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R/C Radio controlled SOARING DIGEST

THE JOURNAL FOR R/C SOARING ENTHUSIASTS

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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.

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The Soaring Site

F3B World Championships

As most of you already know, the World Championships have come and gone and Daryl Perkins took first again! Congratulations are, indeed, in order!

Schedule & Resource Updates

Not much new to report this month, other than the fact we've been able to pull up the mailing schedule by a couple of weeks thanks to the efforts of the *RCSD* Team! And, our "Short Cuts" columnist, Steve Savoie, is back, sharing one of his favorite flying sites this month: Clark's Cove in Maine.

We note that it's also time to update the resource listings. So, if any of you have any changes to report (new address, zip code, telephone number, etc.) please let us know. And, for those of you coordinating contest schedules for the upcoming year, please send them in, as well. The easiest way is, of course, via e-mail to RCSDigest@aol.com.

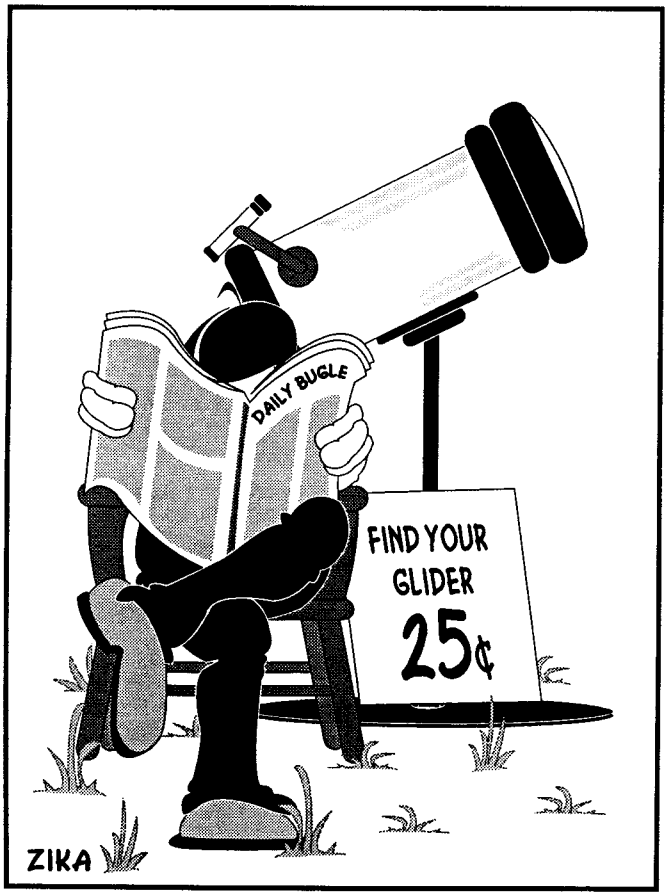
And, for those of you with web browsing capability, new to the pages of *RCSD*, please note that we provide the cover photography, from each issue of *RCSD*, on the main web page. Last month, we featured Pete Bechtel, as well as providing a .pdf file of additional photography he sent in, which was shown on page 9 of the July issue.

Happy Flying!
Judy Slates

TABORCA 3

The current version has a wing span of 132" and weighs seven pounds. This is a superb F3J sailplane which will soon be available as a kit from a major manufacturer.

The flying wings of Jochen Haas, including Taborca 3, are discussed in "On the 'Wing..." by Bill & Bunny Kuhlman.



"CIRRUS"

The Graupner "Cirrus" was a popular plane some 30 years ago, this one having been built by Jerry Slates, Wylie, Texas. The high performance, deluxe kit included a 3 piece plastic fuselage, die-cut ribs, and a complete hardware package. The cost: $35.95!

Photography by Jerry Slates.

Jer's Workbench

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Just a Little Easier - Plug & Jack Volt Meter Leads

I like doing things the easy way when I can. Don't you?

Most everyone who is into our hobby of radio controlled modeling, whether it be cars, boats or airplanes, has a volt meter of some sort. But, do you even know where it's at?

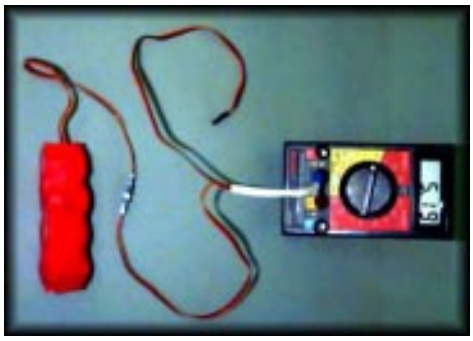
I know some modelers who have a volt meter, but never use it. Why? I don't honestly know why. Perhaps for several reasons. Perhaps they think that one has to be a rocket scientist or an electrical engineer in order to use a tool such as a volt meter. Or, perhaps the real reason is that the leads and probes are too big and awkward to use on the tiny wires, jacks and plugs that are a part of our radio control equipment.

For myself, if I'm going to check something like a battery pack or a switch, I need one hand to hold one probe, while the other hand holds the other probe, as well as the battery pack plug, or switch plug, or jack, in order to get a reading on the volt meter. Of course, what if I had just one plug, or jack, to plug or jack in, instead of trying to man-handle two over sized probes?

Like I said before. I like to do things the easy way. So, I made myself a new set of leads using plugs and jacks for my volt meter. It was very easy to do. It required a set of plugs that fit my volt meter, and some shrink tubing, which is available at most electronic supply stores. The two aileron extensions can be found at most hobby shops.

In order to build these new leads for a volt meter, first take the aileron extensions and cut the plug off of one aileron extension; then, cut the jack off of the other aileron extension. Now, slip one piece of shrink tubing over the two aileron extensions. Then, strip back and skin the two (positive) red wires, don't forget the shrink tubing, and solder these to one of your new plugs that fit your volt meter. Next, pull back and skin the two (ground) black or brown leads, don't forget the shrink tubing, and solder these to your other new plug. Now, pull the shrink tubing in place, and shrink using a heat gun. That's all there is to it.

New plug and jack volt meter leads.



Look Maw! No hands! It's easy to read.

Now to use the new volt meter leads. To check the voltage on your battery pack, just unplug your battery pack, plug it into your volt meter, and read; if you can't get to your battery pack because it's hard to reach, use your other new lead. Simply plug it into your battery pack charge jack and read. If you think you are having a problem with the on-off switch, try plugging it into the other side of the on-off switch, checking that, too.

Keep these new volt meter leads where they are easily available and you'll likely use your volt meter a lot more and have fewer electrical problems. And remember, if you're not electrically inclined, ask a friend that is electrically inclined to do the wiring for you!

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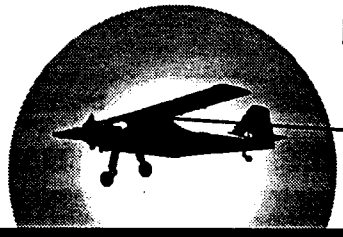

The Great Midwest Oc-Tow-Berfest 2001

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Pilots Choice Awards for Best Modern and

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Food available on Saturday and Sunday.

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$20 Entry Fee / Towpilots Free

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Flying begins after 9AM pilots meeting.

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The Flying Wings of Jochen Haas

One of the benefits of writing this column, now in its thirteenth year, is the tremendous number of correspondents with whom we are in contact. While the flow of information has not been consistent, waxing and waning over time, it has certainly been intense. Except for stamp collecting, we know of no other activity which could have possibly generated so many friendships around the world. Through the years we've been in contact with an untold number of other modelers, some living as close as a few miles away, others as far away as New Zealand and Australia, Hong Kong, South Africa, the Canary Islands, and Abu Dhabi.

Jochen Haas

Jochen Haas, who lives in Bissingen Germany, began writing to us earlier this year, and just recently sent us an Excel spreadsheet which he created. This spreadsheet is used to design tailless swept wings and includes not only the usual CG calculation, but predicts performance as well. Both the spreadsheet and its documentation are available on our web site. (The URLs are provided in the References section at the end of this article.) As the Excel file and documentation are self-contained, this month's column will be used to tell you about Jochen and his aircraft.

Jochen's father reentered modeling around 1970, and Jochen eagerly joined him. Many Sundays were spent flying gliders equipped with power pods and either Cox or O.S. engines. They also flew a number of powered Fred Reese designs from *RCM* plans.

In the mid-1970s, Jochen and his father expanded into slope and thermal soaring in the nearby Teck hills. They flew large gliders, some with wing spans of fifteen feet. Glass and epoxy fuselages were purchased, while the wings and tails were built by Jochen.

Jochen started flying full size gliders in 1976 at a small airfield near the Teck hills. Several notable people were club members, including Dr. Richard Eppler.

Some years, Jochen's modeling activities dropped to nearly zero, but his interest in aerodynamics grew greater and greater. When other modelers complained that they had problems designing their own "odd" creations, or were not happy with the performance or behavior of their 'ships, Jochen tried to solve the problems with an increasing theoretical knowledge base.

