

TOM & SHARON WOLFS' NEW DRAGONFLY 25 Flight Hours So Far

This newsletter is a little late, so many things have been happening this spring that required my presence and time. I have just returned home from seven weeks on the road doing the dog and pony show in the southern United States with Mike Quigly of Task Research. My old buddy, Roger Ring, made the tour with us and really was great company and a terrific help in so many ways.

Roger is a Dragonfly builder so could answer many of the construction questions about plans-built aircraft. Mike Quigly fielded the questions about pre-fabricated parts construction techniques and assembled a fuselage at each of our stops.

I answered many questions about flying and building Dragonfly myself and, of course, talked about HAPI Engines.

We had from thirty to one hundred sixty people in attendance at each of our stops and I wish to thank each of you wonderful people who worked to arrange the meeting places and get the word out about our little show. You are a great bunch of folks and we really appreciate your effort and hospitality.

We had the pleasure of looking at several Dragonflies in the building stages; Jack Lovett's in Albuquerque; Jerry Gonzers in Houston, Texas; Emmett Griffith's in Kansas City; O.C. Hocker's project in Paducah, Kentucky; Steve Pangborn's Cocoa, Florida. Every one of them had well above average workmanship. Our Dragonfly builders seem to do better work than the average job on other designs I can think of that also use our engines. I think maybe our plans are better, but for whatever reason, you guys, and some gals too, are building some exceptional airplanes and I'm proud of you. I foresee a very difficult time deciding who gets the Designers' trophy at Oshkosh this year if all these beauties are there.

NEW DEVELOPMENTS

The rumor mill, as usual, is spewing out gobs of misinformation. Here are the facts. HAPI is working on a new inboard gear arrangement for the Dragonfly design.

The landing gear legs are glass fiber springs and the wheels will be enclosed in wheel pants similar to garden-variety spam cans. Calculations tell us that this arrangement will not increase parasite drag, so should not affect speed. The gear legs and gear leg mounting hardware were designed by Rich Treckle, a Dragonfly builder employed by Task. The prototype gear leg has been made; a sample canard section built with the internal structure to retain the glass spring leg and has been subjected to drop tests, per FAA Part 23, which proved the gear leg and mount to exceed required figures by a wide margin.

This gear is being installed in a new prototype flat canard (no anhedral) now being built and will soon be installed on the prototype Dragonfly. Flight tests will then be conducted to prove (or maybe dis-prove) the advantages of this arrangement.

If everything goes well, this modification will be offered to the plansholder, NOT as a replacement for the originally designed canard and gear arrangement, but as an alternative that should solve some of the problems inherent in the super wide gear tread as on the prototype.

The inboard gear and mounts can be retro-fitted into the original canard, leaving the anhedral, though I don't think it looks as well as the as-yet un-tested flat canard.

If everything goes as scheduled, the testing should be complete and results in, in ninety days. Please don't ask for plans details or otherwise try to hurry the process. We are

going as fast as possible, consistent with doing it right the first time. If and when the new canard is ready, it will be offered for sale; not before. The new flat canard and inboard gear should solve all of the taxi problems inherent with the wide stance gear and should make Dragonfly quite suitable for operating out of narrow, rough strips such as dirt or grass.

There are a couple of other canard modifications and landing gear modifications being worked on by other people and these people may at some time offer them to you. I want to point out just one thing; that these modifications are done by people other than Viking Aircraft and Viking Aircraft has absolutely nothing to do with them; has no engineering input whatsoever; has not tested them; has no idea whether they are good, bad or indifferent. What Viking Aircraft has to offer, what I personally have to offer, is the fact that we do have the prototype; I personally have more time in a Dragonfly than any other man on Earth. I think I have a pretty good idea by now what its' strong points are; what its' limitations are; so probably have the best idea of what it is going to take to take to improve the bird.

CENTER GRAVITY LOCATION ON FIRST FLIGHTS

I have talked to several builders recently who have completed their first flights on the airplane, and without exception, they complain of not being able to get the tail wheel on the ground. When talking with them about how the airplane was ballasted and loaded on the first flight, though, I always find that they are flying the CG in the forward end of the envelope. DO NOT DO THIS. DON'T ballast the airplane in the forward end of the envelope for the first flights. It should be at least half way back in the envelope; from half to two thirds back. The airplane will be much easier to fly with the CG aft; will handle much easier; and will get its' tail down on the ground if you put the CG aft where I have told you to put it. This aircraft does not react like a conventional aircraft with the tail behind the wing. It does need to have that CG aft.

Enough airplanes are beginning to fly now that we are starting to assimilate some data on how the airplanes fly on the first flight and what happens on the first flight. We have noticed a couple of airplanes that, though they flew allright, they flew with a lot of up-elevator. In other words, the elevator being deflected downward from the streamline position when you are flying in level flight. This can be due to a number of things. Forward CG is just one of them. Also, it could be due to incidence angles that are not quite right. We have built up some incidence jigs on the prototype, placing the airplane at waterline -0- and setting up some jig templates that fit over the outside of both the wing and the canard and put waterline -0- blocks on them so you can check incidence by simply slipping the templates over the wing and the canard and making sure that everything "-0-"s. We have sent the templates to Don Hewes, in Norfolk, Virginia, to check his airplane. They will be circulated, then, through the hands of several other people who are flying, with each one of these people measuring their aircraft and checking the figures so that we can find out if the minor variations in flight characteristics are due to incidence angles. Mark Masson had this problem on his airplane, where the elevator was not flying in trail and it wasn't as fast as the prototype. My understanding is that Mark has checked his incidence in the wing and found it had a little too much positive incidence; has decreased the incidence angle; now the airplane is flying as it should.

Do not expect your airplane to fly perfectly with everything

absolutely adjusted to perfection on the first flight. A test flight is just exactly that. The first few flights you will, more than probably, find things that need to be adjusted and changed on your aircraft to make it fly the way it is designed to fly. Don't be unhappy if it don't fly absolutely perfectly the first time. Even in a production aircraft facility like Beech or Cessena, they still have production test pilots and write long squawk lists on that first flight; things that have to be changed and adjusted to make the airplane fly as it should. We should expect no less, certainly, on these "one of a kind" experimentals.

We are still strongly recommending that you guys that are getting ready to make that first flight come out to Eloy and get a little time in the prototype to familiarize yourself. If that is not possible, do try to get with someone who is already flying his Dragonfly, that is geographically closer to you. I can't commit any of these guys, of course, to helping you out, but I think, if you were to talk to most of them, they will probably help you out, at least to giving you a ride and showing you how to fly the airplane properly.

During the Dragonfly swarming last year, I gave a two hour talk; the subject was "Putting the First Flight on Your Dragonfly"; the kind of mental attitude you ought to be in, the kind of preparation you should make for the flight, and what you should do in leading up to that first flight in the way of taxi tests and that sort of thing. The VHS videotape lasts a little over two hours and takes you virtually step by step through this procedure. I would strongly recommend that you guys that can't come out here and get your free familiarization flight do get a tape and listen to it long and hard and then follow what we have told you before you do make that flight. I believe you will find it a very useful aid, whether you have got 50 hours in the air or whether you have 5000.

