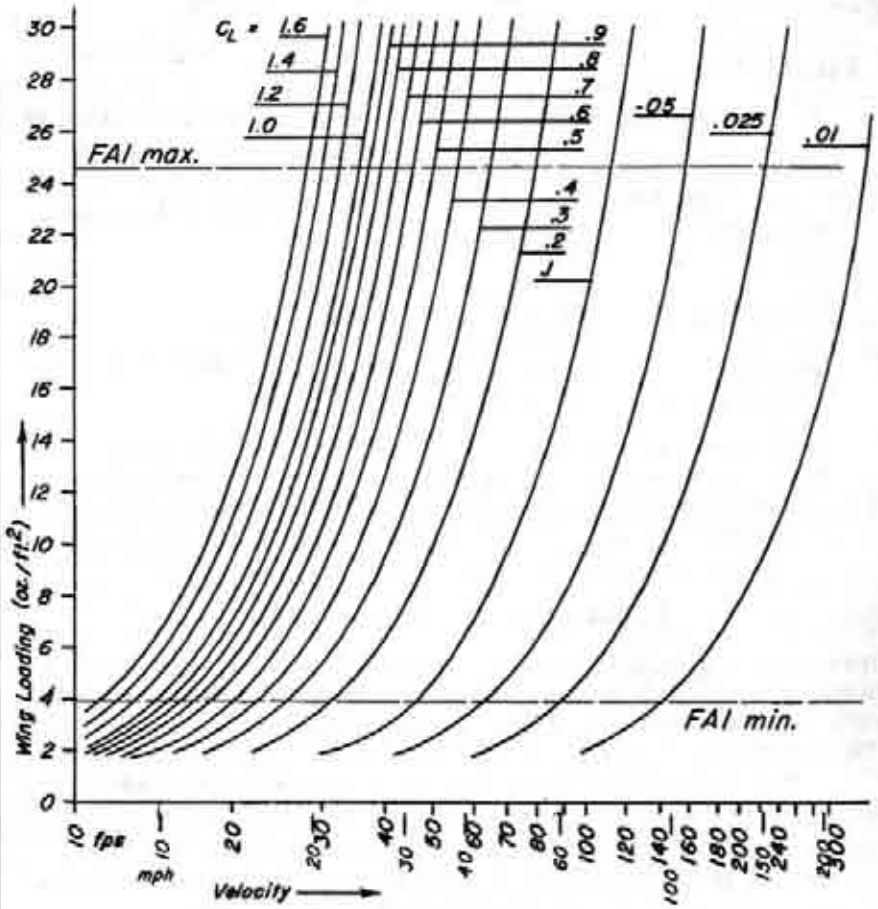
Given two quantities this chart will allow you to easily find the third. It should prove to be enlightening! Note that velocity is given in both MPH and FPS units. For those desiring more detail, multiply FPS by .682 to obtain MPH. The graph comes courtesy of Bill Kuhlman and Alan Halleck.

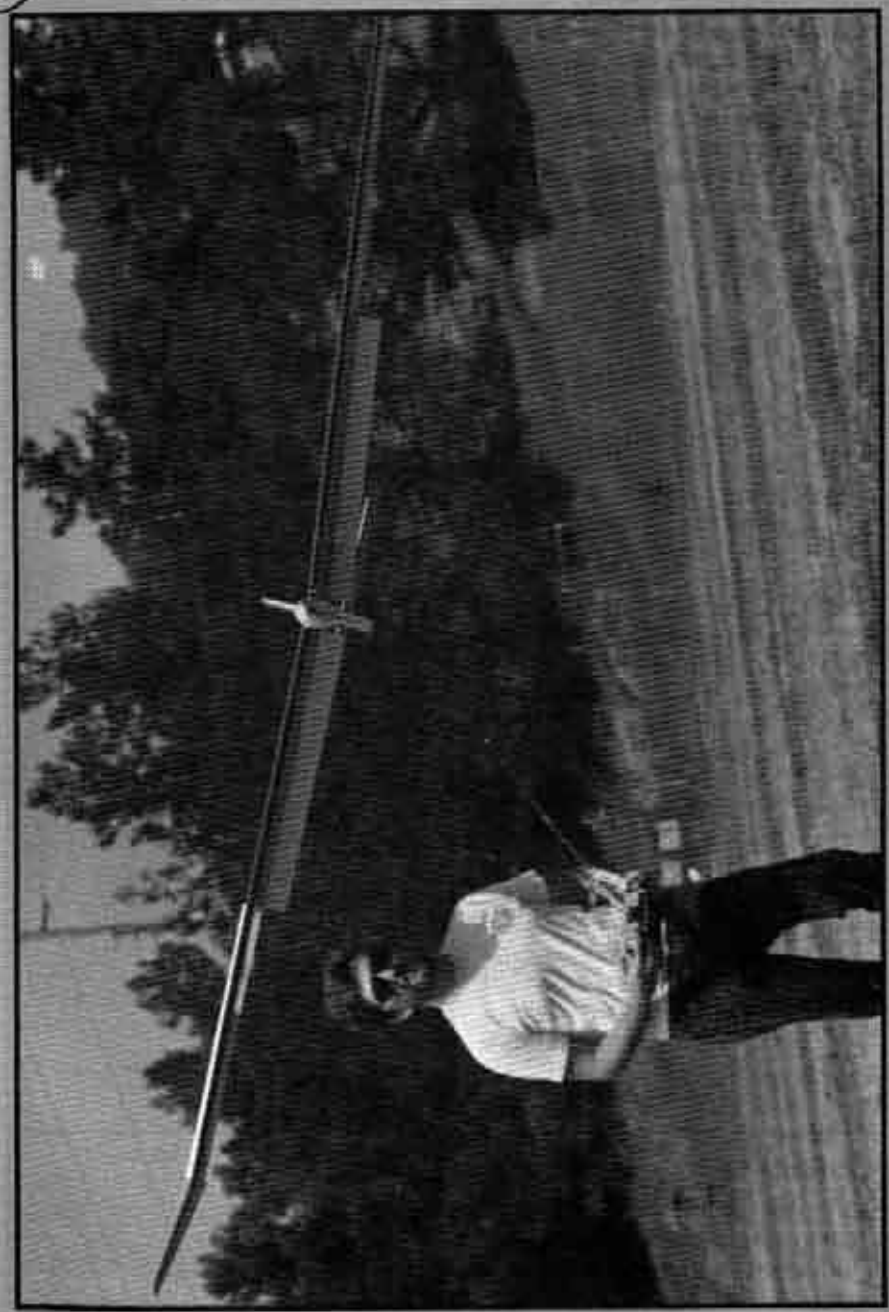


C_L vs. WING LOADING & VELOCITY

R/C Soaring Digest

June, 1991
Vol. 8, No. 6

** Special Bonus Issue **
Contains 16 Extra Pages



About the Cover

Photo of Bob McGowan with his Falcon displaying full flaps and crow. The photo is by Jack White, California, and was provided by Bob's Dad, Ray McGowan. A profile of a winner, Bob McGowan, begins on page 31.

R/C Soaring Digest (RCSD) is a reader-written monthly publication for the R/C sailplane enthusiast and has been published since January, 1984. It is dedicated to sharing technical and educational information. All material submitted must be exclusive and original and not infringe upon the copyrights of others. It is the policy of *RCSD* to provide accurate information. Please let us know of any error that significantly affects the meaning of a story. Because we encourage new ideas, the content of all articles, model designs, press & news releases, etc. are the opinion of the author and may not necessarily reflect those of *RCSD*. We encourage anyone who wishes to obtain additional information to contact the author. *RCSD* was founded by Jim Gray, lecturer and technical consultant. He can be reached at: 210 East Chateau Circle, Payson, AZ 85541; (602) 474-5015.

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The Soaring Site

The survey information has been summarized and the notes, questions and information contained on the forms would completely fill an issue of *RCSD*! Of course, we didn't want to do that, but this month we have added another 16 pages because of the amount of space we still needed after condensing a portion of the material we wanted to share with you.

Next month we must return to the 48 page size in order to get our budget back in balance, postage and printing being our primary considerations. We have been looking for creative ways to reduce those costs, particularly in light of the pending postal increase, but have not met with much success. Should any of you that are or have been involved with publications have any ideas, we are open to suggestions.

In the May issue of *RCSD*, we had intended to include a sample of the material used by Bruce Abell for the covering of his Dragonfly. However, we could not locate this exotic material locally. Bruce has sent us a meter of the covering from Australia. So, if you want a sample, please send a S.A.S.E. to *RCSD* and we'll get one in the mail to you.

There is a correction to the May issue of *RCSD*, Jer's Workbench, page 6. The paragraph that reads: Bi-directional fiberglass cloth also comes in two types: E-glass and S-glass. E-glass is 30% stronger and 15% stiffer than S-glass. The E-glass is more expensive than the S-glass.

Should read: Bi-directional fiberglass also comes in two types: E-glass and S-glass. S-glass is 30% stronger and 15% stiffer than E-glass. The S-glass is more expensive than the E-glass.

Happy Flying, Jerry & Judy

Jer's Workbench

Publications

I have received a couple of things this last month that I want to share with you, especially if you can read French or German.

The first package was from Mirko Bodul of Mequon, Wisconsin. I first ran into Mirko in Richland, Washington last year at the Scale Fly and, since then, we have talked on the telephone several times. In the course of our conversion, I found out that Mirko is a subscriber to *Modele Magazine*, a French model magazine. So, I asked if I could see a couple of his magazines. Now, I don't read French, but I did enjoy looking at the pictures and trying to decipher the advertisements. So, if you can read French and would like a pen pal you can write to Mirko, as he is willing to share his copies of *Modele Magazine*. But, if you do borrow his magazines, be sure that you return them to him.

Terry Edmonds sent in an article with a wiring diagram and parts list on how to build an altimeter device for use in aerotow. This is also in French, but if anyone would like a copy, send me in a large S.A.S.E. with .52 cents postage c/o RCSD and I will send you a copy.

From Germany I received two WISH books; *R.C. Segelflug* and *Modellbau Markt'91* are annuals. *R.C. Selgelflug* is 100% soaring. There are articles on kit reviews with over 100 scale and high performance sailplanes listed along with pictures of each, including the specifications and prices. These kits are produced in Germany. I was somewhat amazed by how many kits there are in Germany as compared to the United States considering the size of each country. *Modellbau Markt'91* is also full of goodies. There is not only a section on gliders, but it also contains electric, power, cars and boats.

Designing a Sailplane

Over the last year I have talked about different things: building a miter tray and wing press, casting small epoxy parts, composite building materials and how to make a fiberglass fuselage. Now, I'd like to explain one way to go about designing a sailplane and will attempt to cover some of the pitfalls that a beginner can get into when designing that first sailplane based on my experience over the years.

What I am going to do is design a sailplane for myself and, over the next 2 or 3 issues of RCSD, attempt to show you how and why I did what I did. I will build a tapered wing and stack cut a set of ribs, lay out the fuselage so that a radio will fit, mount the wing with the correct angle of attack, and balance and position the tow hook. When completed, the sailplane will be test flown and I'll tell you about my mistakes and errors and how I go about correcting them and making the modifications.

If you want to do some serious designing, there are a couple of books that I would like to recommend for your library. They are not required, but should answer some of the questions that come up from time to time. One book is "Model Aircraft Aerodynamics" by Martin Simons and the other is "Sailplane Designer's Handbook" by Eric Lister.

Basic Design Parameters

When designing a sailplane, there are certain specifics that need to be considered. To take a hand full of wood and start cutting and gluing together doesn't work. I've tried it. So, first you will need to establish some parameters for the design of your sailplane:

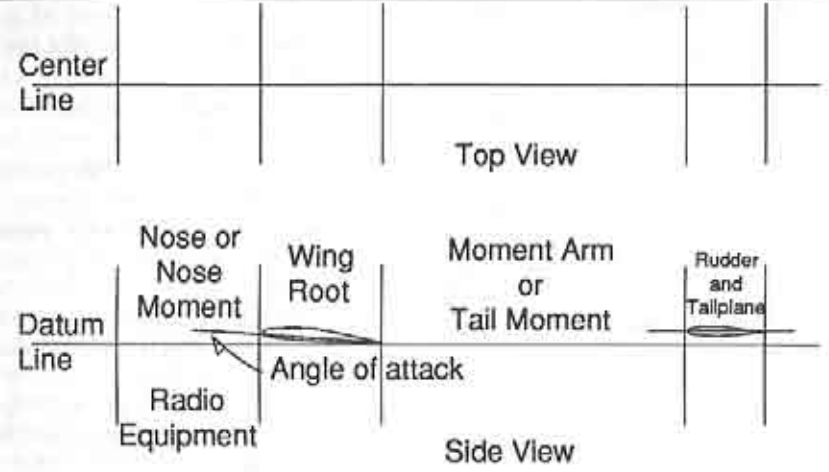
- What size should it be?
- What equipment will be used? 250 ma. -1200 ma. battery pack? Mini or standard size servos?
- What kind of building material is readily available, and what are the cost or budgetary restraints?

Looking at the above, one thing to keep in mind for any first design is to keep it simple. We probably all do a bit of day dreaming. I know, because I'm one of the biggest day dreamers around. We may dream about our own design, the thermal beater, contest winningest, best looking sailplane on the flying field. But, it is best to work our way up to it. So, the design for this first model will be used as a test bed to work up to a space-age, all composite-built beauty.

My Parameters

Based on the basic design parameters shown above, I have developed my own design parameters. Your parameters will probably be different and I will keep the explanations generic as I go along.

1. I do not have the luxury of flying on a nice school or park lawn. I fly in dirt. So,



The figure depicts the basic layout of the fuselage. I can't give you any numbers because I don't know what parameters you have selected. Besides, I want you to work this out for yourself.

Now you can hit your books or reference materials and calculate all the numbers, measurements and variables for your design by weighing your radio equipment and building materials. Don't get too carried away unless you are an engineer. Try to keep the first design simple!

I suggest you choose the airfoil for the wing design and build around the wing. If you already have a wing from a previous model, use it as an example. Measure the overall length, nose, wing root and tail moment. Then step back and see what it looks like. Was there more than adequate room for all the radio equipment? Was there too much? If so, you could lower the profile thereby reducing drag. Maybe an inch can be added to the nose to make the fuselage a bit more streamlined. Were 10 ounces of lead used, for example, in the nose to balance this model? If so, maybe you could remove an inch from the moment arm (tail), which will allow you to remove lead from the nose, thereby reducing the overall gross weigh of your model.

With these things to think about, start your drawing and as you draw more things will probably come to mind. As they do you may want to incorporate them into your design. Good luck and next month I will give you some building tips.

I will need a somewhat strong, rugged and durable sailplane. I will probability make the fuselage out of plywood.

2. I will use a 7 channel radio (since this is what I currently have) with standard size servos and either a 500 ma or 800 ma battery pack. This will eliminate a 2 meter sailplane, but I was thinking of something around 3 meters or a little bigger for myself. (The difference between a 2M and a 3M is the wing span. A two meter wing span is approximately 78".)

3. The airfoil S3021 will be used for the wing because of its somewhat flat bottom which makes it easy to build. (There are many sources for airfoils, and several are included in *RCSD*.)

4. The wing will have an aspect ratio of about 14:1 and approximately 1000 square inches with a wing loading of 10 to 12 oz. per sq. ft. (An aspect ratio of 12:1 or 14:1, based on everything I've read, is considered good.)

5. I have decided to have flaps and a polyhedral wing.

How's that for sticking my neck out. So, now I will draw myself a set of plans and, hopefully, report a bit of progress by this time next month.

Plans

One does not have to be an architect to draw a set of plans. All that is needed is a large sheet of paper (several small sheets taped together will do), a number 2 pencil, yard stick, square, protractor and an eraser.

If you have a set of wings and stabilizer from an old glider that you can use, this will eliminate some drawing. To get started with the fuselage, draw a center or datum line as shown in the figure. Divide the datum line by how long the nose will be, where the wing will sit, the moment arm (aft part of fuselage) and tail group. Now that you know where the wing will go, use the protractor to draw the correct angle of attack for the wing. Once completed, all that is left is to sculpture the fuselage by drawing the outline or profile, and filling in with formers and pushrods. A top view of another dimension will help establish where to drill the holes in each former for the push rods to pass through, and the details for wing rods and whatever else that comes to mind.

With the above to think about, I'm going to leave you as I have a lot to do before next month's deadline. Be sure to keep a record of everything as you go along. If you decide to make modifications or make changes later, you'll need to refer back to your notes.

Mirko Bodul, 11603 N. Lake Shore Drive
Mequon, WI 53092

RC Segelflug (price DM 14,80), *Modellbau Markt'91* (price DM 9,80), Verlag Fur Technik und Handwerk Gmbh, Postfach 1128, D—7570 Baden—Baden 1, West Germany

"Model Aircraft Aerodynamics" (price $29.95), Zenith Books, P.O. Box 1, Osceola, WI 54020; (800) 826-6600

"Sailplane Designer's Handbook" (price $7.95), Eric Lister, 2214 Regina Drive, Clarksburg, MD 20871

Jerry Slates has been an avid modeler for over 40 years, and has acquired over 3000 hours flying full-size craft. Through his teens and on into his early 20's he was very active in competition flying, and tried everything from U-Control-Stunt, Speed, Team Racing and, later, Rat Racing. When he saw his first radio controlled model airplane, he knew he just absolutely had to have one. Currently, Jerry builds fiberglass fuselages from scratch utilizing and testing new composite materials as they are available. In his column, "Jer's Workbench", he shares not only his research and design techniques, but any information that might be of interest to today's modelers. Jerry has acquired his techniques over the years through trial and error in the operation of Viking Models U.S.A., a cottage industry which specializes in high quality fiberglass fuselages for the scratch builder. Judy ■

Getting the Airfoil Leading Edge Shape Right

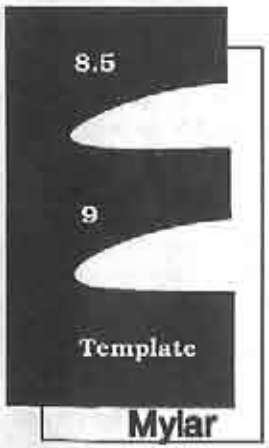
...by Lee Murray, Appleton, Wisconsin

As I was finishing the sanding on my Sealy Constellation X-country sailplane wing I found that the leading edge didn't look much like that of the original airfoil.

