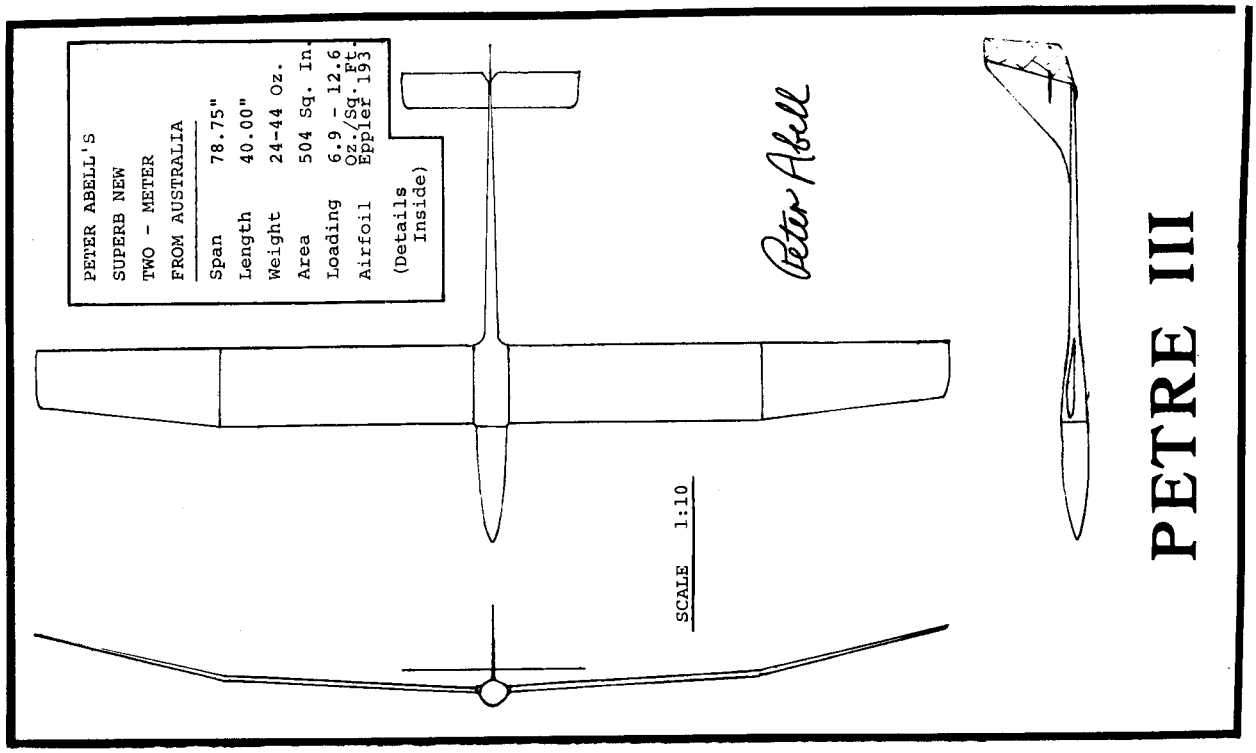
Soaring RC Digest

JULY 1984

VOL. 1 NO. 7



FLYSWAPPER

CLASSIFIED ADVERTISING:

RC Soaring Digest will take classified advertising from both individuals and from businesses. The INDIVIDUAL RATE will be 10¢ per word; the BUSINESS RATE will be 25¢ per word. Addresses free. Count only the words in the main ad. Copy must be typewritten and prepayment by check is required. Please submit all advertising copy before the second week of the prior month. For example, February issue ads must be in before January 15th. Checks payable to RCSD.

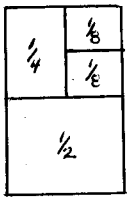
DISPLAY ADVERTISING:

RC Soaring Digest will take display advertising. The rate will depend upon the number of issues in which your ad is to appear, and the following schedule is based on frequency of appearance in RCSD. We suggest, to start, that all ads be typeset and ready for camera.

Ad sizes and formats are as shown in the table below, with the requested dimensions and formats. Full-page, half-page, quarter-page, and eighth-page sizes are available.

Note: All ads, classified or display, will be half price to all clubs and not-for-profit organizations. Ads received too late for publication in the desired issue will be held for the subsequent issue, unless requested otherwise by the advertiser. Publisher takes no responsibility for the accuracy, truthfulness, or credibility of offered merchandise. Any ad repugnant to common sensibility may be turned down by the publisher as unsuitable.

