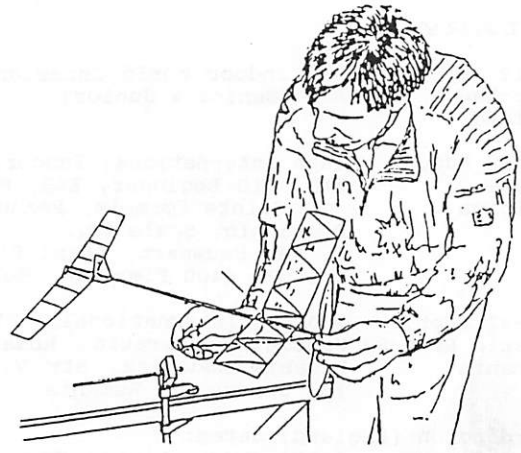
Indoor News

Issue 19 July 1992



INDOOR NEWS CONTINUES!

Welcome to a new issue of Indoor News. With your help I hope to publish Indoor News on a regular basis. If nothing unforeseen happens I will have the time to do it for a considerable period, but do not expect me to do it for more than about five years. Then someone else may take over. I intend to bring the newsletter out three times a year, just like Jørgen Korsgaard did. Size will be 16 pages, which just falls within the postage limits. I will not write much material myself, so it is up to you to send in articles, drawings, competition news, etc.. I can make the drawings, if you are no draftsman.

There are two changes compared to the old Indoor News. It is bi-lingual: English and German. That saves me time for translating. On the other hand it may make Indoor News more accessible to a wider public. Sometimes a translation of a major article will be published in a following issue. Though I can read German easily, I cannot write it. So I need a volunteer translator English-German vice-versa.

The other change is in the subscription. The subscription rate is basically the same, but I prefer payment per six issues. This saves me time for administration and may save you bank charges. Paying by Eurocheque or sending bank notes is free of handling charges, but other ways of payment add ±HFL 15,-. If possible pay by Giro (account number 4406860). A list of those of you who still have some money standing out can be found in the previous issue on page 2.

As you see the issues will be numbered and dated, which does not oblige me to a fixed time schedule. But the intention is to bring Indoor News out in March, July and November. And if you keep sending in material this will be no problem. I consider three issues a year as a minimum. If I do not succeed in that, then I will quit.

Texts can be sent on floppy disk (3½ or 5¼) in Wordperfect or ASCII format. I hope you will send material suitable for beginners and youngsters. That is where the main problem is in Indoor and Free Flight nowadays. It can be quite difficult and not too rewarding to write about such "basic" items, but we need them! A most suitable "credo" comes from Ed Whittens' Junior Flight column in Model Aviation: "Did you help a junior today?". Well, did you?

In Wroclaw (Poland) the F1D World Championships are just about to begin. I wish them good luck and a fair competition. Hala Ludowa is not an easy place to fly, but it is a fair place and that's how it should be. And organizationally it will without doubt be to the exemplary high Polish level of quality! The reason that I am not there as well as no other Dutch, is that since 1988 we could only fly once a year at the Schiphol Hangar and have not had any other opportunity for serious training.



To end this "editorial" this is the right place to thank Jørgen Korsgaard hartily for the many hours he spent to produce Indoor News. Most of all we will miss his fantastic drawings, but I am sure he will not completely forget us in this respect.

Thedo André

CONGRATULATIONS!

Medio April I got the happy message that THEDO ANDRÉ, Holland, had decided to take over and continue INDOOR NEWS.

Thedo is a well-known indoor flyer with great records and he is a memmber of the 40-minute club.

He has been involved in projects for newcomers - indoor and outdoor as well - and over the years he has contributed to the "old" IN with well-documented articles and drawings. He makes excellent plans and drawings and writes very well in English!

Well, friends, INDOOR NEWS will go into business again, with plans, articles, reports, hints and tips etc.. Thedo has new energy but he surely needs your help, so send him material as soon as you can.

I wish Thedo and his enterprise all kinds of support and success.

Happy flying

Jørgen Korsgaard

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Subscription (per 6 issues):

Holland	HFL 20,-
Europe	HFL 30,-
Airmail	USD 20,-

DIARY

6-12 July Wroclaw Poland	FAI Indoor World Championships, F1D (Senior & Junior)
27-30 August Liège Belgium	16th International Indoor. F1D, F1D Beginner, EZB, Micro 35, Sainte Formule, Peanut, Pistachio, Scale CO_2. F. van Hauweart, Grand Place 1, Bte 52, 4400 Flemalle, Belgium.
24-27 Sept Slanic Pradova Rumania	Indoor International, F1D. M. Zancin, Federatia Romana de Rumania Modelism, Str V. Conta 16, Bucuresti, Rumania.

Cardington (England) dates:

26 July	Delta Dart, Living Room Stick, Open Penny Plane USA rules
9 August	EZB 1.2g and USA rules, Novice Penny Plane.
29 August	Delta Dart for Junior and Senior with £100 prize money, Living Room Stick, Kenny Penny, HLG & Catapult, CO_2 duration.
30 August	Flyrod, Novice Penny Plane, EZB (1.2g and USA rules combined).
31 August	F1D, Open duration, 35cm, USA rules Intermediate Stick.

Contact Laurie Barr in advance: phone 0628 25595 (evenings) or 0753 681234 (daytime).

RECORDS

49'00 F1D Microfilm Cezar Banks (USA)

August 31, 1991

At the Lakehurst US Team Trials Cezar Banks made a flight of 49'00. Quite unexpectly, as the conditions were far from ideal during the three day trials. This is what Ray Harlan told about the flight: "Cezar's flight was on a turbulent but suny day at Lakehurst #1 hangar. He launched near the center. It climbed very slowly and when 2/3 of the way up, it drifted towards the east end of the hangar and towards the south wall. As it passed 3/4, it got in a jet stream and went nearly the full hangar length. During this time it peaked at about 160 feet. This was past the midpoint of the flight and it started down. At about 140 ft, it drifted across the hangar, toward the center. It hit turbulence near the north side wall and Cezar steered it out half way to the center. By now it was 50-60 ft high and about 45 min.. The model drifted towards the west. As it settled he made one more steer to avoid some boxes on the floor and the model landed on the floor, just at one box; the time was exactly 49 min.. The air, though turbulent, was very bouyant. No one else matched that flight pattern, showing how variable Lakehurst can be in different parts of the building."

49'30 F1D Microfilm Bud Romak (USA)

Sept. 2, 1991

At the same weekend at Lakehurst but after the trials, where he could only achieve some mediocre flights, Bud Romak put a model in the air "just for the heck of it round 10" for a flight of 49'30. The flight was not officially timed.

25'58 Easy Bee Walt van Gorder (USA)

Sept. 2, 1991

On the same good day at Lakehurst Walt van Gorder did 25'58 with a .745 gram, mylar covered version of his "Pieces" design. See Model Aviation January 1982 for a detailed article about this model.

26'38 Easy Bee Bernard Hunt (GB)

Sept. 8, 1991

With a US rules type of Easy Bee Bernard Hunt set this world record time in Cardington. The flight could have been longer had not one of the security guards opened the large end door, just as the model was on final descent.

35'43 F1D Microfilm Andras Ree (HUN)

June 3, 1991

Andras Ree has now set an official World Record Cat. II (8-15 m ceiling) of 35'43. Very rightly so, as his earlier record of 36'20 had not been recognised by the FAI for administrative reasons.

32'09 F1D Microfilm Bob Randolph (USA)

May 3, 1991

Bob's flight of 30'20 as reported in the last Indoor News was not an official record, as it did not surpass Werner Nimptsch' 29'55 flight by the required margin of 2%. But he now excelled himself with a flight of 32'09! The 2% margin rule will no longer be in force from January 1, 1993.

There is enough space in Indoor News to describe your countries National Records. Send me a survey!

4 Happy Days in Flemalle/Liège (B)

It is a little late to report on last years Indoor International in Belgium. But this is a very nice flying opportunity, especially since the move to a larger hall and the increase to four flying days. I can not compare the new Country Hall to the old Flemalle as I have not been there, but this hall proved to be quite good. It was not as high as reported in advance, it was ±12 m under the lamps. There are many lamps which effectively form the ceiling. That is: for the bigger F1D and F1D Beginner models. The small Peanuts and Saints could fly between and above the lamps. Retrieval of hung models was not much of a problem as there are catwalks cross-wise above the lamps from which you can reach most places with a steering pole. Some duration flyers muttered a bit because they could not achieve the ceiling scrubbing 30 min. flights of the old Flemalle, but this hall forces you to fly on your real skills to stay clear from the lamps. The air was quiet with only slight drift as the hall is well sealed from the environment. It is partly dug into the ground.

The rules were not kept by the organisers as strictly as one might expect from an official international contest. So just use this contest for a leisurely flying session. Especially the first two days were quiet and relaxed, contrary to the Saint and Peanut days when the air was very crowded. Come this year and enjoy it! For details see the diary and Peter Kellers report from Thermiksense.

Thedo

15 Jahre Saalflug in Flémalle

Aus: Thermiksense

von Peter Keller

Saalflug in Flémalle im 15. Jubiläumsjahr nicht mehr in der André Cools Halle von Flémalle, sondern in der "Country Hall" beim Universitätsgelände von Liège, nahe der Unterkunft. Die grössere Halle war nebst der Freude auf das Treffen mit Saalfliegern aus ganz Europa (9 Länder, wenn ich richtig gezählt habe) ein Grund mehr, nach sechsjährigem Unterbruch wieder einmal diesen Wettbewerb zu besuchen. Jünger sind wir alle nicht geworden, aber der grosse Enthusiasmus der Veranstalter und der vielen Helfer, den die Organisation eines solchen viertägigen Wettbewerbes erfordert, ist ungebrochen. Er wurde belohnt durch die Teilnahme vieler neuer jugendlicher Saalflieger und -innen aus Holland, die für eine erfreuliche Blutauffrischung besorgt waren. Sind Miranda, Suzanne und Kim (die drei erstplazierten Juniorinnen bei FlD-Beg.) die Indoor-Stars von morgen?

Ich beteiligte mich nur in den reinen Dauerflugkategorien, für welche jeweils die drei ersten Tage reserviert sind, nicht aber am Peanut/Pistacchio Wettbewerb, der seit jeher das Kernstück und der Höhepunkt von Flémalle bildet. Mein Bericht bleibt deshalb etwas einseitig und bedürfte der Ergänzung.

Zunächst zur neuen Halle: Nicht leicht, aber fair, würde ich meinen. Ihre Besonderheit bilden die vielen (ca. 25) an Kabeln herunterhängenden Lampen, welche die nutzbare Höhe auf ca. 12 bis 13 Meter beschränken, weil ein Durchkommen zwischen den Kabeln ohne Einklemmen des Propellers zumindest bei den grösseren Modellen praktisch unmöglich ist. In Absprache mit den Teilnehmern und den internationalen Gepflogenheiten entsprechend wurde das Steuern unter den Lampen zwecks Beeinflussung der Höhe nicht zugelassen, was einen korrekten und ruhigen Verlauf garantierte und sicher auch im Interesse der jüngeren Teilnehmer lag, die im Steuern wenig erfahren sind. Stangenakrobatik und Deckenkratzen waren somit nicht gefragt; angesagt war vielmehr Präzisionsfliegen auf 12 Meter Höhe und keinen Meter mehr.

