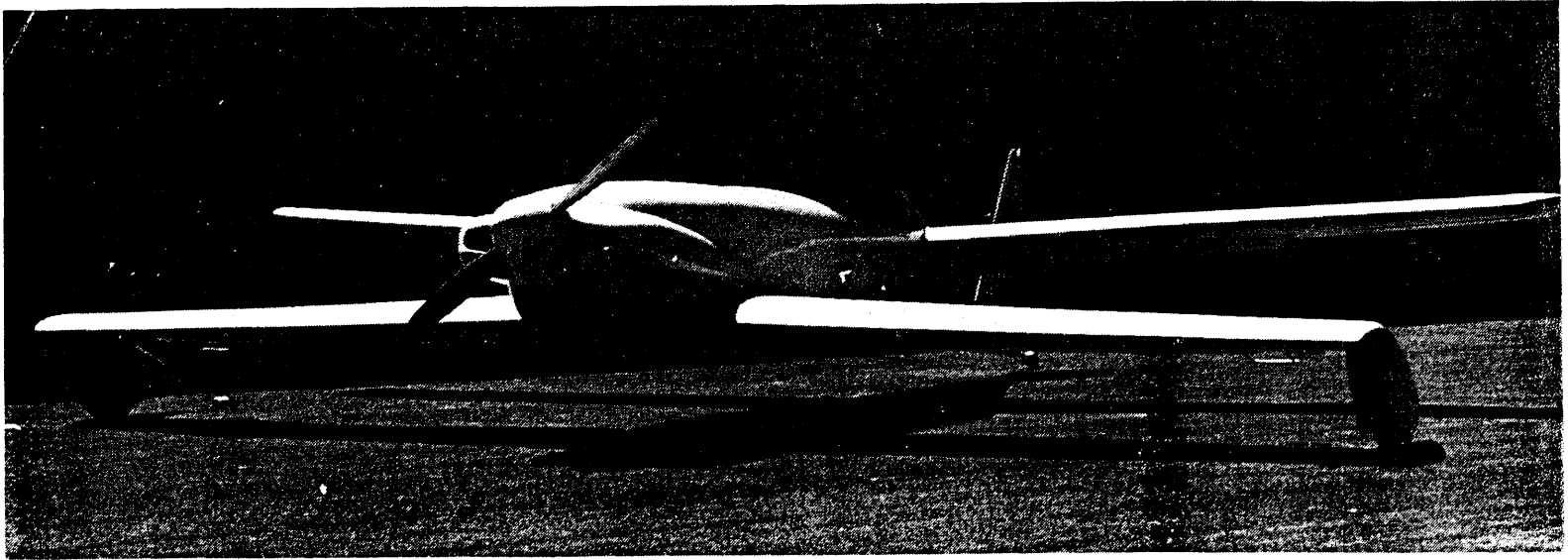


"Dragonflyer"



DRAGONFLY NEWSLETTER

#1 December 1980

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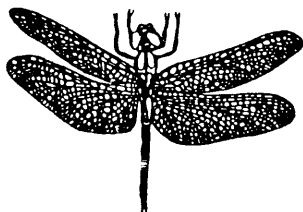
The Dragonfly newsletter is the only method of disseminating information concerning plans changes for the Dragonfly. All builders must subscribe. A one year subscription is included in the price of the construction manual.

Viking Aircraft hangars the Dragonfly at Oceanside Airport in the easternmost hangar. Flight demonstrations are given most Saturdays at around 12:30 or 1:00 P.M. We are presently at the airport on Saturdays and available by phone on Tuesdays and Thursdays. Other times we are busy drawing plans, answering letters etc.