1 issue	3 issues	6 issues	9 issues	12 issues	Sz.
$10	$9	$8	$7	$6	1/8
$20	$18	$16	$14	$12	1/4
$40	$36	$32	$28	$24	1/2
$80	$72	$64	$56	$48	1



Note: Dimensions of ads - 1/8th page - 1/4th-page - 1/2-page

Full: 12"H x 7"W 3"H x 3.5"W 6"H x 3.5"W 6"H x 7"W

RC Soaring Digest
P.O. Box 268
28 East Hill Road
Peterborough, N.H. 03458

STAMP

ADDRESS LABEL

POSTMASTER: ADDRESS CORRECTION REQUESTED

Hi Start

August and September are supposed to be the hottest months of the year, but how about June! Wasn't that something? Here in New Hampshire, the weather set new records of high temperatures for the month. Over 100 degrees in Boston, and 95 degrees right here in good old cool Peterborough. You guys in the south and the west are used to such things, but we poor Yankees have troubles when the heat and humidity both go above 90.

Speaking of hot stuff, the PETRE III featured on this month's cover is one of the hottest new designs in Australia, and it has been cleaning up in Open Class competition as well as in 2-Meter contests. The designer and builder, Peter Abell, is also a pretty hot pilot, so that has a little to do with PETRE III's success. Having heard about this ship from several sources, I managed to twist Peter's arm and get him to do a three-view and specs for us. He'll probably not be quite the same again, as he'd much rather show his stuff in the air than in print. I once heard that those who write about soaring are like parrots, while those who soar are like eagles...so I guess we know who the eagles and the parrots are, don't we? Happy Soaring, Jim Gray

Okay, here's the info on PETRE III.

Wing span	2M (78.75")
Root chord	178 mm (7")
Tip Chord	128 mm (5")
Aspect Ratio	12.2:1
Wing area	0.33 Sq. M. (504 Sq. In.)
Stabilizer span	442 mm (15")
Stabilizer chord	77 mm (3")
Stabilizer area	0.034 Sq. M. (45 Sq. In.)
Stab. % of wing	8.9%
Fuselage (O.A.L.)	1.02 M (40")
Nose Cone (moulded fiberglass)	Pfenninger Laminar 4910
Weight (no ballast)	24 Oz.
Full ballast weight	44 Oz.
Wing loading	6.9 Oz. per Sq. Ft.
Ballasted Loading	12.6 Oz. per Sq. Ft.
Wing Section	Eppler 193

All-flying stabilizer is 10% Symmetrical Section

Description and Design Philosophy in Peter Abell's Own Words

"It was designed about two years ago (early 1982) when 2-metre began to create some interest over here. I had the option (and plan) to build Dad's WINDSONG (not the Dodgson design, but an original Aussie 2-meter...JHG) but my competetive streak and my F3B involvement siad to me that all of the other designs didn't suit me or my ideas of "how."

"The name came from a mate (Aussie for buddy or pal) of mine who calls me'Petrie'(for pronunciation). I simply reversed the final two letters of my Christian name - Peter - to Petre.

"The design in planform has not been changed since the initial drawing. The III indicates that it is the third built, each with constructional changes only.

"Petre III, although very light (by average of other 2-M models) is also quite strong. The wing, in particular, is very strong. It is built up with 1/16" skins, fully sheeted. The spars are short, only 16" long on top and 10" on the bottom, made from hard balsa...no spruce or ply in the wings. The wings are covered with doped tissue for light weight, and weigh about 5 Oz. per panel, as finished.

"The fuselage has a light-weight fishing rod boom of fiberglass, mated to the rear half of a moulded nose. This is made in two sections of fiberglass and epoxy: the nose cone, as per Marjali (A fine Aussie design for F3B - JHG) and wing root section without fillets. The empennage is standard, and fitted to the boom.

"Although the nose is quite long (10½") standard radio equipment will fot only if mini servos are used. The best quality and most powerful servos are required, especially for the stabilizer, as the aircraft is sensitive and any slop - even if slight - is transferred directly to the flight path.

PETRE III (Continued)...

Design Thoughts Incorporated in Petre

"Fuselage: Even though parasitic drag from a fuselage is very small, I decided to reduce it to as small a value as possible by making the fuselage aerodynamically 'clean.' The max boom diameter is 3/4" and the max noxe cone diameter is 2½". The laminar-flow nose cone is a throwback to the Marjali (Stefan Smith's F3B plane - a technique also used by Ralf Decker and some South African fliers - which I saw just prior to Petre's design. The nose cone has another big advantage: it allows a much easier access to the radio gear which is anchored to a fiberglass arrow-shaft set into the wing seat area. Obviously, there is no air leakage through hatches and the like, since there are none.

