RC Soaring Digest
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R/C Soaring DIGEST

Vol. 5 No. 5 May 1988

ECLIPSE

John Wyss 1987

Wing span	128in.
Wing area	1220sq.in.
Aspect ratio	14.2
Wing section	HQ 2.5 9/RG 15
Stab area	94.6sq.in.
Stab section	NACA 63A006
Weight	118oz. 166oz.
Wing loading	13.9 oz./sq.ft. min. 19.6 oz./sq.ft. max.
Construction	Fiberglass, carbon fiber, kevlar, foam, wood veneer

HI START

I had originally intended to write about postage increases, but decided at the last minute to change the subject to something that addresses a recent decision regarding F3B and the United States of America...and the AMA.

I learned recently that the 1989 FAI (F3B) World Championship for R/C Sailplanes will NOT be held at Virginia Beach as planned. AMA, the governing body for model aeronautics in the United States,has withdrawn its bid in order "to make a statement about winches." It is my understanding that the pilots who fly F3B were not consulted as part of the decision-making process. The 1987 US F3B Team was not consulted...and, what's more, those who are responsible for Team selection were not consulted. In its infinite wisdom, the AMA made what appears to be a unilateral decision to withdraw the US bid without the absolutely vital input from active, concerned and involved F3B persons. Whereas the AMA can, indeed, make such decisions unilaterally, such a decision as this certainly ought to have been made after full and thorough discussion between AMA officials and F3B fliers in the US. Not only that, the reason for the withdrawal -- or even the withdrawal itself -- could have been changed, amended or not even made... IF appropriate and timely discussions had taken place. Now, let's discuss the putative reason for withdrawing our bid: the winch problem.

Basically, the matter boils down to one of consistency, control and ready availability of what might be termed a "standard winch/launching system." Until now, each country has been responsible for supplying its own launching system. Some countries have produced extraordinarily expensive winches having a capability of launching F3B sailplanes to heights over 300 meters! Other countries, for whatever reason, have failed to produce this kind of launching capability. You can see that F3B teams with awesome launching power (all within current specifications) have an enormous advantage over teams that have only "average" winches.

The argument boils down to two options: each team supplies its own winch/launch system, or the organizing country provides all of them needed for handling the launch function. In my opinion, the only hope of ever reaching standardization is for the organizing country to provide winch/launch systems that meet standards to be determined by a committee composed of member countries. I firmly believe that a "One-design Winch" fully as much as a "One-design Sailplane" has merit and is workable -- providing that safeguards to prevent circumventing the rules are in place. There should be formed an International Launch System Committee.

Some years ago, when winches were used to launch full-size sailplanes, one manufacturer developed a very, very good and consistent winch. The "driver" could maintain a preselected torque and/or line tension that was just right for any type of sailplane being launched. There is every reason to believe that the same kind of limitation can be provided in a winch for F3B launches. Whether it is a line-tension measuring and limiting device or some other system, let's get on the stick and DO it. The cost of developing and building "standard" winches for the next World Championship can be defrayed by each country contributing a specified amount to the project. Whether the Swiss, the Germans, or the Americans build the winch is immaterial. What does matter is that one be chosen and adopted,

followed by constructing as many as needed to handle the requirements. These would then be tested and shipped to the Organizing country for the next contest.

When I say "winch" I mean launching system; and that includes standard turn-arounds, standard line, standard batteries, and standard accessories... including carts and the whole paraphernalia. Looking at it from the standpoint of those who delight in winning contests by practicing "winchmanship" or "launch-manship" it would be a comedown from the peak of possibilities; yet, those same persons who might feel deprived would at least have the satisfaction that they would not be out-winched and out-launched by another team.

The "weak link" system must go. While a mechanical "fuse" in the line might seem to be a reasonable way of limiting launch height, it is also a dangerous one for pilots and spectators and crew alike. Nobody wants uncontrolled "bombs" flying around at low altitudes in all directions. A properly-designed and built winch/launching system will have line-tensioning/torque-limiting devices to provide an acceptable (if not maximum) launch every time for every contestant.

I'd like to propose that the winches which are funded, designed and built by member countries be given or placed in the hands of the FAI itself for shipment at the proper time to the organizing country. Surely, there will be problems with this approach , too, but I think they can be worked out. Each F3B team should have one of these "standard" launching systems to use for its own practice, and one or more of them could be easily built by any team that needed them...but they'd stay home when the team takes the trip to the World Championships.

If left up to individuals and countries, it is unlikely that consensus could be reached about a solution. Therefore, why not place a proposal before the FAI for a "standard" launching system, with recommendations for motors, lines, turn-arounds, etc., etc. Try to get consensus beforehand from members of an International Winch Committee that is responsible for the proposal, and let them present it for acceptance and adoption by the FAI.

To be sure, this won't solve all the problems that can be foreseen, but at least it could possibly remove one of the problems that is seen as a stumbling block in the eyes of our own governing body for sport aviation.

The AMA, I believe, would consider the possibility of the US holding a World Championship if there were to be a potential solution to the launch system in the wind and a firm offer from a club or other organization to provide a venue and the necessary manpower to hold an International F3B contest.

ANNOUNCEMENTS

WORLD INTERGLIDE 1988

On the weekend of 6th and 7th August, 1988 the Coventry & District Model Aero Club and the British Association of Radio Controlled Soarers will present INTERGLIDE once again. This is basically an International Event based on the BARCS duration formula used in Open Class soaring. This is a ten-minute percentage slot formula somewhat similar to the duration task in F3b, with five rounds to be scheduled. There will also be a SCALE competition and a HAND LAUNCH glider contest. Special awards will be presented to the best Vintage and Tailless models competing. A saturday-evening barbecue will be held, and camping and caravanning is planned for the site.

Warwick Racecourse will be the location, and there is much to do for the visitor besides gliding. Local ale houses are famous, the Cotswolds and Stratford upon Avon are close by. The flying field is exceptional, and the site has been the scene of much aeronautical derring do in past years. International visitors are given every priority, and one can only think that this meet could be the basis of a nice holiday for the family. Write Sam Hitchman, 7 Verney Close, Lighthorne, Warwickshire, CV35 ØAZ for information and entry forms. Oh yes, that address, by the way is ENGLAND. (Thanks to Sean Walbank and Radio Controlled Models and Electronics magazine for the tip...via Jack Sile's letter.

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F3B/USA

A newsletter for the F3B Soaring Enthusiast. Here is your chance to get in on a new publication that will really be of interest to anyone who is currently involved in F3B soaring, or anyone who aspires to fly F3B tasks in competition. Issue Number One 1988 is absolutely crammed with information that is both of interest and a must to have in your possession. Randy Reynolds is the editor, and he's a darned good one. Not a novice to the pen and sword, Randy edits the Pikes Peak Soaring Society newsletter, flies a Hans Mueller COMET, and is a longtime sailplane pilot. He has persuaded soaring notables and experts to pass along their knowledge and expertise. Printing and distribution will be done by AMA HQ, according to columnist Byron Blakeslee of Model Aviation. For your copy, write to AMA HQ. Thos already on the F3B competitor list will receive a copy automatically. For those who woiuld like to contribute material, write to Randy Reynolds, 122 East Uintah, Colorado Springs, CO 80903; telephone (303)471-3160. If you are not on the F3B list, send $5.00 to AMA HQ in Reston, VA and mark your request c/o Micheline Madison. 1810 Samuel Morse Dtive, and a Zip of 22090 will take your request to the right place.