About 15 years ago, the huge semi-scale gliders he had been flying became boring, and he began searching for new challenges. Jochen tried some of the flying wing kits which were then becoming available. He also picked up a book on the Horten wings and Hans-Jürgen Unverferth's "Faszination Nurflügel." About this same time, various flying wing models began appearing in the German model magazines. Jochen's interest was piqued, and he tried some of them, but they had either poor performance or poor flight characteristics.

Through the intervening years, Jochen has modified the designs of others and gone on to design several tailless aircraft of his own. He has also served as a consultant for others' projects. The Excel spreadsheet mentioned at the beginning of this column is an outgrowth of his desire to design aircraft more quickly and with less prototyping, thus saving time, materials and money.

The aircraft

1. A Peck Polymers Genesis, modified for more docile behavior and better performance. The elevons are moved inboard from the wing tips, winglets have been added, and the fuselage is a bit smaller than the original.

2. Taborca 1, the first of Jochen's designs, was formulated for higher wind speeds and wild aerobatics.

Photo 1

Photo 2

This model is about the size of an RC-HLG. The airfoils are also of Jochen's design, and have a pitching moment of zero. This model served as a test bed for ensuing developments — winglet modifications, "M" dihedral, and so on. This model was used as the starting point for the still evolving Excel spreadsheet, and confirmed Jochen's thoughts about how a tailless planform should be designed.

3. This is the Liaton 1, roughly a Horten Ho II. The span is over seven feet. This model has very good flight characteristics and looks good in the air, but its performance is poor by the standards of today. The airfoils are 8% thick, and it flies too fast for light lift conditions. Jochen's second Ho II, which is RC-HLG size, performs much better and is still being flown.

Photo 3

4. Jochen claims spectacular performance from this Horten III. Wing span is 168", and it weighs 23 pounds. These pictures were taken on one of the hills in Teck, shortly before sunset.

Photo 4

5. This is a preliminary small scale model of the Horten Ho IX, constructed as the first step in a larger RC project. The span is 73", and it weighs about three pounds completed. The larger RC project? A 50 pound scale model of the Horten IX, with a wing span of 170" and two turbines. Construction is complete, and the builders are awaiting the certification which they must have before flight tests can commence.

Photo 5

6 and 7. Taborca 3, the current version, has a wing span of 132" and weighs seven pounds. This is a superb F3J sailplane which will soon be available as a kit from a major manufacturer. Its performance is comparable to that of the Graupner/Hobby Lobby Soarmaster. It was designed with Jochen's Excel Spreadsheet.

Photo 6

Photo 7

Jochen's flying site

For those interested in Jochen's flying site, the Teck hills are located in southwest Germany at the Schwäbische Alb. Teck is actually a castle, and the slopes there have been home to gliders since the 1920s. Wolf Hirth flew there, and his two factories, Wolf Hirth and Schempp-Hirth, are still in the vicinity. Graupner and Multiplex are in the area as well. Some are flying tailless models on these slopes, but most have F3B and F3J 'ships, or big semi-scale gliders. The winds are usually light, but the thermals are good and everyone has an enjoyable time.

Resources:

Jochen Haas' Excel spreadsheet and documentation are available for download at <http://www.halcyon.com/bsquared/Haas.zip>.

The compressed file expands to a folder with two enclosed files, one XLS and one DOC.

Unverferth, Hans-Jürgen. Faszination Nurflügel. Verlag für Technik und Handwerk GmbH. Baden-Baden Germany, 1989

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HAVE SAILPLANE, WILL TRAVEL!

Tom Nagel.

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ADVENTURES IN PALEOTECHNOLOGY

Last summer, Paul Seigel set the HLG world on its ear by winning the NATS with a discus-launched glider, the Disco Boy. Since then the internet Soaring Exchange has been awash with discussion of discus launch technique, new discus launch designs and reports of enormous launch heights being achieved be discus style flyers. Suddenly the conventional wisdom is that a conventional HLG couldn't win at contests anymore.

Then, as serendipity would have it, the kid came home from school with a flyer from the Ohio Historical Society announcing a primitive weapons exposition at the Slate Ridge State Memorial, featuring the national competition of the World Atlatl Association, Inc., plus a boomerang exhibition by world champion Chet Stouffer.

My initial reactions were:

1. Amazement that there was even such as thing as the World Atlatl Association, Inc.

2. The thought that these guys must be even stranger than we are.

3. Realization that here was a chance to investigate the paleological roots of both javelin launch technique (atlatl) and tip launch technique (boomerang).

4. Admission that I owed Judy some columns anyway, so what the hell.

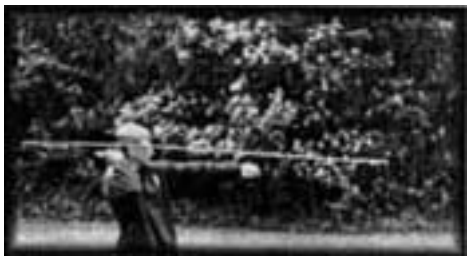
June 2nd dawned dark and drizzly. The weather radio gave a 70% chance of rain. Jack Nicklaus was holding his Memorial golf tournament at Muirfield, a guarantee of crappy weather. My buddy Tom Porch backed out at the last minute. The kid and I decided to go anyway. We were rewarded with a day that was gloomy but mostly dry, and full of paleotechnological weirdness.

Flint Ridge Memorial is located on Ohio's Flint Ridge, which runs for about twenty miles from Newark, Ohio over to Zanesville. The site, owned by the Ohio Historical Society was, in prehistoric times, sacred treaty grounds for Native Americans. Over a span of perhaps 9000 years they would gather at Flint Ridge from all over the midwest and mine flint. The site is dotted with flint pits ranging in size from hot-tub to Olympic swimming pool. You can't walk more than a few yards through the woods without seeing another flint pit, and they number is the thousands. The Native Americans really dug this place.

Archeological digs have shown that, during these ancient rock festivals, craftsmen would set up workshops in the area and knap the flint into arrowheads, spear points, knives, blades, scrapers and ornaments. Excavation of an area only 1 meter square turns up tens of thousands of flint shards. I was reminded of the balsa bits in my basement. I began to feel at home.

Atlatls and Darts for Sale at the Atlatl Nats (two pictures, one a close up of a table full of atlatls and one of a tent full of spears and atlatls).

An Atlatl (spear throwing device) close up.



The launch forces upon a dart thrown by an atlatl are considerable, causing the dart to flex and vibrate in flight.

The Atlatl NATS seemed familiar, too. There were cars and minivans from all over the US. I saw license plates from California, Colorado, Missouri, Pennsylvania, West Virginia, and Indiana. Pavilions and tents were set up, and vendors had tables full of arrowheads, spears and atlatls for sale. (You can get a really nice atlatl for $30 to $45, if you are interested.) It was like a stone age Toledo show!

Rew Nagel

This column is dedicated to soaring vacations. If you have a favorite sailplane saga, consider writing it down for *RCSD*. If you are planning a vacation that includes your plane and transmitter, consider making notes as you go, and working up an article later. Take photos. Collect maps. And send your story to Tom Nagel at tomnagel@iwaynet.net for gentle editing and suggestions.

Tom

RC Smith and his collection of Long-Distance Event Boomerangs.

Rew Nagel and the model trebuchet of RC Smith.

We browsed and talked and explained to a couple of the vendors the recurring discussion on the Sailplane Exchange about using an atlatl on a HLG. These folks knew all about it. They had been asked the same questions before. After all, atlatl's have been around since pre-historic times, I was told. They have been used by every culture on every continent. It was about time that Sailplane Culture got the message.

So the kid and I wound up being offered the use of an atlatl and some darts for the afternoon. (The spears that you chuck with an atlatl are technically known as darts.) The darts are anywhere from six to eight feet long and weigh from six to eight ounces. We saw darts made from everything from bamboo to carbon fiber tubing. The atlatl itself weighs about 10 ounces and is about as long as your forearm, finger tips to elbow. (Remember, these are primitive minds at work here. They deal in cubits, not millimeters.)

Atlatl design is quite varied, too. We saw atlatls made of all kinds of wood, with and without sinew bindings to prevent wood splitting, and with all sorts of different grips, dart braces and balance weights. The small stone balance weights were an American Indian design breakthrough and increased accuracy.

But basically a atlatl does these things:

1. It has a sharp pivot point that fits into a concave hole on the butt of the dart. The traditional point is carved from a piece of deer antler.

2. It has some sort of notch or rest for the dart up front.

3. It has a hand grip right behind the front notch or dart rest.

4. And it gives you the leverage to throw the dart with a lot more force than with your arm alone.

The contestants at the Atlatl NATS were throwing at targets about 15 to 20 yards away. The center "10" ring on the target was about pie plate sized. The targets were mounted on four inch thick sheets of dense foam, and the contestants were punching right though so that a foot or so of dart would protrude from the back of the target. These weapons were designed to take out large game. They carry a lot of energy down range. Darts that miss the targets go easily 60 yards down range.