I suspect that my vacuum process for attaching the balsa skins allowed the leading edge to be compressed slightly. This may have occurred by exceeding the vacuum limit of about 7" Hg or perhaps that foam couldn't take the compression at the leading edge. The situation called for the application of light weight filler in the low areas followed by some careful sanding. A problem that I addressed then and in this article was how to reconstruct the proper leading edge shape. This called for a special tool, a leading edge gauge.

The leading edge shape gauge that I made and used was constructed using a computer plotter, but airfoil plotting programs by several others (Foiled Again & Chuck Anderson's) should produce the same results using a dot matrix printer. The plots on paper were applied to 5 mil drafting Mylar. If your printer or plotter & pens will handle the Mylar itself that might be a better way to getting the airfoil shape onto the Mylar. If you have a contact in the drafting world, you will find that they discard lots of scraps which will serve the purposes. I produced a series of plots in 0.5" increments to evaluate the tapered portion of the wing and then glued them to the Mylar using rubber cement. I don't cut off the excess trailing edge of the plot until I have glued the plot to the Mylar. Apply a coating of cement to both the paper and Mylar surfaces and then join them when they are about dry. Leave at least 1" of Mylar beyond the leading for support. Cut off the portion of the tracing beyond the thickest point of the airfoil. Remove the inside of the tracing using a new or very sharp knife or scalpel to get a good cutting. If you are like me, you will benefit from the use of a magnifier or reading glasses. Usually I am not successful in cutting all the way through the Mylar on the first cut. If not cut all the way through, I will flex the Mylar along the cut to weaken it and then attempt to tear it. You can also go around the cut again, but with the risk of getting off the intended line. Once removed you may find some thin "flashing" like material which can be easily removed with the knife.

Mark the chord lengths on the template so you will know the original chord for that template. Place a strip of masking tape on the wing past where the gauge will go and label the corresponding chord lengths so you will know which gauge goes with which part of the wing. When you compare the gauge with the wing, mark with a pencil where more wood has to come off or where filler has to be added. It takes some time to do it right, but it's better to do it now rather than later or to suffer from performance quirks. ■



On The Wing

...by B^2

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

A review of "Schwanzlose Flugzeuge: Ihre Auslegung und ihre Eigenschaften" ("Tailless Aircraft: Their Layout and Qualities"), a new book written in German by Dr. Karl Nickel and Dr. Michael Wohlfahrt and published in 1990 by Birkhauser Verlag of Basel, Germany.

Dr. Karl Nickel, a test pilot for several of the Horten designs, and Dr. Michael Wohlfahrt, designer of RC flying wings for the Swiss LOGO F3B Team, have written what is advertised as "the bible" for anyone interested in tailless aircraft. "Schwanzlose Flugzeuge" does not focus on models, although an immense amount of material of use to modelers is presented. Rather, it lives up to its title by covering all sizes of tailless aircraft. The book is dedicated to the memory of Franz Xaver Wortmann, designer of the FX series of airfoils.

As objectively written books are becoming more difficult to find, it was a welcome surprise to find the statement, "Das Nurflugelflugzeuge ist der Flugzeug der Zukunft." ("The wing-only aircraft is the aircraft of the future.") followed by, "Wir, die Autoren deises Buches, sind davon nicht uberzeugt!" ("We, the authors of this book, are about this not convinced!").

This hardcover book consists of 616 pages divided into 12 chapters plus a forward, literature list/bibliography, a complete listing of terms as used in formulae, and a comprehensive index. Each chapter is divided into several sections, averaging six to seven per chapter, and all formulae, drawings, and photographs are serially numbered. It is written, then, in the style of a textbook. The main thrust of the book is to fully illuminate problems, construction, and flying characteristics of all types of tailless aircraft. The authors' goals are assisted throughout by headings denoting special consideration: problems, goals, history, explanations and descriptions, applications, cautions, and additional material. Additionally, boldface type is used to increase the reader's attention to important points.

"Schwanzlose Flugzeuge" does not assume the reader to be knowledgeable, and in fact begins with a definition of tailless aircraft and an explanation of their physical relationship to conventional tailed aircraft. The second chapter, in explaining basic aerodynamics and associated terminology, carefully examines aerodynamic theory as related to tailless aircraft. The aim here is to provide the reader with the information needed to understand the polar diagrams, lift distribution curves, and formulae given later.

Stability, control surfaces and their effects, and flying characteristics are covered in the next three chapters. Stability is related to the neutral point and several other measurable parameters, and the effects of control surface movements on stability are examined, including aileron differential, flaps, and airbrakes. Chapter 5, concerned with flying characteristics, provides some details about the effectiveness of wing twist, boundary layer fences, and slots. Once a preliminary design is chosen, the next logical step is to optimize that design. Maximizing lift, minimizing drag, and the use and design of winglets is examined for achieving greater efficiency and better control. Chapter 7 continues this discussion through an examination of various wing profiles, sweep, twist, winglets, and flaps. Of particular note is a complete quotation of Barnaby Wainfan's article on reflexed profiles which appeared in the December 1988 issue of *Kitplanes* magazine.

The problems of tailless aircraft are in some cases unique while others are similar to those seen in conventional tailed aircraft. Flutter and boundary layer drift are of course associated with swept wings of any kind, but increasing elevator function without adverse effect and moving the CG to increase performance pose special problems for tailless aircraft.

Perhaps the most surprising part of "Schwanzlose Flugzeuge" is Chapter 9, in which hang gliders are described as ideal tailless aircraft! Radio controlled models are covered in Chapter 10, with many photographs and a most interesting profile of an F3B winch launch trajectory.

"Stories, misjudgments, prejudice and fairy tales" is the title of Chapter 11. It is here we learn the truth about such things as the bell shaped lift curve, the middle effect, and wandering of the boundary layer.

The final chapter describes in some detail both full sized aircraft (Lippisch Delta I and Horten I, Fauvel AV 36, Horten II, III, IV and VI, the SB 13 "Arcus", and the Rochelt "Flair 30", an ultralight sailplane), and Wohlfahrt's "Sapperlot", the 'wing he designed for the Swiss LOGO-Team.

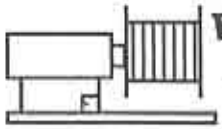
As you can see from the above outline, "Schwanzlose Flugzeuge" covers its material in logical order. Information is provided in an easily comprehended way, with later concepts always easily related to those presented earlier.

The literature list/bibliography is quite extensive, with several citations credited to Dr. Nickel, and several more to Dr. Wohlfahrt. We should also mention the first citation, which is out of alphabetical order, and which Nickel and Wohlfahrt describe as "the well detailed literature list" for tailless aircraft. That citation is for Serge Krauss' "Tailless Aircraft — An Extensive Bibliography for Subsonic Types". This is quite an honor for Serge, and it is well deserved. Copies are available directly from Serge Krauss, Jr., 3114 Edgehill Rd, Cleveland Heights OH 44118.

"Schwanzlose Flugzeuge" lives up to its billing as the bible of tailless fans. Although published by Birkhauser, copies are available through Verlag fur Technik und Handwerk, GmbH, the publisher of the German magazine *FMT*. The cost is DM78,00. While this totals something over US$50.00, we consider the book to be of significant value and there is no question that ordering through VTH is the least expensive method of acquiring it. (Verlag fur Technik und Handwerk, GmbH, Postfach 1128, 7570 Baden-Baden 1, Germany) VTH will accept your personal check made out in US dollars at the current exchange rate. Add DM3,00 to any size order to pay for packaging and mailing. Orders are shipped immediately upon receipt, but delivery takes roughly five weeks as items are sent by surface mail. Again, "Schwanzlose Flugzeuge" is written entirely in German.

"Faszination Nurflugel", edited by Hans-Jurgen Unverferth, was reviewed in this column in the April 1990 issue of *RCSD*. Less expensive (DM29,50), a focus on models only, more easily understood graphs, relevant photographs, and quite a bit of construction information in the form of drawings make "Faszination Nurflugel" the more practical choice if your knowledge of German is less than good. "Faszination Nurflugel" is also available directly from Verlag fur Technik und Handwerk, GmbH, under the same terms as outlined above. ■

"On The Wing...", is a column devoted to tailless sailplanes. Bill and Bunny are members of T.W.I.T.T. (The Wing Is The Thing), an organization of engineers, scientists, pilots, sailplane enthusiasts, model builders and others having an interest in flying wings and tailless aircraft technology. Bill has been flying R/C sailplanes since the late '50s and both have been flying tailless sailplanes exclusively since 1984. Project Penumbra, an on-going evolution of designs, incorporates their current aerodynamic theories and construction methods. Many unique and hard to find plans from many countries around the world may be obtained through their plan service, B^2 Streamlines, a cottage industry. ■



Winch Line ...by Gordon Jones

Gordon Jones, 214 Sunflower Drive, Garland, Texas 75041; (214) 840-8116

Building & Flying the Falcon 600

Well, my Christmas present finally got here on the 16th of January! That is not bad considering that I ordered it about the middle of December. Yes, it took about six weeks to get a Falcon 600 from Mark Allen. I must admit I was not a bit surprised, and actually figured it would take about eight weeks. With the number of orders that Mark is getting for his kits if you plan on getting one, ORDER IT NOW. As most of you have seen, the Falcon is in great demand and the flow is not about to subside anytime soon.

I had been looking for a high performance 2 meter ship for some time and had investigated several potential projects when I heard about the Falcon 600. It started in a casual conversation at the flying field when a friend of mine mentioned that he had ordered a 600. At first I thought I had not heard him correctly or that he had dropped 200 square inches from the description. Upon asking about my hearing problem, he stated that yes, he had said 600, as in 2 meter. I queried him about the information he had and received a short description of this new 2 meter ship.

After his description, I decided a call to California was in order to find out the details. In talking to Mark I learned that he had basically shrunk the 880 down to a two meter size and had retained the airfoil and basic parameters of the design. So, to make a long story longer, I ordered one sight unseen. I figured it would make a nice Christmas present from my wife and daughter. (They always complain that I am the worst person in the world to buy presents for anyway.)

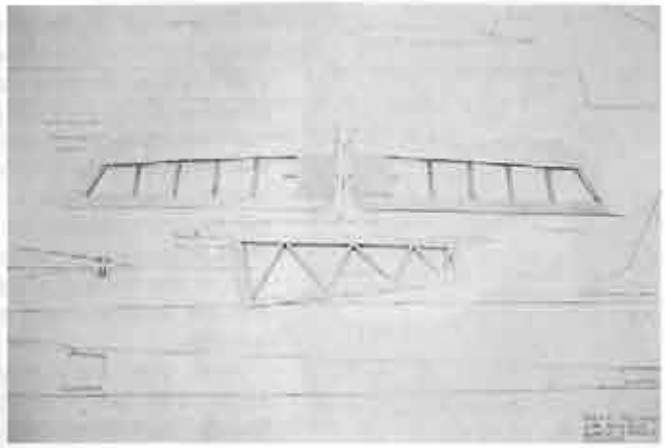
The Kit

The Falcon 600 is available in two kit forms: the standard kit and a Deluxe version with a pre-sheeted wing. Both kits come with a one piece very high quality epoxy-glass fuselage with pre-fit canopy. The foam cores are machine cut from 1.5 lb density foam and are cut on full-size beds to insure a straight trailing edge. Also included in both kits are the wood and accessories to construct the empennage, and the bolt-on wing hardware.

A couple of nice touches that Mark has included are a pre-cut servo tray that fits the fuselage perfectly, and the wire for connecting the wing servos. I know I hate to cut servo trays to fit a particular fuselage and having it already done is nice.

All of the smaller wood and loose pieces

The Kit



Empenage completed.

are bagged in separate bags for shipment, and this makes it nice from a storage standpoint while you are building the plane. I hate looking all over the place for pieces while I'm in the middle of building.

One note, Mark like other kit manufacturers is subject to the same balsa supply problems as the rest of us only on a larger scale. It is hard to get exactly the right weight and strength of balsa on every order. All in all, the selection Mark uses is first rate and he is endeavoring to keep it that way. If you have any questions on building the kit, please feel free to give Mark a call as he is more than happy to answer any questions you may have.

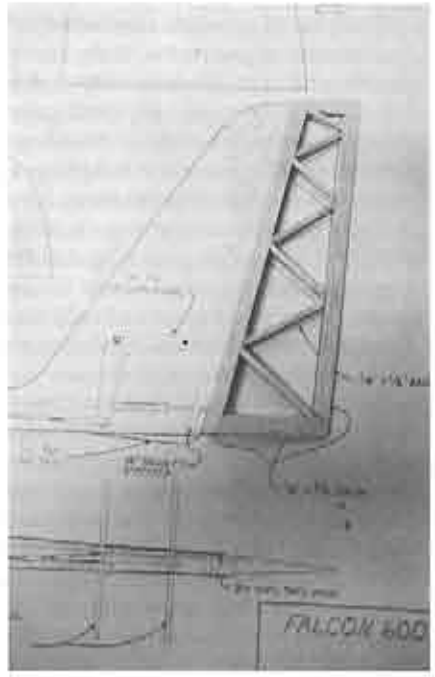
Rudder and Stabilator

The rudder and stabilator are of basic built-up balsa construction. Both are straight forward and very easy to construct. Be sure to align the brass tubes in the stabilator during construction. Sand or cut the leading edge angle in the rudder prior to installation of the control horn. Other than that, they are both straightforward, strong and light.

Wing

The wing requires basic foam wing construction with the addition of carbon fiber over the spar and fiberglass cloth at the trailing edge. First, fit the spars in the pre-cut spar slots. Then epoxy them in place. Mark is using a 3/8" hard balsa spar for the wing and, while it looks weak, it really is strong enough to take a healthy zoom launch.

Prepare the sheeting for each main panel and the tip panels. Sheet the center and tip panels using a good epoxy resin. Mark recommends the press method to apply the sheeting and with the full foam



Ready-to-cover

core beds this works quite well. I added a layer of carbon fiber matt over the area of each wing servo for added strength and stiffness. This does not add any weight to speak of but provides a bit of reinforcement for the sheeting in those areas. I must say that I do like the idea of using fiberglass cloth on the trailing edges as the strength that it adds is tremendous.

Once the wing panels are sheeted, add the leading edges to the main and tip panels, and sand these to shape. After the leading edges are completed cut out the cavities for the servos in the wing. I tried something new for installing the servo wires in the wing this time. I used a 32 inch aluminium arrow shaft as a drill, and after setting up a jig, I drilled the holes for the servo wires in each panel. It works out great and only takes a couple of minutes to drill the holes, and without ruining the airfoil shape.

Next, cut out the ailerons and flaps. It is easiest to use a band saw or table saw with a fence to get good straight cuts. If you use this method be sure to put some masking tape along the line you intend to cut so the balsa doesn't splinter. Plus, if you use a table saw with the right blade you have the right amount of material removed for the balsa capping material. I then used a sander to make the aileron leading edge angles and finished off this part of the procedure by capping the ailerons, flaps and wing cut-outs with balsa, and then sanding them to final shape. (When you are sanding the ailerons and flaps be sure to pay attention to the trailing edges and get them as sharp as possible.)

Next, sand the correct angle on the root of the tip panels. Then epoxy the tip blocks on the tip panels. When these were dry I sanded the balsa tip blocks to shape; then epoxied the tip blocks in place on the center panels. Take your time to insure that the correct angle is achieved with each panel at the same angle of attack and height. I use a set of pre-cut blocks cut to the dimensions required that are the length of the flat section of the bottom of the wing and tip panels to insure the correct alignment.

Next, sand the dihedral angle in the center panels, then epoxy these together at the correct angle. Take your time to insure that the correct angle is achieved with each panel at the same angle of attack. Then lay on the 6 ounce fiberglass cloth with epoxy resin to add strength to the wing panel joint. Taking your time here is important as you can feather the edges of the fiberglass cloth and save a bunch of sanding time. Be sure to squeegee off as much excess resin as possible, or use the toilet paper method to remove the excess resin. Once the wing is dry, sand it for covering, then lay it aside.

Fuselage

The Fuselage is again a straight forward deal. I started at the rear and installed the bellcrank supports; then drilled the hole for the front stabilator joiner. Once this is installed correctly, use the bellcrank as a compass and mark the location of the rear stabilator joiner cut-out and carefully cut out the slot. Once this is completed recheck the alignment of the stabilator on the fuselage.

Falcon 600 Specifications

Wingspan	2 Meter
Avg. Wing Chord	7 5/8"
Wing Area	600 Sq. In.
Aspect Ratio	10.4:1
Airfoil	S3021-S3014
Weight	40 Oz.
Wing Loading	9.6 Oz./Sq. Ft.