"Wing: The Eppler 193 was chosen because my F3B planes have the E205, and - since I hadn't used the E 193 before, but it would give me the needed speed range - it was a 'go.' I will not change the section on this plane in a hurry, as I feel from experience that this section is perfect for Petre. Observations of other aircraft with other sections, and matching them with mine, seem to reinforce this belief. There are two toher possibilities that I considered, however: the Gottingen 795 and the Eppler 385. One for characteristics similar to the E-193 (the E 385) and the other for minimum sink in calm weather.

"Petre Finale: I feel I have fulfilled all design parameters, most to well beyond expectations. I find Petre extremely easy to fly, although many have trouble with her, as she is sensitive. (My flying style?) The flight character is very smooth (as in F3b) stability is excellent, and speed range is almost astounding (comments from bystenader. Petre will go up in the smallest and lightest of lift, yet will sink very slowly when the air is dead. This is where I feel her only vice lies; she sinks marginally quicker than most Open Class soarers (better than 2M models?) in dead air, and flies a little too fast in these conditions. You can't win everything with what I feel is an excellent compromise.

"Petre can be ballasted for wind with no detrimental effect on performance (as with F3b planes) in duration tasks. Speed is great. Although I've flown only one official run of 2 laps (300 meters, old F3b course) in 11.6 seconds, and I felt it a little slow, the second-fastest time was about 15 seconds, going to a Sagitta 600.

"Petre is responsible for 2 of 3 perfect duration scores (360/100) in the past 8 months. Not bad, without spoilers, spotting this way, and has brough many favourable comments.

Competition Record

"2nd;Nationals (thermal 1983/84): 4998/5000 in six rounds flown, group scoring (dropping worst round). 5000 neat was the winning score by Michael O'Reilly, who was 6th in the 1983 F3b World Championships.

"2nd; First 2-Meter Competition 1982.

"7th; Jerilderie LSF Tournament 1983.

"1st; 1983 RCAS Thermal State Championships:- 2-Meter; 6th overall.

"1st in 2-Meter, 1983 Heathcote Cup; Series I

"1st in Open and 1st in 2-Meter, 1983 Heathcote Cup, Ser. III. (F3b plane was flown in Series I Open; I didn't fly Series II).

"3rd RCAS Open Thermal Round 4, 1983; and

"Won 1982 Ted Swan Cup.

Odd Comments:

Petre's wing-joiner tube extends about 4½" into each panel, and is appropriately reinforced: tapered 2-3 bays farther out. My F3b plane is unballasted at 13.6 Oz. per Sq. Ft., and Petre is ballasted to 12.6 Oz. per Sq. Ft. You may think the stab is small, but I flew my F3b plane with the stab at 8.2% of wing area for about 8 months, but when under pressure (poor conditions) it was hopeless. Otherwise, no problem. Interesting. So why have big stabs on state-of-the-art aeroplanes? Well, there's a lot more, but I'll save it for next time...and send pictures! Kindest Regards, Peter Abell"

WING TIPS

Charlie Spear of the Winston-Salem R/C Club sent us a nice plastic-laminated card, entitled: Preflight Instruction Card (see reproduction below). Two cards are supplied to each club member: one for the flight box and one for the workbench...compliments of the club treasury. As you can see, one side of the card covers a maiden preflight checklist, while the other side carries a routine preflight inspection. I'd recommend that other clubs and individuals adopt this system. If you save a plane, or prevent an injury, it will have been worth its weight in gold - or more!

Jerry Arana of Santa Cruz, California submitted a couple of very interesting bits of info. Stopping aileron flutter: use a paper clip attached between the outboard end of the aileron and the wingtip. The clip is bent into a "U" shape and is embedded and glued into the trailing edge of the aileron and the adjacent trailing edge of the wing tip. Note: the "U" may be parallel to airflow or perpendicular to it. Jerry says he saw this on Don Edberg's ship at the International Slope Contest (formerly the RCM Slope Contest).

HOW TO DRAW AN EPPLER AIRFOIL

by Dale Folkening *

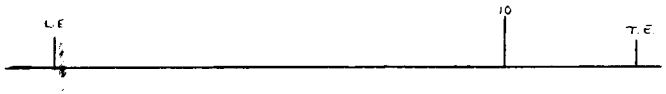
Tools needed: (1) A pocket calculator; (2) A ruler with decimal system markings. (A rule with 1/50 th inch marks works best for me.); and (3) One or more French curves.

Begin by drawing the horizontal base line. Mark the leading and trailing edge positions to suit the size of your airfoil. The airfoil plotted here has a five inch chord.