The atlatl throwing technique as taught to me by the atlatlists was a

revelation, and I didn't do it very well at it. This will come to no surprise to those who have seen me throw an HLG. There is no run-up, no galloping, leaping Joe Wurts delivery. There is no spinning of the body to extend the arc of the arm. It is more like throwing darts in a bar. You would think I would be good at this. At most you take one short step forward during the throw. The dart and atlatl are thrust forward in a linear fashion, with the line of thrust being aimed just above the target. At the end of the throw, the wrist is brought into play, pivoting forward and using the atlatl to add speed and power to the throw. The darts flex and vibrate on their way to the target.

Could an atlatl launch a HLG? Clearly yes. Not only that, an atlatl could rip the wings right off a HLG. An atlatl HLG would have to be built to survive launch stresses greater than those applied during even the best Joe Wurts javelin launch. Additionally, the fuse aft of the wing would have to be strengthened to survive the launch forces being applied at the very end of the fuselage. Getting on the sticks after the atlatl throw would not be a problem. Many of the contestants had wrist straps on their atlatls, just like the ones on ski poles.

Would there be an advantage to atlatl use in HLG? Well, I can tell you this: one of the all time great bar pick up lines that I have ever heard is, "Have you ever used an atlatl?" I can't wait to try it out myself. As to whether atlatl use in HLG would be legal under the current rules, I have two thoughts:

(a) I don't know, and
(b) I don't care.

From the atlatl competition, the kid and I wandered over to the boomerang field, stopping first to talk with RC Roberts, of Columbus, Ohio who had his trebuchet set up nearby, and was firing golf balls ridiculous distances down range. The trebuchet is what the medieval catapult wanted to be when it grew up. You can find out all about trebuchets by visiting www.trebuchet.com, the web site for people who want to hurl. I don't see any way to launch a model sailplane with a trebuchet. A piano maybe, but not a model sailplane.

RC Roberts also brought us up to date on boomerang distance records. We were interested in distance records because the Australian aborigines were the original tip-launch flyers. For many years the record for the longest distance thrown by hand for any object was held by a boomerang. A few years ago the aerobee flying ring took the record away. Now it appears that the boomerang has taken the record back.

A relatively small, three or four ounce strangely shaped boomerang thrown by Marcel Schultz of Switzerland holds the boomerang distance record of 237 meters. That is 237 meters out to a point, and then another 237 meters back again. Because the boomerang does not fly in a straight line, the total distance thrown is well over a half kilometer.

Thus, my paleological investigations have led me to the conclusion that the new conventional wisdom is correct: if you want to win at HLG at the NATS, you need to fly a tip launch glider. And if you are like me, you will need Marcel Schultz to throw for you.

If you are driving down I-70 east of Newark OH, the Flint Ridge Memorial site is worth a visit. Take Rt 688 north off I-70, cross the National Road, US Rt 40, jogging west a little bit, and continue north on 688 until you spot flint knappers or a park sign.

You can visit the World Atlatl Association on the web at: www.worldatlatl.org.

You can find the international brotherhood of boomerang builders at: usba.org.

Information on the Ohio Historical Society and its many activities can be found at www.ohiohistory.org.

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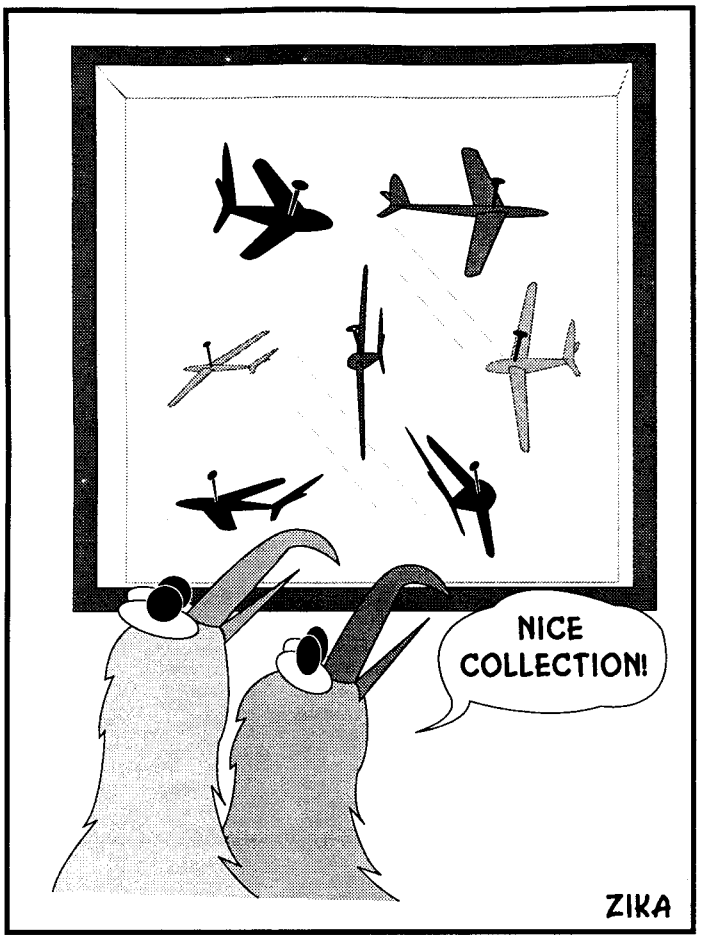

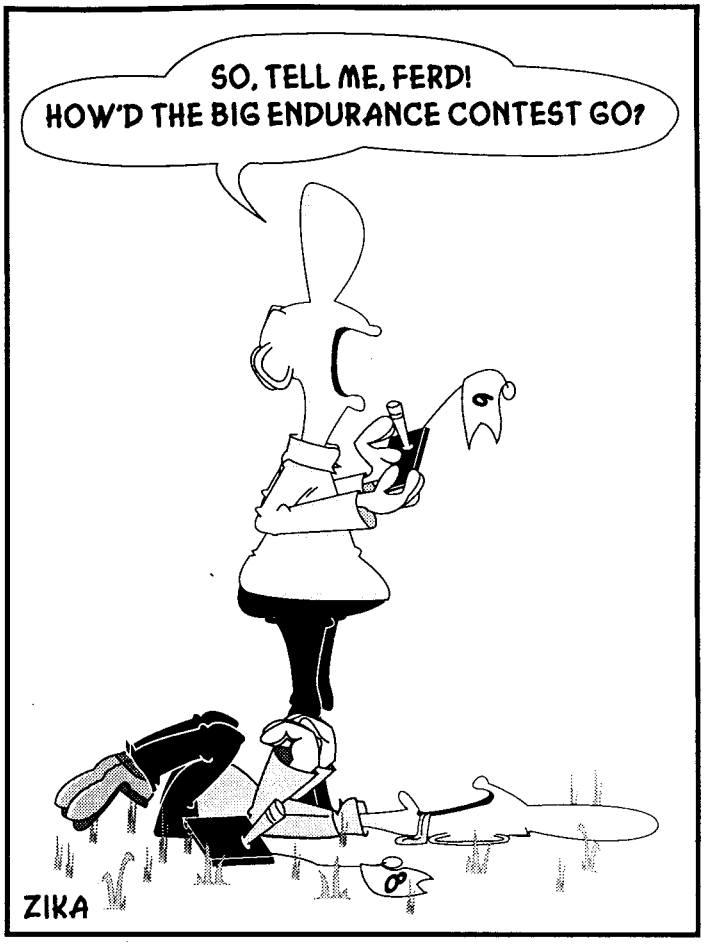

ELECTRIC CONNECTION

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Ste. Genevieve Spring 2001 Electric Meet

Ste. Genevieve, Missouri is a small, sleepy river town about an hour south of St. Louis. Known for its small shops and plentiful bed & breakfast establishments, it is also becoming known for a wonderful electric meet. Ron Vallejo is a doctor in town who has a passion for ducted fan models and electric ducted fan models in particular. Last November, Ron posted on the Ezone's EDF Discussion Group the idea of getting a group of EDF enthusiasts together to fly and swap ideas and suggestions. This quickly grew into an all aspects E-Meet that had excellent weather and a great flying site within eye shot of the levees along the Mississippi River. 15 pilots registered for that event and a great day of flying was had by all.

This year, Ron set up a Spring get together for late April and worked his magic yet again with great weather and flying conditions. 21 flyers registered for the event and there were easily 50+ models on hand that were flown or on display. I had my first flight on my 1.8 meter span Koleos electric sailplane and 48 minutes later brought it in to land as I was getting hungry! Needless to say, the air was excellent and multiple climbs to altitude confirmed how good a model the Icare Koleos is.

