

VINTAGE SAILPLANE ASSOCIATION

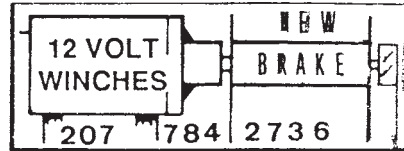
VSA is a very dedicated group of soaring enthusiasts who are keeping our gliding history and heritage alive by building, restoring and flying military and civilian gliders from the past, some more than fifty years old. Several vintage glider meets are held each year. Members include modellers, pilot veterans, aviation historians and other aviation enthusiasts from all continents of the world. VSA publishes the quarterly magazine BUNGEE CORD. Sample issue \$1.-. Membership \$10.- per year.

For more information write:

Vintage Sailplane Association
Route 1, Box 239
Lovettsville, VA 22080

flight LINE SYSTEMS

P.O. Box 1502, Lewiston, Me. 04241



For Information, Contact:
NSS Secretary/Treasurer
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8131 Broadway
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• FULLY SUPPORTS THE F2B SOARING TEAM & LSF SOARING PROGRAM
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• YEARLY DUES ARE \$12 (SPECIAL FAMILY RATES)
• NSS OFFICERS ARE FROM ALL 11 DISTRICTS

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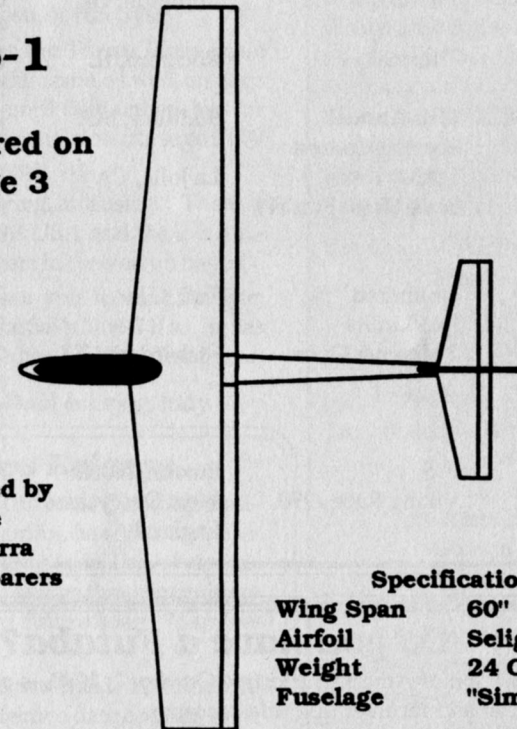
Vol. 7

No. 7

July, 1990

LS-1

Featured on
Page 3



Designed by
The
La Sierra
Slope Soarers

Specifications
Wing Span 60"
Airfoil Selig 3021
Weight 24 OZ.
Fuselage "Simple Box"



Schedule of Special Events

Date	Event	Location	Contact
July 21-22	F3J World Interglide	Warwick, England	Sam Hitchman (0926) 651511
July 22	Unlimited Thermal	Colorado Springs, CO	B. Welsh (719) 495-3572
July 28-29	Michigan Sailplane Championships	Nunica, MI	C. Posthuma (616) 677-5718
Aug. 4	Thermal Fun Fly	Pleasanton, CA	Bob McGowan (415) 498-1042
Aug. 4-5	International - 16th Annual	Coteau Station Quebec, Canada	E.G. Currington (Call RCSD)
Aug. 5	Thermal/Scale	Morgan Hill, CA	Mick Carlin (408) 263-3576
Aug. 5	Thermal	Ellington, CT	G. Knoblauch (203) 658-1538
Aug. 11	Thermal	Rockford, IL	D. Decker (815) 399-7602
Aug. 11-12	19th Annual Soaring Contest	Sudbury, MA	John Nilsson (508) 520-1745
Sept. 1-3	Torrey Pines Scale Slope Fun Fly	La Jolla, CA	Jerry Miller (619) 450-1483 Charlie Morey (213) 494-3712
Sept. 8-9	Unlimited: FAI Limits	Taft, CA	Eric Hendrickson (805) 493-4210
Sept. 8-9	2 Meter & Open	Richardson, TX	Chuck Fisher (214) 270-2634 Jack Hamilton (214) 348-4669
Oct. 5-9	F3F Viking Race 1990	Buxton, North West Derbyshire England	Nic Wright 0352 720516

Do you have a Futaba?

Futaba Corporation of America, effective October 1, 1990, is providing a narrow band transmitter and receiver upgrade program.

According to Futaba, "It is intended to help modelers enter "1991" at a reasonable price without the need to purchase a complete new system. The upgrade program begins October 1, 1990 and will end on March 31, 1991."

Dear Readers,

Although we have seen the full page announcement in numerous publications/club newsletters, we thought that we would take a moment to let you know about it just in case you haven't received any information on what equipment can be upgraded and what procedure is required. Please drop us a line or give us a call if you need a copy of the complete announcement. Jerry

The Soaring Site

The special contest for August 4th, that I mentioned last month, has been added to the events schedule. The CD will be Bob McGowan. Another special event, included later in this issue, is a fourth of July family fun fly and picnic that is scheduled in Long Beach. Yes, it is definitely too late for most of you in the area to consider going, but the "White Elephants" and the "on-site kit building" caught our eye. So, we printed the announcement on page 23, from Bob & Kim Reynolds, to give you some ideas for your local contests or fun flies.

The registration form for the Torrey Pines Scale Slope Fun Fly appears in this issue, as well, on page 22. It may not be held until September, but for those of you that plan to attend, you can save \$5.00 if you register before August 4th.

Are you a multi-task soaring enthusiast? There is a newsletter called the *F3B/USA*, and the information on how to get it appears in their ad on page 11. And, on another note, are you looking for Ron Wagner of Hi Performance Sailplanes? If so, he has a new address: 16650 Redmond Way, Redmond, WA 98052.

Read & Enjoy, Judy

FCC News Release

Robert Underwood, Technical Director, Academy of Model Aeronautics, has distributed an FCC news release to the Model Press "regarding the petitioning to assure that transmitters manufactured in the future meet "narrowband" specifications."

"One sentence in the text needs clarification. The March 1, 1993 effective date appears to be missing a phrase. The intent is that no non-narrowband transmitters may be sold after that date. This allows the "pipeline" of equipment following the March 1, 1992 date given, to clear out."

"The petition simply assures that all transmitters in the future will be narrowband."

About RCSD...

RCSD is a reader written-publication. The articles & letters are freely contributed to RCSD in order to provide:

"The widest possible dissemination of information vital to R/C soaring to enthusiasts all over the world."

It is the policy of RCSD to provide accurate information, but if we print a factual error, we want to make it right. Please let us know of any error in RCSD that significantly affects the meaning of a story. The opinions expressed are not necessarily those of RCSD. Please see the back cover for subscription costs and additional information.

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Based on the Princeton Wind Tunnel Tests by Selig, Donovan and Fraser, as reported in *Soartech*

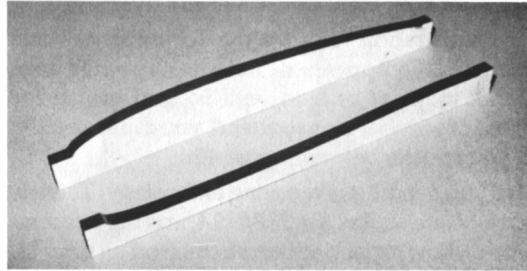
8, it is stated that the demonstrated performance of an airfoil should be achieved when constructed so that the wing surface is within .004" of the airfoil specification. So, how do I/we build a wing within the tolerance of .004"? Very carefully!

Templates

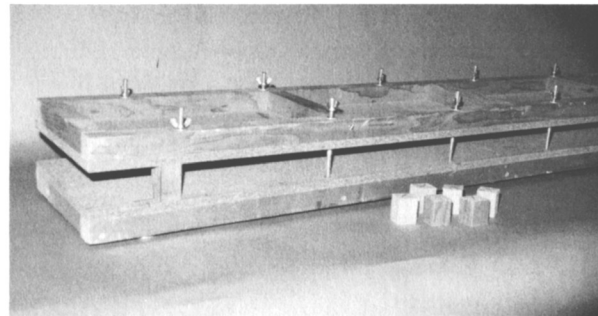
For years, I have been using the two template-type templates for cutting foam cores, with good success. However, I will also admit that I have had to cut the same template out more than once before I got it right. Well, not to worry anymore. Lee Murray of LJM Associates has a computer controlled laser cutter. Lee can cut out the finest set of templates, with alignment holes, in 3/8" plywood from his inventory of 35 plus airfoils. For more information, contact LJM Associates.