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MaxSoar and PC-Soar

Two new computer programs for Sailplane Performance Analysis. One will be used by the Macintosh, and the other by the IBM PC and compatible computers. Lee Murray of LJM Associates advises that this is one of the easiest-to-use and most rewarding programs he's ever used...and believes that there can be no better software available anywhere for the sailplaner. Basic programs will include several planes and several airfoil polar selections. The advanced data disk will have a wider selection of airfoil polars and many more sailplanes of interest. It is possible to add more data form your own experience and sources, until you have a complete design library from which you can accomplish the following:

Make plots of sink rate and lift/drag data vs. flying speed (polar diagrams); calculate standard design parameters such as areas, aspect ratios, aerodynamic centers, average chords, tail volumes, instability factors, and more. You will enjoy on-line documentation with glossary and diagrams, provided polars, unlimited Reynolds Numbers, metric/English capability, and a Hypercard Stack for easy use and customizing.* Best of all -- are you ready? THE PRICE IS $25. Write to LJM Associates, c/o John Hohensee, 9924 West Metcalf Place, Milwaukee, WI 53222, or call at (414) 464-7095 for the Macintosh program. Lee Murray can be reached at 1300 Bay Ridge Road, Appleton, WI 54915; (414)731-4848.

* Note: HyperCard not furnished.

MaxSoar

DESIGN INFORMATION

Dynasoar

WING DATA:

Airfoil	Eppler 214			
Span	140	Dihedral	1.221	
Center Span	35	Polyhedral	6.078	
Center L. E. Sw.	0	Root Chord	12	
Tip L. E. Sweep	5.5	Break Chord		
Area Correction		Tip Chord	6	

Wing Location: (•) High ( ) Mid ( ) Low

HORIZONTAL STABILIZER DATA: ☐ Tee

Span	32	Root Chord	7
L. E. Sweep	3	Tip Chord	4
Area Correction		Location	26.5

FUSELAGE DATA:

Nose Length	15.25
Max Height	3.625
Max Width	3.25

FIN/RUDDER DATA:

Height	14.5	Root Chord	11
L. E. Sweep	7	Tip Chord	3.75
Area Correction		Location	26.25

MISC. DATA:

Weight	86
Drag Add.	.006

MaxSoar DATA sheet, shown here with weights and dimensions for Lee Murray 's Dynosoar.

MaxSoar

CALCULATED DESIGN PARAMETERS

Dynasoar

WING PARAMETERS:

Area	1470.0	Equivalent Dihedral	8.5	Neutral Point	7.89
Aspect Ratio	13.33	Rec. Dihedral	8.8	Rec C.G.	2.64
Ave. Chord	10.50	Angle of Incidence		Max Aft CG	
Aero. Center	3.88	Loading	8.42		

HORIZONTAL STABILIZER PARAMETERS:

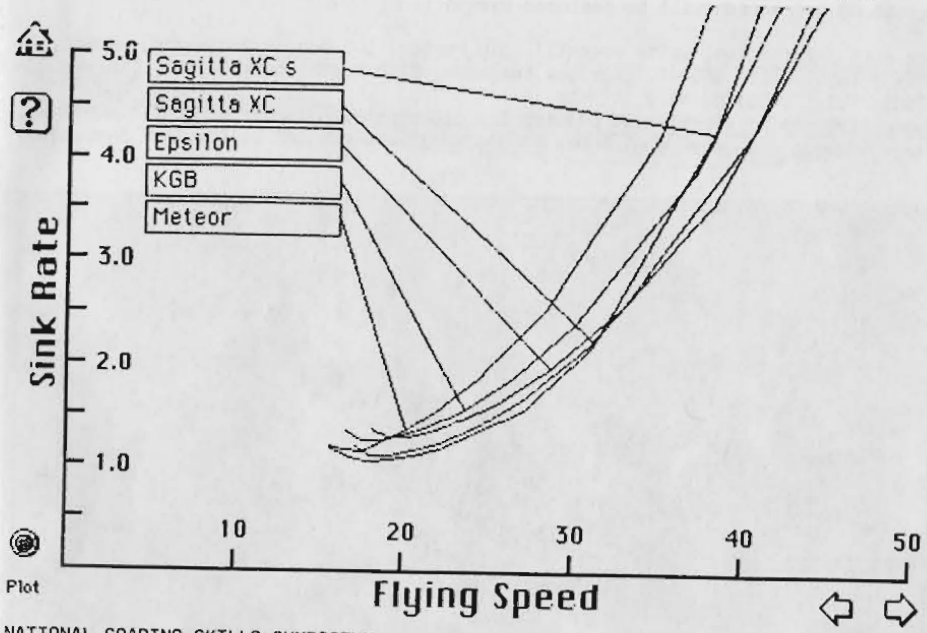
Area	176.0	Ave. Chord	5.50	Tail Volume	0.032
Aspect Ratio	5.82	Aero. Center	2.88	Long Stability Factor	0.43

FIN/RUDDER PARAMETERS:

Area	106.9	Ave. Chord	7.37	Tail Volume	0.021
Aspect Ratio	1.97	Aero. Center	5.61	Sideslip Instab. Fact.	-.00037

Maxsoar design parameters calculated by the program from above data.

Performance plot comparing several designs by sink rate/flying speed.



NATIONAL SOARING SKILLS SYMPOSIUM.....Jim Porter

28 and 29 May, 1988 for sailplanes and electrics AMA Sanction
Blakesburg, Iowa: 3 miles N.E. on County Road H41 . applied for

Times: 0900 - 1200; and 1300 - 1800 daily. Cost: $5.00 per day per participant; and family members $1.00 per day additional. Tents, campers, cars, and airplanes will be charged $5.00 per day for campiong privileges. This is an airport, so fly-ins are welcome. Restroom facilities and hot.showers are available on site.

Christensen, assisted by John Cyr makes F3E run for participants.

A swap shop at $5.00 per space (bring own tables) and a Saturday-evening barbecue for $8.00 per person will be featured events.

For more information, write or call: Jim Porter, 100 Bonnie Boulevard, Hudson, IA 50643; Tel.: (319) 988-4477; or Bob Ferguson, 1105 North Court Street, Ottumwa, IA 52501; Tel.: (515)682-4326

Demonstrations by experienced pilots: Craig Christensen (sport and F3E electrics), Terry Edmonds (F3B flying with his MA designs) were present at the 1987 Symposium.

Terry Edmonds ready for F3B flight demo. Power retriever on left.

Leroy Satterlee, Past Pres. of EISS presents Terry Edmonds his LSF Level V placque.

Craig Christensen readies F3E (electric soaring) demo.

Similarly, noted pilots,designers and builders · have been invited for 1988 to present their expert abilities, answer questions, and help those who attend extend and improve all phases of participation in soaring. THE WHOLE IDEA IS TO SHARE KNOWLEDGE.

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BRUCE MITCHELL MEMORIAL AWARD.....Bruce Abell

Each year an award is given to an outstanding aeromodeler in Australia in memory of the late Bruce Mitchell. The award is a subscription to RCSD and is given in the names of Bruce Abell and Jim Gray who were good friends and 'mates' of Bruce. In 1988, the Bruce Mitchell award was given to Ian Avery, Secretary and Newsletter Editor of the Radio Control Aircraft Society, State governing body for aircraft modeling in New South Wales, Australia. Avery has held this position for many years and has contributed to the advancement of Electric Flight in Australia since its inception. In addition, Avery has taken an active interest in his own club and has been particularly helpful and encouraging to Junior Members. Well liked by all, Ian Avery is most deserving of the Mitchell Award. RCSD salutes him.

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BOOKS YOU WILL LIKE AND USE.....Jim Gray

Aerodynamic Design of Radioguided Sailplanes by Ferdinando Galé is a book that will meet the needs of anyone who aspires to design and fly a sailplane. It is not an "easy" book to read because it does take some effort on the part of the reader to understand and use effectively.