Das Feinregulieren der Verstellpropeller stellte unter diesen Bedingungen auch für erfahrenere Saalflieger eine echte Herausforderung dar. In der Klasse FlD lagen die Zeiten der Besten am Ende recht nahe beisammen. Der längste Flug gelang Thedo Andre (NL) mit 28.53 . Edward Ciapala (PL) hatte Pech,als er sein Modell beim (erlaubten) Steuern mit dem Ballon ausserhalb des Lampenbereichs bei 26 Minuten in gut 9 Meter Höhe nicht mehr befreien konnte (ein Nachteil der Verstellprops). Es wäre ihm sicher ein Flug über 30 Minuten gelungen. Im Nachteil sicher Werner Nimptsch (D), der erst am 2. Tag anreisen konnte und dem damit die für die Einstellung auf die Halle erforderliche Zeit fehlte. Seine ersten beiden Flüge endeten vorzeitig in den Kabeln, sodass er sein 3. Modell auspacken und eintrimmen musste. Zweifelsohne wäre er sonst in der Lage gewesen, das Potential der Halle mit Flügen auf über 30 Min. aufzuzeigen. Thedo André benützte die Gelegenheit, einen VD-Prop zu testen, was sich als recht heikel erwies. Mir gelangen zwei Flüge an aber nicht über die Lampen, was in der Endwertung für den 1. Rang ganz knapp (10 Sek.) vor Werner Nimptsch reichte. Letzterer vermochte Edward Ciapala mit seinem letzten Flug noch zu überrrunden.
In den anderen Dauerflug-Klassen, in denen die gleichen Höhenprobleme zu meistern waren, gab es kaum überragende Leistungen, wenn man absieht von einem guten Flug von 15.31 durch Werner Nimptsch in Micro 35. Die Bestzeit bei FlD-Beginner von 12.53 war immerhin um fast eine Minute besser als die Bestzeit in der alten Halle, was für die neue Halle spricht.

Nicht weniger als 22 Konkurrenten traten am Samstag in der Kategorie Sainte Formule an (benannt nach deren Schöpfer René Jossien "Le Saint"). Hier war die Gefahr, aufzuhängen, wegen der viel kleineren Props bedeutend weniger gross. Keine leichte Aufgabe für die Zeitnehmer, geblendet von der Beleuchtung die Uebersicht zu behalten, wenn sich zeitweise bis 6 dieser kleinen Surrer in der Luft befanden und bis in das Deckengestänge verirrten. Der noch junge Vorjahressieger Christophe Henriot (F) setzte sich erneut knapp durch vor dem Holländer W. de Joode, der auch ein Entenmodell einsetzte, und H.Fraikin (B).

Der Sonntag war den Wertungsflügen der Peanuts/Pistachios reserviert, die am Vortag von einer fachkundigen Jury statisch bewertet worden waren. Man möge mir nicht verüblen, dass ich mangels Fachkunde anstelle eines Kommentars nur einfach meiner Bewunderung Ausdruck gebe, Bewunderung für die Leistung dieser gerade von den sog. Leistungsfliegern oft etwas verkannten Scale-Flieger. Wer je ein Pistachio-Modell gebaut und dann auch noch auf eine gute Flugzeit zu trimmen versucht hat, wird mir nicht widersprechen. Am Start nahezu die ganze Elite aus Europa. Tonda Alfery kam mit nicht weniger als 14 Modellen angereist, mit denen er am Sonntag so um die 50 Wertungsflüge absolvierte. Spektakulär und vom zahlreichen Publikum applaudiert seine Flüge mit CO2 Modellen. In der Peanut Dauer-Kategorie lieferten sich die deutschen Teilnehmer Siegfried Glöckner (Volksplane) und Thomas Merkt(Solar Challenger) mit Flugzeiten über 2 Min. bis zum Schluss ein Kopf-an-Kopf-Rennen, das Siegfried Glöckner ganz knapp für sich entschied. Beeindruckend auch der Skyraider von Heinz Neumann und - natürlich - die Pioniermaschinen von Benno Sabel, selber ein Flémalle Pionier, der jedes Jahr mit neuen Entdeckungen von seinen Forschungsreisen überrascht.

Wem haben die Saalflieger dieses in Europa einmalige Treffen zu verdanken? Fernand Van Hauvaert, dem unermüdliche Organisator, der die immensen Vorbereitungen einmal mehr auf sich genommen und an alles gedacht hat, selbst an unsere Frauen, für die er eine historische Führung durch Liège organisierte. Hoffentlich ermutigt ihn der grosse Erfolg von Flémalle 1991, die Saalflieger auch 1992 wieder nach Flémalle zu rufen.

Beginner Jugend (4 T.)

1.	Miranda Kotte	555
2.	Suz. Van Egmond	518

Mikro 35 Senior (5. T.)

1.	Werner Nimptsch	1615
2.	Chris. Hanriot	1158

EZB Senior (6 T.)

1.	Rysz. Czechowski	1332
2.	Edward Ciapala	1270
3.	Bernard Nery	829

Sainte-Form Jun (8 T.)

1.	Oliver Lemaire	394
2.	Oliver Lemaire	337
3.	Raphael Limet	272

Sainte-For Sen (22 T.)

1.	Christophe Hanriot	550
2.	Wijnad de Joode	543
3.	Henri Fraikin	525
4.	Fern. von Hauwaert	510
5.	J.-P. van Haeren	431

Cacah -Dauer Jug (4T.)

1.	Florian Glöckner	651
2.	Florian Glöckner	388

Cacah-Dauer Sen (26 T.)

1.	Siegfried Glöckner	1019
2.	Thomas Mert	1014
3.	J.-C. Bourdeaud	930
4.	Antonin Alfery	928
5.	Heinz Neumann	883

Pistachio Senior (15 T.)

1.	Antonin Alfery	771
2.	Antonin Alfery	711
3.	Antonin Alfery	668
4.	Antonin Alfery	660
5.	Siegried Glöckner	630

Pistachio Jugend (1T.)

1.	Raphael Limet	141

Mikrofilm Senior (6 T.)

1.	Peter Keller	3358
2.	Werner Nimptsch	3348
3.	Edward Ciapala	3323

Beginner Senior (7 T.)

1.	Peter Keller	1503
2.	Werner Nimptsch	1425
3.	Thomas Merkt	1109

Cacah Maqu Sen(16 T.)

1.	Antonin Alfery	588
2.	George Kandylakis	544
3.	Antonin Alfery	514
4.	Antonin Alfery	503
5.	Antonin Alfery	499

CO_2-Electrique (3 T.)

1.	Antonin Alfery	816
2.	Johannes Roest	535

Reg Boor (UK) and "St. Duck"



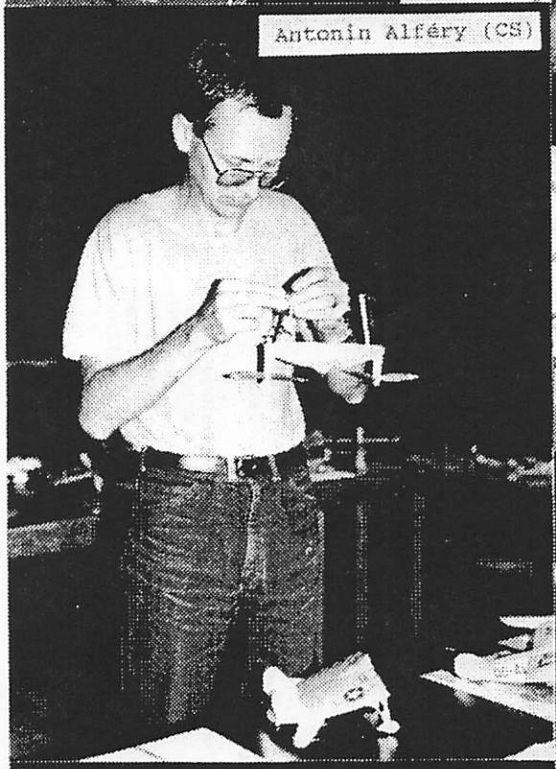
Francis Patat (B)



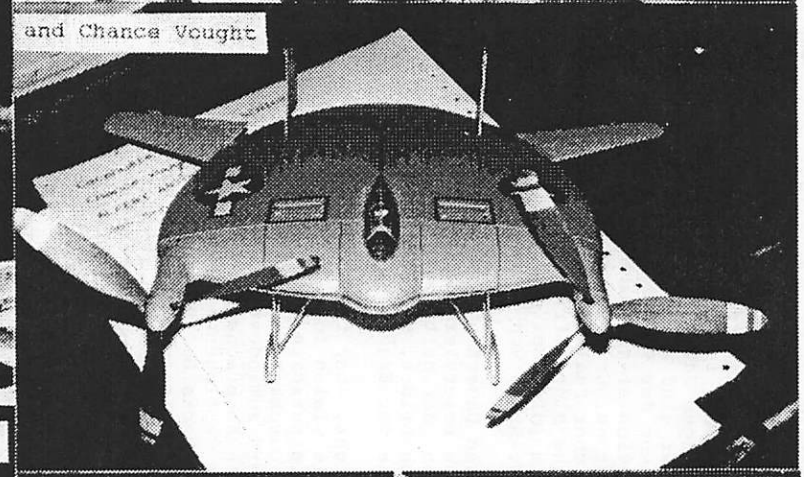
Olivier Lemaire



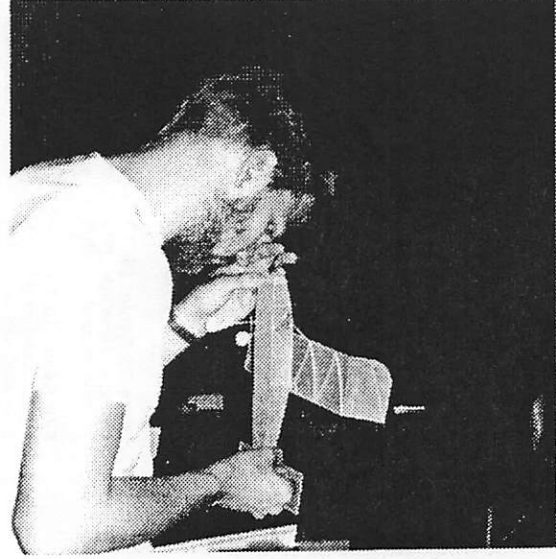
Antonin Alféry (CS)

