Diary

1st August Driffield	SMAE Centralised Mini. A1; CdH; ½A power; CO2; HLG. Contact P Farrimond, tel : 0942 34068.
8th August Woodbury Common nr Exmouth	Woodbury Rally. O/R;O/P;O/G; combined mini; HLG; vintage. Contact C Chapman, tel : Exmouth 3414.
8th August Cardington	SMAE Indoor. EZB Expert/Novice pairs; Open EZB; F1D. Contact L Barr, tel: 01 570 6311/9732/8212 during daytime.
15th August Everleigh	Croydon Open Contest. O/R; O/G; O/P. Contact D Thomson, tel : 01 998 9472.
20th August + Noize, Thouars	5th Poitou International. F1A (on Aug 20); F1B (Aug 21); F1C + F1G (CdH) (Aug 22). Contact M Poussard, 78 rue La Fontaine, 79100 Thouars, France.
28th August + Cardington	SMAE Indoor Nationals. Aug 28th : CO2; 35cm microfilm. Aug 29th : EZB Expert/Novice pairs; EZB (Houlberg Silver Trophy). Aug 30th : F1D (Aeromodeller Trophy); Open microfilm. Contact L Barr (see August 8th for tel).
3rd September + Zulpich, FRG	European Championships. F1A; F1B; F1C.
5th September Area venues	5th Area Centralised event. F1B (Gutteridge); Team Power (Keil); A1 glider.
12th September Cardington	SMAE Indoor. Programme to be announced.
12th September Church Fenton	SMAE Northern Gala. O/R; O/P; O/G. Contact D Kerswell, tel : 0653 2580. SMAE only.
18th-19th Sept Barkston Heath	SMAE First Team Trials. Details to be announced. Contact P Farrimond for information or pre-entry (£2 per class) at 726 Warrington Road, Marcus Bridge, WIGAN WN3 6XB; tel : 0942 34068.
3rd October Odiham	SMAE Southern Gala. O/R; O/P; O/G; ½A P; HLG.
10th October Church Fenton	Northern Area Model flying rally. Contact D Kerswell, tel : 0653 2580. SMAE only.
16th October SATURDAY Witchford, Ely	Witchford Meeting. F1A; F1B; F1C; A1; CdH; ½A. Contact M Dilly, 20 Links Rd, West Wickham, Kent.
17th October Cardington	SMAE Indoor. Programme to be announced.
17th October Church Fenton	Northern Area FAI. F1A; F1B; F1C. 2 flights before 13.00. Contact D Kerswell, tel : 0653 2580.
23rd-24th Oct	SMAE Second Team Trials. Venue to be announced at Barkston Heath,at the first trials.

JULY 1982 82/07

FFn

FREE FLIGHT NEWS

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Compiled and published by Ian Kaynes, Paul Masterman. Malcolm Wood.

GLIDER DEVELOPMENT by Martin Scott

After wasting about 18 months trying to design my own glider virtually from scratch, I decided in 1977 to build a good published design and start again. I wrote to the Czech magazine "Modelar" for the full size plans of Dvorak's "Saper", which they duly forwarded along with some other plans which I had not requested. Among these was an A/2 called "Bejbi" (Baby) designed by one Ivan Horejsi, of whom I had never heard (but I know better now). I liked the look of this model so I built one. The present models evolved or developed from this and a brief summary of progress is set out below.

The "Bejbi" is a glider of "average" continental dimensions, its major distinctive feature from an external point of view is a curved, swept back tip on an otherwise constant chord wing. The aerofoil is a Horejsi special with the Benedek 7457d upper profile and the Lindner lower profile. The tailplane is undercambered, probably Lindner again. The first one I built flew like a dream compared to my earlier models. It had good towline characteristics, a good glide, thermalled well and retained its trim from week to week. Dead air time was around 2.20 for my version which weighed 460g; this is not as high as some claim, but no doubt the high weight killed the glide a bit. Anyway, I was pleased with it and built two more in the next few months. These two were fitted with Maxaid hooks which, despite having some rather bad press at the time, worked well and I did not really have much trouble with them. The three models had similar flight characteristics and got me through most of the '77-'78 season.

Towards the end of 1978 I tried to take stock of my failure to win any contests outright. Several things seemed wrong :

a) My models were not as good as some I had seen - they were all grossly overweight, therefore first priority was to get them close to 410g.
b) My flying techniques were not as good as others', it seemed.
c) Confidence was missing because of the above - this is a great inhibitor to contest performance.

Therefore, both the models and my techniques needed working on. I set down three objectives, which were as follows :

1) Improve the models still air time. This must be a plus in all conditions and I thought at the time that a good glide might make up for my inadequacies as a thermal finder. I have since found that this is only true in calm, low-lift conditions.
2) Gain some height on release of the model. Again this had to be a plus in all conditions, the problem was obtaining the necessary hook and practising. Help in this direction came from Czechoslovakia again when Horejsi sent me an engineering drawing of his hook. I eventually built two of them.
3) Improve my own flying techniques and thermal detection. Self explanatory this : practice, practice, practice.