EPPLER 197

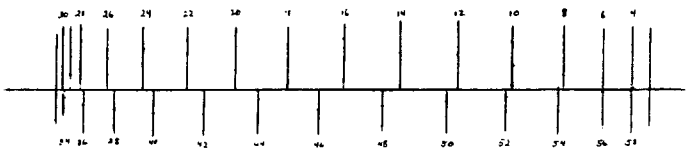
	X	Y
1	100.000	0.000
2	99.642	.050
3	98.604	.219
4	96.960	.530
5	94.778	.960
6	92.096	1.478
7	88.939	2.068
8	85.349	2.733
9	81.384	3.466
10	77.105	4.254
11	72.575	5.079
12	67.870	5.920
13	63.028	6.752
14	58.146	7.542
15	53.282	8.246
16	48.474	8.806
17	43.735	9.191
18	39.085	9.394
19	34.551	9.413
20	30.159	9.250
21	25.933	8.918
22	21.902	8.442
23	18.112	7.844
24	14.599	7.139
25	11.402	6.345
26	8.551	5.478
27	6.075	4.556
28	3.996	3.600
29	2.335	2.633
30	1.104	1.683
31	.318	.789
32	.000	.020
33	.279	-.640
34	1.164	-1.278
35	2.555	-1.803
36	4.458	-2.454
37	6.797	-2.949
38	9.610	-3.368
39	12.852	-3.705
40	16.493	-3.956
41	20.495	-4.121
42	24.818	-4.198
43	29.414	-4.189
44	34.231	-4.080
45	39.236	-3.859
46	44.415	-3.539
47	49.723	-3.163
48	55.091	-2.764
49	60.447	-2.360
50	65.718	-1.968
51	70.854	-1.599
52	75.725	-1.263
53	80.323	-.966
54	84.564	-.711
55	88.398	-.500
56	91.738	-.327
57	94.572	-.183
58	96.864	-.070
59	98.572	-.008
60	99.637	.004
61	100.000	.000

Now plot a coordinate. I will start with position #10. (This is my article so I can start anywhere I want to.) The coordinates for station #10 are X = 77.105, Y = 4.254. These numbers represent percentages of chord length. On my 5 inch airfoil, station #10 is 3.86 inches to the right of the L.E. position (77.105% X 5 in. = 3.86 in.) Draw a vertical line above the base line. (If Y is positive, the station lies above the base line. If Y is negative, the station lies below the base line.)

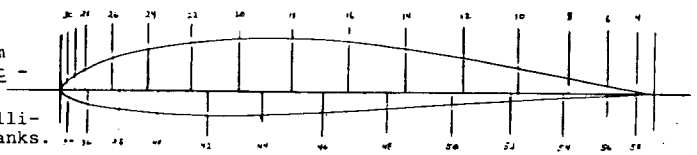


Place a dot on the vertical line 0.213 inches above the base line. (4.254% X 5 in. = 0.213 in.) This is station #10.

Now plot more positions. I have omited some positions due to the small chord. On a 12 inch chord, I would plot all 60 stations.



Finally, use the French curve(s) to draw the airfoil.



* Reprinted from Soaring Flight - Newsletter of S.O.A.R. in Illinois; with thanks.

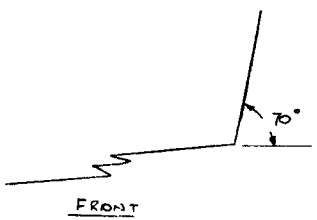
MORE WING TIPS

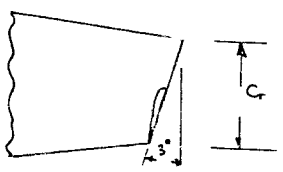
Dave Johnson of the Northwest Soaring Society told about his method of 'ironing on' wing skins to foam cores in an issue of the NWSS newsletter. Here's what he said:

