

T-18 NEWSLETTER



Well, now folks! This is really what it's all about! Isn't it? Mike Thomas (left) Chuck Borden (right)

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Letters to the Editor: Keep them coming folks!

First Flight by *Chuck Borden*

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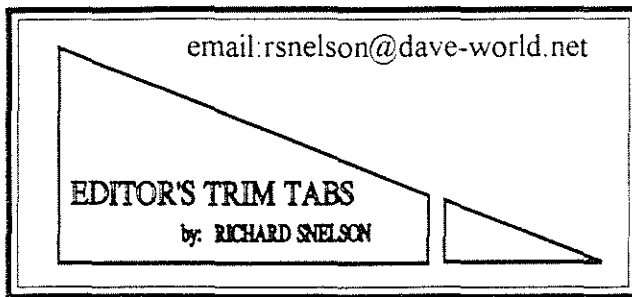
Paso Robes Thorp T-18 Fly-In by *Chuck Borden*

Visit my Webb Page for updates on events:

<http://homepage.dave-world.net/~rsnelson/thorp.html>

email address: rsnelson@dave-world.net

NOTICE: (STANDARD DISCLAIMER) As always, in the past, present, and future newsletters, we would like to make you aware that this newsletter is only presented as a clearing house for ideas and opinions, or personal experiences and that anyone using these ideas, opinions, or experiences, do so at their own discretion and risk. Therefore, no responsibility or liability is expressed or implied and is without recourse against anyone.



Boy! Those West Coast guys sure have a lot of nerve! That Tony Ginn guy called here when we were sitting in a cold house with the power off for 10 hrs and the temperature approaching -100 degrees below zero and he tells us about the temperature in Calif. I wanted to shoot the son-of-a-gun. Oh well! he had some good news about Chuck Borden having his second Thorp Fly-In so I'll let him off the hook this time. I understand everyone in his family now have their own T-18. Talk about formation flying. "The Flying Ginn's"

RoxAnne and I had a crazy December. She had major surgery and I spent the next 5 weeks taking care of the horses and animals on the Snelson Ranch. Oh yes, she's doing really fine and no more PMS.. Come to think of it I'm doing fine too. I hope that explains why I didn't get the December issue #108 issue to you in 1998.

Events for 1999

**Feb 20, Paso Robles Municipal Airport:
Second Thorp T-18 Fly-In**

(See flyer on page 19 this letter)

**June 11-13, Fremont County Airport, Canyon
City Colorado T-18/S-18**

(See notice on page 18 this letter)

**July 30, Oshkosh 99, Lunch and forum in the
Nature Center at noon on Friday**

Sept ?? Placerville, California (No update on this event, stay tuned)

Oct 8, 9, 10 Kentucky Dam Thorp Fly-In

We have an update from Classic Sport Aircraft and it sounds like they have been pretty busy this last year. I've been bugging them to send more items and information for the newsletter. You know, Let us know what's going on guys. A lot of people are finding my web homepage and sending email, calling about the Thorp. I forward the messages to Classic and also to Ecklund Engineering for them to respond. Also getting calls to buy T-18s. So keep us informed if you know of someone wanting to sell or buy.

This newsletter is stuffed fun of good stuff so I'll wrap up here and save room for some of your inputs. **I will mention it's "Dues time." So please get them in before the end of Feb.** Still 25 folks that haven't paid for 1998.. I'm sure they know who they are.

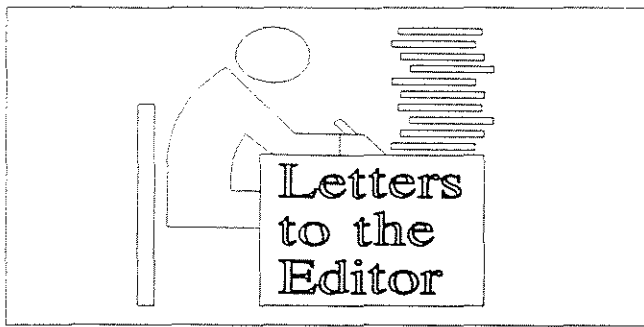
SEND 1999 DUES NOW!

Thorp for Sale!

Built 1969, refurbished 1995. This is a well-built, beautiful Thorp that weighs 900 lbs empty (1,550 gross) and performs like a fighter on less than 8 gph. Two props: 1) Aymar-Demuth wood (1995) lets you cruise 145 kts at 2,400 rpm and climb at 1,500 fpm. 2) Flotorp metal (1969) climbs at 2,500 fpm and cruises at 120 kts at 2,400 rpm. Throttle back to 110 kts and sip 5 gph.

TT is 1570 hrs, 500 since top overhaul on 150 hp O-320-G-4 Lycoming. Narco 720 Nav/Com, Narco transponder w/ mode C. Intercom. Light-weight Hi-Torque starter, new stainless exhaust system. Temperfoam seat cushions. Nav lights and strobe. VFR instruments. New aluminum panel, vacuum pump, DG and horizon ready for installation.

This plane is a 10 outside, 8.5 inside. The panel and new upholstery will make it a 10/10. It has flown me to Alaska, Florida and many other spots and everywhere I land it draws a crowd. \$25,000 Call John Sullivan, 518-494-3292 or e-mail, sullivan@netheaven.com



Richard:

Hope you don't get a complex. We have not been ignoring you - just busy. This year is coming to an end fast. Will try to detail what has been accomplished. We attended 5 Fly-Ins this year (see Frankie's letter below). We will lay out a schedule for next year and advise. With comments and articles discussing fly-in attendance, I would like to let everyone know we are trying to cover as many as possible. The restrictions are Time and Money. While one person wants us to attend their fly-in, another is wishing we would stay home and cover orders. Guess I'll never win.