PILOTS MANUAL

Work is progressing steadily on the Pilots Manual and I hope to be able to offer it to you builders by the time of the next newsletter. This Pilots Manual is not necessarily specifically for Dragonfly but can be used on any aircraft to take you through preparing the aircraft for flight, preparing yourself for flight, going through the taxi tests, through the initial first flight and then takes you systematically through a flight test program that will take you probably 50 hours and lead you into exploring the airplanes unknowns very cautiously without exposing you or the aircraft to any more danger than is absolutely necessary to gain the information we are seeking. As you gain this information, each little bit of new information is logged on charts and graphs so that at the end of the procedure, you will not only have your airplane completely test-flown; you will also have charts and graphs that will give you such information as time to climb data, take off and landing data, loading charts for the aircraft. You will also have explored and found out exactly where all your control stops should be set, where the control movement produces the maximum amount of reaction in the aircraft; you will have explored flutter safely; and you will have charted exactly the limits, both maximum and minimum, that your airplane is capable of. More importantly, perhaps, all of the information you have learned will have been charted so the end result will be a Pilots Manual. The next person getting in that aircraft can look at this manual, read the figures and know exactly what this airplane will do under a given set of circumstances, just as you do when you get in and read the Pilots Manual in either a Piper or a Cessena.

FLIGHT SAFETY WARNING !!!

Those of you who were here at the Dragonfly Swarming last year will remember the small prop strike that I had in running the aircraft down the runway forcing it to stay on the ground at a 100 MPH or so, until I ultimately pushed the tips of the prop into the ground, grinding off about an inch and a half of prop on either end. Prop strikes can be bad news, and can cause severe crankshaft damage that is not apparent when the crankshaft is checked out with a dial indicator. The only real way to know if you have damaged the crankshaft on a prop strike is to disassemble the engine and magnaflux the crankshaft. I don't know what the mathematical probability of crankshaft damage on a prop strike is; it's probably small. Maybe one in twenty-five, but it does happen.

Bill Hazelwood, of Rice Lake, Wisconsin, had a prop strike of the same nature on his Dragonfly during the test flying procedure and forty hours later, coming home from "Sun 'n Fun", with his wife and small child in the airplane, the frontend broke off the crankshaft!! He lost a prop in flight. By the Grace of God and good piloting, he was able to put the airplane down on a country road, dodging through power lines and trees. Bill made a safe landing with only minor damage to the aircraft when he ran off the road into a ditch to avoid a collision with a car. The point is simply this: when you have a prop strike, there is no guarantee that the crankshaft is not damaged. The only way that you can guarantee that your crankshaft is still a good sound piece of metal is to disassemble the engine and magnaflux it.

Now, before some of you get on your soapbox and say "he's just trying to drum up engine business", let me make this VERY CLEAR. I don't care who you get to magnaflux your crankshaft, whether HAPI Engines does the work, whether you do it or have someone else do it. My point is simply this: if you have a prop strike, you may have damaged your crankshaft to the point where it will fail you at some later time.

You may recall in Newsletter No. 4, that Bob described having a crankshaft failure in the prototype. This is after he had had a similar type of prop strike to what I had on the runway out here, and what Bill Hazelwood had experienced. We have just torn down the engine completely in the prototype Dragonfly, magnafluxed the crank, and found I had absolutely nothing to worry about. My crankshaft was perfect. We put it right back in. I'm one of the fortunate ones. This is a potentially very dangerous and very real situation. If you have a prop strike and don't tear down, do be aware that this may just rise up and bite you 20,30,40 hours later without any warning.

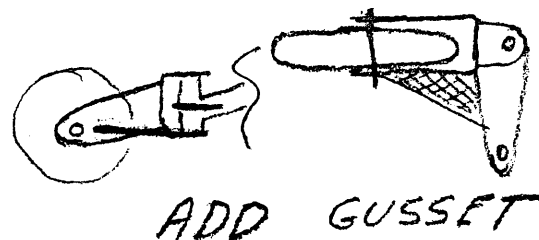
PLANS CHANGE

The NASA air inlet in the bottom cowling has been mentioned in a newsletter before, No. 13, as being unnecessary, and in fact detrimental to cooling. All of you who have the NASA air inlet on the bottom, should be aware that the only purpose of that air inlet should be to feed air to the carburetor. It should not allow air to get into the low pressure area in the bottom cowling. If your NASA duct is operating strictly as a vent on the bottom, close it off. If it is operating as a scoop for carb air and not allowing excess air to vent into the cowling, then you are all right. We have a couple of builders complaining about their engines running hot and apparently blaming the engines for running hot. This is pure bunk! Dragonfly cowling is a very, very efficient cowling and will cool the engine, in most cases too cool, if the baffling is put in there properly. All too many guys do a sloppy job on

the baffling, let the air leak everywhere instead of going through the engine where it is supposed to go, and then complain that the engine runs hot. Doing a sloppy job on the baffling so that the air leaks and doesn't go through the engine where it is supposed to, is equivalent to trying to run your water-cooled engine in your car without water. Just the fact that the engine is air-cooled does not cool it unless the air is really blowing over it and directed through the proper places. If you have a hot-running engine, the problem is not in the engine; the problem is in the job that you did on baffling and cowling. Of course, there are times whenever the engine could be running hot because it is running too lean, but if carburation is as it should be, look for cooling problems in the cooling system, which means your baffling and your cowling situation.

INSPECT YOUR TAIL WHEEL.

The prototype Dragonfly developed a crack in the tail wheel yoke at approximately 540 hours and recently, while in Austin, Texas, I was looking at Tom Wolf's airplane, with about 18 hours flight time on it, and noticed a small crack starting to develop in his tail wheel at about the same point. Refer to the sketch and add a triangular shaped wedge to the tail wheel, as per the sketch. This wedge first appeared in Chris Gentry's newsletter. It is a good fix. It does work. I've put it on the prototype and haven't had any problem with it since. I would strongly suggest that if you have built your tail wheel from scratch, that you do weld in this little wedge. It beefs up the area that seems to be prone to cracking. If you have got one of the Ken Brock tail wheels, I doubt that it will be necessary, because Ken has built the tail wheel out of a lot heavier material than it was originally designed to be built out of, so, consequently, is a stronger assembly. >