ITEMS AVAILABLE FROM VIKING

Plans: \$175 (\$185 overseas)
Information package with color poster \$7.50 (\$8.50 overseas)
Quarterly Newsletter: \$6/yr (\$7/yr overseas)
Cowling: \$150 + \$15 crating (shipped freight collect)
Carbon Fiber: (250'x5") \$205 (shipped freight collect)
Fiberglass tail spring: \$12 (shipped freight collect)

California residents add 6% State sales tax
Free spec sheet-send self addressed stamped envelope



DRAGONFLY WINS RAMONA GRAND CHAMPION TROPHY

The last weekend in October, the Dragonfly prototype was flown over to Ramona, California for the annual chapter 14 fly-in. This get-together draws some very unusual aircraft not normally seen at other air shows, especially rare antiques. Ramona was attended by quite a number of composite aircraft including the Long-Eze prototype and the Q-2 prototype. Bob flew the Dragonfly a number of times both Saturday and Sunday. Don Dwiggins from "Homebuilt Aircraft" magazine took a series of air-to-air photographs for use in a future article. On Sunday Bob joined up on the Long-Eze flown by Burt Rutan and the two of them made a number of high speed fly-bys in close formation much to the delight of the crowd which included a video tape crew from HBO.

Even though the Dragonfly has been seen at quite a number of air shows and fly-ins around the San Diego area, it drew the largest crowds of all the homebuilts all weekend.- On Sunday the Dragonfly was awarded the Grand Champion trophy. It was quite an honor to receive the award, especially since the Dragonfly is a proto-type.

The Dragonfly also received a nice award at the 1980 "Copperstate Fly-in". The Antique Association folks choose their favorite aircraft each year (not necessarily an antique) and this year the Dragonfly won!

This fly-in, held each year at Marana Air Park, is a combined effort by all of the Arizona EAA Chapters and is a loose, fun oriented get-together. Stan Loer was this year's Chairperson and did a great job in running a fine event. If you enjoy sport aviation and/or like to have a good time, plan to attend next year. We'll be there for sure!

PLANS AVAILABLE

Back around Oshkosh time, we estimated that about 50,000 words and 100 square feet of drawings would tell everything one needed to know about the Dragonfly. We thought we could go to the printers around Thanksgiving if we worked full speed. We met that target date and produced that amount of work, but we only got through the basic airframe. It turned out that a great deal of detailed instruction was necessary to insure that the plans built Dragonfly would look and perform as nicely as the prototype.

Viking Aircraft made an informal survey of composite aircraft builders and determined that the average set of plans lacked sufficient "tips" and

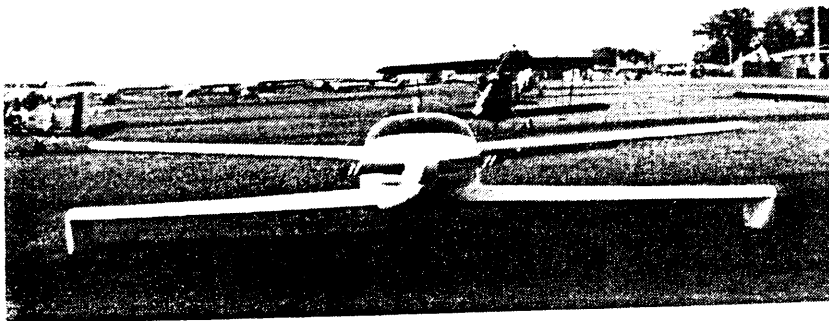
"helpful hints". Composite homebuilt aircraft have had an excellent record of structural integrity, but many builders stated that they needed a bit more help during construction than they got from their plans. Consequently, Bob and Al loaded the Dragonfly plans with detailed instructions on not only how to do it correctly, but also how to do it "fast", "easy", "cheap", and "pretty" while at the same time pointing out how to avoid doing it "slow", "wrong", "ugly", or "expensively".