As far as model design was concerned, I made a policy decision to stick with the Horejsi wing section as it seemd to work well in all conditions, so I built a wing jig which has saved a lot of time and effort,with experiments in structure being easily accomodated.

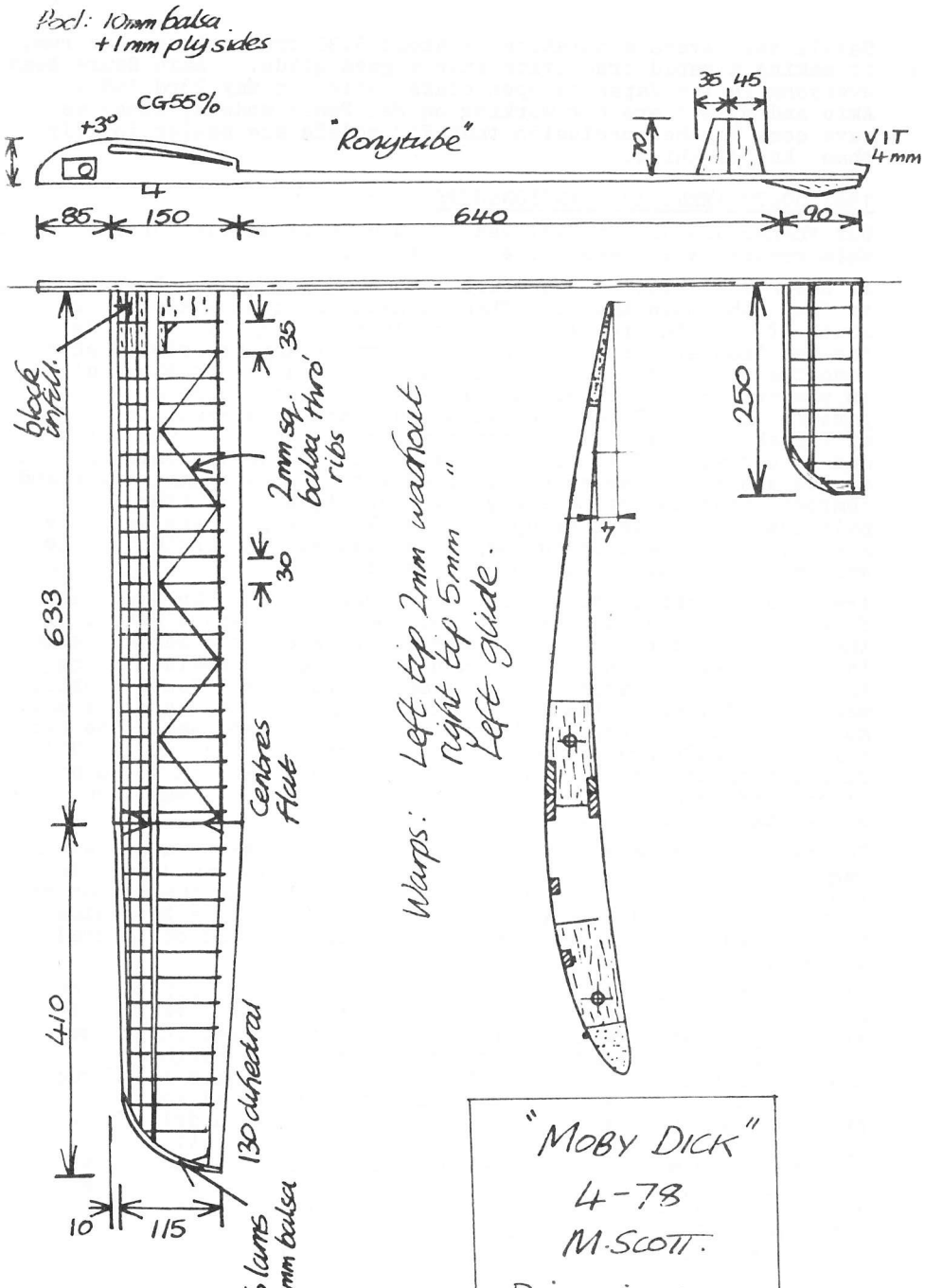
The first thing I tried was to increase the aspect ratio by lengthening and tapering the wingtips. This did seem to result in a slight increase in the dead-air time (about 5 seconds better) but the all-up weight was still high at 435g. This model, 1-78, was originally fitted with a Maxaid but this was later removed as there was insufficient throw available at the rudder for reliable circling. It was fairly good as a windy weather model, but suffered a lot of tip damage as the wingtip spars were balsa only. This problem has been rectified on all subsequent models by the use of tapered spruce spars.