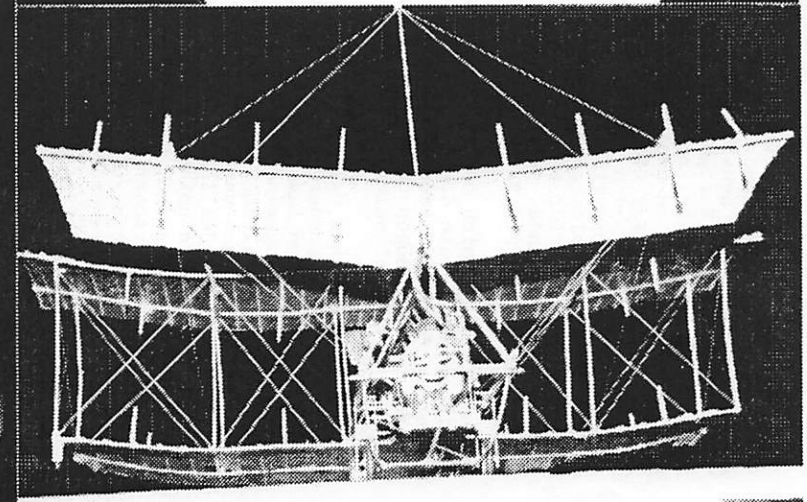


and Chance Vought



Taco de Vries (NL) and "Banana Saint"



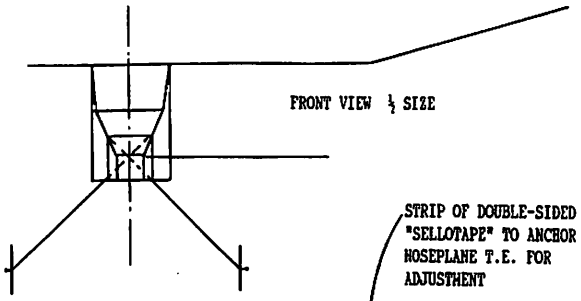


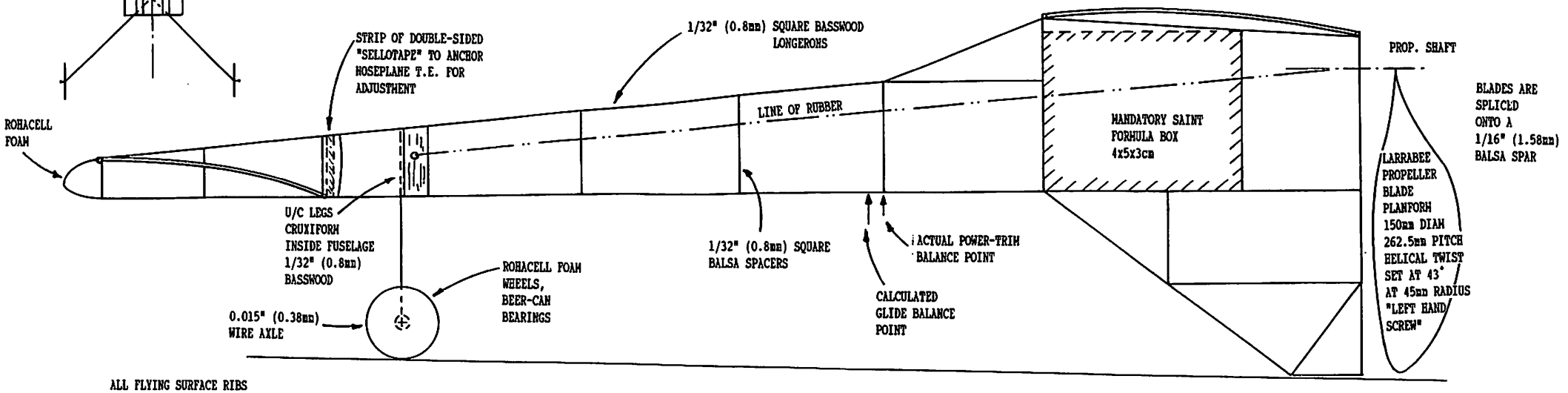
Benno Sabel (D), what type of plane is this?

SAINT FORMULA CANARD 'ST. DUCK'

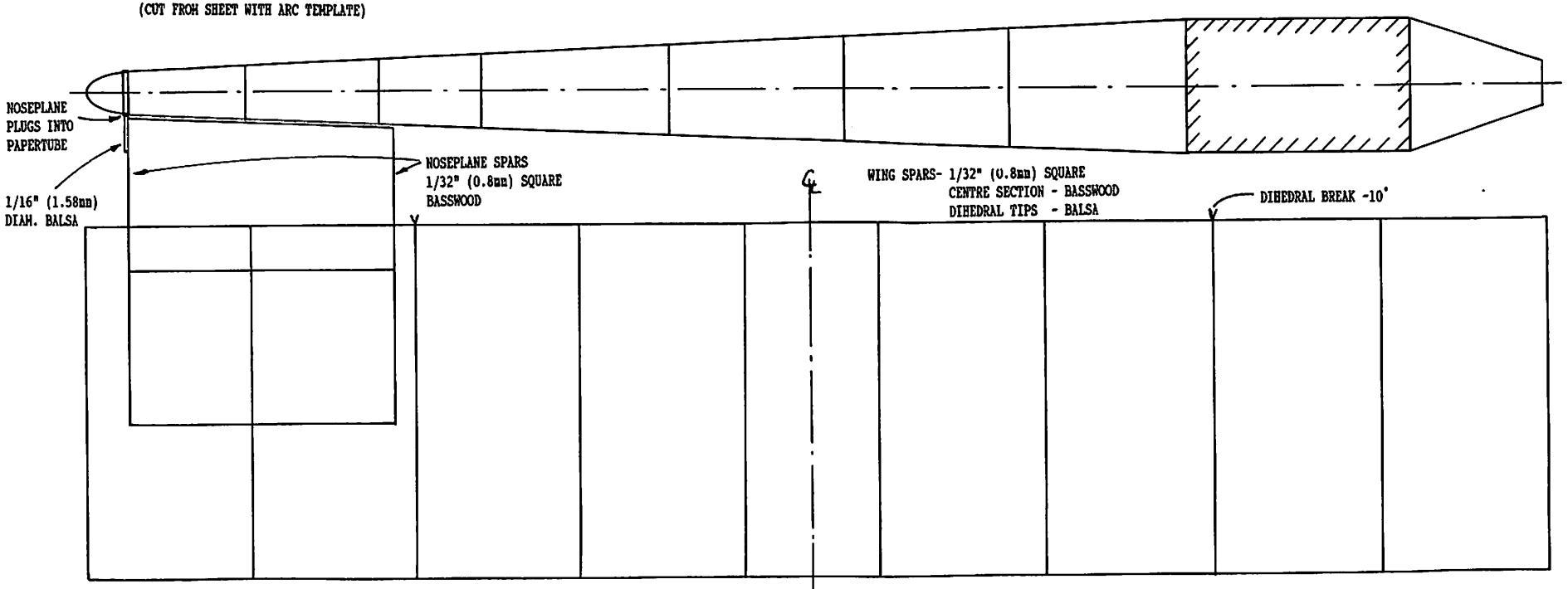
Reg Boor 17/9/91

AEROFOILS WING, 4% ARC, 251.6mm RADIUS
CALCULATED C_L=0.588
NOSEPLANE, 5.5% ARC, 138.0mm RADIUS
CALCULATED C_L=0.767





ALL FLYING SURFACE RIBS
1/32" (0.8mm) SQUARE BALSA
(CUT FROM SHEET WITH ARC TEMPLATE)



FIN- BASSWOOD
VERTICAL
ALL REST BALSA

COVERING-
FUSELAGE, CONDENSER PAPER (NOT SHRUNK)

SURFACES, "ULTRAFILM"
CABIN, "CELLOPHANE"

WEIGHTS-
ALL COVERED

FUS., FIN, U/C	- 1.16gm
WING	- 0.30gm
NOSEPLANES	- 0.18gm
PROP. ASSEM.	- 0.39gm
(+ BALLAST)	----
	2.02gm

POWER-
660mm LOOP
1.3x1mm
1.4gm
2000 TURNS,
"BACKED-OFF"
25 TURNS TO
0.02 OZ-INS TORQUE
(1.44gmcm ?)

Enlarge 141%

SAINT FORMULA CANARD

"ST. DUCK" by Reg Boor (UK)

For ease of carrying, the wing is simply lightly cemented to the fuselage at the flying site. Mine required 1.5mm packing under the trailing-edge for longitudinal trim. This was because I was unable to increase the noseplane incidence, the trailing edge already being rotated to the bottom fuselage longeron. So if you do build one of these you could build-in less wing incidence by rotating the wing saddle about the rear point of the "mandatory box". You would then have easier control over the trimming by use of the noseplane adjustment.

The propeller assembly carried 0.8mm packing at its base to give some "up-thrust".

My model would only fly in circles to the right. This was despite carrying 2.5° of left rudder! I did place 0.8mm of packing under the starboard wing leading-edge corner to give some "out-of-turn" rolling moment.

The model must have been turning under the influence of torque. I have examined my propeller and in retrospect it is carrying far too much camber (the result of inattention whilst hurrying to finish the model in the week previous to the contest). Something like 15% which, at this Reynold's number, is ridiculous and I intend to operate on the moulding block to reduce this to not more than 3 or 4%. I would hope then that the reaction torque problem will diminish and also, more importantly, there will be much less "in-plane" drag and perhaps the flight duration will improve. More of the power going into useful work instead of merely turning the propeller.

The aerofoil cambers were optimised on my longitudinal trim computer program to give a high value of aerodynamic efficiency ($C_L^{1.5}/C_D$). The value being comparable with my friend Mike Green's more conventional model which I also examined. Certainly the canard's best glide was at the calculated balance point but under power I had to put a very small amount of rear ballast in. Thinking about this I can think of two points (not admitting that the computer analysis might be wrong of course!). I should have experimented more with the wing incidence to optimise the trim, but this is difficult by gluing-in bits of packing, hence my suggestion above. Or possibly propeller power effects move the model neutral point rearwards.

When my responsibilities regarding INTERSCALE '91 are over I intend to conduct glide tests of the model in order actually to measure flight speed and sink rate so that I can calculate the wing and noseplane lift coefficients to compare with my computer program. I have analysed a number of models this way but the canard is the first aircraft that I have actually designed using the program, so this will be a good test.

GOODS

Woodhouse mylar

Mike sells clear mylar of 6.8 g/m², 315mm wide, £2.50 for a 10m roll, post free. He also sells other types of mylar and goods (most outdoor free flight). Send reply coupon for his catalogue to 12 Marston Lane, Eaton, Norwich, Norfolk NR4 6LZ, England.

Somers mylar

Jan Somers has very thin clear mylar foil for sale. It weighs 2.4g/m². It is a bit tricky to handle as it splits easily lengthwise and very electrostatic, but it is cheaper than Harlans Ultrafilm. The foil is 315mm wide and comes in rolls of approximately 25m. Cost is HFL 30, postage HFL 3.50 in Europe or HFL 6.50 outside Europe. Address: Volkerak 20, 2401DE Alphen a/d Rijn, Netherlands. To people in the UK: please order this foil from Mike Woodhouse. His price is £2.50 for a 5m length. Address see above.