Wing Press

When I did my first foam wing, I pressed the skins on by using the weight of 25-gallon gas cans, a tool box, and 4 stepping stones from the back yard! I also lost use of my workbench for the next 3 days while the epoxy cured. I knew there had to be a better way, so I developed a wing press. The real advantage to using this press is that after you load your cores into it to cure, you can pick the press up and take it out



LJM's template with ultrasmooth Teflon heat resistant tape on cutting edge.



Note the blocks to hold the PRESS open so that you can slip the cores into the press with no hassle. The small blocks are cut to the same thickness as the foam and the skins are used as stops in the press. I use them to press the skins onto the foam cores and not mash the skins into the cores.

back and lean it against the fence to cure in the sun or, if you live in the east, you can take the press down into your basement and stand it next to the furnace.

Vacuum bagging

If you are into or are looking for parts to build a vacuum bagging system, Tom Overton carries a vacuum switch and a check valve. Tom's address is 1320 Arleen, Sunnyvale, California 94087, (408) 736-1568 after 6:00 P.M. P.S.T.

Also, while talking to the gang at NorthEast Sailplane Products, they told me that they are putting together a vacuum bag system. For more information, see their ad for the address.

Jer's Workbench Foam Core Wings



During a club meeting, one member suggested that the club should have its own glider, one that could be considered indigenous to our club and hill. All members present were excited about the idea and everyone agreed that the club glider should be geared toward the average pilot. We could have designed a sailplane that utilizes all the latest building techniques and space age materials, but the idea here is to keep it simple and relatively low cost. However, simple doesn't mean you have to sacrifice performance. A good compromise of performance and ease of building should produce a sailplane that is easily built from plans only and displays respectable performance.

The club glider should be capable of performing aerobatics to satisfy the seasoned pilot, but be stable enough for a beginning aileron pilot. A design committee was formed and began design on the LS-1 (La Sierra One). The result is a sixty inch span slope glider with built-up wing utilizing ailerons, simple box fuselage, solid wood tail surfaces and a balsa hatch/canopy to clean up the front end. The LS-1 has ample room inside for full size radio gear including three servos and ballast (rudder is optional). The wing is of "D Tube" construction with the use of cap strips. The Selig 3021 airfoil was chosen because of its wide speed range and ability to be loaded quite heavily. (Up to 13 oz. per sq. ft. for the prototype.)

As an aileron trainer, the dihedral can be increased and the control throws decreased to produce an easy to fly trainer. Built per plans, the LS-1 is a clean design that can perform all the standard aerobatic maneuvers with ease. The prototype LS-1 weighed in at 24 oz. ready-to-fly...a seven channel receiver, two large servos and a 500ma battery pack were used. At 24 oz. the LS-1 is able to penetrate and maneuver in 20 MPH winds. This slope glider really holds the energy to perform large maneuvers and blend each maneuver into the next. In light wind (5 MPH) the LS-1 is easy to fly for beginners because the controls are still quite responsive and stalls are mild and easy to recover from.

*...continued
on pg 9*



*Club members & their LS-1s at a recent contest.
Front: Richard Teller, Mike Reed, Sean Silas.
Back: Clarence Michael, Nick Radle, Carl Maas.
Photo by Dale Widmer.*

On The Wing

...by B²

Flug - und Modelltechnik announced a new airfoil for conventional tailed sailplanes in its February, 1990, issue - the DU 86-084/18. While one might wonder how this airfoil works at all, work it does, and very well. Our first look at this new section triggered our memory banks into action, and we soon had a compact "family tree" assembled which outlined the underlying philosophy and aerodynamics of its design.

The first in this tree, the Eppler 662, was included in a 1979 paper presented by Dr. Richard Eppler in which he discussed several new airfoils designed by means of his computer program. The E 662 was specifically designed for full sized sailplanes with full span flaps capable of both positive and negative deflections. Full span flaps normally pose a challenge for the aerodynamicist; Dr. Eppler designed an airfoil which could take full advantage of this configuration.

The flap, of about 20% chord, is capable of movement within a minimum -7.5° (up) to +10.0° (down) range. To understand why this section works so well, it's important to remember that when the flap is down, the Reynolds number is rather low; when the flap is up, the Reynolds number is very high. Dr. Eppler was able to utilize the hinge line to advantage during flap deflections. With the flap positively deflected, the suction peak at the hinge line promotes a transition ramp which greatly improves the airflow over the aft part of the upper surface; during negative flap deflections the hinge line stabilizes the lower surface laminar boundary layer. The theoretical polars for the E 662 appear to be excellent, but we don't know if the E 662 was ever used on a full sized sailplane.

The second airfoil in the tree, the HQ 35/12.29, was found in a 1985 paper by J.L. van Ingen and L.M.M. Boermans, both of Delft University of Technology in The Netherlands. The latter part of their paper contained the results of tests run on low Reynolds number airfoils, one of which was this section by K.H. Horstmann and A. Quast (not Helmut Quabeck). This airfoil was also designed for full sized sailplanes with full span flaps, but it has less drag than the E 662.

The HQ 35/12.29 is 12.29% thick, with a flap chord of just 13.5%. The deflection range for the flap is, at a minimum, from -4° to +28° and is to be used full span. Of interest here is that a significant drag reduction was achieved at all flap deflection angles with the attachment of "zig-zag" turbulators at 69% chord on the upper surface, and at 83% chord on the lower. The concave corner present at the flap hinge leads to local separation of the

turbulent boundary layer as expected, but filling and rounding the corner resulted in no further drag reduction than had been achieved with the turbulators alone.

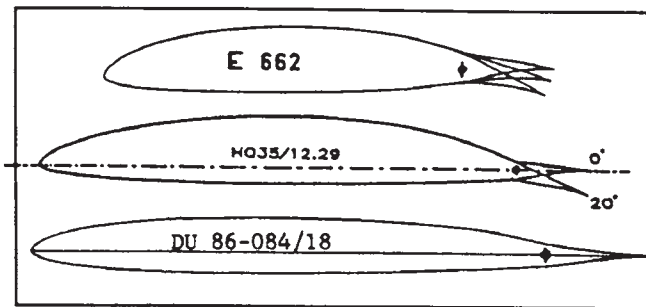
It is fairly obvious that the primary subject of this article, the DU 86-084/18, is a direct descendant of the above sections, but particularly the HQ 35/12.29. The DU 86-084/18 is 8.4% thick and was specifically designed for F3B and F3E aircraft with full span flaps. (F3B and F3E in this case signify the general FAI type designations, not the multi-round competitions.) The flap is of 18% chord and has a deflection range of at least -5° to +15°. Much consideration went into the boundary layer changes taking place at various Reynolds numbers and flap deflections. "Zig-zag" turbulators are used, just as on the HQ section; they are placed at 67% chord on the upper surface and 78% on the lower. This artificial turbulence produces a significant drag reduction.

The DU 86-084/18 was used on an F3B type aircraft which broke the previous world speed record by 20%, achieving an average 250.4 km/h (155.6 mph) — that's how well it works. (FAI rules for speed records have been changed in that lap distance has been increased, resulting in lower average speeds than previously recorded.)

As the Reynolds numbers of our models rise, we will no doubt see our airfoils become more closely allied with those of full size soaring. The DU 86-084/18 clearly shows this direction.

For a complete bibliography and additional information on the E 662, HQ 35/12.29, and DU 86-084/18 airfoils, send a SASE to us at the above address. We'll also include a source for the "zig-zag" turbulator material needed for the DU 86-084/18.

Bill & Bunny
Kuhlman
P.O. Box 975
Olalla, WA
98359-0975



Mike Harvey, of England, says, "My daughter, Karen is holding a 1.25 scale "Gentle Lady"



I made this winter. I fancied something simple for a change. It (handles) very well with its thin section, and it turns very tight. This is very handy for our small English fields that we fly our club competitions in. It flies well enough for me to be third in our club thermal league after three rounds against open models (12' span)."