Items now available are:

1. Our new spinners \$245
 2. Our new landing gear \$ 875
- The mod we made to the gear was for shipping, cost, and we are able to retrofit to the long gear or repair damaged gear in the field. We have three kits that have been sent out.
3. We are stocking windshields and canopies (light gray tint only).
 4. Current stock levels now cover approximately 80% of the aircraft. On some parts, we have as many as 30 airplanes on the shelf. (Of course, it is never what someone thinks of to order.. so I guess we will always have backorders.
 5. Improved on fiberglass for better fit.
 6. We now have formed leading edge skins on the wings, flaps, vertical, horizontal and landing gear fairings.
 7. Horizontal Spar assembly, with 509 & 510-1 fittings riveted in place.
 8. Fuel tank assembly with new flush mounted cap (no leakage in the cockpit).
 9. STARTED CONSTRUCTION ON OUR OWN S-18....

Items In Work For 1999

1. Tri-gear (many, many, many requests for this).
2. Pre-assembled main spar assemblies.
3. New engine for the Thorp. 180HP all aluminum, V4. Allows use of existing Thorp cowling.
4. Cable actuated trim mechanism.
5. Flush mounted cowl cheeks.

As you can see, we have accomplished a lot and will continue. We have not satisfied everyone on everything, but will continue to improve.

We started 1998 with a kit delivery to Wayne Matthews in New Zealand and will finish with a complete kit to Bob Elliott from Helena, MT.

Mike Archer

LETTER FROM FRANKIE ARCHER

Update on Fly-In's that we attended this year.

Sun'nFun - We spent about a million hours driving across the country from California to Florida and it seemed like we were away for a month. I don't think I could have spent one more hour in the car riding. The Staff and Volunteers at Sun 'n Fun do a tremendous job. Everything runs smoothly. In fact, all the Fly-In's seem to be well organized. The weather was a little touchy off and on but the turnout was good. We had about 32 attendees for the Thorp Forum and was happy about that. With weather and our plane having an electrical problem, it had to leave late Friday. Without the plane in our booth we might as well have been invisible. No one was stopping or even looking at our display which is too bad, but we find that at all Fly-In's. We left Saturday and did not stay the last few hours of the Fly-In, so if we missed anyone, we apologize.

In July, we drove to Arlington, WA. to the Northwest EAA Fly-In. We had a Beautiful S-18 in our booth that belongs to Jeff and Amy Taylor of Snohomish, WA. He received a million compliments on his plane, as he should have. We really appreciated having such a beauty in our booth. Thanks Jeff & Amy..

Next was the Placerville Fly-In. Mother Nature wasn't too good there. We did not have the 32 Thorp's that attended last year. There were (3) NEWLY FINISHED planes that attended. The title of The Most Beautiful was owned by Jerry and April Denham of Mt. Shasta, CA. It was painted a beautiful red with lite gray trim. Also Jim Critchfield had his T-18 red beauty and Byron Janzen of Redlands, CA has his newly completed S-18 there. Not painted yet, but soon will be. I am sure he will surprise us. The Janzen's are a Thorp Family. They have 3 completed and another one under construction for their father. The boys are Brad, Bruce and Byron.

Everyone missed Lyle and Ann Trusty. Lyle always presents a good informative program. They are very well liked by everyone and we

hope Lyle is doing well since his surgery and up running around.

In September, we drove to Castle Airport in Atwater, CA (only about 160 miles from where we live). This was the brand new Golden West EAA Fly-In. They had a very good turnout for a first time fly-in with over 600 aircraft registered. Mother Nature was NOT cooperative on Saturday, as it was rainy, cold and windy, but a good time was had by all. We did get a full kit order from there and that made us very happy. Also a possibility of a second one.

Last Fly-In for us was the EAA Copperstate in Arizona, Oct 8 thru 11th. Phil Key had his beautiful red T-18 in our booth. His head gets so Big from all the compliments, that we have a hard time getting his head through the door at the restaurant in the evening. Hopefully, Mike & I will have our S-18 finished soon and we can fly to some of these fly-ins. **BOY DO I LOOK FORWARD TO THAT.** I am really sick of seeing all the RV's and **VERY FEW** Thorp's and I'll bet you are too.

We would love to hear from some of you who have started an S-18 as no one has any idea of how many have been started and not yet completed. Please let us know if you have finished one or getting close to completion. E-mail us at: s18thorp@lightspeed.net. We would love to hear from you. If you have a problem, let us know also. We will certainly try to help you in anyway we can, because we want you to get flying and improve the attendance at all the fly-ins. Hope to hear from you soon and thanks to all of you for your support.

Frankie Archer
Editor's Note: Good report Mike and Frankie. Everyone wishes you the very best in making your Thorp S-18 business a success. Rich



Rich,

This is to let you know that the T-18 I sent you information on (serial # 18) has been sold to Scott Ginn in Colorado Springs, Colorado. His dad, Howard Ginn heard about it from the info I sent to you, or from you, when he was in California. Thanks for all the help in getting this sold. The Ginns are very nice people and it was the perfect situation for old #18. Howard and his wife each have one and another son has one, which you probably already know. I'm looking forward to seeing it fly.

