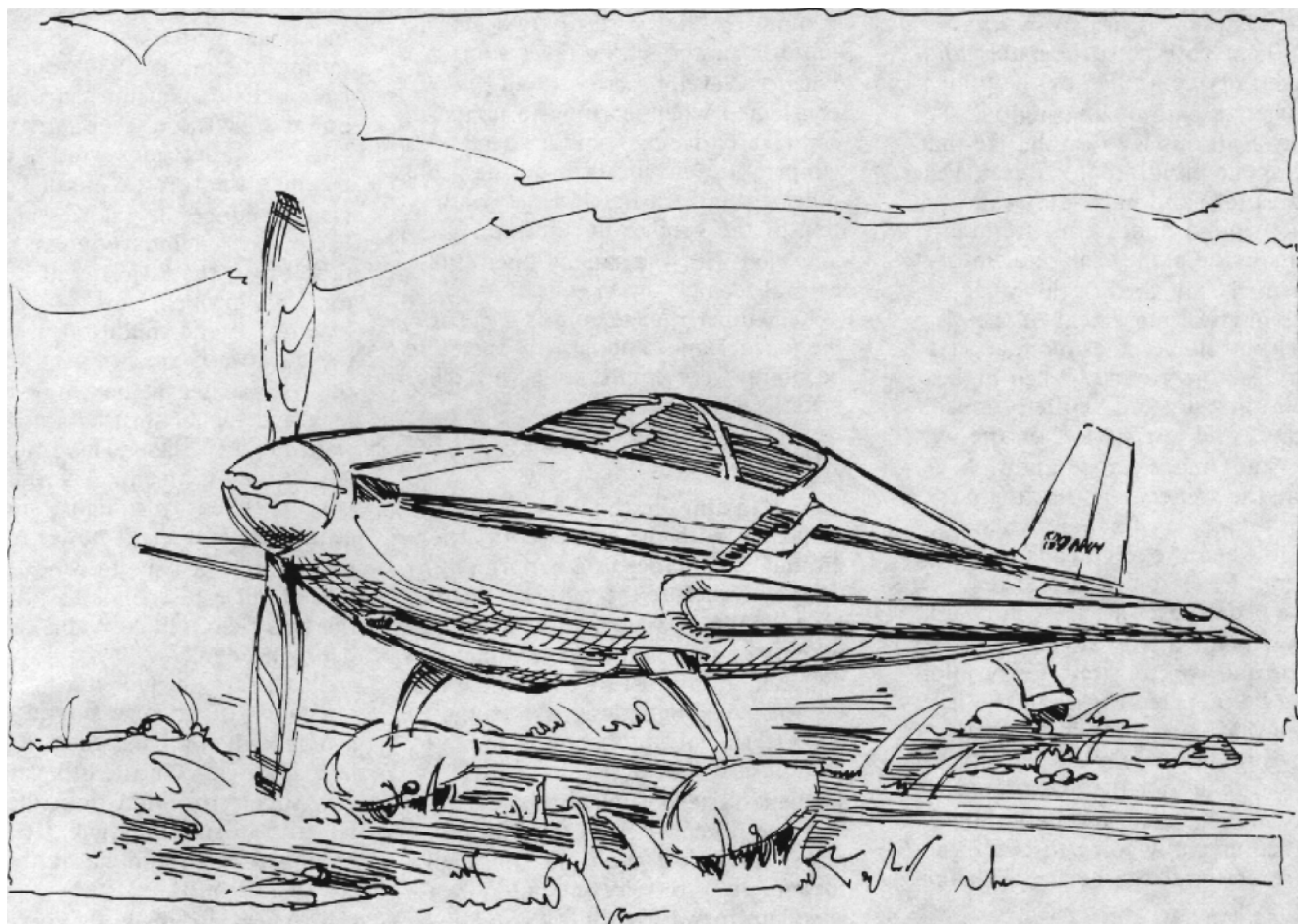


## Handling the Taildragger



The incident rate among Glasair taildraggers continues to be high. Since the first kit-built Glasair flew in April of 1982, approximately 30% of all TD's have suffered some degree of damage incurred in a ground roll accident. Fortunately there have been no injuries, as far as we are aware. Our urgent desire, of course, is to see the elimination of these incidents. We believe this can best be done through increased pilot awareness and training. We are also open to any comments or suggestions as to possible ways of improving our product. In this writing we need to identify the

problem, and then discuss the subject in detail in order to offer solutions. The problem appears to be several things: the pilot overestimating his present skill level; restricted visibility; not having enough current hours in taildraggers; being in a hurry to fly; and the inherent problem with homebuilt airplanes of not having the chance to become fully familiar with an aircraft of the same type.