Because many eager builders were counting on us to have the plans ready, we decided to take the airframe section to the printers at Thanksgiving time. The package turned out to be almost 3 lbs. ready to mail and includes an easy to understand 11"x17" booklet chock full of instructions, drawings and cartoons. Also included are eight 25"x36" full size sheets printed on one side only. These drawings include all the necessary full size templates and difficult to scale up curves. The Dragonfly builder is not required to cut-up and paste together 2 or 3 pages out of the construction manual to produce a wing template, for instance. This is just one example of engineering-out some of the needlessly tricky aspects of home-building.

We are continuing to work on the rest of the plans and will publish them as soon as possible, hopefully, sometime in February. Those builders eager to get started may do so with the initial part of the plans, while those desiring to wait until the plans are complete should hold onto their money for a couple more months. We do not intend to market the Dragonfly plans in two volumes. This is simply an interim situation designed to keep everyone happy.

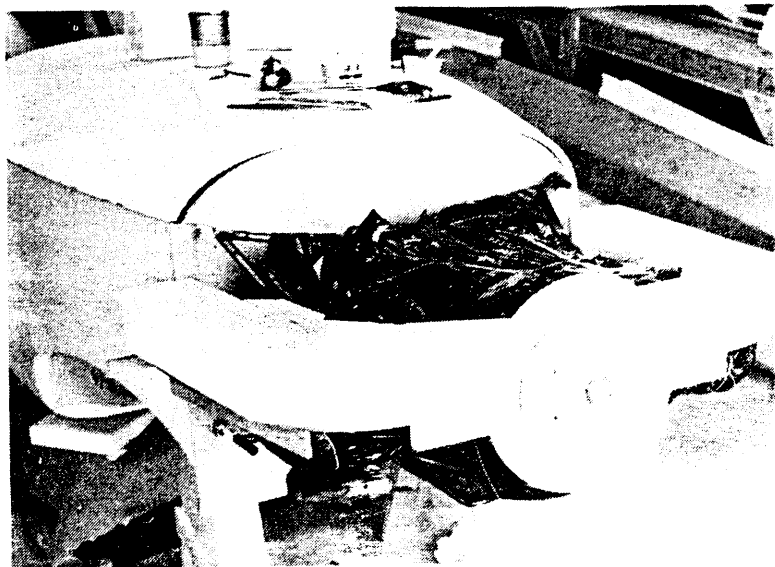
1835 cc ENGINE

A number of builders have expressed interest in installing an 1835 V.W. in their Dragonfly. Our position is that we like the little 1600 and have no desire to change. However, those builders living at high altitudes may want a bit more climb performance and the 1835 is probably the best solution. Our prototype is not underpowered and operates pretty much like a Cessna 150 except that it cruises much faster. Still, we get a lot of questions about more power and for that reason we will test an 1835 HAPI engine as soon as we have time. It will have a float-type carburetor, dual ignition, fuel pump and a starter. Clever design by Rex Taylor has kept the weight to a minimum and it is expected that the larger engine will go right in without any airframe changes. We are pretty busy right now, as is Rex Taylor, so no firm date has been set. Full details will be published in the newsletter. Keep in mind that Viking has a firm policy not to authorize major changes that haven't been fully tested, and although we don't anticipate any problems, the 1835 will not be approved until we finish testing.



ABOVE: FINAL SATURDAY
AT OSHKOSH.

BELOW: INITIAL STEPS OF THE COWLING PLUG



PLANS ERROR!

We never promised to be perfect, but we do promise to set things straight if we can. In chapter one, page two and also on the back page of the Dragonfly "update sheet" there is a "two view" drawing with a scale. The drawing is accurate but somehow during the reduction and printing process the scale wound up to be the wrong length. The line segment that says four feet should actually represent five feet. The scale indicates the card span is 16 feet when in fact it is 20 feet. No big deal, but we try to be accurate if we can!

VIKING PHONE NUMBER

Now that plans are published, we have a requirement to be available by phone. Viking is a small company and is dedicated to keeping the cost of homebuilding as low as possible while still providing a quality product. For that reason, we are only able to man the phone on Tuesday and Thursday from about 8:30 A.M. to 4:30 P.M. On these days you will be able to contact a knowledgeable person not an uninformed secretary or answering service. This system provides the rapid communications required by the builder who may have some difficulty, while still giving us time to tend to writing plans, newsletters and taking care of the hundreds of things that a project of this sort demands.