EPOXY ALLERGIES

More and more of our builders, as well as builders of other composite designs, are coming up with very severe allergies to the epoxy. I am one of those people who has an epoxy allergy. Let me tell you how mine developed. I was building industrial scale models in 1961, and we did some models for Lockheed Aircraft that were out of epoxy. At that time, the manufacturer warned that it was very potent and could cause allergies. I worked in it for several months, had no problems with it, and over the next twenty years, worked with epoxies off and on, never having any problems. I thought the stuff didn't bother me. About three years ago, while working on a KR-1, just whaling away and thinking "this stuff doesn't bother me", of a sudden I got a severe reaction, just overnight. My hands and arms, up to my mid-forearms, swelled up in big water blisters. I itched all over and I was a miserable human being for about four days. A good doctor and massive cortizone injections got the stuff under control but I have never been able to tolerate epoxy since. I am guilty of the same kind of thinking that many other people are guilty of. Don't believe

for one second that this stuff won't bother you. It will and I'll guarantee that! The only way to avoid epoxy allergies is to believe from day one that the stuff is toxic, it will bite you and you must use the proper precautions in using and handling epoxies. I visit a lot of you Dragonfly builders and find you working in rooms that are pretty well closed up, not using the gloves and protection systems that are designed to avoid skin contact and it really concerns me. I know that if you continue this, ultimately you are going to have a violent allergic reaction! There is nobody who is immune to this stuff. When your system reaches the maximum level of toxicity that it can tolerate, you will get a reaction. One of the worst things that you can do around epoxy is to wash up with acetone. Don't ever wash up with acetone. Acetone just opens the skin up for you. Don't wear rubber gloves directly over your hands; it goes right through rubber gloves and gets into the open pores of the skin, and is soaked right up by your body. Don't work in closed rooms; open up a window, get a fan blowing the fumes away from you and out into the wide open. Be sure you are breathing fresh air; wear a respirator so that some of the fumes are kept out of your lungs. Be good to yourself. Don't let a silly epoxy allergy ruin your whole project. I know of three projects that have had to be sold where the builders just simply could not complete them because they did get allergic to the epoxy. Don't let this happen to you.

It's interesting to note that the Rutans have been using these same materials for years. They do take the proper precautions and are very careful not to get skin contact or breathe the fumes. After many years of using it, they still have developed no sensitivity to it, so it is possible to use it over the long term and never develop any kind of reaction to it if you do use the proper precautions in handling epoxy. I can't suggest too strongly that any of you that are going along and thinking that "it's okay, it's not going to get me", change your thinking and believe it will get you and use the proper protections against the stuff. There seems to be a lot of different opinions about just exactly what is the proper protections. For myself, knowing that I am sensitized and allergic to the stuff, I have found that the kit put out by Applied Plastics Company, the same people who manufacture the Safe-t-foxy works very well. This kit consists of cotton gloves, butyl gloves, a respirator with a filter designed to hold out the resin fumes and such, and this does work for me. I strongly suggest that you get a personal protection kit, if you don't already have one, and use it. Believe me, this stuff eventually will make you very, very sick if you don't take the proper precautions now.

DRAGONFLY SWARMING

Our second annual Dragonfly Swarming will be held here at Eloy Airport this year on October 12, 13, and 14. As we did last year, we will have TASK people here doing a composite workshop, we will be showing wing and canard lay-ups, we will be doing some pilot familiarization rides. Last year I gave 123 rides in Dragonfly in a period of a little less than a week. I kinda earned my keep that week-end. We are going to try to do all this again. Primarily this is a working three days, we want it to be a learning experience for our Dragonfly builders. You can come out here and learn the do's and learn the don'ts, and get acquainted with a lot of other fellow Dragonfly Builders. I expect to have several other Dragonflies here this year, besides the prototype. We've got about 30 airplanes flying now and several of those builders have said that they will be here this

that you get your motell reservations made early at either the Golden 6 or the Ramada Inn. The Golden 6 is about like Motel 6; inexpensive but clean and neat and has a swimming pool and that sort of thing. The Ramada Inn is a little farther away. We will provide ground transportation for everybody who needs it, back and forth to the motels and such. If you are driving a motor home or pulling a house trailer, there will be plenty of room here on the airport to park it. We will be glad to have you. We will provide a meal again this year for our Dragonfly builder and his wife and we promise to try to provide you a really good time that week-end, as about like Motel 6; inexpensive but clean and neat and has a swimming pool and that sort of thing. The Ramada Inn is a little farther away. We will provide ground transportation for everybody who needs it, back and forth to the motels and such. If you are driving a motor home or pulling a house trailer, there will be plenty of room here on the airport to park it. We will be glad to have you. We will provide a meal again this year for our Dragonfly builder and his wife and we promise to try to provide you a really good time that week-end as well as an educational one. Please plan to be here.

BUILDERS SUPPORT

All of our builders have purchased their plans from Viking and have been promised builders support available by phone or by letter, to help them over the rough spots in building their Dragonfly.

Many of you build your airplanes completely without any builders support and some builders have made several phone calls during the process of construction.

We are getting many calls and letters now that have very little to do with what we at Viking perceive to be builders support. Perhaps an explanation of what we feel that we are obligated to give you under the plans holders agreement is in order.

When you purchased your plans for the Dragonfly, what we provided you was a complete record of how the prototype was built and what kind of materials it was built from. The purpose of these plans was to enable you to build an aircraft that was an exact duplicate of the prototype Dragonfly, what we provided you was a complete record of how the prototype was built and what kind of materials it was built from. The purpose of these plans was to enable you to build an aircraft that was an exact duplicate of the prototype. Viking further agreed that we would continue to support the builder with plans corrections, additions found necessary to clarify the plans and, of course, anything of a safety nature found necessary to correct an error in judgement or an omission in the plans.

Since the plans were first marketed, Iob spent two years working very closely with the builders and I have spent the past year and a half, also, working very closely with the builders, trying to achieve those ends.

All too often, lately, I find myself in a position of having builders seemingly feeling that we are also obligated to modify, redesign, or in other ways change the design at our own expense, and disseminate those design changes through the newsletter.

A good example of what I am referring to is the forward-hinging canopy shown in this particular newsletter. In order to get this modification done on the prototype, I had to hire outside help, Bill Hazelwood, of Rice Lake, Wisconsin, a Dragonfly builder, to come to Eloy and do this job for us. Before the job was finished and ready to present to you, just

in sketch form in this newsletter, we had an investment of \$1,200.00 in the new forward hinging on the canopy. This has been provided to you builders in the newsletter at absolutely no cost.

I have just talked with another gentleman, building a Dragonfly, who wants the control sticks on the left and the right consoles, rather than as they were designed and drawn on the plans, and he requested plans from Viking to do this modification. Another builder, this week, has requested complete data on how to install Loran C antennas in the aircraft. Another builder wants complete data on how to install the landing lights and navigation lights in the airplane. I have had three letters in recent weeks from builders in three different European countries requesting reams of engineering data to give to their governments, the builders stating that this data is necessary for compliance under the rules that homebuilts are built under in those countries.

I think that, perhaps, a clarification is in order, of what we perceive our responsibility to our builders to be. We will continue to support our builders in every way with builders support; builders support being to clarify the plans, and to help you to build an airplane that is a duplicate of the prototype. Now, the prototype is not equipped with landing or navigation lights, it is not equipped with Loran, it is not equipped with transponder, or any of the other myriad list of bells and whistles that some of the builders seem to want to put in their airplanes. We are fully aware that there are people that may not like the control system, or other features of Dragonfly, just exactly the way they were designed in the prototype. We are also well aware that a lot of you guys have taken it upon yourselves to change things about the aircraft that you don't like and redesign it, or alter it to suit your own tastes. In cases where it is done in a good, airworthy manner, and where there is no basic change to the airplane; that is airfoil or configuration, no real aerodynamic design change; if anything, I would encourage that. The only thing we do ask is that if you do want to make big changes, go ahead and change it if that is what turns you on. Just don't call it a Dragonfly when you get done, because what you have will not be a Dragonfly, but rather something of your own, loosely based on a Dragonfly. We feel that if you want to take it upon yourself to change things, you should also be willing to accept the responsibility for those changes. That seems very fair to me.

