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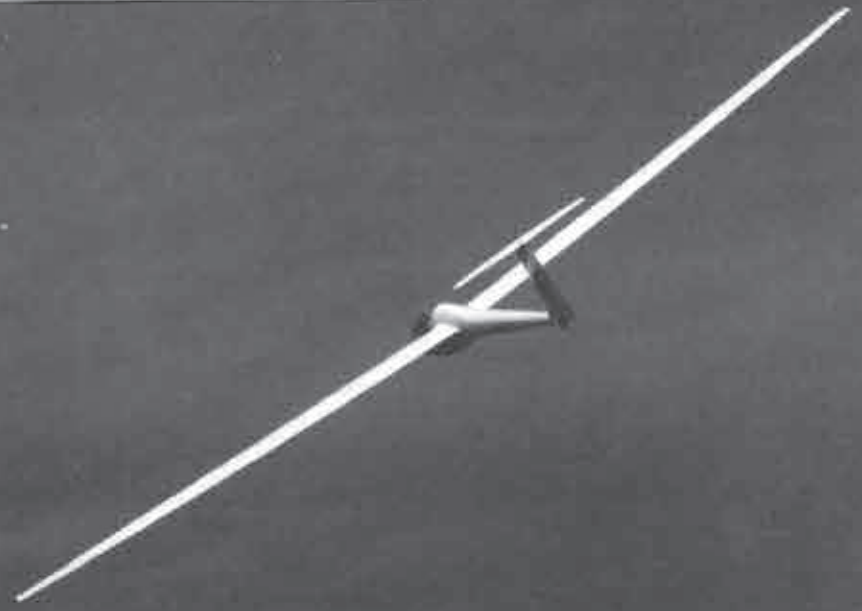

R/C SOARING DIGEST
A Publication for the R/C Sailplane Enthusiast!

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 contributed 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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WHITE WINGS AT LOS BANOS 1996

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The Soaring Site

Flight Simulation Programs

In January, we asked if any of you have experience with good flight simulation program(s). Several of you responded and we really appreciate the time each of you took to write those detailed responses! Thanks go to Dave Register, Kurt Rosner, John Derstine, Kurt Stagmaier, Dave Garwood, Jim Gell, and Robin Lehman.

Have You Hugged Your Newsletter Editor, Recently?

Quite a few newsletters arrive every month, and more often than not, we note that the same newsletter editor has been editing month after month! That takes a lot of stamina, and stick-with-it-ness. We sincerely hope that at least a few of your club members have said, "Thanks," for all your hard work! If you would prefer that they don't give you a hug, maybe a handshake will do, instead!

One editor, who is obviously a glutton for punishment is Waid Reynolds, the editor of the newsletter of the Seattle Area Soaring Society, *Updraft*, out of Seattle, Washington. We enjoy getting the newsletter every month, Waid! Keep 'em comin'!

The *Updraft* isn't the only newsletter we get, of course. But there is little room in this column to make note of all the dedicated editors across the globe. However, if any of you want to take some time to do a write-up about your favorite editor and send it in, we'll start a new corner/column in *RCSD* dedicated to telling the world about just how special they are. And speaking of special, can't pass up Perry Van, who is the editor of the Heart of Texas Soaring Society newsletter, *Hot Flash*. If we don't roll off the chair laughing at least 10 times with each newsletter, then there's something wrong. Perry sure puts a lot of effort into each issue; we're looking forward to hearing about the club's slope fun, and combat wars at the dump!!

Happy Flying!
Judy & Jerry Slates

on the Wing

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The Messerschmitt Me P.1111 for PSS

Some years ago we purchased a copy of Wooldridge's "Winged Wonders," a historical overview of the development of the Northrop flying wings. "Winged Wonders" includes a large amount of information about other tailless designs, thus enabling the Northrop efforts to be appreciated in proper perspective. As many readers will understand, we found quite a few aircraft which we would eventually like to model. One design, however, was so impressive we placed it at the top of our mental priority list of models to be built.

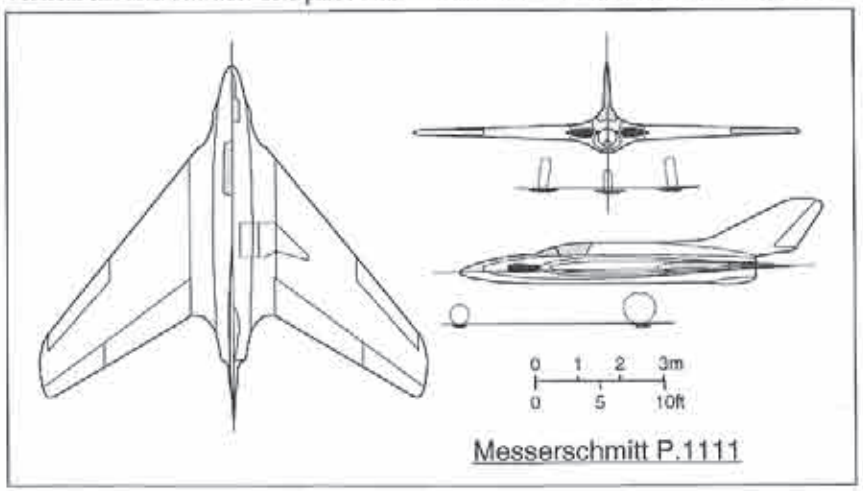
The design which so captivated our attention was the Messerschmitt P.1111, the Messerschmitt Design Bureau entry into a 1944 design competition. The P.1111 was to be a tailless aircraft with wings swept back at 45 degrees and a single swept back vertical fin and rudder. The pilot was seated in a pressurized cockpit. Armament consisted of four MK 108 30mm cannon; two in the wing roots and two in the nose. The wing span was to be slightly more than nine meters (30' 1"), the length a bit less than nine meters (29' 3.4"). Performance was calculated to give a top speed of well over 600 m.p.h. The P.1111 is similar in design and projected performance to the DeHavilland DH 108 which successfully flew in 1946.

Design

A few days after first seeing the P.1111 three-view, we concluded a model of reasonable size could be built from a small amount of foam using a minimum of internal structure. Covered in fiberglass, the resulting model would be relatively light weight, yet because the overall design is so streamlined, model speed would be sufficient to offer acceptable penetration on a wind swept slope.

Because of the projected light weight of this model, we decided to use a symmetrical Quabeck section for all of the flying surfaces. As control surfaces cover the entire trailing edge of the wing, it was an easy matter to hook up two servos in each wing; one servo to control the elevon, the other to operate the inner flap. The trailing edge of the wing could be used to impart the necessary positive pitching moment for stable flight.

Sketches were drawn for a four foot span model. Templates were made from light plywood so the fuselage could be cut from both a top view and side view. Shaping the foam to a three dimensional form would then a relatively easy task. A large opening was planned for the bottom of the fuselage so that the receiver and battery pack would be easily accessible.



Messerschmitt P.1111

Construction

Cavities were cut into foam sheets to accommodate the radio gear and allow for access. These layers of foam were tacked together and cut out to the general P.1111 fuselage outline using the two precut templates. The fuselage was then shaped as planned. Wings and vertical tail were cut from foam using a long hot wire, and a single template through a pivot point. Channels were cut into the wings and fuselage to accommodate the servo wires and antenna. The resulting shaped parts — fuselage, two wings, and vertical tail — were glued together and the entire model covered in light fiberglass.

After the epoxy cured, we cut out the control surfaces, installed balsa edges to the trailing edge of the wings and the leading edge of the control surfaces. Small nylon Du-Bro hinges were used to reattach the control surfaces to the wing. Cavities for the four servos were then carved in the bottom of the wing and micro servos press fit into place. We also freed the belly hatch, completing construction.

Flying

First flights of our P.1111 were at one of the Richland Slope Scale Fun Fly meets. We trimmed the inboard flaps and outboard elevons with a small amount of reflex, assured ourselves the CG was a bit forward of its predicted eventual location, and promptly chucked it off the edge. As anticipated, it flew out over the valley making good headway against the stiff wind. It was immediately obvious, however, that the small amount of reflex trimmed into the inner flaps was more of a detriment to performance than anything else. A simple flick of the two position flap switch on the transmitter retrimmed the inner flaps to neutral, and the P.1111 leaped forward.

Fine tuning of control surface throws and elevon reflex tweaked performance further. Roll response was too sensitive, so we set the aileron dual rate to 50%, while elevator function remained at 100%. With reduced reflex, we were able to move the CG back to near the predetermined position. The resulting flights were quite beautiful, with very well coordinated turns, despite lack of a rudder, and large loops. The P.1111 looked incredibly realistic in the air.

Suggested Modifications

We designed and built our model before we became familiar with the EH series of airfoils. Were we to build another we would certainly substitute a thinned EH section for the Quabeck

airfoil we originally used. A small amount of washout, just a fraction of an inch at the wing tip, would be more efficient than trimming with the elevons, but those who enjoy good inverted performance might want to forgo that modification. The inboard control surfaces, which never proved beneficial on our model, could be eliminated. The resulting two servo control system, composed of an elevon on each wing, works extremely well on this planform, despite its simplicity.

Given time, and some positive feedback, we may eventually formalize those plans we drew, incorporate the above noted changes, and make them available through Cirrus Aviation Ltd.* Yes, this is a call for positive feedback!

If you have ideas for future "On the 'Wing..." columns, we're eager to hear from you! Please contact us at P.O. Box 975, Olalla WA 98359-0975, or by e-mail at <bsquared@halcyon.com>.

Wooldridge, E.T. Winged Wonders; *The Story of the Flying Wings*. Washington, D.C.: Smithsonian Institution Press, 1988.

* Cirrus Aviation Ltd., Harry Volk, P.O. Box 7093 Depot 4, Victoria B.C. V9B 4Z2, Canada.

■

Kit Review

The New Slegers International "Fazer"

...by Jim Thomas
Folsom, California

The Fazer is the newest 2-meter ship offered by Slegers International. At first glance this ship appears remarkably similar to the Laser, which is no longer offered as part of the Slegers product line. On closer inspection, the Fazer is subtly different, incorporating small evolutionary changes geared to improve the already exceptional performance of the Laser.

To start with, the wing has been modified to add a bit more area, thereby lowering the wing loading. This is accomplished by moving the break between inner and outer panels further outboard of the location used on the Laser. The airfoil section used at the tip has also been modified (thinned), and a bit of washout added. This is intended to provide tip stall resistance, while maintaining a drag free tip for towering high launches. These are the most significant changes on the new design.

The fuselage/tailfeathers have also been slightly modified. The fin/rudder area is less than the Laser, which is not a problem as the Laser had a very generous fin/rudder. The fuse is wider through the wing root area, which provides a more stable platform for the wing joining system. The stabilator area has been increased a bit to provide more pitch stability; always a plus with 2 meter ships. Finally, the nose moment is shorter than the Laser. The review model required 1/2 - 3/4 oz. of lead to balance, which is just enough to allow the builder the latitude to set the ship's CG up to suit personal taste.

Design changes don't mean much unless they enhance the performance of the ship. That is the true test of a new design. The Fazer was not a disappointment. The set-up from my Laser was used as a starting point, with the CG a bit ahead of the recommended point. The first launch was high, but a bit unstable. This was my fault, as I had some up elevator programmed along with full span camber in launch mode. After correcting this, the Fazer launched very stable and high. A quick check of all the flight modes indicated that set up was acceptable, and a dive test indicated that it was a bit nose heavy. This too was readjusted, and ended up right on the spot that Slegers' recommends. Flight characteristics were reminiscent of the Laser, but it seemed to float a little better, perhaps a result of the enhanced wing and stabs. To be any more specific would require flying the Fazer and Laser side by side.

The bottom line: the Fazer is another winner from Ed Slegers. The kit is high quality, with complete hardware and wood packages to supplement the beautiful Fuse Works glass fuse and pre-skinned wings and stabs. The ship flies more like a 100" class ship, but can turn like a hand launch. Pretty good characteristics in a 2-meter.

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■

Ballast

...by William G. Swingle II
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The need for penetration is a big concern at the slope. It's always a compromise. We want wind for the lift it brings but, unfortunately, it also brings a horizontal component that we have to fight. In order to effectively use the available lift, you have to be able to fly in it. Thus, your plane has to be able to effectively cruise faster than the horizontal component. Actually, it has to fly significantly faster to really be effective (and fun).

WARNING: An EE (electrical engineer) is about to discuss AE (aerodynamic engineering); hide the women and children!

That said, giving down elevator can only help so much in the search for speed, because it creates additional drag and can only decrease induced drag. Profile drag is essentially unaffected and ever present. Wingeron/pitcheron planes are at an advantage, because they can vary the wing's incidence. This decreases the induced drag without the added drag of a deflected elevator.

However, profile drag remains ever present. It boils down essentially to a battle between two forces. One force, drag, pushes from the front. The other force, the horizontal component of gravity, pushes from the back. Once these forces equal, forward acceleration stops. The only way to reduce the force from profile drag is to reduce the cross sectional area of the plane, or the coefficient of drag. Sadly, this can be difficult to do on the slope, and is really hard on coverings. So, we concentrate on the other force: gravity.

I'm happy to report that, yes, the force due to gravity is not constant. It can be easily changed! Gravity actually provides a constant acceleration. A film common to physics courses illustrates this, by showing a bowling ball and a feather dropped in a vacuum. They fall side by side, at the same rate, and crash into the floor, simultaneously.

Being our gliders' force of propulsion, the freedom to change the force of gravity would seem a panacea for all our speed woes. Sadly, this is not the case. Yes, the plane will usually speed up, but the gains are not free and do have a limit. Along with the increase in the horizontal component, comes an increase in the vertical component of the force of gravity. Your plane must now create more lift in order to stay airborne. When you create lift, you create induced drag, which combines with the profile drag. Thus, your increase in the propulsion force has increased the drag forces. The killer is that profile drag increases with the square of speed. As your plane speeds up, in response to the increased propulsive force, the profile drag very quickly rises to match the increase.

Is it a favorable trade? Maybe. A better question, though overly wordy, would be, "Is the plane aerodynamically clean enough to speed up sufficiently?" This really can only be answered empirically. A rigorous solution would be deliriously complex, and not at all practical. It is also quite subjective, and varies from pilot to pilot. Thus, we must head out to the slope. The glass slippers so common on the slope will usually respond well to ballasting to 50% or more above stock weight. The Renegade is a particularly good example, whereas a foam and tape plane may not like anything over 25%. However, this too varies widely, depending on the plane and its condition. Dents and dings will significantly affect a foamie's top speed.

The bottom line, as in so many other aspects of flying, is to start small and try it. Install a weight that's roughly 10% of the stock flying weight; be extra sure that it sits EXACTLY on the CG. Once the weight is secure, go fly the plane. If you don't see much difference, increase the weight to 15% and try it again. Continue until you find the weight that best fits your style and local flying conditions. For example, my experience with foamies has been that my stock Foameron likes about 25%, while my modified (lightened) Foameron will take 35%. My D.A.W. combat plane did great with 25% and wanted more, but I ran out of lead. In each case, the enjoyment envelope of these planes was widened.

By prudent ballasting, each plane's versatility, and thus the versatility of my personal hanger, has been increased; I am better able to enjoy whatever wind the day may bring.

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"SHORT CUTS"

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Bagging Wings, Bits and Pieces

This month's article will focus around my current building project, a 1/5 scale Salto. This plane has a 90" wingspan and uses a Viking Models, U.S.A. fiberglass fuselage that was strengthened with Kevlar™ tape during the lay up by Jerry Slates. The wings were bagged with Aerospace Composite Products' 80/20 carbon/S glass hybrid cloth with a 1.4 oz. surface layer of glass cloth. To prepare for this project, I reviewed Fred Mallett's article in the February edition of ***RCSD*** which discussed multiple template heights. I agree with Fred's concern to keep the upper surface straight so that the mylar does not fight itself while under vacuum.

On the subject of templates, I want to share a few thoughts on template construction. First of all, get some good template material. I know most of us use formica laminate scraps or seconds, but the problem with this material is that the surface laminate finish causes the templates to curl. For best results, I recommend builders purchase formica stock without the finish surface. The stock I use (1/32" and 1/16") was purchased from Aerospace Composite Products. I rough cut the templates with a scroll saw and then bring them to shape with a 2.5" drum sander fitted to a drill press. The next step requires sanding down the high spots off the template. This is very difficult with a straight edge sander or by hand sanding. What's needed is a compromise method, like a flexible straight edge. To find one, look no further than your wallet, or purse.

It's your credit card, preferably an expired card. Just cover the backside with double faced tape and add 120, and/or 220 grit sand paper. To begin with, I clamp the template between two pieces of pine in the vise to support the template, especially the bottom template. The flexibility of the credit card works well for sanding out high spots without sanding **in** flat spots. The 120 paper cuts very good, and the 220 starts to put a polish on the template surface. The next step is to round off the contact surface of the template with 600 grit paper to reduce friction between the template and wire. It's best to work the 600 grit paper from side to side to round off and polish the edge, much like a shoe shine buff. This produces an almost frictionless surface. So keep those expired membership or introductory credit cards when they come in the mail. When the paper becomes worn, it can be easily replaced by removing the double faced tape.

I also reviewed Aerospace Composite Products new wing bagging video tape prior to bagging the wing with carbon, a first for me. George Sparr informed me that a segment of the tape discussed the use of carbon fiber vacuum bagging, so I thought it was a good investment. This tape was so informative I just had to write up a review of it. The length of the tape was 1:25 and the production quality was very good.

The introduction covers all the reasons why vacuum bagging is so popular, as well as discussing the safe handling of epoxies. Most all of the equipment needed for vacuum bagging was mentioned, as well as assembling a home built vacuum tank unit. The next segment covered all the steps to bag a Sig Samurai wing using plywood skins over white foam cores. Modifications utilizing carbon fiber were incorporated into the lay up. This section of the tape demonstrated assembling a vacuum bag, its accessories, and the proper use of breather cloth and release film. George starts with a stock wing and takes the viewer through all the steps needed to bag it, using his EZ Vac bagging kit. Also included in this section was a demo on bagging balsa skin planks together without edge gluing. George also discusses the pros and cons of bagging with the beds in the bag vs outside the bag, sub-leading edges, and many other neat tricks.

The next section of the tape demonstrates carbon fiber reinforcement and bagging of a 1/4 scale balsa skinned power wing - a big one. Spar design options are discussed as well as demonstrated; the entire bagging method was shown. While the wing is not a glider wing, the bagging techniques are the same.

George then demonstrates bagging a C. R. Aircraft Contender wing with his 4.7 oz. 80/20 carbon/s-glass hybrid cloth. The demonstration begins with cutting the mylars and follows through all the way to trimming out the completed wing. His Auto-Vac system was used to pull 19" of vacuum on this blue foam wing. George also mentions a real neat way to trim the carbon flashing off this high performance wing. Cutting methods and tools for both glass and carbon were also demonstrated.

The last section of the tape covers advanced building techniques, such as incorporating colored synthetic cloth into the glass lay up to add color to wings and stabs. He also discussed the use of angle stock for super straight trailing edges, as well as spar construction.