### Mental Preparation

**As is true in anything we do, the proper mental preparation prior to**

flying an airplane is very important. The builder of a Glasair may have thoughts similar to: "Well, now my project is complete; it's time to go and fly it" Instead, maybe it would be better to think of the "project" as two parts: Construction, and the first 200 hours of flight time. This way, there may be a tendency for the builder to think: "I've worked very hard to complete this plane, and now I am going to work hard to learn to fly it well!" This kind of thinking can help put everything in the right perspective.

There is a second type of mental preparation that applies to actually being at the controls of the plane. The airplane is simply a machine in forward motion. The pilot is the controller. His brain is the "initiator of input" and his arms and legs are what deliver that input. For each input action of a flight control, there is a reaction manifested as a change in pitch, yaw, or roll. Although the earthly elements will try to alter the course or attitude, the plane will act with prudence only as the result of pilot inducement. It will not intelligently fly itself. A good way to relate this point is just to say that "any flight path not deliberately and thoughtfully controlled by the pilot is ultimately a path of destruction!" The intent of all this is to emphasize that *You*, as the pilot, are in control. Fear, intimidation, and uncertainty all detract from a pilot's effective ability to handle the plane. The pilot must be mentally prepared in this way. The physical movement of the flight controls becomes more crucial on or near the ground. When high in the air, the pilot can be pretty much "at ease" and rest his feet on the floor, study maps, eat a sandwich, admire the scenery, etc. But there comes a point on final approach to landing when the mind calls out, "attention!" Feet are poised and ready on the pedals, eyes are fixed forward, and hands are alertly attending to the throttle and control stick. Every pilot should be prepared to rise to the level of skill that is required in the particular situation. He must be fully alert and ready for the unexpected when landing. Realizing these things and then mentally going through the flight procedures can be an invaluable training aid.

One more interesting point on this topic is the idea of physical sensitivity to the controls. With the Glasair it is helpful to condition one's mental view of each control as one in need of either a light or a heavy touch. For example, the flap handle and the elevator trim lever need a determined, strong movement, while the control stick, throttle, brakes, and mixture control usually need only fine tuning or relatively gentle movements. The rudder pedals can be either way, depending on the winds and the forward speed of the airplane. **Taxiing**

When taxiing the Glasair taildragger, direct forward visibility is

obscured by the cowl. If the outside air temperature is at a comfortable level and the pilot does not mind getting windblown, the proper method is to taxi with either the gull wing or sliding canopy open. The pilot will need to have his head outside the plane to see down the taxi-way. With closed canopies the method is to gradually drift to one side of the taxiway, then apply a bit of opposite brake. Right as the plane is turning, the pilot will have a view of the ground ahead. This would be called soft "S" turning. The rudder is not very effective in this type of slow taxiing. Holding a steady taxi and a uniform power setting takes some practice. Several factors should be considered when learning to taxi such as brake pad wear, cylinder head temperature, nosing over on the prop, other ground traffic, and the condition of the wind. Sometimes on a long taxi with the canopy open it is helpful to lock the tailwheel.

Remember that taxiing is a part of the takeoff and landing roll, therefore becoming very comfortable with it is beneficial all around.

### Fast Taxiing

Fast Taxiing, in this case, is defined as taxiing with the tailwheel off the ground. This procedure is normally done only before the pilot has made his first flight, as thereafter it would be part of the takeoff or landing. Extreme caution must be used when trying this. A long runway is essential; 3000 feet would probably be the minimum length desirable. With seatbelts fastened, tailwheel locked, and one notch of flaps set, add power slowly. At about 30 mph apply forward stick to raise the tail. When adequate forward visibility is achieved, hold the level of the tail constant. Next, slowly come back on the throttle. Do not exceed 48-50 mph because in this condition the plane can depart the runway at about 52-53 mph. Make sure that the tail is back down and the plane is back to a slow taxi well before the end of the run-way. For the first several practice runs, do not apply brakes with the tailwheel off the ground.