Standard Kit $140.00
Deluxe $225.00

Next, measure and cut the control cable for the bellcrank and then permanently install the control cable and bellcrank in the fuselage. Insure that you don't glue the bellcrank in place by putting some petroleum jelly around the bellcrank hole when you are glueing it in place. Also, be sure to attach the control cable for the stabilator prior to gluing the bellcrank in place.

Measure and cut the stifner for the fin and trial fit it in place. Be sure to cut a hole for the rudder control cable to exit. Then measure and cut the control cable tube for the rudder and glue it in place at the rear of the fuselage.

Moving to the wing saddle opening, glue both control cable outer tubes along the sides of the fuselage. Next, measure and cut the plywood wing hold down plates and sand the fuselage for a good fit. Epoxy the wing hold down plates in place and hold them with some good clamps while they dry.

Then cut out the servo tray to accept the rudder and elevator servos and the on/off switch. I mounted the servos temporarily and put the servo tray in the fuselage to measure the height of the servo output arms. Once this was attained I removed the servo tray and cut the control cable outer tubes so they would match the location of the servo tray and height of the output arms on the servos. I used some small triangular blocks glued along the side of the fuselage to attain a straight run at the output arms. I glued the blocks in place and then glued the control cable outer tubes in place along the fuselage sides and on the blocks. I then glued the servo tray in place using epoxy and microballoons.

Next, I mounted the wing and drilled the wing hold down holes while holding the wing in place with tape at the correct alignment. During this procedure be careful to attain the correct alignment of the wing to the fuselage. I then installed the hold down hardware and installed the wing on the fuselage for a final check of the alignment.

Covering and Radio Installation

I covered the wing, stabilator, and rudder with Oracover being careful to get a good tight fit. I then painted the fuselage using K&B epoxy paint. I have been using K&B for years and it provides a good hard finish that matches the plastic coverings and does not yellow over time.

I then installed the servos and wiring in the wing using aileron extensions so that I did not have to cut and solder any wires. (Be sure that you check your servos and radio prior to installation as some servos have to be mounted a certain way to operate properly.) From there I measured and cut the control cables for the elevator and rudder. I then installed the rudder and rudder control cable. Next, I measured and cut the elevator control cable and installed the servo end of that cable.

Next, set up the radio for correct movement of the servos. Mark recommends

the following control-surface throws for the Falcon:

Rudder	20 degrees right and left
Stabilator	10 degrees up and down
Ailerons	30 degrees up and 12 degrees down
Launch	1/4 inch down on the flaps 1/8 inch down on the ailerons
Crow	90 degrees down on the flaps 25 degrees up on the ailerons

I used a JR X-347 radio with NES 321 servos for everything but the ailerons; there I used the new NES 341s. The 341 servo is absolutely amazing with a tough output gear and smaller than the Futaba S133. It has an oversized plastic output gear that will match any of the metal geared servos. The power of the 341 servo is perfect for aileron applications in any plane (Torque is stated at 31.2 oz. in.) and the size makes it easy to install in any application (Weight is 0.72 oz.). The receiver is small enough for use in any hand launch plane out today and it makes for a neat combination for a light weight airborne system.

Flying the Falcon 600

Now that the boring stuff is over; the good stuff...FLYING!

After a couple of hand launches to get the elevator centered, I was ready to try it on the winch. The climb out was straight and true even with the light pedal I was using. I released at the top of the line and began seeing how this 600 would fly. With the CG a little forward it still tracked straight and true with a nice wide range of speed. This flight took care of all the major trimming, and after moving the CG back a little bit I was ready for the second flight.

Done at last.
Now for the good stuff!

I pushed the Falcon up the winch and experienced the thrill of it climbing out straight up after the zoom. I have never seen an airplane generate so much energy on a winch! And it seems to continue up and up forever. It will do three vertical rolls after the zoom with ease. Plus I think there is probably room for more, too. I only wish we had a slope in the Dallas area to go out and play on because you can do some pretty good aerobatics with this bird. Rolls are nice and crisp and it tracks just great through loops and indelmans.

All these accolades aside, the thermal capability of the Falcon 600 is great. It reacts to thermal conditions just like the 880 and I really can't tell the difference between my 880 and the 600 except that it is smaller. Again, it flies better than the computer charts and graphs would indicate with an amazing L/D and a really wide speed range. You can do some amazing things in light or neutral air with this airplane. It never seems to amaze me that I can keep pushing it to where it should fall out of the sky; and it keeps on flying and flying and flying.

As with the 880, the Falcon 600 will cover a lot of sky with ease while hunting for thermals. Even at 42 ounces all-up weight it will penetrate very well and with a little ballast it will even take on some of our Texas breezes with no adverse effects. All of the Falcon 600's I have seen have flown extremely well and have proven themselves in contests across the state in Open as well as 2 meter classes.

You can slow this bird down to a walk and have full control throughout the landing or slow flight. It doesn't have any tendency to tip stall, or drop a wing, or anything. It just keeps flying. With a little camber dialed in during thermaling the nose stays at a really good angle to keep in the thermal, and with it being only 2 meters you can take advantage of the smallest thermals at some really low altitudes. I have even scared myself a couple of times with these low altitude thermals wondering just how far I can push this bird.

In conclusion, if you are looking for a 2 meter ship for the contest season give the Falcon 600 a shot. It is a delightful plane with plenty of performance while being comfortable enough to just fool around. You won't be disappointed. ■

Gordon Jones is the generalist with an interest in taking everything apart — from computer programs to winches. He has 21 years and over 1300 hours of flying full-size fixed wing and rotary wing aircraft. His background in computers and expertise in technical writing extends to his love of model sailplanes. Through his workshop tips and his column, "Winch Line", he shares his in-depth research and applications, and provides solutions from the simple to the more complex. ■

Spring Soaring Spectacular

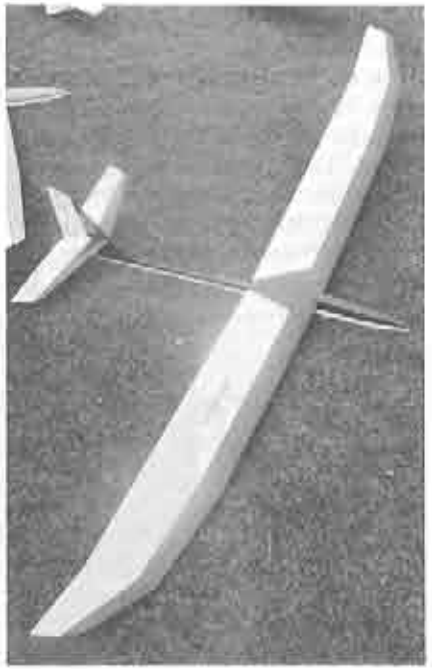
...by Ashley Davis
Travelers Rest, South Carolina

The Spring Soaring Spectacular held April 13 and 14 in Greenville, South Carolina began much less spectacularly than it's title would have you believe.

With practice flying scheduled to begin at eight A.M, everyone converged on the Western Carolina Radio Control field bright and early, only to be faced with a steady downpour which never let up. Flying was postponed until the next day after C.D. Walter Means consulted his crystal ball.

Saturday afternoon Mike Watson graciously entertained a group of on-lookers at his home by demonstrating his vacuum-bagging technique. Mike is working on a beautiful OPEN class ship utilizing a "classic" SCHUEMANN planform wing of blue foam and obechi.

Sunday arrived dark and gloomy, but no rain! After a pilot's meeting, flying began about 10:00. The HIGH COUNTRY SOARING SOCIETY, sponsors of the meet, had set up a really fine mobile winch/retriever system. Manned by Landon Grindstaf and Howard Keller, this set-up allowed for very smooth and



Paul Morrow's "Open" class ship

Partial flight line

casual launching of contestants. This trailer-borne flying center deserves an article itself.

Several flyers had never used a winch before, but there was no shortage of help to get them past this hurdle and by the end of the contest they were looking like pro's.

The task for the day was 7 minute duration with landing inside a 25 foot circle worth 10 percent of the duration score. The overcast which lasted all day made for pleasant but challenging conditions. Lift was minimal but present most of the day and required a very deft touch to utilize. Those adventurous enough to "reach out" found enough to achieve quite a few maxes. Only one pilot made an off-field landing after brushing a tree right at the edge of the field. Galon William's ubiquitous RED DYE #7 suffered minimal wing damage after converging on the landing circle seconds before Walter Means' WINDSONG arrived there. Dewey Franklin gave everyone a run for the money in both classes only to fold a wing on his standard ship at the top of a launch.

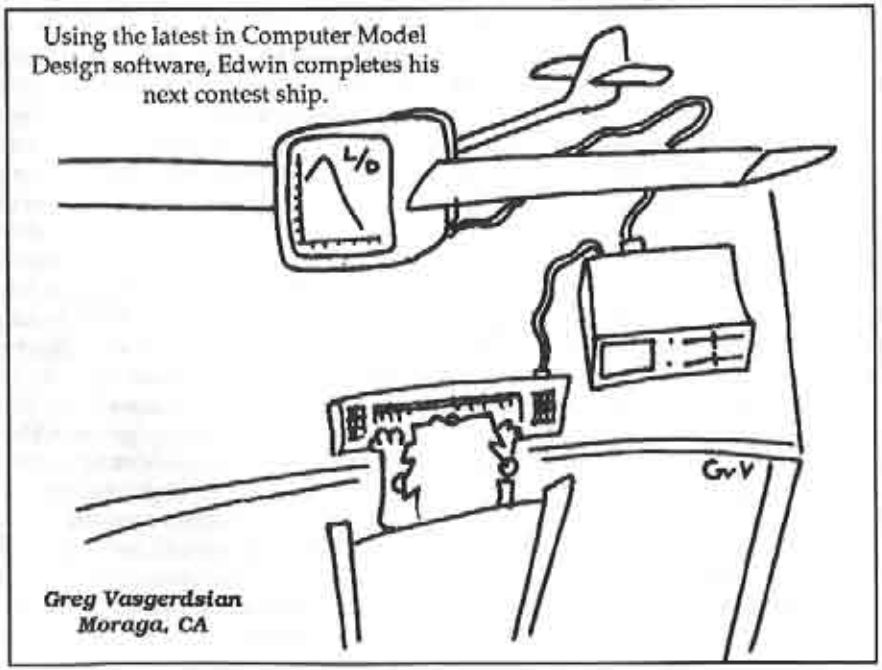
Standard and Open classes were flown simultaneously and 5 rounds were completed by 18 flyers and 23 gliders by about 4:30 P.M. A two minute fly-off had to be flown to determine the third and fourth places in standard class and the contest was finished.

Winner in Open: 1st — Boots Blanton - WINDSONG, 2nd — Mike Watson - original, 3rd — Galon Williams - RED DYE #7 (original), 4th — John Vennerholm - WINDSONG. In Standard: 1st — Paul Morrow - SAGITTA (modified), 2nd — Howard Keller - MOONRAKER (original), 3rd — Ashley Davis - Windsurfer, 4th — Pierre Julien - RISER.

Mike Watson's Original & Swift

Howard Keller & winch

Many thanks to the HIGH COUNTRY SOARING SOCIETY's Mike Watson, John Vennerholm and Landon Grinstaf and contest director Walter Means for the organization of this meet and to the Western Carolina R.C. club for the use of their beautiful field. Hopefully, contests like this will help bring flyers in the southeast together and also generate more interest in glider flying from other areas of modelling. ■



Understanding Thermal Soaring Sailplanes

Part 4 of 4 Parts Continued

(This column began in January, 1990. Each part covers several months.)

...by Martin Simons

Martin Simons, 13 Loch Street, Stepney, South Australia 5069

Tail vortex drag

Vortex drag is large if the angle of attack of the wing or wing-like surface is large. With tail units, the angle of attack in normal flight attitudes is always small and may be zero. The vertical tail surface, for instance, develops lift only when it is called on to correct a yaw, or when the rudder is applied. In correctly trimmed straight flight there is therefore no difference in pressure between the two sides, so no tip vortex forms. In a correctly flown turn with no yaw, the same applies, or very nearly so. Vortex drag of a vertical tail is therefore either very small or none.

The horizontal tail surface also, normally, creates very little or no vortex drag, but this is not correct if a large share of the total weight of the aircraft is carried by the tail. In an extreme case, the aircraft can become a tandem, with roughly equal sets of wings one behind the other. In such a case, the rear wing may be thought of as an excessively large tailplane, and if it supports its fair proportion of the weight of the aircraft, it will develop a good deal of vortex drag. In a canard layout the same applies. The vortex drag of a canard forewing is not small, because it is rigged always as a lifting member and, for reasons of stability and balance, must operate at a higher aerodynamic angle of attack than the mainplane. Any surface which is made to lift a load will produce vortex drag which will increase rapidly as the load on it increases. So far, canard and tandem type sailplanes have not proved themselves superior to the orthodox layout.

Tail profile drag

The other component, profile drag, of a tail unit is a combination of skin drag and pressure drag. Pressure drag is created when the air has to flow around a body. The thicker the body, the greater the pressure drag tends to be. Tail sections are usually very thin and work at small angles of attack. The pressure drag of tail units is therefore relatively small, although not negligible.

Skin drag, caused by the passage of the airflow over the whole of the exposed surface, therefore constitutes the bulk of tail unit drag. Although it is an oversimplification, it is not far from correct to say that the drag of a tail unit will be roughly in direct proportion to its size. If the tail (including vertical and horizontal components) totals about 20% of the wing area, it is going to create about 20% as much skin drag as the mainplane does. Accordingly, if the total tail area is halved then its skin drag will be roughly halved. There are certainly other small factors involved, such as the proportion of laminar flow in the boundary layer flow over the tail, and how much of the tail is operating in the disturbed wake created by the fuselage and the mainplane, but these should not be allowed to obscure the main point: the larger the tail, the larger its share of the total drag.

Cutting tail area

Hence to reduce the drag generated by the tail, the most profitable thing to do is to reduce its total area. A good approach is to consider existing successful designs and consider whether any savings in tail area can be made without sacrificing other desirable features, especially stability and control.

Moment arms and tail volumes

One possibility, easily understood, is to increase the moment arm of the tail, by lengthening the rear fuselage. This allows a reduction in total tail area, and hence drag, without having much effect on stability and control of the sailplane.

A rough figure for the vertical and horizontal tail volumes of an existing successful soarer can be worked out. One way is to multiply the distance between the wing's and tail's respective aerodynamic centres, by the projected tail areas. The centre of gravity may be used as a reference point instead of the wing's aerodynamic centre, but the purely geometrical dimensions are perhaps somewhat easier to work out for a new design. Either way, the tail area (either vertical, or horizontal) is multiplied by a relevant moment arm length, to give the so-called tail volume. As the moment arm is stretched, the tail areas required to give approximately the same volume and power, are reduced. Thus, a tail moment arm of 1.5 metres multiplied by a tail area of 0.3 sq metres, gives a volume of 0.45, which could be obtained by a smaller tail area of 0.25 sq m on a moment arm of 1.8 m. This would, very roughly, reduce tail drag by a sixth. To achieve a reduction of one third the original figure, by reducing the tail area to 0.2 sq m, the moment arm would have to be increased to 2.25m, and so on.

There are fairly obvious limits to this procedure. As any wing-like surface is reduced in size it loses efficiency due to Reynolds number effects. A small tail unit attached to a fuselage will also be partly submerged in the wake of its supporting structure. The smaller the tail, the more such things will count. Lengthening the tail moment arm cannot safely be taken so far that the tail unit is reduced to vestigial fins like the fletching on an arrow. In any case, fuselage skin drag itself increases as the moment arm is extended, so there is no point in making the tail boom ridiculously long. Keeping the centre of gravity position, for the model as a whole, in a sensible place also becomes more difficult if the tail boom is too long. Excessively long fuselages become very difficult to transport from place to place, and are vulnerable to damage in heavy landings.

It is convenient to have the total fuselage length about equal to the semi-span of the wing and practical experience shows that such proportions are satisfactory, yielding reasonable tail areas, good stability and control. On the other hand, shortening the moment arm and magnifying the tail areas to give the same volumes increases tail drag more than it decreases fuselage drag. Bringing the tail too far forward, closer to the disturbed air behind the wing, decreases tail efficiency, so the simple tail volume coefficient becomes less reliable as the fuselage tail boom becomes shorter.

There is some justification for moderate lengthening of tail moment arms to reduce tail areas. The only argument in favour of shortening tail moment arms is to reduce the moment of inertia of a long tail, thus slightly improving the controllability and maneuverability of the model. This involves a drag penalty because the tail areas, vertical and horizontal, have to be enlarged to keep the volumes in proportion. ■

Martin Simons has been actively involved with model aircraft since the 1930's and is regarded as a leading world authority on vintage gliders and sailplanes. He has over 1300 hours flying full-size gliders, many of which are described in his book *The World Vintage Sailplanes 1908-1945*. His column, "Understanding Thermal Soaring Sailplanes", brings the soaring enthusiast insights into sailplane design and construction from theory and design through the building and flying phases. His latest model, a scale replica of the PWS-101, won two competitions within a month of its first flight. ■

SOARING WITH EAGLES

...by Martin Simons

We returned on Sunday evening from our two day Scale Sailplane Soaring Competition at Waikerie. This looks like becoming a regular annual event on the Australian calendar, which pleases me since it was my idea originally. You may remember the account of the first of these contests last April, when I won the vintage section with my PWS 101.