It was sad to see it go, but the realization finally sunk in that I was never going to make the time to finish it in my present situation. Thanks again, Hal Aavang

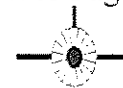


Hi Richard.
 Thought I'd drop you a note and let the readers know of a neat "fix" I found for a bent landing gear. Recently, on landing a local turf strip, I hit a gopher hole while taxiing and bent my gear leg. I searched around for another gear but the cost and shipping was too high. (A one-piece gear has to be shipped by truck, because its too big for UPS.) Then, I called Classic Sport Aircraft and discovered they have recently begun producing a retrofit kit for existing Thorp landing gear. It involves cutting off the gear legs just below the lower firewall crossbar and a section just below the top of the A-frame. You then hammer out the inner tube of the gear that's left, attach a special sleeve to the top fo the A-frame and reinsert the new heat-treated gear legs through the existing landing gear assembly . Each sleeve takes 6 bolts and you need a cobalt bit, slow speed, and alot of pressure of drill through the heat-treated metal.

The assembly took me about 6 hours. I found the gear to be a little softer than my old shorter landing gear but I'm very happy with the results, so far. By the way, this gear kit is easily shipped UPS, too. Greg Halverson.



Hello Rich & RoxAnne,
 We are finally on line with our e-mail, the address is jpaine@ioa.com. We are so happy to see your great web page, and of course, we love the picture of Rich in his Dayton jacket. We read the Ky Dam synopsis, it was great, and 1999 is Oct. 8 and 9. Would you please add our e-mail address at the bottom of all references to this fly-in as Roy Ferris is returning it back to us. Do you have an e-mail for Walt Giffin? It looks like we will try to make the spring fly-in. Thanks again for a great Web Page! Judy & Jim

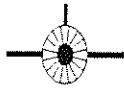


Dear Rich:
 As you know, Pat Rokus bought my aux fuel tank just a day after I spoke with you on the phone. I started to build my replacement tank, but found that I had to buy more aluminum than I needed

for just one tank. So I now have 3 tanks in process, one for myself, and two for sale. If it is not too late to get an add in the next newsletter please include the following:

T-18 Auxillary Fuel Tanks (only 2 left)
Welded aluminum construction.
Mounts under deck behind seats.
Useable Fuel: 8.5 GAL +
\$350.00 Each

Contact John Kleber at 303-840-3648 or
E:Mail address: 73761.230@compuserve.com
Thanks Rich for doing a great job with the T18
Newsletter! Sincerely, John Kleber



Dear Richard,
Thank you for continuing with the Newsletter. I haven't written for a while so I thought I should bring you up to date on Fat Cat. After the initial problem with a broken weld and Ivo's great customer support (He says he has a new welder, and I have 3 new blades.), the propeller is working great. It is only a few pounds heavier than the wooden Prince it replaced, and it gives me 500 fpm increase in climb rate and 10 mph at the top end. (The old prop would over-rev.) I had to build a second brush holder bracket because my first design was not stiff enough. I'm using a 72 inch diameter 3 blade for my IO-360 Lyc., and it seems to be right. I think Ivo is working on a governor, but I don't find the control to be a burden using the toggle switch. It looks great, and for \$2000 offers a lot of performance.

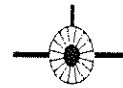
I tried that perforated tape from the article in January Sport Aviation on the prop hoping to get even more performance. It did quiet the prop a little, however I lost performance. Worse, even though I followed the application instructions to the letter, including applying Super Glue to the entire perimeter, the outer 6 inches of tape separated in flight! I pulled the rest off and spent the next 4 hours getting the Super Glue off the prop! The material he uses apparently will not stick to glue. After threatening to write Paul P. I got my money back.

Today I finally figured out how to land at my new mountain airstrip, Alta Sierra, near Grass Valley, CA. It is a one way strip...you land uphill (99% of the time with a tail wind), and take off downhill. I had been approaching at the same airspeed as I would to a level airstrip and would bounce it more than usual. The solution was to

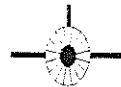
add 5 mph to my approach airspeed to allow more time to flare to the uphill slope. Why didn't I figure that out before? I guess I was reluctant to add speed since it is only a 3000 foot strip, however since you are rolling out uphill you slow down rapidly even without brakes.

I made it to the Placerville Flyin again this year and as usual it was a great success. I do hope that they don't discontinue this event. If they do, maybe we could set up an event at Nevada County Airport. It is near here, and has a better airstrip as well as an EAA Chapter, gas and a restaurant.