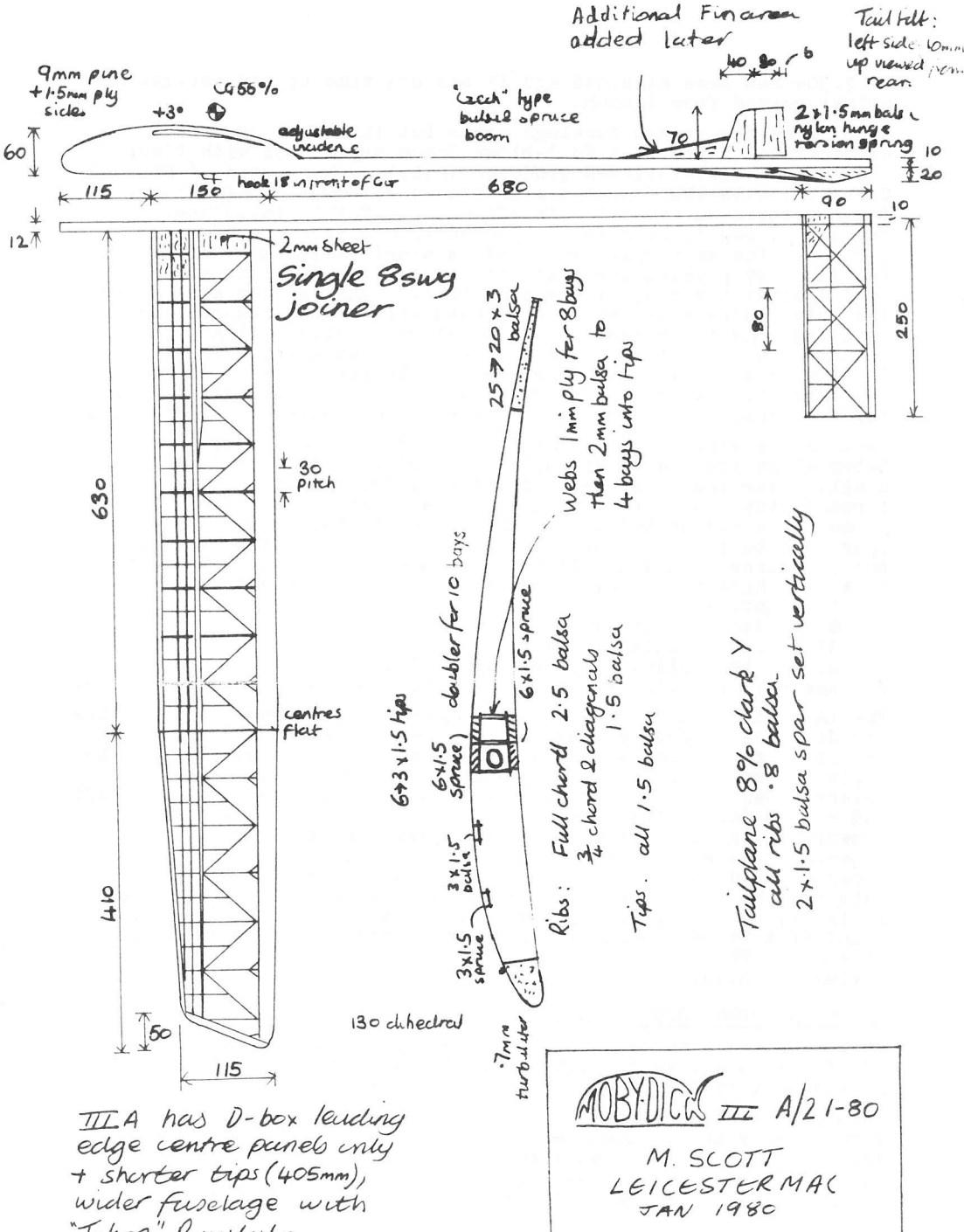
The next two models in sequence werein fact A/1s. I scaled down the "Bejbi", used typical British construction and arrived at the A/1 which I and some of my fellow clubmen still fly. Full sized plans are available from me (at 23 Highgate Dr, Leicester LE2 6HJ).

The first major departure from Horejsi's design was 4-78. In this model the fuselage structure was drastically altered to a pod of 10mm balsa with 1mm ply sides, epoxied into a Ronytube which continued right up to the nose block. The nose length was reduced to 85mm to aid stall recovery and the resulting humped pod looked rather whale-like and suggested the name "Moby Dick" as a series title. The wing and tailplane aerofoils were the same as the original and the wing layout retained from 1-78, but with 2mm square hard balsa bracing passing through the ribs to reduce twisting. It weighed 149g, covered in lightweight Modelspan. Total weight was 412g. I also tried a VIT on this model, which gave 4mm more negative on tow. This is a great asset in calm conditions making towing less strenuous. It also allows tighter on-the-line circles. The big disadvantage is that it makes thermal identification less positive when testing the air in circle mode, as the model is already bouyant, and the aircraft pulls very hard when accelerating prior to release with consequent problems if a "twanger" set up is used. Despite this the model was a success, having a still air time in excess of 2.30 and meeting the weight target. It ended its days at Bassingbourn one still damp day when, attempting an over-energetic catapult launch, the wing twisted round the main spar and unwrapped the ribs.