O'Donnell mylar

John O'Donnell sells the following types of mylar of which the 7.5 g clear mylar is highly suitable for beginners:

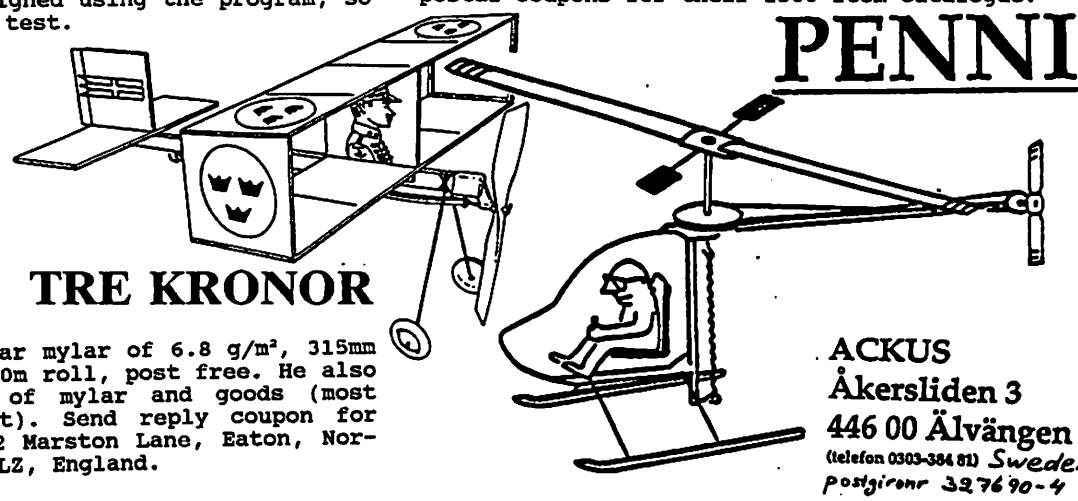
Approx width		g/100ins²	g/m²
85 cm	plain aluminium	1.1	16.5
74	aluminium stripes	0.72	11
105	plain aluminium	0.5	7.5
74	clear	0.47	7.5
74	aluminium stripes	0.32	5
46	aluminium stripes	0.23	3.5

All are £1 per metre length. Ask for price and postage quotation. John also sells the old brand carbon steel razor blades! The only source I know of. Price 15 for £1. Address: 36 Marina Drive, Marple, Stockport, Cheshire SK6 6JL, England.

Swedish models

Through our National Aeromodelling Body I received two indoor model kits from the Swedish firm Ackus with additional information about other kits. One is a Peanut size Antoinette for beginners with a plastic SIG prop. It will be built by a junior on my club. The very simple Tre Kronor Hannan "Farman" design will be built from drawing. The other kit is the Penni helicopter. I built it and it definitely is no beginner's model. Necessary modifications were: ballasting the outrigger pedals with lead to stabilize the rotor and ballasting the left skid to prevent the model spiralling in. I also doubled the width of the rotor blades to increase the flying time and added a vertical tail fin. But with these modifications you get a very well flying helicopter. It's a real show stopper, which can even hoover very well when you get the CG right.

The Penni kit can also be obtained from SAMS, The Chapel, Roe Green, Sandon, Nr Buntingford, Herts, SG9 0QJ, England. Send 4 postal coupons for their 1500 item catalogue.



Dear Indoor Flyer, 3/5/92

First of all thank you for entering the second Living Room Stick Postal Contest. Please find below the full classified results. I hope you all had FUN flying this little model and I hope you will enter next year's event which will start on the 1st January 1993.

LIVING ROOM STICK POSTAL CONTEST 92 RESULTS.

G. Hunter	USA	23.20	430	693.9	1	Overall Champ
T. Vallee	USA	18.60	390	669.2	2	(1st Int.)
J. O'Donnell	UK	10.37	336	668.5	3	(1st UK)
B. Tenny	USA	24.00	406	648.8	4	(2nd Int.)
T. Vallee	USA	18.60	377	646.9	5	
T. Vallee	USA	7.97	302	637.8	6	
R. Randolph	USA	23.00	388	627.6	7	(3rd Int.)
J. O'Donnell	UK	19.75	365	616.1	8	
D. Belieff	USA	18.60	348	597.2	9	
R.L. Gibbs	USA	23.00	361	584.0	10	
D. Belieff	USA	18.60	339	581.7	11	
B. Hunt	UK	24.83	359	568.1	12	(2nd UK)
R. Parham	UK	29.00	362	547.3	13	(3rd UK)
R. Warmann	USA	30.00	365	546.3	14	
M. Harris	UK	28.50	355	539.5	15	
P. Kleinert	USA	18.60	313	537.1	16	
A. Cromberg	ARG	21.32	319	527.2	17	
J. Barker	UK	19.75	312	526.7	18	
J.F. Prugoli	France	8.30	249	521.2	19	
M. Misawa	Japan	25.00	325	513.3	20	
P. Staehling	USA	18.60	295	506.2	21	
R. Parham	UK	15.00	280	508.6	22	
J. LeBlanc	USA	62.00	423	501.2	23	
R. Hardcastle	USA	30.00	333	498.4	24	
J. Godden	UK	24.83	314	496.9	25	
W. Trivin	USA	42.00	367	494.7	26	
E. Seaver	USA	30.00	330	493.9	27	
C. Banks	USA	23.20	305	492.2	28	
S. Finch	UK	11.08	250	489.7	29	
T. Yatabe	Italy	25.00	310	489.6	30	
D. Robelen	USA	23.00	299	483.7	31	
R. Obarski	USA	62.00	407	482.2	32	
R. Obarski	USA	42.00	357	481.3	33	
Fudo	USA	23.20	296	477.6	34	
D. Yates	UK	19.75	276	465.9	35	
M. Harris	UK	18.00	269	465.7	36	
J. Oulds	UK	15.58	256	460.5	37	
D. Richards	UK	19.75	271	457.5	38	
O. Hayashi	Japan	25.00	285	450.1	39	
J. Oulds	UK	24.50	283	449.6	40	
T. Faulkner	UK	19.00	263	448.7	41	
K. Kihara	Japan	25.00	282	445.4	42	
K. Johnson	USA	26.00	285	445.0	43	
J. Barker	USA	42.00	330	444.9	44	
W. Simmers	USA	30.00	297	444.5	45	
E. Grippo	ARG	21.32	266	439.6	46	
S.J. Miles	UK	15.08	240	435.4	47	
J. Jirasky	Czech	24.59	274	434.8	48	
J. Alling	USA	23.20	268	432.5	49	
F. Breisch jr.	USA	21.00	259	429.8	50	
Z. Fujiwara	Japan	25.00	271	428.0	51	
J. Barker	USA	62.00	361	427.7	52	
B. Taylor	AUS	8.75	204	422.0	53	
B. Taylor	AUS	15.98	235	419.9	54	
C. Baker	UK	19.75	248	418.6	55	
C.J. Coolen	UK	25.00	263	415.4	56	
D.Raymond-Jones	CAN	25.00	262	413.8	57	
J. Martin	USA	62.00	344	407.6	58	
M.J. Barnett	UK	15.00	224	406.9	59	
R. Hardcastle	USA	62.00	343	406.4	60	
Y. Tanaka	Japan	25.00	257	405.9	61	
V. Jirasky	Czech	24.59	255	404.7	62	
A. Thomas	AUS	15.98	226	403.8	63	
V. Jirasky	Czech	24.59	250	396.7	64	
J. Nuszer	USA	62.00	334	395.7	65	
P. Boddie	UK	19.75	234	395.0	66	
M. Hunter	USA	23.20	244	393.7	67	
A. Abell	UK	19.75	233	393.3	68	
D. Bird	UK	35.00	273	389.8	69	
S. Nonaka	Japan	25.00	246	388.5	70	
J. Taylor	UK	19.75	226	381.5	71	
M. Aoshima	Japan	25.00	239	377.5	72	
J. Kalina	Czech	24.59	237	376.1	73	
S. Fukui	Japan	25.00	236	372.7	74	
Ing. K. Vins	Czech	24.59	234	371.3	75	
K. Hashimoto	Japan	25.00	231	364.8	76	
W. Saunders	USA	18.60	210	360.4	77	
Ing. J. Svagr	Czech	24.59	226	358.6	78	
W. Baker	USA	18.60	207	355.2	79	
N. Omata	Japan	25.00	223	352.2	80	
S. Rodriguez	Spain	26.24	220	342.6	81	
B. Wade	UK	11.08	174	340.8	82	
F. Barta	Czech	24.59	214	339.6	83	
R. Harada	Japan	25.00	215	339.6	84	
D. Hodnes	USA	26.00	217	338.8	85	
S. Tamai	Japan	25.00	213	336.4	86	
S. Kinoshita	Japan	25.00	211	333.2	87	
Y. Sugi	Japan	25.00	209	330.1	88	
R. Tabellini	Italy	28.50	217	329.8	89	
H. Wells	USA	62.00	273	323.4	90	
A. Tomasch	USA	8.00	151	318.7	91	
H. Haupt	USA	23.20	197	317.9	92	
F. Kieser	USA	62.00	258	305.7	93	
T. Takeuchi	Japan	25.00	190	300.1	94	
C. Westerman	UK	19.75	177	298.8	95	
D. Andrew	UK	19.00	173	295.2	96	
F. Pianigiani	Italy	29.00	194	293.3	97	
T. Baird	USA	18.60	170	291.7	98	
E. Molfino	Italy	28.50	191	290.3	99	
R. Tabellini	Italy	29.00	157	282.7	100	
P. Redhead	UK	12.00	147	282.4	101	
G. DeAngelini	Italy	28.50	180	273.6	102	
A. Hares	UK	13.50	145	270.6	103	
R. Benyman	USA	26.00	165	257.6	104	
M.A. Starick	AUS	30.00	171	255.9	105	
P. Ruzicka	Czech	24.59	158	250.7	106	
A. Searle	UK	14.00	129	238.5	107	
Risvold	USA	23.20	143	230.7	108	
S. Hayashi	USA	26.00	145	226.4	109	
M. Peake	AUS	30.00	149	223.0	110	
S. Hares	UK	13.50	118	220.2	111	
M. Sanderson	UK	15.00	121	219.8	112	
K. Bates	UK	15.00	121	219.8	113	
L. Fanfani	Italy	28.50	142	215.8	114	
L. Fanfani	Italy	29.00	139	210.2	115	
M. Sanderson	UK	11.50	101	196.1	116	
F. Pianigiani	Italy	28.50	118	179.3	117	
F. Rushby	UK	15.00	93	168.9	118	
F. Rushby	UK	11.50	86	166.9	119	
M. Sanderson	UK	11.50	84	163.1	120	
K. Bates	UK	11.50	78	151.4	121	
E. Bucci	ARG	21.32	75	123.9	122	
K. Halsas	FIN	8.46	59	123.0	123	
P. Robinson	UK	11.50	58	112.6	124	
K. Kalina	Czech	24.59	62	98.4	125	
M. Ghisalberti	Italy	29.00	60	90.7	126	
M. Nekovar	Czech	24.59	55	87.3	127	
P. Kunes	Czech	24.59	53	84.1	128	
G. DeAngelini	Italy	29.00	47	71.1	129	
V. Cernik	Czech	24.59	44	69.8	130	
Ing. B. Beran	Czech	24.59	42	66.7	131	
R. Rodriguez	Spain	26.24	17	26.5	132	