The first morning, just like last time, was wet, chilly and windy. Waikerie had had no rain for three months, but, if you want to break a drought, arrange a gliding competition. We had heavy rain overnight on the Friday, with spectacular thunderstorms and a glorious rainbow. Saturday improved after the static judging was over, to permit some flying but very few thermals. Sunday turned out to be cloudless with light and variable winds, good thermals and much more typical of Waikerie weather.

There were 47 sailplanes actually in the contest, a few having dropped (or crashed?) out at the last minute, as usually does happen. It is doubtful if we could cope efficiently with more than 50. We flew five rounds.

We were using both winches and aero tows. An interesting and probably important development is the use of a height sensing device to cut the throttle of the tug aeroplane at a pre-set altitude. The prototype of this gadget, which was built by Mike Borgelt, worked very well and he hopes to market it. Mike manufactures soaring instruments for full scale sailplanes and is expert on this sort of thing. Using the sensor, we were able to prevent the aero towed models having too much advantage over the winch launched ones. However, when the wind veered, as it often did, we who were using winches had problems with downwind launching and couldn't get as high as the aero tows. Nonetheless, the electronic sensing device looks like being essential in future aero-towing model competitions, and I suspect we shall be using this launching method much more often.

Quite a few people are also putting Casio altitude watches in the gliders, to measure attained heights. This could be embarrassing for us all in the long run, since there are often legal height restrictions. At Waikerie the legal limit for the weekend was 1000 ft, so of course we all broke off our climbs at 999 ft 11 ins. (How could anyone, even momentarily, suspect otherwise? I personally know when I am near the limit when I begin to lose sight of the sailplane - it is an infallible guide. I cannot see anything more than 1000 ft high, so if I can still see the model, I know I am legal. Did I get that right?)

We were watched and followed around all weekend by half a dozen eagles. Since there is a large full-scale gliding club at Waikerie, we were rather surprised that the birds should be so interested. They must be used to seeing sailplanes, but perhaps our somewhat smaller craft concerned them more than the bigger ones do. I have never seen them in such numbers. They hovered immediately above our pit parking area, sometimes coming down to just a few feet above the models (and the people) waiting for the gliders to be launched. Once the models were in the air the eagles not only showed us where thermals were but quite often left their own to come over to join ours.

Proceedings were also interrupted several times by the arrival of full-scale aeroplanes, including an air ambulance to take a road accident victim to the major hospital in Adelaide (100 miles away). Waikerie aerodrome is licensed for light traffic and cannot be shut down for a model contest. We also had a helicopter TV crew to cover the event for an Adelaide TV channel. One of the model sailplanes was fitted with a video camera for some interesting flying shots, which were screened later.

Three models crashed badly during the contest. One was caught up on its own winch line. I believe the pilot dived to pick up airspeed when the winch was not giving enough power, and overtook the parachute. This then caught round the tail with the winch still running, and down it went. Another model crashed just before landing, possibly simply because of a stall, but the pilot was convinced he had a radio problem. The most avoidable accident was the DG 300 which, under negative 'g', threw its battery out through the cockpit canopy. The resulting vertical dive from high altitude was long and noisy enough to be agonising. This should remind everyone of the necessity to fix battery packs firmly in place.

In winch launching, taking off from the ground, we had a couple of incidents, fortunately not too serious, caused by the model's wing slipping underneath the running line at take off, or in one case, under the lines of another winch which was standing too close alongside. This kind of thing ought to be avoidable but it does happen. Be warned. Taking off from the ground, if the model is allowed to yaw and run off to the side as the launch begins, when the tension on the 'power' line lifts it off the ground the wing tip can then easily slip underneath and unless the launch is immediately terminated, the model starts climbing with the incoming line over the top. The line can cut deeply into the wing. Unless the power is cut instantly and the model landed straight ahead, the sailplane rolls over and crashes inverted from ten or twenty feet up.

We are thinking of using something like a croquet hoop to keep the incoming line closer to the ground in future, so that there will be less chance of a wing getting under it. It might in fact be better to have the model's wing overlapping the line before starting - then while the line might jump up and touch the underside, at least it would not get on top. However, the main thing is to keep the initial ground run straight, certainly ensuring that the towline is running in the right direction and is not caught round any grass tussocks, to pull the model off at some angle.

As for the results, in the vintage class I did it again! This time, though, the PWS placed only second in the scale fidelity scores and second also in the soaring, winning over all on aggregate. I was beaten for scale by Col Colyer's Golden Eagle and in soaring by Rob Goldman's Olympia 2B. My Kirby Kite was third in scale this time but didn't catch a single thermal, so came nowhere in the flying. Because of my long overseas trip I had not had a chance to fly either model since last April, so was pleased they didn't give any trouble.

The winner in the modern sailplanes class was a fine ASW 24 by Rob Goldman, but the scale judging part of the competition was again won by the superb Elfe S4 by John Gottschalk, which we also saw and admired last year. Mike O'Reilly won the soaring with his LS-3, but this kit model barely counted as 'scale' at all. The whole idea of this competition is to give equal weight in the scores to scale fidelity and soaring ability, so it is interesting to see how the two aspects finally work out.

The glass models, in the modern class, were very variable in accuracy and there was a lot of debate about why some kit manufacturers can't get even the basic outlines right. When people shell out hundreds of dollars for a scale kit, they are entitled to something a bit more faithful to the prototype than they often get. Perhaps some of the professionals should answer this criticism in *RCSD*. The accurate scale sailplanes fly every bit as well as the 'botched scale' and 'semi scale' kit types. There is no real difficulty in producing at least an accurate outline for the model builder to work with. Perhaps all our standards are being raised as we

become more aware of what is required for a scale sailplane contest, and the manufacturers will have to adjust to the market.

Scale judging this year was more stringent than last time, and I felt the scores were fairer all round. I doubt if I shall be able to win a third time with the PWS 101. I hope I shall have a new scale model for next year, but there's a lot of building to be done. ■

Ridge Writer

...by Wil Byers

RT. 4 Box 9544, W. Richland, Washington 99352; (509) 627-5224 (7:00 PM - 10:00 PM weekdays, after 9:00 AM weekends)

Not many R/C soaring pilots can brag about flying their model for eight hours in one continuous flight. Very few can boast about doing the same on a fifty foot slope. John Gunsaullus is one of those in the soaring fraternity who can.

John is an avid R/C pilot from the state of Florida. As you are surely aware, Florida is not known for an abundance of hills or mountains. Therefore, when John decided a few years back to obtain an 8 hour slope flight, on his goal of obtaining LSF level 5, he had to make due with what he had. As the saying goes, "Where there is a will, there is a way"! (I like that saying.) What John had was a slope of some fifty feet in height. Not exactly what one would think about when searching for a slope to get eight hours of continuous flying logged, but one which provided the needed lift, anyway.

Think about this feat, would-be slope flyers. Especially contemplate it, you pilots who reside in the heartland of America, better known as the flatlands to us mountain folk. Any small ridge or hill can provide slope lift!

In John's case, on February 25, 1984 he launched at 8:35 A.M. and landed at 4:37 P.M. The flight was flown with a model most don't associate with slope soaring, but rather with a good history of thermal duration flying, a Saratoga Windsong. Thus, this extended flight demonstrated how all forms of models can take advantage of slope lift, even from the smallest of ridges.

In his description of the flight, John tells of the ups and downs of this flight and how much challenge it was. Apparently, at times the model was scraping for lift and causing the pilot some anxiety, while at other times the model was able to work it's way to great height. It should be pointed out, the site he was using was a coastal one, so a great deal of the time the model was flying over water. However, when working thermals moving through the lift band the Windsong was able to move downwind and high over a ridge of trees and inland a bit. John's flight really expresses the challenge that can be involved in slope soaring, as well as the fun!

If any of you are interested in contacting John about this demanding flight, his address is 3521 Irish St. N., St. Petersburg, FL 33704; (813) 525-3207.

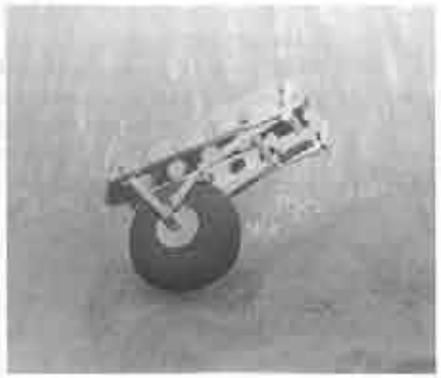
A Scale Retract

Are you interested in scale R/C gliders and soaring machines? If so you will most certainly be interested in the retract system Gene Cope has designed and built. Gene designed this wheel retract for his 1/4 scale Kestrel 17. It is as nearly exact scale as a model retract can get and is of absolutely fantastic craftsmanship. This is probably because it is built by one of the best scale builders in the United States. As some of you may know, Gene was the winner of static scale at the 1989 AMA national championships with his TG-8 WWII trainer model. So, as with any project Gene undertakes, this retract is very accurate in scale authenticity, is well-built, and is light and strong.

Gene's system has utilized 4130 seamless tubing of 1/4 inch outside diameter and .028 inch wall thickness for the main body of the retract. In addition, he has employed true silver soldiering techniques to weld these parts together. The unit also uses brass bearings for a smooth action during deployment and retraction. And finally, Gene has designed the system to over center lock both in the up and down positions; just like the real thing. It is surprisingly rugged for it's weight of only 5.8 ounces. Therefore, it will most certainly be able to support any abuse his Kestral 17 or any other model should be able to deliver.

Gene is currently designing and building a 1/3 scale system. This retract will be built of 5/16 inch outside diameter 4130 tubing, also. It will swing a 5 1/4 inch wheel. If his previous efforts are any indication, this scale retract system should be just as accurate in detail and just as rugged and light in weight.

By the way, Gene has indicated that he will be offering these systems for sale sometime in the fall of 1991 through myself at Mid-Columbia R/C. He also points out that they will be quite spendy at between $100 and $150, but for the real avid scale buff (which they are intended for) they will be worth every penny. Inquiries are welcome I'm sure. Contact Gene Cope at 109 North 42nd Ave., Yakima, Washington 98908; (509) 966-6506.



Gene Cope's nearly exact 1/4 scale retract. Made of tubular steel, it over-centers to lock both up and down. Gene is currently working on a 1/3 scale version for Gary McVay's 1/3 scale LS-3.

Ka3

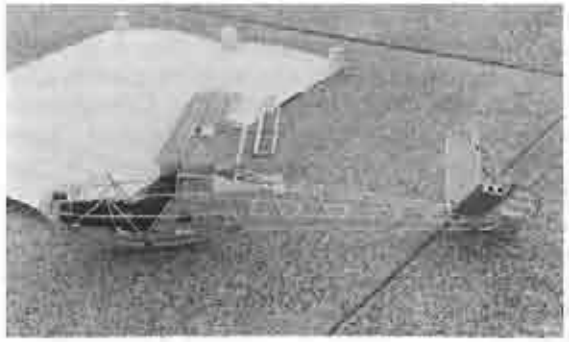
Another model now being built from a set of C.H. Charlesworth plans is a Ka3 owned by Gary McVay. Gary chose the Ka3 because of its nostalgic look, the fact it is a built up model, because it is one of the few vintage V-tail models, and most likely because he could buy a nice set of plans.

This model has a span of 2.5 meters and Gary says it should weigh approximately 4 to 4.5 pounds when finished. It utilizes cables to drive both the ailerons and the ruddevators. Interestingly, the wings each have a servo in them that is connected to the cables for the ailerons, making for very positive control. The landing skid the model uses is an authentic rubber shock absorbing system, while the spoilers it uses are hinged in a very unique but positive way. Note also, this model has some of the most accurate scale detailing available on the plans seen anywhere. And, the plans are very well drawn and documented.

Gary plans to finish the model in Solartex and then paint and detail it. It should be a very sporty 1/4 scale model since it is relatively light and has a relatively short span. The pilot, by the way, was made by Gene Cope's wife, Ida, and is very nicely done.

If you would like to get plans from Mr. Charlesworth, his address is: 41 Spring Road, Frome, Somerset BA11 2JN ENGLAND. If you need questions answered about Gary's model his address is 254 Greenview Dr., Richland, WA 99352. His phone number is (509) 627-4813.

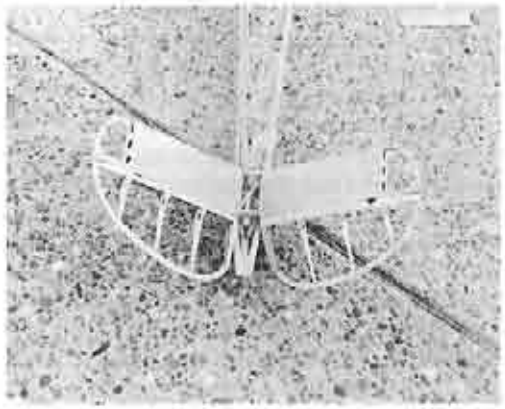
Also, Gary was able to obtain a very nice scale documentation package from



Cary McVay's 1/4 scale Ka-3 under construction. It is being built from C. H. Charlesworth's plans and features very accurate scale details. Some of the features are the wing, detachable V-tail, spoilers, ailerons and rubber-mounted skid.

Scale Model Research, 2334 Ticonderoga Way, Costa Mesa, CA 92626; (714) 979-8058.

ATTENTION RACE ENTHUSIAST!



For those of you who are interested in the happenings in the racing world here is some food for thought. The Europeans don't think of us, in the U.S.A., as SERIOUS racers. They are probably right, don't you think! So what can we do to change that idea and set the record straight? Maybe putting together a team of SERIOUS racers who will travel over the big water to give them some unbridled capitalistic competition. How about it racers? Let's put together a team of racers and go WIN the F3F Viking Cup.

F3F racing is the predominant style of racing hosted in Europe. It is racing against the clock. A clock that times how fast a model can complete ten legs of a 100 meter circuit. Points are awarded to a pilot based on a percentage of the fastest time per round. This is such that the fastest pilot would receive 1000 points while other pilots would receive a percentage of that total. Hey, it definitely isn't hard to do. However, it may be a bit harder to come home with all the marbles.

Fast models are typically those that can turn in completed course times of 35 to 30 seconds. This is to say, a winning model will have to turn in an average speed of 60 miles per hour. It may not sound that fast but one needs to realize this average speed will include two turns per complete circuit. So, the model must go even faster than that speed, down the straights. Its pilot must also be able to fly very straight legs, because the fastest distance between two points is a straight line. Also, the model will have to be strong, because it will be required to suffer under the G loads of carrying ballast and those fast, hard turns.

OK! Who is ready to support this effort? I've received one volunteer, already. Mr. Byron Blakeslee the soaring columnist for Model Aviation. He has communicated to me his intention to participate in any organization which makes as it's goal the task of challenging the Europeans for dominance of F3F. I will, in addition, create a data base of interested flyers and team mates who want to pursue this worthy goal. So, if you are interested in participating, in one form or fashion, drop me a letter or give me a call. We will attempt to put together a team of dedicated racers who can go to Europe and come home winners.

As Royal Robins once said, "You will never know how far you can go until you fall trying and you won't know where that is until you do." I think that sums it up very nicely. Now, let's form a group of dedicated racers and go have a whole bunch of fun sloping. ■

Wil Byers has been a model aviation enthusiast since he was about 5 years old. He enjoys building his models from scratch using the latest space age composites. In 1976, he became more actively involved, and is currently known not only for his flying abilities, but for his dedication in organizing major special slope events. His column, "Ridge Writer", is dedicated to all aspects of the slope, whether racing or flying for fun. He operates a cottage industry, Mid Columbia RC, and is a distributor for JR Radio. ■

Electrics

...by Ed Slegers

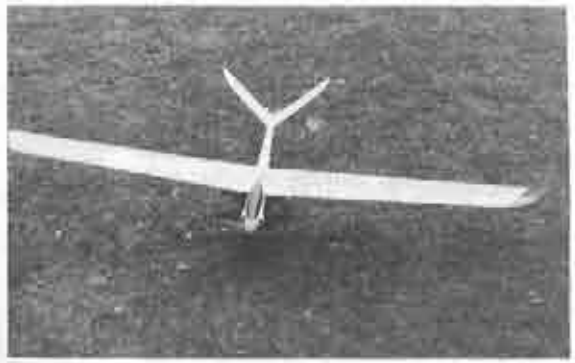
Route 15, Wharton, New Jersey 07885

I've been dealing with Northeast Sailplanes in Vermont for a number of years now. The president, Mr. Sal DeFrancisco, knowing that I've been converting to electric most of the sailplanes I've purchased from him, asked if I could bring five of the more popular models to the WRAM model exposition in New York for display in his booth. The interest was excellent.

Bob Sealy of Quality Fiberglass asked if I would send him a Lumina that I converted to electric for him to display in his booth at the Toledo Show in Ohio. The response there was also very good.

Every major model publication has a section devoted to electrics. Almost all the major distributors have pages of electric equipment in their catalogs. Some of the major manufacturers of sailplanes (Like Mark Allen and Brian Agnew of Flite Lite Composites, Scott Metze of Scott's Models, Mark Hambelton of DCU, Vern Hunt of Vern Hunt Models, Richard Jarel of J.A.D.E., Doug Hertzog of Douglas Aircraft, Frank Weston of Weston Aerodesigns, Bob Sealy of Quality Fiberglass) already have, are working on, or are thinking of producing electric sailplanes. The editor of this publication, Jerry Slates, recently had a survey on what you, the reader, would like to see more of in *RCSD*. Approximately 50% wanted more on electric. Electric events at the NATS is getting larger and clubs all over the nation are getting larger turnouts in electric events. Is electric here? You bet, and growing.