"Ferdi", as he is known to his friends, is an engineer who has been involved with engineering of full-size aircraft as well as models since 1934. He has authored many technical articles for the Italian model magazines, and has published several books, including the present one. One of his best-known earlier books was SOARERS, a series of three-views and descriptions of modern sailplanes, which has been used for scale documentation by many builders...and has seen many printings since its introduction in 1978.

Ferdi was co-founder and President of USAL and a member of the Aeromodelling Committee of the Italian Aero Club. Although he retired in 1986, he still serves as a free lance aero engineering consultant and, in his spare time, flies RC sailplanes, free-flight, and old-timer models. Happily, he has recovered from recent surgery, and as soon as he was allowed by his doctors to leave the house, Ferdi was on a nearby slope soaring his favorite RC sailplane!

Ferdi and his wife Pia live in Baveno, Italy on Lake Maggiore, and he is a frequent correspondent and contributor to RCSD.

THE BOOK DESCRIBED

In an 8" x 10" soft-cover format, Aerodynamic Design of Radioguided Sailplanes is written in Italian and English - in itself a tour de force. Lavishly illustrated with diagrams, charts and beautifully executed drawings, this book takes you from a refresher course in basic aerodynamics and simple mathematics through such related topics and chapters as Airfoils, Wings, Fuselages, Empennages, (the) Complete Sailplane, Longitudinal Static Stability, Lateral Static Stability, Maneuverability, Tailless (designs), Canard (designs), Construction, Examples and Problems, Problem Solutions, Math and Physics Refresher, a Glossary of Modelling Terms, and Airfoil Digest, and a Bibliography.

This book is not for the dilletante or the faint of heart. It is rogorous and thorough, yet easily understandable provided the reader makes up his mind to spend the necessary time reading and digesting the contents. In my opinion, the particular notations that Ferdi uses to lead one through development of the equations is remarkably easy to follow and very logical in progression. It is NOT a book that you will sit down and skim through for a pleasant evening's reading (although you can do that); rather, it is one that you will study carefully in connection with the text, diagrams and equations to gain an intimate knowledge of the subject material -- which will allow you to design practically any type of model you desire in such a manner that optimum flight is practically guaranteed. It is not an exaggeration to say that this book can be used as a preliminary design guide for even a full-size aircraft.

Being a flying wing enthusiast, I was particularly interested in the chapter on Tailless aircraft, and the very complete description of the forces and conditions that apply to these interesting designs...as well as a design guide and analysis of Horten-type swept-wing sailplanes.

The book is NOT inexpensive at $50 surface mail and $55 via air mail, but it is a textbook and, as such, is expected to be priced commensurately. You will use this book as a reference again and again, and you will use it with the secure knowledge that by following its directions your design will be successful. I highly recommend it to designers, engineers, scratch-builders and all who desire more than a cursory glimse of model aircraft design. Well worth the price! Send your order to: Ing. Ferdinando Galé; Via Marconi, 10; 28042 Baveno (No.); ITALY. Please use check or International Money Order in US funds.

SAIL MAIL.....Letters from Readers

LEE's BEES

Mike Harvey, 10 The Crofts, Stubbington, Hants., England PO14 2EY sent in a photo of himself and some of his friends and club members...but the photo was taken three years ago! Okay, why the letter, then? Heres Mike...

"I enclose a photo of the thermal flyers in my club for your collection. That's me far left with B.O.T.; the next model is an LS-1, and in the foreground is JACK RIPPER...yes, that's his name...with the semi-scale Slingsby Eagle. The red-and-yellow high A.R. model is a 'WILDFLECKEN' and the all-red model is a SILHOUETTE. The club site is LEE BEES Model Airplane Club -- a Royal Navy airfield at Lee-on-Solent, Hampshire.

"I enjoyed the slope articles in RCSD, as I have been flying a Krick 1/6th-scale Grunau Baby IIb and a Wik Kestrel; the latter is a semi-scale with an old-fashioned (very) undercambered wing that makes it a bit limited. No, I haven't been building like mad. I bought them at bargain prices from a club member of over 70 who gave up aeromodeling last year.

"That's all for now...and I can't wait to see the Selig wind tunnel test results. All the best, (signed) Mike."

Editorial comment:

Mike, some guys just seem to fall into it, don't they? What's your good-luck recipe? Anyway, it's good to hear what you're up to these days, and I sure wish I could print color photos! Yes, we all wait for Selig's report, but it may be delayed a while longer...as they are now talking of mid-1989 for publication!

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Mike Harvey and friends of the LEE BEES M.A.C. (see text above)

SILE's SMILE

Jack Sile, who is with the armed forces stationed in England and also flies with a club over there, wrote about a couple of interesting things: INTERGLIDE 88 and a new 4-meter ALGEBRA from Dick Edmonds. Here's Jack:

"As promised, all the pertinent facts about INTERGLIDE are in the attached letter. (I'd) be glad to help anyone coming this way, and I do hope some glider guiders, including yourself, are able to come.

"Our first comp is in April, and last year we had 110 entries. I'm still struggling to get into the top 25, but with each new season comes new hope.

"By the way, Dick Edmonds has a new 4-meter on the market, and he did well with it at the '87 Nationals. (I) would also be glad to help anyone with British products. (There are a) lot of large-span Fuzz's made in 'cottage industries' here, but obviously I don't guarantee results!! Anyway, if I can be of assistance, I'd be pleased to try. Sincerely, (signed) Jack."

Ed Sez:

Your offer of help is well received, Jack, and I hope you will get some takers for it. It looks like I won't be comimng to England this year, but for those who will, I'm sure they'll appreciate your assistance. In fact, maybe some of our builders who use English products will write. I had the ALGEBRA 3 meter, as you know, and it flies very, very well. The 4-meter HAS to be even better!

MORE MAIL FROM READERS

Bill Anderson, 25291 Nueva Vista, Laguna Niguel, CA 92677 wrote about the new series by Asher Carmichael, "Razor's Edge".

"Dear Jim: I'd like to make a comment about the use of the use of 77 spray adhesive by 3M. I happen to use this product in my business (sign business) and while it's great for lots of things, it is also very toxic, and I'm not so sure it's such a good idea to be spraying this stuff as much as Asher does unless you wear a mask and have adequate ventilation. I guess what I'm saying is the average guy builds in his house in the kitchen or in some room, and that's NOT the place for him to use 77 spray. I have used it myself to apply fiberglass and to plans for cutting out parts, and when I do it's always outside. Also, there tends to be a lot of overspray just like any other spray can product... and when this 77 spray lands, it stays sticky...so care must be exercized here also. Happy soaring (signed) Bill Anderson."

Editor's comment:

This is a subject that deserves an article all by itself. Ihave NO personal experience with 3M #77 spray adhesive, so I will defer to the "experts" who do have such experience. My own troubles with CA, epoxy, dope and other chemical adhesives certainly has made me cautious -- even fearful -- because of the problems I'ved had with them through careless use (my own fault).

I think it is a good idea to use all these materials in a well-ventilated room, or outside the house if possible...and it is always a good idea to use a mask that has a filter to handle by-products of toxic material application. If you are in doubt, DON'T use them without protection. Toxicity will vary with the material, with its application, ventilation (or lack of it), the person who is exposed, and a variety of other factors. I'd like someone (perhaps Asher himself) to pass along his own words of wisdom, and I thank Bill Anderson for letting us know how he feels. All of these materials arew onderful boons to the builder because they speed up model building and help produce better models...but they can be banes, too; so let's hear from the experts.

