comet	MIRAN	13'34	14'28	**28'02**
4. W. Nimptsch	GER	14'51	12'58	**27'49**
5. C. Hanriot	CMAM	12'44	13'28	**26'12**
F1D Microfilm	**6 flew**			
1. W. Nimptsch	GER	30'41	35'04	**65'45**
2. J. Tipper	GB	25'33	25'45	**51'18**
3. B. Bailey	GB	24'21	25'07	**49'28**
F1D-Beginner	**10 flew**			
1. W. Nimptsch	GER	14'47	14'23	**29'10**
2. B. Bailey	GB	14'32	11'51	**26'23**
3. J. Comet	MIRAN	11'46	12'28	**24'14**
4. R. Champion	CAT	11'40	12'27	**24'07**
5. D. Yates	GB	12'36	10'16	**22'52**
EZB	**10 flew**			
1. B. Bailey	GB	13'14	15'37	**28'51**
2. J. Tipper	GB	14'33	14'16	**28'49**
3. D. Yates	GB	14'44	13'47	**28'31**
4. M. Green	GB	12'04	12'41	**24'45**
5. P. Masterman	GB	12'10	12'28	**24'38**

Promoting Indoor Flying in the Summer

On July 1/2 the Aero Club Stuttgart (GER) organised the AOK-Cup Invitational Contest (see results elsewhere). This event was specificly tailored to achieve the best possible publicity for indoor flying. The national F1D-teams from Germany, Hungary and Switzerland were invited to compete and at two local schools a building course was organized. Local companies were attracted to sponsor the event and nice prices were offered for the kids contest. The local papers gave a lot of publicity to the event. An indoor flight show was announced. Clever idea, perfect preparation. But then on the big day the disappointment came when of the 90 kids, that had built the model, only 9 showed up. The grandstands stayed empty, the public preferred to do something else. The reason: beautiful summer weather outside.

At the same week-end the Dutch were given the opportunity to show indoor flying at a local city festival. They learned the same lesson. Beautiful

weather and very little interest from the public. Two months later at Interscale '95 in Maastricht the same thing happened. A world class event, lots of publicity, but the weather was wonderful and the public stayed away. Next time we want bad weather.....

Stuttgarter AOK-Cup Invitational Contest

Stuttgart-Möglingen, July 1/2, 1995
Ceiling height 7.03 m

F1D

1. Andras Ree	HUN	36'27	34'10	**70'37**
2. Thomas Merkt	GER	34'39	34'17	**68'56**
3. Dezso Orsovai	HUN	33'00	34'22	**67'22**
4. René Butty	SUI	33'31	33'35	**67'06**
5. Lutz Schramm	GER	32'41	32'38	**65'19**
6. Werner Nimptsch	GER	31'46	32'18	**64'04**
7. Ferenc Bakos	HUN	28'19	30'15	**58'34**
8. Dieter Siebenmann	SUI	29'03	28'37	**57'40**
9. Peter Keller	SUI	28'19	26'50	**55'09**

Beginner

1. Mirjam Döpker	124
2. Roman Ilig	120
3. Sebastian Mayer	117

Várszegi Memorial

Technical University, Budapest, July 8/9, 1995
Ceiling Height 14.9 m

F1D

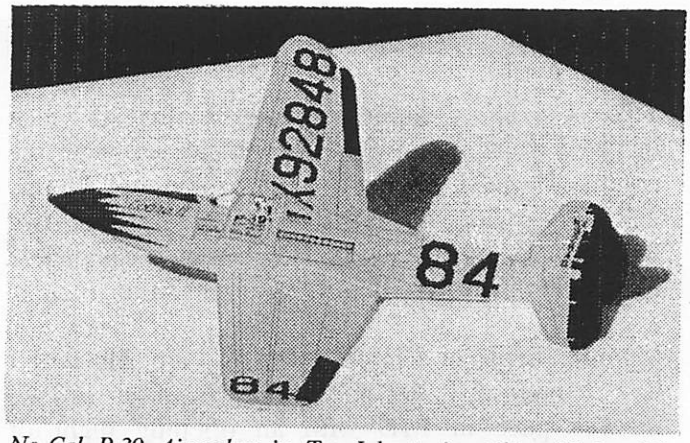
1. Dezso Orsovai	41'49	43'11	**85'00**
2. Andras Ree	41'45	41'48	**83'33**
3. Ferenc Bakos	33'08	31'43	**64'51**

Flying Model Warplanes

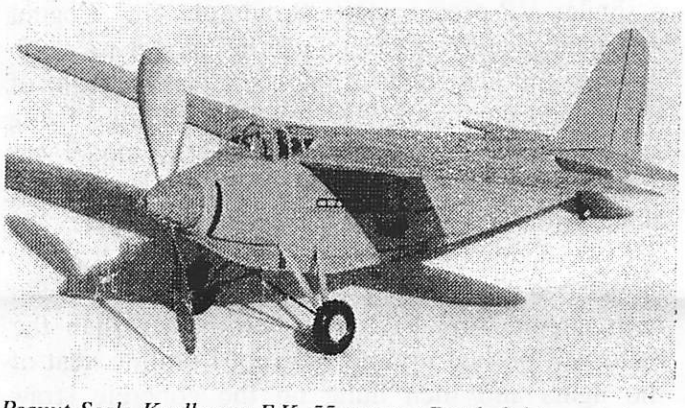
Doc Fredriksen is compiling the next edition of his book **Flying Model Warplanes**. This book tries to catalog all the plans and kits of flying model warplanes that are available in the world. To keep indoor coverage up to date, he asks European modelers to send him catalogs or addresses of companies who market such plans and kits. Interested parties should contact: John Fredriksen, 461 Loring Ave., Salem, MA 01970, USA.

Scale Plans

Michael A. Morrow has started selling a variety of items for the scale modeler and collector. His catalog includes No-Cal (indoor) and Peanut scale flying model plans, scale reference drawings by Mr. James A. Morrow, color slides from Mr. James Morrow's 40.000+ color slide collection, and computer generated "You-Paint-Em" MacTac marking sheets available separately for all the No-Cal models.



No-Cal P-39 Airacobra in Tex Johnston's striking "Cobra II" 1946 Thompson Trophy Race winning color scheme (did 4'17 at the 2-day Fun-Fly before the Indoor Nats at the Kibbe Dome in Moscow, Idaho, this year - not bad for a low-wing fighter!). Model sports You-Paint-Em" MacTac markings.



Peanut Scale Koolhoven F.K. 55 pre-war Dutch fighter prototype (my 18 gram (OOF-Heavy!) prototype has done 61 seconds outdoors with a plastic prop).

Interested readers can get a catalog by sending $1.00 U.S. to Michael A. Morrow at 1327 44th Ave. S.W., Seattle, WA 98116, U.S.A.. If you have any questions, please feel free to call me at (206)937-2851.

GARBER'S FLAPPERS

One of Lester Garber's ornithopters was published in IN 19. That one had flappers arranged according to Frank Kieser's design. The one in this issue has a simpler construction. Lester adds the following notes: "The Dragonfly is mechanically a very simple design but performance is only about 50% of Frank Kieser's design. I think my best flight was about 7 min.. Some of Frank's designs are capable of more than 16 min.! For three years I studied the flight of birds, bats & bugs in great detail (there has been a lot of research done at universities, etc.). Pushers are better because most of the weight can be carried on the canard (more efficient wing)."

DRAGONFLY III

Dragonfly III is a development of Dragonfly as shown in the autumn 85 issue of Flapper Facts. Following Frank Kieser's lead I began to experiment with canard ornithopters using my 'teeter-totter' mechanism. Dragonfly III is a dramatic improvement over my previous tractor ornithopters.

Unlike other designs, Dragonfly has a very simple flapping mechanism. This minimum of parts minimumizes the final weight. I'm sure that some indoor builders could build this design to .9 grams. A simple energy analysis shows that flight time is inversely proportional to weight to the power of 1.5. This means , for example, that a 20% decrease in weight should result in a 31% increase in flight time. Weight is ever so critical!

I have limited access to flying sites and these models have only been tested in one 4 hour flying session under a 49 ft. ceiling. Four out of six flights were over 5 min. 30 sec. with the longest being 5 min. 58 seconds. Flight patterns were very smooth and consistant and the models appear to have much more potential once I figure out the right rubber combination.