In summary, I found this tape well worth the $19.95 (plus $5.00 shipping). The use of breathers, peel ply, release film, and mylars were mentioned as well as many helpful tips. I noted only one technical error that dealt with the omission of wax paper between the exterior of balsa skinned wings and the beds, both within the bag. Such an omission for a beginner using a bit more epoxy than needed could end up with beds epoxied to the wing from bleed through. ***This issue was brought to the attention of Aerospace Composite Products and will be corrected.*** This tape is an excellent reference for the beginner and a good addition to any club library. The experienced vacuum bagger will also benefit from this tape, because there are many helpful hints given along the way.

The cost of this tape will pay for itself by eliminating the possibility of error during lay up. This is especially true when compared against the cost of some of the new materials being used for lay ups, such as 80/20 carbon/s-glass cloth, spectra, and even Kevlar™. 'Til next time, keep your bag tight.

P.S.

George Sparr of Aerospace Composite Products will be a guest speaker at the 1997 New England R/C Soaring Convention to be held in Portland, Maine late in the year. For more information on the Convention, please give me a call.

Aerospace Composite Products
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THE NEW JRXP8103 COMPUTER RADIO

PART I

...by Sherman L. Knight
Bellevue, Washington

The evolution of JR's computerized radios continues with the introduction of the new XP8103. This new radio adds some exciting features. The most important is multi-point programmable mixing which completely eliminates that annoying bump the model takes when you first pull the flap stick down. Landing approaches are very smoooooth. This feature alone is well worth the cost of a new radio.

The JR X388S and the JR X347 have been discontinued. The 347 has been replaced by the JR783. The JR X388S has been replaced by the new JR XP8103. In case you are wondering, the new JR783 is virtually an identical radio to the JR388. If you take the two manuals and compare them page for page, they are exactly the same except for channel number eight (Aux3) is no longer available on the JR783.

If you owned either the JR347 or the 388, you will find that there is very little learning curve with this new radio. The switches and knobs are in the same place as they were on the 388 or on the 347. The programming language is also the same.

There are a few new mixes in the radio such as multi-point programmable mixing. (It makes landing approaches so smoooooth.) There are several new screens which have revised, simplified, and make the programming easier than it was before.

The XP8103 also sports a new and much larger screen. The new screen is nearly twice the size of that found on the 347 or the 388. The screen is pixilated, allowing the computer to place four times the amount of information on the screen at one time, as the 388 or 347. The larger screen also contains an X\Y axis to be displayed on the screen so you can see a visual representation of dual rates, exponential rates, and the multi-point programmable mixing.

The new XP8103 supports a case similar to the 347 and the 388. The new radio still fits my small hands just perfect. Some of the additional changes to the case include:

1. Eight buttons across the face instead of six.
2. The on/off switch has been recessed into the face making accidentally turning off the transmitter much more difficult.
3. The charged jack receptacle has been placed on the side of the transmitter housing rather than the back. You can now lay the transmitter down on its back during charging and not have to worry about it falling over.

The XP8103's transmitter modules are interchangeable with all other JR radio modules.

The new radio is only sold in two versions: one for aircraft and a second one for helicopters. The aircraft version is sold in either an FM or PCM version. Both versions come with four NES517 servos, the ball bearing version of the 507.

Other improvements to the programming features include a much easier to use trim offset memory. Trim offset memory allows you to fly the airplane while making all the necessary trim adjustments. Upon landing, with the push of a button, the trim positions are memorized, and each individual trim knob can be reset to center. In the new XP8103, the instructions on how to go about the process are actually written right on the screen and much easier to use than before.

The same is also true of the Trainer function. The Trainer function allows you to select the servos in the airplane that the trainee has control of. In other words, you can selectively allow them to learn elevator first, then add rudder second, etc.

One feature that you are not going to discover unless you read the entire manual is that the contrast of the display screen is adjustable. Not only is it a nice feature, but it is necessary. The contrast setting for viewing the screen in your shop, late at night, is significantly different than the best viewable screen in full daylight. For those of you who didn't bother to read the entire manual, the screen contrast adjustments can be found on page 19.

Finally, the XP8103 allows you to transfer all the trim settings directly into another XP8103 through a trainer cord.

Programming the XP8103 for a full function six servo sailplane.

Flexibility is a wonderful thing. However, programming the JR is complicated by the fact that the radio's flexibility may provide more than one way in which to accomplish the same result. Although more than one means may be available, **it is important to select and use only one method to accomplish your objective.** Otherwise, programming functions may be in conflict and actually cancel themselves out. This article is only one of the many methods to accomplish the objectives below. If you disagree with my methods, or have found one that is better, please let me know what they are for use in a future article.

This article also assumes that you own an XP8103, have the manual handy and are familiar with the eight programming buttons across the face of the radio. The page numbers referenced in the article are the page numbers found in the manual.

The transmitter has two separate programming modes. These are the **system setup mode** and the **function mode.** The system setup mode comes at the beginning of the instruction manual (page 104) and must be completed before you perform any of the function modes (page 113). If you program the function settings first, and then revise the system setup settings second, it may result in wiping out your programming and returning to the system defaults.

There are also some revisions to the manual you may want to make before getting started. The first one, is to photocopy pages 105 and 106, re-label them 4.1 function mode, and insert them in your manual at page 113. The second is to re-label the servo to receiver connection diagrams found on pages 100, 102, 114 and 115 to the following:

Ch #	TX Function	Airplane Function
1	Spoi	Empty
2	Ail 1	Right Aileron
3	Elev	Elevator
4	Rudd	Rudder
5	Ail 2	Left Aileron
6	Flap	Left Flap
7	Aux 2	Right Flap
8	Aux 3	Empty

The battery may be plugged into any empty slot on the receiver.

System Setup Mode.

You enter the system setup mode by pressing and holding down the UP and DN buttons on the face of the transmitter while turning the transmitter on. You will then be confronted with the screen entitled **[System M].** You won't find this display in the manual anywhere.

On the left hand side of the display you will see a triangle pointed at **Model SEL.** This triangle (and later an arrow) will be referred to throughout the article as the cursor. The cursor can be moved around the screen by pressing the UP or DN buttons. After you have selected the area you wish to enter, press the up and down buttons simultaneously.

Start the programming by placing the cursor before **Model SEL.** Press the UP and DN buttons simultaneously. Press the (+) or (-) buttons and select a model number (1 thru 10) that is empty.

Press the UP button to assign a **[MDL Name]** (page 107).

The XP8103 as it arrives in the box.

Press the UP button again. Touch the (+) or (-) buttons to move the cursor to **glider** (page 108). Press the UP button two more times to select the **[MODULAT.]** of your receiver (page 109). Every XP8103 sold will transmit in FM, S-PCM or Z-PCM. If you ordered the FM version, you may have received an FM receiver but your transmitter will still broadcast in all three formats.

Touch the UP button two more times to select the **[Wing Type]** of your aircraft. Touch the CH key to move the cursor from V-tail to dual-flap. Touch the (+) or (-) button to change dual flap from inactive **(INH)** to active **(ACT)**. Perform the same function if you have a V-tail.

Touch the UP button again to select the method of flap input **[INPUT SEL]**. Touch the (+) or (-) button until input reads **FLP.SW+P6.**

Touch the UP and DN buttons simultaneously to return to the general information display.

Function Mode.

After turning the radio on you will see the general information display. To enter the function mode simply touch the UP and DN buttons simultaneously.

Before you begin, make sure the servos in the wings are inserted so that the arm side of the servo faces the wing tip and closest to the trailing edge of the wing. I further recommend, that during normal flight mode, you set up your radio so that all of the switches are in the same direction. I prefer starting at the top back of the radio and pulling my hand forward and down and move all the switches in that direction. That way, during normal flight mode, the switches all match the direction of the aileron/rudder mix switch when it is in the "on" position. This further simplifies flying and allows you to quickly check your radio without looking down at it by simply passing your hands over all the switches. If you have a V-tail, perform the V-tail mixing at the end of this article, first.

Inhibit Pots 5, 6, & 7

Touch the UP or DN buttons until **[D/FLAP T.]** appears in the upper left

The dual rate and exponential rate screen on the XP8103. As the exponential rate is changed, the graph on the screen goes from a curved line to a straight line.

hand part of the screen (page 122). Press the CH button until the cursor appears before **POT.5**, and press the (+) or (-) buttons until it indicates that it has been inhibited **(INH)**. Do the same for **POT.6** and **POT.7**. You don't need these functions. Leaving them active will just allow mistakes to be made during flight.

Servo Reversing.

Touch the up or down button until **[REV.SW]** appears in the upper left hand part of the screen (page 114). Slowly operate the rudder (left hand stick), the elevator and ailerons (right hand stick). Make sure that all of the control surfaces move in the correct direction. To reverse the servo, touch the CH button until the cursor moves to the appropriate servo. Touch the (+) or (-) button to reverse its direction.

Aileron Differential.

Touch the UP or DN button until **[DIFFEREN.]** appears in the upper left hand portion of the screen (page 117). Push the aileron stick all the way to the left or right. (Do it slowly and, if you encounter binding, don't move the stick any further.) Press the (+) key while watching the down aileron. If the down aileron starts moving up, you can move onto the next step. However, if the up aileron moves down, perform the following. At the receiver, pull the plugs for the aileron servos (channels 2 and 5), reverse the plugs, and then check the aileron stick for aileron movement. If the ailerons are backwards, simply return to the servo reversing switch function and reverse the servo throw on servos 2 and 5. Check Differential again; if the down aileron moves up, then the settings are correct. (At this stage of programming, you should have control over the

This screen identifies with the black dot on the bar, the current location of the servo travel. By moving the control sticks, the black dot moves back and forth across the bar. You can determine instantly whether or not a lack of movement is because of a servo that's reached the end of its travel, or you have a mechanical linkage problem.

ailerons, elevator and rudder.)

There is a three position switch just above the throttle stick. Move the switch to the down position. If the flaps move up, reverse the servo leads at the receiver, just like the ailerons.

Sub Trim.

Sub trim allows you to electronically center all of your control surfaces. Now that the servo direction is correct, and the aileron servos are properly plugged in, it is time to align all of the control surfaces.

All of the control surfaces must be aligned mechanically, first. Adjust the linkages and servo arms for the elevator and the rudder, so that they are as close to neutral as possible. Remove the servo arms from the aileron servos and rotate the arm forward (toward the leading edge) similar to the diagram found on page 134. Do not adjust the flap servo arm at this time. It's important to perform this function with the transmitter and receiver turned on.

Touch the UP or DN button until **[Sub Trim]** appears in the upper left hand portion of the screen (page 114). All of your sub trim values should read 0%.

Do not make adjustments or try to align the flaps at this time. Flaps will be covered later. Touch the CH button until the cursor stops beside the control surface you wish to adjust. Touch the (+) or (-) keys until the control surface is exactly centered (ailerons, elevator and rudder).

End Point Adjustments.

We have reached one of those situations where there is more than one means to accomplish the end result. That end result is changing the amount of servo throw, which in turn effects the amount of the control surface movement. The manual advocates the use of travel adjustments **[TRVL ADJ.]** (page 115) as a means of adjusting servo throws. However, this means you must make at least two adjustments for each servo. If you are using flaperons (flaps that follow your ailerons) to change the differential, you may have to change as many as eight end-point adjustments. In the alternative, you can adjust the amount of aileron throw by using the dual rate function. (If ailerons are mixed to flaps, this duel rate function will adjust the amount of throw on all four wing servos at the same time.) Further, you can also adjust the differential between up and down aileron or flaperon for all four servos by a single adjustment.

Most models today come with instructions and recommended control throws for the ailerons, elevator and rudder. Instead of using the travel adjustment function, use a combination of dual rate and differential mixing to simplify the process, but more importantly make field adjustments easier to make.

Dual Rates.

Duel Rate functions are available for elevator, rudder and ailerons. Touch the UP or DN button until **[D/R & EXP]** appears in the upper left hand corner of the screen (page 113).

Let's start with the elevator. Touch the CH button until **ELEV** appears. Touch the select button until the cursor is before **D\R**. Move the elevator stick slowly, until it stops, and hold it in that position. If the actual elevator throw is greater than that recommended in the plans, touch the (-) button while holding the elevator stick against the stop. The amount of elevator deflection will slowly decrease. Stop when the amount of elevator throw is correct.

Now, move the elevator stick in the other direction. As you can see, the dual rate function should have effected both the up and down elevator. (However, if your mechanical linkages are not symmetrical, you still have more deflection in one

direction than the other.)

Touch the CH button again until **AILE** appears on the screen. Again, move the aileron stick all the way to the stop. Measure the amount of up aileron and compare it to the amount recommended in the plans and specifications. Too much or too little aileron deflection, adjust the dual rate function appropriately until you get the right amount. At this stage, only concern yourself with the amount of up deflection of the ailerons. Be careful; watch the down aileron carefully; if binding develops, stop moving the stick. Continue to reduce the dual rate until there is no binding at full stick movement, or until you reach the recommended throws in the model's instructions.

Finally, perform the same function for rudder throw by fully deflecting the rudder stick and adjusting the rudder dual rate appropriately.

Aileron Differential.

Touch the UP or DN button until **[DIFFEREN]** appears in the upper left hand portion of the screen (page 117). Hold the aileron stick against the stop. Touch the (+) or (-) buttons to adjust the differential between the left and right aileron. The low aileron will move up. Move the aileron stick to the opposite stop and notice that the differential setting works for both ailerons.

Travel Adjustment.

Now that you have the four basic control surfaces (both ailerons, the elevator and the rudder) adjusted to appropriate amount of control throw, it is now time for the final adjustments. (The final adjustment of these control surfaces should be done at home on your work bench and not in the field.) The goal is to obtain travel adjustment as close to 100% as possible for the four servos.

Unless you are an expert builder or awful darn lucky, the control surfaces will not move equally. One aileron will move up further than the other one, or the rudder will move further to the left than it does to the right. The fine tuning of these control throws is now done using travel adjustment.

Touch the UP or DN button until

The XP8103 allows you to create a curve of any shape that you want. This screen represents flapped elevator compensation, and how the amount of elevator compensation would change as the flap stick is pulled down.

[TRVL ADJ.] appears in the upper left hand side of the screen (page 115). Your new XP8103 screen contains all of the travel adjustments for four servos at one time. Touch the select button to move to the other four servos.

Touch the CH button until the cursor moves to **AIL 1**. Move the aileron stick from left to right, and notice that the cursor shifts from left to right.

Move the aileron stick all the way to one side. Measure the deflection of each control surface. Move the aileron stick in the other direction and measure the opposite control throws. Compare the two ailerons to see if they deflect the same amount. (If they are off, they should only be by a very small amount.) Use the travel adjustment to fine tune them until they are the same.

The same travel adjustments should be made to make sure that the rudder deflects the same both left and right.

The elevator is the one place where I typically install more throw in one direction than the other. Additional down elevator is useful at the top of the zoom, right before the aircraft loses air speed and the control surface becomes unusable. Sometimes, that push over needs to be fairly abrupt and additional down elevator is helpful.

Aileron to Rudder Mixing.

Most pilots like to set up their model, so that when ailerons move, the computer automatically mixes in a predetermined amount of rudder. Touch the UP or DN button until **[AILE → RUDD MIX]** appears in the upper left hand part of the

screen (page 120). Touch the CH button again until the cursor moves to **SW:** Press the (+) or (-) buttons until the word **MIX** appears on the screen. The rudder mix can now be turned on and off by the switch in the back, right hand corner of the radio. If you flip the switch back and forth, you will see the words **SW OFF** appear and disappear on the screen.

Touch the CH button until the cursor is beside the word **Rate:** Push the aileron stick all the way to the left and press the (+) or (-) buttons until the rudder moves in the appropriate direction. Insert the amount of rudder mix recommended in the instructions for your model.

You now have control sufficient for the flying of the aircraft. You just don't have any landing control devices, yet.

■ ED: This concludes the basic control surfaces of the aircraft. Next month, Part II will focus on various flight modes, which involve the use of flaps.

■

TORREY PINES GULLS FIRST ANNUAL PRESIDENT'S CUP CHALLENGE

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Now here's something I can appreciate! In an effort to get more folks involved in competition thermal duration (TD) flying, the Torrey Pines Gulls' President, Don Richmond, decided to try a little bit different angle on a time honored format. The contest, held at the TPG's Poway Flight Center on January 25, 1997, was dubbed "The President's Cup Challenge" and offered a unique type of event for both beginning and seasoned TD fliers.

The task was simple; fly a twenty-five minute add 'em up with rounds of three, five, seven and nine minutes in any order. This is accomplished in a three hour window with no designated rounds, so you could launch anytime you liked and not be accused of sandbagging! Landings were scored by hitting inside a fifty foot circle for twenty-five points each, with only the first four landings of the day scorable. Additional flights after the first four were penalized ten points each, and off-times were penalized one point per second.

There were two classes established; namely, those who'd never flown a TD contest and those who had. I love simplicity. The most interesting thing, however, was the required aircraft configuration. The contest was unlimited with one exception. It had to be a two-channel only, aircraft! You could fly anything from a Climax to a polyhedral Waco Magic, as long as it had a two-channel setup. You could launch any way you liked, too. There were three winches set up, a light highstart, and a few folks used good old arm power.

As a final incentive, any participant to score higher than the club President would garner him or herself a free

Sue Van Gundy appears to be having fun working for her times early in the event. It's refreshing to see the ladies competing with the boys!

Arthur Markiewicz shoots a landing well inside the landing circle. The fifty-foot landing circle sounded like a push-over task in the pilot's meeting, but it was surprising to see how many folks missed 'em after being stripped of glide control devices they'd become so accustomed to!

Mark Navarre gave an entertaining, post-game aerobatics show with his Speed 400 powered DAW Ta152 sporting Luftwaffe Afrika Corps camouflage.

This pilot almost hit a perfect landing. The landing circle was hard to see if you were busy flying an airplane, and many of the timers would lay their fluorescent orange score cards at the center so the pilot would have a clearer target to shoot for.

Randy Warner's scratch built Sinbad, built from Sig plans scaled up two times resulting in a 2 meter sized plane. This sharp looking specimen exhibited beautiful craftsmanship. Note how much better the plane looks with a pilot figure under the clear canopy - don't be a ghost rider.

The CD and the Winners - L-R: TPG President and CD, Don Richmond; George Joy, First place; Garth Warner, Second place; Ryan Fry, Third place. I'm tellin' ya' again people... Watch out for these young guys - they're sharp... And they've got real good eyesight!

pizza after the contest! Now we're talkin'! (For those of you who also read *R/C Report*, this might be a way to get Gordon Banks into sailplanes, huh?)

THE CONTEST

My regular flying buddy, John Roe, decided this would be a great time to try TD flying once and for all. He'd been threatening to do it for a long time, and I decided I'd better go time for him and make sure he didn't break any TPG property at the contest. So, we packed up my trusty TG-3 Foamie Trainer and headed on down.

We arrived to a very wet, but navigable, field. The sky was overcast and rain appeared imminent, but there were already quite a few of the twenty-seven participants on hand, so I took the time to be taught how a winch is set up by Mark Navarre and Don Richmond. The TPG's field has turnarounds and base plates permanently in place at the field, and all the equipment was in place in no time at all.