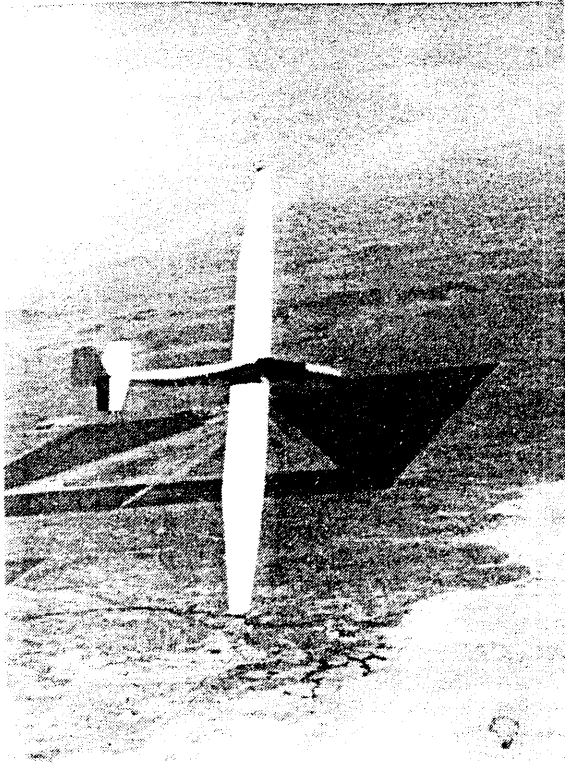
If you want to call and talk about your latest grand-child, feel free, we'll be glad to talk, however, there are only so many hours in the day so give your fellow builder a chance to get in touch with us too.

It would be nice if you have a question of a non-urgent nature, to contact us by mail. On the other hand, if the answer to your question requires a long philosophical discussion, it is easier for us if you call. At any rate, we pledge to do our best to provide an accurate, prompt and most of all, honest reply to your inquiry.

Dial 714/753-1727 Tuesdays and Thursdays.

Note: We appreciate your enthusiasm, but if you want to talk about the Dragonfly or just shoot the breeze about airplanes in general, come and see us at the airport on Saturdays. Please do not visit us at our homes.

BELOW: ONE OF BOB'S EARLIER PROJECTS, A DUSTER SAILPLANE



MATERIALS

The partial materials list calls for 1½ sheets of 3/4" thick urethane foam. This is the correct amount for the basic airframe; however, additional 3/4" foam is required later on. It would be wise to go ahead and order 2 full sheets (2'x8') of 3/4" in order to save cutting and shipping costs.

The epoxy quantity listed in the materials list says 15 gallons. This is the total quantity of epoxy after mixing. Some suppliers refer to this amount as "10 one gallon kits" since Safe-T-Poxy is mixed roughly two to one. In any case, don't confuse "15 gallons" with "10 kits". The idea is to have a total of 15 gallons of material on hand.

The alloy of the MS20426 rivets was not specified on the materials list. They are used only to keep the anchor nuts from turning while the bolts are being installed on the wing fittings. Consequently the alloy is not critical. "A" or "AD" will work fine.

FUTURE EVENTS

We plan to be working on the rest of the construction manual most of the time, Monday through Friday. The Dragonfly will be on display on Saturdays except January 10. We are going to Santa Paula for the local EAA meeting on January 9. The Dragonfly will be on display at the Santa Paula airport the morning of January 10 and then will be flown to Camarillo airport about noon for a short "show and tell". We expect to be back at Oceanside in the late afternoon of January 10. This whole thing obviously depends on the weather.

People who live on the north side of Los Angeles may find this a good time to get a look at the Dragonfly.