Construction Comments

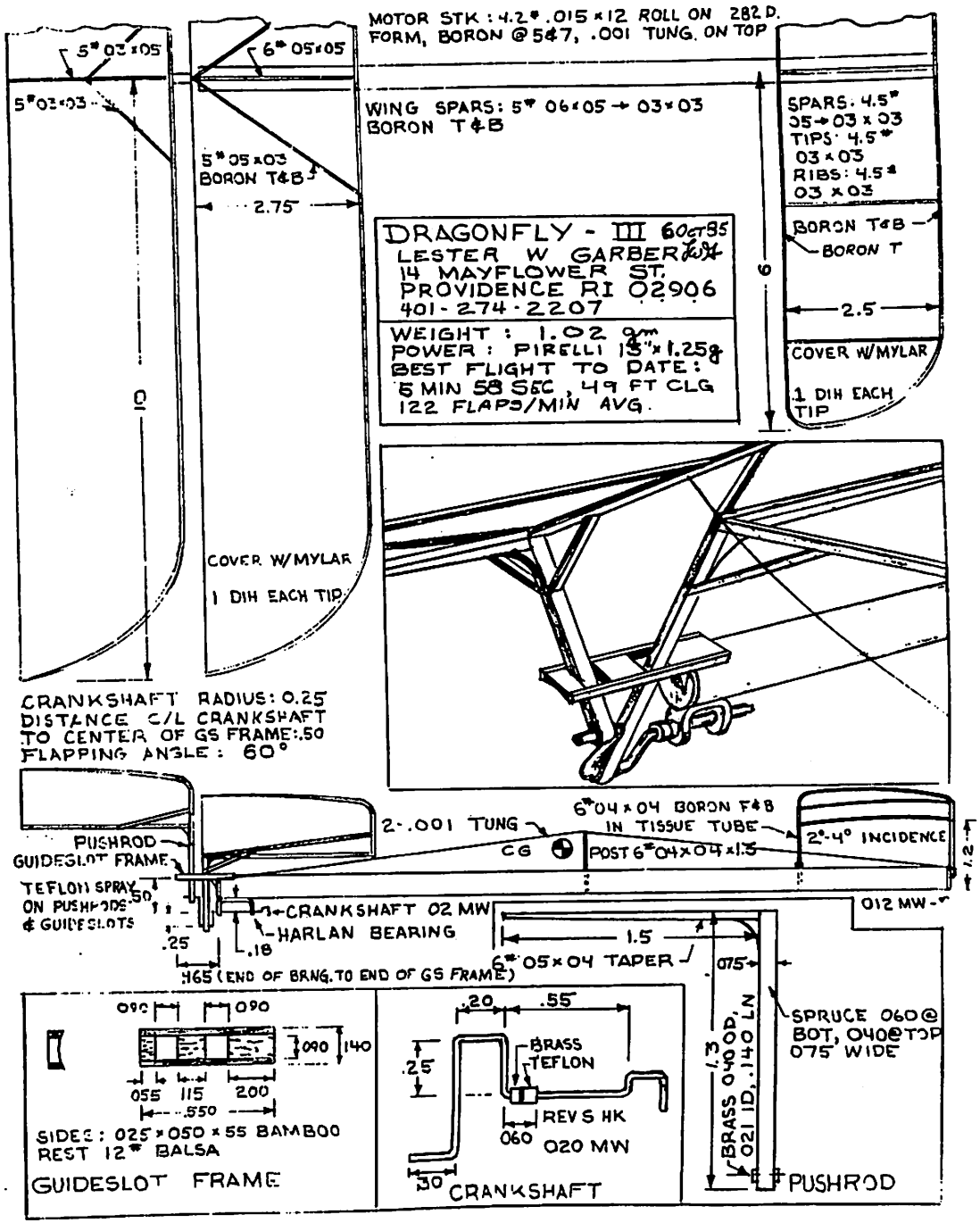
The guideslot frame, crankshaft, and pushrods must be built and assembled with great accuracy. They must be built and assembled in the following order: 1) Make guideslot frame. 2) Make spruce members of pushrods, drill .040 holes for brass bearings, and insert bearings. 3) Bend crankshaft, sliding spruce members into position as you bend. 4) Slide guideslot frame onto spruce members of pushrods. 5) Finish pushrods by gluing horizontals and fillets into position. 6) Slide this assembly into bearing on finished motor stick and glue guideslot frame into position. The flapping mechanism must be perfectly square and rotate freely or the model will, at best, fly poorly.

Note that I use large amounts of boron for increased stiffness and strength. For competition class models this is a necessary evil. We are truly in an era of composite construction, if performance is important it is mandatory to use boron. I don't like to use the stuff, it is dangerous and greatly increases the building time but there is no other way!

The motor stick uses two boron fibers at 5 and 7 o'clock and two .001 tungsten wires on a 1" post. This provides more than adequate stiffness and strength at minimum weight.

The model, if built accurately, does not require a rudder and should turn nicely to the left without any warps in the canard. If it turns in very tight circles this indicates that the wings and flapping mechanism have not been built and aligned with sufficient accuracy.

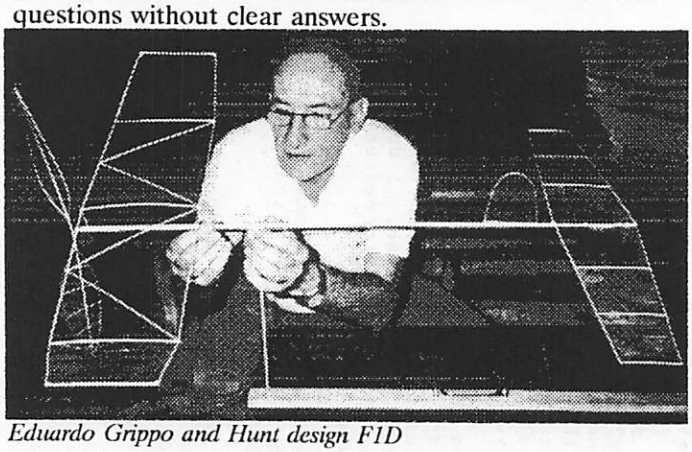
Lester W. Garber



LETTER FROM ARGENTINA

My name is Alberto Cromberg, I am 51 years old and for the last 7 years, with the help of my good friend Eduardo Grippo, I started to build and fly F1D models. My background is to fly F2C Team Racing in 4 World Championships and F2A here! I will tell you something about the way Eduardo and I teached ourselves to build and fly indoor models.

Right from the beginning I was attracted to the extremest class, my first step in indoor flying was F1D! My good friend Eduardo Grippo was many times our National Champion and he had competed at two World Championships. Naturally I asked his help. The wise man looked at me and said: first thing, build a box, the models cannot live outside them. I built a big box, large enough for 4 models. Then from Aeromodeller plans I selected the Butty model, spiral wound stick and four boron fibers. This was the easy thing! How to test the strength of the stick? Easy: attach a wound rubber motor. Well, the result was not as expected, the stick blew up. A different approach was needed. Being an engineer I designed a testing rig which measured the forces and deformations that took place. An F1D model can be built in a few hours, but for making all the necessary tools one needs plenty of time. Winder, torque meter, prop jigs, tailboom cone, 1 mg scale, rubber cutter, wood stripper, micro wood sander, micrometer and other things occupied more than a year of my spare time. Then, would it be easy to learn to fly? How many turns, what incidences, what about center of gravity, which prop, size of rubber and lots of other questions without clear answers.



Eduardo Grippo and Hunt design F1D

The flying site we use is a school gymnasium. It is not draft free, but it has a smooth 7 meter ceiling and is available on request. Two thing were clear: one has to take records of everything and we had to use some sort of test method. We chose to use ¼ length test motors and a weighted wood spacer. The recording of the data showed the need for a very accurately choice of rubber - propeller combination. Also, we found testing of rubber not to be easy. The nature of the rubber unwinding torque curve immediately prompted me to try to devise a variable pitch prop. To our surprise it worked the first time, we can maintain constant RPM.

Then Aeromodeller came with the first article about this wonderful Living Room Stick class. The idea of competing with others was to good to be discarded. I then built my first LRS, more or less the O'Donnell model, and showed to my friends how easy it was to build and fly one. Well, maybe if you are satisfied with 90 second flights, but achieving more is by no means easy! More turns and the model spiralled to the floor. Longer motors were too heavy. The tight rules result in very much the same type of model, to be flown the world over. A perfect frame in which to learn! I very much acknowledge the work of Mike Colling, thank you, Mike! The first idea was to use the largest prop possible (that was before the prop diameter was restricted) to get the lowest prop RPM possible. But with the big prop the left wing could not counter the higher launch torque, no matter how much wash-in we tried. The answer was to make the first Ochroma Lagopis (latin name of balsa), a new asymmetrical plane. Step by step we increased the asymmetry, from 20%, 30%, 40% up to 45%. Each time brought some improvement, though it reduced the flight turn diameter. Then longer and longer motors were tried. More than 500mm was found to be too heavy, but we progressed from 2000 turns to more than 5000. A special torque meter of reduced size was built for this class, calibrated to 7 gcm maximum. This work attracted a few friends and 12 people have tried their hand at LRS. All the lessons learned with LRS are now to be tried in F1D. The objective is to improve our national record of only 30 minutes, then, perhaps we can dream about a future trip to a World Championship. We like to share our experiences. So if you found any of the above usefull, tell us and we can write more specificly.