The pilot's meeting convened at 9:00 AM, right on schedule, and Don explained all the rules carefully. With that, the competition began. Seasoned competitor Arthur Markiewicz was first off the winch with his huge, built-up, 3 meter Gnome, and demonstrated for the rest of us that the lift was hard to find that day. Soon, more brave souls were launching and scratching for their times. At about 10:30 it actually started to sprinkle a little, but these die-hard buzzards just flew right on through it.

Soon, the weather began to clear a little, and the flight line got real busy as more fliers began hooking up on tight but usable lift, shooting for their longer times. Most of the pilots were hitting their three and five minute flights pretty easily, but getting the seven and nine flights was tough, even for the hot shots.

Watching the landing circles was interesting. I knew some of these guys from the local slopes or seeing their faces in the magazines, and was aware of their experience in flying thermal tasks. But... Some of them were zeroing their landings! Heck, it

sounded so easy - a fifty foot circle - but without glide path control and flying into the cushy boundary layer at ground level; I noticed many of the pilots grinning and shaking their heads as they walked to pick up a plane that had over or under-shot the circle! One thing that many of them found helpful was to have a center mark in the circle, and pretty soon the timers were placing their fluorescent orange score cards at the center of the circles, which made things much better for the pilots. You can take the landing tape out of the contest, but it would seem it's hard to take the landing tape out of the pilots! In spite of the loose, simple format, this was a challenging event and required concentration and skill to achieve a winning score.

In the 'experienced' class, first place was taken by George Joy with a perfect score of 1600, followed by Garth Warner with 1592 and Ryan Fry with 1590. Ryan endured a fly-off with Arthur to clinch his third place finish - no small feat! All three pilots received nice trophies for their efforts (and presumably, each a pizza). In the 'first-timer' class, a field of only four, John Roe finished first with a score of 1520.

In keeping with Gull's tradition, an impromptu luncheon was held at the local pizzeria. The after-contest lunch is a must to get the full flavor of a TPG thermal contest. This is a great bunch of knowledgeable and affable folks, and the casual gathering after the event is time well spent.

A TREND?

This is a neat contest format. Easy to understand and inexpensive to participate in, pilot skill becomes an even greater factor than ever since the competitors are flying every conceivable type of aircraft. The de-emphasis on high-tech airframes and re-emphasis on fun and camaraderie left a strong impression on my slope-head, fun-loving, maverick mentality, and I'll definitely be back for the next one. Do others share these sentiments? It would appear so.

While speaking to TPG member Gary Knapp, he told me that his brother's club, the Southern Oregon Soaring Society, was experimenting with a similar format in their area, and were seeing a good turnout at contests. I've also seen considerable discourse on the topic of two-channel-only contest formats on the internet. This, coupled with a surging popularity in the Nostalgia class events, may signal a new form of thermal competition and could help open up our sport to more people by reducing the financial and psychological intimidation factors.

The TPG winch masters keep the equipment in fine condition! All three of the winches performed perfectly for the entire day.

This event also brought out the very best in the experienced competition pilots; John and I found them to be helpful and supportive as we worked ourselves into the ways of the thermal duration format.

For information on future Gulls' two-channel TD events, you can contact Ron Schark, the TPG's newsletter editor at: 7319 Olivetas Avenue, La Jolla, CA 92037. His phone is (619) 454-4900; e-mail, Scharck@aol.com. Thanks again to the Gulls for a great day and a fun event! ■

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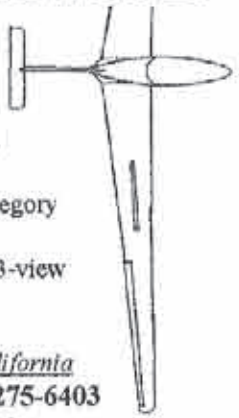

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An Interview with Ed Slegers, Slegers International

...Conducted by Steve Savoie
Gorham, Maine

Introduction

Several months ago, I decided that I would like to interview one of our hobby's key figures. Not having done an interview before, I was quite apprehensive and wanted to select an individual who I felt could be considered a peer, as well as a driving force in the industry, and one who is highly respected by most all hobbyists. I chose Ed Slegers, because in all my dealings with hobbyists and industry professionals, I had never heard a legitimate gripe about Ed. *(Steve's questions begin with a "¿" and Ed's response is in quotes.)*

The Interview

¿Why did you start Slegers International when you already owned a successful Honda and Yamaha motorcycle dealership? Seems like a radical change.

"Yes, it was a radical change, but also a natural one. I was involved in the motorcycle business for most of my life, starting out as a racer and then as a dealer. At the same time, I was very involved with model airplanes. My dad got me started modeling at the age of ten, starting out with rubber band models, gas powered models, helicopters, boats, cars, and eventually sailplanes. It was only natural that tiring of the motorcycle business after 35 years, and seeing a need for someone who could give good, reliable service in the sailplane industry, I would take my turn at providing sailplane enthusiasts with the quality and service I was never able to get as a consumer myself. As luck would have it, I found a buyer for the motorcycle business, sold it, and can now devote my full time to the sailplane business."

¿It seems that the planes you offer are not just a smorgasbord of everything out there on the market. Is this so, and if so why?

"Yeah, that's true. If you look in catalogs, you'll see that there are just

One corner of the shop! Ed uses vertical space to the top!

too many for just one person to handle. What Slegers International has the reputation for, is handling mostly, higher quality thermal duration airplanes. I do offer a few slope airplanes designed by Mark Allen. I also carry a large selection of electrics, which is something that is very dear to me. I got involved in the very early stages of electric and have pursued that, to get higher and higher performance electric sailplanes. The last couple of years I've gotten hooked on hand launch and now have a full line of hand launch kits available. What I handle, to answer your question, is really planes I like to fly myself."

¿Besides glider kits, what other items do you carry?

"Anything that's associated with gliding. Any single item that you can think of, I either have in stock, or access to."

¿I've noted mention of Mark Allen and Brian Agnew designed kits in your ads. Are either currently designing new sailplane kits for Slegers International?

"Yes they both are. We are constantly trying to improve our existing products or to bring out new products.

Some of the small items that Slegers' has to offer.

Mark Allen, at this point, is going to help in designing both a 2 meter and open class thermal duration airplane, and is constantly giving me input on what's new and current, and what works best. Brian Agnew has also been very instrumental as a researcher and developer of new products and, on a personal note, has helped me fly better. He's been working on a new open class airplane, and is probably going to pursue an F3B type airplane."

¿Will this be your first true F3B plane that you will carry that will have your design?

"It'll be Brian's Agnew's design. Brian has already started on the prototype. He's done some wings and fuselages and, I believe at this point, he's going to call it the "Bandit"."

¿What does Slegers International bring to the average customer that sets it aside from the many other sailplane kit suppliers?

"Actually, having to talk to many thousands of sailplaners, both in the United States and overseas (and I can verify that with my mailing list, and certainly my phone bill), there certainly is a problem in this industry with basic common professionalism. So, I would like to think I offer good, reliable, and courteous service to fellow modelers. I think by doing this, and having a large inventory, I'm helping promote the sport, and that's helping to promote the industry."

¿Are there any aspects of this business that disappoint you, or should I say that you wish to avoid?

"Yes, there's a lot of aspects of the business that I'm not real pleased with, having been through a couple of businesses and one that was very similar, although you wouldn't think it on the surface, which is the motorcycles. The motorcycle business at one point was just for enthusiasts; it was just for competitors; it was for people with discretionary income. No one had to have a motorcycle, and no one has to have an airplane like you do a refrigerator. They were motorcyclists who got involved with their sport, and the model airplane business, in a lot of ways, parallels that. I've learned a lot of things being in the motorcycle business, and we have the same situation with model airplanes that I experienced years ago. There are a lot of deficiencies in the sport, hobby or industry. Certainly the lack of a large dealer network offering the general public, who walk into the hobby store, a large selection of sailplane or sailplane equipment is lacking. You go to most local hobby stores and they don't want to get involved with the soaring segment; it's either too small, or they know nothing about soaring. The other would be the lack of large, professionally run, sailplane distributors and manufacturers."

"This industry seems to be made up of a lot of "Ma and Pa" or cottage industries, as we call them, and they can only hurt the industry, because everyone's working on a shoestring. Another deficiency, in an effort to try and make ends meet, is that some of the smaller businesses may be less than honest in some of their dealings. That actually hurts the customer and, in the long run, will have a serious effect on the sport. I'd like to see that all change."

¿Without being too specific, are there any products or product lines that you won't carry, and why?

"There's quite a few products out there that I just won't handle. I believe that some are not the quality that I would want my name associated with. Another would be the reputation of the company that handles it, and product availability. There are some very fine products that I would like to handle, but unfortunately they can not be supplied in a manner that either I, or my customers, would be used to. If I

advertise it, people would assume it's available, and that would do more harm than good."

¿That being even if it were a good profit maker?

"I'd like to make a profit, but not at any price. The profit you make today may not be worth the aggravation down the road."

¿Some believe there's a movement underway to revitalize scale. Do you have any plans to begin carrying scale kits?

"I think there is a definite movement to revitalize scale. And I think it's very good there is. There's nothing more beautiful than some of the scale sailplanes I've seen flying. They're just absolutely gorgeous. Personally, I have not gotten involved in scale like I have in thermal duration, and my expertise in that field is very low. One of my main goals in this business is to offer fine product at a fair price, and be able to have some expertise in answering the customers' questions. In that I'm not involved in scale, I'm sure someone would call me and ask a question about scale that I couldn't answer, and that's not what I want to do. So, to offer the consumer good, reliable answers at this point would not be possible with my lack of knowledge of scale sailplanes. So, no, at this point, I'm not going to offer scale sailplanes."

¿What's a typical day like at Slegers?

"Well actually you've experienced some of it. Being here for a couple of days, and it's certainly been our pleasure having you and your wife here as our guests, you've seen what it's like. A typical day for me is to get in the shop between 7:30 - 8:00 A.M., after I've seen my wife and son off for the day. Then, I stay in the shop, or if I'm fortunate, the other "shop" (i.e., flying field), doing research and development until about 4:00 P.M. After spending some time with the family and having some dinner, I head back to the shop later in the evening and, because of poor sleeping habits, most of the time I work until 2 or 3 in the morning. And then, the next morning, start all over again. My typical day is very long and that's not a

Unique Barracuda fuselage.

complaint. I really enjoy it. One of the reasons I spend such a long day, is because during the so-called "normal" business hours I'm on the phone taking orders, and these orders have to be filled. Not having an abundance of employees, this has to be done at night, and can sometimes take many hours."

¿You don't offer any kits that are glass bagged. It appears that most everything you offer is obeche skinned. Why is that?

"We do have access to some glass bagged planes. I'm a dealer for Mark Levoe's Super V and could have access to Mike Popescu's Grand Esteem. There's the RnR Products line. Also, I'm a dealer for Joe Hahn's line of airplanes, which includes the bagged Monarch. I also sell the F3B Eagle, which is molded, as well as the Calypso from England. We do not have access to a reliable wing manufacturer in bagging that we can count on for a large supply of kits in a timely manner, and a price range that people can afford. The sale of obeche airplanes is hard enough to keep up with, let alone bagged airplanes. One of the reasons that I started this business is because there is a lack of product out there that you can get in a timely manner, and I don't want to contribute to this by offering a line of composite planes that would take a long time to get. I can speak from experience, because I tried this route and it doesn't work."

¿I remember a few years back that you were writing for *RCSD*. Can I ask why that ended?

"Yes it did end, but I'm going to start writing again, for awhile, anyway. To be perfectly honest with you, I had written upwards to maybe 40 articles,

and there was just so much I could write about, without sounding redundant. I had just burned out. I had run out of things to write about that I thought would interest people. I've given writing a break for about a year, but now with all the new products and gadgets available for gliders, I'll start writing again. I felt it unfair to be writing about things that were of no interest, just for the sake of writing."

¿Several months back, Brian Agnew wrote an article that was quite critical of the SD7037 airfoil, but I notice that it's the most popular airfoil that you offer on all your kits. Any comments?

"That's correct, and Brian did, and he's certainly entitled to his own opinion. I agree with Brian. At the time, Brian was working here, and we got lots of phone calls about the article. Half the people agreed and half didn't, which was interesting. I think SD7037 became popular, because at the time there weren't many new airfoils to pick from and it got a lot of media hype. I think it's a good airfoil, but it's not the only airfoil to consider. If you have the opportunity to try new airfoils like we do here at Slegers International, you will find it is not the universal remedy for all the gliding conditions. I think it's very hard to disagree with someone of Brian's skill level. If anyone out there knows thermal duration, it would be Brian. Another reason that the SD7037 became so popular is because it's a fairly forgiving airfoil, and many people at different skill levels can fly it with fairly good results. But I also think that if we gave some of the other airfoils a chance and practiced with them, we could get better results. The reason we offer the SD7037 is because the public has demanded it."

¿With all the time and energy you devote to the business, when do you have time to compete?

"Yes, a tremendous amount of time is devoted to the business. Fortunately, a lot of that time is at night when I can't fly at all. I can't fly what I can't see! I do find time to practice a lot, because I have a flying field located right here at the shop. Because the field is only a few feet from the shop, I can step in and out, take and return phone calls and orders, and then fill those orders as needed. Weekends are reserved for family and flying, and I've been fortunate enough to go to quite a few contests this year. We could say it's in the name of business, but it's really pleasure."

¿That's good that you can flip the switch any time you want and say that's family time; a lot of people have a hard time with that.

"You're certainly right."

¿What's new in electrics, and do you carry electric kits and accessories?

"I carry a lot of electrics, but due to my ads I've become better known for my line of thermal duration airplanes. We have some really fine electrics that were designed by Mark Allen. Mark and I work very close together. He does the designing, and I sort of do the research and development. Our electrics started with the 550E. We made modifications and from there we designed the Electric Hawk. With new technology and more modifications, we've come up with a plane called the Electric Storm. The Electric Storm is absolutely phenomenal on 7 to 10 cells for a thermal duration electric. Because I'm getting more and more interest from consumers that are interested in electrics, I'll start advertising our electric products more, so people can see what we have to offer in electrics."

¿Including Slegers International, where do most kit manufacturers/distributors need to improve?

"That's a real tough question, Steve. I think all of us can improve in quality control. I don't believe we're ever really satisfied, either as manufacturers or buyers. And I am also a buyer. As you can see here in my collection of sailplanes, I try to buy every new sailplane that is available. The quality of the kits can always be improved; there's no question about that. Nothing is going to be perfect, but we constantly try to upgrade. Another improvement would be on price. $400 for a model airplane is an awful lot of money, but because of the smallness of the industry, I don't see that changing for awhile. If we could make the

industry larger and get things in larger volume, then I think prices would start to come down. Product availability is very poor in the industry. I think we as dealers can also improve, by coming up with less complicated models."

¿Could you describe your typical customer and his or her needs?

"The typical customer that I have is probably the same as my competitors', because sailplaners seem to be pretty universal all over. They are usually in their thirties and above. We do not have a young market, which is a bad sign. Most seem to have a fairly good income to afford the price of the kits. They are very knowledgeable and particular about what they want. I find that world wide, because I do deal internationally, the customers are all pretty much the same. They want a good flying airplane, a good quality kit, good after sales service if they have a problem, and good value for their money."

¿Now that you're selling kits overseas, have you noticed any difference between domestic and overseas customers? For example, expectations, building techniques, skills, or availability of supplies that we may take for granted here in the states?

"There's definitely a difference in different parts of the world. Here, in the United States, we seem to have a "bigger and lighter is better" mentality, where in other parts of the world they couldn't care. For example, I sell a lot of airplanes in Australia. There they are looking for fast, molded, and almost ready to fly airplanes, and price almost does not seem to be a factor. In the United States, the majority of the people want a lighter airplane, and don't want to spend much more than $400.00. But worldwide, they're still looking for the same thing: a good flying airplane. The Europeans want big and they don't seem to care about the weight. They fly planes that are a pound or more heavier than ours, and don't think twice about it."

¿Do they seem to have the same access to the building supplies that we have here, or is that a limitation?

"They're looking for some of the building supplies that we have here,

The new Fazer 2 meter.

Condor fuselage with custom designed bellcrank - plastic injection molded.

but we are not the only nation that has sailplanes. There are a lot of building supplies in other countries that we don't have access to here. It's kind of a shame that we can't get together with some type of universal distribution of products. That's one of my goals: to bring product in from other countries that we haven't seen. An example of that would be MAP from France and the Feudenthaler line of products."

¿Can you give an example of something you'd like to see more readily available in "the States"?

"There are lots of things I'd like to see available here. One, for example, would be servo holders for the wings. I've just now noticed that after many years, a company's called Critter Bits is coming out with servo holders made here in the United States. Also, Soarcraft has some nice servo holders. That would be one quick example of the many unique items I've seen in other catalogs."

¿New technology and building techniques are creating planes which can launch higher, land on a dime with extended landing skegs and stay together on strenuous nose plants. How is this affecting the typical thermal duration contest?

"It's making the contests extremely competitive. Contests are now won or lost by either seconds or inches, or by a fast or slow timer. It's getting so close that I think eventually we'll have to come up with a more precise way to time airplanes and measure landings."

¿What is this doing to the "first timer" who wants to get into a contest?

"I don't think it's going to hurt the "first timer". That's why we have classes. The "first timers" are going to be up against other "first timers"."

¿Do you see any new design or building tends?

"Yes I do. I think we are eventually, but slowly, going to see more molded airplanes. I don't think that's going to be a bag composite wing, but a hollow core molded wing. Steve Hug of Fuseworks is working on making some really nice, hollow core molded wings at reasonable prices. As building techniques and materials change and the demand goes up, I think you're going to see the prices become more affordable."

¿Your product line fails to include HLG of any significant numbers. Why is that?

"That's a good question, but it's not really true. We have not been able to keep up with making the public aware of our products. We are getting product in faster than I can make catalogs and fliers. One of these days, if I can get the time, we are going to upgrade our catalog. We currently have many fine hand launches. They include the Climmax, the Monarch, and the Vertigo. This question brings to light a problem we have. We currently have much more product than people perceive we have. We can't keep up with the new products that we get, nor can we send out catalogs every time we get a new product. Basically, any airplane or accessory associated with soaring we have, through our company."

¿Can you describe the manufacturing facility here at Slegers International for the readers?

"As with most all of the sailplane industry, it's probably not as big as some people think it is. Some of the industry has been able to give the customer the perception that some of the sailplane companies are very large, through glamorous and glorious catalogs, but in reality most shops are fairly small. I think my shop is well laid out. It's clean, well lit, heated and air conditioned, but it's not large. The shop is approximately the size of a large two car garage for our active work, and we have about the size of a four or five car garage for our dead storage. This is where we keep the kits, the boxes for making kits, and the sheets of foam for wing construction. But the actual facilities are actually more than adequate for the nature of the industry."

¿Would "modest" be an adequate description?