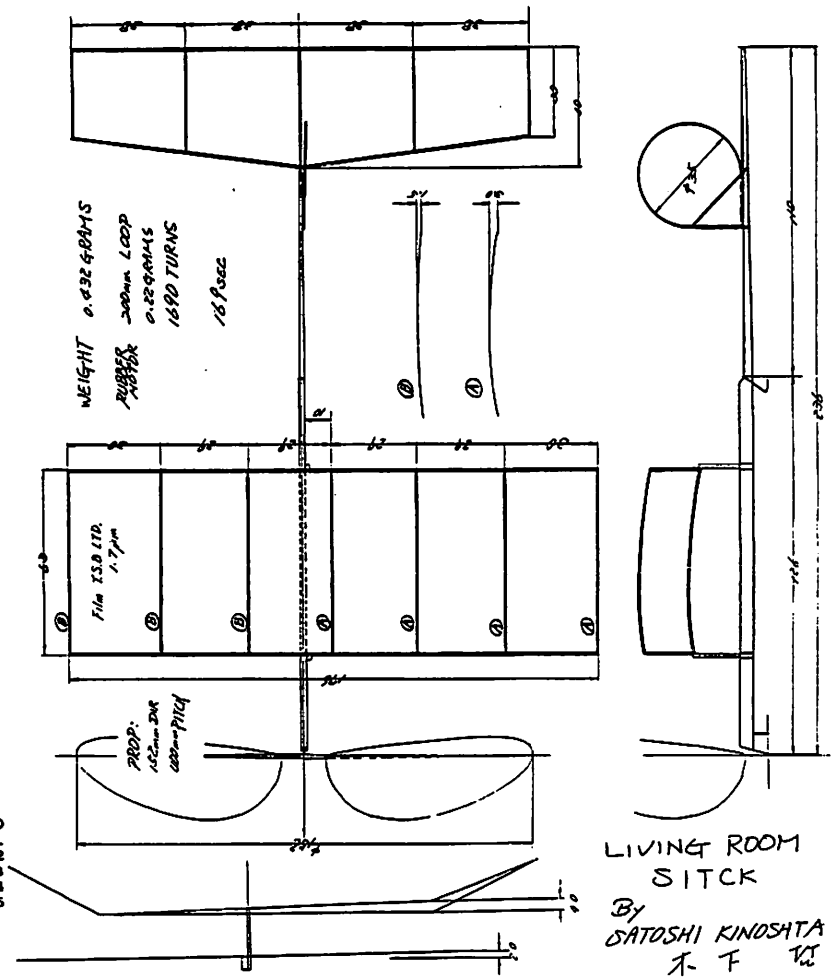
To save you counting here are some of the vital statistics of this year's event. A total of 117 entrants posted 433 competative flights. Flyers from 11 countries flew in sites ranging from 62 feet down to 7.97 feet.

Prizes will be sent to the overall champion and to the top three in international class and UK class. No contestant will receive more than one prize. Well that is just about it for now.

Thermals for ever even Indoors.

Mike Colling
BMFA Indoor Technical Committee Chairman.

403 Mossey Lea Road, Wrightington, Wigan, Lancs., England, WN6 9SB, Telephone 0257 452624.



Saint Formula.

The Saint Formula class has become very popular in Holland during the past two years. Reason: we now hold regular sports hall flying sessions at fixed dates, which attract more "sports" flyers than previously when we still could use the Schiphol Hangars. These people prefer "real airplane like" models above the competition planes like F1D Beginner or Easy Bee. And a Saint model is not as difficult as Peanut.

Saint Formula was originated in France ten years ago by René Jossien (The Saint) with this goal in mind and he met it. The class is flown in France, Belgium, England and Holland. The following rules are the English rules:

General. Rubber powered model for indoor flying. Motor enclosed by the fuselage. Single skein motor, no gears. Covering: paper, other materials, except microfilm.
Fuselage. Total maximum length excluding propeller: 330mm. Minimum cross section 3x4cm over a length of 5cm (volume 3x4x5cm). Transparant surfaces such as cabin, windshield or cockpit cover minimum total 2 cm^2 (viewed from the front and side).
Wings. Maximum projected span: 330mm. Maximum chord for monoplane: 80mm. If biplane, maximum sum of chords: 100mm, with one chord 40mm minimum.
Tail. Maximum span: 150mm, maximum chord 60mm.
Undercarriage. Two legs and two freely revolving wheels obligatory, minimum diameter 18mm.
Propeller. Maximum diameter: 150mm. Maximum blade width 25mm.
Weight. Minimum weight of airframe i.e. without motor: 2 grams.
Motor. Rubber, length and section unrestricted.
Contests. Contests to be flown over 4 or 5 flights of which at least TWO must be rise-off ground. Scoring to be the total of the two best flights. Attempt: less than 10 seconds.

In Holland the following rules modifications have just been introduced. The minimum airframe weight is up to 3 grams. Reasons: it does not make the gap between beginners and experts too great and it does not force those that prefer paper covering to use thin mylars. Contests are flown over 6 flights. This simplifies the organisation as mostly competitions in the other classes are flown at the same time. One of the winning flights must be rise-off ground. Added is a rule to allow only one entry per person, regardless of how many models one intends to use for this entry. Previously one could enter separately with every model one possesses and then win all the top places at once! As I understand it, this rule will now also be applied in Belgium at the Liège contest this year (for the Saint class only, I assume).

René Jossien kindly donated a "Challenge René Jossien" cup to us and the first competition for this trophy has just been flown:

1st Dutch Saint Formula Competition for the "Challenge René Jossien", April 11, 1992, Sports Hall Lunetten, Utrecht (7m height).

Senior	
Wijnand de Joode	5'31
Gé Brouwer	4'05
Niels Brendel	3'46
Fernand van Hauwaert (B)	3'41
Hans de Bruin	2'47
Jan-Willem Roest	2'42
Fred Verburg (1 flight)	0'31
Junior	
Fabrice Audry (B)	3'33
Remco Deenik (1 flight)	0'52
Suzanne van Egmond (1 flight)	0'19

Bostonian

A class almost unknown in Europe is the Bostonian class. It is comparable to Saint Formula, but has its own attractions. The models are larger, 400mm span, a little heavier, and can also be flown outdoors. At competitions the model is judged by the attractivity of its design. So-called charisma points are given in addition to the flight scoring. There exist two sets of rules: 7 gram and 14 gram minimum weight. As I do not have a complete set of official rules, can any of the U.S. readers send these to me?

From Free Flight News:

CLASS F1L - INDOOR EZB MODEL

The FAI international rules for 1.2 gram EZB were approved at the 1991 CIAM Plenary meeting and, since the "provisional rules" book does not have as wide a circulation as the regular Sporting Code, the rules are reproduced here in full. This copy includes specific substitution of the full wording for items which in the original proposal were given as references to paragraphs of section 3.4 of the Sporting Code.

The regulations for Class F1L given below are to be used in conjunction with the relevant parts of the FAI Sporting Code, Section 4 and 4a.

L.1 Definition

A monoplane aeromodel powered by one (1) extensible motor, and in which lift is generated by aerodynamic forces on fixed surfaces.

L.2 Characteristics

Wingspan, maximum projected - 45.72 cm (18.0 in)

Wing chord maximum - 7.62 cm (3.0 in)

Stabilizer area maximum - 50% of wing

Structure: Only balsa wood and adhesive are to be used for the basic structure. Exempted are the prop shaft, rear hook, thrust bearing, surface holding fittings and reinforcements for their attachments. No external bracing is allowed except balsa wood wing struts.

The motor stick must be a solid, single piece of balsa. The tail boom must also be solid and of one piece but may be an extension of the motor stick. Balsa splices up to one centimetre in length may be used for repair breaks in the motor stick or boom.

The propeller must be all balsa except for ground adjustable pitch fittings if used.

There are to be no devices for changing any part of the model's geometry or torque during flight. Only the normal flexing of the structure due to flight loads or motor forces is allowed.

Covering: Models are to be covered with any commercially available solid sheet material such as paper or plastic. Microfilm is not allowed.

Weight: The weight of the model without rubber motor shall not be less than 1.2 gram.

L.3 Number of Flights

The competitor shall be allowed 6 flights of which the 2 best flights will be taken for classification.

L.4 Definition of an Official Flight

Only flights of 60 seconds or more will be considered as official. A flight may be terminated by any physical means within the first 60 seconds. A flight of less than 60 seconds duration will be considered a delayed flight and there will be one delayed flight allowed for each of the six official flights; the delayed flights will not be accumulative.

L.5 Number of Models

There is no limit to the number of models that a competitor may use at an indoor contest.

L.6 Collision Rule

In the event of a collision between two models in flight, each competitor must choose, in the time span between the collision and two minutes following the termination of his flight, either to retain the time of the flight as an official time, or to recommence the flight. The recommenced flight must be flown before the next official flight.

L.7 Steering of Model (use of balloon & line or rod)

a) Steering must only be used to avert collision with the structure of the building, its contents or other models. Movements of the model must be primarily in a horizontal plane.

Note: If, in a timekeeper's opinion, a model's altitude change is approaching one half metre, or one metre for each 25m of altitude (whichever is larger) he will warn the competitor. Continued disregard of the timekeeper's warning will result in a terminated flight.

b) A balloon(s) with its line attached, or a rod 2 to 8 metres in length, may be used to alter the course of the model, or to reposition it in another part of the flying space. There will be no time limit or restriction to the number of steering attempts, except that all steering shall be done from the **front end** of the model and **never from behind.**

c) During the steering the propeller may get caught by the line/balloon(s)/rod and stop revolving. As soon as the propeller stops, a third watch should be used (preferably a double button watch, that records accumulative time) to determine the total of propeller stopped time, which is deducted from the running total shown on the other two watches.

If the steerer cannot disengage the propeller after steering, all three watches are to be stopped together, and the total prop-stopped time deducted as is detailed above.

d) No reflight is allowed other than if fouled by another competitor during steering.

e) The decision to steer is the responsibility of the competitor and must be done by him. A physically handicapped competitor must arrange for a substitute with the contest officials. In the case of poor sight, a medical doctor's affidavit certifying the competitor's corrected vision is no less than 20/40 for the better eye must be submitted to permit a substitute steerer.

f) It is the time keeper's responsibility to observe the use of the steering equipment, and to warn the competitor if he is likely to endanger other models. If other models are fouled by the steerer, the fouled competitor has the choice of a substitute flight, which, if taken, is his score for that round. He must exercise this choice to his timekeepers no later than two minutes after termination of his flight. If he chooses to restart, he must do so before his next official flight.

L.8 Timing of Flights

The flights must be timed by two timekeepers with stopwatches or timing devices recording to at least 1/5th of a seconds.

From General Section, para. 2.9 only 2.9.1, 2.9.2 and 2.9.6 apply to class F1D.