The days of the overweight, underpowered, poorly designed, Styrofoam ARF are gone. We now have available to us very high performance motors from Astro Flight and Keller, to name a couple. There are batteries in almost any shape



Swift 400

and size that will deliver tremendous power and peak detection chargers that will give us the most we can get out of these batteries. Speed controllers and on-off relays that are not much bigger than a stamp, micro servos and receivers, new prop designs, a whole new breed of airfoils, new lighter building techniques to save weight and much more all make high performance electric flight possible.

Falcon 600

Why electric flight? For some of us it's the challenge of coming up with something new and different. Because of the lack of noise it may be a way to save a field. But for the glider pilots, it's another way to get their pride and joy up to thermal heights. Not everyone has access to a field long enough to string out hundreds of feet of Hi-Start. Not everyone can afford or has the strength to haul around a $400, ninety-pound winch for a flight or two. This is where electric is handy. Put a battery or two on charge at night, next morning put your plane and transmitter in the car. Maybe you have an extra half hour before or after work. Just stop at the field, get your plane out, launch it, get in a flight or two and go home or go to work. No wasted time setting up your launching equipment. These are only a few of the advantages.

Unfortunately, one disadvantage I found is there were not many 7 cell high performance sailplanes available (7 cell being the easiest to work with). Because of this, I started looking at what sailplanes could be converted to electric. A few years, over 70 planes and 40 different motors later, I've come up with a group of some very fine performing sailplanes and some not so fine. Only a few are shown in the accompanying pictures. The Falcon 600 is a great multi-function plane, the Lumina is a great flying thermal plane, the Stinger does both well and the Swift 400 with a 7 cell FAI 05 is just pure speed.

Why not try electric? Most manufacturers sell fuselages separately. So, for the price of a fuselage and a few servos, you could swap the wing and tail group from one fuselage to another and fly both electric and non-electric with very little effort.

Some of the sailplanes I've converted to electric that perform well are: Falcon 600 (3 versions), Swift 400 (4 versions), Swift 800 ST, Stinger, Super Dragonfly, Chuperosa HLG, Chuperosa 2m (3 versions), Lumina, Tempest, Weasel LS1, Olympic II, Buzzard (2 versions).

Stinger

Planes that I'm working on that should be completed by the time you read this are: Accipiter TDX, Impulse, and Dixie.

Future projects as the planes become available from the manufacturers are Fun, Merlin, Vortex, a Twin Tempest and a Twin Impulse.

If enough of you show interest in conversions let *RCSD* know and I'll do an in-depth step-by-step of the most asked for conversions.

Just before I was going to send this article to *RCSD* I had a phone conversation with Mark Allen of Flite Lite composites. Mark is making a mold for an electric fuselage. He will offer a few different wing sizes and airfoils depending on the skill level of the buyer. The fuselage will be for an 05 size motor and 7 cell, for wings 60-70 inches. Other details were not available, yet. Keep a lookout for more information from Flite Lite.

The same day I talked to Mark, I also talked to Vern Hunt of Vern Hunt Models. He also has a prototype electric fuselage which he is going to send me for evaluation. It looks like his fuselage will hold a 05-.15 geared motor on 7-10 cells. This would make it suitable for up to a 100 inch sailplane. Also, look for more information on this; hopefully, in a few weeks.

As I said earlier, electric flight is really growing and will only get better as more people develop better products.

Most of the conversions took lots of time, energy and research. Without the help of the designers and manufacturers it would have been even more difficult. somehow, they always seem to find the time to discuss their planes. So, special thanks to Mark, Brian and Evelyn of Flite Lite, Scott of Scott's Models, Mark of DCU, Vern of Vern Hunt Models, and Richard of J.A.D.E. and Sal and Stan of NorthEast Sailplane Products for having the best selection of sailplanes, anywhere.

Happy Flying! ■

Lumina

Catapulting Sailplanes

A proposed new class of competition.

© Frank R. Deis
Pikes Peak Soaring Society
2680 Fairway Dr., Colorado Springs, Colorado 80909-1026

I plan to submit a rules proposal during the 1992/1993 rules' cycle establishing a catapult launching category for R/C sailplanes.

Therefore, I have started experimenting to determine specifically what the rules should say. I think it is time for some others to play with this idea also so that we can get a reasonable set of rule on the first attempt.

I think the objectives of a good rules proposal include: opening up new design and flying challenges, keeping the sport interesting, driving the development of new technologies and furthering our understanding of the sport in general. The result should be fun, exciting, and cheap. I think a catapult class satisfies most of these requirements. For the technicians out there, catapulting potentially increases the speed range of sailplanes to well beyond their terminal velocity. Achieving speeds this high while retaining the ability to soar will further increase the importance of low drag, high performance and stiff, light weight structures. If this sounds like an opportunity to apply the F3B technology more broadly, I think you are right.

Several considerations lead me to conclude that the time is about right for catapulting:

1. There are a number of good hand launched sailplane designs available and they should be good starting points for catapult designs.
2. Not everyone has the physical capability to throw a hand launched sailplane but almost anyone could use a catapult. Hence, more people could be competitive in this class than in hand launch.
3. The availability of composite building materials (fiberglass, foam core wings, carbon fiber, etc.) should make it possible to build sailplanes capable of surviving the speed range demanded by catapulting.
4. The availability of computer controlled transmitters provides the control capability required for dealing with the broad range of flight conditions.
5. The availability of micro servos and small battery packs keeps the weight of the airborne pack within the reasonable range for a one meter sized sailplane.
6. The SOARTECH Note 8 wind tunnel data should provide plenty of airfoil data with which to start.
7. F3B technology is applicable to catapult designs. Because the sailplanes are smaller, the price should be much more reasonable and we avoid the complexities of F3B competition by staying with traditional AMA events.
8. There appears to be a growing need for a launching device compatible with very small fields.

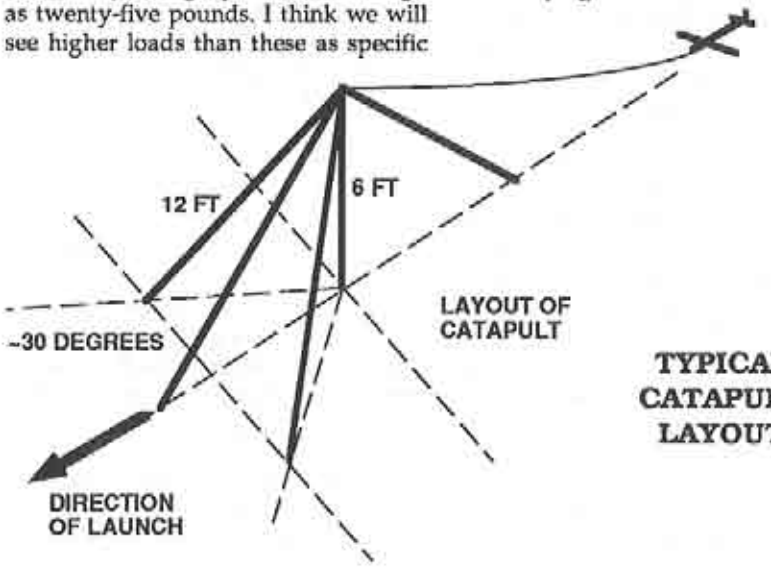
So, all the pieces are in place.

I have been experimenting with a Top Flight Talon as a starting point for a catapult sailplane. I did not do much research. I just picked something I thought was the right size and weight. So far it is working well. A true catapult design would use a different airfoil and have reduced drag. It must have much stiffer tail surfaces to preclude flutter and subsequent destruction of the model when launched on a "super" catapult.

Safety is a major concern with all model aircraft and catapulting brings some unique concerns. I envision an approach where the contest director provides the mounting post for the catapult and the contestant provides the catapult itself. (The catapult and the sailplane must be closely matched and this approach is the obvious way to accommodate the requirement.) I use a six foot and one inch long piece of 3/4 inch diameter conduit for the pole and four, twelve foot lengths of light weight chain to hold it upright. *(See photo # 1.)* Three of the chains go forward to counteract the pull of the catapult and one goes backward to stabilize the pole. *(See the diagram and photo #2.)* The chains are hooked to the pole with 3/16 I-bolts. The other end of each chain is attached to a 3/4 inch washer through a small drilled hole. Four, 12 inch long spikes are driven through the washers and into the ground to anchor the pole in place. I drive a fifth spike about 8 inches into the ground and slide the conduit over it to hold the base of the pole firmly in position. I have invested about $15.00 in materials and 30 minutes in construction. It takes about 5 minutes for one person to set the pole up by themselves. A third I-bolt located exactly 6 feet from the ground is fitted with a quick link to allow changing the catapult easily with no risk that it will come loose accidentally. This pole design appears sufficiently strong. I pull tested it as high as twenty-five pounds. I think we will see higher loads than these as specific catapult sailplane designs appear, so this is something we will have to keep an eye on. It is very important that the pole not come lose and fly back at the pilot when stretching the catapult, therefore, the use of pretty strong materials.

For the catapult itself, I am using twenty-five feet of medium heavy high start rubber and stretching it 1.5 to 2.0 times its relaxed length. (15 feet of rubber seems a little short and 25 feet seems a little long. Much more experimenting is required. For rules' purposes I am thinking about a maximum length of 10 meters.) I would stretch the catapult further but I am concerned that the tail surfaces will flutter and rip off. This has already happened to a V-Tail Talon my son built when he catapulted it into a high wind. After I stiffen the tail, I will go for more powerful launches. As it is, I estimate that I get 100 to 150 of launch altitude. Part of the fun of this class will be cleaning up the designs and going for some serious altitude. Right now it is not as good as the winch, comparable to a high start and much better than a hand launch. Catapulting seems to fit in the lower middle of the launch spectrum.

I am flying the Talon with my Vision



TYPICAL CATAPULT LAYOUT

transmitter, two aileron servos, one elevator servo and a 250ma battery pack. This gives me flaps, camber control, automatic elevator trim mixing with flaps and camber, differential ailerons, dual rates on the elevator and ailerons and special launch pre-set trim settings on the flight mode switch. I use them all. The only modifications made to the Talon were locating the tow hook well forward of the normal position (*See the diagram and photo #3.*) and adding some sandpaper to the rear of the fuselage to improve the grip. The objective of catapulting is to build up a great deal of speed (not altitude) while on the catapult. Using the normal hook position results in a dangerous looping tendency. I normally trim my sailplanes to near neutral stability so just a touch of down trim gives a fast flat launch. *(See photos 5,6 and 7.)* The Talon reaches peak velocity as it passes about 10 feet above the pole and proceeds into a nice stable zoom climb. (Victory roll on the way up if you like.) I reflex the flaps to reduce the drag for launch – a difference from winching and the flaps are handy for spot landings. I have had lots of fun so far. The Talon fits easily in the car and it is pretty squirrelly to fly so it is convenient and it keeps you on your toes.

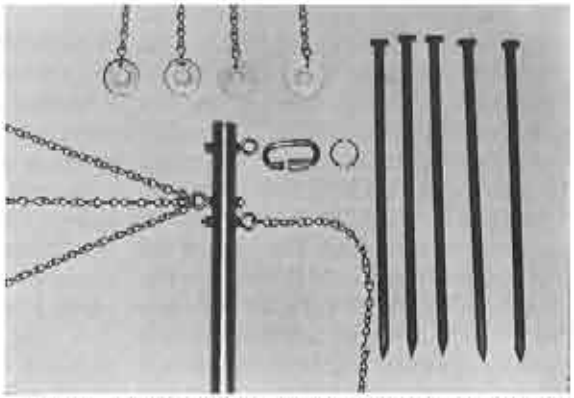


Photo 1. This is a picture of all the hardware associated with the catapult pole. The chains are each 12 ft. long. One end is attached to the pole and the other to the washers as shown.

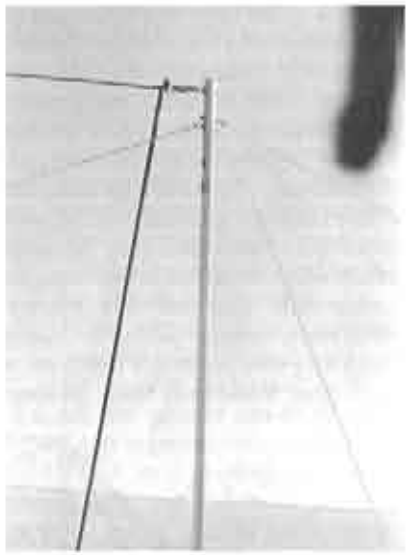


Photo 2. View of the top of the catapult pole.

Locating the tow hook is pretty tricky so be sure to use a movable hook. *(See the diagram.)* Slowly bring the sailplane up to full launch speed so that you don't get any surprises. Use several launch trials slowly increasing the catapult tension and adjusting the tow hook position as you go. If the hook is too far back, the sailplane can loop around and hit you in the back. If it is too far forward, the sailplane can be catapulted into the pole! Neither prospect is appealing.

I believe the ideal catapult sailplane will be very light and very stiff foam construction similar to the F3B designs but much lighter basic construction. I expect the wing span to be about a meter and the aspect ratio to be lower than the Talon's. The weight will be an especially interesting parameter. The ballistic coefficient should be high – you can catapult

LOCATION OF THE TOW HOOK IS VERY DIFFERENT FROM THAT USED FOR WINCHING

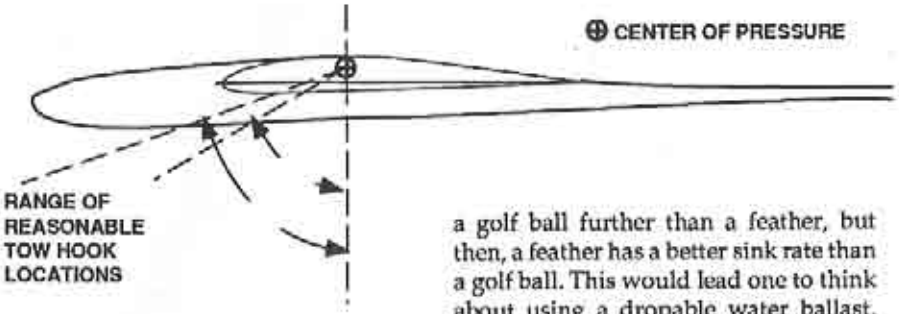
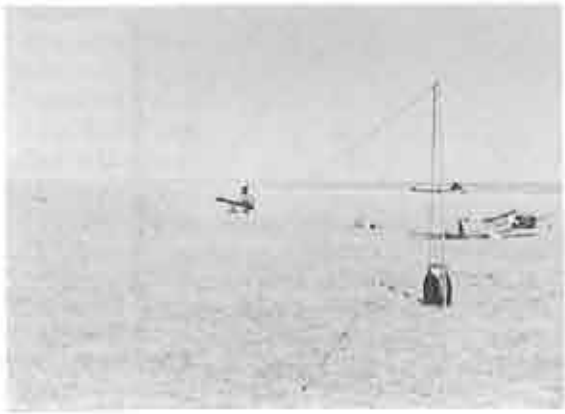


Photo 3. Frank Deis holding the Talon ready for launch. Note the forward location of the tow hook. I glued some 400 grit sandpaper to the rear of the fuselage to keep the Talon from slipping out of my grip.

Photo 4. This gives you some idea of what a catapult launch looks like prior to release.



a golf ball further than a feather, but then, a feather has a better sink rate than a golf ball. This would lead one to think about using a dropable water ballast. The extra weight would be retained through the launch phase and then expelled for the soaring portion of the flight. All in all, I think there are some interesting possibilities here. (How about folding wings -- like those used on dime store gliders twenty years ago – that unfold when the glider slows down?)

Safety is a primary concern so common sense is important. I have had no problems catapulting the Talon, so far. It has been surprisingly well behaved! As catapult speeds increase, however, I expect things to become less predictable. Only experience will tell. In the meantime, keep the catapult away from people and obstructions. Make sure everyone is watching the launches so they can take cover if something strange happens. Gradually increase the launch speed

Photo 5. About 3 seconds after a low power launch. The Talon is still accelerating.

making only small trim changes as you go. I think it is very important that we be extra conscious about safety as we develop this class of competition. Please don't do anything foolish that might give

Photo 6. About 4 seconds after release. Note that the high-start is full relaxed and that it fell away from the Talon without the need of a parachute or streamer.

the class a bad name before we can get it off the ground. I am very interested to hear about your ideas and experiences so don't hesitate to write.

BE CAREFUL -- HAVE FUN! ■

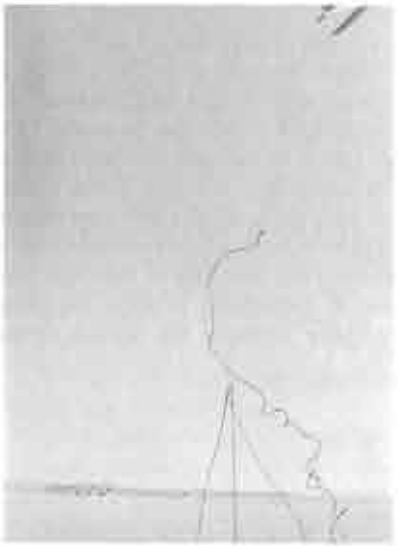


Photo 7. 4 to 5 seconds after launch. Note that the high-start tubing keeps flying around so you don't want to be near the pole. Also note the climb angle on the Talon. It is going very fast and only climbing at 15° - 20° as it passes over the pole.