"Yes, a little bit modest. There is also my own personal feeling that bigger is not always better. Because you're big, doesn't make you good. The advantage I have here, which is a major advantage in the designing of our airplanes, is the ease of carrying out research and development, since we are located right on a flying field. I'm sure that there are many fine airplanes out there that have never been developed to their fullest because every time the designer wanted to test something it was a half hour drive, and an hour round trip. Here, it's only 50 feet away."

¿(Ed then discussed many design improvements that came about through field testing and components matching!) I've been asking most of the questions during this interview, so now I'll open things up to you. Anything on your mind that you'd like to discuss?

"No, not really. Not anything I can think of. You've covered just about everything. As we discussed earlier in the interview, I'd like to see some changes in the dealer network, some new models for the intermediate flier, and see prices come down. Other than that, it's already been pretty well covered."

¿Could you tell the readers a brief history of the company?

"I started the company about 4 or 5 years ago for a few reasons. As I stated

earlier, it was natural that my passion for sailplanes would then turn into a business. I started building sailplanes for a few customers and another dealer, and needed product to build these, found there was a lack of product availability, and a lack of product knowledge. Again, I felt I could do a better job. Having always been interested in electrics, I wanted to try and convert a glider into an electric powered glider, and I noticed some ads for a sailplane that looked like it could make a good conversion. The plane was a Falcon 600 by Mark Allen. I called Mark, this was back in the mid 80's, and he also expressed some interest in electrics. Because of our common interest, we struck up a friendship, that lasts to this day. Mark's been a mentor of mine. Without his help in designing a major part of my airplane line, I would not be where I am, today. I believe Mark's the best sailplane designer in the country, if not the world, which certainly adds to the credibility of our company. At about the same time, Judy and Jerry Slates were looking for information about electric powered sailplanes for their publication *R/C Soaring Digest*. Judy must have heard what I was doing with the Falcon 600 and called me. She asked if I would do an article on the conversion, which I did, and one thing led to another. The Slates' support and encouragement, both personally and through *R/C Soaring Digest*, is the main factor that paved the way to success. Another reason that the company started is because I like to tinker. I've always enjoyed modifying planes, and in an effort to come up with the ultimate for myself, I started offering my findings to the public. And I think the public has benefited from Mark Allen's designs, Steve Hug's fuselages, Ron Vann's wings, publications like *R/C Soaring Digest* and my tinkering. Another mentor and close friend, who has taught me how to trim airplanes and has increased my flying skills, is Brian Agnew. Without the combined expertise of all these people, and the support of my wife Cheryl, and son, Sean, I don't think Slegers International would be where it is today."

¿Where do you see the future of this industry going?

"Right now I think it's very good. You've been here; you've seen a typical day. We've had many orders come in from all over the world. We've also had many orders go out. You've seen my phone pad, with sometimes 40 - 50 messages on it. So, immediately, right now, in the present, it's very good. I have heard from some others in the industry that they're not doing quite so well. I think in the near future, probably in this building season, it's still going to be pretty good. In the not too far future, I think things are going to slow down considerably. There are a few indicators that lead me to believe this: AMA membership is down, in many cases club membership is down, and contest entries are down; lack of flying fields, which has always plagued the gas powered flyers is now starting to plague the sailplane flyers, as more and more land gets built up."

"I also believe most businesses have their up and down cycles, and a year or two ago we had an up cycle. At that time, people bought airplanes, because there were a lot of new designs out there. But talking to a lot of these customers, I see that some of these planes have not yet been built; so why would they buy another? Also, I think the consumer isn't going through as many airplanes. The planes are stronger and, in quite a few cases, fly better than the skill level of the pilot; so why, again, buy another sailplane. Some people tell me they have been turned off to our sport and hobby, due to the lack of professionalism previously mentioned. The only way to build up the sport and hobby would be to come up with new designs, different building techniques and, if possible, lowering the prices. I think a main concern is to keep the existing customers happy and not give anyone a reason to leave the sport."

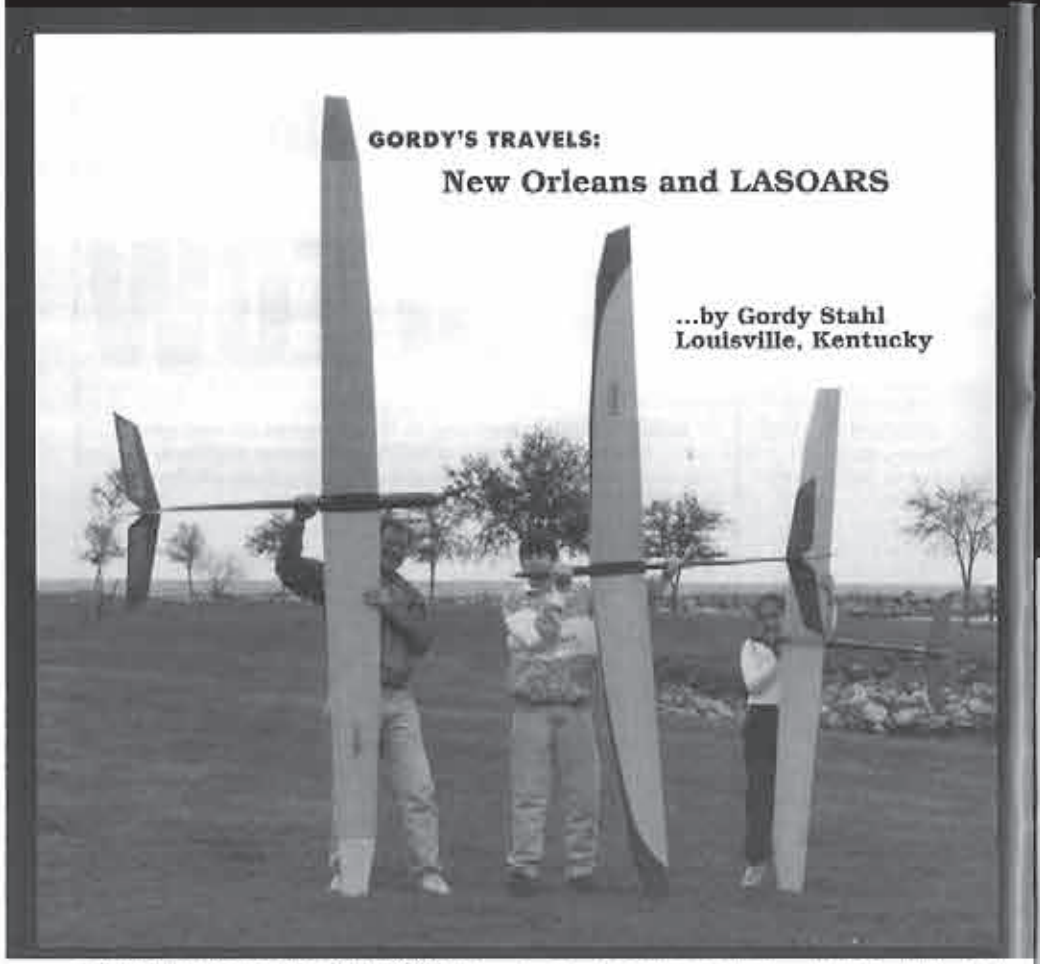
¿Are you planning on attending any of the big hobby shows this year: WRAM, Toledo, etc.?

"Yes, we're going to be at the WRAM show, as we have been there for the past 3 - 4 years. I haven't planned on going to any of the other shows at this time, but may go to some in the future."

Summary

I want to thank Ed and his family for their hospitality during my stay at their home where this interview was conducted. Both my wife and I came away with a different feel for New Jersey. It's a lot more than just the New Jersey Turnpike. I also enjoyed flying Ed's war torn HLG Monarch during one sunny, 22 degree, Saturday afternoon. (This was the first time I had flown a Monarch, and I was quite impressed with its performance.) Ed took quite a chance agreeing to do the interview, as some of my questions were quite direct and not easy to answer. It became quite apparent to me, not long into the interview, that Ed's not in this hobby just for the money. In fact, I would have to guess that if he wanted, he could close up shop, fly at his leisure, and be quite content enjoying his well earned retirement, instead of running a manufacturing business and dealing with the headaches that sometimes come up. But, that's not Ed. I can only described him as the Energizer Bunny with bifocals. I hope he accomplishes the many goals he so openly discussed in this interview. ■

April 1997



GORDY'S TRAVELS:

New Orleans and LASOARS

...by Gordy Stahl
Louisville, Kentucky

For those of you who lurk RCSE on the Internet, you know me and my whereabouts as GordySoar. It was GordySoars originally, but I recently lost my "S" in Las Vegas! (But that's another story!)

I was *forced* to go to New Orleans during Mardi Gras and, being a sailplane addict (without my wife along), spent most of my time looking for cool sailplane stuff and people. I did spend my share of time on Bourbon Street, bartering beads for a "better view", but I have to say that the best part of the trip was my visit with Paul Perret, designer of the LASOAR series of sailplanes.

In this day of clone designs, I fully expected to see another version of the popular glass fuse, 7037 foiled, obechi-winged sailplane. Don't get me wrong! I would give my eye teeth (not my TX!) to have one of each of the cool ships out there, but my humble RC beginnings started with Bill Evans' tailless aircraft; that set a trend of leaning toward the unique. I never owned or built a powered plane with a tail, and at one point I had over 100 various ships hanging, ready to fly! I digress....

(L - R) LASOAR 1200 Electric, 7037 airfoil, 139"
LASOAR 960 sailplane, 7037 airfoil, 110"
LASOAR 650, Eppler 387 airfoil, 92"
(Gerd Lipski is hiding behind the 1200!)

First, let me tell you why I think the LASOARS are singularly unique from the crowd — Paul Perret. Yep, it's his fault. Isolated from the sailplane community, not too deep in the bayou, not too close to alligators, and not eating too much spicy Cajun food, was the then young, Paul Perret. Day dreaming of someday becoming a dental technician, he visits a flying site and is helplessly addicted to RC

Fashionable droop nose, full length Kevlar™ reinforcement, extremely clean lines.

Notice the fuselage wing fillets. Plywood molded in place and nearly 3/8" area all the way around for a great tape joint. Carbon tow reinforced canopy area; fiber mix epoxy in nose for strength; and, that unique jet canopy!

sailplaning. His dream comes true and, one day, while filing away on a denture, he decides that being a sculptor is really the cats' meow and sets up a shop in an abandoned steel fabricating shop. He switches over to bronze castings and holds his first showing, only to find that being an artist means starving, so back to fixing dentures he goes doing the art stuff on the side.

About this time, he discovers electricity and electric sailplanes, and the competition aspect intrigues him. Everyone was flying the old gas bag design ships, converted to electric assist. Paul felt that if the new composite ships and their airfoils were so successful in non-electric sailplanes, then those concepts should be great for his electric competition interests. That meant finding an airframe that fit his requirements: stable, efficient, strong and, since he was an artist, with good looks, one that could kick butt on the current batch of converted floaters.

He looked around and found plenty that met some of his needs, but none that filled them all. That meant designing and building his own.

Paul has a thing for jets, so he made it part of his fuselage criteria to add a dash of jet-ish looks. He wanted launch stability, so just the right "hedral and planform" had to be found. A lot of altitude was being lost on wobbly climb-outs and he found, although a straight wing would climb out faster, that he usually ended up with more altitude with a concession toward more 'hedral.

He loved the look of sailplanes that carried their tails high on step, so he aimed for the least amount of mass in his ships' rear sections. He knew that E-ships had a tendency to slap their tails on landings, so he also aimed for strength. Always primary was the focus of beauty in its lines.

The next was wing construction and the spar. The entrance of the unorthodox, carbon joiner and tube spar created by George Sparr, appeared to solve a whole bunch of potential building and production problems. This system is used on some of the most recognized performance ships available, today.

The fuse was the next labor of love. I mentioned his jet thing, and that is clearly evident in the canopy. But a top view of the tail feathers gives a clear impression of a graceful whale's tail fin. The wing is mounted high in the fuse, protecting the flap servos on landings; the ample wing fillets, with molded in ply reinforcements, provide plenty of area for smooth tape joints! Paul couldn't settle for just buying someone else's fuselages, he had to mold his own.

The result is a sailplane series that stands out in the group, with an artist's touch and an A.M.A. NATS Champion record.

How does it fly? Who cares? All three of the series are pretty enough to be an art object, but if you care, and the past NAT's performance didn't impress you, here are some of the reports I got from two owners: one with the huge 139" LASOAR 1200, and the other with the unlimited sailplane 118" LASOAR 960. The comments were so close I'll just paraphrase them here.

"I love it! It may be the only unlimited sailplane where I feel more relaxed after having flown, than before. No need to constantly monitor its attitude in a thermal turn. Once trimmed I know just exactly where it's going and what it's going to do. And gosh it's beautiful; sometimes I just put it together in my shop and stare at it. It's a joy to fly and to own and I am proud to sit by it on the ground when spectators come by. It wasn't the

cheapest ship, but I feel it's paid me back over and over, and look ma, no fuselage cracks!"

Well, you get the point. I don't own one (yet), I haven't flown one (yet), but I doubt I need to say more. These ships created by a sculptor, in love with sailplanes, way down in Louisiana, is different in lots of really positive ways. If you want to be different, want to feel the pride and excitement and contentment of being an LASOAR owner, then take a good look at the LASOAR series.

The series includes the 139" 7037 - 1200 Electric, the 118" 7037 - 960 Unlimited sailplane, and the 92" Eppler - 387, 650 Electric; three ships specifically designed for their tasks.

I was in the shop, met the man, and saw the ships. Take a look at the photos and see some of the differences for yourself.

Travel has its advantages.

The next stop in my travels is yours. It's nice to know there are alternatives!

If you would like to contact Paul for more information just take highway 10 west to.... Probably easier to call; his phone number is 504-524-3442. ■

ELECTRIC STORM

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Electric Storm & Storm designed by Mark Allen

Wingspan: 78"
Airfoil: SD 7037 modified
Weight: 44-49 oz
Recommended for 7-10 cell
Fuselage will accomodate either direct drive or gear drive.

STORM

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- ✔ Elevator servo located behind trailing edge of wing under a unique hatch.
- ✔ Wing comes pre-sheeted in obechi, carbon fiber reinforced.
- ✔ Wing hold-down bolts hard points installed under sheeting, eliminating crushing wing when bolting to fuselage.
- ✔ Ailerons pre-routed. Servo holes are pre-routed. Wing has flat center section with turned up outer panels, making it easy to install flaps; for nominal fee, flaps and the flap servo hole can be pre-routed at the factory.
- ✔ Conventional stab and elevator pre-machined.
- ✔ Complete hardware package and instructions.

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- ✔ Fazer is an all new, 2-meter, which replaces our discontinued Laser. With subtle enhancements, we continue to improve upon our already well-proven sailplanes.
- ✔ Fazer features slight airfoil wing platform and wing area changes.
- ✔ Fuselage has been slightly changed to improve builder's radio installation.
- ✔ Kit features a fiberglass and Kevlar™ reinforced fuselage.
- ✔ Pre-sheeted obechi wings with flaps; ailerons pre-routed; servo pockets pre-routed; pre-sheeted obechi stabs; all necessary bass wood needed to complete the wing.
- ✔ Kit includes full hardware package and deluxe 19-page illustrated instruction manual.

SPECS.	2 METER	OPEN
Airfoil:	SD7037 modified	SD7037 modified
Stab airfoil:	SD8020	SD8020
Weight:	41-44 oz	62 oz

OPEN CLASS FAZER wingspan: 112"

BARRACUDA

Designed by Brian Agnew

- Glass, reinforced with kevlar, fuselage accommodates standard servos
- Pre-sheeted wings & stabs
- Wing incorporates a poly break sheeted with one piece of obechi without a seam
- Full flying stabs
- Pre-routed flap & aileron and servo holes

Kit Includes: full instructions, Squires wing rod, Byron Blakeslee control cables, Ziegelmeyer control horns and tow hook. All wood and hardware is of highest quality available.

Specifications

Wing Span	110"
Airfoil	SD7080
Weight	59-61 oz.

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PRECISION AMAP WING CUTTER, replacement parts, and service. AMAP Model Products, 2943 Broadway, Oakland, CA 94611. Butch Hollidge, (510) 451-6129, or fax (510) 834-0349.

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VACUUM BAGGERS! Build the unique, slick, aesthetic, competitive 140" GENIE sailplane by Harley Michaelis, LSF 023. Send SASE and $1 for pics, details on ship and on parts package. 26 S. Roosevelt, Walla Walla, WA 99362; (509) 529-2562.

WING BAGS: Protect your wings with a nylon, foam-padded bag, custom made to your wing size. Fuselage bag with a stab pocket also available. For more info., write or call: Pat's Wing Bags, 123 Robbins Lane, DeWitt, NY 13214, phone (315) 445-0044.

PLANS - R/C Sailplanes - Scale, Sport & Electric. Old Timer & Nostalgia - powered, rubber, and towline. Scale - rubber. All models illustrated. Catalog: $2.00. Cirrus Aviation, P.O. Box 7093 Depot 4, Victoria, BC V9B 4Z2, Canada.

RAHM'S, Winches, & Line Retrievers, (310) 866-2405.

For Sale - Business

PARACHUTES: $10. Dale King, 1111 Highridge Drive, Wylie, TX 75098; (972) 475-8093.

For Sale - Personal

1/4 Roebers Pilatus B4, 3.75 meter span (147"), wing profile Ritz 3, NIB... $495.00; 1/4 Roedel Super Cub (towplane), 2.687 meter span, wing profile Clark Y mod. (suitable motors are 160 T, 300 T, OS BGX-1, Brison 3.2 or similar), NIB... $385.00; 1/4 Rosenthal Ralley Morane (towplane), 2.78 meter span (109"), NIB... $495.00; 1/5 Wik Twin Astir, all glass, NIB... $595.00. Contact Robin Lehman, 63 E. 82nd St., New York, NY 10028; (212) 879-1634.

THE ELECTRIC CONNECTION

Mark Nankivil
7411 Canterbury Ave.
St. Louis, Missouri 63143
(314) 781-9175

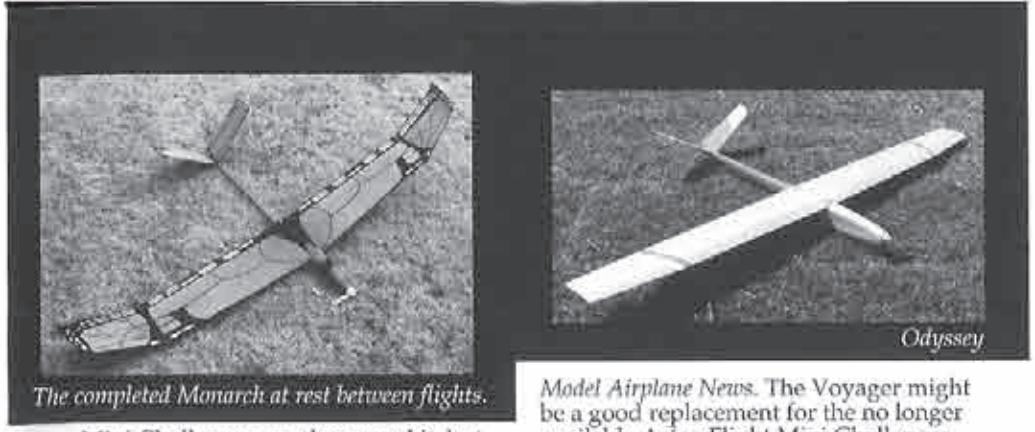
Monarch EX Review - Finale!