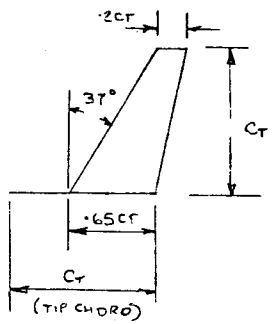
1. "Sand the cores and skins smooth, and vaccum off the dust.
2. Start with the bottom skin and do just one side at a time.
3. Dilute the aliphatic resin glue (like Titebond (about 1 part glue to 3/4 part water) and paint it on the core and on one side of the skin.
4. Allow to dry completely - 3 to 4 hours. The balsa skin will curl when wet, but flatten as it dries.
5. Tape the core to its foam bed, and tape the bed to the table so you can work with both hands.
6. Use a regular household iron with the temperature set on 'wool', and position the skin (let's see you try that with tape or contact cement!), and 'tack' it in a couple of spots with the iron.
7. I place a thick telephone directory on top of the skin and slide it along behind the iron to hold the skin down for a couple of seconds after the iron passes. The book curves to the contour of the wing and applies even pressure.
8. Start in the middle of the wing and move the iron, followed by the book, at a steady rate off the end of the wing. Lift at the end of the skin a little to see if it's sticking properly, and go over it again if necessary.
9. Once you figure out the proper rate, you can stick it down in just one pass. There doesn't seem to be any great danger in melting the core as long as you keep the iron moving.
10. When you apply the top skin, I would recommend against trying to iron the trailing edges together. Instead, I apply Hobby Poxy thixotropic (a slow-curing gel) to both skin surfaces where they overlap. Then, after ironing on the top skin, I weight down the trailing edge directly on the table or in the core bed or whatever way will best maintain the proper trailing edge contour. Different airfoils have different requirements. That's all there is to it! It's as simple as it sounds and you can skin an entire wing for less than a buck, even if you dilute the glue with Perrier!"