We obviously cannot spend the time to work with each one who wants to make changes in the airplane, draw out the changes for him that he requests, build it, make sure that it works, and then put it in the newsletter for someone else to do. There simply isn't that much time in a day, and I don't think Rockefeller would have enough money to pay for that kind of a design effort.

I believe that most of our builders are first-time builders who have never built any other homebuilt projects and, perhaps, haven't dealt with other plans sellers. Many of the designs available on the market provide little or no builders' support and leave the builder pretty much to his own devices, as to how to interpret the plans, where to get the materials, and, ultimately, how to test and fly the airplane. One well known designer of three very, very good airplanes charges a high price for his drawings, which consist only of the very basic dimensions on the airplanes; little, if any, detail; (everything that you guys are used to having in the way of builders notes and how to do it and what you need to do it with) and all that kind of stuff is totally left up to the

builder. That designers' philosophy is: If the builder is not dedicated enough, and not willing to learn enough to go out and dig up enough details to finish building that airplane from the minimum number of details supplied, the designer figures that the builder isn't dedicated enough, so that the designer doesn't want to waste his time with that builder.

We have gone, perhaps, too far in the opposite direction; maybe doing too much for our builders and in doing so, leading them to expect us to do more and more all the time at no expense to them. We have been available from 8:00 in the morning until 6:00 or 7:00 every evening, here at the shop. We have had builders call me at my home, in the middle of the night, and ask me about this or that problem. We have builders show up here virtually every Saturday, and many times on Sunday, fully expecting us to drop everything and take care of their problems, and we have done so in the past.

We are, of necessity, going to have to structure this thing so that we can get something done here, however, and we are going to have to have an understanding with the builders concerning times on builders support and concerning the fact that I, too, am entitled to a day off once in a while. Beginning with your receipt of this Newsletter, calls for builders support will only be taken between 3:00 and 6:00 in the afternoon, Arizona time. I will be available between 3:00 and 6:00 and will be 100% dedicated, during that time period to helping you with builders support. I will further help you on Saturdays if you call in for builders support, if we are in the plant on Saturdays. If no one answers the phone, we are not here. Beginning with this Newsletter, I am going to flatly refuse to do anything with Dragonfly on Sunday. I deserve a day off, I feel, and I am going to take it on Sunday.

In recent months, an ever-increasing portion of my time is being taken up, not answering legitimate builders support questions, but answering questions that have to do with modifying the airplane. I would bet that I have been asked the question: "when are you going to put in an aileron reflexor?" at least 300 times. The same for the "T" tail. Now, at least three times a day I am asked when we are going to change the airfoil on the canard to the new one that Quickie is using when are we going to install an Q-200; are the plans available for putting a turbo on the engine in Dragonfly. The questions seem to go on ad infinitum and ad nauseam.

Let's just take those three questions that are such a thorn in my side. We are not going to put the aileron reflexor on because we simply don't need it. Same thing for the "T" tail. Since we don't have the problem, then we don't need the bandaid. The new airfoil that our competitor uses may be fine for their airplane, but I don't see anything wrong with the one we've got and I've got more hours in a Dragonfly than anybody. All the airframe changes that our competitor has had to make have apparently been changes to try to fix their problems with their airplane. They should not and do not need to be fitted on a Dragonfly. Dragonfly is a totally different airplane.

As regards the Q-200, don't you guys ever read? While the competitor claims very high cruise speeds, I have been able to find absolutely no verification of the fact that the airplane is anywhere near capable of what they claim it is. I read Peter Lerts' article, March Air Progress, 1984, page 32, (and he is a factory test pilot for the Q-200), and he flatly states that the best speed that he has ever been able to get out of it is 192 MPH, period. March, 1984, Homebuilt Aircraft magazine, Bill Cox, page 40, top left corner, "eventually I saw 169 MPH indicated for a 194 MPH true."

But then, perhaps, I am being too hard on them. Perhaps, with the Quickie people, themselves, at the controls, the airplane does go faster. Let's see. Sport Aviation magazine, November, 1983, page 64, the results of the Lowers-Baker-Falck Competition, in which the Q-200 was flown. If it's ever going to perform, you would think it would perform well in competition where it is tuned up for racing and everything is optimized for maximum performance. Did it perform? Lowers competition: went around the course as fast as it would go; average speed? 177.81 MPH. In the Falck competition: this award is for the fastest single lap around the triangular course; did 182.34 MPH. My question to you is: if the airplane cruises "effortlessly" at 200 MPH, why in the hell don't it do it sometime whenever God and the whole world can see how fast it is?

Down at Sun 'n Fun this spring, Gene Sheahan was there with a Q-200, buzzing around the fly-by pattern virtually every day. Chris Beachner was also there with his Buick "V-8 Special" that cruises at 180 MPH. Strange thing. The 200 MPH cruise Q-200 couldn't even begin to keep up with a 180 MPH cruise Beachner "V-8 Special". We sold a Dragonfly to a fellow who was able to get a chance to ride in the Q-200; found out, indeed, that the fastest level cruise speed that they could demonstrate was 175 MPH, and he chose the Dragonfly.

If you want to install an O200 in your Dragonfly, it is your Dragonfly. I suppose you can go ahead and do it. But, don't expect to cruise 200 MPH or 220 MPH. top or whatever the ES figures are, currently, this week, because it isn't going to happen. If you are lucky, you will get another 10 MPH cruise, as they did. For that 10 MPH, you are going to have to spend a whole lot more on fuel; you are going to have to redesign the whole airplane, because it never was designed to carry another 50 pounds out there in the nose; you are going to have to spend another \$6,000.00 to get a Continental (over the price of a Volkswagen), if you can find one; there is no current production aircraft using a O200 Continental. In fact, they haven't been used for the last few years. There are a lot of Cessna 150s sitting around that are out of service, because the parts are just too expensive for the O200. The parts to rebuild an engine are worth more than the whole airplane. And that is the engine that you want to lock-in on? Seems to me we don't have to have an O200 Continental in Dragonfly to get it up to advertised speed because it gets up to advertised speed very nicely on the Volkswagen. After installing the O200 in the T-200, they have finally gotten up to what was advertised speed for the Q-2. Those of you who want to play follow-the-leader and install a big chunk of ugly iron in the front of your airplane should do some pretty basic research and find out if that big, ugly hunk of iron is going to do what you have been led to believe that it will do.