The timing of each flight shall commence when the model is released. Timing will terminate when:

a) the model comes to rest on the floor of the building

b) jettisoning occurs

c) the model comes into contact with any part of the building or its contents other than the floor and translational movement ceases. Note: In this case the timekeepers shall continue to time the flight for 10 seconds after translational movement has ceased. Should the model remain in contact with the building or its contents after 10 seconds, timing will cease and the 10 seconds will be subtracted from the flight time. Should the model release itself from contact with the building in less than 10 seconds, timing will continue normally.

L.9 Number of Helpers

The competitor is entitled to have one helper.

L.10 Launching

a) Launching is by hand, the competitor standing on the ground.

b) Winding of rubber motors may be done by either the competitor or his helper.

L.11 Ceiling Height Categories

The following ceiling height categories are recognised for contests and records:

I. - less than 8 metres.

II. - between 8 and 15 metres.

III. - between 15 and 30 metres.

IV. - higher than 30 metres.

The height of the ceiling is defined as the vertical distance from the floor to the highest point at which a circle of 15 metres can be inscribed, below the primary structure of the building.

FLY-BABY

F1D-Beginner model by Gerrit Jan Breteler (NL)

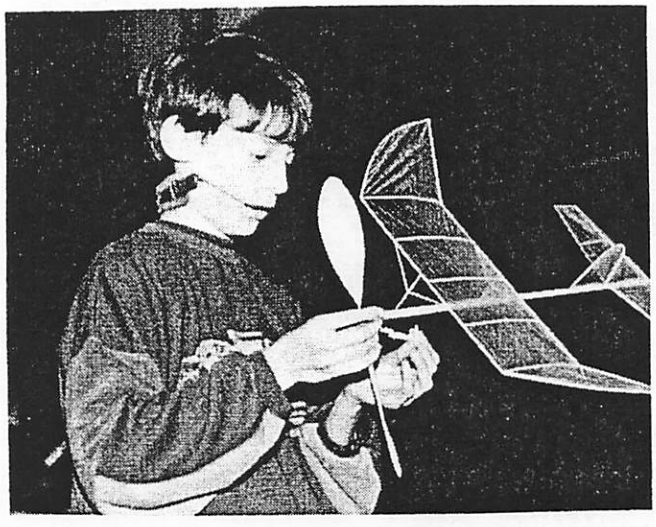
Fly-Baby is designed for flying in low ceiling halls and turbulent conditions. Stability and stiffness are important characteristics of the model, but when correctly trimmed it can fly very efficiëntly. The model is a mix of a Penny Plane (Rol Anderson's "Super Penny Plane") and an Easy Bee ("Serendipity" by Jerry Nolin). Motorstick, tail boom and wing are from the Penny Plane. De wing tip shape was modified to allow flying against the ceiling (less chance of hooking). The stabilizer and propeller design come from the Easy Bee. The stabilizer has a section with a very rearward high point. Correctly built the stabilizer will have "self-correcting properties". This is essential when flying in turbulent conditions. The stabilizer leading edge may not be too stiff. Otherwise the correcting action will not work.

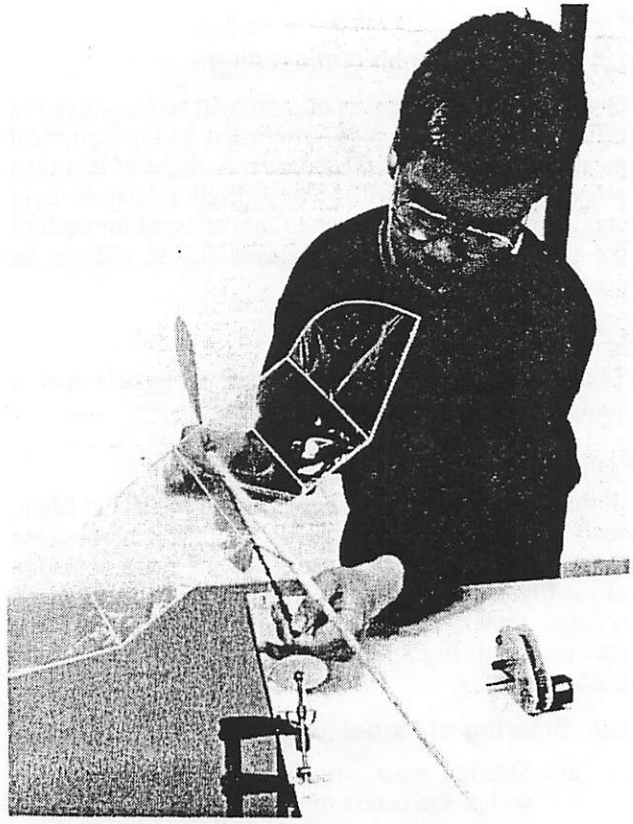
Except for the propeller and the tailboom 1 mm balsa can be used to build the model (standard model shop balsa 'A' or 'B', weight of a sheet 10x100cm 8 gram). For the tailboom 0.3 gram quarter grain has to be used. This can be shaved from a wetted blank of wood, or you have to use special indoor wood. The tip of a fishing-rod can be used as a jig.

For the prop blade indoor balsa has to be used. Choose a piece of sufficient rigidity. The blade is built up from 3 cm wide strips, glued together at an angle of 30° onto the spar. First the strips are glued together with cyano. Then the correct blade shape is cut out along an aluminium template. After wetting the blade it can be brought into the correct shape and twist on a cilindrical jig. The diameter of the jig has to be ± 15 cm. The drawing indicates a number of places which have to be reinforced with carbon fiber. Preparing the carbon fiber and the use of cyano on indoor models will be described in a future Indoor News. The model can be built without the use of carbon. In this case the stabilizer spars have to be a little larger.

The model is covered with microlite, which is glued to the wood with thinned down contact cement. The middle section of the wing is covered first. The tips are covered separately. Where foil onto foil has to be glued (along the dihedral joint) thinned down Robbe "balsa-loc" is used. This is a water soluable, PVA-like glue for foil covering. Balsa-loc can also be used to repair damaged foil.

I wish you good luck building and flying the Fly-Baby.





Robert Wientjes hooking up his hard to beat Fly-Baby.



Another Fly-Baby fan: Suzanne van Egmond. Did 10'49 at the Dutch Nationals and placed third.

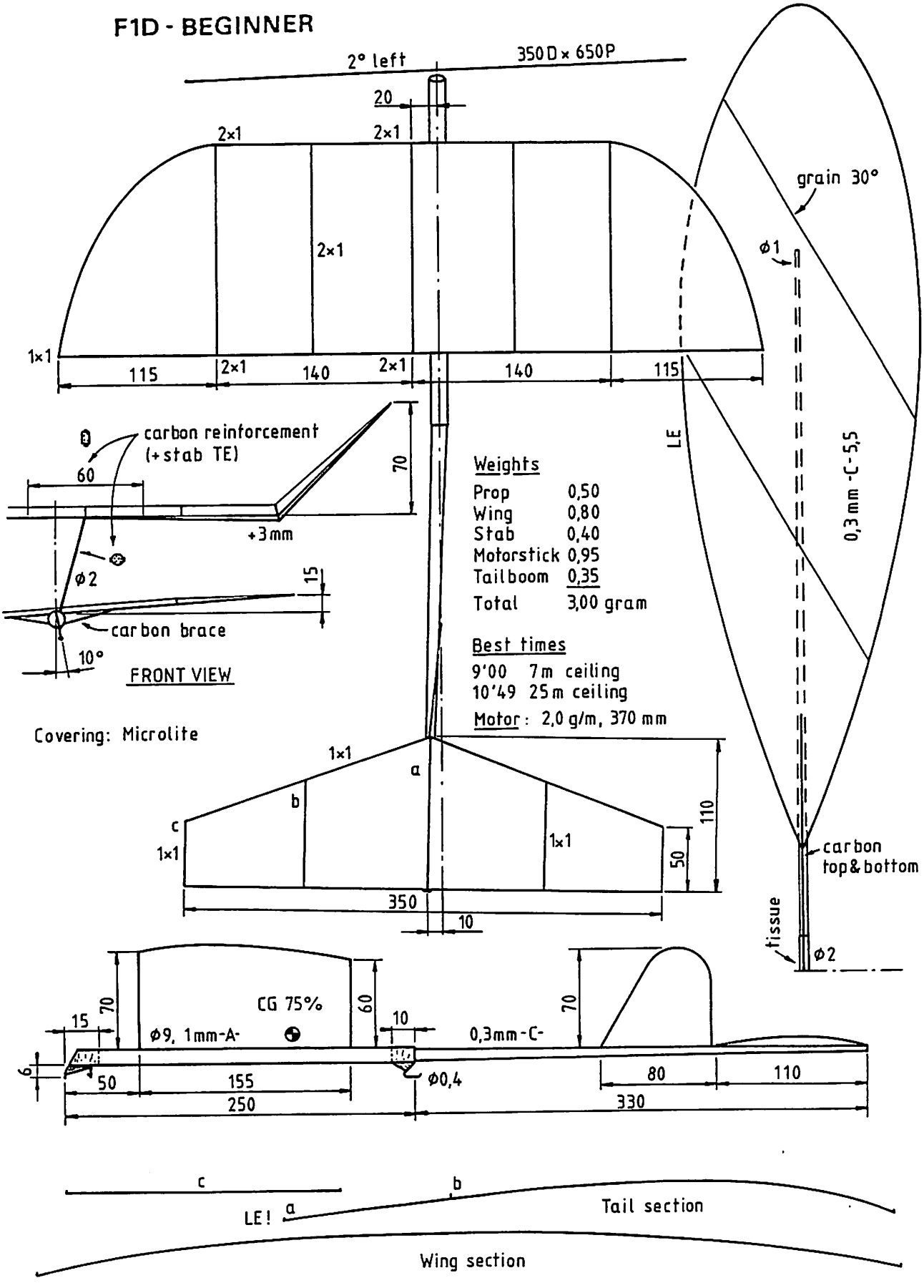
Jeroen Wackers with his Fly-Baby.
Model was 0.8 gram underweight!