A New Book Modellflug — Ratgeber für Einsteiger (Advice for Beginners)

"This book makes it possible for newcomers and beginners to receive assistance and tips in their model-building efforts, while at the same time being introduced to the fascination of this hobby. At the same time, the articles are suitable for accomplished model fliers, yet written in an easy-to-understand manner."
...Verlag Für Technik Und Handwerk GmbH,
Postfach 1128, 7570 Baden-Baden 1, Federal Republic of Germany

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Furthermore, the wing surface should not be rough or wavy. The implications are that a rib construction wing with heat shrinkable coverings cannot comply with this recommendation because of the inherent sagging of the covering between ribs. There is a solution to the needs for the accuracy requirement that is affordable, and can be accomplished with a modeler having some practice in foam cutting and precise machine cut airfoil templates.

I have been producing laser cut templates in 3/8" plywood since 1982 for myself and for others. Some templates were used to produce foam cores for the Princeton Wind Tunnel Tests. Until now, the templates had been one piece designs which resembled a rib or an airfoil cross section. The templates were often used to produce a second working template for foam cutting because of the tendency of the wood to be

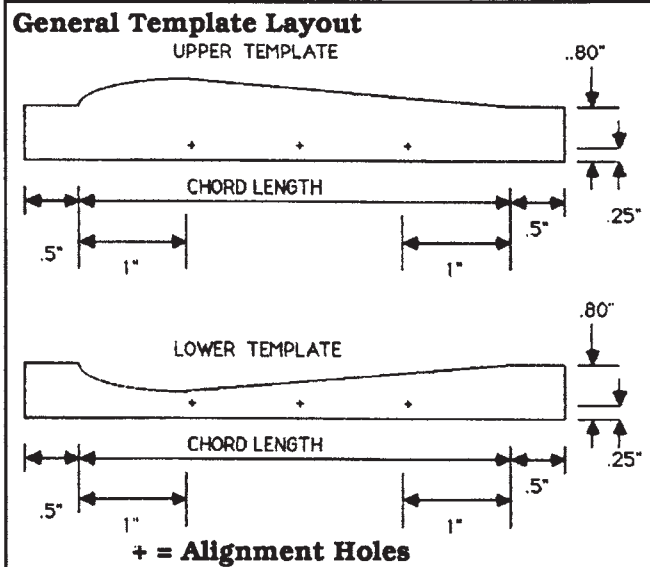
Laser Cut Templates

...by Lee Murray

Based on the Princeton Wind Tunnel Tests by Selig, Donovan, and Fraser, as reported in Soartech 8, it is stated that the demonstrated performance of an airfoil should be achieved when constructed so that the wing surface is within 0.004" of the airfoil specification.

damaged by a hot wire under high tension. Now with the use of an ultra-smooth Teflon heat resistant tape, the templates can survive many, many uses. The tape can also be replaced, if needed. In addition to the temperature resist feature, the airfoil templates are now available in upper and lower styles. (See illustration.) Upper and lower templates are supplied with three indexing holes which allow for accurate switching between the upper and lower surface. Adjustments of the

template's surface, for the thickness of your covering material and the diameter of your cutting wire, are precisely made using software so that the finished wing surface should be precise. The new two piece template system has been tested by a commercial foam core producer for several months with good results. I am making these available to the modeler. A new quality check is done on every piece to see that it meets specifications.



Classified Advertising:

For Sale

GRUNAU BABY 1/5 Scale & Ready-to-Fly
with 4-Channel Futaba Radio
&
SG-38 PRIMER 1/4 Scale (Needs Covering)
As Shown on Page 22 of the March, 1990 Issue
of RCSD

Call Ray Cindric at (215) 579-1576
To Negotiate Price

If the airfoil does not appear on the list, there is a set up charge of \$15. The turn around time for templates runs between one and six weeks.

List of Laser Cut Airfoils already produced and available without additional setup charges:

E193, E195, E197, E205, E211, E214, E374, E387
NACA 63A006, NACA 63A007, NACA 63A008,
NACA 63A009, NACA 0012
RG12, RG14, RG15
S2027, S2046, S2048, S29055, S2091, S3021, S4061, S4063
SD7032, SD7037, SD7043, SD8000, SD8020
HQ2.0/9.0, HQ2.5/10, HQ3.0/11, HQ3.5/12
FX60-100

Lee Murray
LJM Associates
1300 Bay Ridge Rd.
Appleton, WI 54915
(414) 731-4848
after 5:30
Central Standard Time

COSTS:

Upper and Lower Template Sets:

Single Taper Wing (2 chords - 4 pieces) \$35 + S&H
Double Taper Wing (3 chords - 6 pieces) \$40 + S&H
Triple Taper Wing (4 chords - 8 pieces) \$45 + S&H

Multiple sets:

\$25 + Number of chords * \$5 Computed + S&H

Single Template Sets:

Up to 4 chords \$35 + S&H

Multiple sets:

5-8 Chords \$45 + S&H

Order a duplicate set as a backup at additional savings:
up to 4 pieces: \$20
up to 8 pieces: \$25

Shipping Costs:

Standard UPS \$4
UPS 2nd Day Air \$7
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Thousand Oaks Soaring Society The Eighth Annual Western Great Race

September 8-9, 1990

Taft, California

Unlimited: FAI limits (11 lbs., 2325 sq. in.)

Entries must be received no later than August 8th.

Distance: Approximately 20 miles for both days.

Only one team per frequency.

Objective: To complete the course in the least time on one launch. If none of the teams complete the course, the team covering the longest distance will win.

Additional event: An entry level event will be held on both days with a LSF level IV task on Sat. and a LSF level 5 task on Sun. Sailplanes will be limited to 130" wingspan and 7.5 pounds. All other rules are the same. Frequencies will be assigned 30 days before the event from those not being used by the Unlimited class.

T.O.S.S. is looking forward to renewing friendships with the veterans of 1983 through 1989.

Contest Director: Eric Hendrickson (805) 493-4210

Understanding Thermal Soaring Sailplanes

Part 3

...by Martin Simons

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The earlier articles in this series dealt in general terms with the glide polar, the effects of adding or removing ballast, and the influence on performance of model size and wing aspect ratio. The importance of high speed performance, or 'penetration' was stressed. It was indicated that for success in thermal soaring, model sailplanes should be built with the largest permitted wing area, with spans between four and five metres, and, accordingly, aspect ratios between 12 and 18. An allowance of 10% of the wing area

is assumed for the horizontal stabiliser to keep within the permitted maximum total of 1.5 sq m. A 4.5 metre span wing, of 1.35 sq metres area with aspect ratio 15 was offered as a good compromise. This does not mean such a model will always win contests but on average over a period it will prove more consistent than smaller models and will be fully competitive with other large ones.

In what follows it is assumed that the sailplane will conform to these dimensions. Although the question of ballast will be re-examined towards the end of this section, for the present it is also assumed that the sailplane will be loaded to 3 kg/sq metre of wing area, i.e., slightly under 10 ounces per square foot, ignoring the horizontal tail area.

The choice of wing section

The above recommendations are not affected by choice of wing profile. It would be a mistake to think that the aerodynamic disadvantages of a small model can be overcome by choosing a wing section that does especially well at low Reynolds numbers. A successful small model will invariably be surpassed by a larger one of similar wing loading and aspect ratio, even with the same wing section. The only advantages of the small model are those previously mentioned: greater maneuverability in the air, greater ease of transportation on the ground, and less cost in money and time spent in building. By far the most important aerodynamic improvement in model sailplane performance comes as a result of using the largest possible wing. After this the choice of profile becomes important but no miracles are to be expected.

As previously, the objective first is to discover a wing which will give a low rate of sink when flying slowly, a gentle stall to permit easy circling in the rough air of thermals, and at the same time low profile drag at high speeds to achieve good penetration. All these requirements have been explained in the earlier articles. The fuselage and tail are still omitted on the assumption that the sailplane with a good wing will do better than one with a poor wing. The object now is not to compare absolute sailplane performance figures, but to discover how profile selection affects the wing. This can be established by comparing wing polar curves. All figures below stating minimum sink rates and glide ratios, refer only to the wing. A real sailplane will of course not achieve these performances, but the comparison of wing against wing remains valid. Parasitic drag will be considered later in the series.