I seem to remember that the Q-2 was advertised as the world's most efficient airplane for quite some time. Until the first time they got into competition with Dragonfly, where they got soundly beaten. Dragonfly came in second in that event. Q-200 came in fifth. The Q-2 came in a sorry eighth. Dragonfly, in that event at the Cafe 400, also took home Q-2s' Tom Jewett Memorial Trophy for having obtained more miles per gallon than any other aircraft entered.

There is a lot of difference between ES advertising claims, and cruise performance reality. We have always defined cruise as being that speed that the airplane can attain and maintain at gross load, for hour after hour. The prototype Dragonfly

will cruise at gross load, hour after hour, at 165 MPH. It will do it any day of the week, with any two people aboard, and that fact has been demonstrated over 600 times to the over 600 different people who have flown in Dragonfly and many of you guys reading this have flown in Dragonfly and know damn well that what I am telling you is exactly as it is.

I am wasting many hours a week, answering these questions about modifications and what about putting all the Brand "Q" baloney into Dragonfly. If you want to build all the Brand "Q" stuff into your Dragonfly, do me a favor and sell your Dragonfly and buy something from Brand "Q", then all the stuff that you want to do will be appropriate for the aircraft perhaps. If you want to put a O200 in your airplane or a Roll-Royce Merlin or whatever, I don't approve of it, I don't want to know about it, I'm not going to help you do it, I don't even want to discuss it with you.

If you got yourself built into a big mess by buying the wrong kind of materials from somebody who tells you that what we specified is too high priced, and we are rip-off artists and such, and you ought to buy his stuff because it is wonderful and he is going to save you from us mercenary designers who are getting rich off of you, when it all turns to worms, don't bother me with it. So talk to the guy who sold you the crap in the first place and let him get you out of the problem.

We still will 100% support the Dragonfly design, we will stand firmly behind you with builders support, we will work our fingers to the bone, at no cost to you, to help you guys get your airplanes together right. We made a commitment to help you with builders support and we have every intention of meeting that commitment, but you must remember that builders support is limited to supporting you and helping you to build the airplane as per plans. I realize that what I have just said is probably going to make some of you pretty irritated, but so be it. We have always been available for builders support on the Viking line, virtually all day, every day, and sometimes I am here until late at night, talking to builders, and trying to help them work through the rough spots. Recently I find myself working 16 hour days, and getting very little done, because I am answering too many questions that I shouldn't be answering in the first place, because we are not obligated to answer those kind of questions. I believe that the vast majority of the builders will, if they think about it a little bit, realize that there is a difference, a big difference, between builders support and all these other things that I have just mentioned.

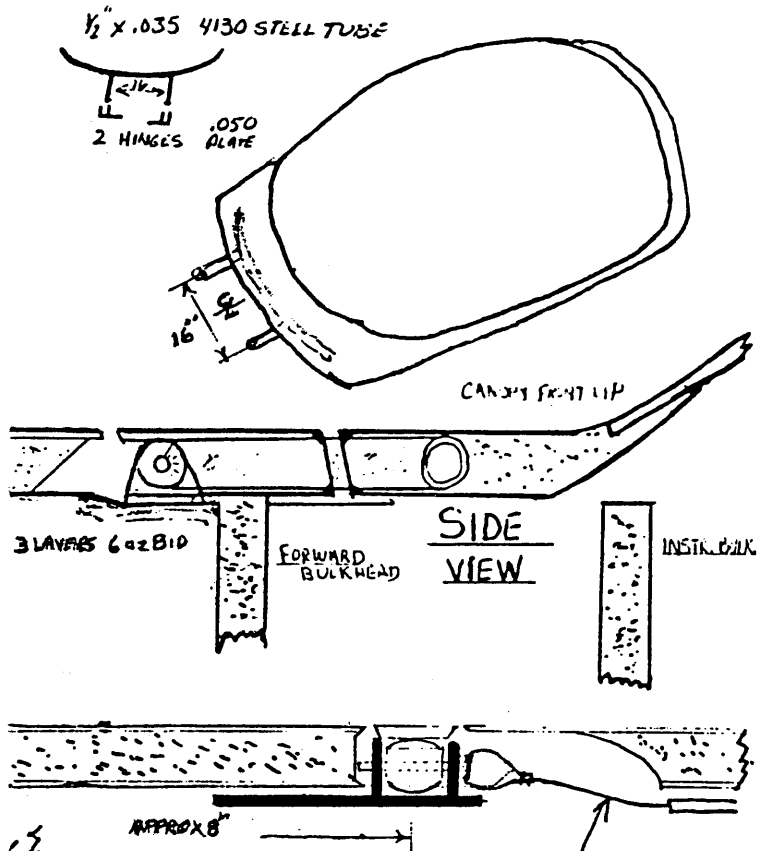
FORWARD HINGING CANOPY

Remove the canopy from the Dragonfly and protect both the inside and the outside from scratches and painting. Remove the "lazy tong" hinges and sell them to a Q-2 builder. Fill in the hinge area with Clark foam and glass with two layers of 6 oz. b.i.d. Also cut off extra plywood on the canopy and sand smooth. Tip canopy upside down and router into front of canopy lip from the bottom side, a 1/2 inch wide groove, 24 inches long, parallel to the front lip and aft about 1 1/2 inches from the front lip. (See Sketch)

Cut a 2 foot length of 1/2 inch x .035 4130 steel tubing and bend it in a vice to follow the compound curve of the canopy. Now, cut two 4 inch lengths of 1/2 inch tubing and weld them to come forward out of the canopy about 3 inches. They should be about 16 inches apart and centered. Make two 1/2 x 1/2 steel bushings, with a 3/16 hole through it for a hinge pin and weld them to the forward end of the 4 inch tubes.

(NOTE: Place a 3/16 inch diameter rod from one bushing to the other bushing to keep them in line while welding.) Now make the other part of the hinge from some .050 steel plate.

CANOPY FORWARD HINGING DETAIL



- NOTE - HINGE PINS MAY BE ATTACHED TO EMERGENCY RELEASE CABLE IF DESIRED FOR CANOPY JETTISON.

base should be about 2 inches square and the two tabs welded to the outer side of the base to allow the pins to be pushed in from the sides. (See Sketch). Make two pins out of a AN3-10A bolt. You may want to put an anchor nut on the inboard side of the hinge tab to secure the AN3-10A bolt, if you're not interested in jettisoning the canopy. If you feel like jumping out, attach pull cables to pins so that they may be pulled out for emergency bail-out. Now install the hinge unit into the bottom of the canopy lip with flux and two layers of 6 oz. b.i.d. at 45 degrees. Make sure the tubes extend out the forward lip 3 inches and are LEVEL.

After cure, router a 1 inch wide slot in the top of the forward cover to accept the 3 inch tubes. Also router a relief hole from the bottom of the forward cover to allow room to slide the pin in the hinge. (See Sketch). Now comes the real work. Find someone, (your wife), to crawl into the airplane with the hinge plate, pins, Bondo, etc. Place the canopy on the dragonfly and center it. The person inside must attach the hinge plate and Bondo it in place and stay in there until it cures. After cure, remove the hinge pins and lift off the canopy carefully. (Kiss your wife). With the help of two other people, flux and fiber glass the hinge plate in place with 3 layers of 6 oz. b.i.d. Install the canopy after cure and make sure the hinge is working properly. Do some cosmetic work to cover the exposed 1/2 inch tubing. Flux and fiber glass a top floor on the 1/2 inch tubing to bring the exterior back to the original look. By cutting a 45 degree wedge in

front of the hinge, you can almost eliminate any sign of a hinge. (See Sketch).