Bob McGowan Wins Masters of Soaring-1991

...by Don McColgan,
Claremont, California

The 1991 Masters of Soaring competition opened on Saturday, March 16 at the Silent Wings Soaring Association (SWSA) field in Covina, Ca.

Twenty-nine top glider fliers gathered under a clear blue rain-scrubbed sky to participate in ten rounds of tough competition. To participate in this contest a flier must have achieved LSF level V or level IV and all contest points for level V, hold a national record, or have won a major two day national or regional contest.

Saturday's seven rounds started with a three minute precision duration warm up followed by a 4, 7, and 10 minute triathalon. Rounds 5, 6, and 7 were 5, 7, and 3 minute precision rounds with steep scoring curves. All landings were runway type adding a maximum of only 40 points. These rules made the flying time of paramount importance. The lift was vicious when found, and so was the sink when it wasn't.

Round one ended with eight perfect scores and an eight place tie for ninth. At

Equipment Preferences — Masters of Soaring — 1991

Contestant	Radio	Airplane
Billman, Todd	Airtronics Vision	Vector
Chastler, Frank	Airtronics Vision	Legend
Clasen, Steve	Airtronics Vision	Original
Classen, Brad	Airtronics 7SP	Falcon 880
Clerx, Ben	Airtronics Vision	Falcon 880
Douglas, Ian	ACE Micropro	118" Gemini
Edburg, Don	Airtronics ATRAX	Cuttro
Fink, Dan	Airtronics Vision	LGM Chetep
Garner, Rich	ACE	Donzel
George, Chris	Airtronics Vision	Legend
George, Stephan	Airtronics Vision	112" Legend
Harris, Phil	?	?
Holder, Ed	Airtronics Vision	Legend
Jolly, Larry	Airtronics Vangard	Pantera
Kendrick, Keith	Airtronics 7SP	117" Cumic
Koplan, Terry	Futaba Conquest	Viking
Martin, Tony	Airtronics Vision	Original 2M
McCarthy, James	Airtronics Vision	FF42
McGowan, Bob	Airtronics Vision	Falcon 800
Moran, Myles	Airtronics Vision	Falcon 880
Nibley, Bill	Futaba Conquest	Paragon
Perkins, Daryl	Airtronics Vision	Eagle
Regan, Mike	Airtronics Vialon	Falcon 880
Renaud, Tim	Infinity	Legend
Russell, Pete	Airtronics 7SP	Falcon 880
Spencer, Randy	Airtronics Vision	Falcon 880
Tatum, Dan	Airtronics 7SP	Mod. Paragon
Weaver, Fred	Airtronics Vision	Legend
Wurts, Joe	Airtronics Vision	Falcon/3021 Airfoil

Bob McGowan
A Profile of a Winner

Robert McGowan was born in 1962, has two sisters, and is the son of Ray and Texie McGowan. (Ray is also a sailplane enthusiast.) Bob is married and has a daughter, Robin, and a new son, Allen.

He started flying "U" Control in his youth, P51 profile with throttle control, and built a Monocoupe which is still in good shape today. He flew A1 towline glider and he used to fly his Dad's Super Tiger powered "A" Ray, but he found that he had more fun with it when the engine stopped in flight so that he could thermal it, instead! His first sailplane was a used ASW-17 from which he learned the principles of soaring. His planes have included: Centurion Soarcraft, Windfree, Drifter II, Paragon, original designs, modified kits, Griffin (slope plane), hand launchers (Zephyr, Falcon HLG, etc.).

Bob won his first contest at the South Bay Soaring Society flying a Centurion Soarcraft and has been a top contender since. Some highlights of his wins over the years are: Winner of Unlimited and 2 Meter Senior events at '79 NATS (just seconds behind the Open winner), winner at Visalia (over 150 contestants), twice winner of Western United States Championships, season's champion of the Northern California Soaring League (several times), winner of the 1989 LSF champs, Hi Johnson award (highest score) at 1989 NATS, team member winner at Visalia meet (twice), and he is the 1990 and 1991 Master's Champion. Of course, he's won more than his share at the local contests, as well. He has also attained LSF Level V.

He built an ACE servo in high school, went on to an electronics education, and is now a field representative of Precision Echo Company, which is the reason that he is missing some of the meets lately due to travel. He likes thermal events best, but has flown some FAI flying his Dad's noseless designs 10 years ago, and placed 12th in the U.S. finals. Slope soaring has been mostly a sport event for him.

What is he flying, now? Currently, his stable of contest ships are the Falcon 880 and 800 with a Falcon 600 and Airtronics Legend in the process of completion. He is a firm believer of practice, flying the same airplane all the time and getting to know its every quirk. For radio, he uses an Airtronics Vision and is sold on it. He flies mode 1 for more accurate control.

One thing that Bob is noted for is sharing his knowledge with others and helping them to be a better flier. He has written articles for various newsletters on tips to improve one's flying. We need more people like him. ■

the close of round seven on Saturday Joe Wurts led with 5950.8 points followed by last year's winner Bob McGowan with 5923.5 and Visalia's own Steve George with 5922. The top nine fliers were all within 127 points of each other at this point.

The Sunday opener was another three minute precision with runway landing. Round 9 gave a choice of 3, 5, or 7 minutes with weighted scoring of 700/300, 800/200 or 900/100 respectively. A standard landing tape was now introduced to put some pressure on landing skills. The last round was a five minute precision. As the last two rounds came up so did the gusty south wind which made the now very important landing points even harder to earn. McGowan and his Falcon 800 and Wurts with his Falcon derivative were neck and neck but Bob prevailed with a better landing in round 10. One throw-out round was allowed. Bob McGowan had to throw away a 971 round. The top six fliers were separated by less than 100 points after ten rounds. There were a total of 33 perfect rounds flown in this contest!

The most popular airplane was the Falcon (8) followed by the Airtronics Legend (6). The most popular brand of transmitter was Airtronics (23), 17 of which were Visions. Lee Renaud of Airtronics generously donated a Vanguard VG6DR radio to be raffled off to the SWSA folks who hosted the contest and provided free coffee and donuts.

Trophies were awarded to the top five places: 1 Bob McGowan, 2 Joe Wurts, 3 Steve George, 4 Chris George, and 5 Ben Clerx. These gentlemen all demonstrated superb flying skills and are deserving of the title, "Masters of Soaring". ■

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NEW PRODUCTS

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The Alcyone

...from NorthEast Sailplane Products

NorthEast Sailplane Products is pleased to announce availability of the latest design from Culpepper Models: The Alcyone. The Alcyone (pronounced "Ahl-see-yone") is a 121" competition thermal plane that is based on the highly successful "Chuperosa" design, a 1991 NATS champion.

Alcyone uses a combination of the latest and best airfoils available to the model soaring enthusiast: the Selig 7032 and 7037. The wing has the SD7032 at the root, and gradually transitions to the 7037 at the first break. This combination results in an extremely good glide that, when coupled with the light (9.6 oz./sq. ft.) wing loading results in superb performance. Also, the wing sports polyhedral tiplets which increase flight stability for easier handling and solid thermal turns.

The Alcyone is unique in that it offers the builder a high performance sailplane at a reasonable cost due to its excellent design. This complete kit features an easy-to-build balsa/spruce/plywood fuse, foam core wings, outstanding plans and instructions, and an extensive hardware package. Controls include ailerons, flaps, elevator, and rudder. Also, the airplane requires only three servos for surface control, unlike most planes in this class which require six. This design consideration further reduces to the builder's total expense. Also, the airfoil camber distribution allows 80-90% of the speed range of full trailing edge camber without the expense of a four-servo wing. Due to its very clean lines and strong spar construction, the Alcyone tows extremely well resulting in high launches off the winch or hi-start.

Alcyone is an excellent choice for the intermediate builder/flier. For those seeking to enter the world of high performance competition kits but are wary of the cost, the Alcyone provides the perfect solution.

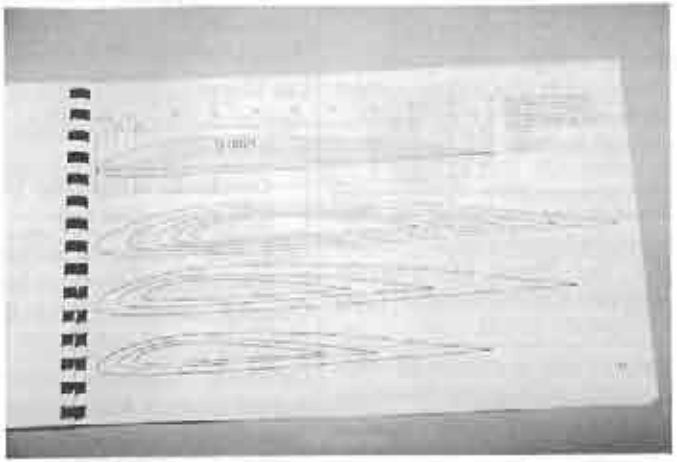
Alcyone is available exclusively from NorthEast Sailplane Products (802) 658-9482 for $149.95.

Airfoils to Go

...from Soaring Stuff

Airfoils to Go is a compendium of ready-to-use airfoil templates for radio control sailplanes. This book is dedicated to the R/C sailplane flier who wants to design and scratch build his own sailplane. With the developments that have been made in composite model construction, it is now possible to construct a sailplane wing with an airfoil that closely approximates the theoretical wind tunnel tests. Throughout this book, there is a shaded "master" drawing of each airfoil. On the master drawing, a solid "chord line" is shown from the leading edge to the trailing edge. There is also a dashed line that shows the "camber line". There is a note included with each airfoil to explain where they are best used. The thickness and camber percentages are also shown.

Airfoils to Go is available from Soaring Stuff, 9140 Guadalupe Trail N.W., Albuquerque, New Mexico 87114; (505) 898-1129.



R/C Soaring Resources

Do you hold seminars and workshops? Would you like to be included as a contact to answer questions on soaring sites or contests in your area? If so, please contact *RCSD*. Our address and telephone numbers are on page 1.

Seminars & Workshops

Free instruction for beginners on construction and flight techniques. Friday & week-ends (Excluding contest days) Bob Pairman, 3274 Kathleen St., San Jose, California, 95124; (408) 377-2115

Free instruction for beginners on construction and flight techniques. Sunday - Thursday. Bob Welch, 1247B Manet Drive, Sunnyvale, California 94087; (408) 749-1279

Fall & Winter 1 day seminars on composite construction techniques. Free with purchase of Weston Aerodesign plan set ($35.00) or kit. Frank Weston, 944 Placid Ct., Arnold, Maryland 21012; (301) 757-5199

Reference Material

Madison Area Radio Control Society (M.A.R.C.S.) *National Sailplane Symposium Proceedings*, 2 day conference, on the subject and direction of soaring. 1983 for $9.00, 1984 for $9.00, 1985 for $11.00, 1986 for $10.00, 1987 for $10.00, 1988 for $11.00, 1989 for $12.00. Third class postage included. For 1st class include additional $1.50 per issue. (U.S. funds) Walt Seaborg, 1517 Forest Glen Road, Oregon, WI. 53575

BBS

BBS: Slope SOAR, Southern California; (213) 866-0924, 8-N-1

BBS: South Bay Soaring Society, Northern California; (408) 281-4895, 8-N-1

Reference listings of *RCSD* articles & advertisers from January, 1984. Database files from a free 24 hour a day BBS. 8-N-1

Bear's Cave, (414) 727-1605, Neenah, Wisconsin, U.S.A., System Operator: Andrew Meyer

Reference listing is updated by Lee Murray. If unable to access BBS, disks may be obtained from Lee. Disks: $10 in IBM PC/PS-2 (Text or MS-Works Database), MacIntosh (Test File), Apple II (Appleworks 2.0) formats.

Lee Murray, 1300 Bay Ridge Road, Appleton, Wisconsin, 54915 U.S.A.; (414) 731-4848

Contacts & Special Interest Groups

California - California Slope Racers, Rich Beardsley (Director), 2401 Country Lane, Santa Maria, California 93455 U.S.A., (805) 934-3191

California - Northern California Soaring League, Mike Clancy (President), 2018 El Dorado Ct., Novato, California 94947 U.S.A., (415) 897-2917

Canada - Southern Ontario Glider Group, "Wings" Program, dedicated instructors, Fred Freeman (416) 627-9090 or David Woodhouse (519) 821-4346

Eastern U.S.A. - Eastern Soaring League (Covers North Eastern U.S.A.), Frank Weston (Editor), 944 Placid Court, Arnold, Maryland 21012 U.S.A., (301) 757-5199

Texas - Texas Soaring Conference (Texas, Oklahoma, New Mexico, Louisiana, Arkansas), Gordon Jones (Contact), 214 Sunflower Drive, Garland, Texas 75041 U.S.A., (214) 840-8116

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F3B/USA

The Newsletter for the **Multi-Task Soaring Enthusiast**

Subscriptions: $12 / Year / Six Issues

Write: F3B/USA
Byron Blakeslee
3134 Winnebago Drive
Sedalia, CO 80135

(303) 688-9572

You are invited to join the
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- NSS OFFICERS ARE FROM ALL 11 DISTRICTS

For Information, Contact:
NSS Secretary/Treasurer
Robert Massmann
282 Jodie Lane
Wilmington, OH 45177

LSF

The League of Silent Flight (LSF) is an international fraternity of RC Soaring pilots who have earned the right to become members by achieving specific goals in soaring flight. There are no dues. Once you qualify for membership you are in for life.

The LSF program consists of five "Achievement Levels". These levels contain specific soaring tasks to be completed prior to advancement to the next level.

League of Silent Flight
P.O. Box 517 • Winfield, Illinois 60190

F3H INTERNATIONAL

Newsletter on Cross Country (X/C) Flying

Myles Moran, 10428 Oso Ave., Chatsworth, California 91311 U.S.A.; (818) 882-4687

(The first newsletter on X/C Flying, "worldwide (?)", arrived recently. It contains 4 8 1/2 X 11 pages. Myles hopes to publish the newsletter 3 - 4 times a year. He is looking for interested parties to contact him.)

The 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

Definitions

ARF Almost Ready to Fly
R-T-F Ready to Fly
SMTS Sportsman Multi-Task Soaring Event

Several of you asked what these terms meant. We'll try to put some of the more common ones in the following issues. If the list becomes too large, we'll provide it separate from each monthly issue. Your questions on the FAI will take awhile.

Schedule of Special Events

Date	Event	Location	Contact
June 8	Thermal	Maple City, MI	Troy Lawicki (616) 276-9696
June 8-9	Unlimited	Little Rock, AR	R. Cartwright (501) 568-2905
June 8-9	1991 AMA National Ralley (Wright Patterson Air Force Base)	Dayton, OH	
June 8-9	Western Soaring Championships	Farmington, CA (209) 878-3462 Day	A. Stonner 878-3078 Eve
June 8-9	Invitational X-Country Great Race XV	Oswego, IL	Lee Sheets (708) 748-8934
June 9	Summer Sailplane Classic	Tustin, MI	Mike Stump (616) 775-7445
June 9	Triathalon	Dallas, TX	Gordon Jones (214) 840-8116
June 15	Duration 2M & Open	San Antonio, TX	Tom Meeks (512) 590-3139
June 15-16	SlopeGlide '91 F3F, Scale, X/C	Rivington Pike England	Tom Speakman (USA - Call RCSD)
June 16	Hand Launch	Dallas, TX	Gordon Jones (214) 840-8116
June 16	F3B Fund-raiser - Thermal	Pasadena, CA Brookside Park	Pasadena Soaring Soc.
June 22-23	NSS Soar-In 2 Meter & Unlimited	Madison, WI	A. Scidmore (608) 271-5500
June 22-23	2 Meter & Unlimited	Gainesville, FL	E. Wilding (904) 375-0918
June 23	2 Meter Unlimited	Novato, CA	M. Clancy (415) 897-2914
June 29	MASS Nationals Soaring Warm-Up	Memphis, TN	Tony DiGirolamo (901) 756-5528
June 29	Thermal	Dayton, OH	Ken Allen (513) 236-6849
June 30	Open Man-on-Man	Dayton, OH	Jerry Shape (513) 843-5085
July 5-6	F3B - 1st Annual SW Classic	McIntosh, NM (505) 848-0939 (wk)	Phil Renaud (505) 271-8720 (h)
July 6-7	Unlimited Thermal	Seattle, WA	W. Volhard (206) 774-8840
July 13	Slope Race	L.A. Area, CA	Rich Beardsley (805) 934-3191
July 13-21	AMA NATS	Vincennes, IN	Gil Gauger
July 14	Handlaunch	Dallas, TX	Gordon Jones (214) 840-8116
July 14	10 Minute Precision	Houston, TX	Julian Tamez (703) 540-3944
July 20	ARE Brown Memorial	San Antonio, TX	Tom Meeks (512) 590-3139
July 27-28	Western MI Sailplane Championships	Nunica, MI	Cal Posthuma (616) 677-5718
July 28	Hand Launch Man-on-Man	Dayton, OH	Ken Allen (513) 236-6849
Aug. 3-4	Dual Soar-In	Grand Ledge, MI	Larry Storie (517) 626-2290