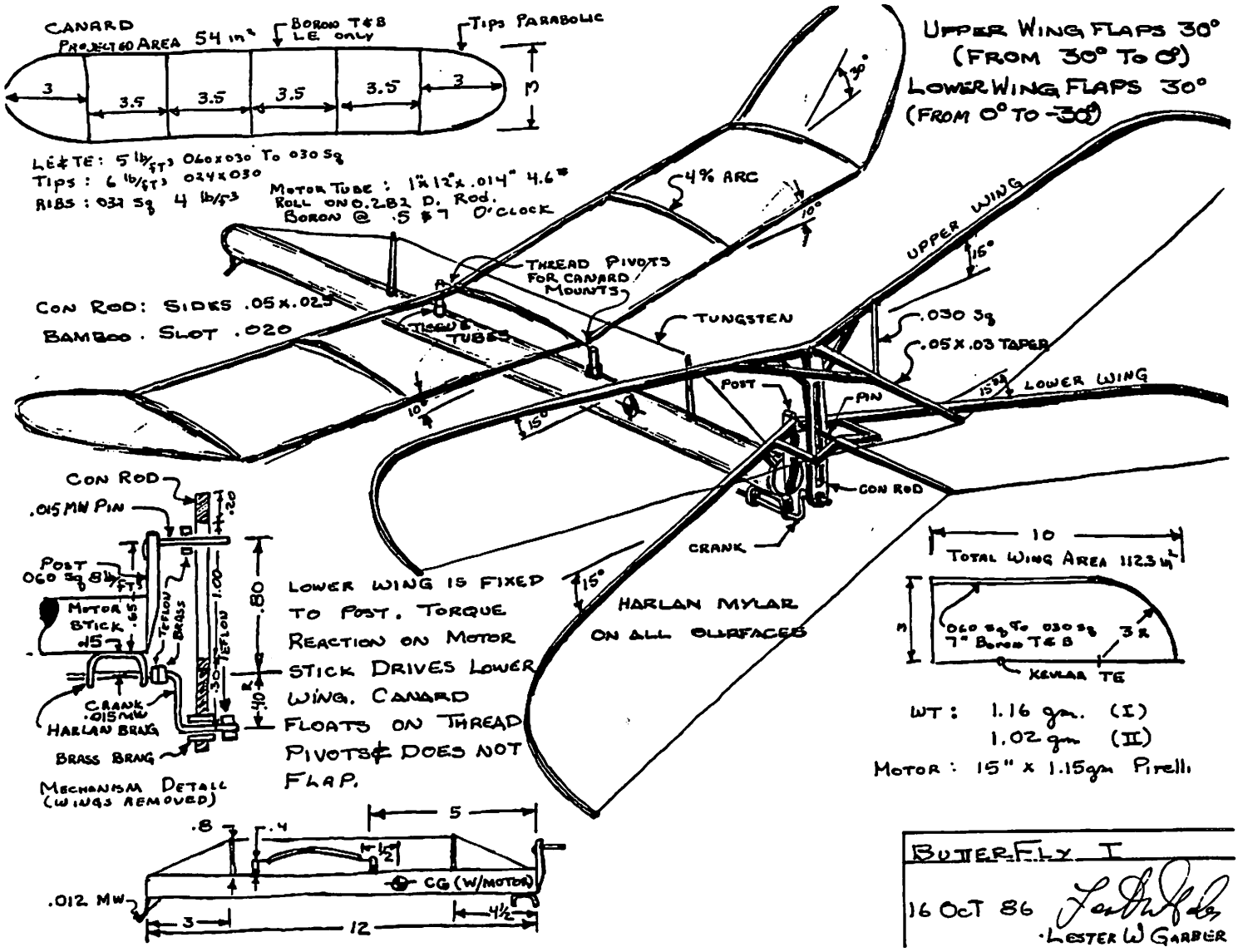
(Note: look for Model Aviation January 1988 for a fantastic article by Jerry Nolin about his Sirendipity Easy Bee!)

FLY-BABY

by Gerrit Jan Breteler (NL)

F1D - BEGINNER





Butterfly I

16 Oct 86 Lester W Garber

BUTTERFLY I

Butterfly I is my latest and most successful ornithopter design.

Aerodynamically it follows the principles that have been evolved by Frank Keiser. These can be summarized as follows:

Flapping wings are very inefficient for lift generation.

A canard can be used to generate lift to support the weight of the model. The canard operates in relatively undisturbed air and is an efficient lifting surface. Hence a canard configuration is inherently more efficient than is a tractor design. The canard should be as large as possible (close to the legal limit of 50% of the flapping surfaces).

To increase the wing loading on the canard, the center of gravity should be as close as possible to the center of lift on the canard and as far away as possible from the center of lift on the flapping surfaces. On Butterfly I the wing loading on the flapping surfaces are about 20% of the wing loading on the canard. The canard actually carries about 70% of the model weight while the flapping surfaces carry the remaining 30%. This means that the flapping surfaces are used mainly to produce thrust.

An over-under biplane flapping configuration should be used. As the upper and lower wings flap towards each other they push air rearwards in a bellows like effect. My experience shows this configuration to be vastly superior to monoplanes or to my previous fore-aft biplane configurations.

Mechanically, Butterfly I is very simple in design. Torque reaction on the motor stick flaps the lower wing while a pin and slider mechanism flaps the upper wing. The canard does not flap because it is mounted on thin thread pivots (I use a few strands of unwaxed dental floss).

By comparison, the typical biplane design has 4 connecting rods and 16 pivot points on the wings and connecting rods. Butterfly I has only 1 connecting rod and 2 pivot points.

The flapping angle is determined by the crankshaft radius and the centerline distance between the crankshaft and the pivot pin:

SIN(FA) = R / D R = Crank Radius FA = Flapping angle
D = CL distance crankshaft to pivot pin

To date I have built two models of this design. Their weights are 1.16 gm and 1.02 gm. Both have ample strength and stiffness. The design could probably be built to 0.9 gm if the canard were covered with microfilm.

Lester W. Garber October 23, 1986

Aus: Thermiksense

Saalflug-Protokolle

von Thomas Merkt

Früher, als ich meine Karriere im Saalflug begann, war jeder Wettbewerb für mich ein riesiger Streß, selbst wenn ich nur in einer Klasse gestartet bin. Dagegen schien es bei einigen anderen ein Kinderspiel zu sein. Dies lag zum einen daran, daß ich vor jedem Wettbewerb ein neues Modell baute, das selbstverständlich erst am Abend davor fertig wurde. Das war natürlich eine sehr überzogene Maßnahme, die auf gar keinen Fall notwendig ist, denn im Saalflug, außer bei den Microfilm-Modellen, hält ein Modell mindestens 1-2 Jahre, ohne an Leistung zu verlieren bzw. bis es vollkommen ausgereizt ist.

Aber auch als ich nicht mehr so viel Zeit zum Bauen fand blieben die Wettbewerbe stressig, denn es gab jedesmal ein Rätzelspiel, welches denn der richtige Gummi sei. Ich habe mir dann mit der Zeit auf den Gummitüten die beste Flugzeit und die Klasse notiert, was schon eine große Erleichterung war. Im Laufe der Zeit lernte ich auch die Vorzüge eines Drehmomentmessers zu nützen, was aber wiederum ein Faktor mehr war, der jedesmal neu ausgelotet werden mußte.

Dies alles ging so lange, bis mir jemand gesagt hat, ich solle doch Wettbewerbsberichte schreiben und mir ein Formular in die Hand gedrückt hat. Es dauerte zwar eine ganze Weile, bis ich damit zurecht kam, aber dann war es wirklich eine große Erleichterung und vor allem wurden die Flüge von Wettbewerb zu Wettbewerb konstanter.

Der Umgang mit so einem Wettbewerbsbogen ist eigentlich ganz einfach. Allerdings benötigt man, um ihn komplett auszufüllen, einen Drehmomentmesser, der heutzutage ohnehin unersetzlich ist. Man beginnt mit der oberen Zeile, indem man die modelltypischen Daten und Wettbewerbsbedingungen dort einträgt. Unter Wettbewerbsbedingungen verstehe ich die Hallenhöhe, die Wetterlage und die Temperatur, denn sie beeinflussen die Flugdauer drastisch. Danach füllt man die Spalten, die den Propeller charakterisieren, aus, den Propellertyp bzw. die Nummer, den Durchmesser,. die Steigung und das Gewicht. Beim Gummi geht es genau gleich. " Län " steht für die Länge des Gummistrangs, " Gew " für das Gewicht und die Spalte " Stra " sagt nur aus, ob man mit ganzem oder einem kleineren Strang fliegt. Die Gummistärke gibt man in g/m an, das heißt man wiegt, wie schwer 1 m des entsprechenden Gummis ist. Wem das zu umständlich ist, kann aber auch die Stärke in mm angeben oder wenn man will auch beides.

Die Angaben, die wir bis jetzt eingetragen haben können, wenn sie sich nicht ändern, mit Gänsefüßchen nach unten weitergeführt werden. Was sich aber bei jedem Flug ändern wird, sind die folgenden Spalten. Der Buchstabe N steht für Umdrehungen und D für das Drehmoment. Bei N_m trägt man nach dem Aufziehen die maximalen Umdrehungen ein, die man auf dem Gummi draufbringt und gleichzeitig auch das entsprechende Drehmoment D_m. Danach kurbelt man den Gummi auf das gewünschte Startdrehmoment D_s zurück und trägt die entsprechenden Startumdrehungen N_s in die Tabelle ein. Nach dem Flug hängt man den Gummi wieder in die Aufziehvorrichtung und kurbelt den Gummi ganz zurück. Dabei zählt man natürlich wieder die Restumdrehungen N_r. Hierfür sollte ein Wert von 100 Umdrehungen angestrebt werden, ansonsten muß der Gummi länger oder kürzer gemacht werden. Aus den Restumdrehungen und den Startumdrehungen kann man dann den Faktor N_r/N_s ausrechnen. Dieser Wert ist aber relativ unrelevant. Viel wichtiger ist die Frage nach der Umdrehungszahl pro Minute, die in die vorletzte Spalte eingetragen wird. Dazu subtrahiert man die Restumdrehungen N_r von den Startumdrehungen N_s und teilt diesen Wert durch die Flugdauer. Im Saalflug versucht man natürlich eine geringe Drehzahl zu erreichen. In der letzten Spalte ist noch Platz für Bemerkungen über Vorfälle während des Fluges, bei Beschädigungen am Modell oder bei einem Gummiriß.

Wenn man jetzt bei jedem Wettbewerb so einen Wettbewerbsbogen ausfüllt, kann man die einzelnen Wettbewerbe wunderbar vergleichen und dann daraus erkennen, was man noch verbessern könnte.

Saalflug-Quellen

Champion Model Products
880 Carmen Ct., LaVerne, CA 91750
Owner: George Schroedter
Black rubber in bulk & tissue

FAI Model Supply
Box 3957, Torrance, CA 90510
Owner: Ed Dolby
Tan & black rubber in bulk, rubber lube; cat $1.50

Hannan's Runway
P.O. Box 860, Magalia, CA 95954
Owner: Bill Hannan
"Peanuts & Pistachios " Vols. 1-5 & Plans

Harlan Mfg.
15 Happy Hollow Rd.,
Wayland, MA 01778
Owner: Ray Harlan
Ultra film, scale, balsa stripper, rubber stripper, prop bearings

Indoor Model Supply
Box 5311, Salem, OR 97304
Owner: Lew Gillow
Complete line of indoor supplies, plans, wood & kits; cat $2.00

Micro-X
Box 1063, Lorain,OH 44055
Owner: Jerry Skrjanc
Complete line of indoor plans and supplies; cat $1.50

NFFS Plans
10115 Newbold Dr.
St. Louis, MO 63137
Contact: Bob Klipp
"Winning Indoor Designs" book.