1-79 had a stiffer wing featuring a box spar and full-depth Warren girder bracing aft of the main spar. A Lepp-inspired underfin and wooden fuselage was also tried. The model was a failure in all respects bu one - the wing was very strong, and the Warren girder bracing has been retained in all subsequent models. For some reason this glider exhibited a tendency to wander on the glide. This wandering was more apparent in breezy weather and was later traced to an imbalance in side area either side of the C.G. As the model flew downwind it seemd reluctant to turn back into wind as the fin,or rear side area, was insufficient to balance the effect of the large pod. This was rectified by adding more fin area.

The afailure of the 1-79 halted development for a while and a lot of time was wasted trying to get it to fly well, but after taking stock of progress to that point I realised that a still air time





IIIA has D-box leading edge centre panels only + shorter tips (405mm), wider fuselage with "Tchop" Ronytube

of 2.30+ had been attained and it was now time to concentrate on height gained from launch.

1-80 tried the wooden fuselage again but this time of more conventional layout. A full-blown Czech style hook with timer start and a flat-bottomed geodetic tailplane were used (8% Clark Y) with the moment arm increased to 680mm to compensate for the expected reduction in efficiency of this tailplane. The two 10 swg joiners were replaced by a single one of 8 swg buried in the main spar, which allow simple adjustment of relative incidence by packing the rear wing stop. The trailing edge is held against the stop by a rubber band. This system also means that ply centre ribs can be dispensed with, which reduces the building time and weight. The model goes quite well and is in regular use in contests. A second copy, featuring a wooden D-box wing was built but this does not thermal as well as the open-structure wings. The D-box wing weighs 163g against 150g for the other one. Both are covered with lightweight Modelspan.

Obviously a wing still in torsion is a desirable feature, but D-box wings are fiddly to build. A trick I discovered is to double cover the front part of the wing from the main spar forward, top and bottom, with an extra layer of tissue, producing a tissue D-box. It goes without saying that the main spar must be an I-beam or box. This method really does work, but of course is not as effective as a wooden D-bod. It seems like something for nothing and has a few positive attributes :

1) lightness
2) no fancy building techniques
3) allows turbulator spars to work
4) can be applied to existing models.

Perhaps Kevlar cloth or something similar would also be effective.

The lastest model "Moby Dick 4" has further refinements. The tips are designed to reduce drag and have been made by sanding the underside round and leaving the top flat and the edge sharp. The angle of sweepback is also important; it forms a built-in reverse Hoerner tip. It employs a Hatschek hook with timer start and rudder delay, the fuselage is a "Tchop" Ronytube and the moment arm is slightly reduced to 675mm. At the moment I am experimenting with tailplane sections and the model has both undercambered and flat-bottom tailplanes. The wing weight is 145g and the model needs 15g of ballast to bring it up to weight. It is flying very well, my best one to date. In the Grantham Grand Prix it was second in the open glider fly-off with a time of 4.02. The next objective is to raise the standard of my flying technique.

AE-25 ½A POWER MODEL by Akio Ezure

Following the plan of a Japanese power model in the June issue of FFn, we now give the plan of a ½A model from the same country. It was sent by Koei Tsuda, with the following comments :

This is Akio Ezure's latest ½A model. It is rather sophisticated structurally and immaculately finished, but the most important thing is that AE-25 flies like crazy. It was originally at a weight of 234g but has now been reduced to 195g at my suggestion. It is out-flying my own American designs like Witch Hawk and Satellite. Average duration is about 5.30 from a 10 second run, it making a rapid transition into a good glide. Akio Ezure beat everyone in the Japanese open class contes on May 23rd 1982. Akio and myself are now working on FAI Power models, since we have come to the conclusion that F1C models are easier to fly than hot ½A ships.