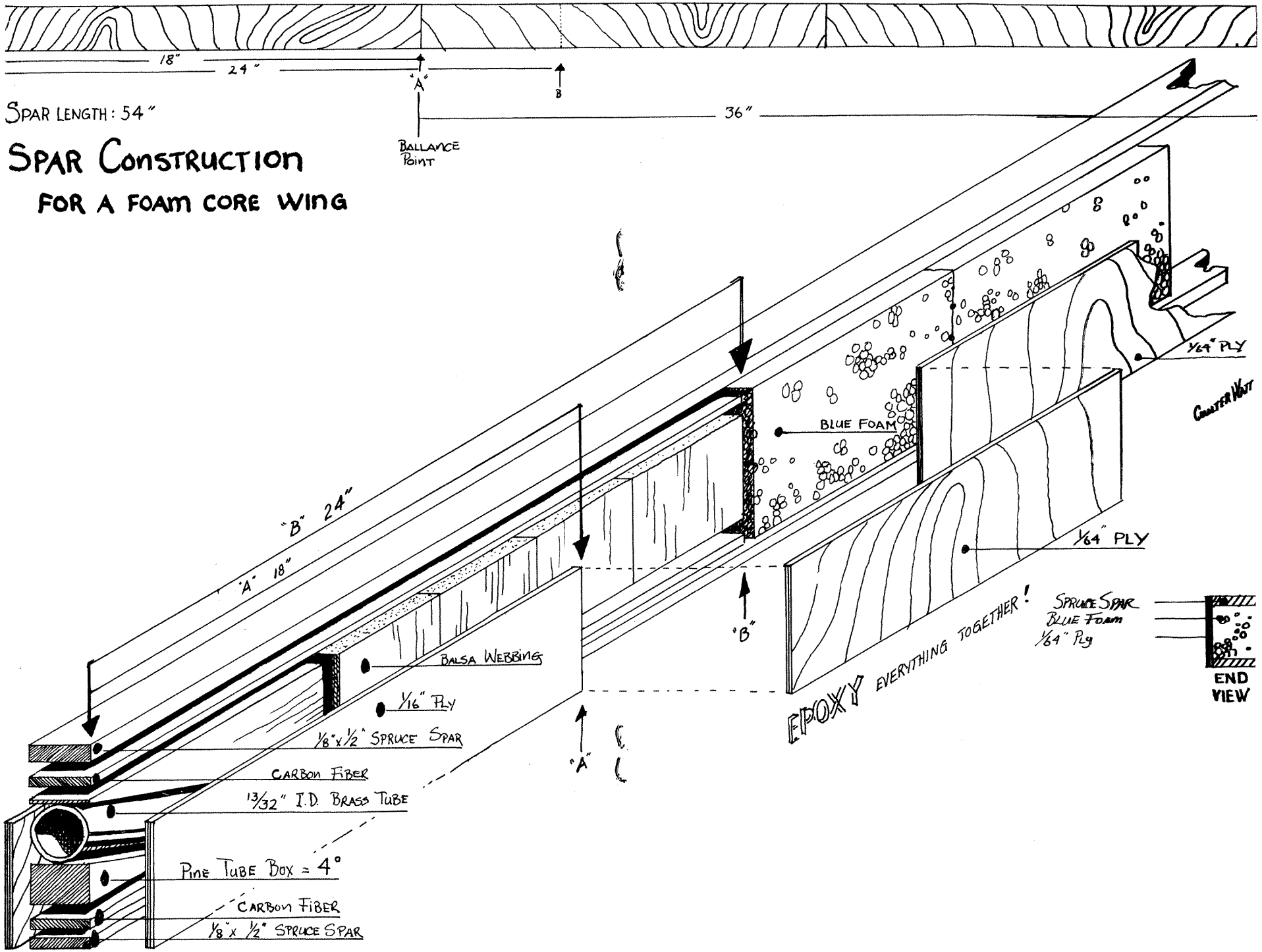
WINGLETS

For those of you who may wish to try those new-fangled winglets on your sailplane, the Montreal soaring club published the following in their newsletter a few years ago. A possible advantage of winglets is to increase the effective span (hence aspect ratio) without increasing the actual span. They do, however, create additional vertical area near the c.g., which may - or may not - affect the rudder authority of your sailplane. They're interesting, though, and you may ant to try them for fun. NOTE: The tip section should have the same thickness-to-chord ratio as the wing; toe-out and inward-lifting section; needs a generous root fillet; dimensions can be +/- 10%; angles can be +/- 20%.








18"
24"
"A"
B
36"
BALLANCE POINT
SPAR LENGTH: 54"
SPAR CONSTRUCTION
FOR A FOAM CORE WING
"B" 24"
"A" 18"
BLUE FOAM
1/64" PLY
COUNTER WAIT
BALSA WEBBING
1/16" PLY
1/8" x 1/2" SPRUCE SPAR
CARBON FIBER
13/32" I.D. BRASS TUBE
PINE TUBE BOX = 4°
CARBON FIBER
1/8" x 1/2" SPRUCE SPAR
"B"
"A"
EPOXY EVERYTHING TOGETHER!
SPRUCE SPAR
BLUE FOAM
1/64" PLY
END VIEW

WORLD CHAMPIONSHIPS - F3b

The 1985 RC Soaring World Championships will be held during the week of April 13 - 20 in Waikerie, South Australia. For any of you who may be interested in attending, contact The Secretary, World R/C Soaring Champs, 9th Floor, 38 Currie Street, Adelaide, S.A. 5000 for details. Telephone: (08) 51 6516 (home).

The Waikerie Aerodrome will be the contest site - location of the 1974 World (full-scale) Gliding Championships. The contest format will be identical with that of the 1983 Championships in York, England: Processing on Day 1 (Saturday), Official Practice on Sunday, and 5½ Contest Days from MOnday until Saturday noon. Each National Aero Club, affiliated with the FAI, will be invited to send a team of not more than 3 contestants. The Fourth World Champion (Ralf Decker) will be invited to attend as an individual contestant.

Accommodations for team mambers and managers will be at: 1. The Waikerie Hotel/Motel; 2. Sunrise Village (self-contained cabins(; and The Waikerie Caravan Park (on-site caravans). This park has been built only recently and has 90 sites, each with water and electricity. Modern shower, toilet and laundry facilities are included.

Transportation will be available to competitors from most countries, with special baggage allowances to cover the transport of models and equipment.

Frequencies: 29.720 - 30.000 MHz; 36.050 - 36.550 MHz; 40.660 - 40.700 MHz...plus the possibility of frequencies in the 35 MHz band. Note: Other frequencies will be negotiated on behalf of competitors except 27 MHz which is deemed unsafe for aircraft operation in Aussie.

Climate: Nearly ideal in April, with mild temperatures and winds (daily average max 75 degrees) with winds between 1 - 20 kph likely 90% of the time. Rain averages only four days during April.

Currency: The Australian Dollar subdivides into 100 cents, and is equal to .956 U.S. Dollars. Tipping is not expected in Australia. Preferred Traveller's Checks appear to be: American Express, First National City Bank, and Thomas Cook. Others can be negotiated. Credit Cards acceptable are: Amex, Carte Blanche, Diners Club, VISA and Mastercard. All-in-all, there should be no problem of any kind.

Electricity is 240-volt, 50 Hz...so bring your adapters!

Rental Cars go for anywhere from $210 per week (small sedan) to $420 per week (mini-bus), with unlimited mileage. DRIVE ON LEFT LIKE UK.

Sightseeing: The Organizers are working to provide a number of Holiday Packages for Contestants and supporters after the event.

Full-Size Gliding will be available both before and after the World Championships. Inquire about booking reservations from Sue Martin, Waikerie Gliding Club Inc., P.O. Box 320, Waikerie, S.A. 5330. Telephone: (085) 41 2644.

Hopefully, someone will try to arrange a Charter Flight from the U.S. whereby all of us who may be interested in attending can go as a special-interest group, travelling together. Anyone want to start the ball rolling: It would probably require about 200 to sign up in advance. See you there - or on the way???