Thanks to Ron for putting this great event together and thanks go to the

Tom Denham from St. Louis put in the first flights on his Clancy StaggerBee at that meet. Tom used the recommended set up of a Speed 480 motor with a concentric 3.45:1 gearbox turning an APC 11x7 prop. Juice is supplied through a Viper ESC by 8 Sanyo 800AR cells.

Jeff Brundt holding his Jim Ryan designed F8F Bearcat. Primarily an all balsa kit with foam core wings, it uses a Speed 400 6 volt motor on 8-600AE cells and a Graupner 6"x4.5" scale prop. Span is 30" and AUW is only 18 ounces. Jim Ryan makes some excellent Speed 400 powered sport scale fighter kits.

Tom Ramsey of St. Louis brought this Eindekker from the Balsa USA kit. Span is 80" with a wing area of 1155 sq. inches and a AUW of 10.5 lbs. Power is provided by a DeWalt 18 volt motor and ModelAirTech H-1000 belt gear drive, 24-2400mah NiCad cells, turning a 15x8 prop.

Ike Rutherford is from the Ste. Genevieve club and brought along this Playboy powered by an 05 size ferrite motor using a Master Airscrew gearbox and folding prop on 7 cells.

I didn't get the info on this model but it's a sports scale Piper TriPacer.

Tim McDonough with his Speed 400 powered Raptor Aerosports Falconet MkII pylon racer. Speed 400 6 volt motor and 7 - 500AR or 600AE NiCad cells.

Ron Vallejo holds his new Flash E-74 EDF model. This model is being imported by your columnist from Switzerland. The airframe is all molded foam with balsa and ply reinforcing and uses a custom designed EDF unit that is also now available separately. The fan unit uses a ball bearing ferrite motor specifically wound for this set up and runs on 10 to 12 cells. Both Ron and I are presently flying on 10-2000mah NiMH cells and are seeing 25 amps/24 ounces of thrust with run times of 6+ minutes at full power.

Jeff Brundt's P-38 Lightning from the JR Models kit sold by Hobby Lobby and others. 48" span with an AUW of 48 ounces, it flies on a pair of Speed 400 6 volt motors and 8 - 1250SCR cells.

Ron Vallejo's EDF fleet - from L to R you see a Bill Griggs ElectroScreamer, a Kyosho T-33, Flash E-74 and a Robbe Gnat. Ron's Gnat has been hopped up with a WeMoTec MiniFan and Plettenburg HP200/20/6 brushed motor while his T-33 uses the Kyosho fan along with an Aveox 1114/4Y brushless motor.

(Below) Another one of Kevin Cox's creations is this F/A-18 powered by a WeMoTec MidiFan and an Aveox 1409/2Y brushless motor on 14 RC2000 NiCad cells.

Tom Ramsey with his other big bird, a Balsa USA Taube. 83.5" span and 12 pounds AUW, Tom motivates this model with a DeWalt 14.4 volt motor and a 3.6 :1 ModelAirTech H-1000 belt drive and 21-1700mah NiCad, all turning a 14x10 prop.

(Left) Jeff Brundt also brought along this nice Taylorcraft built from a Comet kit. 54" span and a light 27 ounce AUW, Jeff uses a 3:1 geared Speed 400 with an APC 10x4.7 Slow Fly prop and 8-600AE cells. Looked great in the air!

(R) Kevin Cox preparing his O/D F-15 Eagle EDF for a bungee launch. This awesome model uses a WeMoTec MidiFan with an Aveox 1412/2Y brushless motor and 22 zapped RC2000 NiCad cells.

Tom Ramsey decided to do something a bit smaller and built a ModelAirTech Nightstik. Wingspan is 30" with 300 sq. inches of area and an AUW of 17 ounces. Tom tried flying on a 7 cell 600mah NiMH cell pack but power was lacking. Later flights on a 7 and 8 cell pack of 600AE NiCads were successful. There was an F-117 that actually had the American flag motif applied to the underside as Tom has modeled. Considering the odd angles presented by the real F-117 and the model as it flies, the flag is a great idea - you'll need all the help you can get with orientation!

Brad Young holds a Tim McDonough Speed 400 powered MiniStreak in his right hand and a Jim Ryan designed, speed 400 powered F6F Hellcat in his left. Brad had decals cut for the Hellcat to finish it in original Blue Angels colors.

Your columnist's present electric fleet.

Ste. Genevieve Flying Club for their wonderful hospitality. Food and drinks were provided at the field by Mike & Jody Uding along with their kids Scott & Zach. Ron is planning on a Fall get together, so I'll be sure to post information on that so those of you in the Midwest can plan to attend. I'll let the photos and captions tell the rest of the story! ■

ELECTRIC CONNECTION

by Mark Nankivil
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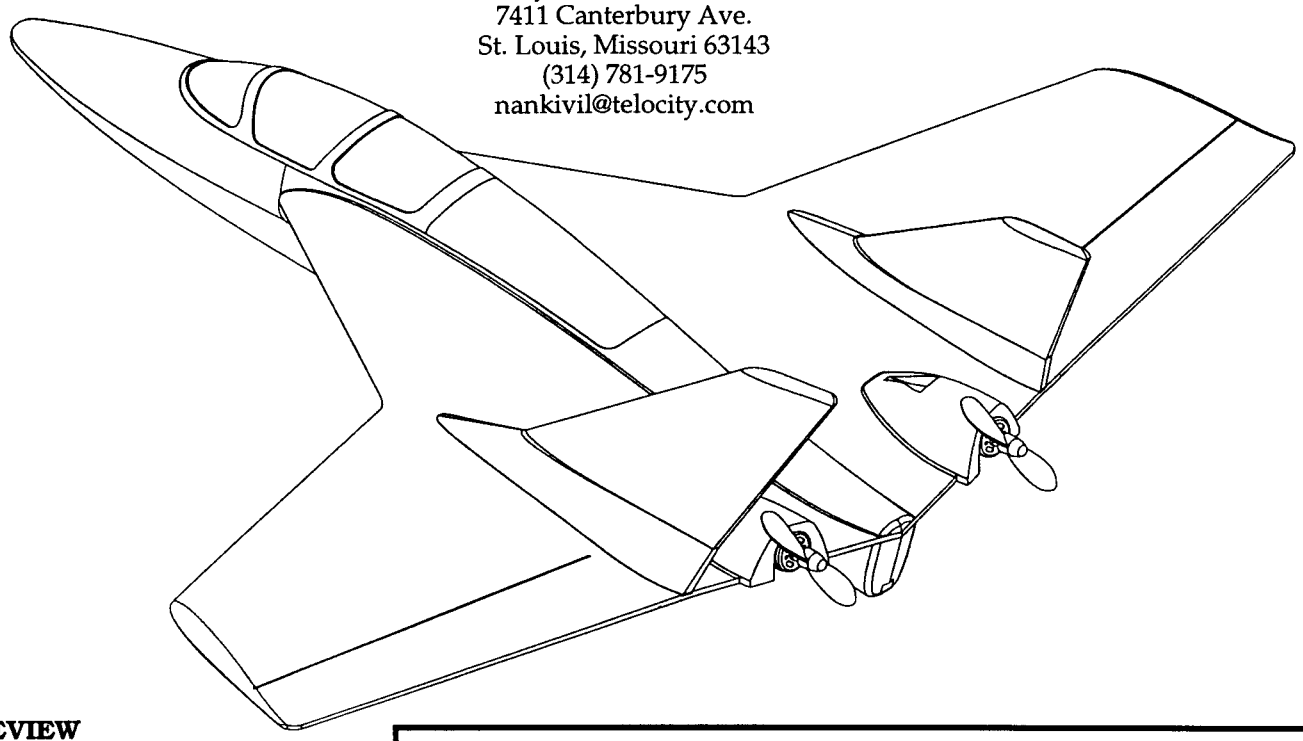
nankivil@telocity.com



KIT REVIEW

Mutliplex Twin Jet Review

Twin Jet Specifications

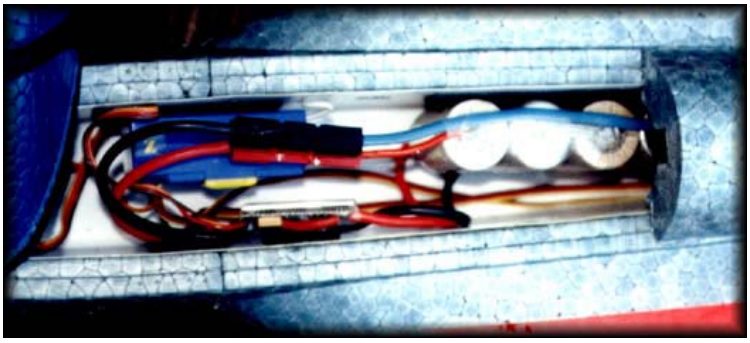
Wingspan:	35.8 inches
Fuselage Length:	31.6 inches
Wing Area:	395 square inches
Flying Weight:	40 ounces (using an 8 cell - Sanyo RC2000 pack)
Radio:	Airtronics RD6000 (radio will require elevon mixing)
Servos:	2 - Hitec HS-80 mini servos
Speed Controller:	Castle Creations Griffin 40 (40 amp rating)
Batteries:	8 - Sanyo RC-2000 NiCad cells