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WANTED: AN ELECTRONIC ALTIMETER..... Herman Heintz

Herman Heintz, 14148 Ingram, Livonia, Michigan 48154 wrote to ask about an electronic altimeter: "Dear Jim: I wonder if there is something like an electronic altimeter that can be used in model planes. As you can see from the photo, I fly pretty large gliders, and I guess at times they get up to about 4,000 feet! The altimeter would have to show the altitude reached after the model is back on the ground. A friend of mine claims he has read about an instrument like that, but he can't recall the name of the magazine.

"Just to tell you a bit about the picture: I call the model GULLWING, and I fly only my own designs. This is my favorite one. As a 17-year-old glider pilot in Germany in 1937, I flew the MINIMOA competitively, and have been in love with gull wings ever since.

"The model's wingspan is 13 feet, uses a flat-bottom 10% thick airfoil, has a 20:1 aspect ratio, and a 10.5 Oz. per Sq. Ft. wing loading. Controls are rudder, elevator, and spoilers.

"Hoping to hear from you, I thank you for your time. Sincerely, Herman Heintz. P.S.: I love your RC Soaring Digest!"

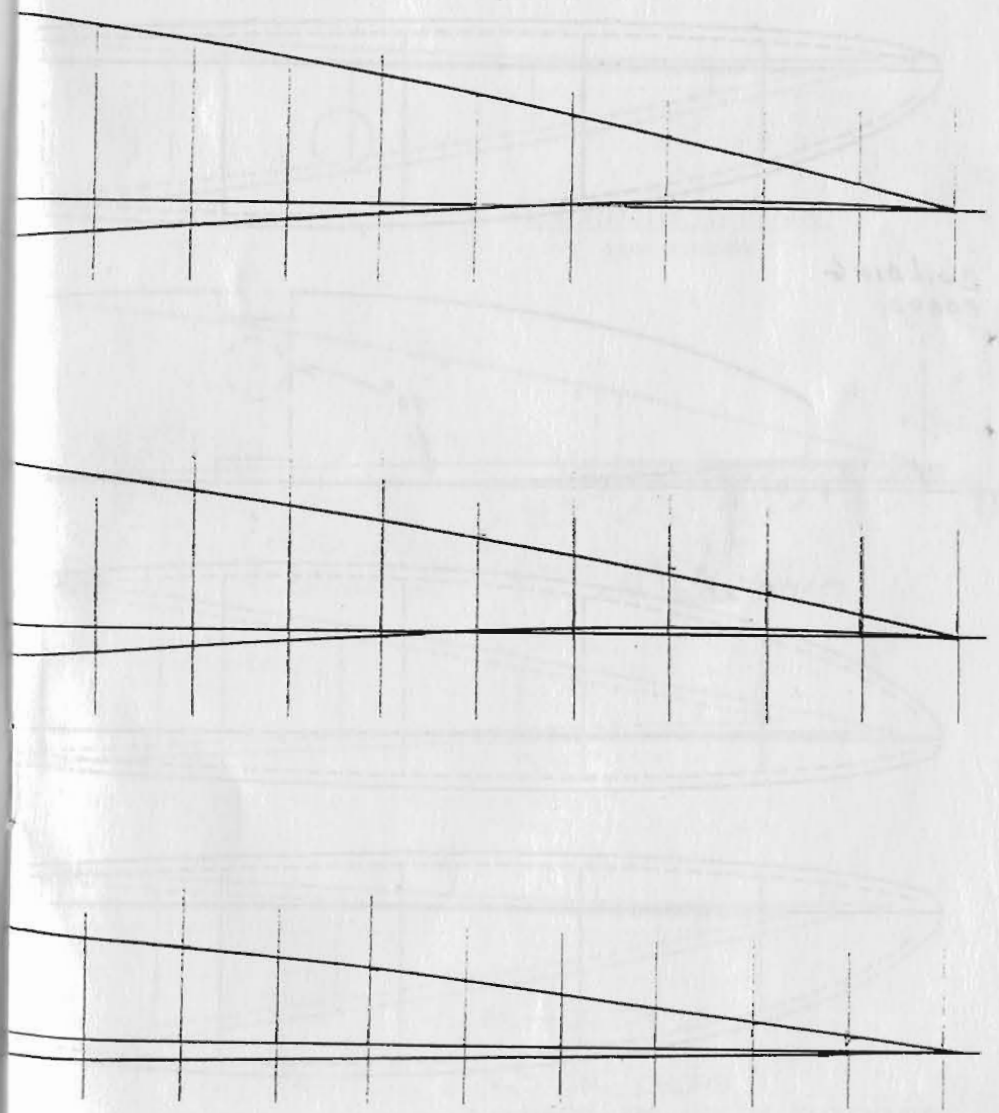
Editor's Notes:

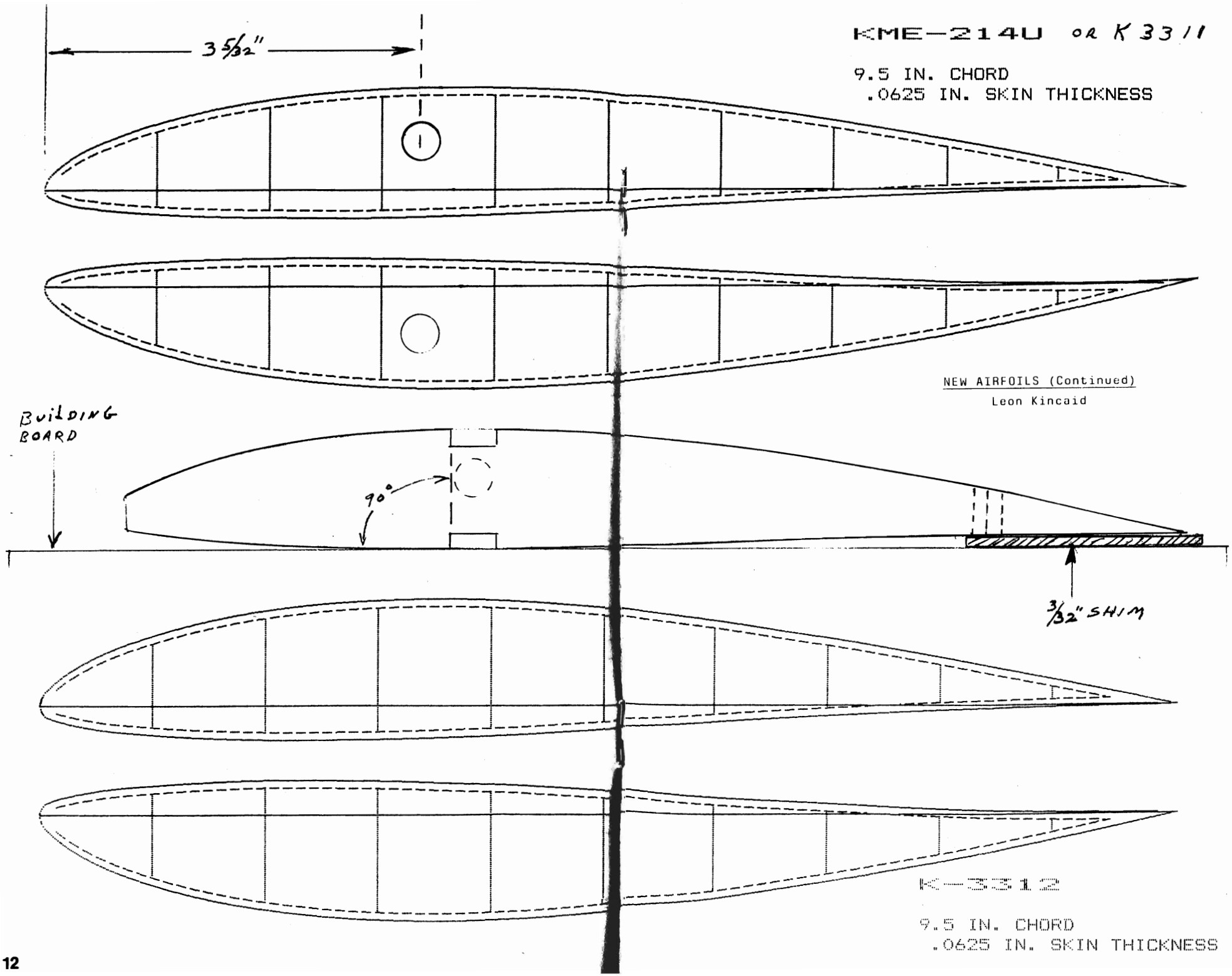
I, too, love gull wings, Herman...and I aspire to building a MINIMOA or REIHER someday. It's interesting to hear that you flew the full-size machine in Germany...something I'd like to do, although there are only a few of the type left, Somewhere, I heard about an electronic altimeter that would read out altitude remotely...but I don't believe it's available to us RC fliers. However, there is an idea for a good product, and one that would really sell. Until then, you may have to use a Replogle or Peravia barograph, both of which are expensive and a bit larger than one would like to have, even for a big sailplane like yours. How about it, readers: anyone out there with the instrument Herman needs? Thanks, too, for your kind comments about RCSD. You made my day!