Aug. 10	Thermal Festival	Maple City, MI	Jim Johnston
Aug. 10	Slope Race	Davenport, CA	Rich Beardsley (805) 934-3191
Aug. 10-11	Unlimited Thermal	Seattle, WA	S. Pugh (206) 874-2429
Aug. 10-11	2 Meter & Unlimited	Lakeland, FL	F. Stronmer (813) 938-6520
Aug. 11	Multi-Task	Dallas, TX	Gordon Jones (214) 840-8116
Aug. 17	Canyon Lake Thermal	Austin, TX	Tom Meeks (512) 590-3139
Aug. 17-18	OHIO Cup Man-on-Man	Dayton, OH	K. Davidson (513) 864-1774
Aug. 18	Canyon Lake Slope	Austin, TX	Tom Meeks (512) 590-3139
Aug. 18	Hand Launch	Dallas, TX	Gordon Jones (214) 840-8116
Aug. 24-9/2	F3B World Championships	Holland	Don Edberg
Aug. 24-25	2 Meter (Only) Champs - Man-On-Man	Nunica, MI	Cal Posthuma (616) 677-5718
Aug. 30-9/1	2 Meter & Unlimited	Ocala, FL	K. Goodwin (904) 528-3744
Aug. 31	Northern MI Sailplane Championships	Tustin, MI	Mike Stump (616) 775-7445
Aug. 31-9/1	Champs. 2M +	Farragut State Park, ID (Athol)	R. Kirkpatrick (509) 489-5841
Sept. 14	Slope Race	L.A. Area, CA	Rich Beardsley (805) 934-3191
Sept. 14-15	TNT 2 Meter & Open	San Antonio, TX	A. Coher (512) 599-4031
Sept. 15	Distance	Houston, TX	Julian Tamez (703) 540-3944
Sept. 15	F3b Speed Trials	Denver, CO	John Wyss (303) 494-0363
Sept. 22	Hand Launch	Dallas, TX	Gordon Jones (214) 840-8116
Sept. 24	2 Meter & Unlimited		L. Montgomery (407) 793-8179
Sept. 29	Old Timers	Dallas, TX	Gordon Jones (214) 840-8116
Oct. 5-6	Visalia Fall Soaring Festival	Visalia, CA	Ed Hipp (209) 625-2352
Oct. 5-6	2 Meter & Unlimited	Lakeland, FL	Bob Wargo (813) 938-6582
Oct. 6	SMT Contest	Denver, CO	Lenny Keer (303) 737-2165
Oct. 12	Slope Race California State Champs	Santa Maria, CA	Rich Beardsley (805) 934-3191
Oct. 13	Dual Elimination	Dallas, TX	Gordon Jones (214) 840-8116
Oct. 19	Duration 2M & Open	San Antonio, TX	Tom Meeks (512) 590-3139
Oct. 20	Hand Launch	Dallas, TX	Gordon Jones (214) 840-8116

The Reader Survey

The response to the survey was overwhelming. We received 460 which represents approximately 1/3 of the readership. Of those, approximately 1/2 contained notes, thoughts, ideas or asked questions. We deeply appreciate the thought that was given to filling out the form, and for the insight provided into each of the categories or subjects.

All the notes have been typed and divided into 2 categories. The one category contains a list of specific subjects, while the second category includes questions, ideas or information that we felt would be appropriate to share. We didn't attempt to respond to everything but, rather, felt it would provide a flavor for the readership and provide some ideas for future articles.

R/C Soaring Digest will, of course, stay "unique". This is not to say that it won't change; we already see some ways to make it better and build off of those ideas we extracted from the surveys. The key points are:

- Additional emphasis will be placed on the subject of sailplane construction and flying techniques for all categories.
- Current contest coverage will be modified to include learnings or other educational points.
- We'll add a column on Electrics.

We thought that you would like to see the actual percentages for the sailplane and contest categories (areas of interest). Multiply the % times 1400 to determine the actual projected number.

Special Interest Groups

Information and specifics on rules we usually leave to the special interest groups. For those of you interested in F3B/SMTS, there is the *F3B/USA Newsletter*. Byron Blakeslee, the editor, is also the soaring editor for *Model Aviation* magazine. There are currently 115 members. Since the survey results indicate 42% interest in this area, some of you might want to give this newsletter a try. At 50%, those of you interested in Cross-Country might want to contact Myles Moran. Both Byron's address and Myles' are shown in the "Special Interest Groups" section.

Interesting Points

- All the information was tallied by state and country and the percentages were roughly the same across the U.S.A. No one area appeared to cause any one set of numbers to be significantly different.
- 1315 tallies were made to the sailplane categories. With 460 surveys, each reader checked an average of 3 categories. The written responses supported maintaining a balance between all the sailplane categories. "Basic" contest coverage was not supported.
- 32% do not attend contests.

Notes & Things

(S) is for information off the survey and (R) is response.

Thermal	96%	Slope	63%	Scale	47%
Flying Wing	36%	Electric	43%	Aero-tow	33%
F3B	42%	F3F	17%	F3E	19%
F3J	28%	SMTS	32%	Hand Launch	47%
Thermal/2M	76%	Scale	41%	Slope	47%
X-Country	50%				

Slope Sites & Area Flying Sites

(S) Great soaring sites of various parts of U.S. A list of other members. It would be nice to talk to others in your area. *RCSD* is GREAT! Georgia

(R) Your statement is shared by readers asking the same question from California, Hawaii, Maryland, Oregon, Pennsylvania, Utah, Wisconsin and England. So, if anyone out there has information on slope or area flying sites that they're willing to share, please send the information to either Wil Byers or Jerry Slates. The *RCSD* list contains 1400 names and prints like a book every month. We'll have to come up with some ideas on this one. In the meanwhile, if you drop us a line, we'll try to put you in touch with others in your area.

Contest Announcements

(S) Why aren't there any contest announcements or coverage from the southeast? Are we too lazy to send this stuff in or are all of your readers concentrated in the west coast? I really enjoy your 'zine so far. Alabama

(R) Perhaps it is just a matter of not knowing. Several of the C.D.s and clubs keep us posted by dropping their lists in the mail or faxing them in.

Contest Coverage

(S) Only to the point of providing information about aircraft and/or equipment that is new, unique or that advances inf. about this hobby/sport. There's already too much ho hum wasted space in other publications. Iowa

(R) Your notion on contests is shared by almost every reader that wrote notes on the survey forms. So, we've modified the author guidelines, somewhat, to focus in on providing information or to describe learnings. The types of information should include: contest winners/plane/radio/function/airfoil and any other specifics that are available.

Electrics

(S) How about a little on Electrics? Howard Short, California

(S) My only suggestion would be to try and get some electric info., especially for beginners. I really believe electric powered gliders are the "coming thing". Colorado

(S) I really enjoy the new and bigger format of the magazine. You folks are doing a great job. I would like to see more on the subject of electrics. Thanks, Charles McCullough, Kansas

(S) Lower tech type 2 meter electric. Conversion to electric. New Jersey

(S) The present format pleases me very much. Keep up the good work. Electric powered sailplanes do not interest me very much though. If I want a prop, I'll build an ugly stick and carve arcs in the sky with a nitro burning .60 beating the air and ear drums as it passes overhead. Illinois

(R) Well, approximately 43% of you have expressed an interest in electrics. So, this month Ed Slegers has written what could be the start of a new column. Ed is considered an expert on the subject and, if you want him to continue, we suggest you write to him or contact *RCSD* right away! He's planning on sharing how he goes about the conversions. So, this is a how-to — no rules, just basics.

And Everything Else

(S) I live out in the boonies, kind of, so *RCSD* is almost my only exposure with the rest of you fanatics out there. Great magazine; I can't get enough to read about it all. Also, don't get to fly often so vicarious thrills are important. (I always read the flying portion of a construction article first and last.) I have to sublimate by building a lot. (Anybody want some help?) I love my Lovesong. What a fun plane to build. Are there any other planes out there that are fun to build or do

I have to buy another Dodgson? What are Mark Allen's like? MAGIC sounds exciting and innovative. Let's go for portability and durability to help introduce youngsters. 3-D is where it's at. Thanks. Greg Driver, P.O. Box 777, Jerome, Arizona 86331

(R) Thanks, Greg. We have included your address should anyone wish to contact you regarding your question on building. We leave the questions on what to build up to you and will continue to try to provide information on the different planes.

(S) More on kits that are available that the majority of the people fly. Most people I talked to would like to see more on the kits that your weekend flier is using instead of all this high tech stuff that most of us can't afford to fly. Arizona

(R) We'll see what we can do. What is the week-end flier flying in your area? Please drop us a line with some details and photos if you have time.

(S) I must say I'm impressed with both the speed, accuracy and warmth of your reply as well as with how informative *R/C Soaring Digest* is. I hope you continue to remain this effective! I also hope that the Table of Contents, only found in the April issue, is the beginning of something new as it is immensely helpful. I do have a suggestion: as a newcomer to the sport I found many terms and abbreviations which I did not understand. I suspect that even people in the sport may forget, or may not know all the acronyms used with such abandon. A glossary of such terms, abbreviations and acronyms would go a long way to making some of the articles more understandable. This could be made a regular part of your publication on a periodic basis (monthly, quarterly, semi-annually) and could also be added to the *RCSD* database. Thanks for a great publication! Sincerely, Maynard Vitalis, Dublin, California

(R) Thank-you. Those are excellent suggestions and, we've already begun!

(S) Is anyone out there (besides myself) interested in doing flight performance analysis? As in Telemetry Systems? Tom Paden, 100N Whisman Road #353, Mountain View, California 94043

(R) We have included your address, Tom, so that if anyone is interested, they can contact you.

(S) I have flown hang gliders for the past 16 years and full-size sailplanes for 6 years. I subscribe to RCSD for an interesting cross pollination of ideas. Very little design information is printed on soaring or hang gliding. I enjoy Martin Simon's articles very much. The construction articles are also excellent. Thanks, Dan Armstrong, California

(R) On the subject of hang gliding, you're probably aware of Dan Poynter's books as he is an authority on the subject. For those not aware that may also have an interest, the books may be obtained from PARA Publishing; (800) PARAPUB. They take credit cards.

(S) I think your publication is FANTASTIC. I read each issue cover-to-cover twice the day I get it. I get the other RC pub's., but my only interest is sailplanes and there is only limited info. The more information, the better. I would really enjoy articles about real sailplanes, too. Keep up the good work. California

(R) Several readers indicated an interest in full-size sailplanes, particularly if it related to history and scale. Where there is a link to the R/C sailplane world we may, on occasion, do the odd article as with the PERSEUS. For those not familiar with *Soaring*, it is an excellent full-size magazine covering "all phases of gliding and soaring on a national and international basis". It is available

through the Soaring Society of America (SSA), P.O. Box E, Hobbs, New Mexico 88241; (505) 392-1177. Another publication which we'll be talking more about in the future is the *S.H.A.p. Talk Newsletter* which is published by the Sailplane Homebuilder's Association, a division of the Soaring Society of America. Their purpose is to "foster progress in sailplane design and construction..." It's available through Al McCarty (Secty./Tres.), 545 McCarty Dr., Furlong, PA 18925; (215) 345-1554. ($17 U.S.A., $21 Overseas in U.S. funds, payable to Sailplane Homebuilder's Association)

(S) Just received the March '91 issue. The best part, so far, was the bit about soaring with NSP. Almost like being there. "I" have a hard time taking all the hours of work and throwing it over a cliff. When the high tech gets too heavy, I lose interest. The "*Digest*" has enough to keep me waiting for the next issue. Keep it up. Thanks, Mike Mc Quisten, CA P.S.: I've been building models for 35 to 40 years — "More building than flying".

(S) Kit reviews by a "neutral" modeler. Not the manufacturer. California

(R) *RCSD* does not do kit reviews per se, in the context of what other publications do. The readers submit articles on their latest and we include the material, when appropriate, in *RCSD*. Since the first of the year, articles written by kit manufacturers have been considered press releases and appear under New Product.

(S) I think the most important aspect of my enjoyment of RCSD is the mix of a variety of subjects and the fun attitude with which they are represented. For example, I have little interest in flying wings, but it's great to read about B2's adventures with them. If flying wings were to appear semi-annually and another aspect of our hobby were covered on alternate months that would be fine, but I think it's important that a variety of subjects be shown even if they are not mainstream, contest winning, super-efficient state-of-the-art ideas. This should be a hobby. Not the Nurenburg Trials. Thanks for doing a great job! John Brophy, California

(R) Many of the readers also believe that the mix is important which is supported by the notes on the survey forms received. In the case of flying wings, 36% of the reader base certainly wouldn't be able to obtain this type of information anywhere else!

(S) Regarding FAI competition: I have flown FAI towline glider, FAI free flight power and FAI control line speed. I have flown a very limited amount of FAI type RC sailplane competition. I appreciate the technological advances that FAI creates and the trickle-down to us medium-tech folks, but I personally don't like participating in it. This is because of the time, money and dedication needed to be competitive in it. FAI seems to take a lot of the fun out of "just plain old model airplane flying" and turn it into a semi-professional activity. My thanks and admiration to those who fly FAI, but I must keep my favorite hobby just that — a great, relaxing pastime. Mike Clancy, California

(R) Thanks, Mike. Rest assured that *RCSD* will not be dominated by FAI!

(S) Any thought to having the magazine "normal magazine size" so can store easily with others, put in binders, etc.? The "other" publications are full-size, color, 130 pages and only $5.00 more per year. California

(R) Perhaps, some day. But with the readership at 1400 we can't get the cost breaks that full-size magazines having over 100,000 readers get. And, if we did, we would probably have to send *RCSD* to another state or Hong Kong for printing which means the information would be at least 3 months old. In regards to the size, *RCSD* currently has the most cost effective size. If we increase the size, we'll

have to increase the subscription costs. Based on this, if anyone has any suggestions or wants the page size increased, please let us know.

(S) Many of us have developed special tools and jigs etc. that make the hobby more interesting and more precise. It would be nice if we could share these. Also, many flying components have been built by the individual and are usually more effective than the mass manufactured parts. Let's look at these. By the way, the publication is great just the way it is. Keep up the good work. California

(R) We would be delighted to have anyone with a special tool or jig send in the information!

(S) More on technique and less on super high tech. 90% can't understand it! It's too much lab and theory oriented (i.e., Simon's articles). Florida

(S) How to keep high-start from hanging up on wild blackberry bushes. Florida

(R) Anyone have an answer?

(S) You included a reader survey with the *Digest* which indicates you want to meet the needs of your audience. I suspect a lot of sailplane people want to get involved with composite building techniques. William Otis, Florida

(R) Composite building techniques is, indeed a #1 priority with many of the readers.

(S) Has anyone found a competition as much fun as "slope combat" where the combatant did not need to sacrifice airplanes (i.e., cutting ribbons in the power world)? You print a great product! Idaho

(S) Your openness to readers is unique. Count me among your supporters! Keith Hoover, Illinois

(S) First, I would like to say that I enjoy reading your magazine very much. It contains all things that I can only dream about right now. Since becoming a full-time college student, my hobbies for the most part have been put on hold. My question would be then, if you could guide me in some way as to how to get going again. Specifically, I would like to begin experimenting with "high tech" construction. If you would have any suggestions as to the projects which I might undertake, I would greatly appreciate it. Illinois

(R) The first recommendation would be for you to find an experienced modeler. Then you'll have someone you can call quickly if you need help. We can probably put you in touch with someone in your area if you'll drop us a line. There is reference material listed in *RCSD* and there are videos available on vacuum bagging. We suggest you start with low tech and then modify the plane utilizing some of the newer techniques. Watch "Jer's Workbench" for more on the subject.

(S) Sorry I've taken so long to get this in. Couldn't send without saying what a great job you're doing. Your interest and concern for soaring shows in your publication. Good Work!! You should be proud. Richard Hoke, Indiana

(R) Thank-you on behalf of all of the authors! Those are kind words, indeed!

(S) Thanks for showing that soaring occurs across the U.S. and not just the "left" coast! Indiana

(S) I have enjoyed Pancho Morris' articles on medium tech. A lot of us out there are Sunday fliers who enjoy flying for the fun of it and take in contests just for the chance to fly. Keep up the good work! Iowa

(S) Gray area column — please bring it back. Tips for the fliers on mods done to planes to increase performance. More thermal flying and tips. The scale and slope reports are getting a bit over-whelming. I realize your mag. mostly covers the west coast. However, there is other flying besides slope. Does interest really dictate a flying wing column every month? I have really enjoyed Martin Simon's articles. Please continue them. Kansas

(R) We have not received any information recently on the subject of modifications, or we would have printed them. If anyone has done any modifications that they would like to share, please send them in.

(S) I would like to see more articles on just plain flying. I feel like too many of the magazines today are losing that aspect. It seems like you can't find an article or column that doesn't have an airfoil polar graph and such as the dominating feature. (Your magazine does do the best job of printing flying type articles.) I know that all the work that was done with the Princeton tests has been a help to the sport, but do we need to see the results of those tests in everything we read? I don't think so. I would love to see an article about what goes on during one of Joe Wurtz' record breaking cross-country flights. I think an article done in the format of a forum of say, some of the top fliers across the country discussing some of their techniques. These are just a few suggestions and I hope they will help. I would like to thank you for a great magazine and the opportunity to express my likes and dislikes. Happy Soaring, Pat McCleave, Kansas

(R) Thanks, Pat. We'll see what we can do. Maybe someone is listening?

(S) Is anyone building small out there? Seems that the trend has been towards larger scale planes over the last decade or so. Would like to see and expanded "Jer's Workbench". Massachusetts

(R) Is anyone building small? Drop us a line.