Alberto Cromberg, Bermudez 1211, 1636 Olivos, Argentina

«Oh,lala!...»

by Jean-Francis Frugoli (FRA)

This model was built for the 1995 International Living Room Stick Postal contest. It differs in two aspects from my previous design "Zakouski". The wing has single dihedral and its shape is inspired by Barnaby Wainfan's flying wing "Swallow" P-30 model. According to a theory by P. van Dam swept wing tips improve wing tip efficiency. The second change simply follows the latest fashion, twin fins at the stabilizer tips and high aspect ratio. Theoretically this should improve the stabilizer efficiency. But the most effective modification is the increased diameter of the propeller to 172mm, with relative pitch of 2. And of course the use of Tan II rubber. It is also important to note that with thes long motors it is very important to wind carefully and smoothly so that the motor will unwind without any hick-ups.

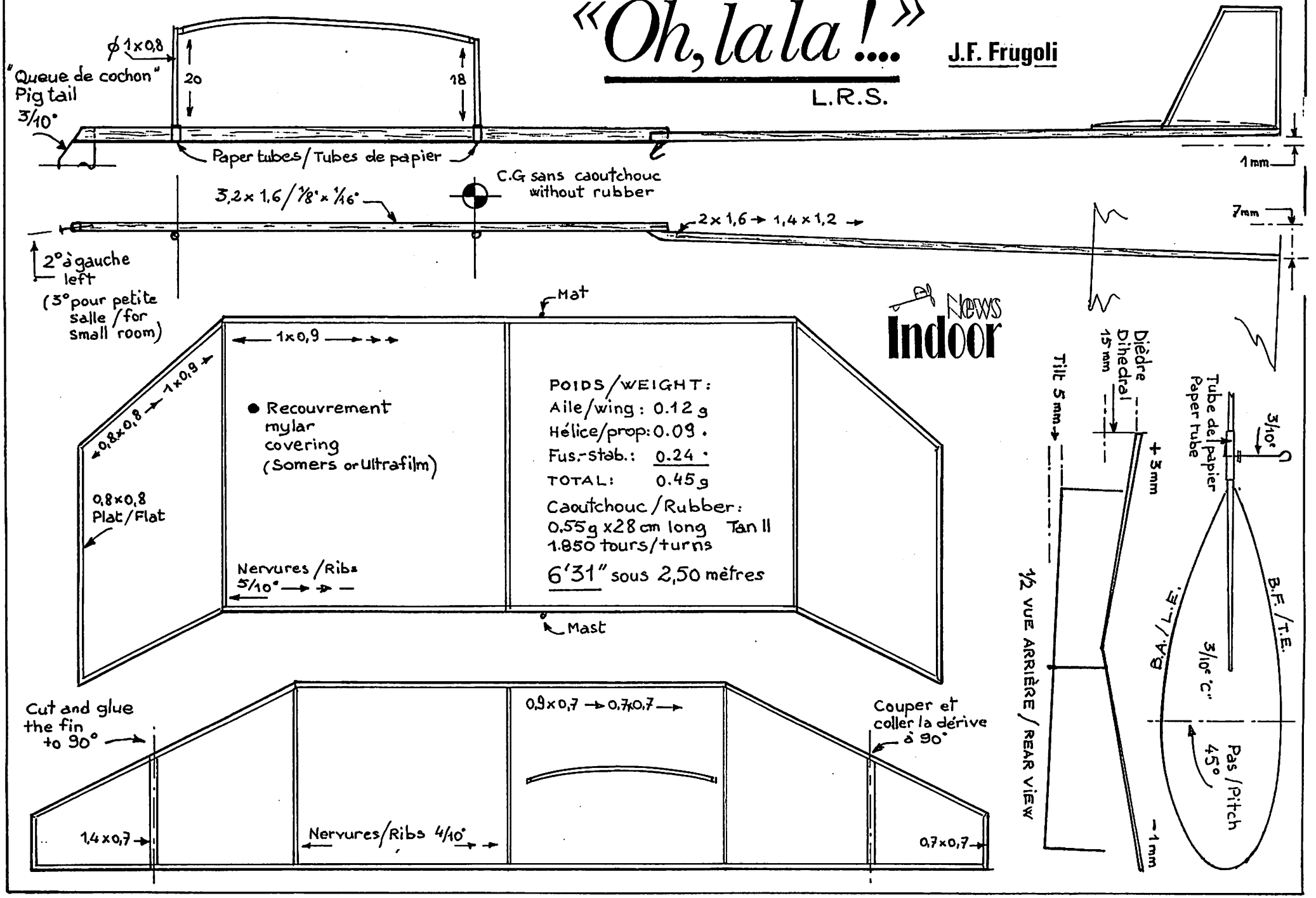
TIP: Patching Microfilm

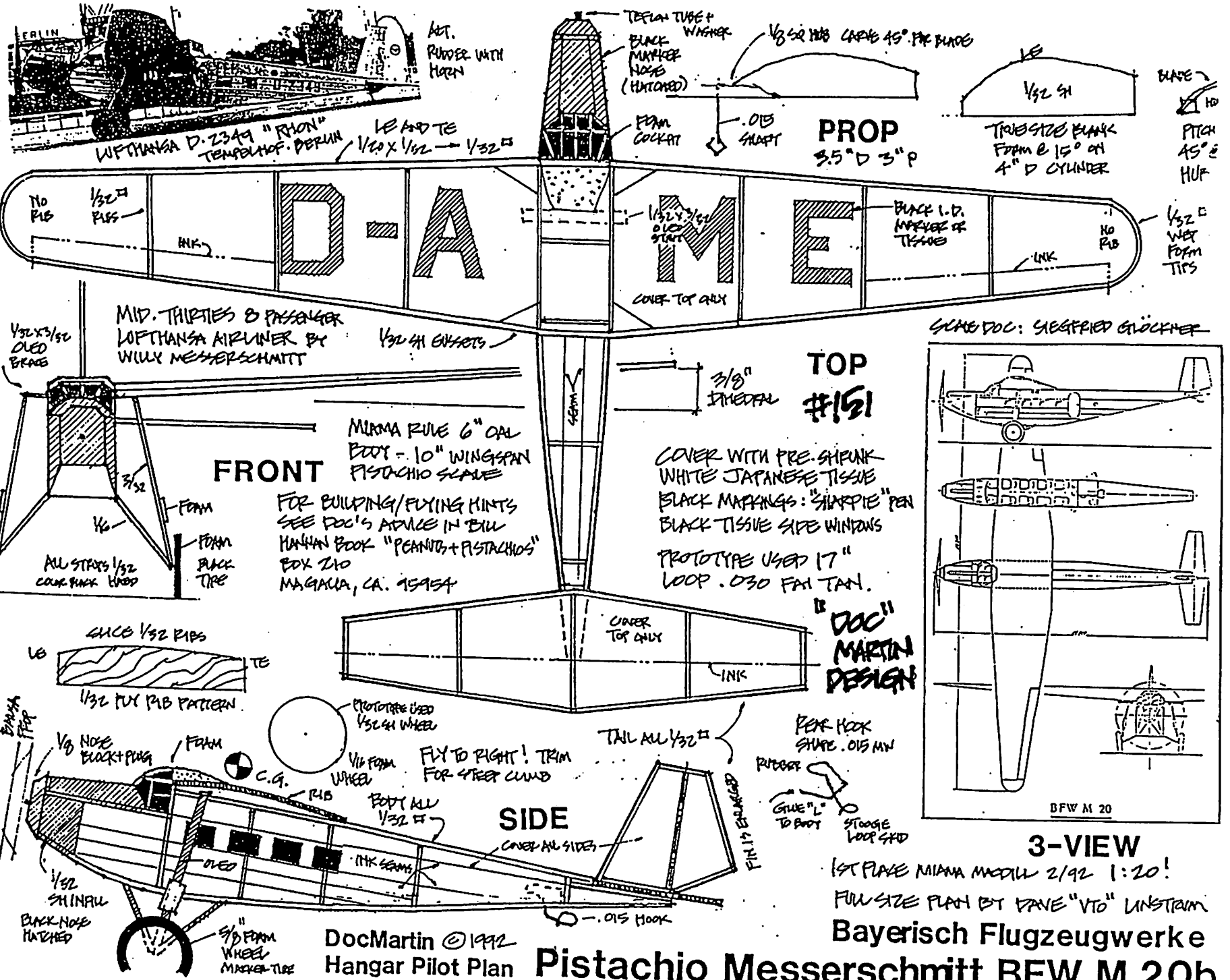
From Bob Randolph: I am surprised by the number of contestants that I see who do not use the best procedure for removing the paper backing of the patch. Use a 1½ ft (45cm) length of rubber fuel line to suck the paper backing off the mike. This method is safe, fast and foolproof.

«Oh, la la !...»

J.F. Frugoli

L.R.S.