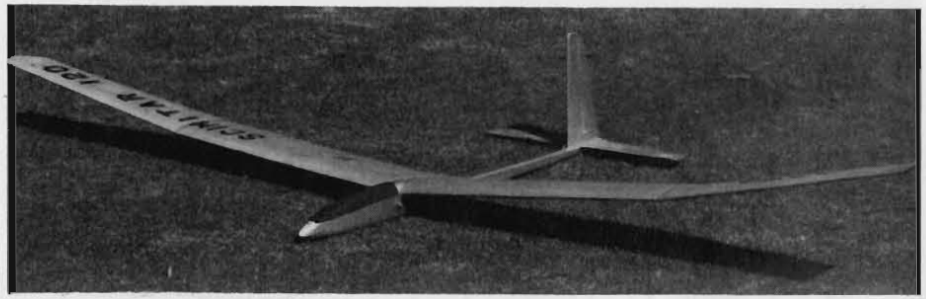
SOME NEW AIRFOILS

This month RCSD has two sets of airfoils to present to you. The first set comes from Bruce Abell, our frequent contributor, good friend and Australian correspondent. Bruce's 'foils have appeared in RCS periodically since 1984. The ones presented this month are 14%, 12%, and 8% thick, respectively, and are designated BA25R14, BA25R12, and BA25R8. These sections are used on Bruce's original design SCIMITAR (see photo) and are derived from the 10% sections reproduced in an earlier issue of RCSD. Photo enlargement and reduction from the outlines given here should allow you to use any size you wish. Co-ordinates are unavailable at the time of writing.

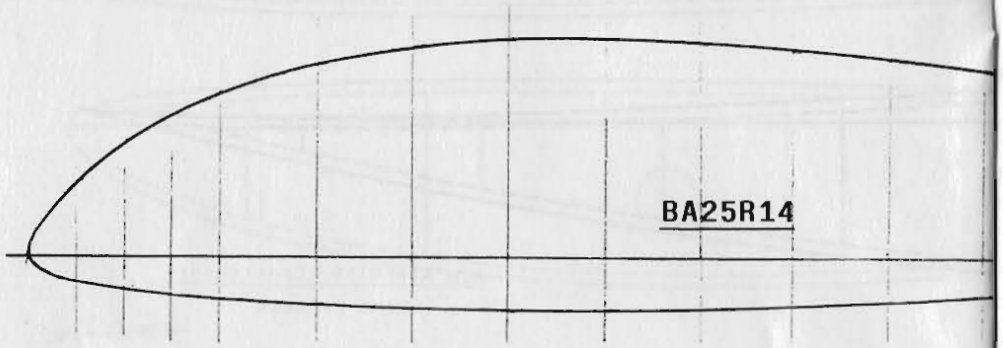
Pull out center section for complete airfoils

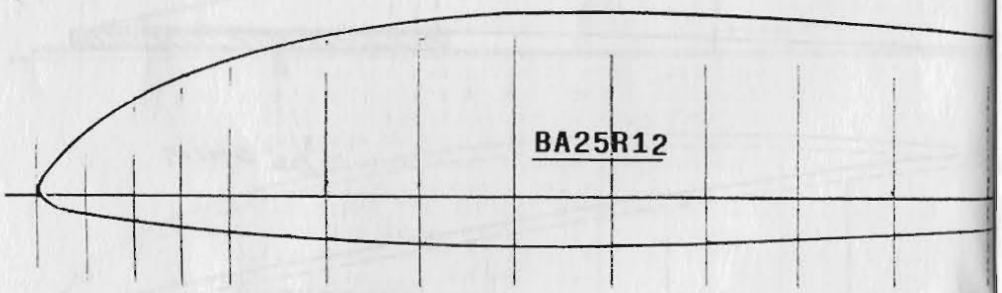


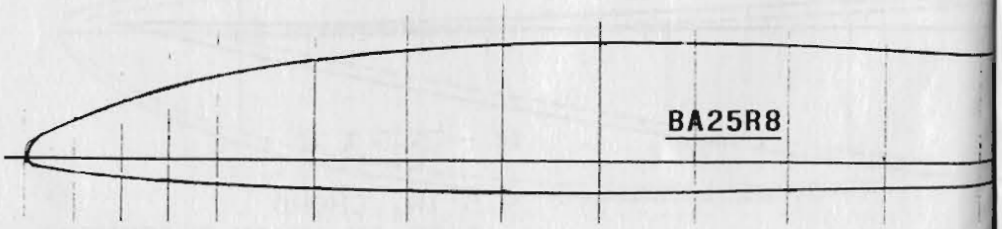

3 5/32"
KME-214U OR K 3311
9.5 IN. CHORD
.0625 IN. SKIN THICKNESS
NEW AIRFOILS (Continued)
Leon Kincaid
BUILDING BOARD
90°
3/32" SHIM
K-3312
9.5 IN. CHORD
.0625 IN. SKIN THICKNESS



Bruce Abell's SCIMITAR 120"







KME-214U (K 3311)

	X	YU	YL
1	0.000	0.000	0.000
2	1.000	1.715	-0.947
3	2.000	2.484	-1.273
4	4.000	3.610	-1.610
5	6.000	4.421	-1.842
6	8.000	5.178	-2.010
7	10.000	5.768	-2.126
8	15.000	6.989	-2.336
9	20.000	7.831	-2.421
10	25.000	8.400	-2.452
11	30.000	8.736	-2.421
12	35.000	8.873	-2.305
13	40.000	8.821	-2.147
14	45.000	8.631	-1.978
15	50.000	8.315	-1.768
16	55.000	7.842	-1.484
17	60.000	7.263	-1.221
18	65.000	6.631	-0.947
19	70.000	5.894	-0.736
20	75.000	5.063	-0.526
21	80.000	4.189	-0.305
22	85.000	3.263	-0.189
23	90.000	2.252	-0.094
24	95.000	1.221	-0.073
25	99.990	0.052	-0.052
26	100.000	0.000	0.000

K-3312

	X	YU	YL
1	0.000	0.000	0.000
2	1.000	1.684	-1.157
3	2.000	2.494	-1.452
4	4.000	3.736	-1.873
5	6.000	4.705	-2.189
6	8.000	5.463	-2.378
7	10.000	6.115	-2.536
8	15.000	7.400	-2.821
9	20.000	8.252	-2.968
10	25.000	8.810	-2.968
11	30.000	9.105	-2.915
12	35.000	9.210	-2.768
13	40.000	9.115	-2.610
14	45.000	8.821	-2.357
15	50.000	8.410	-2.052
16	55.000	7.894	-1.736
17	60.000	7.263	-1.421
18	65.000	6.494	-1.136
19	70.000	5.757	-0.873
20	75.000	4.905	-0.631
21	80.000	4.031	-0.421
22	85.000	3.073	-0.263
23	90.000	2.105	-0.147
24	95.000	1.094	-0.105
25	99.990	0.052	-0.052
26	100.000	0.000	0.000

Leon Kincaid is well known for his famous SCOOTER designs which have won many contests. Recently, RCSD asked Leon for some information about the airfoils he uses on some of his winning designs, and the accompanying sections are a result of that request.