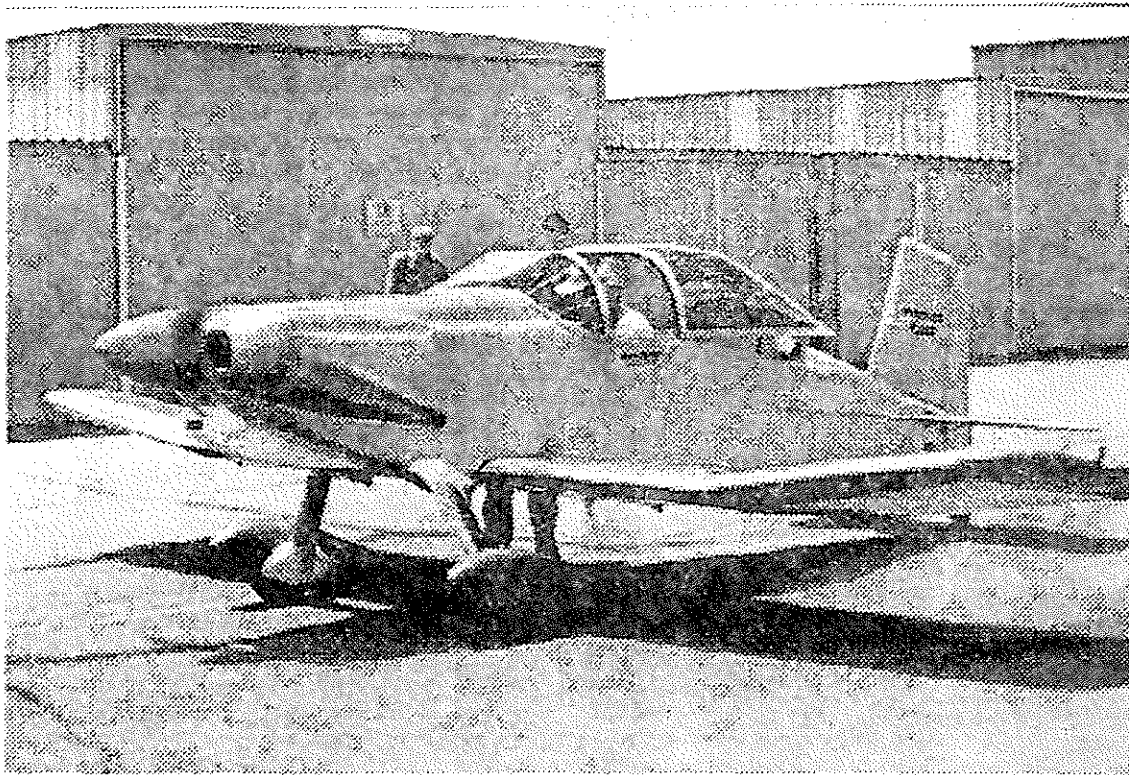
Harvey and Stephanie Mickelsen
harveym@nccn.net



Rich,
I recently purchased T-18 N2819L from Bob McWhorter here in Longmont CO. I am nearing 20 hours in the aircraft (in the last 2-1/2 weeks) and my instructor turned me loose after about 10 hours). The aircraft was completed in 1984 and has about 650 hours on the airframe and re-built O-320A2B. I built a Starduster II and a Pitts in my younger days, but I enjoy flying the T-18 the best of all. Demanding but very honest design. I have only three problems with the plane;
1. I have VERY chapped lips at the corner of my mouth from the ever present smile...
2. I have run off what few friends I once had by talking constantly about the little bird.
3. The dieting is hell. Very glad I lost 30 lbs this last summer, now I just need to keep them off so I will fit in the 'pit. Looking forward to fly-ins and meeting you all, Tom Melsheimer
ttm@merlin.com P.O. Box 930 Berthoud CO
80513 Phone:(970) 227-9487



Editor's Note: Next issue a email from Bob Pernic while at the South Pole Antarctica. Pictures from Kentucky Dam 98 and much more.. Send it, guys... Rich