1982 SOUTH AMERICAN CHAMPIONSHIPS

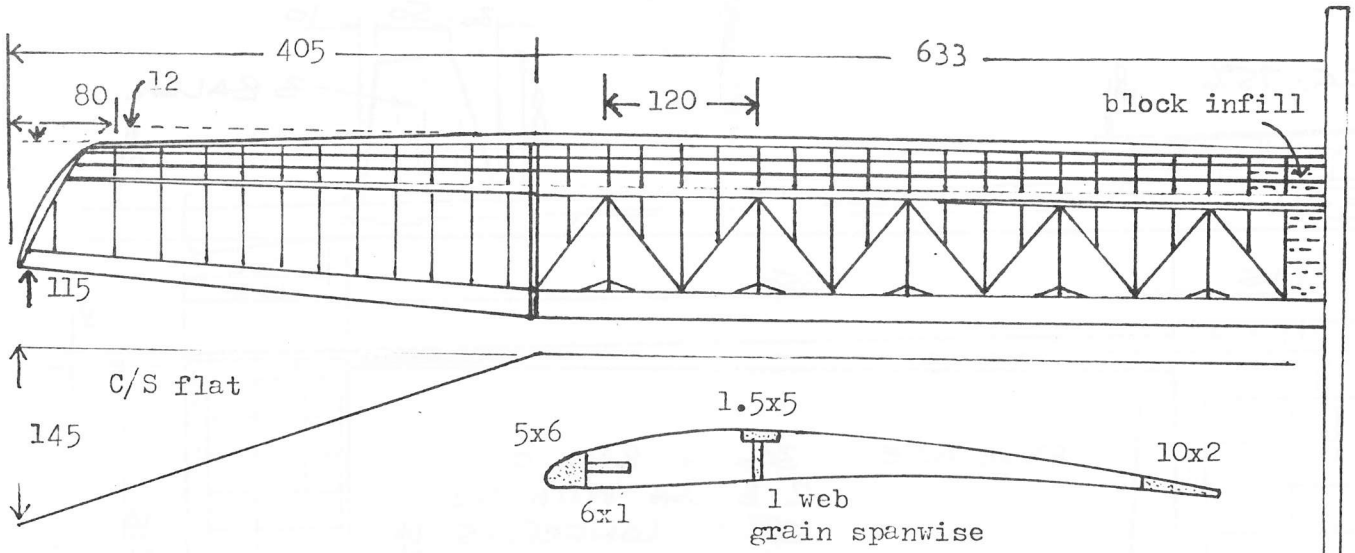
Our thanks are due to Gary Madelin and Andre Gomide for passing us this report, which was writen by Andre.

It was not without some concern that we departed Sao Paulo heading to the 13th South American Champs, held in Embalve Rio Terceiro south of Cordoba from April 6th to 10th. Right in the midst of the Malvinas affair (sic) we could expect any trouble, even the cancellation of the event. In fact, we had had problems already as one member of our RC glider team was hindered from participating. Though he had already acquired Brazilian citizenship, he was still considered a citizen of South Africa and so not allowed to cross the Argentine border. This was not a good start, but we were surprised with a good organisation and comfort that satisfied everyone. No signs of military or political activities, except on the TV. Despite the schedule of events, grouped all in two days, had caused some protests, the weather was so nice that nobody was affected.

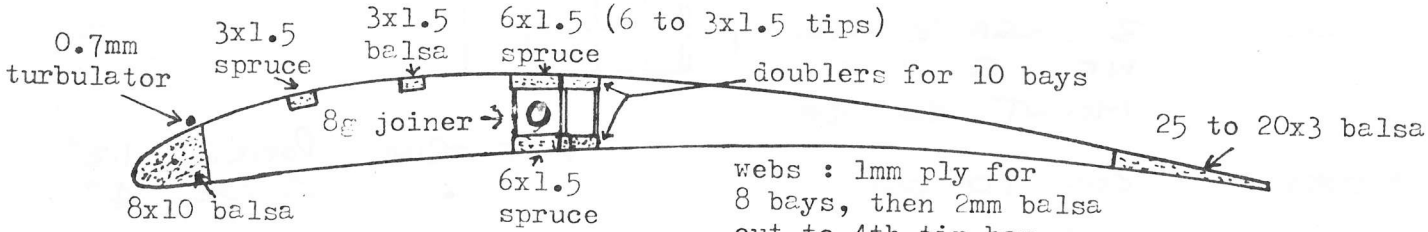
Argentine, Brazil, Chile and Uruguay participated in the free flight events : Nordic, Wakefield, Power and Coupe d'Hiver. At the same time three contests were being held : the South American, the 4th Pan-American and the 36th Argentine Nationals. There were thus three scoreboards and all competitors in the South American were also flying in the Pan-American Champs. The opposite was not true and only Argentinians could fly in their Nats. We had North America represented by Alberto Dona, who flew in the USA glider team at Burgos. We regret that Gary Madelin could not attend before definitively leaving Peru. Bolivia was also a regretable absentee.

The two contest days had identical weather, with dead air at the beginning of the first round, some very weak thermals just before the end of the first round, then changing through the rounds to a very turbulent and somewhat windy sixth round and a bit calmer for the last round. There was an overcast sky and occasional showers.