It is recommended that fast taxi practice be done when no other traffic is around, and that each session be kept to a maximum of 20 minutes to avoid overheating the engine. The total amount of taxiing required before the first flight is determined

by the pilot in regards to his own skill, experience, and confidence.



### Takeoff

Some incidents have occurred during the takeoff roll; not usually on the actual first flight, but sometime during the initial 20-30 hours. The 2 key points to remember are; Add power *slowly*, and especially watch out when a left crosswind is present. Opening the throttle gradually will greatly reduce the chances of the "P Factor" of engine torque becoming a problem in the takeoff roll. "P Factor," or "propeller disk asymmetric loading" is the condition in which the downward moving prop blade, on the right, has a higher angle of attack and higher thrust than the up-ward moving blade. This results in left turning moment. A good practice is to get lined up straight on centerline, add slight power to just get rolling, lock the tailwheel, and take about 5-6 seconds to fully open the throttle. Gradually add right rudder as needed.

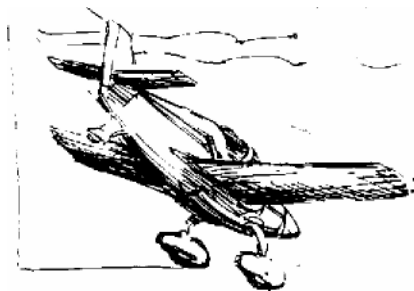
Takeoffs by a pilot during his first few hours of practice should be avoided when a crosswind from the left is present. On the other hand, a very slight crosswind from the right is effective in subduing any "P Factor" problems. Even minimal lefthand crosswinds on takeoff may require supplemental right brake to keep the airplane straight, however, this may vary somewhat from Glasair to Glasair. In any case, beware of *strong* left crosswinds. Full right rudder, substantial right brake, left aileron, and possibly a tail low 3-point attitude are necessary.

One method of taming a crosswind on takeoff, or even on landing, is this. If the runway is wide, line up facing a little more into the wind, and take off slightly across the run-way instead of straight down it.

When departing from an extremely narrow strip, it is a good idea to pick a reference point such as a cloud or a tall tree, and keep it in sight. Be sure to be lined up exactly down the nar-

row runway before beginning the takeoff roll. With practice a pilot can become proficient at looking out the side of the plane and knowing whether or not he is proceeding on line and how to make any corrections.

Normally, takeoffs are done with the tail up. Outside of the obvious visibility benefits, the reason for this is because it is a much more comfortable takeoff; the liftoff speed is much above the stall speed and the immediate angle of attack is not critical. With a 3-point takeoff, aft stick pressure must be relaxed immediately after liftoff.



## Landings

In any airplane a feeling of reward and accomplishment is found in making a quiet, smooth touchdown. Landing with precision, smoothness, and consistency in the Glasair taildragger is not especially difficult. The plane lands very nicely. Many of the landing incidents have happened on the landing roll, not on actual touchdown. Pilots have got to keep alert and on top of things right down to the speed of slow taxi.

Let's look at the techniques that apply to an inexperienced Glasair pilot. First we will cover wheel landings. When doing touch and go's it is best to land with only 2 notches of flaps due to the lower rate of sink and the ease of retraction on go around. The idea at first is to drive the plane onto the ground in nearly a level flight attitude. Make the approach speeds at about 85 mph and touch down at about 75 mph. When coming down low over the numbers do not "flare" so to speak, but rather check the sink rate with slight aft stick. Concentrate on stabilizing the airplane when the wheels are a foot or less off the ground. When the wheels touch, pin them down by using forward stick. This is the key to success. Hold the tail up for good visibility and enough to keep the

wheels on the ground, but don't go over on the nose *too* far. Next, slowly add full throttle, keep the plane pointed straight with rudder control, and lift off. Just after the wheels are off the ground, move the flap handle back to one notch, and then to 0 degrees when desired. The only difficult part of the actual landing is developing an anticipation of when the wheels are going to touch. To prevent or to stop bouncing, a feel for the elevator control must be developed. A bounce is stopped simply by anticipating the next bounce and damping it with aft stick followed immediately by forward stick. After some practice, the approach and landing speeds can be lowered. This is a transition from very horizontal landings, to a little more vertical landings, where the sink rates are higher and more deliberate elevator control is needed. At first be very cautious on landing rollout. Keep working the rudder pedals to keep the nose straight. Don't let the tail come down until about 30-35 mph is reached. Be extremely alert; try to anticipate the necessary rudder corrections; stay ahead of the plane.