Wind tunnel tests

It is almost totally futile to try to select wing sections for models by using the calculated drag polars for wing profiles which have, from time to time, been published. Experiment shows that while the computed drag and lift figures are achieved on full-sized aircraft, scale effect, i.e., low Reynolds numbers, on model wings causes such changes in the boundary layer

flows that the calculations are seriously wrong. The errors become greater as the wings become smaller and fly slower. The sailplane models considered here are large, but they still operate at Reynolds numbers too small for boundary layer theory, at its present state of development, to be fully applicable. A good deal is known now about the boundary layer but numerical quantitative work is still very imperfect at speeds relevant to model flying. New discoveries are still being made and developments may be expected eventually but full explanations of the behavior of airflow over a model wing have not appeared yet. Until they do so, the modeller should be very sceptical about theoretical drag charts for wing sections.

The wind tunnel test has the important advantage of testing an actual model wing in real air, and to that extent is more reliable. This is not to say, however, that wind tunnel results can be used without a good deal of caution. Some margin must always be allowed for experimental error. No wind tunnel is perfectly accurate and no wind tunnel test specimen conforms exactly to the specified ordinates. Even when testing the same nominal wing profile, different laboratories never produce identical test figures and confusion follows if this is ignored. It is not always justifiable to suppose even that all tests published by one laboratory will have been done under identical conditions. This applies, for instance, to some earlier and later results from the well known Stuttgart model wind tunnel in Germany.

We are greatly aided by the availability now of the results from the Princeton University wind tunnel tests by Michael Selig, John Donovan and David Fraser, published by Herk Stokely as *Soartech 8*.¹ All the sections were measured under standard conditions by the same team, with the same equipment, so the results are self-consistent. *Soartech 8* contains detailed explanations of the test methods.

The Princeton tests encompassed a large number of profiles, many were tested with various types of boundary layer control devices, and some with different types of surface covering and finish. Selig and Donovan also developed a number of new profiles and tested these too, in the hope of making genuine improvements in profile design.

The diagrams and tables which will follow in future months rely entirely on this relatively new data. For the present only plain airfoil sections will be considered, without flaps or turbulators.

* * *

¹ *Soartech 8* is available direct from Herk Stokely, 1504 North Horseshoe Circle, Virginia Beach, VA 23451, USA

Martin Simons
13 Loch Street
Stepney
South Australia 5069

The Casio 376 Altimeter Watch

Readers, if you're considering purchasing a Casio 510, you might want to hold off until you can compare it with the Casio 376. Lee Murray has written an evaluation of this watch, and we're planning on including it in the next issue of *RCSD*. Judy

LS-1...continued

Many club members are building the LS-1, even new pilots are making the LS-1 their first scratch built aileron ship. In the near future a "One Design" contest is inevitable and we are hoping for a good turnout. In order to share this design with other modelers, plans have been made available. For \$7.00 (Money Order), you can get really clean CAD drawn plans, a template sheet and a three view drawing.

Mike Reed
1775 Dumitru Way #B
Corona, CA. 91720

We have all encountered this situation at one time or another. Each of us is looking for something that suits "ME"; either from an aesthetic view, in the realm of performance, or both. A few actually find that dream machine through either compromise or desire, finding that kit that finally meets our own expectations or designing our own from scratch.

Over the past few years we have seen a notable increase in the tools that aid the designer. There are books that provide the basics of model aeronautics; books that provide the latest in airfoil technology. With the advent of the computer in today's modeling society, there are programs for designing (or design testing), plotting design data, and providing accurate computer generated airfoil plots to use as templates. Add to these the technical seminars that take place each year and the local workshops that are becoming popular. Basically, there is a wealth of information available to assist in designing the "World Beater".

There is one overriding consideration that must be evaluated prior to putting pencil to paper, however...YOU. Take a hard look at what parameters or flight characteristics work well for you. Remember the moment when a particular design flew well for you or that you were comfortable with, or an airfoil that made you look like an expert, etc. Look at what works best for you. You are the only one who can evaluate your preferences, your flying style and those aspects of flying that work for you. If all else fails, make a list of things you want, parameters and goals for the project that will keep you on track. By all means take a good long look at these items before you start and you won't end up with a loser.

As a starting point, plan the basic planform you are looking for in this craft. Decide on the general layout you are after, nose and tail moment, type of stabilizer arrangement, and the general layout of the aircraft. Martin Simon's book *Model Aircraft Aerodynamics* provides an excellent reference and resource for this type of information. Look at the whole plane from an aesthetic and performance view. Once this is accomplished, test your theories on a computer program or look at an existing aircraft that comes close to what you are putting together. Decide if you are meeting the parameters and goals you have set for yourself and make any adjustments that seem in order.

The phase that requires the most attention in this process is the selection of an airfoil. It is critical because it can make the whole thing enjoyable or not so enjoyable an experience. If you are going to use your current airfoil, this makes the process easier by far. If you are going to one of the new airfoils, do a little experimenting before you jump. I have a fuselage that is dedicated to playing with different airfoils. I build a wing and put it on the test bird and go fly, fly, fly. This way I have a known set of parameters to judge performance of the airfoil. But most important, I fly it for quite a while before making judgements. I try it in different conditions, with different wing loading setups, and really wring it out. It takes quite a while to determine the good and bad characteristics of any airfoil, which leads to the real test of how good things turn out.

Finding the right airfoil and wing planform is the key to the success or failure of the project. Whatever airfoil you select, give it careful consideration and, by all means, fly it for a long time to really get a feel for its characteristics. Don't go out and use the "airfoil of the week" theory and expect things to work out. Look at the guys who consistently win contests or get the long flights when everyone else is dropping out of the sky. They know the limitations of both themselves and their airplane completely from flying them for long

Designing the "World Beater"

...by Gordon Jones

Ever modify a kit to enhance performance? Mate that old wing and fuselage that were gathering dust in the corner of the shop? Couldn't quite find what you were looking for in the latest kits on the market?

periods of time. They have flown that airfoil long enough to be in control of even the bad situations, because they are very familiar with the characteristics of that combination. This has been the topic of numerous commentaries over the years and is totally accurate.

Now I haven't told you how to design a sailplane, as others have done a far better job than I ever could. But, at least, there are some things here to be considered before you start designing and building that "World Beater" you have been dreaming of for so long. Look at the resources and references I have mentioned and use them to your best advantage. As is true with this hobby, your only limitation is your imagination.



Gordon Jones
214 Sunflower Drive
Garland, Texas 75041

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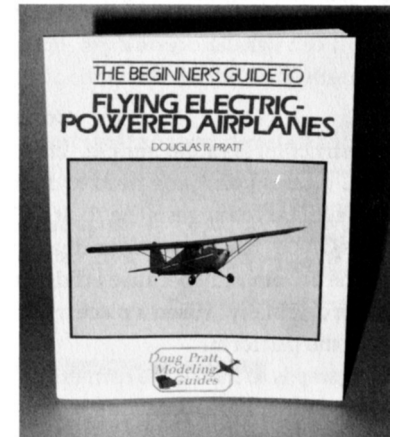
Book Review Have an Interest in Electrics?

...by Jerry Slates

The Beginner's Guide to Flying Electric- Powered Airplanes

Written by Douglas R. Pratt, this book is available for \$12.95 from Tab Books, Inc., Blue Ridge Summit, PA 17294-0850, (800) 822-8138

(In PA & AK, 717-794-2191)



Douglas R. Pratt, modeler, builder & flier, has written a beginner's book on electrics. This 100+ page book is easy to read, well researched, and packed with special photos. The author provides the basic information necessary to select your first kit (or convert a power kit). He explains the different motors, and the selection of batteries and chargers, and accessories (connectors, switches, speed controllers) used in electrics. A real plus in this book are the kit reviews of no less than 17 electric airplanes! With all the hints & tips, this book could become your bible to getting started in electrics.



The Buzzard A Generic Glider Series

...by John Heinrich

Now who, in their right mind, would name a glider, which they hoped to successfully market, "The Buzzard"? The Buzzard is not one of your attractive birds, but it is probably one of the very few creatures in my small part of the country which can consistently soar better than Bobby McGowan (and sometimes I think Bobby is better).

I happen to be in the same small portion of the country as Dave Acker, the proprietor of Precision Foam Cores. So, when Dave appeared at the flying field with the prototype for the Buzzard, I was somewhat interested. Then, after I read the review by Gordon Jones, I decided to give it a try.