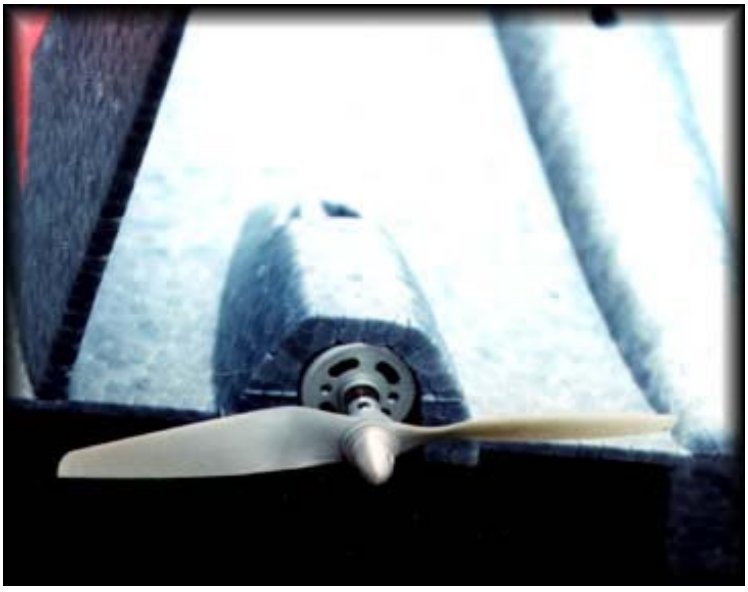
Some time back, I saw a posting about a new model coming from Multiplex of Germany called the Twin Jet. It looked so cool in the artwork with twin fins, twin Speed 400 motor driving pusher props and a flying wing configuration that overall gave the impression of a modern jet fighter. Right then and there, I decided I needed to have one. A short while later, the word was out that the models were shipping and a quick call to Tim McDonough at Electric Flight Products had one on order and headed my way.

I saw Tim at a local swap meet a couple of weeks later and he passed on to me a rather large box with plenty of bright, colorful artwork on the box top and the promise of something special inside. When I got home, I opened up the box to find one very large molding that made up the wing, motor nacelles and a portion of the fuselage, moldings making up the rest of the fuselage, the vertical fins and the canopy along with a vacuformed plastic cockpit tub, a piece of hard balsa stick wood used to make up the spine of the model and a complete power package. The power package consists of two Speed 400 6 volt motors, wiring and two Gunther props. Rounding out the kit is an excellent instruction manual with a single addendum sheet and a sheet of simple self adhesive decals. The Twin Jet's airframe is made up of a molded EPP type foam that appears to be identical to the Arcel™ foam used to make up the FMA Razor flying wing. All moldings were clean with little to no flash and the parts fit in my kit was excellent.

The building instructions start you off by attaching the nose section of the fuselage to the main molding. I did this using ProBond™ polyurethane glue, taping the section into place once it was properly aligned. The parts fit is excellent and with the way that the parts are keyed together, it would be very difficult to get the alignment of the parts wrong. Once the fuselage was a single unit, the vacuformed plastic tub is trimmed and glued into the radio compartment in the fuselage. I roughed up the outside surface of the tub to help improve bonding when it's glued into place. I used polyurethane glue again to do this. Once cured, the tub adds quite a bit of rigidity to the nose section. The rest of the fuselage/wing construction is straightforward and spelled out clearly in the manual.

Wiring is the one place that takes some finesse and patience. There is a bay in the underside of the fuselage just to the rear of the radio compartment area that is the transition point for the wiring in the wings to the radio compartment. To make the holes in the fuselage sides and in the fuselage from the radio compartment to the wiring bay, I chose to use a sharpened 1/4" brass tube which turned out to work





quite well. Just be patient while pulling the wires through. When soldering the motors to the wire leads, be sure to wire it so that the motors work as pushers. Place one of the supplied Gunther props on the motor shaft AFTER you follow the instructions in the manual for changing the props to work as pushers. Run the motors to be sure your wiring is done correctly.

The instruction manual has you using the supplied decals for the hinge tape on the elevons. I was a bit leery of this as the decals are quite thin and easy to tear so I used some Airtronics mylar hinge tape, being sure that I could get a full range of movement on both elevons. The decals are pretty simple and lack much color, something that is useful when flying the Twin Jet and keeping easy visual orientation. I used some Monokote trim sheets on the top and bottom of the wing and made up a couple of chevrons to place on the outside surface of the vertical fins. I would recommend a bright color for the under surface of the wing and light, non fluorescent color for the upper surface for good contrast. To get a smooth finish where the trim sheet goes, I sanded the small molded vent marks off of the wing surface and cleaned the surface with denatured alcohol prior to placing the trim sheet.

With assembly complete and the radio equipment installed, I decided to add a bit of cooling air to the radio compartment as there is none provided for in the design. Using a 3/8" brass tube with one end sharpened as a cutting tool, I drilled a cooling hole in the leading edge of the wings just outboard of the fuselage and angled back in such a way as to put air into the compartment at the speed controller and on the opposite of the fuselage. On the portion of the canopy fairing that is glued to the fuselage, I added three such holes angled back towards the tail. So far this has provided sufficient cooling for the speed controller and the motor packs are not unbearably hot after flying. I am presently using a Castle Creations Griffin 40 electronic speed controller and an 8 cell pack of Sanyo RC2000 cells. All up model weight was 40 ounces when using an 8 cell pack of Sanyo RC2000 NiCads.

In balancing the Twin Jet, the fuselage molding has two little bumps on the underside of the wing and it is a very simple process of balancing the Twin Jet so that the CG is on those little bumps.

It's time to fly!

First flights were made at a local county park late in the day. After range checking the Twin Jet both power on and off, it was just a matter of giving the model full power and a good heave ho and the Twin Jet was off and flying. The recommended CG is quite conservative and the Twin jet is very stable and docile set up that way. Visual orientation takes some getting used to, especially in the late evening light, and it is best to keep it in close until you are used to it. By the third flight, I had moved the CG back about a 1/4" and drooped the elevons about 1/8" to remove some reflex and compensate for the CG shift. Speed was noticeably up and the Twin Jet now would climb and roll with more authority. With darkness fast approaching, it was becoming increasingly harder to see and keep the correct orientation and after one spin and recovery, I called it quits for the day. Later that same weekend I put another dozen flights on the Twin Jet and can honestly use one word to describe flying it - FUN! The Twin Jet is easy to fly, has plenty of speed and is quite aerobatic with the CG back 1/4" to 3/8" from what is called for in the manual. Landings are easy and just require setting up the approach and flaring to touchdown. Don't hesitate to pull the nose up to bleed the airspeed as the Twin Jet is very stable. Flight times with the 8 cell pack of Sanyo RC2000 NiCads are typically around 7 minutes, most of it at full throttle. I've made a couple of flights using a 7 cell pack and the performance is rather sedate for my tastes. After the first weekend of flying, I switched the props to a pair of APC 5.5"x4.5" Speed 400 props on Maxx Products prop adapters to gain a bit more speed and have found that this is an excellent match up for the Twin Jet on 8 cells.

With the EPP type foam construction, the model is very durable and the Twin Jet is the kind of model you'll toss in the back of the car and take with you everywhere. I've even "bounced" the Twin Jet quite hard trying to do a roll at what turned out to be too low an altitude. It hit hard enough to pull the motors and a portion of the nacelles off of the wing but using some CA, it was back together and flying in no time. The Twin Jet is a tough one!

The Multiplex Twin Jet is quite a bargain at a street price of around $125.00 and highlights the fun and ease of multi motor electrics. I plan on taking the Twin Jet with me next time I go to the slope and use it to test the slope conditions knowing that with a bit of power I can bring it back to me easily. I have flown my Twin Jet so much in the past three months that it is beginning to look a little long in the tooth and I plan on ordering a replacement in the very near future - it's that good a model!