"I am sending you a plot of my 3M SCOOTER airfoil that I have labelled K-3312. I drew it up in late '82 or early '83. It's a simple 3% MC (Mean Camber) with the high point at 33% aft and an overall thickness of 12%. (The original SCOOTER 2M had a 3% MC but was 10% thick). I have constructed several planes with the K-33XX series airfoil upper camber, but reduced the lower camber and overall thickness. For each 1% thickness reduced on the bottom, the mean camber (MC) goes up by approximately 1/2%. I found that the lift goes up, but so does the induced drag, which means that NO airfoil is perfect for every situation. It is also hard to be original. The K-3312 with the bottom rreduced to 10% is so close to the MS--2091 you wouldn't believe it! (Michael Selig 2091 - Ed.). It was when I reduced the K-3312 an equal amount on the top and bottom cambers to keep the 3% MC, that I found it fell into the Eppler 214 mold! In Jan/Feb 1985 NSS Sailplane Woody Blanchard submitted the E-214 modification. The "mod" barely raises the trailing edge .02% C and puts a flat surface (for easy building) on the bottom. When my thinned airfoil template fit so nice, I figured I m ust be in the right ball park. I did have to sand about 10 or 15 thousandths from the upper camber around the 15% or 20% chord position...so now the only difference between mine and Woody's is the undersurface camber. I really shouldn't call it the KME-214U, as someone might think I am trying to take credit away from Woody, which I would never do. I've known Woody since we were 'teens (he's 3 years older)...so I guess I should just call it simply K-3311.

"Meanwhile, if you decide to try it, fine. In travel mode, like it is, it's a lot cleaner then the E-214 with the flap up 4 or 5 degrees. Oh yes, I recommend the flaps to be about 22% to 23% of the chord. The top and bottom spars are most parallel at 33.22% aft of the leading edge. That's 3.156" from L.E. to center of the spars -- also to the main wing rod hole."

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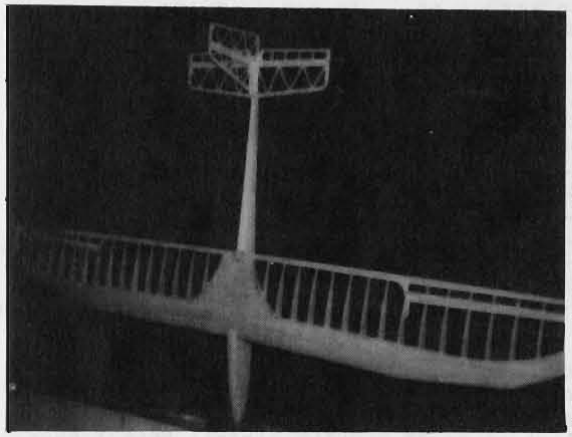
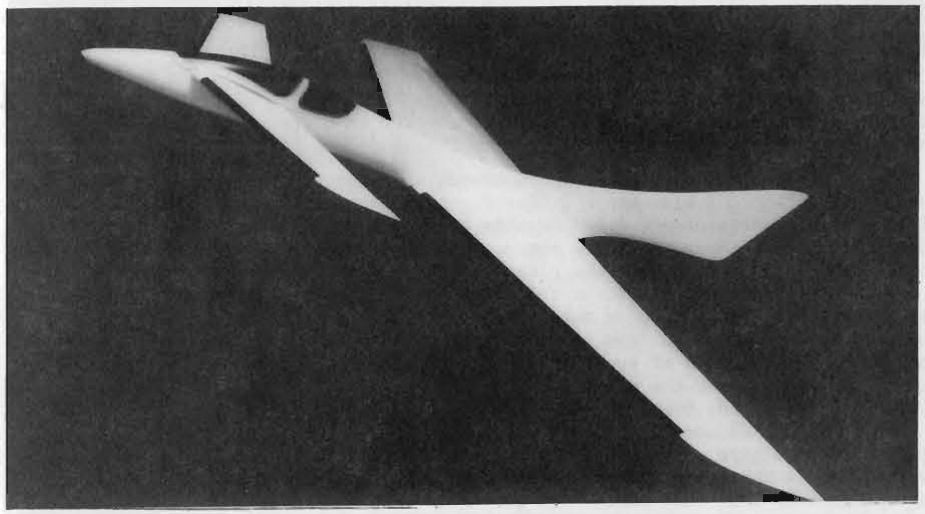
A NEW HAND LAUNCH DESIGN.....Eric Jackson

"I did take time out while building my HP-18 Scale machine to design and build a new HLG. The pics aren't so hot, but what the heck...I'm a flier, not a filmer! The new design is a departure from "normal" HLG design theory, and for now I'm kinda keeping all the 'goodies' under my hat 'til I see if the preliminary test flights (already 300+) are a fluke. For what it's worth it seems to be a good floater and works super light air surprisingly well. Tests with my old Sunrise have shown it to have a faster rate of climb in light air, a better launch, a lot more speed and half again as much L/D at the same weight. Right now I'm cautiously optimistic. Craig Robinson, Sunrise designer, has flown my bird and says he wouldn't change a thing...quite a compliment, I think.

"Still love the mag, particularly scale stuff...but would like to see a little more HL (please...). Well, you are probably tired of reading, and I am out of junk to say, so...keep your wings level. (Signed) Your friend, Eric."



Editor sez: First thing, when you take off that hat and let us see what 'goodies' you have hidden underneath, please tell us how the "Discus" wing is working for you on your HL. Also, tell me what you've named it -- and be sure to do an in-depth article for RCSD. You see, in that way, we can give you more of the HL you asked for! Neat, huh? I see you have ailerons, but don't see any flaps, so maybe you have a 'secret' airfoil. Sheeted leading edge and center section look pretty good but "normal" but I'd like to know more about those tips. I'll bet you've done some good things there, too. The only problem is, with a pretty structure like that, it's a darned shame to cover it...so how about a clear covering???



TELOS, A NEW CANARD FOR SLOPE SOARING.....Jim Gray

American Sailplane Designs introduced a new RC slope sailplane, according to Gary Anderson, president of this California Company. The literature that was released today mentions these advantages and features:

* First production sailplane featuring the CANARD configuration
* Avoids tip stalls, violent pitching, unexplained dives
* Offers rapid roll rate, inverted flight, outside loops
* Stall resistant
* Composite construction: S-2 glass, Kevlar, carbon-graphite, WEST epoxy, and high-density blue foam wing cores

Specifications: Designed by: JAREL Aircraft Design and Engineering

Length	38"	Main wing area	345.2 Sq. In.
Main wing span	51"	Canard wing area	99.3 Sq. In.
Canard wing span	26"	Total weight	27 Oz.
Required channels	2	* Average wing loading	9.4 Oz./Sq. Ft.