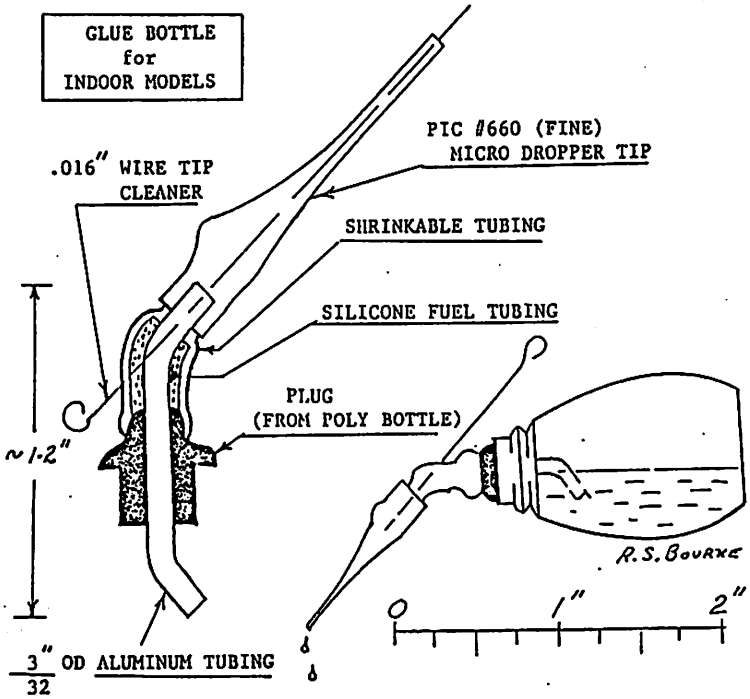



ALT. RUDDER WITH HORN
LUFTHANSA D-2349 "RHON" TEMPELHOF, BERLIN
LE AND TE 1/2 O x 1/32 → 1/32 □
TEFLON TUBE + WASHER
BLACK MARKER NOSE (HATCHED)
FOAM COCKPIT
1/8 SQ BDS CARVE 45° FOR BLADE
.015 SHAFT
PROP
3.5" D 3" P
1/32 SH
TRUESIZE BLANK FOAM @ 15° ON 4" D CYLINDER
BLADE
PITCH 45° @ HUB
D-A-M-E
NO RIB
1/32 □ RIBS
INK
1/32 x 3/32 OLED START
BLACK I.D. MARKER OR TISSUE
1/32 □ WET FOAM TIPS
COVER TOP ONLY
MID-THIRTIES 8 PASSENGER LUFTHANSA AIRLINER BY WILLY MESSERSCHMITT
1/32 SH GUSSETS
SCALE DOC: SIEGFRIED GLÖCKNER
1/32 x 3/32 OLED BRACE
3/8" DIHEDRAL
TOP
#151
FRONT
MIAMA RULE 6" OAL
BODY - 10" WINGSPAN
PISTACHIO SCALE
FOR BUILDING/FLYING HINTS SEE DOC'S ADVICE IN BILL HANNAN BOOK "PEANUTS + PISTACHIOS" BOX 210 MAGALIA, CA. 95954
COVER WITH PRE-SHRUNK WHITE JAPANESE TISSUE
BLACK MARKINGS: "SHARPIE" PEN
BLACK TISSUE SIDE WINDOWS
PROTOTYPE USED 17" LOOP .030 FAI TAN.
3/32
FOAM
1/16
FOAM BLOCK TIRE
ALL STRUTS 1/32 COOK BLACK HARD
SLICE 1/32 RIBS
LE
TE
1/32 FUS RIB PATTERN
"DOC" MARTIN DESIGN
PROTOTYPE USED 1/32 SH WHEEL
1/16 FOAM WHEEL
BANANA PROP
1/8 NOSE BLOCK + PLUG
FOAM
C.G.
RIB
FLY TO RIGHT! TRIM FOR STEEP CLIMB
TAIL ALL 1/32 □
BEAK HOOK SHAPE .015 MW
RUDDER
GLUE "L" TO BODY
STOOGE LOOP SKID
BODY ALL 1/32 □
SIDE
COVER ALL SIDES
INK SEAMS
OLED
FIN + RUDDER
1/32 SH PLYWOOD
BLACK NOSE HATCHED
.015 HOOK
5/8" FOAM WHEEL MARKER TIRE
BFW M 20
3-VIEW
1ST PLACE MIAMA MAGALL 2/92 1:20!
FULL SIZE PLAN BY DAVE "VTO" LINSTROM
DocMartin © 1992
Hangar Pilot Plan
Bayerisch Flugzeugwerke
Pistachio Messerschmitt BFW M.20b

A MICRO-DROP GLUE APPLICATOR
FOR INDOOR MODELS

Roy Bourke
Markham Indoor Group

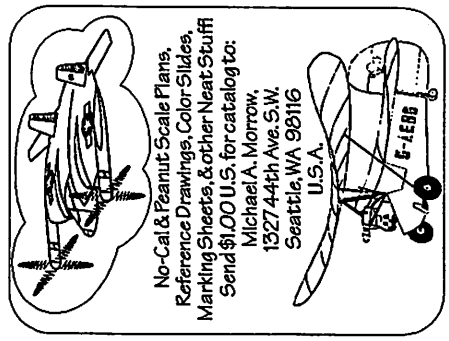
One of the secrets of building light indoor models is to pay attention to the glue joints. Excess glue is heavy, and does not necessarily add strength to the joint. A good glue applicator can go a long way to ensure the accurate placement of just the right amount of glue to each joint. The accompanying sketches show an excellent glue bottle that can be used with acetone-thinned model aircraft cement or water-thinned white glue or Titebond, as used on indoor models. Incidentally, I did not design this glue bottle. It is available commercially from the USA, but it is much cheaper to make one yourself.



The best poly-bottle to use is a small food colouring bottle (McCormacks' food colouring), but there are several other poly bottles that could be used with minor modifications to the design. Begin by bending a piece of 3/32" aluminum tubing to the shape shown, and fit it to the plug that comes with the poly bottle that you are using. Make sure that you make the lower bend such that you can still insert the plug into the bottle without interference from the tubing.

Drill a small hole (0.016") in the upper bend for the wire tip cleaner, then cover the bend with a short piece of silicone fuel line. Add a piece of shrikable tubing over the silicone tubing, shrink it in place, tim, then add the Pic Micro-Dropper tip to the end of the aluminum tubing. Make up the wire tip cleaner, and insert it backwards through the nozzle to pierce a hole in the silicone and shrinkable tubings. Finally, re-insert the tip cleaner from the back end of the nozzle, and the glue bottle is complete.

To use the bottle, simply draw the wire tip cleaner back only far enough to clear the narrow part of the bore of the Pic nozzle, tip the bottle and squeeze. You will find you have excellent control of the amount of glue that appears at the tip. During storage, the tip cleaner is left fully inserted to seal off the nozzle. Since polyethylene does allow some evaporation of the acetone, you should check the thickness of the glue periodically, and add acetone as necessary.



STIFFNESS TESTS on INDOOR BALSA

by Joe Maxwell

The main requirements for balsa used in Indoor models are that it should be light, i.e. low density, yet relatively stiff.

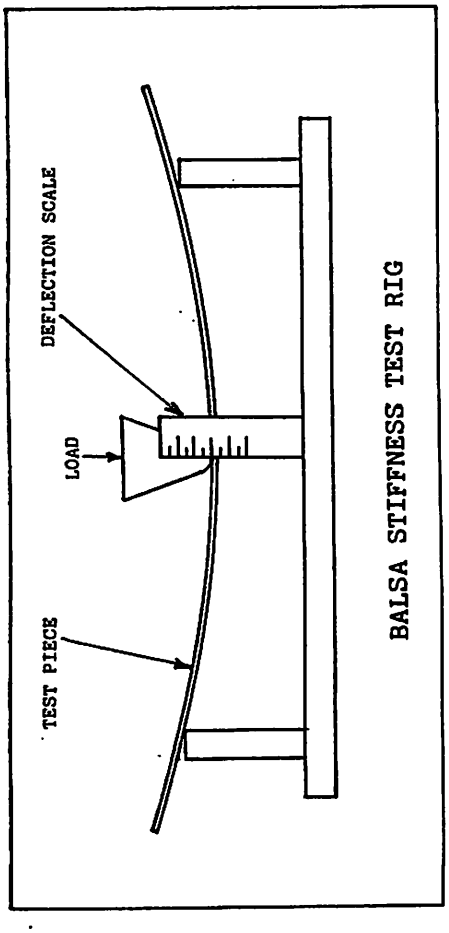
As a rule, the density is marked on each sheet - though with varying degrees of accuracy - but it is left to the builder to judge the stiffness for himself. One supplier does state that his motor stick balsa is "hand tested for strength", which, presumably, means that each stick is flexed by hand to feel how stiff it is. The tests referred to here are intended to put stiffness grading on a rather more scientific basis.