FIRST FLIGHT

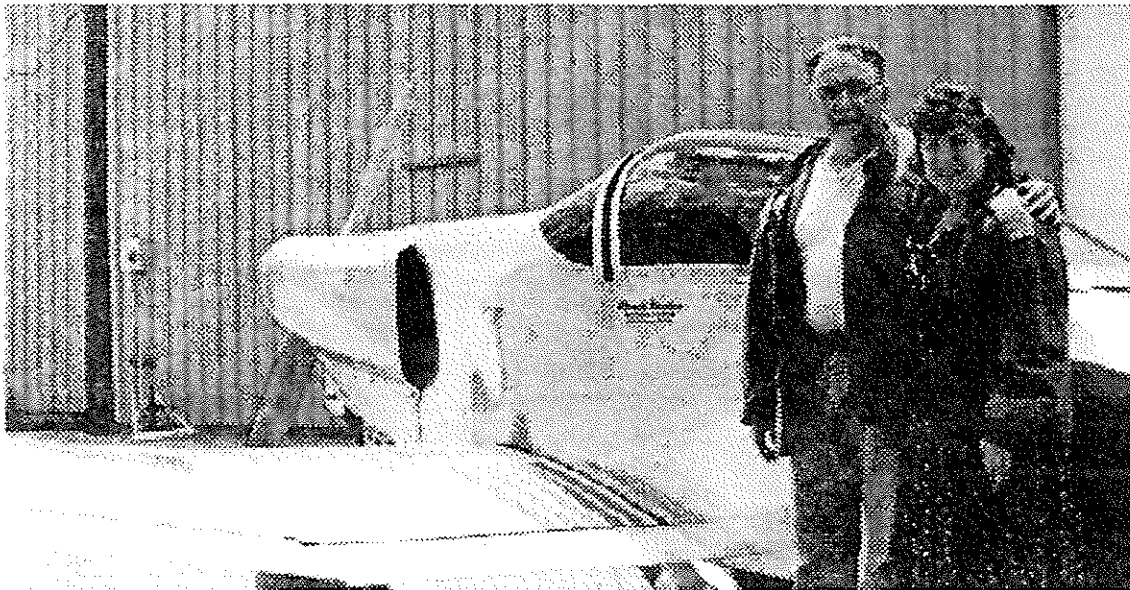
by Chuck Borden

Dear Richard I am writing this letter to inform you and readers of the T-18 Newsletter that my new Thorp T-18, flew for the first time on May 23rd of this year. It is the third T-18 I have built. Since I was not current and had not flown a T-18 in many years I had my good friend Mike Thomas of Pismo Beach Ca. do the honors. Many of you know Mike, he is a former T-18 owner and has won the "Sun 100" race the last two years with his Questar Venture, N77T. The flight went well with no problems except that the airplane is right wing heavy. This seems to be a reoccurring problem that I've had with my other Thorp T-18's. We got most of it out by massaging the trailing edge of the right aileron. But the problem has not completely gone away. I think that if I were to lower the rear spar, on the right wing 1/32 of an inch and ream the hole to .374 and use an AN6 bolt, the problem will be solved. For those that don't know about this problem, it is better to have the left wing heavy when flying solo so you can trim the airplane with the lateral trim. Then when you have a passenger the airplane will fly hands off with the trim backed off. I have been flying T-18s since 1972 when I flew my first one. It is still flying today and is based at Centennial Airport in Denver. Jerry Ferman of

Englewood now owns it. Jerry has owned it since 1977. I had the pleasure of knowing John Thorp and I once gave John a ride in my T-18. Much to my surprise John told everyone at the time, that I had the best flying T-18 he had flown in. I don't think this set well with the guys who were building and flying prize winning T-18s. So let me explain. First of all John Thorp was a purist. He didn't like fiberglass. He didn't like people changing his plans. If you could make it out of aluminum he thought that was what it should be made out of. That is why John had those not so glamorous aluminum wheel pants on his airplane and the all metal cowling which is a piece of work. I am fortunate enough to have one of John's all metal cowlings on my new T-18. When John took the ride in my T-18, he liked that it was built exactly as he designed. Which was 97% to the prints and flew exactly like he wanted it to fly. It was powered by a GPU that John had built for me for the price of \$1100. Boy, how times have changed. During the years that I knew John we, the local T-18 builders and close friends, would meet on Saturday mornings at Mr. C's Coffee Shop. We were all guilty of asking John real stupid questions, to which John would give real intelligent answers. Once someone asked if a T-

18 could fly put together with clecos. That question John did not answer but instead gave that John Thorp look. The only thing I don't like about the T-18 is, it's too narrow for two people. It needs to be about 3 inches wider in the cockpit area, especially since I'm not that 155-pound young man I use to be. I build standard T-18s. I don't know what you guys are building, but I'm sure they do not fly like a standard T-18. Once a man told me his wide body folding wing T-18 weighed 1200 pounds empty and stalled at 80 mph. That airplane can not be any fun to fly. I would not even get in it. Now, about my third T-18, my new standard T-18 has a 0320 in it and stalls at 56knts. I fly over the fence at 65knts and it makes perfect three point landings. The serial number is 160 and it was an uncompleted project that was started back in the late 1960's by a friend named George Momborg, a Lockheed aerospace worker. It was never completed and nothing had been fitted together. The Project was sold to Joe Pengilley and later sold to an old friend that we all knew, Bill Warwick. After the unfortunate death of Bill I met up with Millie Warwick, who I hadn't seen for years, at a memorial that the locals at Torrance Airport were giving for Bill. After spending the day with friends I hadn't seen in years, I had a conversation with Millie. She said, "Chuck how would you like to have another T-18?" I was dumbfounded and without thinking bought it sight unseen. It took my wife, Linda, and I two months to get out to the Arizona desert to see the project, and another two and a

half years of constant work to complete what was going to be a six-month project. But I am pleased. In closing I would like to say that after reading this newsletter for the last two years I can see that nothing has changed. Everyone is still trying to change things that do not need to be changed and trying to second-guess John's design. As an example I once read in this newsletter that "everyone should be aware that countersinking the web on the main spar is dangerous and this should be dimpled." Please, there has never been a structural failure of the main spar on a T-18. Don't reinvent the wheel. Where does this stuff come from? I would like to say hello to all the great people I have meet over the last 31 years involved with the T-18. A special thanks to George and Barbara Leader who gave me help and encouragement, Mike Thomas who has been trading favors with me for years, Tony Ginn who took the time to give me a good refresher course, Tom Hunter who helped me bring the project to Paso Robles, Joe Pengilley who always greets me with a smile and last of all Millie Warwick who sold me the project and a special remembrance for Bill Warwick who always offered his assistance and once let me fly his famous Tiger Plane. We are planning a Bar-B-Q at our hanger in Paso Robles, CA. on February 20th 1999. RSVP Phone #805-438-5478 You can e-mail me at cbbitt18@concentric.net or snail mail me at, 9031 Tassajara Creek Rd. Santa Margarita, CA. 93453 Check out our web page www.concentric.net/~cbbitt18



Chuck & Linda Borden

Editor's Note: Chuck sells some aircraft tools that we could use in building Thorp's or other metal homebuilts. A Fan Rivet Spacer for laying out hole spacing, 20 holes-\$30, 10 holes-\$25 He also makes a set of five different thickness joggle forks for the corners of bulkheads. \$4.99 per set. Borden Industrial Tooling, 9031 Tassajara Creek Rd. Santa Margarita, Ca 93453