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FEEDBACK

For those of you who may be Radio Amateurs:("hams") there is an RC Sailplane Net operating at 4 PM Eastern Time, on 21.407 MHz. Carl, W3NTS; Walt Good, Al Doig (callsigns unknown by me);and a fellow from Detroit - KA3JVX - regularly sign in. I wonder if a 20-meter frequency will be chosen, now that sunspots are declining? (By the way, I am W1XU - JHG.). Let me know where you guys meet now.

Wing Lamination Technique by Bruce Abell, reported last month has a serious flaw, according to Bruce. He discovered that the top skin is not strong enough in compression. The alternative procedure he recommends to correct this problem is to lay up a sheet of 2½ oz. cloth on a sheet of glass, using epoxy gel-coat on the glass, then cover the cloth with 1/32" sheet balsa, and lightly weight it until the epoxy sets. Bruce says that the reason for lightly weighting the sandwich is that epoxy relies on the heat generated by the chemical reaction between the two components to properly 'cure' and that a too-heavy weighting squeezes the epoxy too thin to cure properly.

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APPEAL FOR SUBSCRIBERS

RCSD, as of this writing, has 402 subscribers! This is great, and we'd like to pass the word along. If YOU like RCSD, would you please let your friends know about it, and ask them to write or telephone me for info and a subscription blank? The more, the merrier!

MOTOR GLIDERS - a thoughtful letter from Japan by Ian McQueen

"Letter sbout motor gliders in recent issues prompt me to write. There are doubtless a few other modellers like myself whose enjoyment comes from watching a long-winged sailplane leisurely move across the sky at high altitude, catching an occasional thermal... if my limited skills can find/identify/use it. I am not interested in the challenge of trying to get my glider up from the limited altitude possible with a high-start; and the atmospheric conditions where I fly here in metro Tokyo seem to produce mostly downdrafts below 500 feet. I use an engine quite shamelessly to get the model up, and it is within this framework that I want to offer comments and information.

"Kurt Rosner in his letter in the May issue of RCSD is probably typical of modellers evaluating engine power - he seems to have considered a two-stroke glow engine and a four-stroke glow engine, preferring the latter mostly for reduced noise. There is one option open to him and seemingly not considered; an option that would give him the light weight of the 2-stroke, the pleasing quiet sound characteristic of the 4-stroke, the ability to swing a large and efficient prop, plus more usable power (thrust) than available from a 2-stroke of the same size. What kind of engine has these features? If I add the fact that you never have to change glow plugs; don't even need a glow-plug battery, in fact...you may have caught on. I am talking about DIESEL ENGINES. To the above list you can add the ability to ue any type of dope, lacquer or enamel without worries about fuel resistance. For minimum-weight power to get a model up, I don't think there is anything to match a diesel, and I wish to urge motor -soarers to consider using them.

"For models up to 2 meters, an .049 swinging a 7 - 3 prop gets the model high enough to please anyone. I used a Davis-converted Cox engine for a Pilot 1800mm.span kit glider with good results, and a Webra Record 1.5cc (.09) diesel of rather dated looking design, with an 8-4 prop to lift a Hobie Hawk. I still can't use a filled 35cc fuel tank, otherwise the glider goes so high I lose sight of it. Probably an .09/.10 engine would do for up to 12-foot span sailplanes...for anything bigger there's always .15!

"I have such a good opinion of diesels that I import Davis Diesel conversion heads from the USA, and PAW engines from England. I am promoting their use here in Japan and Oceania to the best of my ability. Diesels bring out the missionary zeal in one, and one spends the rest of one's flying days extolling their virtues. However, since I'm not promoting their sale in the USA, you can take my comments as objective, rather than sales oriented (thought I would be happy to sell PAWS from here, Davis heads would be cheaper there).

"Since the glider will not be flying very fast, it is not efficient to use a small (i.e. normal sized for a glow engine) propeller screaming away at 17,000 rpm. It is aerodynamically more efficient to use a much larger diameter at lower rpm (at the torque peak, I believe) so that the maximum thrust is being exerted. The Webra is not the most modern engine design, and I believe an 8-4 is about right. An OS 10 FSR converted to diesel with a Davis head is quite happy with a 9-4, and will even turn a 10-4, though I suspect that this might pull it below the torque peak, and thus be a bit too big. The OS 10 is very powerful, once it's running, and the only problem is that it does not have good compression as a general characteristic. Therefore an electic starter (a mini starter on 7.2V is plenty) is very useful to avoid frustration. A larger engine like an OS 25 or OS 45 FSR, when converted to diesel,is extremely easy to start - and very powerful. The remark about starting refers specifically to the OS 10 FSR.