I had been flying a Sig Riser 100 for six months, with a fair amount of success. One Saturday, at the flying site, I decided to see how well the Riser did as a free flight glider. (Read that, Dumbo forgot to turn on the radio.) This brought the flying for the day to a quick halt. When the dust settled, I was left with an unrepairable fuselage, a wing with minor damage, and a set of tail feathers. The answer: I needed a Buzzard fuselage.

The kit is rather simple consisting of a front pod section, a tail boom, the plywood formers, and the instructions. In addition, you get Dave's helpful advice, should you run into a problem.

Construction

The construction is rather simple. Notch the tail boom for a platform to attach the tail feathers to. At this point, you need to decide how you are going to attach the tail feathers to the fuselage. Dave suggests the "bolt on" method, since this is an option on some gliders, such as the Oly 2. The instructions describe the platform and how to construct it. I chose to glue mine on, but only because I didn't use the above described method when I put the tail together originally. I used a piece of plywood for the platform and simply glued the tail surfaces to the platform.

The next step is to install the formers into the front pod section of the fuselage. I had to do a bit of sanding here, because I was using a wing with a rather large cord (almost 11 inches), and this fuselage is set up for a wing with a 10-inch cord. I also had to extend the wing platform a bit. This was also easily accomplished. Once I had the formers sanded to the right size, I installed the one-eighth inch piano wire in the formers...one in the rear former and two in the front former. This is for the rubber band wing attachment method. The music wire is bent into an L-shape and, then, installed in the former as described in the instructions. The formers are then glued into the fuselage pod.

One of the suggestions Dave made was to get the front pod and the tail boom sections all put together BEFORE gluing the two sections together. By doing this you can make sure the tail surfaces line up correctly with the wings. You also need to install the pushrods before you glue the tail boom to the front pod. I put cables in and I had to devise a way of keeping the cable casing from moving around inside the tail boom section. (I think one of the better ways of doing this was covered by Jerry Slates in the March issue of RCSD.) I attached the cable casings to a spruce stick and then glued the spruce stick to the inside of the tail boom. The next step is to join the tail boom and the pod. First, slide the two halves together, but DON'T glue them together, yet. Now, put the wing on using at least 4 rubber

bands. Now, since the tail boom is a round fiberglass tube, you can just twist the front pod until the wing and tail surfaces line up. Once this is accomplished, glue the two halves together. I chose to do the hatch last since I am not overly fond of sanding, I saved the worst for last.

Next comes the painting. I decided I wanted a glider that would be easy to see and distinguish from other gliders, so, my color scheme is a bit unusual. Red and black wings, yellow and black tailfeathers, a pink hatch and a dull red for the fuselage. I am still waiting for the weather to get warm enough so I can put the final coat of paint on the fuselage.

I chose to put in a standard size radio, so I was limited to two channels: rudder and elevator. There is enough room for lead, two servos, and the battery pack in the nose. The receiver went under the wing.


I had to add a fair amount of lead to the nose to get the CG in the right spot. This was due in part to the excessive weight of my tail section and, to a lesser extent, the short nose portion of the fuselage. Even so, I still came out with an 8.5 ounces per square foot wing loading.

Performance

I was very impressed with how easy and smooth my new creation flew. I think the only thing I would change would be the addition of spoilers or some other type of airbrakes. I am very impressed with the flying characteristics, even though the weight was a little high. I found it quite easy to handle and, in my opinion, my version is easier to fly than the original. The Buzzard fuselage is very aerodynamic compared to the stock Riser fuselage, and the Buzzard is also much stronger.

About the only thing I didn't like about the Buzzard was the short nose (and I have heard rumors that this may be changed in the very near future).

I know I'm not the only one out there who had or has a spare set of flying surfaces lying around collecting dust, so give the Buzzard a try.

 John Heinrich
1411 Creekside Dr. # 6
Walnut Creek, CA 94596



Ray Reiffer of Zeeland, Michigan says, "This is a GREMLIN 40 (Rubber Job) from Easy Built Models in Canada. As it flies so well, I've put a "T" tail and D.T. on it. I almost lost it twice already in the weak, wet thermals of springtime. I had to ballast the short nose for CG...it could have been sheeted instead."

The Tri-City Soarers International R/C Soaring Scale Fun Fly

...by Greg Vasgerdsian
...Photos by Jerry Slates

This year's Scale Slope Soaring Fun Fly, sponsored by the Tri-City Soarers, showed the biggest turn out yet with 141 people, 111 pilots and 225 models. The Fun Fly was just that: bring up your scale ship, fly and have fun

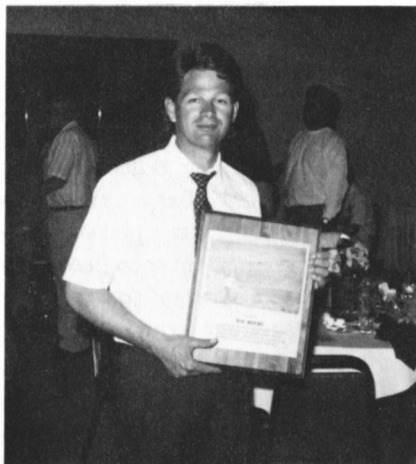
Thursday evening, Wil Byers, the CD opened registration in preparation for the first day of flying. Friday morning arrived with the winds coming out of the west at 20-30 mph. The power slope scale pilots were happy, as this was exactly what they needed to fly their higher wing loading models.

Glider guiders are definitely getting crazier as mouths dropped in awe on seeing a 1/4 scale A6 Intruder. Weighing in at 25 lb., this beautiful model was one of the models used for the movie *Flight of the Intruder*. Its sheer presence on the ground was overwhelming and, in the air, it looked very realistic.

As if the large A6 wasn't enough, I watched as several people hauled out a 12 foot wing span, 25 lb. B-29 super-fortress, complete with Bell X-1 attached to it's belly. This beautiful model was well worth

the work as it climbed right out after launch, flying perfectly on its maiden flight. Once the B-29 was sorted out, it was brought back in and later flown with the Bell X-1 attached. With cheers from the crowd, the B-29 dropped the little X-1 and both went on their way.

Kim and Bob Reynolds brought out their swing wing F-14 ...continued on page 16



Left: Wil Byers got a big surprise when Bill Liscomb presented him with this special plaque in recognition of all his hard work. It is now hanging where he can see it every day. Wil says, "It made it all worth while. Thanks!"



Right: Bill Liscomb was the M.C. and did a great job keeping everything going.

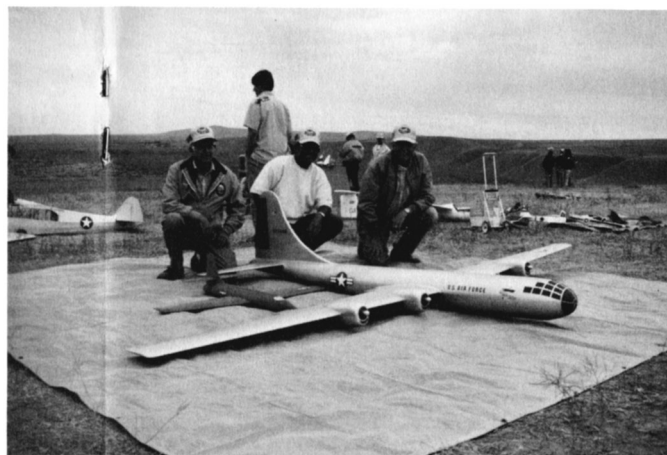


Michael Selig captured and held the attention of the audience. The educational content of his speech was thoroughly entertaining in the way it was presented.

8 Points on Reducing Drag

- Select a Good Airfoil
- Put Wing on Top or Pylon Mounting (No Fuselage Cut-Out in Wing)
- Use Fully Sheeted Wings
- Wing Shape Should Be a Consideration
- Outer Wingtip Panels Should Be Turned Up
- Trailing Edge Should Be Straight
- Trailing Edge Should Be Sharp
- Wings Should Flex

Below: The B-29 with Bell X-1 was built by (L-R) Wayne Stanford, Ed Mason and Howe Weber of Nampa, Idaho. The fuse for the B-29 was made from PVC pipe, the wing is sheeted with 3/32 balsa wood (finished with silkspan and dope), and the wing profile is an SD6060 @ 9%.