Glider day was Thursday and had a lot of people flying. Line crosses were a real trouble. The first round was very difficult with only 7 maxes. The contest between the Argentinian and Brazilian teams was impressive, but on the last flights the Brazilians did two 50 second flights and once again the Nordic Trophy was held by Argentina. The Chile team had lots of problems but their beautiful, light models were a delight to the eye. Two gliders on the field were quite distinctive : Vicente Molfino's one with its ultra-short tail moment, flying in very tight circles, and Mario Israilev's model that used a "kick down" device on the catapult, similar to the system used in power models. But Alberto Dona, with an all-sheeted wing model of conventional "Taft design", was the only one to achieve a perfect score, becoming



Tail section (full size) Ribs 1mm

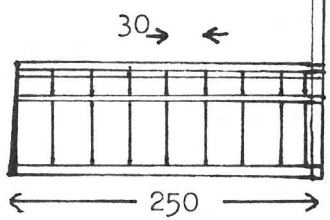


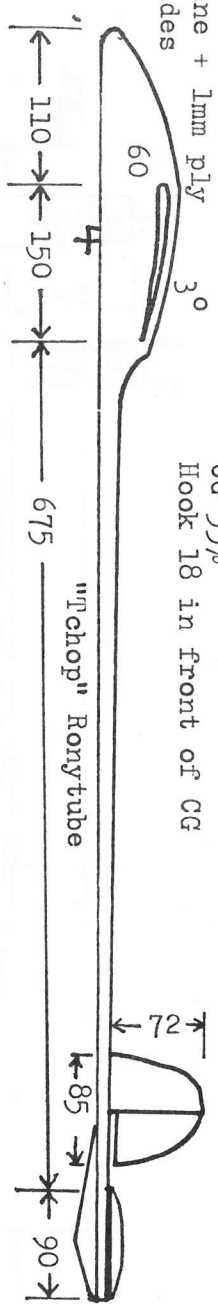
WING SECTION (full size)

Wing Warps

Right tip -4mm
Left tip -2mm
Left inner panel
$\frac{1}{2}^{o}$ more than right

left glide
tail tilt : left side
10mm up





SCALE 1:6 All dimensions in millimetres

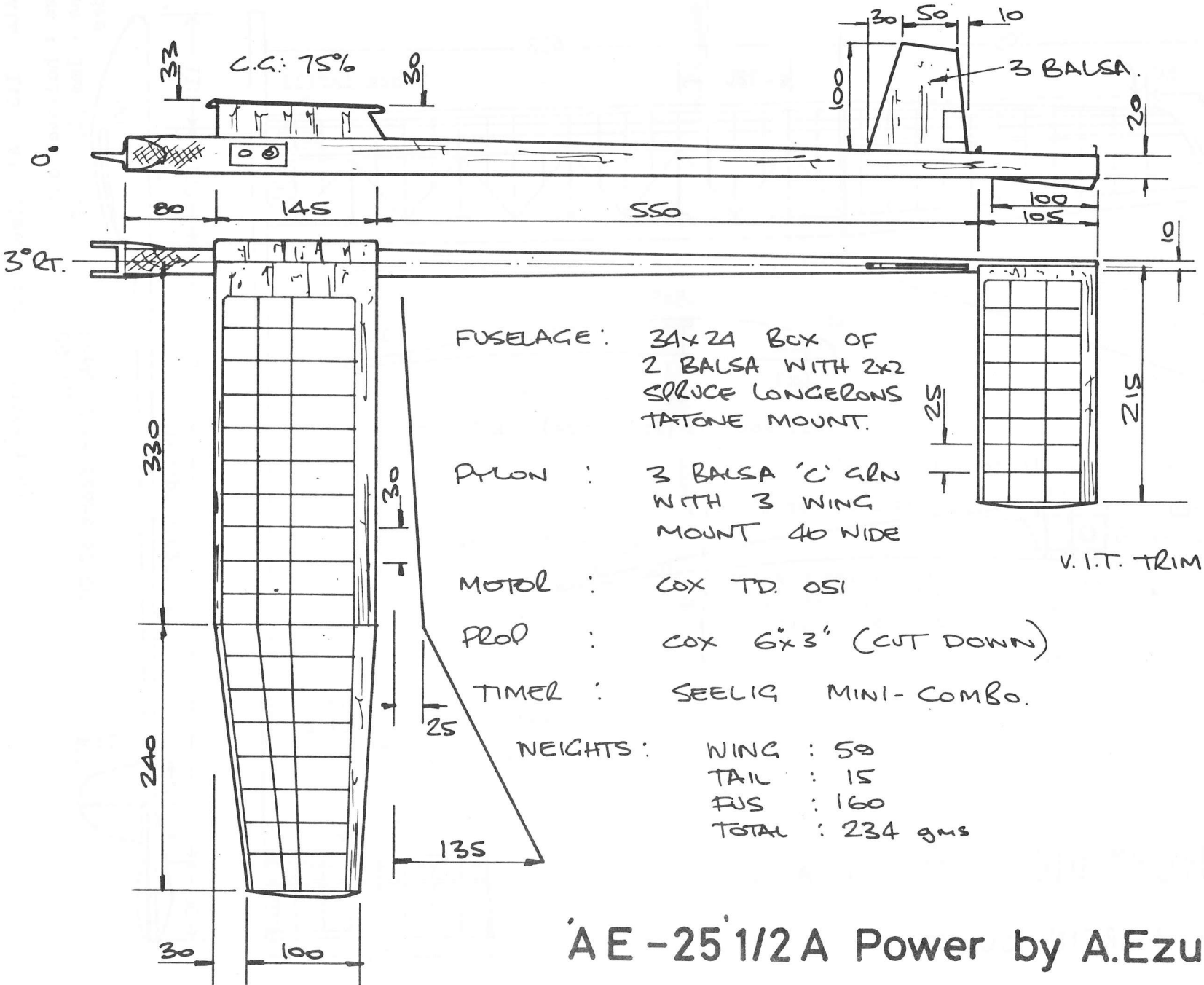
Nose : hollowed out
pine + 1mm ply
sides