The 3-point or full stall landing uses the same techniques as any other taildragger. The key to this landing is to flare the airplane, holding it slightly off the runway until *full* aft stick is achieved. Allowing the wheels to touch before the stick is all the way back will *always* result in a bounce. Pilots who are very accustomed to 3-point landings in other planes may prefer the same in the Glasair.

The best way to master landing the Glasair is to get out in the pattern and do touch and go's, one after another. Do them until it gets tiring, and go out later for some more. It is very important to keep on practicing until all fear and uncertainty is gone. Try some shorter runways, some brakes while the tail is up, etc. Build up confidence in yourself and in the airplane. When this point is reached, the work becomes fun. The complete satisfaction of building and flying the Glasair is realized.

## Brakes

**Brakes should not be used at all on touch and go's. At all times they should be used cautiously. The quick use of brakes can deliver the airplane from a near groundloop and save the**

day. On the other hand, the misuse of the brakes can cause serious problems. Check the brake pads often and replace them before they wear thin. We have found that when the brake pads become *very thin*, the O-ring on the master cylinder goes past its seal and the loss of pressure results in instant brake failure.

## Conclusion

The Glasair taildragger is not tricky or unpredictable on the ground. However, it is a taildragger and *all* taildraggers by nature are more difficult to handle on the ground than tricycle geared airplanes. If you are not an accomplished taildragger pilot before flying your Glasair, ground handling problems are inevitable. The fact that it is a blind taildragger, a high performance plane with sensitive controls, and a brand new experience for the pilot, can be a little too challenging for the novice. We simply can't stress this point enough! It could be called a "pilot's airplane." It needs to be flown by someone who really enjoys flying, and is willing to put the time in to get to know its handling characteristics inside and out.

We sincerely regret any incidents that have taken place. When these things do happen, we want to make every effort to help the builder restore the plane to flying condition and find new ways to prevent a future mishap.

We continue to offer our dual instruction program here at the factory. Everyone is urged to utilize this service. Happy Flying!

## Builder Suggestions/Hints

### Chromed Cylinders

An interesting problem has been brought to our attention. Thorough taxi testing is recommended for the break-in period of all pilots. However, thorough taxi is *not* recommended for the break-in period of rebuilt engines with chromed cylinders. Therefore, it may be best to take your engine to a properly equipped overhaul shop and pay them a small fee to break in the engine on a test stand. The idea is to get the piston rings to wear against the cylinder walls, to help them seat quickly and surely. This initial wear must not be

impeded; so high RPMs and low heat are needed. The ideal method would be to mount the engine on a different aircraft, fire up the engine and immediately take off, maintaining a shallow climb angle. The plane would be kept at high speed (to minimize load), high RPM, and maximum cooling. After as little as 30 to 40 minutes of this the rings would likely be seated properly.

Lycoming engines that don't get broken in properly will run just fine, but chances are they would always burn some oil. The problem with taxiing around with a new engine is that the RPMs remain low and the cylinder head temperatures quickly rise. In this condition the resins in the engine oil can coat the cylinder walls and prevent or delay complete seating. This discussion concerns all new or rebuilt engines, but is especially an important consideration on powerplants with chromed cylinders,

### Rib Fitting

When in the final stages of fitting the wing ribs so that the upper wing skins lie perfectly true and absent of high or low spots, here is a suggestion. Try taping a piece of carbon paper onto each rib with the black surface up. Then close the wing panel firmly and lift back up. Any high spots on the rib will leave an obvious imprint.

Another idea concerning these ribs is to temporarily fit them in place prior to installing the rear spar shear web. This permits a full view of the ribs during fitting. The rear spar can be simulated by mounting wood blocks to the wing trailing edge. Be sure the trailing edges are the correct distance apart. (Refer to the "Z" dimension in Wing Assembly Section.)