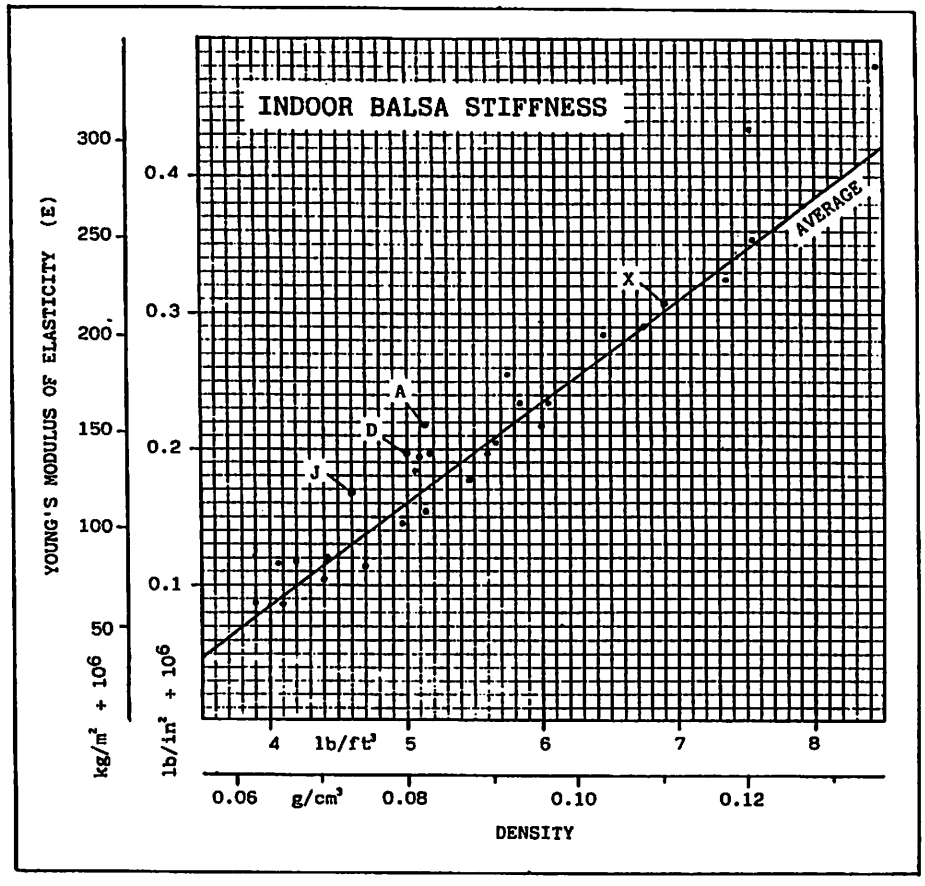
Engineers use Young's Modulus of Elasticity (E) as a measure of a material's stiffness, and this is applicable to balsa too. E can be obtained by applying a bending load to the test piece, and then measuring the resulting deflection.

So far, I have tested 28 samples of balsa, from a variety of sources, using a rig of the type shown in the diagram. The results have been plotted on the graph, and a pattern is emerging. The line on the graph seems to represent average Indoor balsa, so it follows that anything above the line is better than average.

E values are rather unwieldy numbers, and are meaningless unless quoted in conjunction with the density. Therefore, I would suggest that stiffness should be expressed as a percentage of the average. Thus, with the average as 100, the best stiffness rating recorded up to now is 133. No doubt this will be exceeded in due course.

Some of the points on the graph are particularly interesting.
J was the last remaining sheet of a batch I obtained from Frank Zaic's JASCO in 1951.
X This sheet, of a well known brand, had a nominal density of 5lb. If that had been correct, its E would have been exceptional, but the true density was 6.9lb, making it about average. (Such large discrepancies in density marking are by no means uncommon).
D was not one of my tests, but shows the values used by Lothar Döring in selecting the balsa for his Espada wings.
A One surprising revelation was the performance of Australasian cultivated balsa. The five samples tested were all well above average. Clearly, this balsa, despite its unusual appearance, has potential for Indoor use.

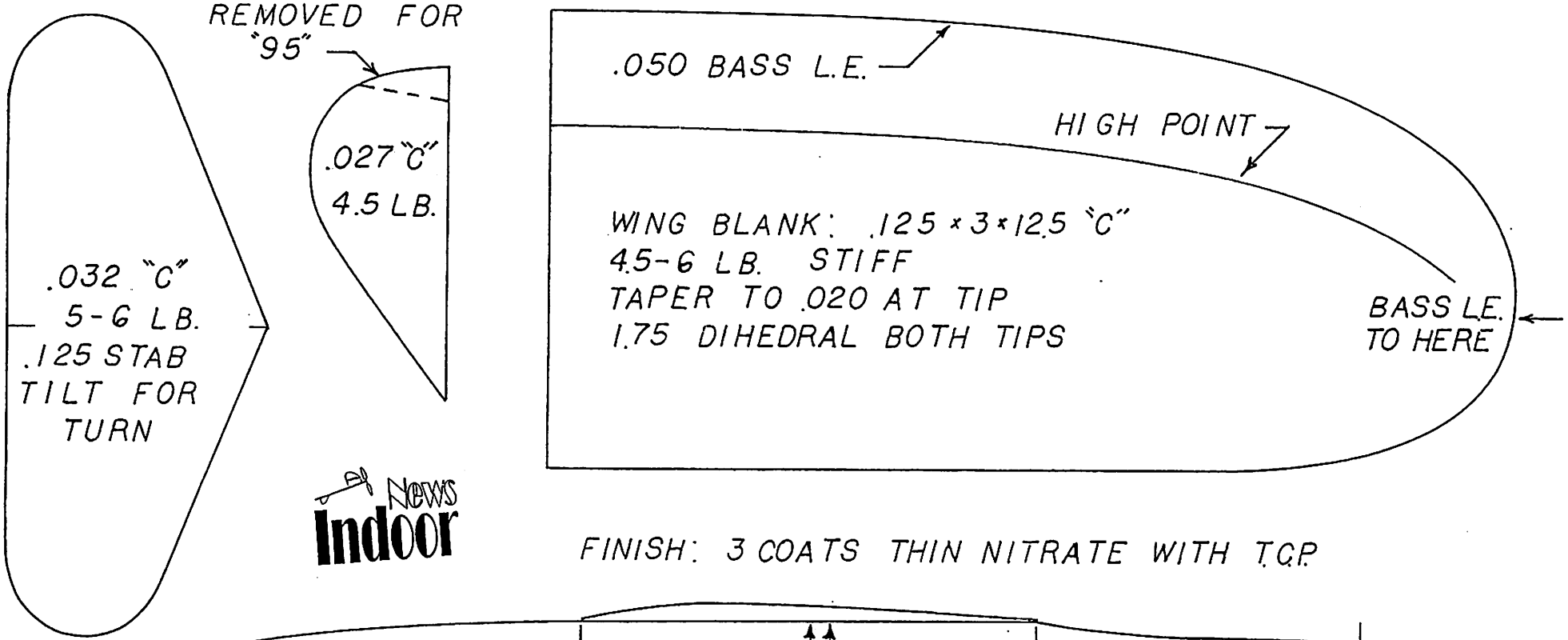




(Joe Maxwell supplies stiffness tested balsa. See info in IN 33.)

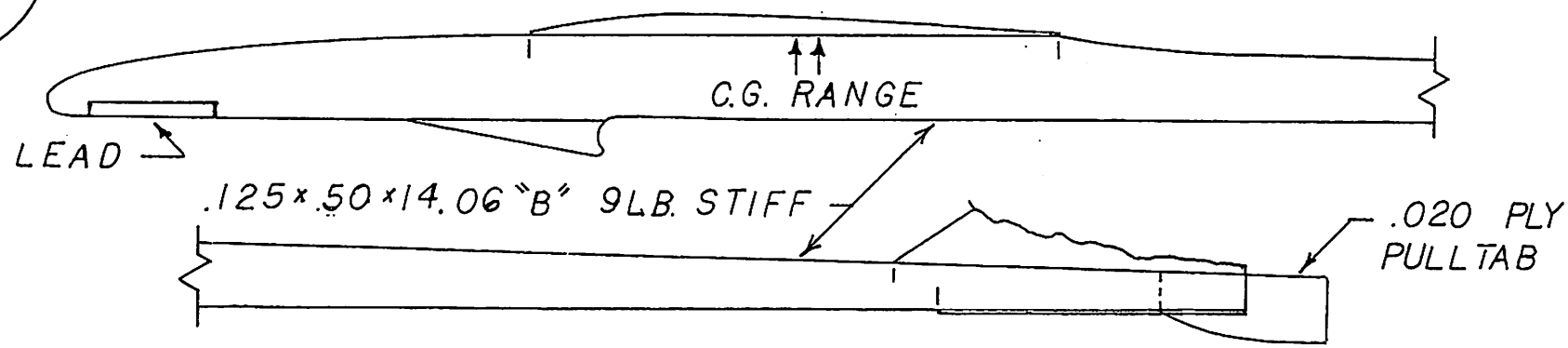
HIGH ROLLER "95"

CAT. IV AND USIC RECORD HOLDER



News Indoor

FINISH: 3 COATS THIN NITRATE WITH T.C.P.