We wish to thank the following sponsors of the Fun Fly:

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...continued

Tomcat which flew well until the left stab broke. Quick reflexes by the pilot brought the model back in safely, though. Many other planes proceeded to burn up the sky. ME-163 Comets, Spitfires, and the stable of Combat Models seemed to be constantly zooming around all day long. Most of the scale gliders stayed on the ground, but a number of them also tested the tremendous lift being generated.

The Wine Tasting Social that evening, put on by Slope Soaring News, Cliff Hanger Models & the Tri-City Soarers, let everyone chat in a non-windy environment. A larger room was definitely needed though, as the place was packed with modelers and there was no elbow room to spare. Besides the wine and soda served, two VCR's were present which replayed the days events that people had filmed on their camcorders. Michael Selig as well as Byron Blakeslee were just a few of the soaring notables present, as well as a number of kit manufacturers.

Saturday arrived with a report of light south westerly winds, but after sitting at Eagle Butte till 11:00, Wil Byers decided to move the event down to the slope at Benson City. About 15 people stayed at Eagle Butte to wait out the winds as they shifted around to the west. By 1:00 P.M., with thermals coming in from the valley, some very long flights were flown. However, two planes had to land in the fields below when the sky fell out beneath them. Apparently, the conditions were much the same at Kiona Butte, as a few



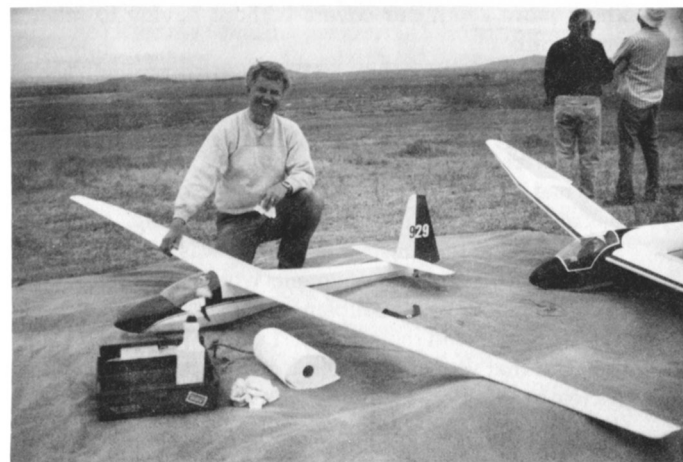
A6 INTRUDER by Mark Hambelton of DCU.



Bob Pairman of San Jose, CA with his SCHWEIZER 1-26A built from Model Aviation plan #578.



Lynsel Miller of San Jose, CA with his beautiful TG3.



Gary Brokaw of Spokane WA & his ASK-18 1/4 scale built from English plans.

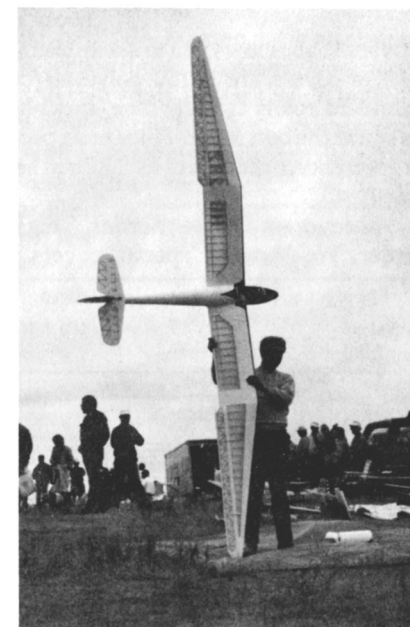
Gary Brokaw & his German MINIMOA.

models had to be retrieved from the foot of that slope, too.

If Saturday was a day of mediocre flying, the night's banquet was nothing short of fantastic, with the room packed to 204 people. After dinner the official ceremonies got on their way. Bill Liscomb performed the duties, starting out by thanking everyone for making the event a success, and then by awarding Wil Byers a beautiful plaque in recognition for 3 years of dedication in organizing the fun fly. Bill then announced the Pilot's Choice Award and the beautiful trophy of a Janus carved from cherry, oak, and walnut by Mike Bamberg went to the three builders of the B-29. Michael Selig gave a great presentation on his work and then went on to explain eight practical methods of reducing drag that he would like to see incorporated into models.

Sunday arrived with very cloudy skies and a light wind. The slope spot for the northerly winds was Kiona Butte but, as the wind picked up, so did the rain. By noon, a few had gotten a little air time, but this pilot decided it was time for the long drive home.

Thanks, Wil & Mary Jo Byers!
We had a great time!



*Greg Vasgerdsian
31 Lenelle Ct.
Moraga, CA 94556*

About Our Wing Covers from Soaring Specialties

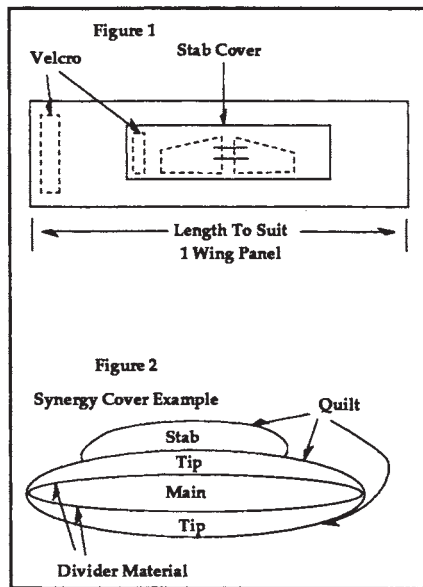
...by George Voss

Business has been booming since we placed an ad in RCSD for our wing covers! Covers have covered coast-to-coast, and top to bottom of the U.S. from New York to California and from Michigan to Texas. We appreciate the response!

covers. This allows you to assemble the stab halves with the wires installed (See Figure 1).

The covers are 50/50 polyester/cotton quilting, and are machine washable. The standard colors are light blue, dark blue, and red. I can get other colors, but the light blue is by far the best seller. Since most people use the covers "in the pits", the light blue seems a good choice because of its minimal heat absorption, while the dark blue ones hide the dirt the best.

All covers are made to order. This is the reason that we request dimensions with each order. We do make "special" covers, as well. The Synergy 3 (See Figure 2), for example,



costs \$43 & shipping.

All covers use velcro for fasteners. Since most HL wings are 1 piece, we install the velcro on the outside of one cover. This then fits inside the opposite cover, thereby allowing both covers to be used whether in the "pits" or in "storage".

One closing note...we changed the name from Service Plus to Soaring Specialties for tax accounting purposes, and to better describe our services!

If anyone needs further information, please call or write. We'll be happy to answer any questions!

George Voss
Soaring Specialties
1403 Lincolnshire Road
OKC, OK 73159
(405) 692-1122

Many letters & phone calls have been received concerning our wing covers. Since most of the questions are the same (i.e., color, shape, etc.), I thought the readers would like to know more about our covers without having to make a phone call.

After purchasing well over \$1000 worth of pre-built Lovesongs last year, I developed a strong desire to take good care of my investment. I searched through several magazines for wing covers, and came up empty-handed. My wife, in times past, had been a professional seamstress, so I put her to the task of making a set of covers for the Lovesong.

After seeing the finished product, I was sure that others that had made similar investments would like a set. It is not uncommon today for a sailplane enthusiast to invest several hundred dollars in their hobby. I saw only one good solution, and that was to make these quality products available at a reasonable cost. This was the creation of Soaring Specialties (formerly, Service Plus).

So, what do you get when you order our wing covers? They consist of two pieces...one for each wing half. If you choose the stab cover inclusion, this will be on one of the

My husband, Matt Gewain, started flying R/C some 30 years ago in New Jersey. He introduced me to my first model contest in May 1971 in Wichita, Kansas and gave me a model airplane kit for my wedding present the following month. By early 1974 we had opened a retail hobby shop in Midwest City, Oklahoma which we sold in 1977 when Matt was transferred to California. For a few years we kitted free flight models but sold that business when Matt was again transferred from Florida to California in 1985.