CG 55%
Hook 18 in front of CG

MOBY DICK IV F1A 1-81

BY MARTIN SCOTT

SCALE 1:5. ALL DIMENSIONS IN MILLIMETRES



FUSELAGE : 34x24 BOX OF 2 BALSA WITH 2x2 SPRUCE LONGERONS TATONE MOUNT.

PYLON : 3 BALSA 'C' GRN WITH 3 WING MOUNT 40 WIDE

MOTOR : COX TD. 051

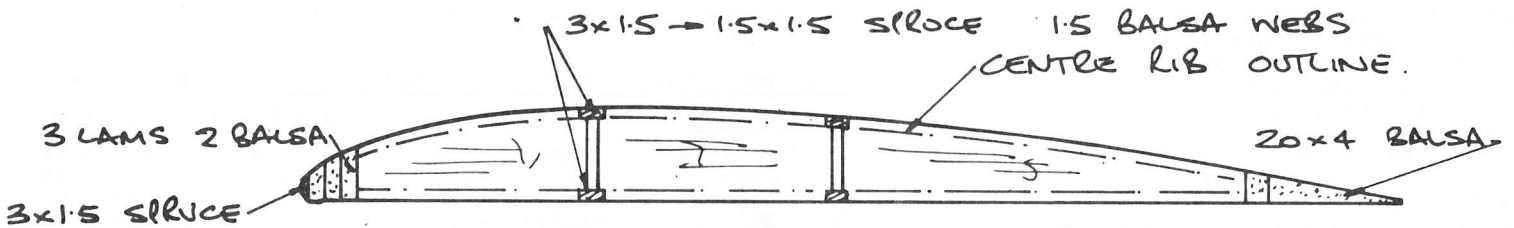
PROP : COX 6"x3" (CUT DOWN)

TIMER : SEELIG MINI-COMBO.

WEIGHTS : WING : 59
TAIL : 15
FUS : 160
TOTAL : 234 gms

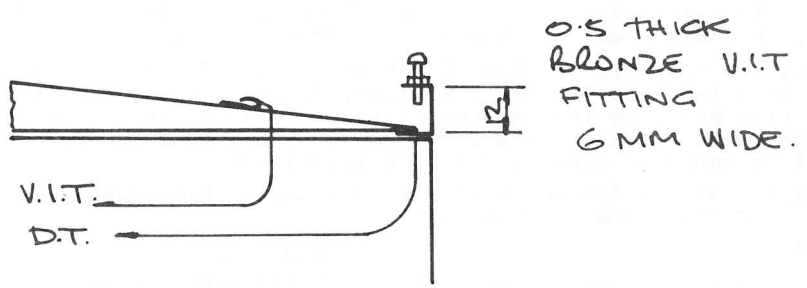
V.I.T. TRIM : POWER 1.3°
GLIDE 4°

AE-25 1/2A Power by A.Ezure. Japan.



WING SECTION (FULL SIZE) F. BAUMAN MOD 7%

TAIL SECTION (FULL SIZE) MERCER 8.8%



'AE 25' Full Size Details.

the fourth Pan-American champion. Carlos Minolli won the South American and Israilev became the new Argentinian champion.

Friday had the Wakefield event. Though the Argentine team is quite impressive in this category they had incredible bad flights, maybe because of the thermals being very difficult to spot. We had three electronic detectors, but all of them were out of order when they were unpacked - I believe that such things are sensitive to travelling or important contests ! Following an approach different to current trends of long motor runs, Luis Serrano (now flying on the Brazilian team) was the only one capable of matching such small and trick thermals. With his first flight being as close as 180.3 seconds, Luis went on maxing up to the last flight, when he achieved a 164 second score (out of sight) to become the winner. His model uses a variable incidence wing and variable pitch propeller, both torque actuated. Propeller is 540mm dia by 750mm pitch initially, with the blade rotating about 10 degrees at the lower motor torques. This is equivalent to decreasing also the diameter, since the pitch distribution is concentrated more towards the root. The result is a fast turning propeller at the end of the run, a fantastic climb for the 22 second run. On the team results, it is interesting to note that Argentina, Brazil and Uruguay flew equally badly, the three results being only 18 seconds apart!