WEIGHT: 6.75 GRAMS .·. AKRON OHIO 177.4 SEC. 2 FLIGHT TOT.
6.5 " U.S.I.C. TENN. 166.2 AND 165.2 " "

POWER: 2 LOOPS
.125 TAN II 8-93

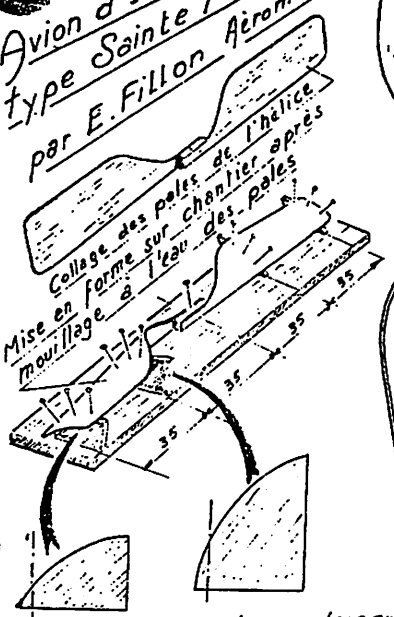
MOD. MARKOS DESIGN BY MIKE THOMPSON "1995"

Camille

Avion d'intérieur simple

type Sainte Formule

par E. Fillon Aéromodéliste

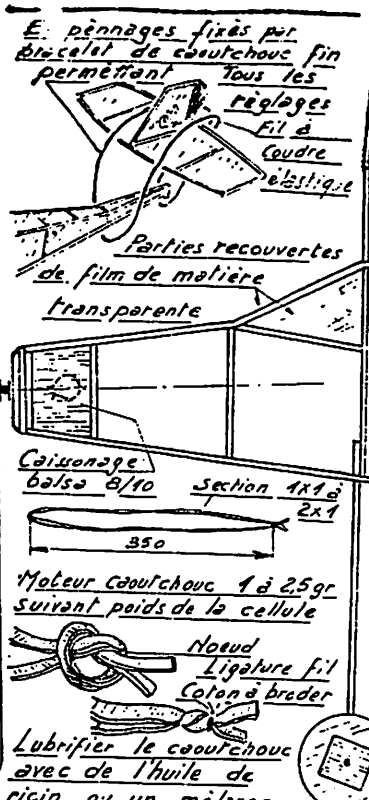


Cales balsa 3mm ou bois quelconque

Empennages fixés par bracelet de caoutchouc fin permettant tous les réglages

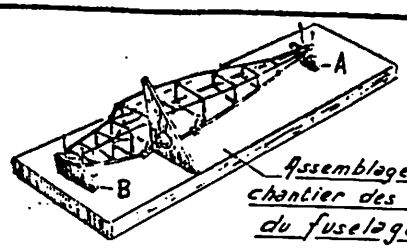
Fil à coudre élastique

Parties recouvertes de film de matière transparente



Centrage

Tous les collages colle cellulosique fluide ou colle vinylique à bois



Assemblage sur chantier des 2 flans du fuselage

Volet de réglage calque ou bristol léger



broche tube alu ϕ 2 ou bois dur (cure dents)

si besoin cale

Recouvrement de toutes les parties en papier Japon fin ou en papier condensateur 54 collage à la colle Limpidol Messager allongée d'1/3 alcool tension fuselage seul : à l'alcool

balsa 8/10

Caissonage balsa 8/10

Section 1x1 à 2x1

350

Moteur caoutchouc 1 à 2,5 gr suivant poids de la cellule

Noeud Ligature fil Coton à broder

Lubrifier le caoutchouc avec de l'huile de ricin ou un mélange Savon noir + Glycérine + Eau