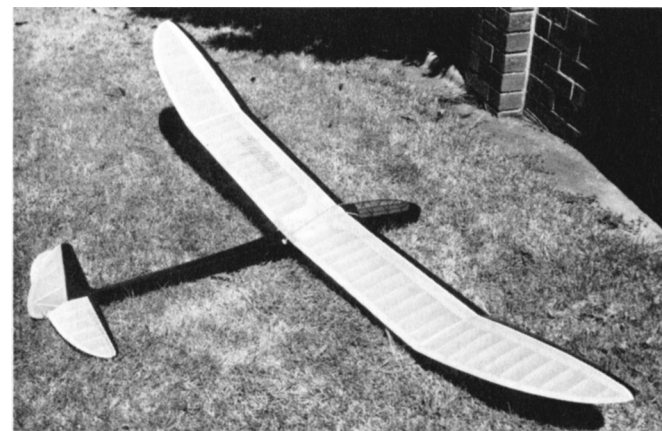
During these years, modeling was facing a new frontier — composites. We started using composites in our models in the early 70's with good success. I flew in the Free Flight glider FAI team finals in 1976 with Matt as my helper. Matt got a place on the 1983 Free Flight team and won the World Championships in F1A Nordic Glider that year. As defending World Champ, he placed 12th in 1985. Although our greatest successes have been in Free Flight, our interest in all types of modeling has never diminished. The Aeronautical Engineer in Matt is always challenged by building a "better" model for whatever event and he has never built two airplanes alike as they always incorporate new ideas and materials. Making these super new materials available to modelers seemed like an idea whose time had come and vacuum bagging was the tool needed for success. Over the last two years, I have spent hundreds of hours searching nationally and internationally in order to put together products with applications in modeling. In July we will come out with an expanded products list which will include nylon vacuum bagging film, epoxy release film and fabric, bleeder and breather materials, new release agents, heavy mylar film and a wider range of carbon, Kevlar and Rohacell sizes. We are very excited about the modeling applications of these new materials. We are continuously experimenting with new potential products to evaluate their applications for modeling.

A Little Background On Composite Structures Technology

...from Gail Gewain

CST is a "cottage industry" which originated officially in April of 1988. The concept was probably inevitable considering our background.

Composite Structures
Technology
Dept. M1
P.O. Box 4615
Lancaster, CA 93539
(805) 723-3783



Frank Smith of Australia says, "The SUNFLOATER was designed by Scott Pentland last year. He asked me to build the prototype."

Flatland Fun Contests Continued

...by Don Anthony

AS A FLATLAND CONTEST DIRECTOR, I have wrestled often with the issue of bringing variety and fun into the same ol' thermal contests associated with us "flatland" glider guiders. Over the years I have conducted, participated in or heard about a variety of thermal or quasi thermal *fun* contests. I would like to share some of this inventory with the readers in the hope that one or more of these contests will be used by their local club to liven up their Saturday contest & fun fly.

The "Bomb" Drop

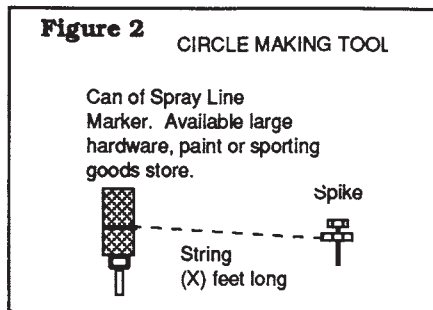
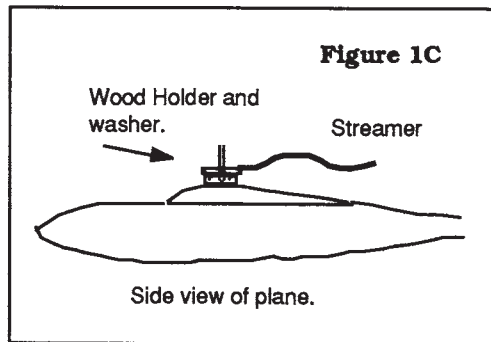
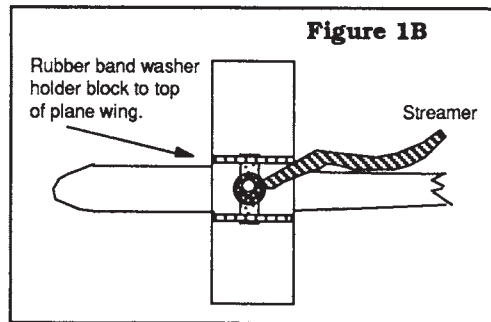
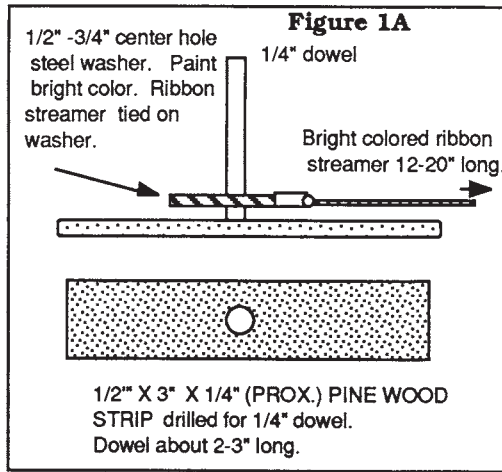
This is a real fun contest for a picnic & fun fly or any time a change of pace is needed. Colorful bombs (Painted washers with streamers) are dropped into a 50' circle, with maximum points being scored by the bomb closest to the circle center.

RULES: See Fig #1 (a,b&c) for some ideas on how to build the simple equipment needed for this task.

The bombs are steel washers with a hole size of 1/2 to 3/4 inch. This is not critical. They are painted a day-glo color or any bright color. Short colored streamers are affixed to each "bomb" to permit easier tracking and to help find the "bomb" after it hits the ground. There should be at least three or four different colored bombs to permit easy identification.

A fifty foot diameter circle works well as a target. A regular spot landing tape is used to measure to the fallen bomb and record points. See Fig #2 for the way I mark out circles.

Everyone is allowed at least one and preferably two practice runs. Then two, three or four real runs are scheduled. Depending on the time available and



number of contestants, scoring may be either the best single score or the best cumulative score. The CD will decide for his own club based on the circumstances.

The technique is simple. A *gentle* launch with NO Zoomie will usually keep the washer on the holder. Over the target, either roll inverted and hold inverted long enough for the bomb to fall off or do a half-loop and hold it inverted long enough to launch the bomb. There are other creative techniques that also work well. Hitting the target however, is another matter. Good luck!

Aerobatics Option Contest

This contest format is guaranteed to produce bitching and complaining. It is also a good fun contest with a lot of spectator appeal.

The central idea is to have a "standard" thermal contest with a suitable landing option. **BONUS** points are awarded for a series of prescribed aerobatics. These aerobatics are **NOT** mandatory—they are for bonus points only. In my contests, I usually restrict the total bonus points to 100 points or less. Even under 50 might be acceptable for your club.

RULES: During the course of a thermal flight if the following aerobatic maneuvers are called out and successfully executed by the pilot as witnessed by the timer, the pilot will earn **bonus points**. Typical points are suggested in the following table: (Shows 50 points total.)

1. Inside loop (3 consecutive) 5 points
2. Outside loop (only 1) 10 points
3. Hammerhead stall 5 points
4. Hammerhead stall turn with turn direction correctly forecast 5 points
5. Rudder roll 10 points
6. Figure "8" maneuver (Inside & outside loop coupled together) 10 points
7. Inverted flight (20 seconds or longer).....5 points

It is a very good idea to announce this type of contest far enough ahead for the potential contestants to adjust their plane's balance and control surface throws, and test fly it before the contest day (i.e., this is ...continued on page 24

The SUNFLOATER

...by Frank Smith

I have not been doing a great deal of modelling in the past months, but I have finished a light weight sport model I was working on last year. This is a 100 inch span floater with two functions, which weighs only 36 ozs (with R/C gear installed), but does not require ballast — 6 ozs./sq. ft. — and is covered with silk. She is named SUNFLOATER.

It's a dream to fly, as it just loves the light conditions, and seems to have a mind of its own for finding thermals, etc. On a couple of occasions, I have almost lost the model as it climbed so high that I could hardly see it in the sky. Also, the model can fly inverted quite well, which has surprised a number of guys who have seen it fly.

My Other Projects

The other model that I have made (recently) is that of a 1.6 semi-scale GO.1 WOLF from plans published in the November, 1989 FMT Magazine. This little model performs O.K., too. I have finished it in Hungarian markings, which makes it different.