Building the Wing Flaps

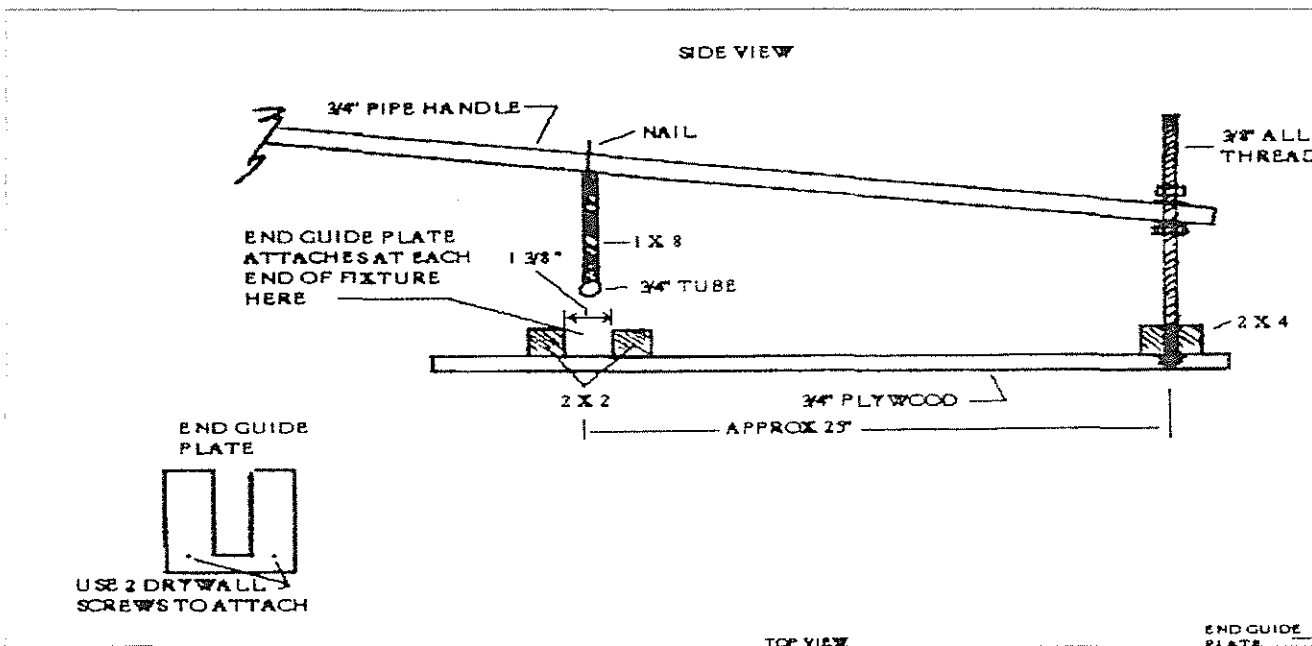
by Roy Farris

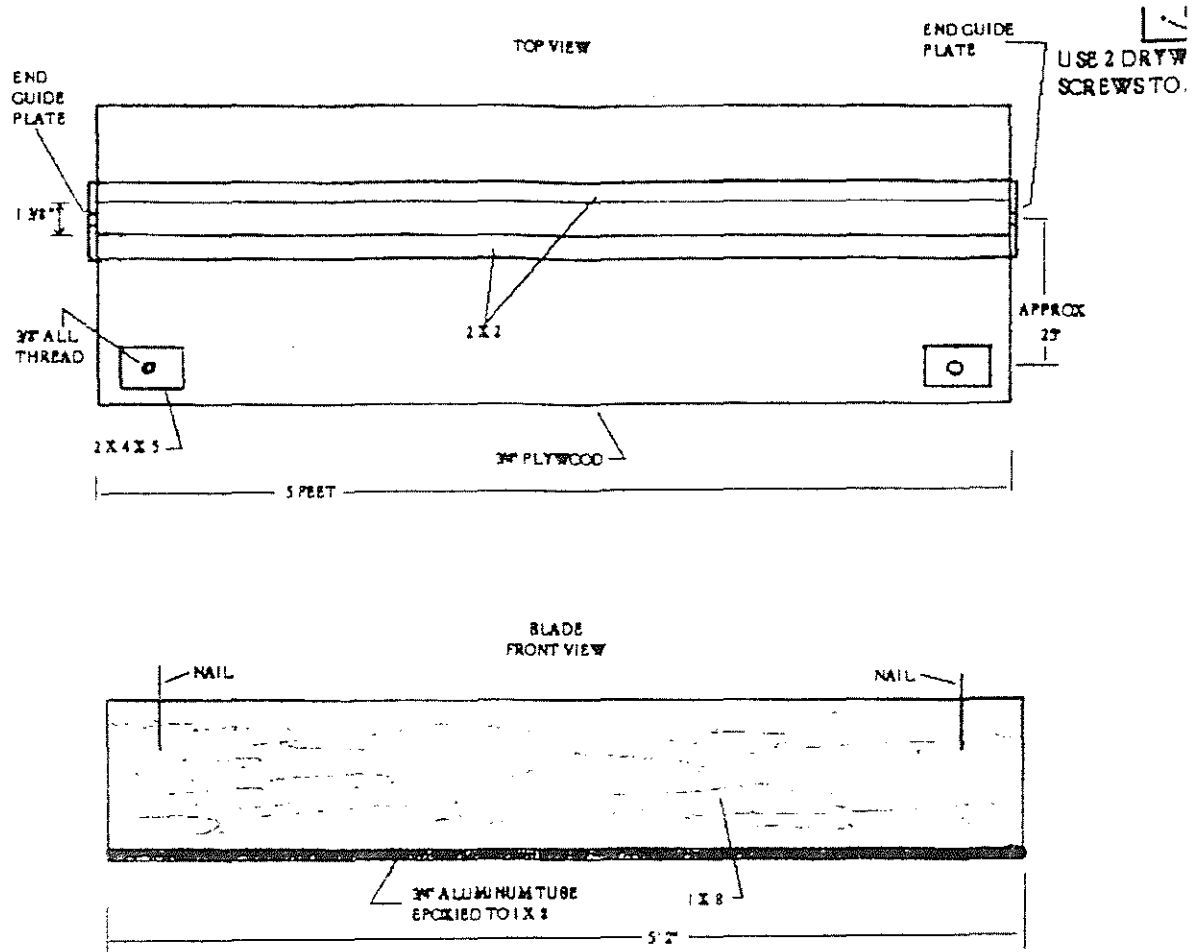
When it came time to build the flaps for my T-18 project, I approached it the same way that I had every other assembly. I dug out all the newsletters and went to the index, found all the articles on flaps, and proceeded to read them all. What I found was that there were no construction articles at all in the entire stack of one hundred or so newsletters. I found this hard to believe since every other assembly problem on the T-18 is covered somewhere in those newsletters. I began calling some builders to gain their input on flap construction. I didn't get much help, almost every builder that I spoke to said something like "you don't want to make them like I did... mine are warped". It seemed that most everyone had problems building those darn things. The couple of builders that had good looking flaps on their airplane just could not tell me a good way to do it. I even spoke to the legendary Jim Younkin at the Antique Fly-In in Bartlesville, Ok. Jim can bend anything for an airplane out of sheet metal. He said "well I just don't know how to tell you to bend that flap skin... but if I had it in my shop I'm sure it wouldn't be a problem." Well that was great but it didn't help me any. So I took all the input I had from Jim and all the T-18 builders and set down to figure out a good way to build the flaps. It took me six months of experimenting, but I figured it out. The problem has always been the .44 radius bend on the lower leading edge. Most builders have simply folded the skin over in polliwog fashion, and pressed it