Think this whole idea through before starting any cutting. You shouldn't have any problem with this if you have already built a Dragonfly. You may also want to install some kind of device to hold open the canopy. A nitrogen filled cylinder from a late model car is suggested. (See Tony Bingalis' column in Sport Aviation for ideas.) That is up to you. To hold the canopy, duplicate the left side lock to the right side.

DRAINAGE HOLES

If you leave your Dragonfly parked out in the rain regardless of how well you think you have it covered up, you'll find water inside of it. This water tends to collect in the well underneath the elevator torque rods, collects under the bottom of the seat, behind the gas tank, and the seat-back bulkhead, and will collect ahead of all the bulkheads going back towards the tail. It is strongly advised that you create drains in these areas to prevent the water from accumulating there, causing a flight safety hazard. It is possible that water could accumulate in one of the aft bulkheads without your knowledge and cause an aft CG condition. It is therefore recommended that small drain holes, about 3/8 inch diameter, be drilled through the bulkheads, next to the bottom skin line from the seat-back bulkhead aft. It is further recommended that two small drain holes be placed through the bottom of the fuselage and covered with seaplane vents, at the bottom, to drain any water that might accumulate in that area. Two drain holes should also be placed in the elevator linkage well to preclude the possibility of water collecting there.

ATTENTION: CHICAGO AREA BUILDERS DRAGONFLY BUILDERS MEETING

Dr. Richard Goldman, of 55 East Washington, Suite 2905, Chicago, Illinois 60602, is very interested in forming a Chicago area Dragonfly Builders Club. Richard is calling for a first meeting of that club on May 23, 1984, in the Chicago area. Call him at (312) 332 2222 for time, place, and more information. We encourage builders to get together in groups such as this. Builders can help each other quite a little bit by sharing experiences, and in some cases tooling and ideas. Just being able to get together with fellow builders is a great boost to the moral sometimes. Every builder goes through highs and lows during the building process. Sometimes everything is going well, and it just seems like it is going to be done next week; and other times, things are not going well, and it seems as though it will never be done. When you are having the low period, it is great to have a buddy who is close by, who is going through it, has been through it, and can kind of share the burden. Makes the building task a whole lot easier and a whole lot more enjoyable.

On the next page you will find a very comprehensive cross-reference that Dragonfly builder Ed Vongehr, of Occidental, California, has worked up and been kind enough to send us to disseminate to all you Dragonfly builders. We want to thank Ed for making this available to everybody, and encourage any of you other builders who have something that may be beneficial to the building program to send in your ideas also. We appreciate them and I am sure that the other builders will appreciate them.

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QUALITY METAL PARTS

Many of you have had a chance to see the pre-fabricated metal parts manufactured by Ken Brock, in Stanton, California, and have commented that they look good. We received a letter from a German builder, by way of Ken Brock, which he forwarded to us. "Dear K.E., Thank you for the prompt delivery of the Dragonfly parts. Please find enclosed an order check to cover you invoice number 22482. To meet our German regulations, I was forced to test the parts which I recieved from you. The tests found place in Stuttgart University, using the magnaflux and x-ray methods. The results were great. Final comments of the chief tester: "good work, no faults, aircraft quality". Yours, sincerely, Hans Graesser."

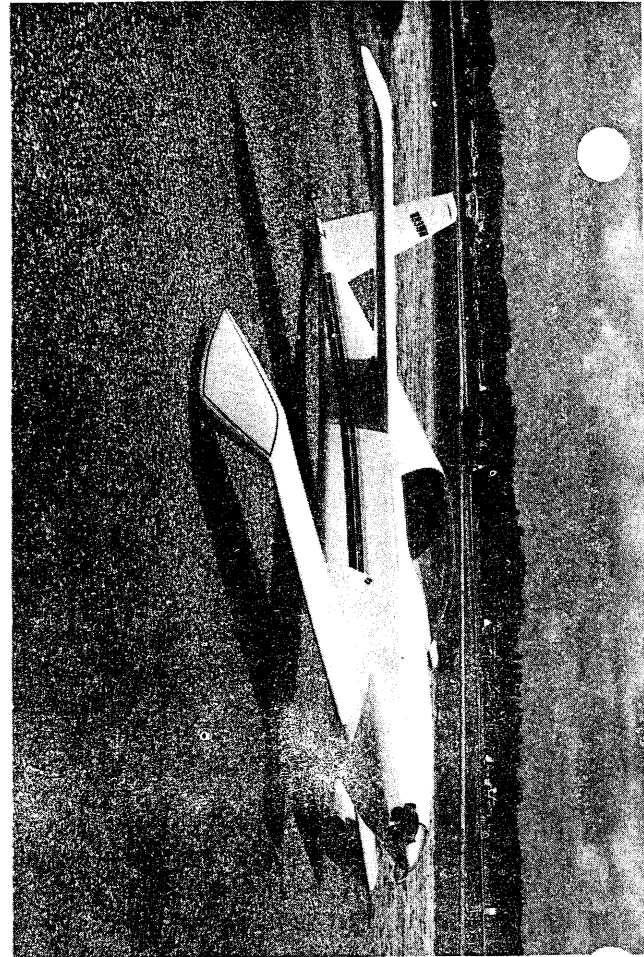
A JIM KERNS SHORT-CUT

Many of us have fought bias cut tapes in taping together bulkheads and consoles and such, inside the fuselage, and had a real problem in getting the tapes cut and laid in there properly without making a big mess of things. Jim Kerns little trick of properly laying out bias tapes is so easy it makes me wonder why I didn't think of that. It goes like this. Number one. Cover an area on top of your work table with polyethylene film. This can be in the form of a garbage bag, painters drop cloth, a big vegetable sack from the market, or whatever, just so long as it is thin polyethylene film. Number two. Roughly cut your cloth and lay it on top of the film. If you need three layers of tape, put on three layers of cloth. Apply the resin to the cloth, spreading it around with a tongue depressor. Cover the cloth with another layer of polyethylene film and now squeegee the resin around between the two layers of polyethylene film until the cloth is thoroughly saturated, and the excess resin worked out of it. Now take your sissors, and if you need three inch tape, cut three inch wide strips of the polyethylene film, bias tapes and everything. Pick it up a strip at a time, take it to wherever you are working inside the airplane, pull the plastic facing strip off of one side, lay the tape in place, squeegee it out right over the top of the remaining polyethylene film, get it all in the area with no fuss, no muss, no bother, and pull the top side film off. Touch up edges. You will hardly get your hands dirty, you will be able to transfer the tape from point to point without the bias tape stretching, and you will be amazed at how easy it is.