What with the winter weather and a busy personal business schedule, the Monarch EX was slow to be completed. Not a fault of the model, but that of the builder (me!). We left off in the last installment with fitting the radio gear and motor, speed controller, and motor pack into the fuselage. As you can see in the photo, it indeed all fits, and rather well at that. Up front is the back plate of the Graupner Speed 400 6V motor with the attached JETI JES 10 Compact speed controller. This is a very nice speed controller with both prop brake and BEC (available from Hobby Lobby) that is perfect for Speed 400 models - direct or gear drive. Able to handle up to 10 amps, it attaches to the motor tabs with two set screws (instead of directly soldering the unit to the motor like the Robbe RSC-210 on-off switch), which allows for rapid removal and swapping of the motor/speed controller with other models/motors. Nice! Behind the motor and speed controller are two Hitec HS-60 servos which drive the V-tail surfaces. Light and small, these were the choice for this location, as I needed a bit more room up front for the possible installation of a geared motor at a later date. Behind the leading edge bulkhead, a lightened JR receiver resides followed up by the 7 cell - 500 AR motor pack. This pack is set up as two rows of 3 cells with a single cell across the end, opposite the connectors. The cells are directly soldered to each other - no straps between cells except the single end cell. All up weight for my Monarch EX is 20.5 ounces - quite reasonable for a 4 servo model with the Monarch butterfly finish. I might later swap the receiver and install a MFA Direct Micro 2000 receiver and save another 1/4 ounce of weight. Control surface throws were set up as recommended in the instructions; this seems to be dead on for my set up. Only time and more flying will see whether I modify the throws. I would highly recommend that you stick to what is noted in the instructions and adjust only after flying the model a number of times. Balance was right in the center of the recommended C.G. range - a rarity for me!

Up front is the Graupner Speed 400 6V motor with JETI JES-10 speed controller attached to the back plate, followed by two HS-60 servos. Behind the bulkhead is a lightened JR credit card receiver and a 7 cell 500AR motor pack. Yes, it all fits!!

Initial flights have been with a Robbe 6 x 3 1/2 folder, and the climb is quite brisk as long as the airspeed is kept up. With a direct drive set up, you are better off using a shallow climb with good air speed whereas with a geared installation, the climb can be a bit steeper and slower. This makes sense when you think about what the propeller is doing in each case. The model senses lift well and circles tightly without fear of tip stalling. When slowed down too much, the Monarch gets mushy and obviously isn't flying at its best - it's easy to see when that happens. Keep a decent turn of speed and you will be rewarded with a nice climb rate. When you have established the lift, crank in a little flap and watch the elevator going up!! When it's time to leave the lift and head out, neutralize the flaps and start moving. If sink is encountered, a little bit of negative flap helps to pick the speed up and let you escape the sink zone. I will continue to refine my use of the flaps to open up the flight envelope of the Monarch EX. This is a model that I will continue to find fun and challenging to fly.

I would recommend the Monarch EX to anyone looking for a competition level Speed 400/ElectroSlot model. The cost is higher for the kit than say a Voyager, Mini Challenger or other pure kit, but remember that the level of pre-fabrication of the Monarch EX is much higher, too. I would still be building it today if it weren't for that level of pre-fabrication! Plus, you can swap the wing to a Monarch HLG fuselage and let it do double duty for you! Contact Joe Hahn and Don Stackhouse at: DJ Aerotech, 719 Fisk Street, Piqua, OH 45356; 513/773-6772.



The completed Monarch at rest between flights.

Odyssey

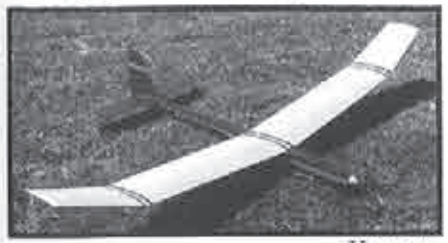
I'll let you know how things go when I install a Graupner SpeedGear 400 geared motor and 10x8 or 12x8 folder in this beauty.

Other New ElectroSlot 400 Size Sailplanes

I received some interesting info. and photos on two relatively new Speed 400 powered electric sailplanes from Kenneth Williams at K & A Models Unlimited. The models are the Voyager and Odyssey and can be purchased as either an all wood kit for $39.99 or with a fiberglass fuselage at $69.99. The specs on the two kits are:

Wingspan - 60"
Wing Area - 370 sq. in.
Wing Loading - 7 to 10 oz./sq. ft.
Airfoil - SD7037
Ready to Fly - 18-24 oz.

There was a very positive kit review of the Voyager in the February '97 issue of *Model Airplane News*. The Voyager might be a good replacement for the no longer available Astro-Flight Mini Challenger. You can contact Kenneth at: K&A Models Unlimited, 9300 Yvonne Marie Dr. NW, Albuquerque, NM 87114. Tell him that *RCSD* sent you! ■



Voyager

WHAT'S A GOOD FLIGHT SIMULATOR?

"Jane's US Navy Fighters"

...by Dave Register
Bartlesville, Oklahoma

For a good flight simulator, I'd recommend "Jane's US Navy Fighters" for Windows 95. It's not a cruise around with a Cessna, but it's got a lot of great options. It is still the best in terms of flight simulation for powered aircraft, challenging situations and good quality graphics. It has all the bells and whistles in terms of pilot view, spotter plane view, sound effects, etc. It has NO sailplane capability.

For military aircraft fans, it has about 30 aircraft in there, with about half having video clips on design, development and flight performance. All of them have still pictures and a write-up on development history, deployment background, and capabilities.

There are a large number of simulated missions and campaigns. Most end with a required carrier landing and that's REALLY hairy. The flight effects are very good. Flight characteristics for each plane is different. For instance, the C-130 has a very slow control response and even appears to evidence some adverse yaw. The F-22, on the other hand, is a nightmare!

It's sure a lot of fun. We got this for our son who's at the Naval Academy. He couldn't tear himself away from it at home, and his room mates are crowding the computer to get at it when they have some liberty at school. Most surprising effect was just before crashing an A-6. After a series of gravity defying moves, and consequent grunts and groans over the speakers, the navigator got sick to his stomach. Rather nasty sound effects!

This program comes as a CD-ROM and works best with Win'95 on a Pentium (90 MHz or higher), a 4X (or higher) CD-ROM, 16Mb memory, and about 30Mb of available hard disk space. A sound card is a must for the instructions, video clips and sound effects. A good joystick is not absolutely essential, but adds a lot; it works best with a more advanced joystick such as the Microsoft 3D.

The program is distributed by Jane's Combat Simulations/Electronic Arts. It's readily available in Wal-Mart and other stores for $50.

I've also tried the Microsoft Flight Simulator, EF2000, and the Sailplane Flight Simulator (SFS). Microsoft Flight Simulator (Win95 version) is good, but not as good as USNF 97. It has a 2-32 as the only sailplane option. Trouble is, it only has some tight, stationary thermals in the SF Bay Area landscape. These are incredibly tight, even at extreme altitudes. In tower view, you're so far away from the nearest airport tower, you have to run at ~ 50 to 75 zoom to see what you're doing. If you create a custom flight with the 2-32, you can set up a landscape where tower view isn't too bad. However, no thermals!

SFS (demo version) is pretty good for sailplane control realism, has excellent thermals (and apparently some slope lift). The choice of options is fine, but the graphics quality is not great. Very blocky and DOS looking. It has both a pilot and spotter plane view; it also has a tower view. However, it works very well, and is unforgiving in control response. The ability to stall, spin, etc., is probably the best in this one. If only the graphics were a bit prettier, this would be a real winner. Maybe I need to buy the full version and check it out.

I had some problems installing SFS under Win 95 and sent a note to RCSE and found a number of others had similar troubles. One reply led me to my solution, and here's what I learned. My computer is both smarter and dumber than I am. When it first tried to run the program, it claimed it wanted to run in DOS mode. In that mode, you run into all sorts of memory management and memory availability problems. So, I went back into the taskbar and set it up as follows (assuming you've already put this on your Start menu somewhere):

1) On the START menu, click on Settings; then click on 'Taskbar'; then click on 'Start Menu Programs'; then click on 'Advanced'. This gets you into Explorer with the installed programs displayed.

2) Find the listing for "Sailplane Flight Simulator'. Right click (right mouse button) on this program, and click on the 'Properties' selection.

3) Go to the Program section and click on Advanced; then check the box which says 'Prevent MS-DOS programs from detecting Windows'. Then click 'OK' to close that menu.

4) Go to the Memory section and make sure all selections are set to 'Auto'.

Back out of all of these open windows and you're ready to run.

I've since discovered that I don't need all that rigamarole in Win95 to run SFS. Turned out I had a resident program (a virus checker) that was getting in the way of the program running properly. Telling the system not to allow a DOS program to detect Windows can't hurt, but in most cases, it really isn't necessary. Just install it on the program menu and it should run fine.

When SFS 2.5 comes up, go over to the menu screen to set all the options you want. I had a problem with a sound card. Namely, I have a Sound-Blaster 16 PNP card (a real live, certified, official branded one!). The Sound Blaster option on the program won't work with this card, no matter which settings I used. (Strange but true - locks up the machine with a blank screen, even when the Sound Blaster test works OK.) However, the Ad-Lib' option works fine and is a heck of a lot better than the PC speaker. ■

PC Flight Sim Notes

...by David Garwood
Scotia, New York

Keep in mind the difference between RC flight simulators and full scale sims, which can vary from arcade game to exceedingly complex aircraft with mission planning simulations. The latter are games you must study to play well. They come with books, and serious players buy more books to learn them thoroughly. Many have multi-player combat capabilities.

The RC sims are developing rapidly and some of them, like RC Aerochopper, include a simulated RC glider. They tend to be more expensive than the game sims, because a transmitter box is generally included and the publisher sells fewer copies.

The "full scale" game and combat flight sims are cheaper, because the market is larger and you provide your own joystick to control the aircraft.

There is a feature of many game sims that may be useful in RC pilot training and practice. You can fly the aircraft from an "external view" sometimes called "tower view" and the plane then looks and acts somewhat like an RC model. Examples of programs where this feature is available are:

Kesmai Air Warrior
Microsoft Flight Simulator
Looking Glass Flight Unlimited
Electronic Arts US Navy Fighters
Spectrum Holobyte Falcon 3.0
Strategic Simulations Su-27 Flanker

The Microsoft Flight Simulator and Looking Glass Flight Unlimited programs contain simulated full scale gliders.

My son Louis, a decent slope soaring pilot, credits his time on PC-based flight simulators as helping him learn to control an RC plane with a radio transmitter. The program he spent the most time with was Sierra Online's Red Baron.

Red Baron, an easy-to-fly, WWI biplane dogfight game, is an old program, now perhaps available in the bargain bin for ten bucks or so. Sierra Online has announced a new version of Red Baron, due out soon. ■

SFSPC

...by John Derstine
Gillett, Pennsylvania

SFSPC - The Soaring Simulator from Germany - is absolutely the best one I have seen for sailplanes. I only have the demo version, but even with its limitations it is good. It is the most realistic, full scale sim for sailplanes. The graphics are not as refined as Flight Unlimited, but the flight realism is far more comprehensive in my opinion. Check it out at <http://members.aol.com/umilde/sfs.htm>.

Also, I have Flight Unlimited and have discovered that the Dave Brown "box" operates the planes in a more docile manner than a joystick. By playing around with the screen resolutions, and detail levels, you can fine tune it to some extent. This control makes it a more realistic R/C simulator. I find the joystick controlled planes to be too twitchy. However, I find the "in the plane" cockpit training sessions very realistic with the joystick.

If you want to do a strictly nuts and bolts R/C simulation, Dave Brown's is probably the best way to go. They sell an IBM compatible flight simulation program for R/C called RCFS version 4, which comes with a small, twin joystick "box" that looks and operates like an R/C transmitter. The kit, with program and box, costs about $120.00, without an options package (more aircraft set-ups). This box plugs into a standard 4 axis game port. You can set up models any number of ways, and even match flight characteristics to your real model. It also has rocket gliders and planes of all kinds. While available for Apple II, it doesn't work as well, or have the same features. Dave Brown Products, Inc.: <http://www.dbproducts.com>, or (513) 738-1576. ■

Flight Unlimited (PC)

...by Kurt Stagmaier
Signal Mountain, Tennessee

In response to the request regarding computer simulation flight programs, I would recommend Flight Unlimited by Looking Glass Technologies. Although the program has four power planes, it also has a GROB G-103A Twin ACRO sailplane. It is very, very realistic, including aerotow from several air fields, thermals, and many configurations for views, weather, etc.

The program requires a minimum Intel DX/33 or 100% compatible system, running MS-DOS version 5.0 or higher. Flight Unlimited works best powered by an Intel/66 or Pentium processor. Additionally, the program requires 8 megs. of RAM, a VESA 1.2 compliant SVGA graphics card, a double speed CD-ROM drive, 25 megs. of free space on the hard drive, and a Microsoft compatible mouse. A joystick is recommended, and the program supports several virtual reality head sets. ■

Press Release

SFSPC - Soaring Flight Simulator

...from Jim Gell
G.E.E. Wiz, Inc.
Farmington, Michigan

(We asked one of our readers to tell us about SFS, which he also distributes through G.E.E. Wiz, Inc. ED.)

G.E.E. Wiz, Inc. is proud to announce that it is distributing SFS, the first flight simulator for the PC dedicated to soaring flight. Developed by two aeronautical engineers in Germany, SFS is designed not as a game, but as a soaring simulator.

SFS allows you to fly one of four sailplanes over your choice of two terrains where lift and sink are generated by thermals and topography. The available sailplanes include Ka-8, LS-1f, SB-10, and ASW-27. The physical models used to simulate these planes have been refined to be as accurate as possible. This means the plane reacts to rudder commands, weather, and thermals just like the real plane. Even the stall characteristics and the physical stability of the plane are authentic.

SFS simulates the dynamics of the environment and the flight characteristics of sailplanes to provide a very complete experience. Thermals are not just fixed entities in the simulation, but move and distort with the wind. They also cycle through the phases of birth, development, and death. This attention to detail is further demonstrated in the capabilities of the aircraft. Water ballast is available for all of the planes except the Ka-8. Flaps are available on the SB-10 and the ASW-27.

You won't be flying alone either. Other sailplanes, towplanes, and fighter jets on low-level training runs share the sky with you, all created by SFS's specially designed graphics engine that produces 256-color shaded 3-D surroundings.

You can select any of four flight modes: free flight, target flight, target and return flight, or triangle flight, launched by winch or towplane. Time, average speed, course, and barograph are recorded for you. A camera is also available for turning point verification photographs.

An R/C option is also available. Control the aircraft as you would when flying from the cockpit, or use your R/C transmitter. (An adapter for the transmitter, available through Pantronics, is required.)

SFS hardware requirements: IBM-compatible PC with 80386 processor or better. (We recommend at least 386/33 MHz plus coprocessor or 486DX/25 Mhz.) Memory requirements: at least 450 K of free conventional RAM, 1 megabyte EMS-RAM, and a hard disk with at least 3 megabytes free disk space. Also required is a VGA-compatible graphics card, while **optional** configuration includes: gameport and analog joystick, rudder pedals, Adlib- or Soundblaster-compatible sound card, and R/C adapter.

The price is $50 plus $10 S&H (Michigan residents add 6% sales tax). All orders are shipped by Priority Mail. Price includes software on one 3.5-inch floppy disk, 46-page manual, license card for discounts on future upgrades, and a full-color map. Discounts are available for group orders.

For more information, or to order, contact us at G.E.E. Wiz, Inc., P.O. Box 2581, Farmington Hills, MI 48333-2581; (810) 932-0825, or <geewiz@wwnet.com>.

You can download a free working demo of the latest version on the internet at: <http://members.aol.com/UMilde/sfs.htm>. Or send us a blank, formatted, 3.5-inch floppy disk, and we'll send you a copy of the demo. ■

A Comparison

...by Kurt Rosner
Boulder, Colorado

I'm familiar with two excellent 'sims': the Microsoft Flight Simulator, and Flight Unlimited by Looking Glass Technologies. Both require a high performance computer and monitor, as well as lots of speed, memory, and CD ROM drive, with sound and joystick.

The Microsoft Flight Simulator can be used for entertainment ***and*** serious stuff, like cross-country navigation using radio aids, and instrument landings under instrument conditions.

Flight Unlimited is simpler, for fun, only; it lets you fly several hot, aerobatic airplanes over very well done terrain, graphically speaking. It ***could*** be taken seriously by RCers wanting to practice aerobatic flying.

Both sims let you sit in the cockpit, or watch from the outside, changing the viewing angles in both modes, which makes both sims useful for RC demonstration.

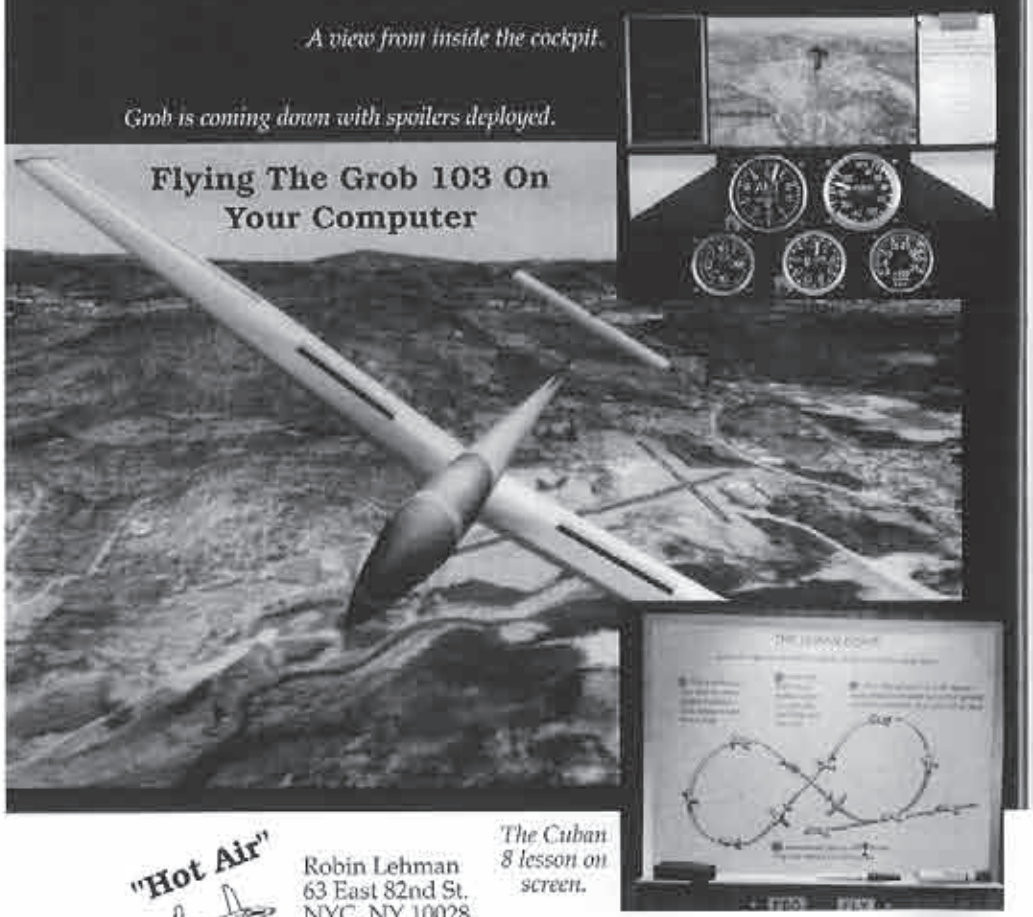
The Microsoft Flight Simulator is complex, allowing (forcing) the user to select all sorts of detail, from control response to scenery complexity, weather conditions, location, and on and on... Flight Unlimited doesn't give the user enough choices, control response being hypersensitive. The instruments lack a compass or any directional indicator. The engine sounds are superb!