together with a two by six as they had done for the wing, stab, and fin skins. I found that by doing it this way I could not get a perfectly straight bend and it was difficult to get the correct radius. That aluminum is really tough to bend that sharply. The following is what I came up with to do the job. All the dimensions on the accompanying drawings are for the T-18 flap skins. This method would work equally as well on the S-18 flaps, but the fixtures would not need to be as wide, being that the S-18 flaps are shorter. You will however need to bend four skins.

The bending fixture

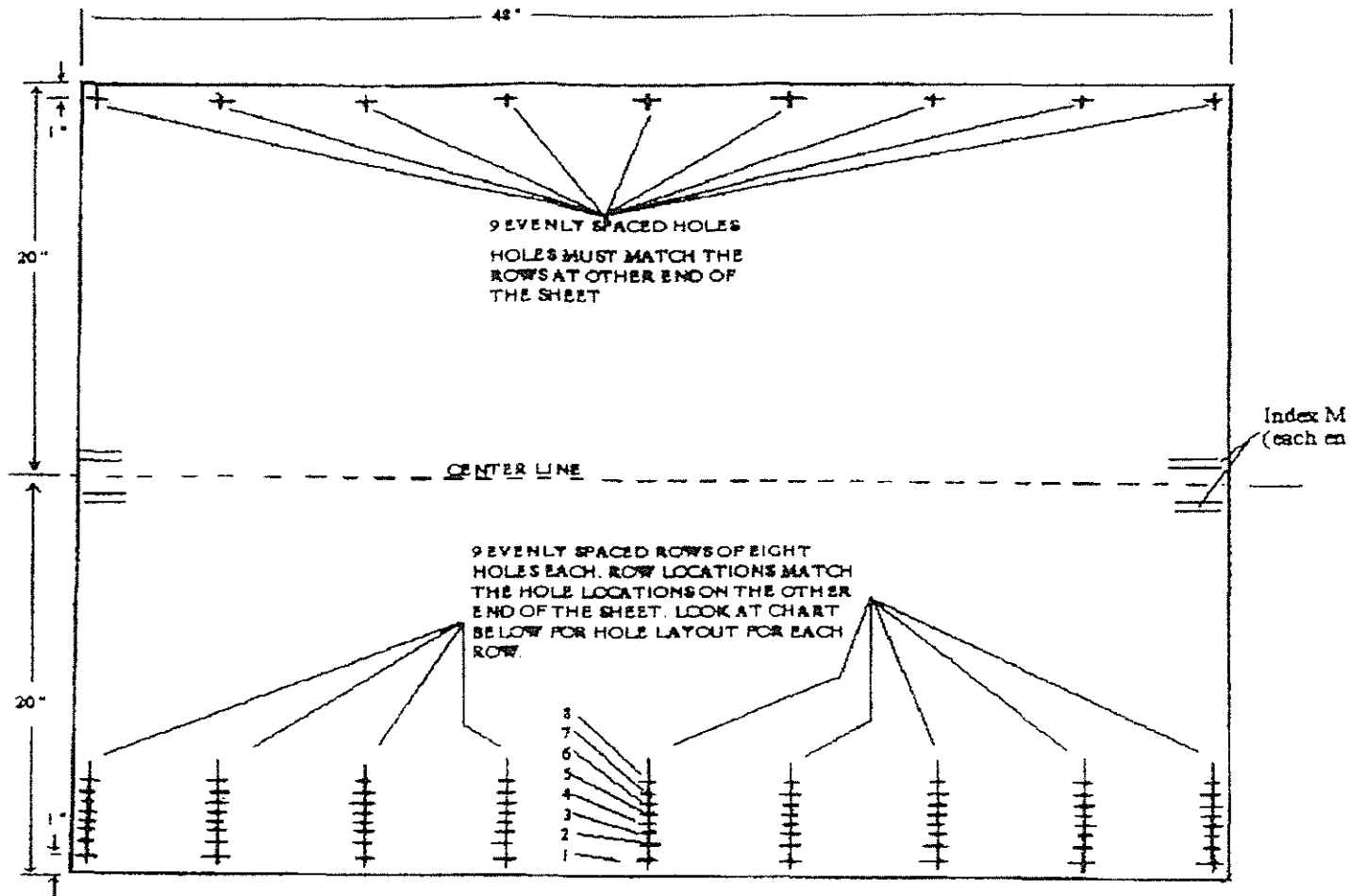
Basically what I call the bending fixture is nothing more than a press brake, or nose brake as I have heard it called. I started out with a piece of 3/4" plywood 5' long by 36" wide. Then I cut 2 pieces of 2 x 4 about 5" long. I glued them on the back edge and about 1.5" from each end. I also ran 4 drywall screws up through the plywood from the bottom and into the 2 x 4's. Drill a 3/8" hole through the 2 x 4's somewhere about their center and go completely through the plywood. I then counter bore from the bottom through the plywood with about a 1" diameter wood bit. (NOTE: counter bore only through the plywood). Insert a 14" length of 3/8" all thread through these holes and secure with flat washers and nuts to hold them securely to the 2 x 4's.