"The OS 10, Super Tigre 11 Schneurle, Super Tigre X15, Fox 15 Schneurle, and Cox 049 engines are the only ones in the small sizes for which Davis heads are available. European diesels are occasionally advertised by American companies, and I can supply .049, .06, .09 and '15 PAW diesels from here. Readers outside the USA and Canada can also order Davis heads from me, but I can't supply fuel except in Japan. So, if you want a light, quiet, powerful and convenient powerplant for your glider, try a diesel. You'll never look back!"

Signed: Ian L. McQueen, 2-18-7 Kami-Meguro, Meguro-ku, Tokyo 153, Japan.

All you motor-soaring types out there should take heart at Ian's info, and maybe even try it. How about a scale Fournier, for example, with an .049 or .010 diesel? That would be nice, n'cest pas?

SOARCES

Electrostatic Autopilot - from Ben Thomas, 1740 Aberdeen Terrace, Winston-Salem, North Carolina 27103. This electronic device is small enough to fit into an average-sized sailplane, and operates from the flight pack. All that is needed before flight is to zero the balance (sensor) potentiometer. The unit may be switched on and off remotely by a channel in your RC gear. Ben has built over 100 of the neat little gadgets before finally achieving a stable, reliable, and consistent performer. He has them for sale, but cannot advertise them, due to legal restrictions imposed by the inventor and patentee. For serious cross-country work, they should be ideal. Both pitch and roll control can be achieved...but Ben cautions about flying into areas of possible reversed polarity (such as a rain cloud, for instance) because the plane will try to invert! Ben's device is patterned after the principle (but not the electronics) discovered by Maynard Hill, back in the '50s. Get one and let me know how you like it.

American Aviation Historical Society - although not soaring related, this group seeks to preserve and maintain information, documents, aircraft, and paraphernalia relating to World War I aircraft. Membership provides quarterly newsletters and journals, and an opportunity to contribute and take part in research and reconstruction, as well as to meet others who have the same interests. A one-year subscription is $25 U.S. and $30 elsewhere for one year. Write to AAHS, 2333 Otis, Santa Ana, California 92704 for more information.

TRIATHALON BY HP 15 C CALCULATOR

Dr. Ed Granger, 43 Wembly Rd., Rochester NY, 14616 Phone 716 663 9161

It is often difficult to use the AMA rule book (We have lots of wind here.) to score a contest and equally hard to train a GOFB, who is not into gliders, to the wonders of the Triathalon scoring system. Well all is solved with this "little" program for the HP 15C. It will give the Rule Book score and landing points. In addition, a cumulative score, (**LBL C**), is available to further aid in scoring. If you have any problems give me a call. The time is put in the format min.seconds. Note single digit seconds must be entered as 2.03 for example. Then push the **A** function key to calculate the score. Enter the landing in feet from the center of the circle and push the **B** function key to complete the score. The cumulative score can be computed by entering the cumulative score from the previous round and pressing the **C** funtion key.

SCORE	**LBL 3**	X>Y	**LBL 1**	GTO 8	X	**LBL C**
LBL A	1	GTO 5	RCL Ø	**LBL 7**	RCL 7	RCL Ø
→H	RCL 1	RCL 2	RTN	RCL 6	-	+
STO 1	X<Y	RCL 3	**LBL 2**	2	ABS	RTN
CLX	GTO 9	X>Y	RCL 3	GTO 8	STO + Ø	
STO Ø	1	GTO 6	RCL 1	**LBL 9**	RCL Ø	
CF 1	+	RCL 2	-	Ø	RTN	
RCL 1	2	RCL . Ø	RCL 6	ENTER	**LBL 2**	
RCL 3	+	X>Y	X	GTO 8	RCL Ø	
X<Y	INT	GTO 7	STO Ø	RTN	RTN	
GTO 1	2	Ø	SF 1	**LANDING**		
RCL 1	X	ENTER	RTN	**LBL B**	**DATA REGISTERS**	
RCL 5	RCL 1	**LBL 8**	**LBL 4**	F? 1	R3	20
X<Y	-	RCL 2	RCL 7	GTO 1	R4	10
GTO 2	ABS	X	2	RCL Ø	R5	10.5
RCL 1	RCL 6	-	GTO 8	RTN	R6	60
RCL 4	X	RCL 1	**LBL 5**	**LBL 1**	R7	200
X>Y	STO 2	RCL 6	RCL 8	2	R8	202
GTO 3	2	X	4	5	R9	220
RCL 3	X<Y	+	GTO 8	X>Y	R.Ø	30
RCL 1	GTO 4	STO Ø	**LBL 6**	GTO2		
-	RCL 2	SF 1	RCL 9	R↓		
STO 1	4	RTN	RCL 4	8		