We have tentative plans to attend Sun-N-Fun in Florida this year. The dates are March 15-22. This trip will depend on the weather and the status of the 1835 engine program.

Al will be giving a talk at the Annual Soaring Convention on the morning of January 15 in Phoenix, Arizona. His speech will be oriented towards home-built sailplanes but will include quite a bit of information concerning construction of the Dragonfly.

CARBON FIBER

A few prospective builders have asked questions concerning the cost of carbon fiber and the difficulty of using it. Since not everyone is familiar with carbon, let's first talk about making chocolate cakes. If you want to make a chocolate cake, but you have never seen one, then step one would be to ask someone about cakes, right? Suppose you were unfortunate to consult someone who wasn't a cook, but this someone had tried to make cakes before. Let's suppose he told you that a pair of chop sticks was your primary tool and that curry powder was an important spice for making chocolate cakes. Your advisor is also likely to tell you not to bother making chocolate cakes because not only are they difficult to make, but they don't taste very good either.

Now let's suppose instead, that you consulted either a real cook or a good cook book (or better yet both). Chances are pretty good that your cake will be successful and taste good too. The key is getting the right information.

The point is this. Carbon fiber is quite simple to use for the beginner and in fact, is easier to use than fiberglass as far as the Dragonfly spar caps are concerned. The price of carbon fiber has actually decreased since we built the Dragonfly prototype while fiberglass and epoxy have risen slightly in cost. Even though carbon fiber costs more per pound than fiberglass, it is stronger and stiffer than fiberglass consequently much less material is required to do the job. It is now actually less expensive to make the Dragonfly spars out of carbon than fiberglass. The Dragonfly construction manual provides detailed instructions on the fabrication of the spar caps, so that even the beginner will find it easy.

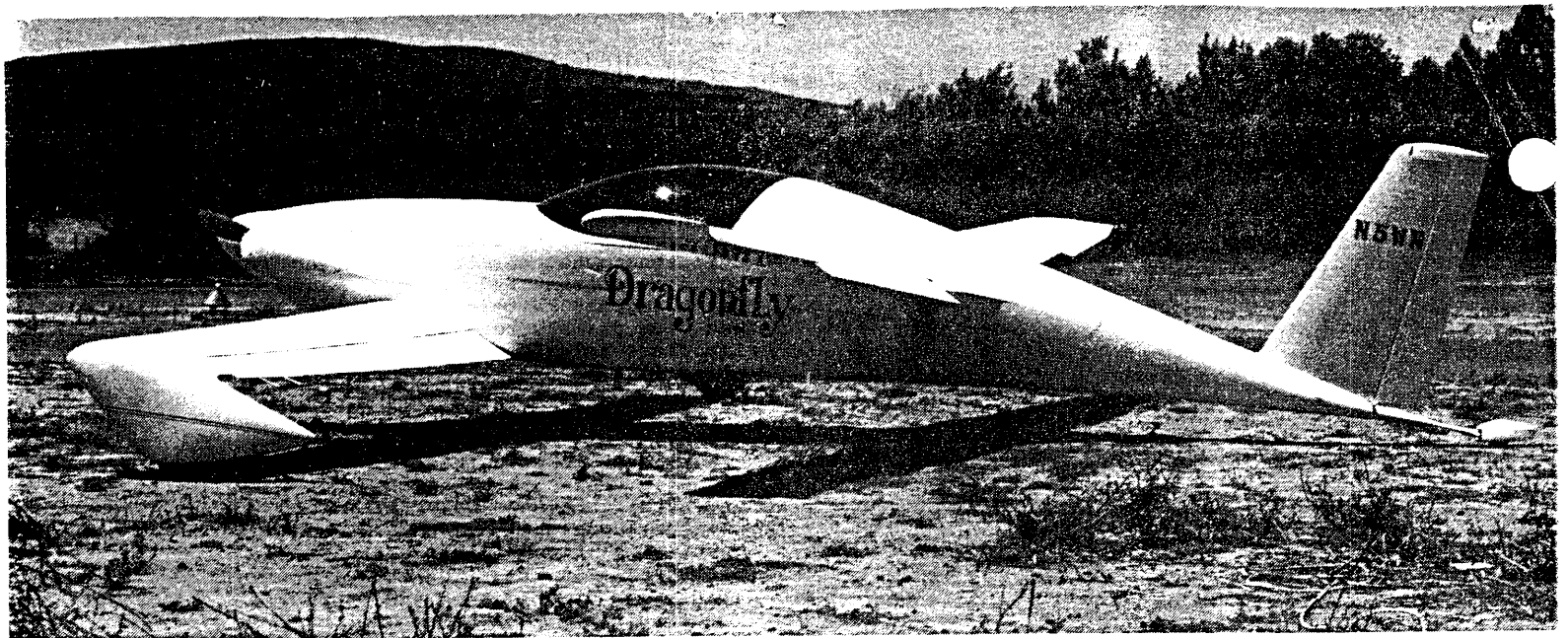
Kevlar is not used in the Dragonfly. If it were advantageous to use it, then we would. However, the only realistic application of Kevlar would be in the construction of the engine cowling. It could save a pound or two of weight, but because of the high cost of the basic material and the increased fabrication cost, Kevlar is not considered worthwhile. It is quite difficult to cut, so the fabricators charge more to work with Kevlar, than with fiberglass or carbon fiber. The end result is that the cost of saving a pound or two is simply too high for an inexpensive homebuilt.