Both sims offer a sailplane in their aircraft assortment, with thermals and ridge lift; however, the lift in Flight Unlimited is difficult, if not impossible to use. The latest Microsoft Flight Simulator, "Flight Simulator for Windows '95" has added the Extra 300 and 737 to the previously available Cessna Skylane, Learjet, Schweizer 2-32 sailplane, and Sopwith Camel. This sim includes airports all over the world, with appropriate radio frequencies for their nav-aids.

Both sims allow the user to 'record' flights, saving them on hard disk for future 'playback'.

Are these sims 'good for kids'? Since neither of these products allow the user to shoot anything or anybody, they may appeal only to kids who have an interest in flying. ■

Flying The Grob 103 On Your Computer



A view from inside the cockpit.

Grob is coming down with spoilers deployed.

The Cuban 8 lesson on screen.

"Hot Air"

Robin Lehman
63 East 82nd St.
NYC, NY 10028
(212) 879-1634

Flight Unlimited for the Macintosh

This last September, it seemed to be a good time to get a computer for my kids, and make use of some of the wonderful children's learning software out there. Little did I know at the time that on the same computer I would be practicing my flying skills!

Described by several of the computer magazines as the best flight simulator of the year, I couldn't resist purchasing Flight Unlimited. Described as having beautiful background graphics with four stunt planes and a sailplane to fly, this program really lived up to its billing!

I've seen the A-10 Warthog, the FA-18 3.0, and the latest Microsoft flight simulators among others, and unless you are specifically looking for a shoot-em-up type game, all these pale in comparison. Although the graphics are nice, with good airplane detail, these simulators don't fly much like the real thing. Also, some of them don't have an exterior view, so they really don't help us R/C pilots very much.

Flight Unlimited has five excellent aircraft to work with: Grob G-103 A, Bellanka Decathlon, Pitts Special S-2B, Extra 300-S, and a Sukhoi SU-31, in order of difficulty. Each of these aircraft has very different flying characteristics, and each is interesting to use and learn from.

If you are a pure sailplane pilot and don't want to mess with motors, the Grob is worth the price of the whole package.

You can launch the Grob by airtow, although it is quite difficult and not at all realistic, or you can simply press the tab button and find yourself going higher and higher in increments of 500 feet. This same function is also handy when you crash or break your aircraft: press tab, and it's miraculously together and flying again.

You have five completely different airports to choose from: Arizona, Alaska, Maine, Vermont or Virginia. Some are in desert, some are in flat terrain, and some are in valleys. As I mentioned before, the background graphics are beautiful!

You can fly your Grob from inside the cockpit with three different views, although I think flying it from the outside of the airplane with "external views" is best. I find the Wingman view from outside the aircraft the most useful, although there are four other external points of view to choose from.

All of the above mentioned views can be used with a variety of instruments, the most useful being the airspeed indicator, which shows you when you are near the stall.

The **controls** can be operated from the keyboard and the mouse, although if you really get into this program, you'll get the best out of it if you invest in a joystick, if you don't already have one. What you end up with is an airplane that flies rather like it's coupled (rudder and ailerons), although it is not. For you single-stick right hand pilots, it's perfect. I've heard that you can set up this same program using the Dave Brown Flight Box (a normal two-stick R/C control). I can't do it on my Apple, although it does work with DOS, and perhaps Windows.

There are some **demo flights** included in the program, and you can see what each aircraft is capable of doing, although in every case, the aircraft lands upside-down on the airfield although not on the airstrip. Personally, I found the landing to be the most difficult maneuver, as the strip itself is barely wider than the wing span of the Grob; unless you do an excellent landing you are likely to break your aircraft.

This program also has two aircraft modes: normal and indestructible. In the indestructible mode, you can do just about anything without breaking the airplane (perhaps a little bit more like our R/C flying objects). But in the longer run, it's probably more fun to use the normal mode. Each aircraft can sustain different G-forces, and if you go beyond the capabilities of the aircraft, it will break up in mid air. As mentioned above, no problem! Simply press your tab button and you are flying again.

The Grob has spoilers which are very effective, and of course rudder and ailerons. It's a highly aerobatic sailplane, and is most useful for practicing those hot maneuvers you've never tried before. Although the loops seem to be a little bit slow, the rest of the maneuvers are quite realistic.

You will notice the basic difference between our smaller sailplane and the full-sized Grob; the inertia of 1,000 plus pounds flying through the air is much greater than a five or fifty pound glider. So, in this respect, the maneuvers are a little bit different, but it also makes them quite interesting! To spice things up, you can also add wing-tip smoke.

There are various **wind conditions** and **thermals** that you can set in the program, although the thermals are extremely small and somewhat unrealistic. The wind, on the other hand, can be used for lift on the hills, once you figure out which way the hills are facing. You will be pleased with the excellent glide ratio of the Grob, as it will slope soar in the lightest of lift, and it will thermal.

As with most high-intensive graphic

programs, the higher the resolution for the background, the more jerky the movements of the aircraft. However, as the Grob is the slowest and the gentlest of the five aircraft offered in this program, so the high-resolution background is less of a problem. If, on the other hand, you decide to fly the hotter airplanes, it's a good idea to turn down the background graphics to get smoother flight performance.

This program comes with an excellent Operators Manual. I strongly suggest that you carefully read this before you start flying. It will take you an hour or two to fully digest how to operate your aircraft, but this is time well spent. In case you are interested in trying out Flight Unlimited, the program requirements for the Mac are: Mac OS 7.5 or greater, 66 MHz 601 with 256 Level 2 cache (80 MHz recommended), 8 MB RAM (16 recommended), 2 X CD hard drive (or faster), and 25 MB free hard disk space.

Lessons

Flight Unlimited has a whole section on lessons, with written and illustrated examples of what to do, together with a flight that has a talking instructor, who shows you how to do the maneuver. You can fly the maneuvers from inside the cockpit or with an outside view. The subject of the lessons are as follows: level flight, rudder turn, landing, inverted flight, 2-point roll, loop, Immelman, split S, slow roll, knife edge*, 4-point roll, outside loop, outside Immelman, spin, snap roll, climbing roll, reverse 1/2-Cuban, reverse Cuban 8, hammerhead (stall turn), square loop*, outside hammerhead, outside square loop*, tail slide, vertical roll*, avalanche, humpty-bump, and a rolling turn* (* these maneuvers will be very difficult for a sailplane).

You can go directly to any of these maneuvers and tackle them one at a time. First, your instructor shows you how to do it; then, you can have a go yourself and practice. Your practice airplanes are the Citabria and the Pitts.

The best part of all this is that you are able to make disastrous mistakes with impunity - when you crash and kill yourself and your instructor (he

The Pitts at the top of a demo loop. The arrow shows you where to fly. Follow the arrow, and you will be OK.

screams), simply push the (magic) "Tab" on your keyboard and you are once again flying high and in one piece and can try it all over again.

You really must have a control stick to be able to properly maneuver your stunt plane. Aerobatics by definition need control! By the way, when you're landing, your "instructor" will talk you through it. Better than anything, his comments illustrate the benefits of advanced planning in landing and, for that matter, in any flight maneuver that you plan to do.

Although all of these maneuvers are executed with a powered aircraft, some are quite easy and most are possible to do in a sailplane.

For those of you who might be interested in doing an aerobatic routine, familiarizing yourself with maneuvers you do not know would be a tremendous asset. (Sooner or later somebody is going to hold a scale aerobatic competition at a place like Torrey Pines, or some other appropriate site.) Some of these maneuvers have fancy names, but are extremely simple to execute. If you are a good sailplane pilot, and have a glider which is able to do fairly decent aerobatics, you will be surprised at how many of these maneuvers you will be able to do without much practice.

If you don't like practicing with a powered aircraft, you can take a lesson and then go fly the Grob G 103.

Once you know a few aerobatic maneuvers, you can join these together

The Citabria during a lesson.

as they do with full-sized aircraft. You can then fine-tune your aerobatic routine to get the stunts in the best possible order. For instance, your first maneuver might be a Split S, followed by a loop, followed by an Immelman, etc. It's a question of building up enough airspeed to execute your maneuvers in an aesthetically pleasing manner. Also, you don't want to fly out of sight! A 4-point roll, followed by inverted flight, followed by a 2-point roll, would put three maneuvers together in a long straight line, which would not be good.

Flying, planning ahead and doing a maneuver starts in your brain - if you are thoroughly familiar with how to execute a maneuver, and what it should look like, you are way ahead of the game. This is the true value of the aerobatics in Flight Unlimited. Oh yes, by the way, it's a lot of fun!

Flight Unlimited on the PC

I recently had a chance to try out the Flight Unlimited program on a Dell (PC) computer with a 200 MMX Pentium and 64 MB of memory.

In the latest version of Flight Unlimited, there are a few extra airfields: Dinan and Bordeaux in France (bread and wine are extra, although not recommended for flying), Fort Royal, Glaciers (Alaska), and a very nice California site that looks just like someplace near Los Banos!

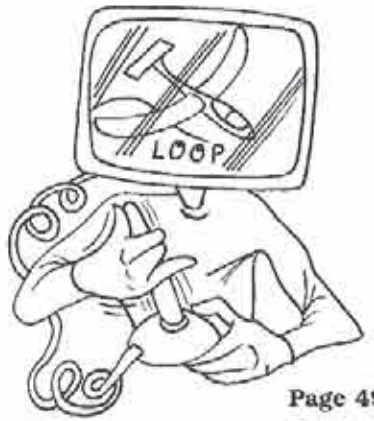
The best news is that the flight controls are much easier to set. You simply put the controls in the flight stick pro mode, click recalibrate, and follow the simple instructions. In a matter of seconds, the Dave Brown flight box is operational, and now you can fly all of the airplanes in Flight Unlimited with an R/C flight box, which gives you all of the controls in your fingers, and they are easily accessible.

Coordinated rudder and aileron turns are now very easy. With the sailplane, the left hand throttle stick operates the spoilers. Full-throttle is no spoilers; low-throttle is spoilers deployed.

DON'T FORGET to calibrate your joystick! If you're using the Dave Brown flight box, you need to press alternate plus J in the flight stick pro mode.

Coupled or uncoupled?

One very interesting experiment you can do, if you fly with the Dave Brown flight box or with a joystick that has rudder easily accessible on it, is with turns, coordinated with ailerons and rudder, and with ailerons only. You will quickly see how much rudder is needed and in what amounts. If you turn the Grob with ailerons only, you will find that once it is in the turn it will continue to bank steeper and steeper. You will end up giving it reverse ailerons to maintain the exact same amount of bank in the turn! When you use rudder and ailerons, you will need different amounts of ailerons; but again, to maintain the exact same amount of turn, you will end up needing to cross-control rudder and ailerons. Yes! The soap box again! But this is a perfect example of how coupling rudder and ailerons will frequently cause you to make inefficient turns; if you coupled the rudder and ailerons on an airplane that flies



like this simulation of the Grob, you will not be able to make the most efficient turns. By the way, most full-sized sailplanes and many models fly in this very same manner, which is the prime reason for my flying uncoupled at all times!

One problem with this program is the fact that the elevator trim won't work when you calibrate the flight box in the normal way. There is a way to solve this problem. When the simulator asks you to leave the (right) stick alone and then push a button, you push the forward stick to give down elevator in neutral. When calibrated in this manner, you have elevator trim, which is extremely handy! It makes it much more difficult to fly an airplane if it is not flying straight and level, and so I find elevator trim an indispensable part of flying in general.

With an R/C set up, any practice on aerobatics is worthwhile, and although your sailplane will not fly exactly like the Grob, all of the principles are the same and you will be familiar with what you are doing. For example, if you are unfamiliar with inverted flight, fly the Grob upside down and just remember that down elevator, when you are inverted, will bring the nose up, and up elevator will bring the nose down. Ailerons operate exactly the way you are used to right side up. If you get used to flying your Grob upside down, when you go out and fly your R/C glider inverted, you will find surprisingly that you will be quite familiar with how to do it!

Of course, the real value of all of this (apart from keeping your sanity in the wintertime when it's freezing cold and you can't go out and fly) is that you can try out maneuvers that you otherwise wouldn't dare do with your beloved R/C sailplane!

With the PC, you can bring your graphics up to the maximum, and have beautiful backgrounds to fly against. I particularly enjoyed the California and the French airports, which are new.

By the way, some of the airports are easier to land on than others, as some are in flat open spaces like Bordeaux and Dinan (in France), and several in the States. There are no fewer than eight airfields to choose from in the

USA. A few of these, like Sugarloaf, Skybrice, California and Glaciers, lend themselves to slope soaring.

The graphics are clearly better on the PC, and the backgrounds are gorgeous. With a powerful PC you can turn your graphics up to maximum and have excellent results.

To sum up, I find the Flight Unlimited program with its five airplanes, all with very different flight characteristics, to be an exceptionally good tool for learning and flying R/C. It's a great way to try out and perfect those aerobatics which you've always wanted to do, and for beginners it would be a very exciting way to learn to control an airplane. I thoroughly recommend this program - it's aesthetically pleasing and the best learning tool I have yet come across (if hooked up to the Dave Brown flight box or something similar).

The product support for this product has been terrific; I've called several times and asked related questions, which have always been answered promptly and accurately.

One other note: I've tried to purchase Flight Unlimited in several software shops and found it to be invariably out of stock. You can order it direct from

Looking Glass Technologies, Telephone 800-360-7455, for $39.99. This is much cheaper than banging in your beloved sailplane because you weren't familiar with the maneuver you were trying!

Having spent quite a few days in the below zero wind chill so far this winter, I was delighted to have run across Flight Unlimited. I have been polishing up my knife-edge, 4-point rolls, and other maneuvers, and if I was serious about learning an aerobatic routine, I would certainly try it out on this flight simulation program first, to iron out all the bugs. Although it's not exactly like flying an R/C aircraft, it certainly is good for keeping the brain in tune. I feel quite certain that whenever I go out and fly again, I will be just that much less rusty, thanks to being able to "fly" the Grob and other aircraft, whenever I have five minutes to spare.

I thoroughly enjoyed this program and perhaps you will too! Good luck and good learning! ■

Jane's Combat Simulations/Electronic Arts
"Jane's US Navy Fighters" (PC Windows 95)
http://www.janes.com/janes.html

Microsoft
Flight Simulator (PC)
http://www.microsoft.com

Looking Glass Technologies
Flight Unlimited
(PC Windows 95, DOS, MAC)
http://www.lglass.com
Demo available on-line.
Flight Unlimited II scheduled for release in mid-1997. CD-ROM for Windows 95.

Sierra On-line
Red Baron (PC DOS)
http://www.sierra.com
Red Baron available on-line for free.
Red Baron II requires 1 meg., DOS.

G.E.E. Wiz, Inc.
SFSPC - The Soaring Simulator (PC)
http://members.aol.com/umilde/sfs.htm
Demo available on-line.

Dave Brown Products, Inc.
Dave Brown Flight Box
http://www.dbproducts.com
(513) 738-1576

Great Lakes F3J

The following announcement is from Bob Sherliker.

"I am running a two day F3J contest on the 5 & 6th of July at Brantford, Ontario, approximately 2 hours from Detroit/Windsor border and 1 hour from Niagara Falls.

"This came about after Mike Stump and I decided over Christmas and New Years to get some interest in this new international class going, and maybe start a couple of annual contests; so, the first event will be held at Southern Ontario Glider Group's (SOGG) field. There are already quite a few flyers on both sides of the border coming; we need more to increase the international flavor to the contest.

"This contest could be a tuneup for the team trials, in both countries, scheduled for Labor Day weekend. Information on request: maps, hotels, etc."

Bob Sherliker can be reached at: 2496 Folkway Dr., Mississauga, Ontario L5L 2J6 Canada; (905) 820-2799, <bsherl@interlog.com>.

9th Annual Masters of Soaring

The following announcement is from Don McColgan, Secretary of the Silent Wings Soaring Association (SWSA), in southern California.

"The SWSA will be hosting the 1997 Masters of Soaring competition again in Covina, California. We have been alternating with the Detroit Hiking and Soaring Society in conducting this contest so that qualified pilots across the nation can have the opportunity to participate. Only the top pilots are allowed to enter, and the competition is usually fierce.

"This is the 9th annual event. Only pilots that have won a 2 day national or regional event, holders of national records, LSF level 5, or level 4, that have completed all contest requirements, can enter. The event is scheduled for July 19 and 20 at the Lark Ellen Jr. High School, 641 N. Lark Ellen, Covina, California. There will be 16 rounds of flying, 10 on Saturday, and 6 on Sunday. It will be an AMA Class B event for 444 (unlimited gliders)."

Don can be reached at (909) 626-1451, <ddmc@cyberg8t.com>.

1997 Southwest Vintage & Classic Sailplane Rally Moriarty, New Mexico

The following announcement was received from George Applebay of the Vintage Sailplane Association.

"We all have certain special interests in our group's overall scheme of gliding and soaring's historic preservation. The New Mexico group was so impressed with the great success and camaraderie of the 1995 International Vintage Soaring Meet, it was publicly announced right after IVSM that a follow-up to that wonderful event would be held the third week of June, 1997 (June 15 - 21).

"A fine organization of helpers has been put together. The principal sponsor of the Southwest Vintage and Classic Sailplane Rally (SVCSR) will be the U.S. Southwest Soaring Museum, Inc., of which you will be reading more about in *Soaring* and other publications in the near future.

"SVCSR is open to the first 60 vintage gliders, 25 or more years of age, to register. Ramp space limits participation. A large contingent from southern California have committed, as have others from Kansas, Texas, and some of the eastern states. Several WWII training gliders will offer rides, as will some early classic two place ships. Steven Leonard will bring the prototype HP-14. About ten vintage gliders call Moriarty home."

Awards, record attempts, social events, and family and crew trips to Santa Fe and Albuquerque are planned. George says they would love to have an RC glider program on Saturday, June 21, although one is currently not scheduled. To obtain additional information, contact Southwest Glider Rally, Box 1812, Moriarty, NM 87035; (505) 832-0755.