I still have my PIK-20 to finish off one on these days, and I may start work on another RHONBUSSARD shortly, as I like this model. If so, the next one will be lighter so I can fly it on a flat field.

I am looking for a good color scheme for a KA.6E. Do you know where I can get one?

Readers, the SUNFLOATER is shown on page 19.

Frank Smith
1/57 Highstreet Road
Ashwood, Victoria
Australia 3147

Torrey Pines Scale Slope Soaring Fun Fly

San Diego, California

September 1-3, 1990

SPONSORED BY THE TORREY PINES GULLS

REGISTRATION FORM

Preregistration deadline is August 4!

Name _____
 Address _____
 City _____ State _____ Zip _____
 AMA # _____ Phone _____
 Frequencies _____
 Company you represent _____
 Entry fee includes three days slope fee, Saturday night social sponsored by industry members, one entry to the Sunday night banquet and one entry in the pilots' raffle (\$30 pre-entry; \$35 late entry, after August 4) \$ _____
 Guest banquet fee (\$22 each) \$ _____
 Total \$ _____

Please send your entry to Slope Soaring News, TPG Fun Fly, 2601 E. 19th St., #29, Signal Hill, CA 90804.
 SCALE MODELS ONLY. YOU MUST BE AN AMA MEMBER; MEMBERSHIPS AVAILABLE AT EVENT.
 LATE REGISTRATION - AFTER AUGUST 4 - \$5.00 EXTRA. NO EXCEPTIONS!

Banquet Information

The banquet will be held at the Wyndham Garden Hotel, the official fun fly hotel, on Sunday, September 2, at 7:00 p.m. There will be a no-host-bar happy hour from 6:00 to 7:00 p.m. The meal will include prime rib, salad, choice of potato, rice, pasta or vegetable, hot rolls, dessert and non-alcoholic beverage.
 There will be a special guest speaker, the presentation of the Pilots' Choice Award (you vote for the pilot among you who best deserves this recognition) and dozens of gifts awarded in the Pilots' Raffle.

Hotel Information

The Wyndham Garden Hotel (formerly the Ramada Inn) is conveniently located within easy driving distance to the Torrey Pines Gliderport. The hotel offers pool, spa, restaurant, view rooms and nightly free happy hour from 5:00 to 7:00 p.m. with hors d'oeuvres.

Room Rates	
1-2 people.....	\$59
3-4 people.....	\$69
Suites.....	\$75

Wyndham Garden Hotel
 5975 Lusk Boulevard
 San Diego, CA 92121
 619/558-1818

IMPORTANT: WHEN MAKING YOUR RESERVATION, BE SURE TO MENTION THE TORREY PINES MODEL AIRPLANE EVENT TO RECEIVE THE DISCOUNT RATES LISTED ABOVE!

For more information, phone Jerry Miller at 619/450-1483 or Charlie Morey at 213/494-3712.
 Mail written inquiries to Slope Soaring News, TPG Fun Fly, 2601 E. 19th St., #29, Signal Hill, CA 90804.

Fourth of July Slope Fun Fly!

Family "Fun Fly" and picnic at Bluff Park in Long Beach (at the foot of Redondo Ave., on Ocean Blvd.).

Background

Last year, our fun fly was just that, with a no "events" and no organization, and most all had a good time! So, why mess with a good thing...? Well, there has been a growing interest in "events" of a competitive nature, so we thought that we would tie an "event" day to the fun fly day, as this season's "event" calendar is already full. So, you get two happenings for the price of one.

The "picnic" part of our fun fly will be a little different also, as it will be a "bring your own" plus enough for two more people, and we will eat our own lunches, and invite those who didn't or couldn't bring a lunch to join our blanket. We also anticipate that a few of the families will get together and have mini pot-luck(s). However it comes down, the idea will be the meeting of new slope friends, and spending a little "sit-down" time with them!

Prizes & Entry Fees

The entry fee for the events will also be a little different. What will get you into the different events, are your "white elephants" (R/C related) that you have laying around and would just love a chance to get rid of the guilt trip that they represent (unfinished and/or rebuilt projects that have been haunting you, etc.). Normally, each event will require its own "entry fee", but if you have a real "goody" of a white elephant to offer, you probably can talk your way into having it count for more than one (if not all) event(s). Your entry fees will become the prizes (some will be grouped together to make some good prizes, if need be).

Build-It-Contest

The last topic that we need to cover before we list the events, is the "Kit Building Contest". Starting at 10:00 A.M. on the 4th, you (the first 10) will be able to buy (\$10 to \$15) a "KIT" of materials that you will construct into a controllable R/C slope glider. And, the first one into the air that passes a simple controllability test will be the winner. The "KIT" will only contain the materials that will become the "airplane". You will supply ALL the rest, like the R/C gear, and glue(s), and tape(s), and paint(s), and control linkages/horns, etc. You design and build and fly it.



The Events

The "events" will be all of these (time and interest and weather willing):

- A carrier landing contest
- A balloon bust contest
- A spot landing contest
- A last plane in the air, combat contest (with a three minute repair and retoss allowed).

All judging will be on the "buddy system", and the opinion of the judges (the audience) will be final.

For further information, call Bob or Kim Reynolds at (213) 866-2104 (Lakewood, CA).

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Fun Contests...continued

not a good surprise contest).

I ran this type of contest as my very first open thermal contest. One of the pilots bent the wing rods in his plane while trying to do an outside loop. He ragged on me unmercifully for the remainder of the day.

This type of contest not only can be a lot of fun, it can be very instructive for pilots as they gain a little experience in flying their plane at the fringe of its performance envelope.

All these maneuvers are possible with polyhedral, rudder/elevator ships. They should be easier with aileron, flat-winged ships. Please note, however, that there is no bonus for "form". A sloppy rudder roll counts just as much as a finely executed one. However, it must be clearly recognizable. Ditto for all the other maneuvers. Please feel free to play around with this concept to suit your own club's needs.

Don Anthony
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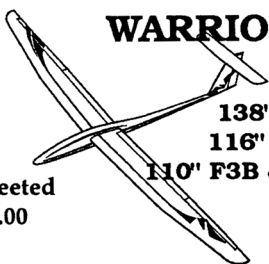
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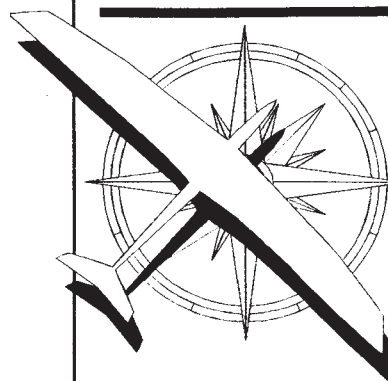
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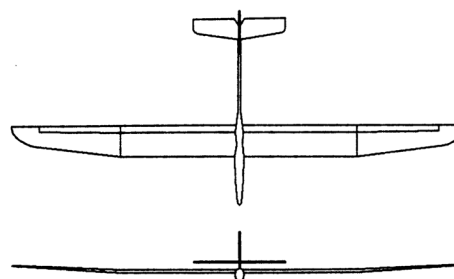
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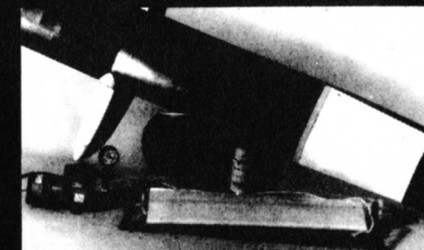
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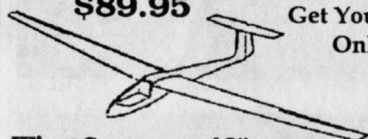
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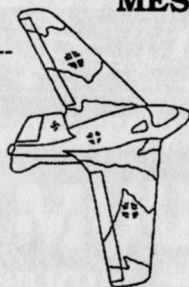
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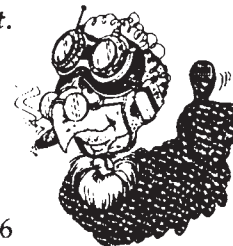
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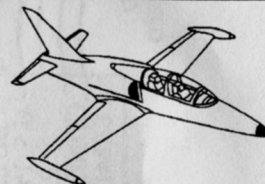


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