The Multiplex Twin Jet is available from:

Tim McDonough
Electric Flight Products
127 S. Oaklane Road
Springfield, IL 62707
www.tim.mcdonough.net

or at:

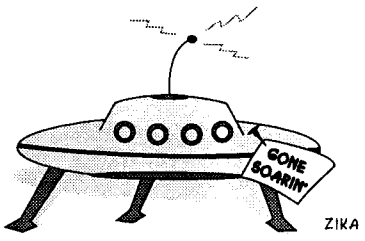
David Roberts
Electric Aero Modeling USA (EAM)
170 W. Main
Lewisville, TX 75057
972/436-5826
www.eam.net

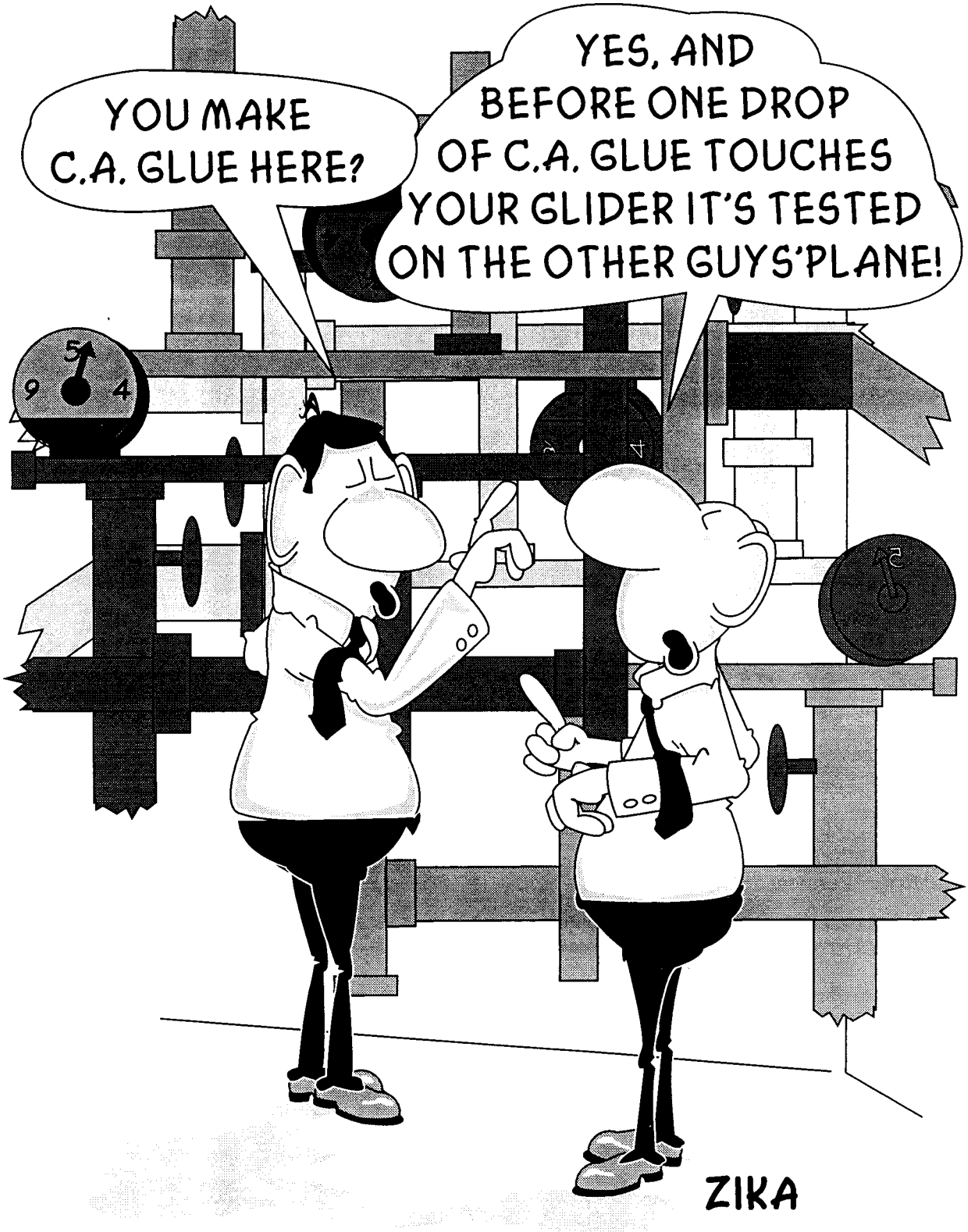
■

International Scale Soaring Association

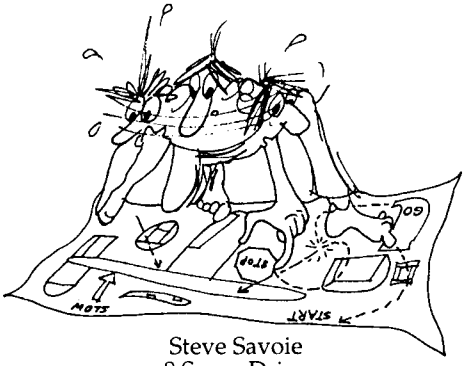
There is a growing interest in scale soaring in the U.S. We are dedicated to all aspects of scale soaring. Scale soaring festivals and competitions all year. Source for information on plans, kits, accessories and other people interested in scale. For more information, write to:

International Scale Soaring Association
37545 Oak Mesa Drive
Yucaipa, CA 92399-9507
e-mail: 70773.1160@Compuserve.com
web site: www.soaringissa.org




YOU MAKE C.A. GLUE HERE?
YES, AND BEFORE ONE DROP OF C.A. GLUE TOUCHES YOUR GLIDER IT'S TESTED ON THE OTHER GUYS'PLANE!
ZIKA

"SHORT CUTS"



Steve Savoie
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mainerinvt@yahoo.com

I'm Back

Hello to all once again! Quite a few changes have been going on here so "Short Cuts" has been off the line for awhile. To bring you all up to date, I'm no longer in Vermont. We have moved back to Maine and I'm now Production Manager of a small composite shop that just was awarded a contract for a series of prototype (all composite), six passenger, amphibian aircraft (neat stuff to build). This meant a quick move to a temporary location with no room for a decent workshop, so the X-4 Bantam is on hold until next year when we buy a house/workshop.

Flying at Clark's Cove

One of the pleasures of being back in Maine is flying with the DownEast Soaring Club, <downeastsoaring.org>. This great group has matured over the years and has worked with landowners to develop some great slope soaring sites. My favorite site for south and southwest breezes is Clark's Cove in South Harpswell, Maine, located just 20 minutes south of Brunswick, Maine. Located in the mid-coast region, it's centrally located for both club members and tourists, as well. The site works off the sea breeze and generates sufficient lift for DAW EPP war birds as well as Zagis and lighter aircraft. It's best to also bring a HLG and 2-meter if you plan to spend the day. The wind doesn't usually pick up until about 10 am.

This slope has a run of about 1000' with a max height of 20', and the slope angle varies from 40 to about 60 degrees. The slope and shoreline are rugged, so it's best not to dump in anything less fragile than EPP (though EPP does float nicely). Low tide does allow the slope to work a bit better than flood level, so check your tide chart. It doesn't sound like much of a site, but it's convenient and works S-SW, which is predominant wind in the summer. The slope generates good lift for close up combat as well as 400' for the lighter planes during passing "up" air. So how close is close? Last week one fellow had his antenna clipped clean off (his transmitter that is). The landing area is a large grassy field peppered with a few small trees and there is no rotor to speak of. Large 120 TD planes have landed without problems.

A thin peninsula only 400' wide winds around to create the cove and, on the backside of the flying area, there is the lobster pound. This is where the tired flier can order steamed clams, lobster, fried haddock, hot dogs, hamburgers, etc. There is seating on an open deck, overlooking the lobster boats in the cove, under umbrellas. This is not restaurant dining but the food is good, hot, and reasonably priced. The club schedules monthly meetings there, in the summer between the flying sessions, and those from out of town are always welcomed. It's not unusual to have a good 5 hours of flying during the day. The club web site has a map for the site as well as a listing of the club officers. If you are passing through, give one of us a call; maybe we can share the slope and some great seafood.

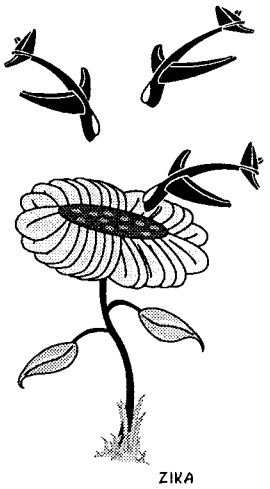
■

Please send in your scheduled 2001 events as they become available!