Aerotow "97" Web Links

The following information is from John Derstine.

"To all those interested in coming to Aerotow "97", or for those curious about our area of the country, here are some links to Elmira and Harris Hill. There are maps and points of interest, also."

Elmira NY home page:
http://www.geocities.com/The Tropics/1463/

Harris Hill Soaring Corp.:
http://hcirisc.cs.binghampton.edu/~blalor/HHSC/

National Soaring Museum:
http://www.soaringmuseum.org/

Our aerotow site and HHL/D site:
http://www.vivanet.com/~zigy300/av00006.html

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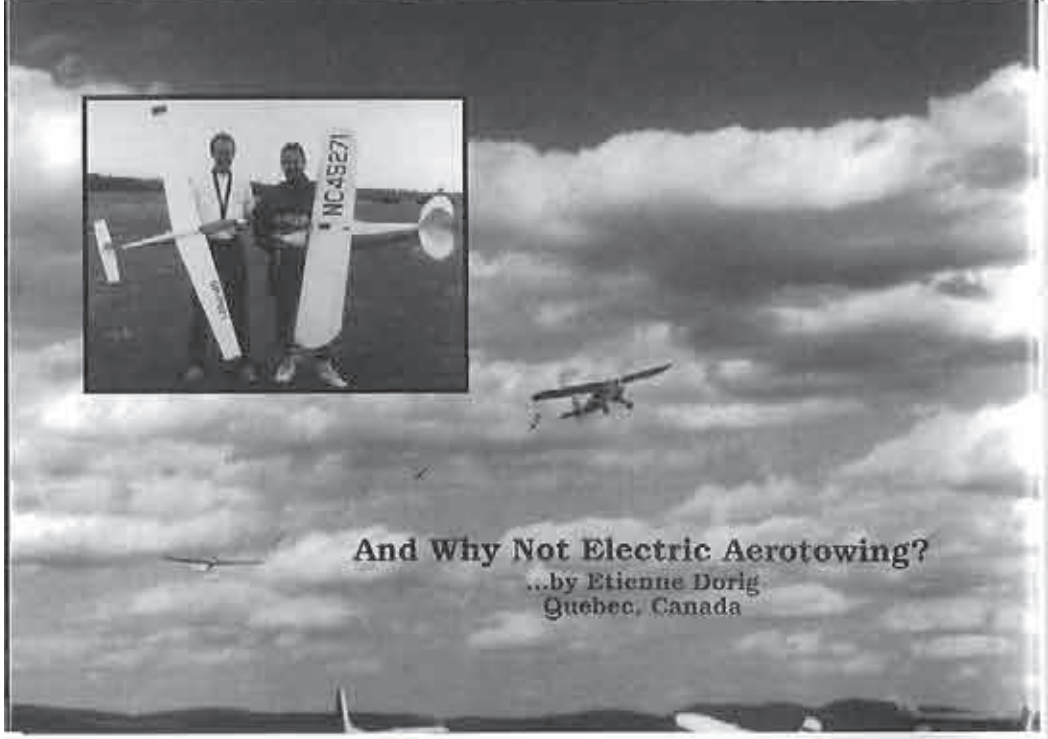
Schedule of Special Events

Date	Event	Location	Contact
April 19-20	FSS#4 2m/Unl.	Orlando, FL	Don Cleveland, (407) 696-7516
April 25-27	Airtow Fun Fly	Fayetteville, NC	Wayne Parrish, (919) 362-7150
May 3	Slope Fun Fly	San Diego, CA	Don Richmond, (619) 587-0226
May 3	R/C Exhibit Opening	Elmira, NY	NSM, (607) 734-3128
May 3	U.S. Soaring Hall of Fame	Elmira, NY	NSM, (607) 734-3128
May 3-4	Hand Tow, Spring Training	Washington, DC	Rod Armstead, (301) 498-7192 roda@msn.com
May 3-4	Spring Soaring Contest	St. Louis, MO	Wayne Wimbish, (314) 947-9294 wdwimb@aol.com
May 3-4	Spring Intergalactic R/C HLG	Cincinnati, OH	Paul Siegel, (513) 561-6872
May 10	15th Annual ISS HLG Contest	ISS Riverside, CA	Robert Cavazos, (909) 485-9563 RCAV@aol.com
May 10	CSS Club Contest	Cincinnati, OH	Ed Franz, (606) 586-0177 edkim_franz@msn.com
May 16-18	Los Banos Slope Scale Soar-In	Los Banos, CA	Lynsel Miller, (408) 275-6403
May 16-18	SIG-LASS Midwest Slope Challenge	Lucas, KS	Paul Wright, (402) 796-2175 PaulW@isco.com
May 17-18	CSS Memorial Contest	Cincinnati, OH	Ed Franz, (606) 586-0177 edkim_franz@msn.com
May 18	Open TD Contest	San Diego, CA	Patrick Dionisio, (619) 586-7997
May 16-19	Coupe du Quebec Slope Race	Leclercville, Qc, Canada	Etienne Dorig, (514) 449-9094 ICARE@telts.com
May 24	2 Meter TD Contest	San Diego, CA	Patrick Dionisio, (619) 586-7997
May 31	HL Meet	Lafayette, IN	Adam Weston, (765) 742-7558 Glenn Sembroski, (765) 463-6306
May 31 - June 1	7th Annual Spring Fling	Davis, CA	Mark Hilliard, (916) 878-4478
June 7-8	Spring Soar	Bristol, VA	Bernard Leonard, Jr.,(423) 878-2094
June 7-8	IHLGF	San Diego, CA	Ron Scharck, (619) 454-4900 Scharck@aol.com
June 14	SHA Central Div. Workshop	Shawnee, OK	David Magerstadt, (512) 251-5388 dmag@mail.utexas.edu
June 14	CSS Club Contest	Cincinnati, OH	Ed Franz, (606) 586-0177 edkim_franz@msn.com
June 14	60" Slope Race	San Diego, CA	Bob Matheson, (619) 754-2657
June 15	F3J	San diego, CA	Mike Ziaskas, (619) 484-7596
June 13-15	Elmira Aerotow 97	Elmira, NY	John Derstine, (717) 596-2392 2076482@mcimail.com
June 15-21	SW Antique & Classic Soaring Rally	Moriarty, NM	(505) 832-0755
June 19-22	1997 MSSC	Huntsville, AL	Ron Swinehart, (205) 883-7831
June 21-22	Rosebowl Soaring Festival	Pasadena, CA	Mike Ratner, (818) 871-6891
June 28-29	1st Annual Sailplane Weekend	Washington, MI	Ray Hayes, (810) 781-7018
June 28-29	Ontario Grand Prix Soaring	Cookstown, Ont.	Jack Nunn, (705) 728-4467
June 28-29	IGG Airtow Weekend	Bendam, Switzerland (Model Club Lichtenstein)	Peter Aeberli, 011-41-1-915 37 53 Jack Kagi, 011-41-1-926 2187
	http://www.interconnect.ch/customers/igg		
June 29	SC2/TPG TD Contest	San Diego, CA	Patrick Dionisio, (619) 586-7997
July 5-6	F3J	Brantford, Ontario, Canada	Bob Sherliker, (905) 820-2799
July 6	2 Meter TD Contest	San Diego, CA	Patrick Dionisio, (619) 586-7997
July 12	CSS Club Contest	Cincinnati, OH	Ed Franz, (606) 586-0177 edkim_franz@msn.com
July 12	60" Slope Race	San Diego, CA	Bob Matheson, (619) 754-2657
July 13	Open TD Contest	San Diego, CA	Patrick Dionisio, (619) 586-7997
July 18-20	SHA Eastern Div. Workshop	Elmira, NY	Mat Redsell, (607) 569-2776 71750.2350@compuserve.com
July 19	CSS Family Fun Fly & Picnic	Cincinnati, OH	Ed Franz, (606) 586-0177 edkim_franz@msn.com
July 19-20	Masters of Soaring	Covina, CA	Don McColgan, (909) 626-1451
Aug. 2	HLG Contest	San Diego, CA	Tom Clarkson, (619) 486-4068
Aug. 2	Slope Combat	San Diego, CA	Arthur Markiewicz, (619)753-3002
Aug. 3	2 Meter TD Contest	San Diego, CA	Patrick Dionisio, (619) 586-7997
Aug. 9	RCHLG	Orlando, FL	Ed White, (407) 321-1863
Aug. 9	CSS Club Contest	Cincinnati, OH	Ed Franz, (606) 586-0177 edkim_franz@msn.com
Aug. 9	60" Slope Race	San Diego, CA	Bob Matheson, (619) 754-2657
Aug. 10	Gentle Lady	Orlando, FL	Rick Eckel, (407) 365-9795
Aug. 9-10	Summer Soar	Bristol, VA	Bernard Leonard, (540) 669-4387
Aug. 16-17	Scale Fun Fly (GNATS)	Nigara Peninsula, Canada	Gerry Knight, (905) 934-7451
Sailplanes/Motorgliders			Don Smith, (905) 934-3815 Mistral@niagara.com
Aug. 17	Open TD Contest	San Diego, CA	Patrick Dionisio, (619) 586-7997
Aug. 23-24	IGG Slope Soaring Weekend	Hahnenmoos, Switzerland (near Adelboden)	
http://www.interconnect.ch/customers/igg			Peter Aeberli, 011-41-1-915 37 53 Jack Kagi, 011-41-1-926 2187
Aug. 30-1st	SHA Western Div. Workshop	Tehachapi, CA	Dan Armstrong, (805) 822-8852 danarmstro@aol.com
Sept. 6	HLG Contest	San Diego, CA	Tom Clarkson, (619) 486-4068
Sept. 6	Slope Combat	San Diego, CA	Arthur Markiewicz, (619) 753-3002
Sept. 7	F3J	San Diego, CA	Mike Ziaskas, (619) 484-7596
Sept. 13	60" Slope Race	San Diego, CA	Bob Matheson, (619) 754-2657
Sept. 14	Open TD Contest	San Diego, CA	Patrick Dionisio, (619) 586-7997
Sept. 13-14	Sailaire One Design Contest	Cincinnati, OH	Paul Siegel, (513) 561-6872
Sept. 13-14	DMFV Scale Masters Motor Glider - Germany		Winfried Olgard, or Bernd Wich 011-49-28 97 85 011 (direct line)
Sept. 19-20	DMFV Scale Masters Scale Sailplane - Germany		Winfried Olgard, or Bernd Wich 011-49-28 97 85 011 (direct line)
Oct. 4-5	CSS Pumpkin Fly	Cincinnati, OH	Ed Franz, (606) 586-0177 edkim_franz@msn.com
Oct. 4-5	24th CVRC Fall Soaring Festival	Visalia, CA	Phil Hill, (209) 686-8867
Oct. 11	60" Slope Race	San Diego, CA	Bob Matheson, (619) 754-2657
Oct. 12	Open TD Contest	San Diego, CA	Patrick Dionisio, (619) 586-7997
Oct. 11-12	Fall Intergalactic HLG	Cincinnati, OH	Paul Siegel, (513) 561-6872
Oct. 11-12	Fall Soar	Bristol, VA	Greg Finney, (540) 645-5772
Oct. 25	TPG Fun Fly	San Diego, CA	Don Richmond, (619) 587-0226
Nov. 2	2 Meter TD Contest	San Diego, CA	Patrick Dionisio, (619) 586-7997
Nov. 8	CSS Turkey Fly	Cincinnati, OH	Ed Franz, (606) 586-0177 edkim_franz@msn.com
Nov. 8	60" Slope Race	San Diego, CA	Bob Matheson, (619) 754-2657
Nov. 15	New England R/C Soaring Convention	Portland, ME	Steve Savoie, (207) 929-6639 Jim.armstrong@acornbbs.com
Nov. 16	Open TD Contest	San Diego, CA	Patrick Dionisio, (619) 586-7997
Nov. 28-30	24th Tangerine	Orlando, FL	Don Cleveland, (407) 696-7516
Dec. 6	HLG Contest	San Diego, CA	Tom Clarkson, (619) 486-4068
Dec. 6	Slope Combat	San Diego, CA	Arthur Markiewicz, (619) 753-3002
Dec. 7	Open TD Contest	San Diego, CA	Patrick Dionisio, (619) 586-7997
Dec. 13	60" Slope Race	San Diego, CA	Bob Matheson, (619) 754-2657
Dec. 14	F3J	San Diego, CA	Mike Ziaskas, (619) 484-7596



And Why Not Electric Aerotowing?

...by Etienne Dorig
Quebec, Canada

One Saturday, at 8 o'clock in the morning, I met Alex, a good pilot friend, at our usual sod farm. We were a bit anxious. We were expected, in less than two hours, to arrive at the St. Hubert exhibit, where we would begin aerotow demonstrations. This was our first training flight; a first in Canada, and perhaps even for North America, we were attempting to tow a glider with an electric towplane.

Doesn't it look real easy? A couple of smiling guys after the first successful flight (Etienne on left.) Photography by David Garwood, Scotia, New York.

History

The idea for this project goes back several years. Our club, exclusively dedicated to gliders and electrics, had always practiced conventional aerotowing, but in a sporadic manner. There were a couple of pilots that didn't mind the mechanics but, despite the interest in aerotowing, nobody was enthused by "gas engines". We had the expertise, and we wanted to develop new interest. If Europe could do electric aerotowing, we could too. The trick was to find a light towplane, and install a sufficiently powerful motor, at a reasonable cost.

After a couple of years of research, Alex purchased a superb, completely finished Piper Cub (yellow, of course). The weight was perfect for an electric conversion. Of course, the original model was set up for a gas engine, so Alex modified the Cub for electric, and added the famous, releasable towhook. The used motor is an Astro 40G, gear fed by 16 cells; the final weight of the model is 2.0 kg.

It was my job to build a scale glider, which corresponded to the scale of the towplane. I chose one of my kits, a Polish glider, the Swift, and built it with a 2 meter span. The glider made its first test flights on the local slope; after some fine tuning to find the proper propeller, the towplane was ready to go.

First Flight

So, there we were, on Saturday morning; the Piper Cub was ready to make its first flight. The 16 cell pack was hooked up for the final charge, and the models were lined up on the runway.

The tow rope was 15 meters long (typical Dacron), with 30 cm of nylon as a fuse (about 30 lbs. test). Streamers were attached at regular intervals, so that it would be easy to see the towline in the air. Since the Swift does not possess a wheel, it was set on a tow dolly. Well loaded, the batteries were placed in the Piper Cub; one last check of the towline attachment was performed.

We were ready to go. Standing side by side to allow good communication during the climb, Alex pushed the throttle lever on the radio. The tow plane picked up speed, and the glider lifted gracefully from the dolly. Our first flight was to be a success!

During the climb, we followed our usual pattern; at about 100 meters height, the Swift released the towline, and the Cub dove back to the runway, neatly dropping the towline onto the track.

On to the Exhibit

At the demonstrations, during the two days of the exhibit, we continued to make refinements. The number of cells was increased to 20 because, during the face wind leg, the towplane was a bit marginal, power wise. The 20 cells allowed level flight to be achieved with half throttle, which provided a good margin of security. Now that the towplane has sufficient power, our summer project will be to tow a three meter span glider.

I hope to have demonstrated, by this article, that towing does not require large gliders and towplanes, only. With means and with models that are more modest, it is possible to explore other avenues of aeromodeling, at a lesser cost. For more information about electric aerotowing, and/or the models used, I can be contacted at: Etienne Dorig, ICARE Sailplanes, 381 Joseph-Huet, Boucherville, PQ, Canada J4B 2C5; (514) 449-9094 (ph), (514) 449-3497 (fax), <ICARE@telts.com>. ■

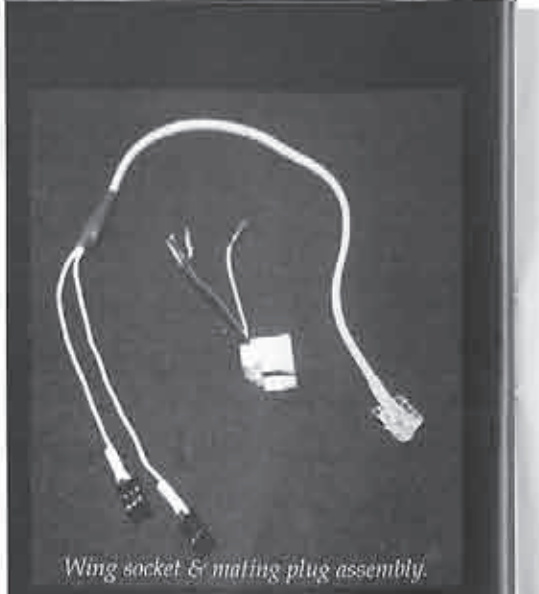
Wing Servo Connections the Easy Way

...by Randy Martin
San Pedro, California

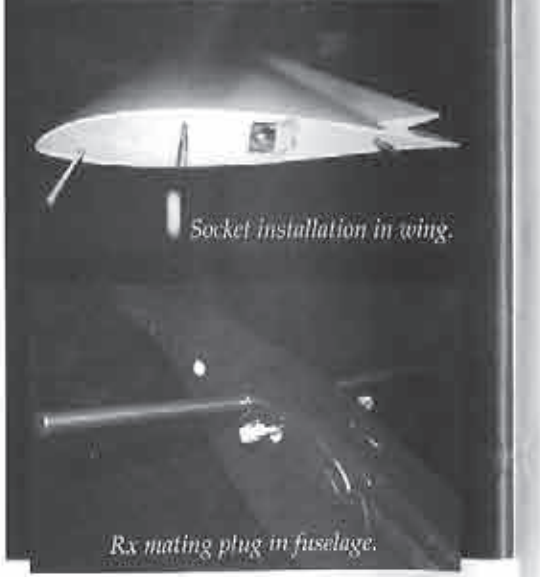
A few years ago, while disassembling my latest open class pride & joy, and in a big hurry as usual, I managed to rip the wires out of one of the wing connectors, again. After enduring yet another round of verbal abuse concerning my apparent lack of basic motor skills from fellow S.U.L.A. (Soaring Union of Los Angeles) club member Mickey Baron, we came up with a solution that has proven to be both simple and reliable. We have been flying this connector configuration for over three years and have yet to experience a failure. The solution? Ma Bell to the rescue: a telephone connector. Well, not exactly, but it kinda looks the same.

The actual item is called a data connector and should be available at most electronic supply houses or computer stores. The main difference in the two types of connectors is wire gauge and insulation material. The phone type uses very fine, stranded copper wire, wrapped over a fabric insulator, which makes it difficult to solder. The data connector uses color-coded, 26 awg stranded copper wire with a vinyl insulation. The cables and receptacles come in 4, 6, 8, and 10 wire configurations. We opted for the 4 wire plug and receptacle, since the physical dimensions are the smallest. Some of the more obvious benefits of using this connector/plug configuration are as follows:

- The socket can be installed in either the wing or the fuselage.
- Installation is flush with the root rib. No protruding pins to bend or break.
- The plug is recessed entirely within the receptacle.
- Positive electrical connection. Plug "snaps" into place.
- To de-mate the assembly, simply press the locking tab and remove the plug.