(S) I'd like more articles for those of us who are not hot-shot fanatics. I have limited time, limited money; I crash a lot, and I'm terrified of those trees downwind! I'd like to see an evaluation of common kit planes. Massachusetts

(S) Source information on specialized sailplane equipment such as releasable towhooks, UV resistant upstarts, etc. Unbiased source list would do it. Source list for various model sailplanes reinforced in *RCSD* articles. E.g., I've been trying to find a source for Cirrus canopy. "Travelogue" articles on slope sites and thermal sites. (This March issue one of the best I've seen!) Please don't forget us newcomers to sailplanes. While one can pick up basic modelling skills and flying techniques fairly easily, we don't automatically know acronyms or jargon. Such abbreviations as "NSP" mean nothing to me. How about a quarterly corner for newcomers that works like a dictionary? (i.e., explain terms, initials, etc. that others may already know.) Michigan

(R) Whenever we find something new, we include the information in *RCSD*. In regards to an on-going source list, there are a couple of things in the mill. As soon as we get specifics, we'll let you know. The Cirrus canopy is available from Viking Models U.S.A. — Jerry Slates, also "Jer's Workbench", has 100s of hard-to-find canopies and can provide a close match if dimensions are provided. Jerry is listed as a source with a few of the major magazines. For more inf., call (415) 689-0766.

(S) We need on-going ideas to bring in the youngsters. Two channel Jectsk (sp?) thermal birds can be had for zip. What are people doing with boy scouts, etc.? Nebraska

(R) Couldn't agree more. We are looking for this type of information, as well. Next month, we'll tell you about one seminar for youngsters that Jerry attended.

(S) Gordon Jones & Pancho Morris — yes! New Jersey

(S) Martin Simons and B^2 are the best articles in *RCSD*. New Jersey

(S) Your article on composite bellcrank construction and Bob Champine's article on stab actuation are the types of construction articles that are invaluable. Don't

waste space duplicating contest coverage by other publications, but cover only those events over-looked by others. Keep up the good work in general. *RCSD* packs more useful info. per page than any other publication, period. New Mexico

(S) Where to get soaring related items. Wingrods. Parachutes. Tow hooks. Winch line. Oklahoma

(R) Most of the advertisers in *RCSD* are cottage industries offering the types of soaring related items you seek. Contact them for their catalogs or additional information. Also, American Sailplane Designs carries accessories, as well.

(S) I would also like to know if there are any articles on why our hobby is so addicting. I am interested in how wide spread this addiction is in our hobby. Now that I have put together 12 planes, I have limited myself to one new plane a year to try to keep my life in balance. Very truly yours, Tom Fowler, Oregon

(R) Would any of you like to write a short or a long article to explain this one?

(S) I'm very interested in sailplanes but have not flown one, yet. I'm mostly interested in building/flying low key, have fun on the weekend kind of thing. I used to subscribe to *RCM & MAN*. Not anymore. You guys have a great little magazine. Oregon

(S) Leave discussions (squabbles) of rules to AMA. Please do not present computer programs. They are a boor. If everyone used comp pro to design there would soon be just a handful of expert modelers and no lesser souls like me. Lets have more how to with those dandy drawings I've seen in the mag. Texas

(R) We will indeed leave the rules with AMA and the special interest groups. We'll try to provide more dandy drawings but in exchange, we hope you'll share a few pages with the folks that want computer stuff.

(S) I would like to stay informed in all areas, but I don't want to see the magazine dominated by any group (F3E?). It's going to be pretty hard for you to improve in any way what you are doing now. Try to always keep the balance you have so far. Some of the model mags. have at times seemed to devote the entire soaring column to the exploits of the globe hopping F3B boys. Don't get me wrong. I want to know what they are doing—technology filters down from the top—but I will never fly a $1000.00 sailplane ($500.00, maybe). The recent improvements in the mag are great. Keep it up! P.S.: A survey in a recent magazine has gone unanswered by myself because it's printed on a page I don't want to tear out. I intended to copy it and send it in, but given the choice of building or reading *RCSD* and going to the copy machine at the mall...well, you guess what counts. This is the way it should be done. Gene Warner, Texas

(R) Thanks, Gene. We'll try to maintain the balance.

(S) This is already one of the best magazines. Please try to maintain your standard or make it even better. Please avoid general "fun papers". Go with the theory — make it a serious thing. Supply measurable results. No "bullshit". Include side topics like aerial photography out of model airplane. Present critical reviews of kits or models. Be not afraid of controversial topics. A little fun, now and then, is of course also nice. Try to find a good reliable in-depth article on launching techniques. As I said, it is a great *Digest*. Make it #1 concerning the high technical standard of the papers and articles presented. Walter Panknin, Virginia (VA) to Germany

(R) Thanks, Walter. Coming from you, that's high praise, indeed. We'll try to maintain the standard or make it even better.

(S) Reading *RCSD* is a bit of a hobby all by itself. I love anything that flies and sailplanes most. I can't really suggest any changes because I might miss something else. My favorite parts of each issue are Martin Simons' pages. But I devour ALL tech articles — design, construction, widgets and doohickies. Whatever—e.g., Jer's little blurb on making C.F. stab bellcrank—loved it. Also, thought of a way to simplify the thing, too. K.I.S.S. (Last S. is me.) Besides, If I really want something to be in *RCSD*, all I have to do is write it myself and submit it. Right? Without your publication, I never would have gotten to Dave Acker & the charming Donna. Worth the price of admission, alone. SO—in conclusion —I guess I'd say DON'T CHANGE ANYTHING!! Except, maybe make it a little easier to submit stuff—solicit typed draft as well as disk. Thanks, Greg Tutmark, Washington

(R) Thanks, Greg. We'll try to make it easier. See how easy you got into print!

(S) Write-ups on people or companies that build glass sailplanes to order and can be trusted. If you could recommend someone to me on the above subject it sure would be helpful to me. Thanks, Jerry Budwig, Wisconsin

(R) There are numerous people and companies that build glass sailplanes to order. Most of them have been around for many years and have developed a "track record". (One can't stay in business long if they can't be trusted.) There are several ways to approach this question. We can run a free subscriber want ad for you. Then, be sure to ask for references when someone calls and see how satisfied the references were with the work. And, be sure to find out the length of time involved, as well.

(S) I really like *RCSD* and look forward to every issue. Korea via APO

(S) You do a great job as it is. If you can do better, then you have my fullest admiration! Sean Walbank, England

(S) I enjoyed the first person article by the NE Sailplane guys when they went to Cape Cod. These guys know how to have fun. And, that's what, I think, our hobby is all about. Please think of writing/including more of these types of articles. West Germany

(S) I'm a model rocket flier on the Cdm National team. I basicly read over your material to see what I can convert to R/C Rocket Glider (S8E). Canada

(R) If you run into anything that you think may be of interest to us, please let us know.

(S) How about an occasional article devoted to the history of sailplanes (both model and full-size)? Regular input from various regions of the North American soaring committees would be great. Coverage on other country events (i.e., Canada, UK, Europe, Australia). For example, the Calgary, Alberta area that I am involved with has an active group with 30 members on its mailing list. We run a X-country meet every spring (3rd one this year), and one of the active members was the first to achieve the Canadian Soaring Society diamond level. (Actually, the only one so far.) We also sponsor one of the N.W.S.S. meets every August and participate in N.W.S.S. meets in Montana, Idaho, and British Columbia. If you divide the continents into regions and run a report summarizing the season's activities of that region (provided by some, hopefully, reasonably literate sailplaner from that region), it would provide your readers with a broader perspective of our sport in North America and, perhaps, encourage more contacts across the regions. Your excellent publication already promotes this, but you can't do it all alone and providing a regular forum that we the readers would provide the information for would give us all a look at the soaring scene further afield. Keep up the good

work! Brian Olson, Calgary R.C. Glider Group, Canada

(R) Excellent idea, Brian. We would love to have some input from yourself or others in Canada. We have just heard from the Southern Ontario Glider Group, David Woodhouse, and have added them to the Special Interest Group contact list.

(S) Try not to forget that a lot of pilots still have simple radios and simple planes. Recent articles such as the DUCK and others are excellent. It is my intent to purchase a new plane, soon, and I would like to take my time and build it as well as possible so that when my flying skills improve, it will be waiting. Therefore, if you have any comments or past articles on a Dodgson Lovesong, I would just love to hear from you. Keep up the good work. Sincerely, Charles Hope, Canada
P.S. Do you have an index of past articles, and are past issues available?

(R) We do have past issues available for 1990 and a few months in 1989. The index is listed in the R/C Soaring Resource column, now. The Dodgson Design Lovesong has been around for a number of years and is a very popular plane with many fliers. You might write to Bob Dodgson for additional information at 21230 Damson Road, Bothell, WA 98021. Let us know if you would you like us to check to see what we have on file.

(S) The articles by Martin Simons tend to be very technical which is O.K. for those who like to design, but for most of us they are a bit too deep. However, if you continue to print items of a lesser technical nature, that is a balance that is fine. I appreciate that you cannot please us all, all of the time.

Anyone for aero-towing? There seem to be more scale sailplanes around these days so how about an article or two on the subject? Of course, scale is not essential for this aspect of R/C flying.

You have published a fair amount on the subject of airfoils and how to plot them. Is it possible to have some sketches or diagrams showing the air flow over/around these airfoils? From time to time we hear of the Reynolds Number, turbulation, laminar flow, etc. How do these characteristics perform/vary with their respective aerofoils?

Please keep printing articles about new materials. Carbon fiber is now fairly well established and understood, but I find many fellow modellers do know about kevlar, boron (apparently very hazardous to use), and other new names. I have written to one supplier to ask if any display samples are available. These to be used at a club meeting and could be returned. I wrote back in January but, so far, no reply. Could they be losing business because of this? This happened to Aerospace Composite Products. Their catalog is quite good, but one still does not see what they are describing.

LSF and CSS is an excellent way to go but not all soaring pilots are into these categories. Do all clubs have a "Wings Program" for qualifying their pilots? It would be interesting to have a few points of view on the subject of club requirements. For pilot competency and qualifications. Also, qualifications to become an instructor. A.B. Stevens, Canada

(R) Thanks, Steve. We plan to maintain a balance on the articles. According to the survey, 33% of the readers are interested in aero-tow. We do have a home VHS video on aero-tow that we received from Robin Lehman. If you want us to ship it to you, please let us know. Regarding the display samples, that sounds like a good idea.

I don't believe that most clubs in the U.S. have a "Wings Program". If anyone out there has a "Wings Program" or would like to write an article on the subject, please contact *RCSD*.

(S) I am a recent subscriber to *RCSD* and I wish I had discovered it sooner. I appreciate most of all the construction articles. I am a scratch builder and I scratch around for all the information I can get my hands on. Incidentally, this is crucial if we want to pass on the legacy of this "sport too-good for kings" to our younger modelers. The information in RCSD is worth more than a sack of money. (Which, I of course, don't have.) I also derive great pleasure from Martin Simon's articles, new product information (e.g., "Spectra" from WACO), and photos...photos...photos. Thanks, Jerry and Judy and all the staff for a great publication. If the price goes up you'll never hear me hollar. It's a lot of work. Stephen Barry, Canada

(R) Thanks, Stephen! We saved yours for last.

Author Guidelines

As a reader-written publication, all contributions that are educational and informative are considered for inclusion. If you saw something of interest, please let us know. Material may be submitted by computer disk (Macintosh or IBM 5 1/4"), typed or hand-written. When submitted by disk, it should be in word processing format, and a hard copy should be included for the 5% that may cause format difficulty. While black and white photos are not required, they are appreciated.

Thank-you, again, and Happy Flying!!

California Slope Racers

...by Rich Beardsley (CSR President)

Saturday morning, April 13, started by letting me know that I should test equipment before relying on them for a contest.

Miguelito Canyon

The turn markers that I had set out the day before had come apart because I had used plastic pipe that was too thin walled. I now have a set of turn markers that will hold up and can be broken down for ease of transportation.

Mother nature again showed CSR that she was the boss and in complete control of when and if we raced. We had a great turnout with 33 pilots, but still had to wait for Mother Nature to co-operate. Finally, a little after noon, there was enough wind to hold a race. We started with Division II flying the first round, then division I. We alternated throughout the day.

The cream rises to the top very quickly; Division II pilots Scott Raines, Jay Brehm and Ricky Wong won their heats and gave notice that they would be the pilots to watch. They continued their winning ways and, after three rounds and a fly-off between Bob Ratzlaff and Ricky Wong, the top six were: 1 - Scott Raines, 2 - Jay Brehm (These two pilots will move to Division I for the next race.), 3 - Bob Ratzlaff, 4 - Ricky Wong, 5 - Richard Beardsley, 6 - Duane Gibbs. Congratulations, guys!

We had a good turnout for Division I with the complete U.S. F3B team members: Larry Jolly, Darryl Perkins, Joe Wurts, and the equipment manager, Norm Timbs. Rich Spicer and Rich Tiltman, members of the 1989 F3B team were also in attendance, as well as Don Edburg. The entry list doesn't get any tougher than that and it showed in the close racing.

Joe Wurts was fast and consistent, winning all three of his heats. The only pilot that had a chance of staying with Joe was Rich Tiltman of Nova Racers. Rich had two heat wins going into the third round and was leading his heat when a small mistake at the near turn put him in the ground for a DNF (Did Not Finish) and 5 points, handing Joe the overall win. Norm Timbs was also very consistent with 2 wins and a second for second place overall. Third place was decided by a fly-off between Steve Lewis and Darryl Perkins. This was the best race of the day, from the start to the final lap these guys were no more than two feet apart and actually glanced off of each other three times. The only mistake was made by Darryl, cutting the far turn and deciding the duel. After it was all over, the top six were: 1 - Joe Wurts, 2 - Norm Timbs, 3 - Steve Lewis, 4 - Darryl Perkins, 5 - Rich Tiltman, 6 - Rich Spicer.

Our national F3B team members took three of the top six places, and the only team organized especially to contest the seven race CSR points series, Nova Racers, took the other three. It seems to me that organization and practice pay off in results!

Los Banos

Once again, things did not go well at Los Banos. The wind was out of the south, with a threat of rain and thunder storms. The turnout was not good; I'm sure it was because of the unsettled weather for the race date. You really find out who is committed to the points chase in conditions like these. Most of the top ten point earners showed up, some of them driving four and a half hours to get there.

We set up the course on a very marginal south facing slope, but as soon as I had the turn markers in place, the wind

shifted around to the northwest. So, we moved the course to the slope normally flown. The wind never did blow hard enough to really race, and after working through one and a half rounds, we had to call the race. We will once again set a rain (wind?) date. I would like to thank all of you that braved the elements and spent your time and Saturday to attend the race.

July 13th Race is at Hughes Hill behind Loyola University.

See you at the start gate!
Rich Beardsley
2401 Country Lane
Santa Maria, CA 93455
(805) 934-3191

A New F3B Classic

!!News Flash!!

On July 5th and 6th the Albuquerque Soaring Association will sponsor the 1st Annual Southwest Independence Day Classic for F3B sailplanes in McIntosh, New Mexico. The contest (AMA Class A sanction) will be flown to standard FAI F3B rules with no "sportsman" changes. All F3B/USA subscribers are invited! For full information, call Phil Renaud at (505) 271-8720 (H) or (505) 848-0939 (work).

F3B Fund Raiser

!!News Flash!!

The Pasadena Soaring Society is having an F3B fund raiser at Brookside Park in Southern California on June 16th. All three of the F3B team members will be flying at the contest. It is open to expert and sportsmen classes. All AMA 1991 radio rules apply (Note: no channel 12.). Classes: Unlimited and 2-Meter; Tasks: 4 rounds thermal duration, 7 minutes each round, standard tape landings (25 ft.). Sign-up is at 8:00 A.M. There will be trophies and a raffle, and the Boy Scouts will be serving hot dogs, etc. all day.

Classified Advertising

Advertising Policy

Classified ads are free of charge to subscribers provided the ad is personal in nature and does not refer to a business enterprise. Classified ads that refer to a business enterprise are charged $5.00 per month and are limited to a maximum of 40 words. The deadline for receiving advertising material is the 5th day of the month. (Example: If you wish to place an ad in the March issue, it must be received by February 5th.) *RCSD* has neither the facilities or the staff to investigate advertising claims. However, please notify *RCSD* if any misrepresentation occurs.

A Building Tip

...from Pete Carr

Here is a building tip which may help the newer pilots with their planes.

A friend of mine, Jim Burgoon, had put together one of the new generation of Two Meter gliders. This model uses one large bolt to hold the wing onto the fuselage and a smaller one for alignment. On "firm" landings the wing tends to slide forward on the wing saddle snapping the plastic bolts too easily.

Jim's model did this several times and there was no apparent fix for the problem. Finally, we decided to try applying some RTV silicon rubber compound to the wing saddle. This stuff puts a lot of drag on the wing keeping it in place. If a wing tip hits first, the wing still pivots and snaps the rear bolt, but the wing does not come away from the fuselage.

To apply the silicon rubber, smear a thin coat on the wing saddle, then lay down a piece of backing from a piece of Monocote. Then bolt down the wing and let the rubber set up. After several hours, unbolt the wing and peel off the Monocote backing. You're now ready to re-install the wing and go flying.

In short, the silicon rubber keeps the wing with the plane while minimizing damage. In the absence of a front bulkhead to hold back the wing, this is the next best thing for keeping the plane together.

Pete Carr, President NSS, 329 Little Ave., Ridgway, PA 15853