SCHEDULE OF SPECIAL EVENTS

September 14-16, 2001
Last Fling of Summer — Broken Arrow, OK
Dave Register, regdave@aol.com

September 28-29, 2001
Oc-Tow-Berfest 2001 — St. Louis, MO
Peter George, (314) 664-6613
twometer@worldnet.att.net



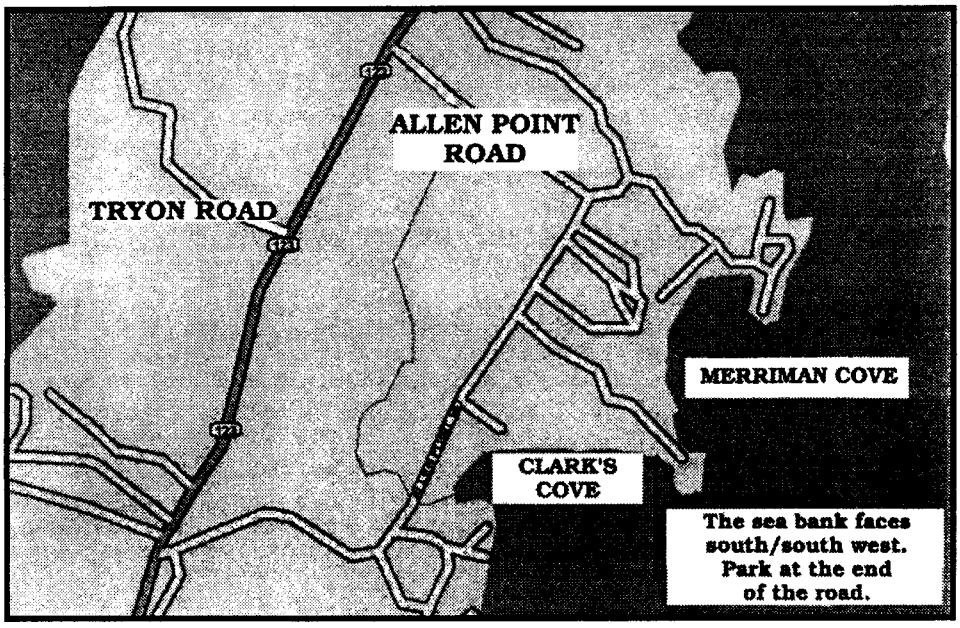
DIRECTIONS TO CLARK'S COVE IN HARPSWELL, MAINE

To get to Clark's Cove, you drive over the old Topsham/Brunswick bridge into Brunswick. Drive through town. As you start to leave downtown Brunswick you will see a large white church on the left. Take a left at the church and go to the next light, which is Route 123.

Drive down 123 and you will pass a flashing light, which is Mountain Road intersection. Keep going until you pass a big white church on the left. After you drive through an S curve in the road, look for Allen Point Road on the left.

You will drive down Allen Point Road to a 90-degree bend. After the bend you will see a large stand of trees on the left. Drive by them and you will come to a house that has a dirt road to the right of it. This road is Morse Shore Road, Fire Lane *82. Drive down to the end of this road. You will see the slope on the right.

Please drive slowly on Morse Shore Road, as many small kids play on the road and excessive dust will not make the land owners happy.



Damaged or Improperly Bound Copy?

Please let us know, and we'll replace it. Something always slips by every month!

TULSOAR

TULSA RC SOARING CLUB

AMA CLASS A SANCTION 01-1581

20th ANNUAL LAST FLING OF SUMMER

BLUE SPRINGS SOD FARM, Broken Arrow, Oklahoma
September 14, 15 and 16

Friday, Sept 14th, 2PM:	Class A: Handlaunch	6 Rounds
Saturday, Sept 15th, 9AM:	Class D: Unlimited	6 Rounds
Sunday, Sept 16th, 9AM:	Class B: 2 Meter	4 Rounds

(Expert and Sportsman Class for each Event)

Awards:

1st Place Overall	Trophy For Combined 2m and Unl scores (Flyoff in case of tie)
Handlaunch	1st thru 3rd, 1st place for Sportsman (Certificates and cash awards)
2m and Unlimited	1st thru 5th. 1st place for Sportsman (Certificates and cash awards)

Event	Entry Fees	
Friday Handlaunch	$10.00	Attached
Saturday Unlimited	$20.00	T1(modified) / L6
Sunday 2 Meter	$20.00	T1(modified) / L6
Event Discount	-$5.00 (More than 1 event)	
PreRegistration Discount	-$5.00 (By 9/08/00)	
Total:	$_____	

CD:
Dave Register
747 Brookhollow Lane
Bartlesville, OK 74006
(918)-335-2918
e-mail: regdave@aol.com

ASSISTANT CD:
Dave Miller
3909 N. Battle Creek Dr..
Broken Arrow, OK 74012
(918)-355-3909
e-mail: dmiller@sitemaster.com

ENTRY FORM
Name:_____
Street:_____
AMA:_____
Frequency (1st/2nd) HL:_____/_____
Amount Enclosed:_____

Date:_____
Phone:_____
City_____
Open/Sport:_____
2M: _____/_____
(To: Tulsa RC Soaring Club)

e-mail (optional):
_____
St/Zip:_____
Unlimited: _____/_____
(Return Entry to CD)

Cancellation prior to September 10th will receive a full refund. Mail or e-mail to Dave Register

TulSoar's 20th Annual Last Fling of Summer will be held September 14th, 15th and 16th at the Blue Spring's Sod Farm in Broken Arrow. Oklahoma. The Blue Springs site is one of the finest soaring fields in the Midwest with plenty of open space, generous thermal activity and occasional wave lift from the hills to the South across the river. TulSoar is fortunate to have Rusty Shaw and Mike Fox attending this year. Both are well known in both HLG and national soaring competition and should provide an excellent level of experience for this year's event. Dale Nutter (former USA-F3B team member) as well as the TulSoar AMA national championship team (1999) will be on hand to give Rusty and Mike a challenge. We're hoping a few vengeful Texans will come up after TulSoar recently took TNT honors. And the guys from KSS and the Frickey brothers are always tough to beat. 2001 should be the best 'Fling' yet.

Handlaunch will be held Friday afternoon with a pilot's meeting at 1PM and flying beginning at 2PM. A minimum of six rounds will be flown. 10 minute flying window for each event with unlimited launches:
- 10 flights, 1 minute max.
- 5 flights, 2 minute max.
- 10 second ladder event (20 sec., 30 sec., 40 sec., etc.)
- 4 flights, 1, 2, 3, and 4 minute maxes in any order
- 3 flights, 3 minute max.
- 1 flight, longest flight wins

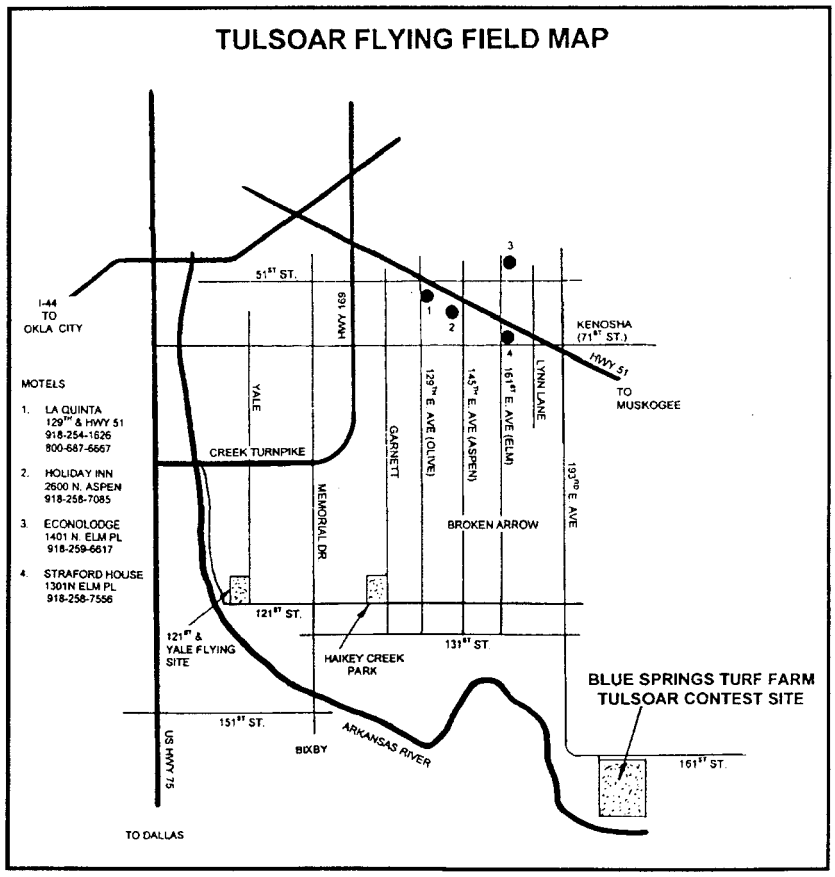
Unlimited will be held on Saturday. Pilot's meeting at 9 AM, 1st flight starts at 10:00 AM. 6 rounds of International Duration. Time target to be determined by weather conditions. If more than 50% of the pilots meet the target time, the next round target time will be increased by 2 minutes (up to a maximum time of 9 minutes). Lane landings will be scored at 100 points (max)/round.

2-Meter will be held on Sunday. Pilot's meeting at 9 AM, 1st flight starts at 10:00 AM. 4 rounds of International Duration. Time targets as described for Unlimited.