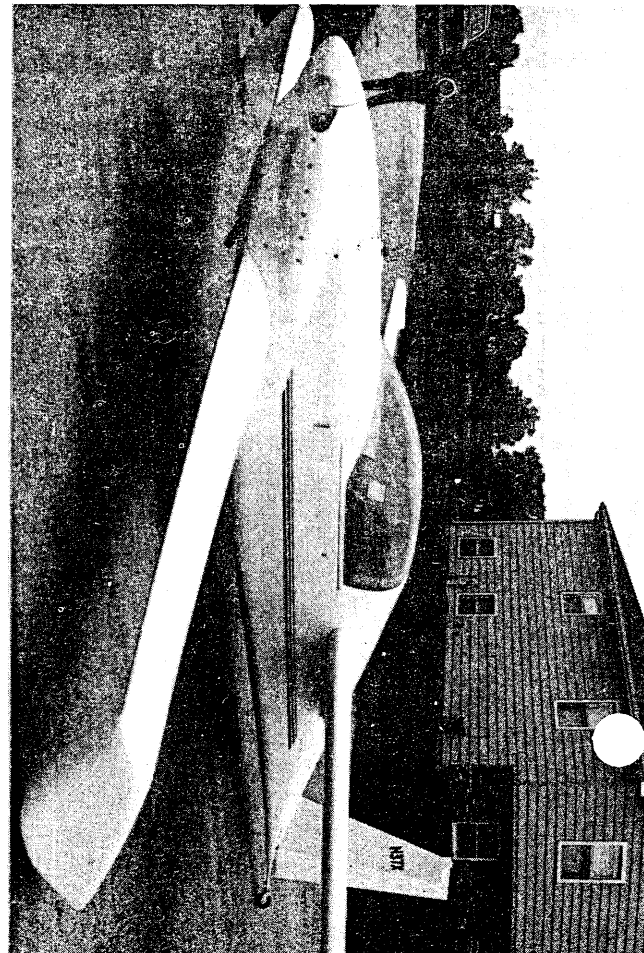
AZUSA BRAKE WARNING

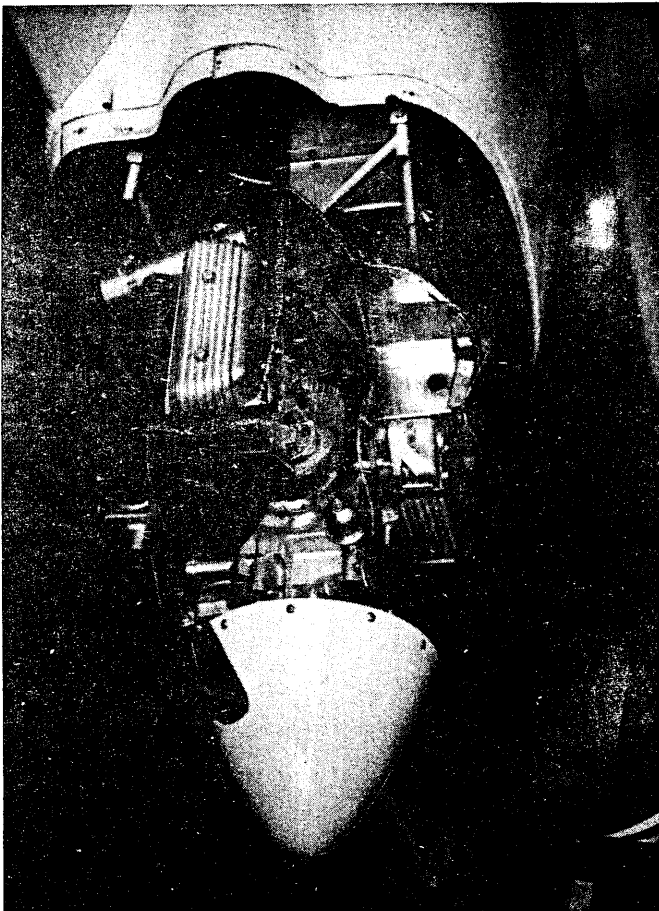
We continually have reports from builders having problems with the Azusa Mechanical brakes originally specified on the plans. Recently a builder reported putting in brand new Azusa shoes, only to have one of the linings come completely off of the shoe on the first taxi. The Azusa brake may have been a good brake at one time, but it seems the quality that they are putting out currently is terrible. In previous newsletters, we have reported sharp edges and burrs causing malfunctions on the brakes. We have personally checked out several Azusa rims recently and haven't found one that runs round. If you have a machine shop at your disposal, you can take the Azusa wheels and brakes and, with a few hours work and some ingenuity, make them into a piece of equipment that will work, but we strongly advise that you either go to the hydraulics, or, if you haven't already bought brakes, just wait a little while, and maybe something else will show up on the market that is better than the Azusas. We cannot advise that anybody put the Azusas on at this time.

DAVE SNYDER
Big Rock, Ill.

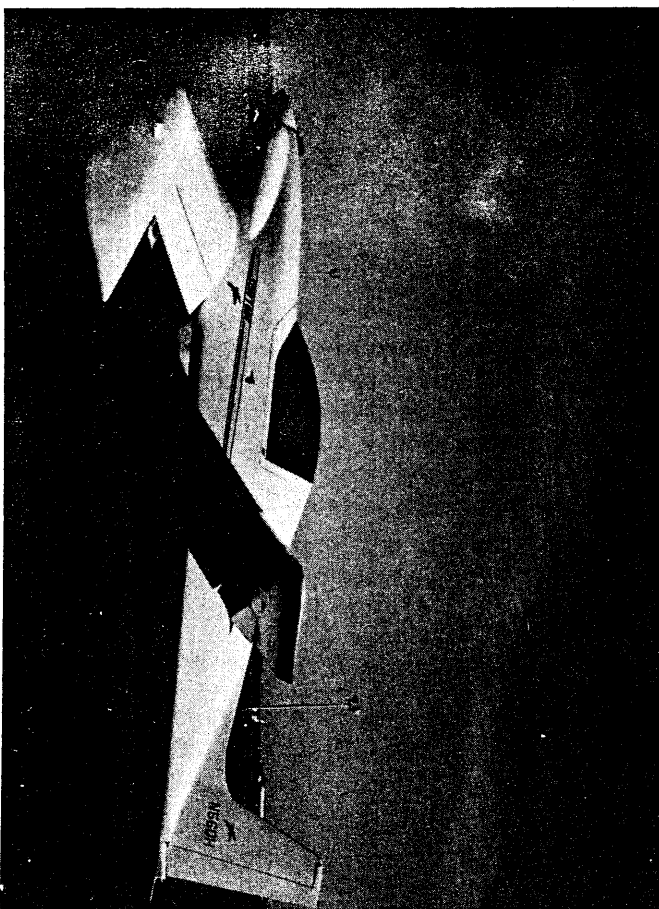
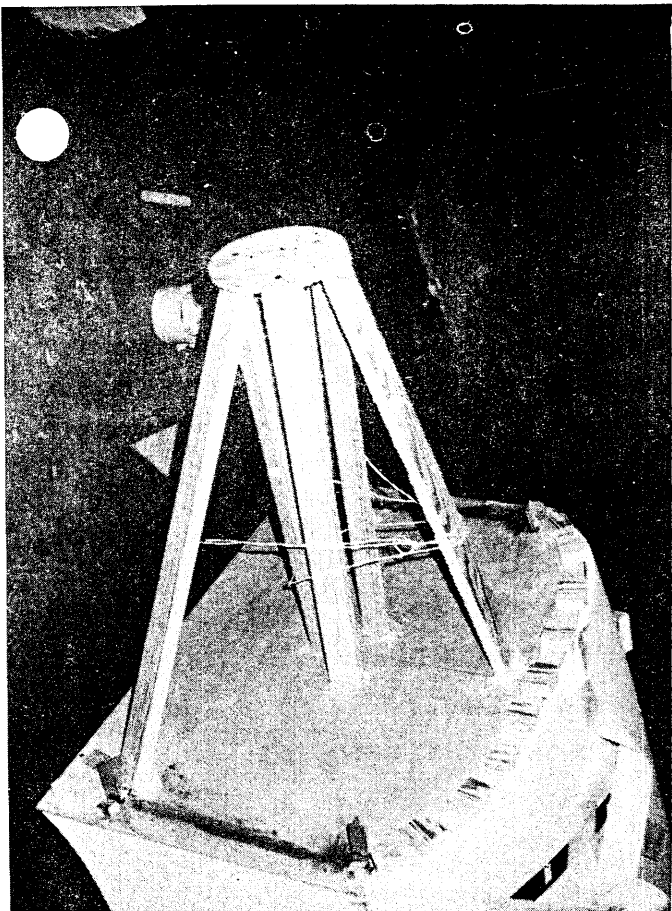