Paliers alu découpés dans métal mince 0,3 à 0,5

Faire un trou de diamètre suffisant pas 98 l'axe ne doit pas frotter

Axe Cap 5/10

palier alu

Bloc balsa contrecollé

palier alu

rondelles fines

Perle verre ou butée téflon ou graphite

Coller après mise en place

l'aile gauche doit être voilée pour être plus positive de 3 à 5° en bout

Cale de dièdre 25

Ne pas tendre à l'alcool papier Aile et empennages

25

Partie dessus du fuselage non recouverte pour accès accrochage moteur

Mâts en balsa moyen 1x1 à 2x2

Mât avant gauche réglable

ligature Caoutchouc fin

le caissonage peut être encastré ou posé sur les baguettes

Toutes les baguettes balsa de 1x1 à 2x2 suivant l'habileté du constructeur

on peut même descendre à 98x98 pour les modèles de compétition

B

A

balsa 8/10

baguette 1,5 x 1,5 bambou roseau refendu ou bois dur

9 Nervures découpées en balsa 8/10

Cale ép 1 1,2 1,5 2

Lame rasoir

Pale d'hélice 2 pièces balsa 8/10

10 5 5 1 1

baguette balsa dur ou peuplier section 3x3

Gabarit pour découpage des nervures en Aluminium ou Carton dur

Trusquin bois dur pour découpage des baguettes

B

A

2 Cales bois quelconque ép 3 à 4

2 pièces de chaque balsa 8/10 contre collées à fil croisé

4 pièces balsa 8/10

2 pièces balsa 8/10

ligature et collage

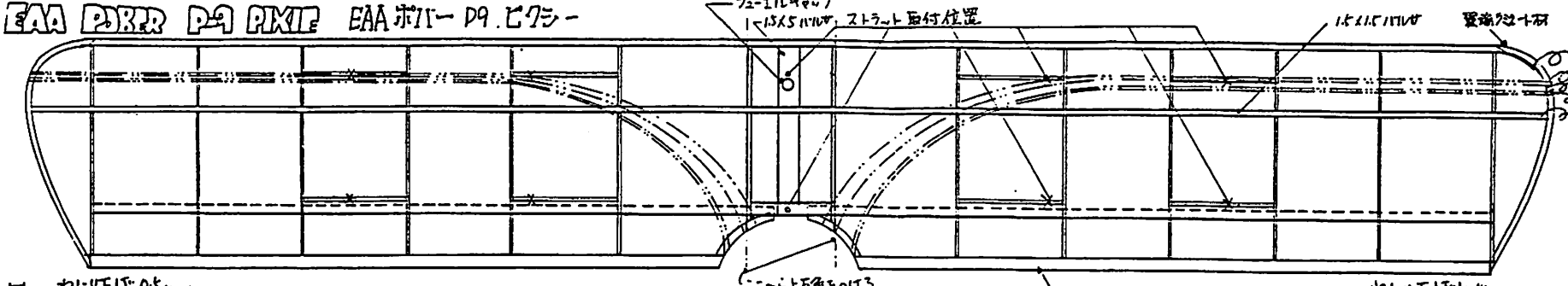
Epingle argentine

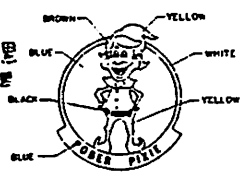
Indoor News

E.F. 86

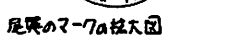
Enlarge 141%

EAA POBER P-9 PIXIE　EAAポバー P9 ピクシー



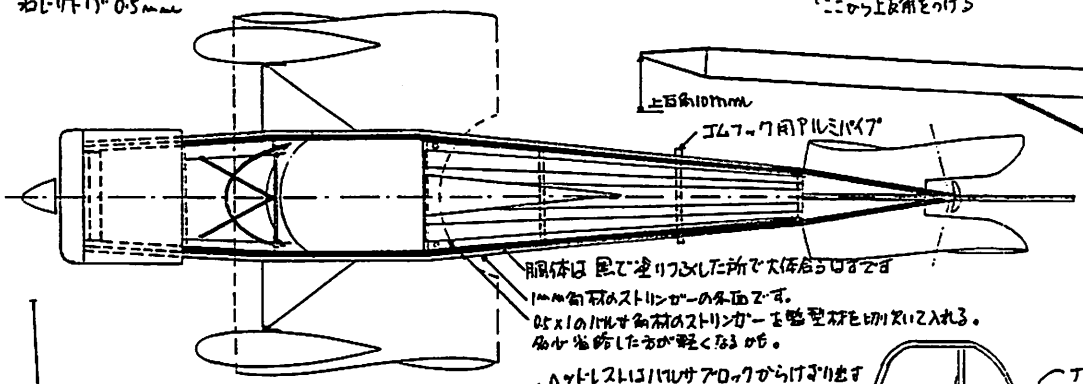


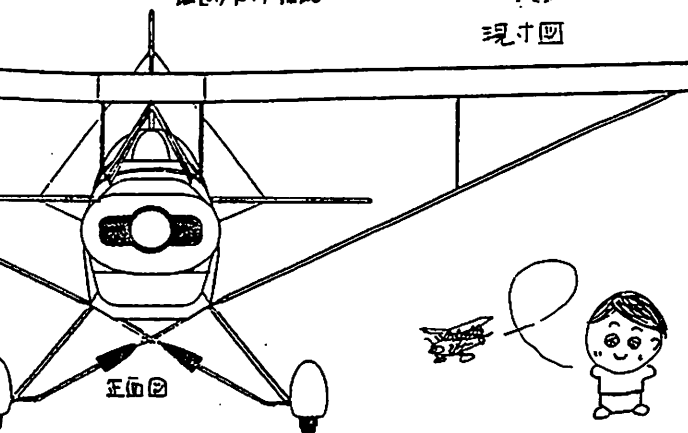
尾翼のマークの拡大図
これを本にはりたい

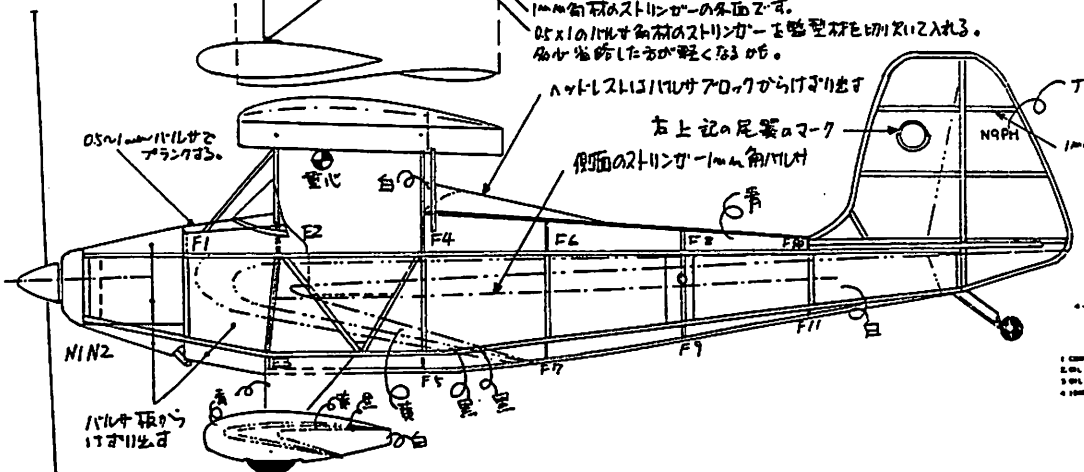


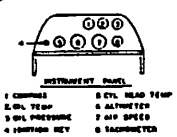
現寸図

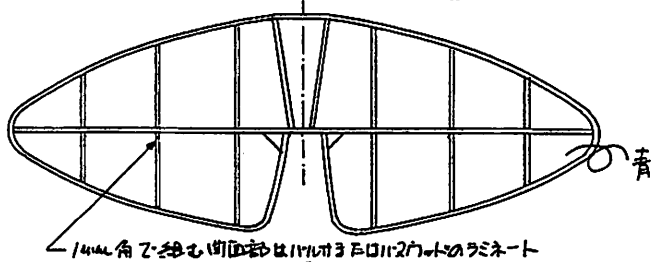
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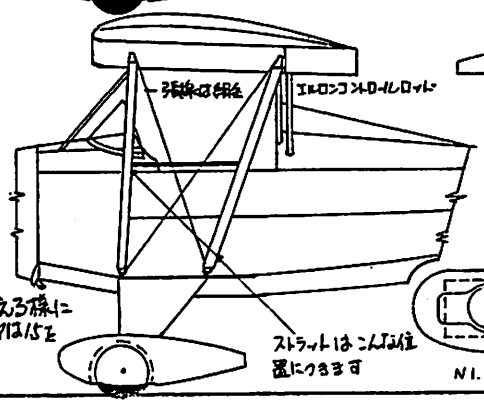


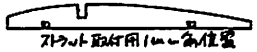




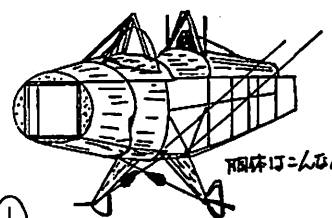


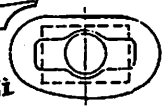
from P-tech

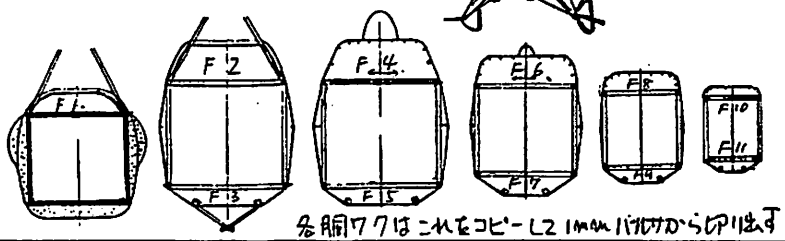








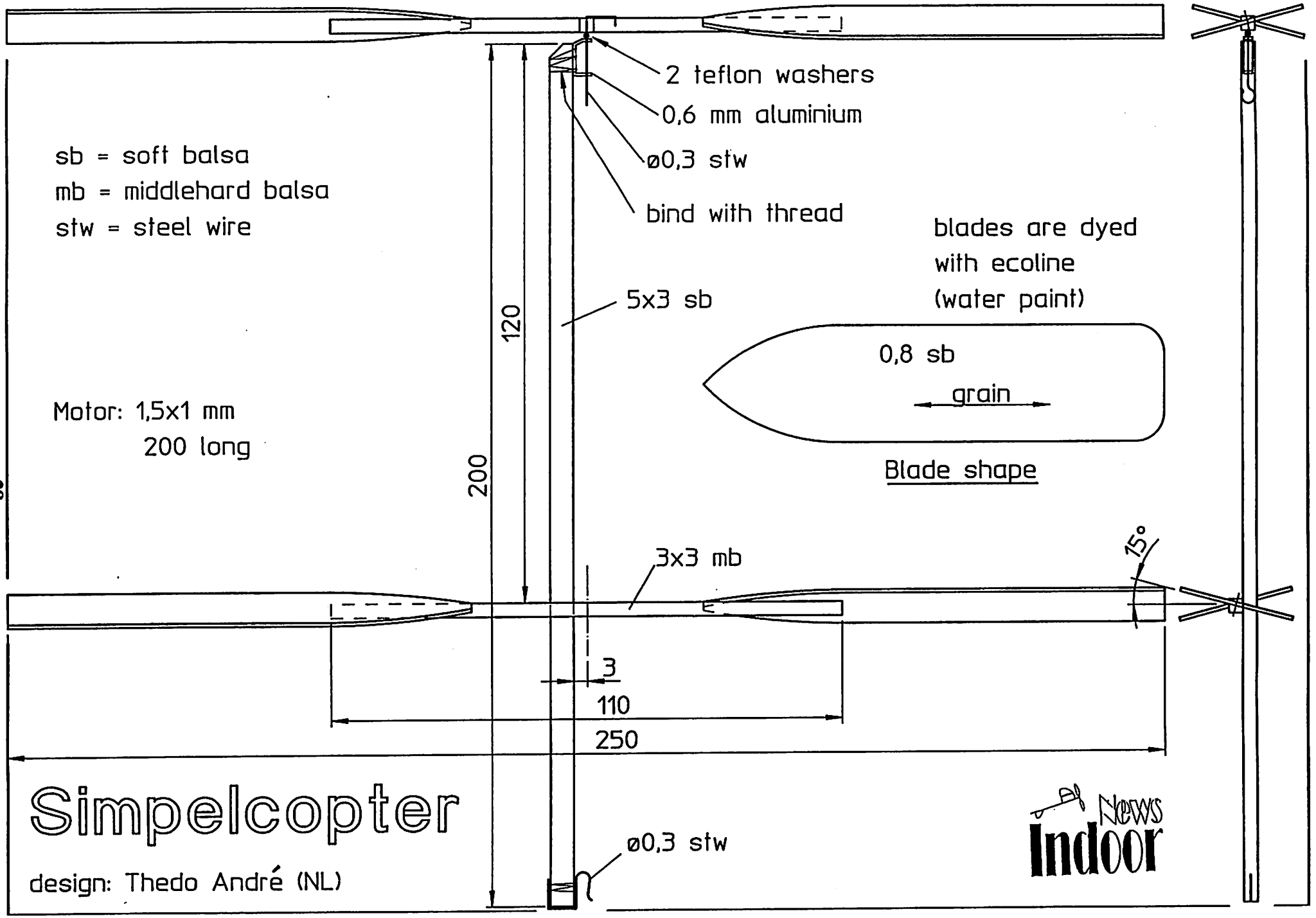




各胴ワクはこれをコピーして1mmバルサから切り出す

注即
ギヤ. はこんな風に見える様にスパッツをけずり タイヤは15を貼り合わせて作った。

EAA ポバーP-9 ピクシー　単座機です
全長5.26m全巾9.09m 60馬力エンジン最速166Km/h
色は青・黄・白・ラインは黒 尾翼マークは上記のものを参照のコト
重量は10.5gです。10cmプロペラの時ゴムは1.8mmの
20cmループです。この色のパターンはEAAのものです。
1993年9月10日 DRAWING BY Shiro Takeuchi 竹内史郎


2 teflon washers
0,6 mm aluminium
ø0,3 stw
bind with thread
sb = soft balsa
mb = middlehard balsa
stw = steel wire
blades are dyed
with ecoline
(water paint)
5x3 sb
120
200
0,8 sb
grain
Blade shape
Motor: 1,5x1 mm
200 long
3x3 mb
15°
3
110
250
ø0,3 stw
Simpelcopter
design: Thedo André (NL)
News
Indoor

1996 International Mini-Stick Postal Contest

The St. Louis Thermaleers invite all indoor flyers to take part in the 1996 International Mini-Stick Postal Contest to be held over the winter period. The rules for the contest will be as follows:

1. The contest is open to Indoor models that comply with the Living Room/Mini-Stick rules.

2. Contest flights are to be made between 1 Jan., 1996 and 31 Mar., 1996.

3. Any number of flights can be made at any number of sites.

4. All contest flights to be timed by someone other than the flyer.

5. All contest flights to be recorded on an official Results Form. (Included in this issue. Copies can be made.)

6. Best single flight time wins, after the flight time has been corrected for different ceiling heights. Ceiling height to be measured as per the FAI, but with a 5 metre diameter circle. The correction factor is 627 divided by (167 plus 46 times the square root of the ceiling height in feet). The time in seconds will be multiplied by this to give the corrected time.