Wing socket & mating plug assembly.



Socket installation in wing.

Rx mating plug in fuselage.

The plug end of the cable is available as a complete assembly with a connector on each end, or you may assemble your own by ordering a bag of connectors and a crimping tool. My preference is to purchase a 7 foot cable, cut it in half, and splice on the servo connectors for the left and right wings. Mickey prefers to buy extra length servo connectors and crimp them directly to the plug. He never learned to solder. If you go the pre-assembled cable route, pay particular attention to

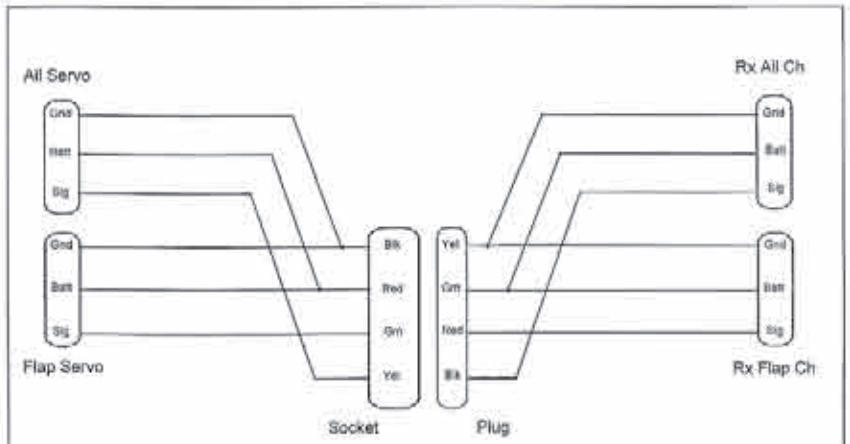


Fig 1
Connector Wiring

the wire color code, as the plug pinouts on one end of the cable may be the mirror image of the receptacle. See figure 1 for wiring information.

There are two options when it comes to servo wiring. You may cut off the existing servo connector and splice the wing connector wires directly to the servo. This saves space in the servo bay, but results in a lot more work if you experience a servo failure and must return it to the factory for repair. The second option is to splice the servo socket to the wing connector wires and simply plug in the servo. I usually hollow out a little of the foam, and more or less stuff the servo connector assembly underneath the wing skin.

The parts are distributed by Frys Electronics in Southern California. Phone (310-364-3797). No, I haven't seen them at Radio Shack.

1646719 BT-120-4-P-P - Data Modular Plug
1647020 6104C - Modular Jack

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R/C Soaring Resources

These contacts have volunteered to answer questions on soaring sites or contests in their area.

Contacts & Soaring Groups - U.S.A.

Alabama - North Alabama Silent Flyers, Ron Swinehart, 8733 Edgehill Dr. SE, Huntsville, AL 35802; (205) 883-7831.

Alabama - Central Alabama Soaring Society, Ron Richardson (Tres.), 381 Stonebridge Rd., Birmingham, AL35210; (205)956-4744, e-mail: lamreht@concentric.net.

Alabama - Southern Alabama & NW Florida Aerotow, Asher Carmichael, (334) 626-9141, or Rusty Rood, (904) 432-3743.

Arizona - Central Arizona Soaring League, Iain Glithero, (602) 839-1733.

Arizona - Southern Arizona Glider Enthusiasts, Bill Melcher (contact), 14260 N. Silwind Way, Tucson, AZ 85737; (602) 325-2729. SAGE welcomes all level of flyers!

Arkansas - Northwest Arkansas Soaring Society, Tom Tapp (President), RT 2 Box 306, Huntsville, AR 72740; (501) 665-2201, eve.

California - California Slope Racers, John Dvorak, 1063 Glen Echo Ave., San Jose, CA 95125; (408) 287-0375.

California - Inland Soaring Society, Robert Cavazos, 12901 Forman Ave., Moreno Valley, CA 92553, RCAV@aol.com.

California - Northern California Soaring League, Mike Clancy, 2018 El Dorado Ct, Novato, CA 94947; (415) 897-2917.

California - South Bay Soaring Society, A.J. Angelo, P.O. Box 2012, Sunnyvale, CA 94087; (415) 321-8583, fax (415) 853-6064.

California - Southern Calif. Electric Flyers, John Raley (President), 1375 Logan Ave., Costa Mesa, CA 92626; (714) 641-1776 (D), (714) 962-4961 (E), e-mail: E-Flyer@ix.netcom.com.

California - Torrey Pines Gulls, Ron Scharck, 7319 Olivetas Ave., La Jolla, CA 92037; (619) 454-4900.

Colorado - Rocky Mountain Soaring Assn., Phil Weigle, 1290 Salem St., Aurora, CO 80011; (303) 341-9256 eve.

Eastern Soaring League (VA, MD, DE, PA, NJ, NY, CT, RI, MA), Jack Cash (President), (301) 898-3297, e-mail BadIdeas@aol.com; Bill Miller (Sec./Tres.), (609) 989-7991, e-mail JerseyBill@aol.com; Michael Lachowski (Editor), 448 County Rt 579, Milford, NJ 08848, e-mail mikel@airage.com.

Florida - Florida Soaring Society, Mark Atzel (President), 1810 SW Terrace, Ft. Lauderdale, FL 33312, (954) 792-4918.

Georgia - North Atlanta Soaring Association, Tim Foster, (770) 446-5938 or Tom Long, (770) 449-1968 (anytime).

Hawaii - Maui Island Slope Soaring Operation, MISO, Hank Vendiola, 10-C Al St., Makawao Maui, HI 96768; (808) 572-5283.

Illinois (Chicago Area) - Silent Order of Aeromodeling by Radio (S.O.A.R.), Jim McIntyre (contact), 23546 W. Fern St., Plainfield, IL 60544-2324; (815) 436-2744. Bill Christian (contact), 1604 N. Chestnut Ave., Arlington Heights, IL 60004; (708) 259-4617.

Illinois (Northwest) - Valley Hawks R/C Soaring Club, Jeff Kennedy (President), 414 Webster St., Algonquin, IL 60102, (708) 658-0755, eve. or msg.

Iowa - Eastern Iowa Soaring Society (Iowa, Illinois, Wisconsin, Minnesota), Bob Baker (Editor), 1408 62nd St., Des Moines, IA 50311; (515) 277-5258.

Indiana - Bob Steele, 10173 ST Joe Rd., Fort Wayne, IN 46835; (219) 485-1145.

Kansas - Wichita Area Soaring Association, Pat McCleave (Contact), 11621 Nantucket, Wichita, KS 67212; (316) 721-5647.

Kentucky - Bluegrass Soaring Society, Frank Foster (President), 4939 Hartland Pkwy., Lexington, KY 40515; (606) 273-1817.

Kentucky - Louisville Area Soaring Society, Ed Wilson (Contact), 5308 Sprucewood Dr., Louisville, KY 40291; (502) 239-3150 (eve), e-mail Jay_Burkart@hp.com.

Maine - DownEast Soaring Club (New England area), Steve Savoie (Contact), RR#3 Box 569, Gorham, ME 04038; (207) 929-6639. InterNet e-mail <Jim.Armstrong@acornbbs.com>.

Maryland - Baltimore Area Soaring Society, Russell Bennett (President), 30 Maple Ave., Baltimore, MD 21228; (410)744-2093.

Maryland & Northern Virginia - Capital Area Soaring Association (MD, DC, & Northern VA), Chris Bovais (Coordinator), 12504 Circle Drive, Rockville, MD 20850; (703) 643-5513.

Michigan - Greater Detroit Soaring & Hiking Society, Greg Nilsen (Sec.), 2163 Highsplint Dr., Rochester Hills, MI 48307; (810) 651-8598, GNilsen624@aol.com.

Michigan - Great Lakes 1.5m R/C Soaring League & "Wings" Flight Achievement Program & Instruction. Ray Hayes, 58030 Cyrenus Lane, Washington, MI 48094; (810) 781-7018.

Minnesota - Minnesota R/C Soaring Society, Tom Rent (Contact), 17540 Kodiak Ave., Lakeville, MN 55044; (612) 435-2792.

Missouri - Independence Soaring Club (Kansas City area, Western Missouri), Edwin Ley (Contact), 12904 E 36 Terrace, Independence, MO 64055; (816) 833-1553, eve.

Missouri - Mississippi Valley Soaring Assoc. (St. Louis area), Ken Trudeau, 3033 Plum Creek Dr., St. Charles, MO 63303; (314) 926-3537.

Nebraska - B.I.P.L. Slopers, Steve Loudon (contact), RR2 Box 149 E1, Lexington, NE 68850; (308) 324-3451/5139.

Nebraska - S.W.I.F.T., Christopher Knowles (Contact), 12821 Jackson St., Omaha, NE 68154-2934; (402) 330-5335.

Nevada - Las Vegas Soaring Club, Jim Allen (President), 7117 Caprock Cir., Las Vegas, NV 89129; ph (702) 658-2363, fax (702) 658-1998.

New Jersey - Vintage Sailplane R/C Association, Richard G. Tanis (President/Founder), 391 Central Ave., Hawthorne, NJ 07506; (201) 427-4773.

New York, aerotowing Rochester area, Jim Blum and Robin Lehman, (716) 367-2911.

New York - Elmira - Harris Hill L/D R/C, aerotowing & slope, John Derstine, (717) 596-2392, e-mail 2076482@mcimail.com.

New York, aerotowing Long Island Area, Robin Lehman, (212) 744-0405.

New York - (Buffalo/Niagara Falls area) - Clarence Sailplane Society, Lyn Perry (President), (716)655-0775; e-mail perryl@sstaff.sunyerie.edu; Jim Roller (Competition Coordinator), (716) 937-6427.

New York - Long Island Silent Flyers, Stillwell Nature Preserve, Syosset, NY, Taylor Fiederlein (President), (516) 922-1336, or Joe Coppola (VP), (516) 798-1479.

New York - Syracuse area, Central NY Sailplane Group, Dave Zinteck, Minoa, NY, (315) 656-7103, e-mail Zinteck@aol.com.

North Carolina - Aerotowing, Wayne Parrish, (919) 362-7150.

Northwest Soaring Society (Oregon, Washington, Idaho, Montana, Alaska, British Columbia, Alberta), Sandie Pugh (Editor - NWSS Eagle), 1119 SW 333rd St., Federal Way, WA 98023, e-mail: parrot2luv@aol.com, (206) 874-2429 (H), (206) 655-1167 (W).

Ohio - Cincinnati Soaring Society, Chuck Lohre, 3015 Beaver Ave., Cincinnati, OH 45213; (513) 731-3429, lohre@iac.net, http://www.iac.net/~lohre.

Ohio - Dayton Area Thermal Soarers (D.A.R.T.S.), Walt Schmoll, 3513 Pobst Dr., Kettering, OH 45420, (513) 299-1758.

Ohio - Mid Ohio Soaring Society (MOSS), Hugh Rogers, 888 Kennet Ct., Columbus, OH 43220; (614) 451-5189, e-mail tomnagel@freenet.columbus.oh.us.

Oklahoma - Central Oklahoma Soaring, George Voss, (405) 692-1122.

Oklahoma - Tulsa R/C Soaring Club (TULSOAR), http://www.mccserv.com/tulsoar

Oregon - Portland Area Soaring Society (PASS), Pat Chewning (Secretary), 16766 NW Yorktown Dr., Beaverton, OR 97006, (503) 645-0323, e-mail: patch@sequent.com, web page: www.europa.com/~patch/

Oregon - Salem Soaring Society, Al Szymanski, (contact), (503) 585-0461, aszy@teleport.com, www.teleport.com/~aszy/sss.html

Oregon - Southern Oregon Soaring Society, Jerry Miller, 3431 S. Pacific Hwy. TRLR 64, Medford, OR 97501, e-mail Milljer@aol.com, ph/fax (541) 535-4410.

Tennessee - Memphis Area Soaring Society, Bob Sowder, 1610 Saddle Glen Cove, Cordova, TN 38018, (901) 751-7252, FAX (901) 758-1842

Tennessee - Tullahoma (Southern Middle Area), Coffee Airfoilers, Craig Logan, 147 Stillwood Dr., Manchester, TN 37355, (615) 728-5446, jclogan@edge.net.

Tennessee - Soaring Union of Nashville, Terry Silberman, PO Box 17946, Nashville, TN 37217-0946, (615) 399-0846.

Texas - Texas Soaring Conference (Texas, Oklahoma, New Mexico, Louisiana, Arkansas), Gordon Jones, 214 Sunflower Drive, Garland, Tx 75041; (214) 271-5334.

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Virginia - West Virginia & Western PA area, Chip Vignolini, 1305 Perry Ave., Morgantown, WV 26505; (304) 598-9506, ydne30a@prodigy.com.

Washington - Seattle Area Soaring Society, Waid Reynolds (Editor), 12448 83rd Avenue South, Seattle, WA 98178; (206) 772-0291.

Outside U.S.A.

Australia - Southern Soaring League, Inc. (SSL), Mike O'Reilly, Model Flight, 42 Maple Ave., Keswick SA 5035, Australia. Phones: ISD+(08) 293-3674, ISD+(08) 297-7349, ISD+(018) (082-156 (Mobile). FAX: ISD+(08) 371-0659.

Canada - Greater Niagara Area Thermal Soarers (GNATS), Flat Field Soaring & Aerotowing, Gerry Knight, (905) 934-7451 or Don Smith, (905)934-3815.

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Canada - Southern Ontario Glider Group, "Wings" Programme, dedicated instructors, Fred Freeman, (905) 627-9090, or Bill Woodward, (516) 653-4251.

England (Thermal Talk & Europe), Jack Sile (Editor), 21 Bures Close, Stowmarket, Suffolk, IP14 2PL, England; Tele. # 0449-675190.

England (southwest) - Sean Walbank, Woolcombe Hays, Melbury Bubb, Dorchester, Dorset, DT2 0NJ, phone 01935-83316.

Hong Kong - Robert Yan, 90 Robinson Road, 4th Floor, Hong Kong; (852) 25228083, FAX (852) 28450497, yanr@asiaonline.net.

Japan - Dr. Paul "Sky Pilot" Clark, 2-35 Suikoen Cho, Hirakata Shi 573, Osaka Fu, Japan; IAC+(81) 720-41-2934, fax: IAC+(81) 6-954-4144, e-mail: 76055.3546@compuserve.com, http://chaos.fullerton.edu/~jclark/skypilot.

Scotland - Ron Russell, 25 Napier Place, South Parks, Glenrothes, Fife, Scotland KY6 1DX; Tele. # 01592 753689.

Seminars & Workshops

Free instruction for beginners on construction & flight techniques, week-ends (excl. contest days), "AJ" Angelo, South Bay Soaring Society (San Jose area), (415) 321-8583.

BBS/Internet

Internet - Email list/resource of RC soaring related folks, including US and international club contacts, vendors, kit manufacturers/distributors, software, equipment and supplies. Check out the web site: www.ocpapsych.com/yellow.htm, or contact Manny Tau at taucom@kaiwan.com.

Internet soaring mailing listserve linking hundreds of soaring pilots worldwide. Send a msg. containing just the word "subscribe" to soaring-request@airage.com. The "digestified" version that combines all the msgs. each day into one msg. is recommended for dial-up users on the Internet, AOL, CIS, etc. Subscribe using soaring-digest-request@airage.com. Post msgs. to soaring@airage.com. For more info., contact Michael Lachowski at mikel@airage.com.

The Frequent Flier's Info. Hot Line, San Francisco Bay Area - Box 1 (lost & found airplanes, helpful tips, upcoming events), Box 2 (questions), Larry Levstik, (415) 924-4490.

R/C Soaring Web Site & E-Mail Addresses Directory, one stop search for URL's and e-mail addresses. Submit your cyber address free. Updated constantly: http://mccserv.com/dozone/rcwebpgs/

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Reference Material

Still a few copies available of some issues of the printed transcripts of talks given on RC Soaring at the Previous Annual National Sailplane Symposium. Prices reduced to clear out stock. Talks were on thermal meteorology, flying techniques, hand launch, cross country, plane design, airfoil selection, vacuum bagging, plastic coverings, flying wings, etc., etc. Send SASE or call for flyer giving details. Many copies of most recent (1992) transcript left. Clubs have found them good for raffle prizes, gifts, etc. Al Scidmore, 5013 Dorsett Drive, Madison, WI 53711; (608) 271-5500.

"Summary of Low-Speed Airfoil Data - Volume 1" & "Volume 2", Michael Selig wind tunnel testing results. Cost for each: $25 USA (includes postage), $29 surface outside USA, $31 air Western Hemisphere, $38 air Europe, $42 air all other countries. Computer disk, ascii text files (no narrative or illustrations), is $15 in USA; $16 outside USA. Source for all "SoarTech" publications, also. Contact Herk Stokely, 1504 N. Horseshoe Cir., Virginia Beach, VA 23451. Phone (757) 428-8064, email: herkstok@aol.com.

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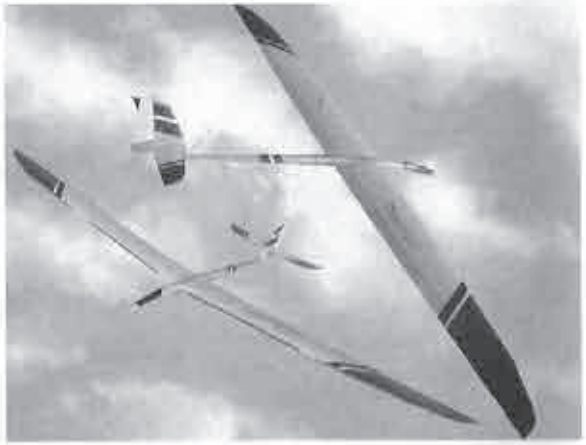

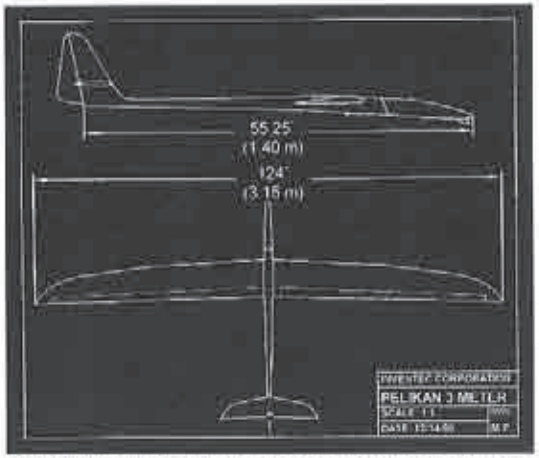

Fuselage Length:	55.25 inches (1.40 meters)
Wing Span:	124 inches (3.15 meters)
Wing Area:	965 square inches
Wing Airfoil:	60% constant thickness 7080, transitioned 40% 7084 stock
Stabilizer Area:	98 square inches
Stabilizer Airfoil:	Eppler 374, 6% thick, 0.8% camber, upswept trailing edge
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