Power was also flown on the Friday. The winner used a conventional model, Mouricio Zito used the same model that took third place at the last Pierre Trebod, Walter Nutini of Brazil flew a radical design with a very high aspect ratio wing. It was the best climbing model but proved to be unreliable and some bad scores spoilt Walter's chances.

Coupe d'Hiver was flown on Saturday and the Uruguay team finally got its deserved victory with some very fine models. I didn't see this event and so cannot say much about it.

This was probably the best South American in many years with all factors being favourable : weather, flying field and organisation. We even had time for an unusual event at such Champs - a soccer game between contestants from Argentina and Brazil. This ended with a score of six-nil for the Argentines!

Results of the Fourth Pan-American Champs. Placings in brackets are for the South American Champs.

F1A

1		Alberto Dona	USA	1260
2		Mario Israilev	ARG	1241
3	(1)	Carlos Minoli	ARG	1229
4		Ernesto Dondero	ARG	1224+178
5		Vicente Molfino	ARG	1224+170

F1B

1	(1)	Luiz Serrano	BRA	1244
2		Mario Blitzman	ARG	1175
3	(2)	Delmo Donelli	ARG	1172
4		Juan Gutierrez	ARG	1168
5		Oscar Viggiano	ARG	1073

F1C

1	(1)	Alfredo Banos	ARG	1257
2	(2)	Mauricio Zito	ARG	1206
3	(3)	Carlos Matos	BRA	1087
4	(4)	Oswaldo Almeida	BRA	1058
5		Domingo Iele	ARG	998

Team results of 13th South American Champs

F1A

1	Argentina	3554
2	Brazil	3393
3	Chile	3093
4	Uruguay	2547

F1B

1	Argentina	3055
2	Uruguay	3054
3	Brazil	3037
4	Chile	1601

F1C

1	Argentina	3461
2	Brazil	2928

SMAE FOURTH AREA CENTRALISED EVENT - RESULTS June 13th

Open Glider (Team, Model Engineer Cup + Plugge) 84 flew 3x180

1	T Bamford	Birmingham	+360	6	D Greaves	Bristol &W	+188
2	E Drew	Bristol &W	+351	7	G Pink	Bristol &W	+172
3	A Cameron	Crawley	+349	8	R Pollard	Tynemouth	+170
4	J Williams	Freebirds	+335	9	P Jellis	Croydon	+155
5	T Dilks	Falcons	+247	10	K Smith	Croydon	+137

Team results :
1 Crawley 1567; 2 Biggles A 1532; 3 Falcons 1480.

Coupe d'Hiver 25 flew 5x120

1	P Carter	Croydon	600+224	4	J Cooper	Biggles	578
2	D Greaves	Bristol &W	583	5	M Chilton	EPS	555
3	M Dilly	Croydon	581	6	R Elliott	Croydon	539

F1C (Astral Trophy) 10 flew 5x180

1	S Screen	Birmingham	900+205	4	H Hutchings	E Grinstead	706
2	R Baggot	Birmingham	836	5	T Payne	Biggles	684
3	F Chilton	Crookham	758	6	D Cash	E Grinstead	465

Plugge Points
1 Biggles 914; 2 B'ham 722; 3 E Grinstead 672; 4 Grantham 597

CROOKHAM GALA, Beaulieu June 20th

This event had really fine weather, although the wind increased for a while during the afternoon. Unfortunately few contestants made their way to the south coast flying site.

Open Rubber 9 flew 3x240

1	P Davis	Bristol &W	+1560
2	D Hipperson	Croydon	+725
3	C Chapman	Bristol &W	+615

Open Power 5 flew 3x240

1	J Hook	Crookham	+449
2	J Hopper	Freebirds	+326
3=	R Peers	Falcons	+208
3=	P Harris	Falcons	+208

ALL-IN FAI 21 flew 5x180

1	P Williams	Richmond	900+300+360+250
2	M Fantham	Richmond	900+300+360+160
3	R Miller	Croydon	900+300+358
4	J Williams	Freebirds	900+300

Open Glider 19 flew 3x180

1	D Cox	Crookham	+635
2	M Fantham	Richmond	+390
3	A Tipper	Lee Bees	+377
4	G Madelin	Crookham	+355

Wakefield Champagne Fly-off 9 flew

1	I Kaynes	Croydon	643
2	P Uden	Crookham	539
3	I Taylor	Falcons	426
4	R Miller	Croydon	361