### Propeller Oil Line

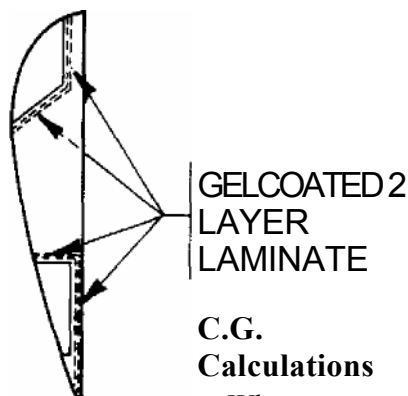
When using a constant speed propeller, the oil pressure line that runs from the front of the crankcase to the prop governor must be of the highest quality material. This is essential to flight safety. Do not use aluminum tubing. Use annealed stainless, 3/8" O.D. with a wall thickness of .035". A 40" piece should be enough to do the job. Here are 3 specific choices of tubing that may be used.

304 stainless, AMS 5560  
(SAE 30304)

321 stainless, AMS 5557  
(SAE 30321) 347  
stainless, AMS 5556  
(SAE 30347)

### Wing Tip Tip

To aid in getting the maximum brightness from lights mounted in the wing tips, here is a suggestion that works well. Apply gelcoat to a one or two layer laminate, about 18" x 18" square. Sand and buff to a high polish. For each wing tip, four pieces will need to be cut out of the large square. The goal is to seal off a small compartment under each lens, and with the shiny white surface facing outward, a brighter light will be the result. Cut a small hole in one of the pieces for the bulb to extend through. When the pieces are shaped to the proper dimensions, bond them in place around the edges with a Q cell/mill fiber mixture.



When determining the empty weight of your airplane by the use of floor scales, be sure to have the sliding canopy in the closed position. A fully open sliding canopy can move the C.G. aft somewhat. Also, try to have the engine drained of all oil. Several builders have not done this, and it has caused them added complexity in performing the mathematical calculations.

### Canopy Frames

One of the more difficult procedures of the canopy installation is the frame cutout. The problem is that after the frame is cut out it is necessary to remove sufficient material from the fuselage or frame to allow for a proper fit when the 2 layers of glass and gelcoat are replaced. This removal of material makes it difficult to keep the final cut lines accurate and even.

Eventually, the cut fine separating the frame from the fuselage needs to be approximately .120" to .150" wide to allow for the replacement 2 layers of glass on each surface (.060) and gelcoat on each surface (.030), and allowing for a seal. Because saber saw blades are not very thick, it is necessary to sand the excess material after the cut is made. The following sequence is recommended:

1. Use a wide marking pen and draw the cut line to the exact dimensions desired. This will give a good reference.
2. Leave the canopy frame attached at 4 points when making the original cut. In other words, make the saber saw cut down the middle of the reference line and leave 4 evenly spaced tabs still intact so that the frame will not be removed just yet.

Now, with the canopy frame in place, proceed to remove the excess material with sandpaper or a file to the previously drawn reference cut line. Once the cut line is all sanded away the tabs can be cut. Remove the canopy frame. Sand the tab area smooth. Now the canopy frame is assured of being even on all sides.

## Optional Items

Stoddard-Hamilton is interested in providing expanded service to all of our builders in the form of optional packages and parts, accessories, etc. Many builders have desired to purchase "extras" from us; however, in the past this has not been possible. Our purchaser has been working hard making contacts and putting together all necessary information. In the near future we will be publishing a catalog of available items. In order for everyone to begin thinking along these lines, here is a partial list of some things that **may** be included in the catalog: Instruments, radios, auto pilots, nav systems, lights, strobes, antennas, batteries, upholstery packages, fire extinguishers, jack stands, jack pads, tow bars, engine controls, brake pads, sanding blocks and paper, tongue depressors, fresh air vents, pre-drilled instrument panels, canopy locks, stick grips, inverted oil and fuel systems, hydraulic oil, duct hose, and cutting tools. This partial list, of course, is only meant to give an idea of the kinds of things to be expecting in our catalog.

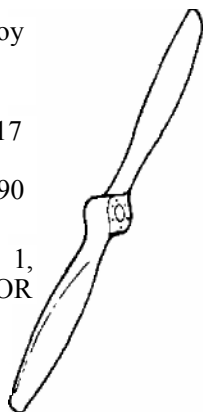
## Wood Propellers

Many people are inquiring about the availability of wood props and which manufacturers we recommend. Wood props continue to work very well on the Glasair. They are very light in weight, durable, inexpensive, and come with leading edge protection for flying in the rain. Here is the list of the manufacturers we have worked with the most in establishing correct dimensions for the Glasair.