Overall Championship will be determined as the sum of Unl and 2M scores. In case of a tie, a fly-off between the tied pilots will be held.

Awards:
Trophy for Overall Champion

Unlimited, 2-meter and Handlaunch will consist of a certificate and cash awards.



NEW PRODUCTS

The information in this column has been derived from manufacturers press releases or other material submitted by a manufacturer about their product. The appearance of any product in this column does not constitute an endorsement of the product by the R/C Soaring Digest.

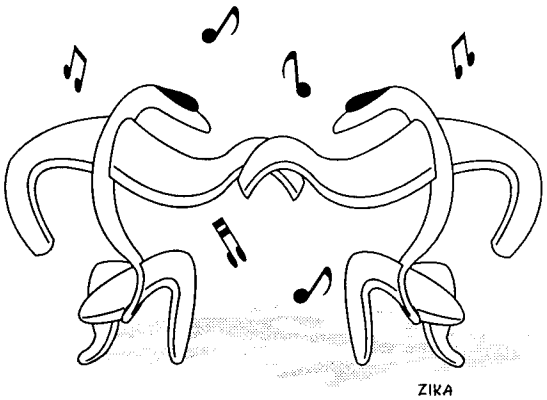
Hangar 9's™ Perfect Peak™ TX/RX Peak Predict Charger

The difference between a great afternoon at the flying field and a disappointingly short one can often be the availability of charged batteries. This is why a reliable fast field charger that lets you accurately peak charge your receiver and transmitter packs simultaneously is one of the best investments in the hobby you can make. Hangar 9's new Perfect Peak is just such a charger.

The Perfect Peak is simple to operate. Just plug in your battery packs and watch the green LED lights for each. Steady green means they're charging, and flashing green means they're done. The Perfect Peak's sophisticated circuitry automatically switches from fast charge to trickle charge exactly when a peak charge is achieved. It won't leave you hanging by getting faked out by a "false peak" either. The Perfect Peak's internal "smart" programming can actually recognize a proper charge cycle and will ignore an abnormal one.

The Perfect Peak comes wired for 12V DC power supplies and is compatible with both Ni-Cd and NiMH, 4- to 8-cell battery packs. An optional AC adapter is also available that let's you use the Perfect Peak at home with a regular wall outlet. The Perfect Peak is extremely compact and easily fits in just about any field box.

HAN9520, Perfect Peak DC TX/RX Peak Predict Charger street price: $69.95. Hangar 9 distributed exclusively by Horizon Hobby, Inc., (217) 355-9511, <www.horizonhobby.com>. ■



Classified Advertising Policy

Classified ads are free of charge to subscribers provided the ad is personal in nature and does not refer to a business enterprise. Classified ads that refer to a business enterprise are charged $5.00/ month and are limited to a maximum of 40 words. *RCSD* has neither the facilities or the staff to investigate advertising claims. However, please notify *RCSD* if any misrepresentation occurs. Personal ads are run for one month and are then deleted automatically. If you have items that might be hard to sell, you may run the ad for 2-3 months.

For Sale - Business

PARACHUTES: $12.50 (includes S&H U.S.A.) Send check or money order to Dale King, 1111 Highridge Drive, Wylie, TX 75098; (972) 475-8093.

DesignAire: EASY TO USE AIRCRAFT DESIGN SOFTWARE (PC). 3-D sketch, performance, Wt/Bal, inertias, color graphs, panel analysis, static stability, airfoils, FAR 23A loads and envelope. Runs "airfoil ii". $119. JammAero POBox 69, Wallops Island VA 23395. www.jammaero.com.

Auto-Triever(Do-it-yourself plans now available. $31.95 plus $5.00 s&h CONUS, $8.00 s&h Internationally. Auto-Triever(, 3431 S. Pacific Hwy. #64, Medford, Oregon 97501, 541-535-4410, Milljer@aol.com.

BUZZ WALTZ R/C DESIGNS: Kits & plans. www.buzzwaltzrc.com or phone: 760-327-1775.

Glider Business. Over 60 sets of molds, master drawings, inventory of fiberglass, epoxy mixers, and much more. Serious inquiries only. Contact Jerry Slates, Viking Models, U.S.A., phone (972) 442-3910.

Reference Material

Summary of Low-Speed Airfoil Data - Volume 3 is really two volumes in one book. Michael Selig and his students couldn't complete the book on series 3 before series 4 was well along, so decided to combine the two series in a single volume of 444 pages. This issue contains much that is new and interesting. The wind tunnel has been improved significantly and pitching moment measurement was added to its capability. 37 airfoils were tested. Many had multiple tests with flaps or turbulation of various configurations. All now have the tested pitching moment data included. Vol 3 is available for $35. Shipping in the USA add $6 for the postage and packaging costs. The international postal surcharge is $8 for surface mail to anywhere, air mail to Europe $20, Asia/Africa $25, and the Pacific Rim $27. Volumes 1 (1995) and 2 (1996) are also available, as are computer disks containing the tabulated data from each test series. For more information contact: SoarTech, Herk Stokely, 1504 N. Horseshoe Circle, Virginia Beach, VA 23451 U.S.A., phone (757) 428-8064, e-mail <herkstok@aol.com>.

BBS/Internet

Internet soaring mailing listserve linking hundreds of soaring pilots worldwide. Send msg. containing the word "subscribe" to soaring-request@airage.com. The "digestified" version that combines all 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.

Books by Martin Simons: "World's Vintage Sailplanes, 1908-45", "Slingsby Sailplanes", "German Air Attaché", "Sailplanes by Schweizer". Send inquiries to: Raul Blacksten, P.O. Box 307, Maywood, CA 90270, <raulb@earthlink.net>. To view summary of book info.: http://home.earthlink.net/~raulb

T.W.I.T.T.

(The Wing Is The Thing)

T.W.I.T.T. is a non-profit organization whose membership seeks to promote the research and development of flying wings and other tailless aircraft by providing a forum for the exchange of ideas and experiences on an international basis. T.W.I.T.T. is affiliated with The Hunsaker Foundation which is dedicated to furthering education and research in a variety of disciplines. Full information package including one back issue of newsletter is $2.50 US ($3.00 foreign). Subscription rates are $20.00 (US) or $25.00 (Foreign) per year for 12 issues.

T.W.I.T.T., P.O. Box 20430
El Cajon, CA 92021

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

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

Send for your aspirant form, today:

League of Silent Flight
c/o AMA
P.O. Box 3028
Muncie, IN 47302-1028 U.S.A.

http://www.silentflight.org

Sailplane Homebuilders Association (SHA)

A Division of the Soaring Society of America

The purpose of the Sailplane Homebuilders Association is to stimulate interest in full-size sailplane design and construction by homebuilders. To establish classes, standards, categories, where applicable. To desiminate information relating to construction techniques, materials, theory and related topics. To give recognition for noteworthy designs and accomplishments.

SHA publishes the bi-monthly ***Sailplane Builder*** newsletter. Membership cost: $15 U.S. Student (3rd Class Mail), $21 U.S. Regular Membership (3rd Class Mail), $30 U.S. Regular Membership (1st Class Mail), $29 for All Other Countries (Surface Mail).

Sailplane Homebuilders Association
Dan Armstrong, Sec./Treas.
21100 Angel Street
Tehachapi, CA 93561 U.S.A.

The Vintage Sailplane Association

Soaring from the past into the future! The VSA is dedicated to the preservation and flying of vintage and classic sailplanes. Members include modelers, historians, collectors, soaring veterans, and enthusiasts from around the world. Vintage sailplane meets are held each year. The VSA publishes the quarterly BUNGEE CORD newsletter. Sample issues are $2.00. Membership is $15 per year. For more information, write to the:

Vintage Sailplane Association
1709 Baron Court
Daytona, FL 32124 USA

The Eastern Soaring League (ESL) is a confederation of Soaring Clubs, spread across the Mid-Atlantic and New England areas, committed to high-quality R/C Soaring competition.

AMA Sanctioned soaring competitions provide the basis for ESL contests. Further guidelines are continuously developed and applied in a drive to achieve the highest quality competitions possible.

Typical ESL competition weekends feature 7, or more, rounds per day with separate contests on Saturday and Sunday. Year-end champions are crowned in a two-class pilot skill structure providing competition opportunities for a large spectrum of pilots. Additionally, the ESL offers a Rookie Of The Year program for introduction of new flyers to the joys of R/C Soaring competition.

Continuing with the 20+ year tradition of extremely enjoyable flying, the 1999 season will include 14 weekend competitions in HLG, 2-M, F3J, F3B, and Unlimited soaring events. Come on out and try the ESL, make some new friends and enjoy camaraderie that can only be found amongst R/C Soaring enthusiasts!

ESL Web Site: http://www.eclipse.net/~mikel/esl/esl.htm

ESL President (99-00): Tom Kiesling (814) 255-7418 or kiesling@ctc.com

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