* With Standard (S-38) radio system and 250 MaH battery pack. Note: Main wing and Canard are loaded differently.

Radio requirements: TELOS uses a standard-size radio system; Futaba S-38, JR-501, etc. will fit in TELOS, except for Futaba S-28s. A 250 MaH battery pack should be used. AVAILABLE NOW from American Sailplane Designs, 2626 Coronado Avenue, San Diego, CA 92154.

SOME TIPS ON PAINTING.....Ed Devlin

Ed Devlin has done a couple of articles for us, and he's the fellow who did all the finish and flying work on my ACCIPITER CCT. I was so impressed with the appearance of my sailplane after Ed's treatment, I asked him to tell us how he achieves those nice finishes...so Here's Ed.

" KRYLON paint is in Standard Brands stores out here, so that is what I use - spray cans. I also use SIG "Skybright", a one-part paint; epoxy, I think. I do have a compressor and guns, Paasche brushes, but they take too much time. Guess I'm getting lazy, so I use spray cans now almost exclusively. What the heck, as long as the plane looks clean and neat. Just spray, dry, wax and fly.

"The hard part for me is color and design of the pattern. Doing others' planes are easy, but doing my own is harder, as it takes longer to decide how I want it to look. I said 'choice' of color, but for me, one color will always be white. In the case of your ACCIPITER, it was easy, because you gave me the color you wanted, and the plane itself chose the pattern. Painting with SIG Skybright spray cans requires only time to dry overnight.

"ACCIPITER was fog-sprayed a couple of times with Skybright primer -- just enough to give a covering. Check for pin holes, etc. and fill same. Sand with 600-grit wet, with warm water and dish soap, taking the coat down to a smooth finish. The paint should now look like streaks, filling only the low spots and bitty holes. Fog spray again with primer for good coverage, and do as much as needed. Dry for a couple of days, in sunlight if possible, then sand with 600 wet again, but only enough to leave a smooth surface...leaving a light covering of primer on the body. Wash the body in soap and water, taking off all the primer powder, and rinse in clear water. Dry with towels and hang to dry overnight.

For the non-white parts, mask with low-stick masking paper tape...no need to paint the body all white, as the primer is whitish already. Spray the white in a fog-spray pattern -- taking four or five spray coatings to complete the painting process, and allow to dry for several hours between the first 3 fog coats. Spray the fourth coat and let dry for 20 minutes. Spray the next coat now, and this should give you a good finish. When painting, peel off the masking tape about 10 minutes after each spraying, and re-tape before the next coat. DON'T GET FINGERPRINTS ON THE PAINT. I buy my tape at the builders emporium when it's on sale at 37¢ a roll for 1" wide tape. I know it's cheap at this price, and won't stick down hard.

"When the final coat has set about 10 minutes, pull tape and allow to dry overnight. Next day, tape along the exact line of color demarcation. Use newspaper or plain brown grocery bags, and tape the paper to the tape ALREADY IN PLACE. The first tape keeps the printing ink from touching the white paint.

"Now spray your colors as mentioned above. When the white paint is dry, a ridge is left along the color line, so put your tape along this ridge. On the last 2 coats of red (or whatever your color coat is) drop the first tape line down from the 'ridge' line about 1/32" to 1/16". Spray the last two coats and let dry for a couple of days.

"Now, wet-sand the ridge between the white and solid color...and before sanding you should feel the solid color slightly higher than the white with your fingertips. When done properly, you should finally feel no ridge or high spots between the white and color areas. Now, lightly wet-sand the entire body with 600 grit to smooth the surface, take off the fuss, and remove the surface shine. Wash and rinse as above, and dry with a nice old thick towel, T-shirt or worn out bed sheets...a soft cloth. Using more of the same material apply a GOOD paste wax, or a GOOD liquid wax. I use Eagle 1 non-abrasive carnauba paste wax, or Meguiar's car cleaner wax -- a liquid.

"Wet a small thick pad of T-shirt or sheet with a clean solution of warm water and dish soap and squeeze water out until cloth is damp. Put on a bit of wax and rub the paint until it is as smooth as a baby's tush. When surface gets dry, put more wax on cloth and spray from a bottle of warm water and dish soap mixture, keeping area to be rubbed wetted at all times. The longer you rub, the sharper the surface becomes...so work as long as you want. Your ACCIPITER was rubbed about 3 hours! When you have rubbed it to your satisfaction, allow surface to dry about one hour. Then, with a clean cloth and NO water, polish the dry surface until it shines. As a final step you can rub in a coat of Blue Coral Preservative and sealer. Let it dry and polish it out with a clean cloth. This process gives a deep sheen to your baby. Paste wax gives a better shine

and depth of sheen than spray wax, but suit yourself. Spray wax is faster and easier, but doesn't look quite as nice when finished. Eagle 1 spray on-wipe off works quite well. I get it from Pep Boys.

"Some comments about products. I like and use SIG Skybright because it resistes scratches and won't peel up the paint when I use SIG striping tape (Part No. SH-427) to hold the canopy in place. Skybright is lighter weight when finished than other popular products I've used, and the pigment seems deeper so it takes less coats and lighter ones to achieve the finish I want. Not many hobby shops carry it, so you may have to order it direct from SIG. You can get it in small cans for use with your own spray gun if you wish, but I prefer the spray cans, as I'm getting too old to fool with those guns, cleaning them out after use, etc. , and a bit lazy, too.

"By now you're probably light headed and tired out from all those paint fumes and all that hard rubbing, so I'll let you off until next time."

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HERE'S A NEAT PRODUCT - "DRAGON'S TEETH" .....RCSD

Stop your sailplane in its tracks ... on the ground, of course. Tim McCann of McCann Tool & Electronics, P.O. Box 8155, Stockton, CA 95208 has some pretty nice products, but the one that I've heard called for most often is the landing skid that pilots call "dragon's teeth." (Also "sharks teeth")

A few weeks ago, I attended a contest (don't ask how I did -- it wasn't the top five) and the reason I did embarrassingly poorly was my landing score. The ground was rock hard, and there was a thick layer of sun-dried grass on top of that. On the one occasion that I had the spot nailed, the glider slid right on through the landing grid and stopped just outside. On that same day, I heard other pilots making the rounds asking for "dragon's teeth"...so now I have some.

The landing skid is a piece of plastic that can be attached easily to the bottom of your sailplane near the nose. It is a tough plastic piece and it has serrations (fancy word for teeth) that face the ground in the landing attitude. When you land your pride and joy, the teeth dig into the ground and stop your sailplane quickly. I've seen all kinds of other things used, but none seem to work any better than this product from McCann, and many of them do not work as well.

Heck, for a measly $2.95 STOP your glider in the landing circle. Just pre-mold the polyethylene plastic to the shape of the underneath part of your fuselage...well, okay, the sailplane's fuselage by placing the plastic for a short time in boiling water, and then pressing it against the surface to which it will be fastened. Next, screw it in place with wood screws or with 6-32 screws and blind n uts. For a really secure attachment, use hot-melt glue in addition to the mechanical hardware. If you're in a hurry, call (209) 466-0428 and tell them that RCSD sent you.