Bernhard Warnke Eloy  
Airport Eloy, AZ  
85231 (602) 466-9441

Ted Hendrickson 9917  
Airport Way  
Snohomish, WA 98290  
(206) 568-6792

Pacesetter, Inc. Rt. 1,  
Box 927 Hillsboro, OR  
97123  
(503) 645-4356



## Newsletter Subscription

Effective June 1, 1984, the subscription price of the quarterly newsletter has been set at \$12.00 per year.

## Oshkosh '84 Banquet

On Wednesday, August 1, all Glasair builders and guests are invited to gather for an evening meal at 8:00 pm at Butch's Anchor Inn, 225 W. 20th St., Oshkosh, WI 54901. We are in contact with this restaurant and will be reserving seating space. If you think you can attend, please contact us by phone or letter ASAP. Direct your correspondence to Mike Currier. At 7:00 pm there will be a social hour at the same location. This will be a great chance to get to know many of you. We hope to see everyone there!

We would like to see as many Glasairs on the Oshkosh flight line as possible. We would encourage all builders who are able, to plan to ring their planes to the world's greatest aviation event. We will attempt to save some space on the grass display area for all Glasairs to be parked together; so if possible give us a call and let us know if you want us to reserve you some space!

## Air Show Report

During the past 3 months we have attended several air shows. In each. Bud Granley put on a beautiful display of aerobatics in Glasair N87SH. Many thousands of people are being exposed to the plane for the first time and are enjoying the spectacular flight demonstrations. These shows have included Sun 'N Fun in Lakeland, FL, Comox on Vancouver Island, Edmonton, Alberta, and Watsonville, California. The airshow schedule for the remainder of the season has not yet been confirmed. It appears that with the exception of Oshkosh, we will be attending shows on the west coast only. If you would like to know if we will be at a specific show, give us a phone call. As time passes it is great to see more and more of our builders at fly-ins and air shows with their completed Glasairs.

## Glasair Picnic

Plans are now set for the first annual Glasair fly-in picnic. The dates are Saturday and Sunday, August 18 and 19. Early arrivals beginning at noon Friday are welcome.

We have a limited amount of hangar space and lots of tie-down space. (Bring your own tie-downs.) Bring your tent if you prefer to camp on our lawn, or we can make arrangements for your stay in a local motel.

The cost is \$35.00 per person which includes:

- A Saturday night salmon, chicken, and rib barbeque with all the trimmings, and live music.
- Sunday brunch in the waterfront town of Anacortes, gateway to the beautiful San Juan Islands.

Name.

Total number in party

Do you need motel reservations? ☐ Yes ☐ No

Will you be camping? ☐ Yes ☐ No

How will you arrive? ☐ Glasair  
☐ Private plane  
☐ Airlines  
☐ Auto

Which nights will you stay? Fri. ☐ Sat. ☐ Sun. ☐

Mail to:

Glasair Picnic / 18701 58th Ave. N.E. / Arlington, WA 98223

## First Flights

Since our last report several more Glasairs have flown for the first time. Deserved congratulations are in order to Al Klappmire of Prairie du Sac, Wisconsin; Bob Sloe of Berea, Kentucky; Dick White of Newport Beach, CA; Terrell Keen of Graham, Texas; Dick White of Alamo, CA (yes, there are 2 Dick Whites); Jim and Stacey Hamm of Phoenix, AZ; Dick Thwaites of Spokane, WA; and Franz Stone of Columbus, OH. This brings the current total of completed Glasairs to 46.

The Spokane, Washington area now has 3 flying Glasairs; Dick Thwaites, Ron LeBlanc, and Frank Malone. They may adopt the title of "Air Force of the Inland Empire." Dick White of Alamo and Franz Stone have the 2nd and 3rd RG versions to be built from a kit.

— Use of a loaner car if you wish to do some sightseeing.

We are looking forward to many fun activities such as a morning flight to the Mt. St. Helens volcano sight, a guided tour by automobile of some of our surrounding scenic beauty, an open house to all of our facilities, judging and awards in various categories for all Glasairs in attendance, and hopefully all builders who have never had a ride in a Glasair before will get the chance.

Everyone who has already sent in their reservations are presently being billed for the amount due. Time is getting short, so all those who still wish to sign up please send in a check along with the coupon. July 20th is the deadline for letting us know of your plans to attend, so please hurry!