The most interesting thing about Kevlar cowlings is that they are sometimes found on prototypes, while the production cowlings are made from fiberglass and polyester resin. This fact is usually not revealed to the public, but is one of the keys to the creeping weight growth of some designs. The Dragonfly, by the way, has a cowling made of fiberglass and polyester. The production cowlings are made of the same material.

PROPELLERS

The Dragonfly prototype is currently using a 52 inch diameter 40 inch pitch prop made by Great American Propeller Company, 555 Westmont, Suite 212, San Luis Obispo, California 93401. It is just about the maximum pitch our little 1600 is able to handle. We have done testing on several other props, but the Great American Prop is the best one we've tested so far. With a 36 inch pitch prop the already good takeoff and climb performance of the Dragonfly is dramatically improved. The top speed is essentially the same; however, the engine turns about 4000 RPM to reach 155 TAS. This figure produces higher than desired engine wear and fuel consumption. Cruise RPM with the 40 inch prop is 3450 at 155 TAS which gives us better long range cruise fuel consumption. Probably a 38 inch pitch would be optimum for the person who flies a lot near gross weight on short cross-countries, a 37 or 36 would be good for local area hot rodding, while the 40 is good for going to Oshkosh.

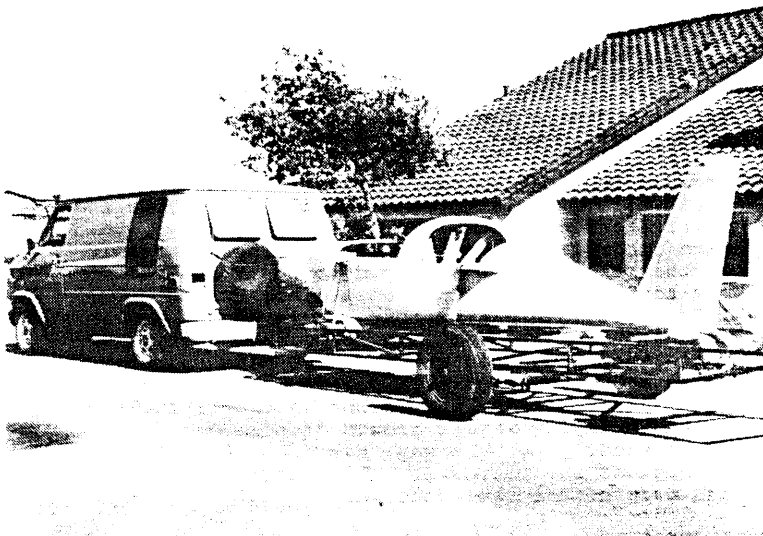
We expect to do more prop testing in the future. If you only have one "gear" it's a good idea to choose one that suits your purpose.