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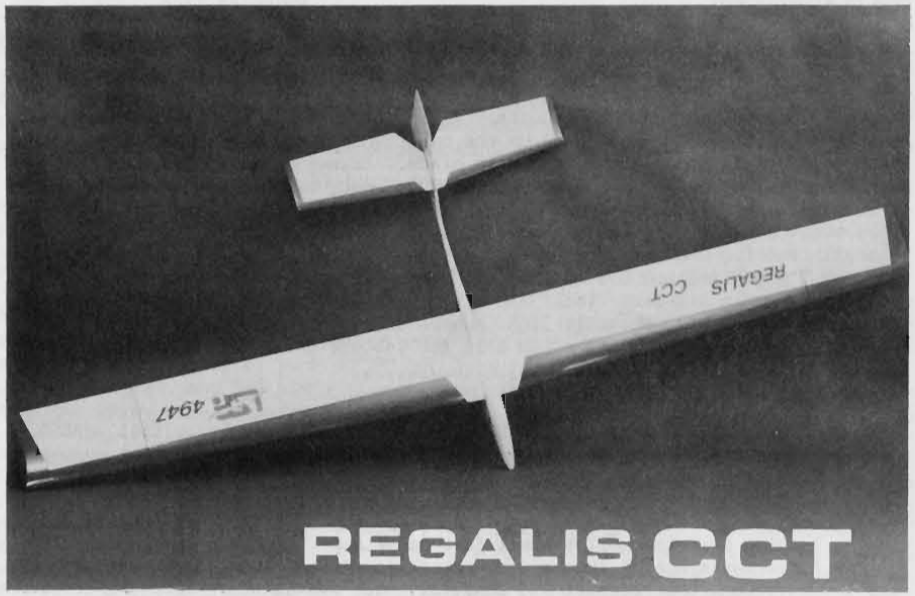

REGALIS CCT

TIPPERON CONTROLLED SAILPLANE

AT LAST! A 100" CCT. The REGALIS. Everything the ACCIPITER is plus "forever" floating glide and excellent thermaling charactistics.

Specifications:

Span	100 In.
Wing area	918 In.
Aspect ratio	10.9 to 1
Wing loading	11 Oz./Sq.Ft.
Airfoil	Eppler 214

Control functions:
Tipperons
Rudder
Stabilator
Flaps 6°Neg. 80°Pos.

Coupling:
Tipperons to Rudder
Flaps to Stabilator

Construction:
Wings Foam core
Balsa sheeting

Fuselage Epoxy glass

Stabilator Foam core
Balsa sheeting

Rudder Built up

Price: $179.50 + $6.00 Shipping

CAL SOAR

California residents add 6½% Sales tax

All kits are custom made.
Please allow 4 to 6 weeks for delivery.

CALIFORNIA SOARING PRODUCTS

P. O. BOX 367• TOPANGA, CA • 90290 (213) 455-2808

ACCIPITER CCT

TIPPERON CONTROLLED SAILPLANE

A superbly smooth handling, responsive and stable aircraft with exceptionally wide speed range and aerobatic capabilities.

specifications:

Span	2 Meters
Wing area	723 Sq. In.
Aspect ratio	8.6 to 1
Wing loading	11 Oz./Sq. Ft.
Airfoil	Eppler 214

Control functions:
Tipperons
Rudder
Stabilator
Flaps 6°Neg. 80°Pos.
Releasable tow hook (optional)

Coupling:
Tipperons to Rudder
Flaps to Stabilator

Construction:
Wings Foam core
Balsa sheeting

Fuselage Epoxy glass

Tail feathers Built up

Price: $159.50 + $6.00 Shipping

Also available: **ACCIPITER CCX**
The original aileron version.
$149.50 + $6.00 Shipping

CAL SOAR

California residents add 6½% Sales tax

All kits are custom made.
Please allow 4 to 6 weeks for delivery.

CALIFORNIA SOARING PRODUCTS

P. O. BOX 367• TOPANGA, CA • 90290 (213) 455-2808

SOURCES

HI-PRO-FORM-FABRICS, 962 Devon Drive, Newark, DE 19711; (302) 368-0405

For nine years Hi-Pro-Form fabrics has been making KEVLAR, Grpahite and Fiberglass available, prodong themselves on selling a customer one yard or a thousand yards. There is a special brochure available for the model builder; one that contains items not shown in the regular brochure. Special fabric styles, narrow widths, new fabrics, and hard-to-find fabrics/materials are included.

For more information and a copy of the catalog, write to the above address or telephone Hi-Pro Form Fabrics, Inc. at (302) 368-0405. Minimum order is 1 yard. Interestingly, ceramic fiber fabrics are available. He who says his aircraft flies like a rock may be right! Please mention RCSD when you buy or inquire.

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SUBSCRIPTION RATE INCREASE .....Publisher

BECAUSE OF THE INCREASE IN UNITED STATES POSTAL RATES THAT TOOK PLACE ON APRIL 3RD, 1988, RC SOARING DIGEST WILL HAVE TO INCREASE ITS SUBSCRIPTION RATES, BEGINNING WITH THE JUNE 1988 ISSUE.

Current subscribers will NOT be affected by this increase until their renewal date. New subscribers will pay the new rates beginning with the June issue.

SUBSCRIPTION RATES ARE BEING INCREASED ONLY ENOUGH TO PAY THE INCREASED POSTAGE.

THE NEW RATES FOLLOW: (Note: we will offer surface rates to foreign countries at a lower rate than air mail)

United States its possessions and APO's: FROM: $16 per year TO: $17 per year via Third Class bulk rate.

FROM: $21 per year TO: $22 per year via First Class mail.

Canada and Mexico: FROM: $20 per year TO: $21 per year via First Class. Note: RCSD must be sent First Class in envelopes, by Postal Regulations. Unfortunately, we have no choice.

FOREIGN COUNTRIES

EUROPE AND UNITED KINGDOM: FROM: $24 per year TO: $26 per year via AIR MAIL.

NEW SURFACE RATE: $18 per year (save $8 per year)

MIDDLE EAST, ASIA, PACIFIC:

FROM: $24 per year TO: $28 per year via AIR MAIL

NEW SURFACE RATE: $18 per year (save $10 per year)

Comments: Postage via air mail from United States to Pacific, Asia and Middle East has been costing $1.35 per copy of RCSD, plus envelope. This represents a LOSS to RCSD. The new rate has been set at $1.54 per copy!!! We can no longer afford to bear this loss; hence, the price increase.

Postage via Air Mail from the United States to Europe and the U.K. has cost $1.12 per copy of RCSD, plus envelope. This represents a break-even, zero profit situation. The NEW rate will be $1.32 per copy - hence a loss. We must compensate to at least break even!

In most instances, RCSD contains material that is not dated, which means that sea mail, while taking longer than air mail, will represent no particular loss to the reader-subscriber. We apologise to all our readers for this new and unfortunate development, but bear in mind that we suffer too.

March 29th, 1988

94-1058 Paha Place #3
Waipahu, Hawaii 96797

Dear Jim,

I recently completed a wing using the NASA leading edge droop outlined in the Oct. '87 RCSD. It sounded like a possible solution to the harrowing tip stalls I experienced with a previous wing, whose airfoil began life as an E205; but after my sandpaper-and-exacto-knife 'smoothing formula' turned into a wing that was a fine fast flier for windy days, but would do impromptu wing-overs on anything but a blistering landing approach. Since I do mostly thermal flying, I wanted something that would retain low-speed control as well as covering some ground when required.

I am really excited about the results. The plane has all the speed and penetration capabilities one expects of an E205 ship but will slow down and fly like my Gentle Lady. I've put it into spiral dives, stalls and the like, from which it recovers very rapidly. The wide speed range is reminiscent of my late, beloved Prodigy. It is a 2-meter wing strapped to a Prophet fuselage.

The first day out with my new pride and joy just happened to be my club's (Mid-Pacific Soaring Society's) monthly contest, and I was late for the start. Its very first trial was a 6 min. max contest flight and third place in the contest.

This may be a tempest in a teapot or just dumb luck, but I highly recommend that others try this technique the next time they get the itch to home-brew a wing.

Sincerely,

Jim Williams