Scale Flight Co.
1219 So. Washington St.
Bloomington ,TN 47401
Comet/Megow 10 cents plans and kits

Scale Model Research
2334 Ticonderoga,
Costa Mesa, CA 92626
Owner: Bob Banka
Scale documentation pix and 3-views; cat $3.00

Wilder's Machine Works
2010 Boston, Irving, TX 75061
Owner: Bob Wilder
Fine quality winders and torque meters

Modell / Typ Klasse:	Flügel: Tiefe: cm Gewicht: g Spannweite: cm	Schwerpunkt: %	Ort : Halle: m
	Rumpf: Länge: cm Gewicht: g Hakenabstand: cm max. Drehm.: gcm		Wetter : Temperatur: °C

Datum	Durch-gang	Propeller				Motor				Touren						Zeit min sek	$\frac{U}{min}$	Bemerkungen
		Typ	Ø	S_{tg}	G_{ew}	Stra.	Län	G_{ew}	$\frac{g}{m}$	N_m	N_s	D_m	D_s	N_r	$\frac{N_r}{N_s}$			
	1																	
	2																	
	3																	
	4																	
	5																	
	6																	
	Trai-ning																	



Original Konstruktion: Gary Kimberley, Australien

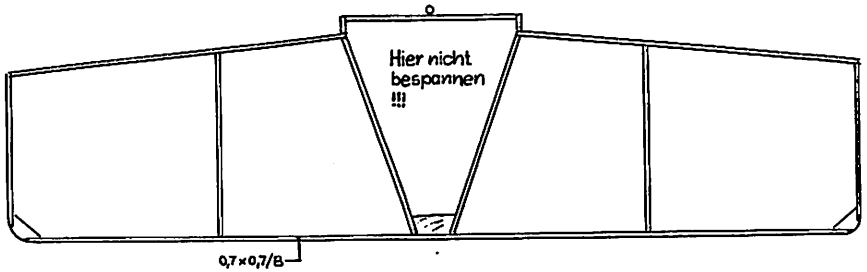
Modell Peanut Scale 9 Inch Rumpfformel

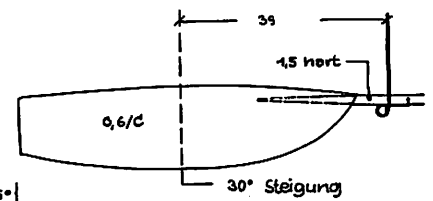
Basisplan: Konstruktion David Aronstein, USA

Überarbeitete Konstruktion: Jürgen Weil, BRD

Zeichnung: Heinz Neumann, BRD

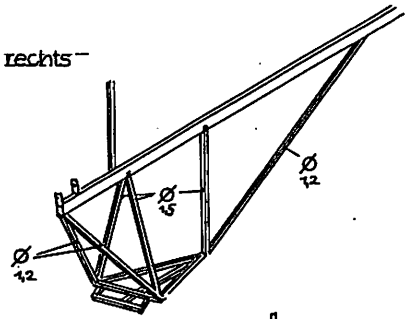
Maßstab: 1:1 / Maße in mm





Propeller:
Sturz 0°
Seitenzug: 2° + rechts

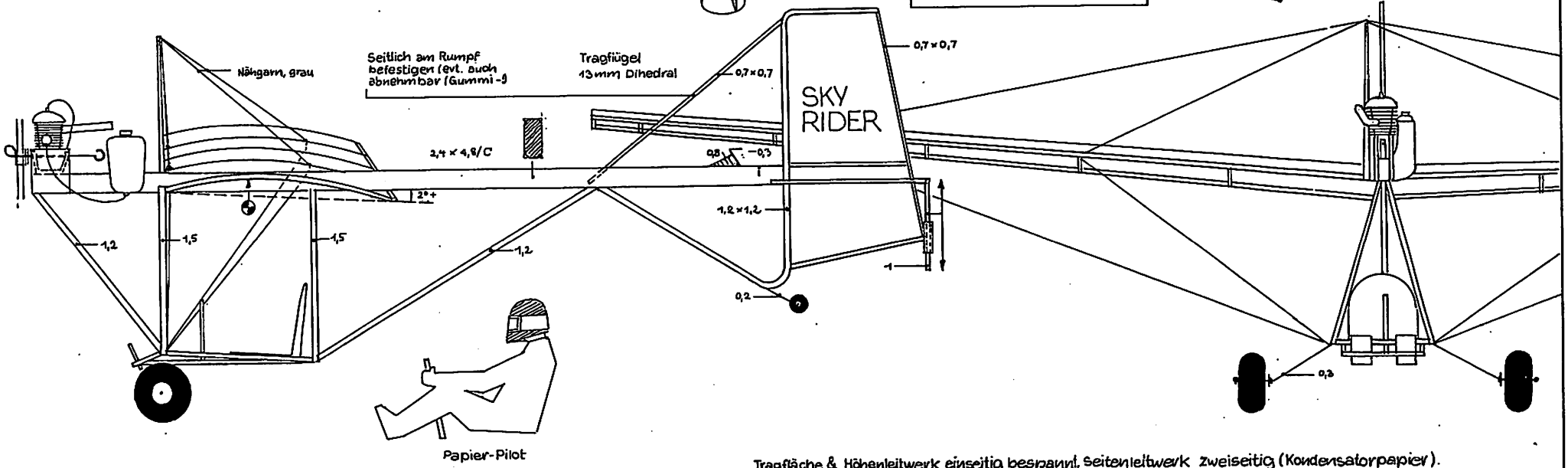
Gummi:
1 × 1,3 Pirelli
Länge 320
ca. 1580 Umdrehungen





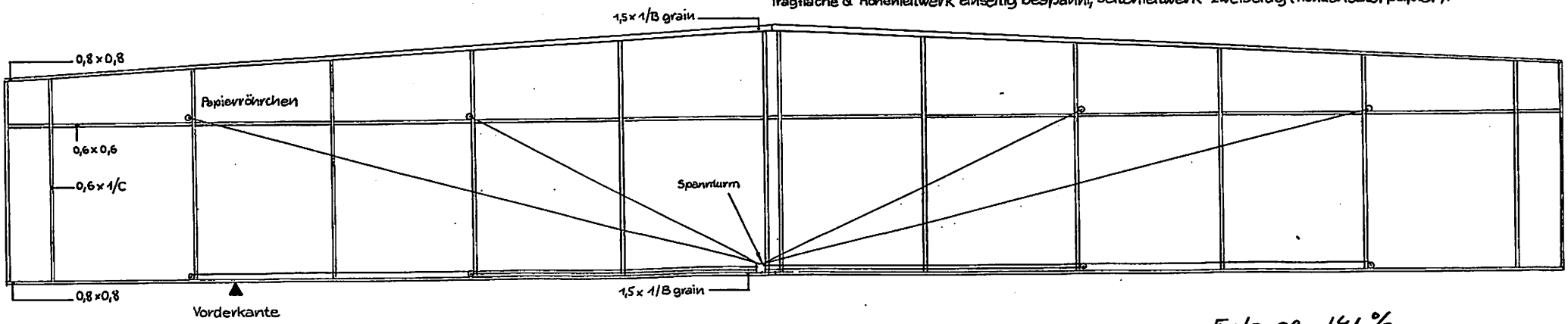
Cola-Dose





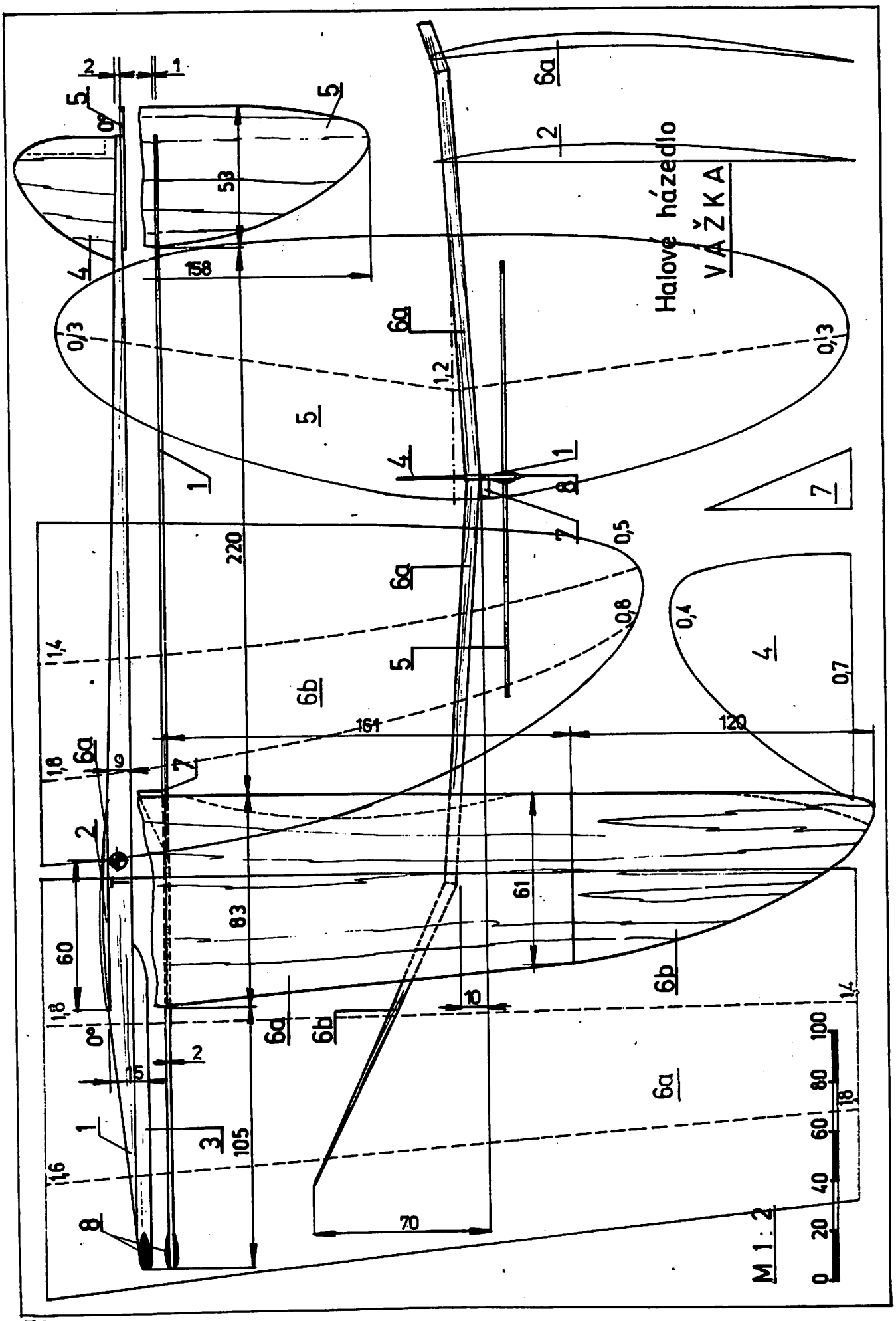
Papier-Pilot

Tragfläche & Höhenleitwerk einseitig bespannt, Seitenleitwerk zweiseitig (Kondensatorpapier).



Enlarge 141 %

51



FROM:
MODELÁŘ · 3/1987