BELOW LEFT: DRAGONFLY FUSELAGE READY TO GO TO THE AIRPORT

BELOW RIGHT: BOB CLIMBING IN FOR INITIAL TEST FLIGHT

BOTTOM: CUTTING THE CARBON FIBER SPAR CAP MATERIAL



COWLING AND CANOPY

Cowlings are now being produced for the Dragonfly. They are available from Viking Aircraft for \$150 plus \$15 crating and handling charge. They are shipped freight collect. Allow 4 to 6 weeks for delivery. The cowling is a light weight fiberglass part made in two pieces. The engine inlet holes are cut out by the builder to suit his engine size. This rather simple step allows us to keep the cost of the cowling as low as possible. Cowlings may be picked up at the hangar at Oceanside on Saturdays only. This saves shipping and handling charges. Please give us 2 weeks notice if you want to pick up your cowling in person. Calif. residents add 6% state sales tax.

The Dragonfly canopy is a molded part and is quite unlike the more common free blown part available for the vast majority of homebuilts. The Dragonfly canopy actually matches the shape of your aircraft. Actual production canopies will begin just after the first of the year. Prices, crating charges, color options, etc. will be available at that time also.



MATERIALS PROCUREMENT

Enclosed with this newsletter is the current materials procurement list. Publication of this list is an effort to keep the cost of building a Dragonfly as low as possible by making it possible for builders to deal directly with a materials supplier. There are several potential problems with this system. A wholesale foam supplier may not know anything about homebuilt aircraft and could sell you the wrong material for example. Keep in mind that these suppliers are not "authorized distributors" and Viking Aircraft cannot guarantee their performance

BUILDERS LIST

Included in the Dragonfly construction manual is a licensing agreement. Each builder has an opportunity to indicate on this agreement whether or not he would like his name released to other builders. We will respect the privacy of those who would prefer not to have their names published. We will publish a builders list from time to time, of those folks who might like to get in touch with one another. If you are a plans holder be sure to circle the appropriate place on the agreement before you mail it in to us. Because the plans were mailed only a short time before this newsletter went to press, we have received only a few replies so far.

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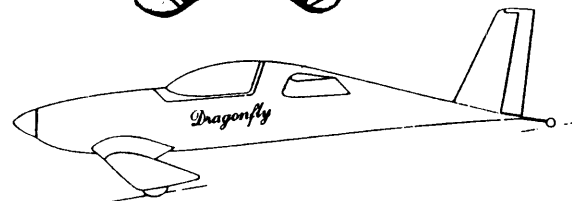
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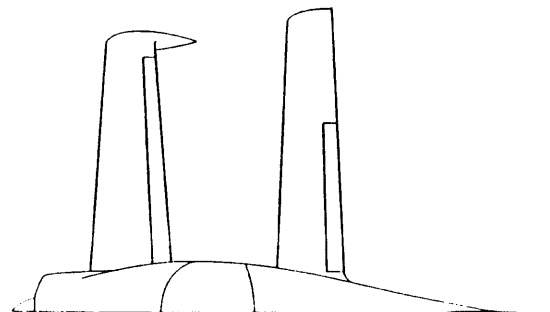
Merry Christmas and Best Wishes for the New Year from all of us at VIKING AIRCRAFT!!

ABOVE LEFT AND RIGHT:
CROWDS AT OSHKOSH

BELOW: NAME THE VIKING
CONTEST. SEND US
YOUR IDEAS. WIN
A FREE TAILSPRING.



Scale (feet)





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