BILL HAZELWOOD
Rice Lake, Wis.

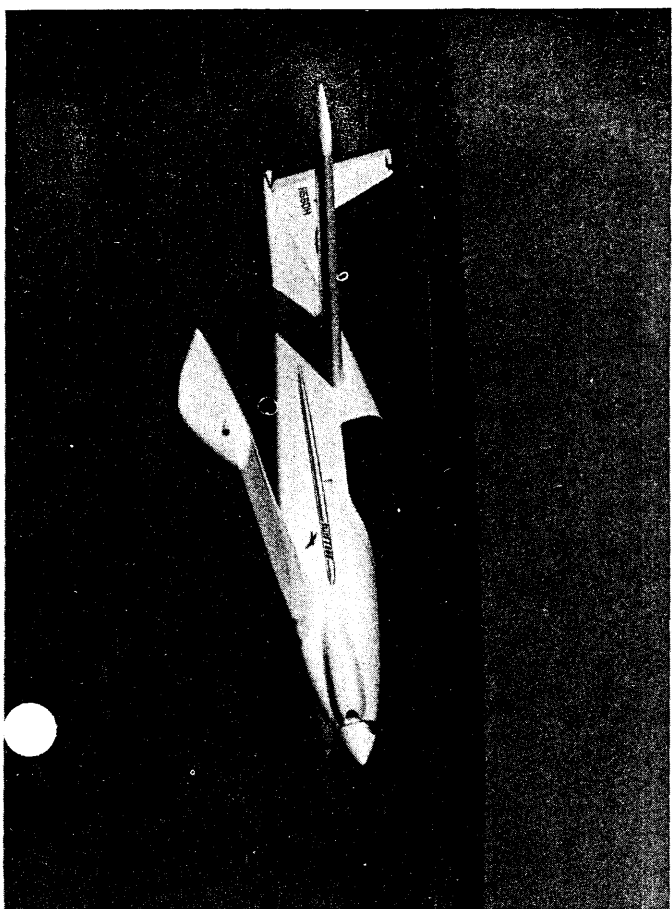




TOM HEWES - Norfolk, Va. I had the pleasure of putting the second flight of this Eragonfly. Note the big grin on my face



TOM WOLF did first rate baffling job! has no cooling problems, Tom devised simple cowling alignment aid, plywood disc simulates prop hubs aligned to center line and proper distance from firewall



COMPOSITE BASICS

"COMPOSITE BASICS" is an intensive one-day seminar which covers fundamental background material in the types of composites used by aircraft homebuilders. Fiber types, resins, fabric construction, fiber orientation, core materials, tooling and fabrication methods are covered, using both text material and samples of actual parts and materials. The session is intended for both builders and designers of the aircraft which employ these new materials and processes.

"COMPOSITE BASICS" is presented by Andy Marshall, in cooperation with Homebuilt Aircraft Magazine. Mr. Marshall is a consultant in composite materials, a Registered Mechanical Engineer, and the author of a continuing series, "Composite Basics", appearing in Homebuilt Aircraft Magazine. He has been a Private Pilot for more than 48 years, accumulating some 1750 flying hours in small aircraft.

1984 Seminar Schedule

<u>DATE</u>	<u>CITY</u>	<u>LOCATION</u>
Wednesday, March 14	Lakeland, FL	Holiday Inn-South
Sunday, March 18	Miami, FL	Holiday Inn-Crowne Plaza
Sunday, April 8	Dublin, CA	Howard Johnson's, I-580
Saturday, April 14	Portland, OR	Chumaree Rodeway Inn
Sunday, April 29	Vancouver, B.C.	Delta Airport Inn
Saturday, May 5	Kansas City, MO	KCI Holiday Inn
Saturday, May 12	Philadelphia, PA	Philadelphia Holiday Inn, Airport South
Saturday, May 19	Boston, MA	Howard Johnson's, Woburn
Monday, July 30	Oshkosh, WI	Pioneer Inn, downtown
Thursday, August 2	Oshkosh, WI	Pioneer Inn, downtown
Saturday, Sept. 15	Burbank, CA	Burbank Airport Hilton
Saturday, Sept. 29	Houston, TX	Ramada Inn, Intercontinental Airport
<u>Sunday, Oct. 14</u>	<u>Eloy, AZ</u>	<u>Casa Grande Ramada Inn</u>
Saturday, Oct. 27	New Orleans, LA	Holiday Inn-Airport

Who Should Attend:

This seminar has been structured to be of particular interest to homebuilders of composite aircraft, and all of those who are interested in improving their perspective, understanding and decision-making capabilities in the specialized area of Sandwich Structures and Advanced Composites. No previous training in engineering or mathematics required.

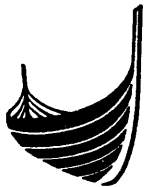
Advance Registration:

Because class size is limited, advance registration is strongly advised. When room in the class is available, registration and payment will be accepted at the door. Should your late registration seem likely, it is suggested you telephone to confirm that an opening is still available.

Hotel Accommodations:

If you plan on staying overnight, you should make reservations directly with the hotel. The Registration fee does **not** include any overnight accommodations.

20 - 2.12.5
COWLING AIR INLET
FORWARD HINGING
DRAINAGE HOLES

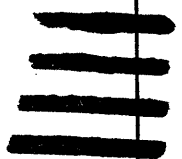


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