7. Prizes will be awarded dependent on the number of contestants.

8. All Results Forms to be returned no later than 10 April, 1996 to the address below:

9. Entry is free to all contestants.

10. Results will be sent if a S.A.S.E. is included with the Results form.

Send your results to:

Larry Coslick
4202 Valley Crest Hills Drive
St. Louis, Missouri 63128

MINI-STICK MODEL RULES

Monoplane, max span	7.0 in.
Max Wing Chord	2.5 in.
Stick Length	5.0 in.
Max Model Length (less prop)	10.0 in.
Stab (Tail) Area	Max = 50% of Wing
Covering	Plastic/Paper. NO microfilm
Propeller	Wood Prop, 7" dia.max.
Minimum Weight	(0.43 gms)0.015 ounces

Flying

Steering	4 Ten Second Steers*
Attempt	15 Seconds or more*

*Special rules for very small rooms only! (Living Room flying.)

Vol 6 & 7 Here Now!! Lots of stick & tissue plans / how-to! Best of the Hangar Pilot Vol 6 & 7 only $7 ea ppd USA to:



Dave Linstrum
1109 36th Ave W
Bradenton , Fl.
34205

23 Years of Indoor!

Complete your set: back issues of Vol 1,2,3 $20/set Vol 4,5 $14/set
These contain plans for the best flying models by MIAMA's talented designers!

It's NOT just a Calendar !!!
1995 Scale Flyer Calendar contains 14 Planes Worth Modeling, with building plans for contest winners including Swiss 1921 Dornier Falke. Hang in your shop/ build from it!!!
ON SALE only $4 ppd or $3 with any Best of the Hangar Pilot order above!
You tried the rest- now get The Best!
Foreign P & H add $2 / vol for Air Mail UK/Eur.

Indoor Postal Contest Results Form

Club Name_____

Date of Contest____/____/____ Site Name_____

Ceiling Height_____Feet

Contestant Name SMAE No. Age (if Jr.)	Address	Time in Seconds	Timer Initials	Leave Blank
		1.		
#		2.		
		3.		
		4.		
		5.		
		1.		
#		2.		
		3.		
		4.		
		5.		
		1.		
#		2.		
		3.		
		4.		
		5.		
		1.		
#		2.		
		3.		
		4.		
		5.		

Thrust	Traction	Schub (Mot.)
Thrust line	Axe de traction	Zuglinie
Thrust bearing	Butée à billes	Druckkugellager
Thrust washer	Rondelles	Unterlagscheibe
Tilt	Tilt	Kippung
Timekeeper	Chronométreur	Zeitnehmer
Tin plate	Tôle	Blech
Tip rib	Nervure extérieure	Aussenrippe
Top	Dessus	Oben
Top surface	Extrados	Oberseite
Tissue	Papier	Papier
Torque	Couple	Drehmoment
Trailing edge	Bord de Fuite (B.F.)	Austrittskante
Trim	Réglage	Trimmung
Tube	Tube	Rohr

U

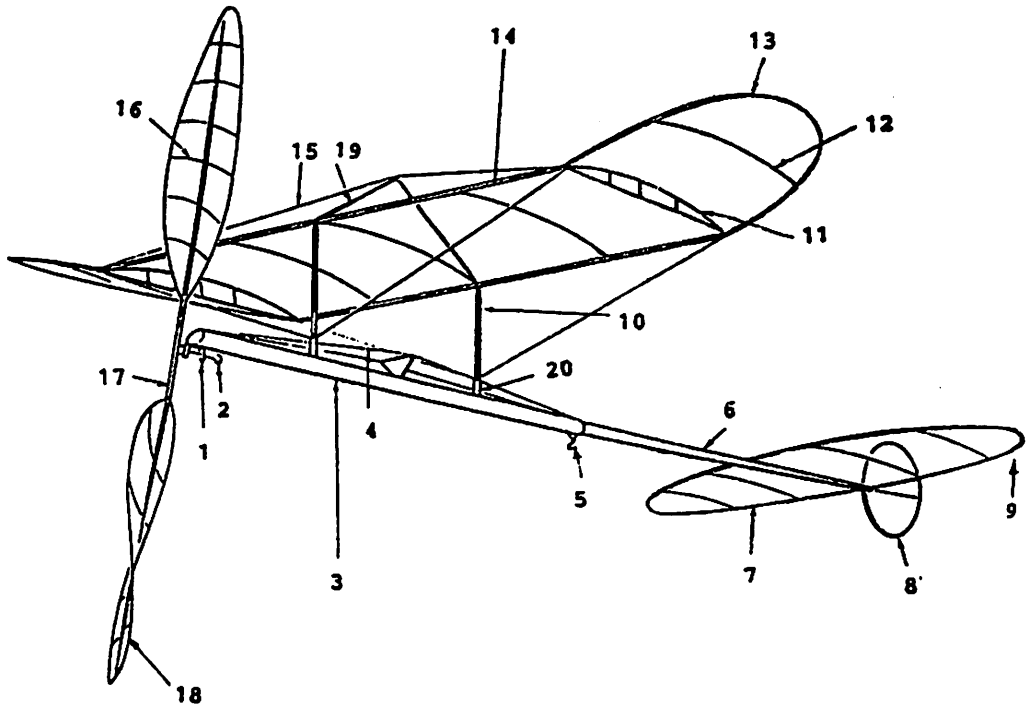
Upthrust	Cabreur	Motorzug nach oben
Under	Dessous	Unter
Undercambered	Profil creux	Hohlunterseitig
Undercarriage	Train d'atterissage	Fahrwerk

V

Variable diameter	Diamètre variable	Variabele Durchmesser
Variable pitch	Pas variable	Gesteuerte Steigung
Vertical stabilizer	Dérive	Seitenleitwerk
View	Vue	Ansicht

W

Wash-out	Vrillage (neg.)	Verwindung (neg.)
Wash-in	Vrillage (pos.)	Verwindung (pos.)
Washer	Rondelle	Scheibe
Weight	Masse/Poids	Gewicht
Wheel	Roue	Rad
White glue	Colle vinylique	Weissleim
Winder	Chignole	Aufziehmaschine
Winding	Remontage	Aufziehen
Windscreen, -shield	Pare-brise	Windschirm
Wing	Aile	Flügel
Wing chord	Profondeur	Flügeltiefe
Wing panel	Panneau (d'aile)	Flügelteil
Wing post	Mat d'aile	Flächenstütze
Wing spar	Longeron d'aile	Flächenholm
Wing tip	Bout d'aile	Flügelohr
Wire	Fil d'acier	Stahldraht
Wood	Bois	Holz



1 Prop. bearing	Butée avant	Propellerlager
2 Prop. shaft	Axe hélice	Luftschraubenwelle
3 Motor stick	Poutre écheveau	Motorträger
4 Bracing	Haubannage	Verspannung
5 Rear hook	Crochet	Haken
6 Tailboom, tail cone	Poutre arrière	Leitwerksträger
7 Stabilizer	Stabilo	Höhenleitwerk
8 Rudder	Dérive	Seitenleitwerk
9 Stab tip	Bout du stabilo	Leitwerksende
10 Wing post	Mat d'aile	Flächenstütze
11 Compression rib	Nervure de compression	Kompressionsrippe
12 Rib	Nervure	Rippe
13 Wing tip	Bout d'aile	Flügelohr
14 Wing spar	Longeron d'aile	Flächenholm
15 Wing bracing	Haubannage	Flügelverspannung
16 Propeller rib	Nervure d'hélice	Luftschraubenrippe
17 Propeller spar	Longeron d'hélice	Luftschraubenholm
18 Propeller outline	Contour de pale	Luftschraubenumriss
19 Cabane	Cabane	Spannturm
20 Paper tube	Tube papier	Papierröhrchen