The counter bore on the bottom will allow the nut and washer to recess and allow the plywood to set flat. Next you will need 2 nice and straight pieces of 2 x 2 that are 5' long. It is important that at least one side of these 2 x 2's be perfectly straight. I ran mine through a good table saw and trued them up. Draw a line across the top side of the 3/4" plywood 25" from the center of the two 3/8" all thread rods. This will be the "center of bend line". You want to position the 2 x 2's parallel to this line. You want them spaced 1 3/8" apart and centered on this line. I used drywall screws to attach the 2 x 2's to the plywood. Note: Because of the stiffness of the aluminum I found that I could not apply enough pressure to bend the skin with the 2 x 2's set at the 1 3/8" setting as described above. I first bent the skin with the 2 x 2's set at 2 1/2" and then moved them to 1 3/8" and repeated the process. This worked out really nice, but you do have to move the 2 x 2's. That's why I used drywall screws to attach them, it made it a cinch to move them around. You then need to make 2 End Guide Plates. I made the end guide plates from 3/4" plywood. Basically they need to be about 8" wide and 4" or so tall. Cut a 3/4" slot in it's center leaving 3/4" across the bottom to hold it together. The end guide plates then screw onto each end of the bending fixture using drywall screws, with the center of the 3/4" slot lined up with the "center of bend line". The Bending Blade

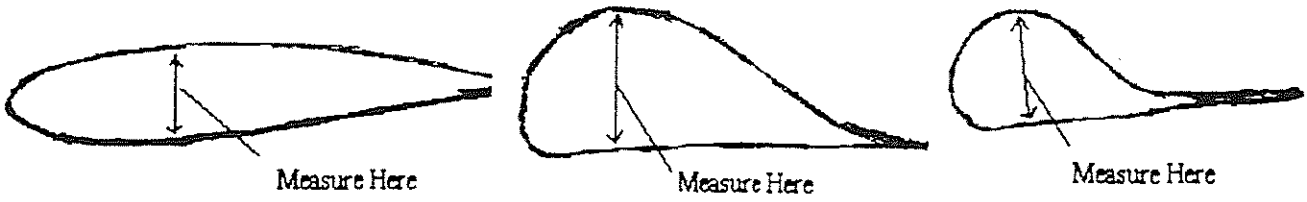
is now fashioned... I used a 5' length of 3/4" diameter aluminum tubing. I epoxied the tube to one side of a straight 5' long 1 x 8. Again I ran the 1 x 8 through a table saw and trued up the edge. Make sure you keep the bending blade straight while the epoxy is curing. After the epoxy is cured, apply Duct tape to the tube to keep it from scratching the flap skin. Now make 2 Handles. Make the handles out of 3/4" black pipe, or something of equal strength. You will be amazed at how much force is required to make the initial bend. They will need to be 5' or so long. I think mine are 6'. Drill a sloppy 3/8"+ hole near one end of each handle. Place a nut and flat washer on each all thread, then slip the handles on, and then place another flat washer and nut on the top. Place the bending blade into the end guide plates, it should move freely, but not have to much slop. The center of the aluminum tube should run down the "center of bend line". If it doesn't you need to reposition the end guide plates. Raise the bending blade and slip a scrap piece of aluminum sheet across the 2 x 2's and lower the bending blade so it rests on the sheet. Adjust the handles on the all threads until they rest on the top of the bending blade and are parallel to the plywood base. Drill a 1/4 hole through the handles so they hit the center of the top of the bending blade. Push a #8 nail through the handle and tap it into the top of the bending blade. Do not drive the nail all the way down,



HOLE LAYOUT FOR BOTTOM ROWS

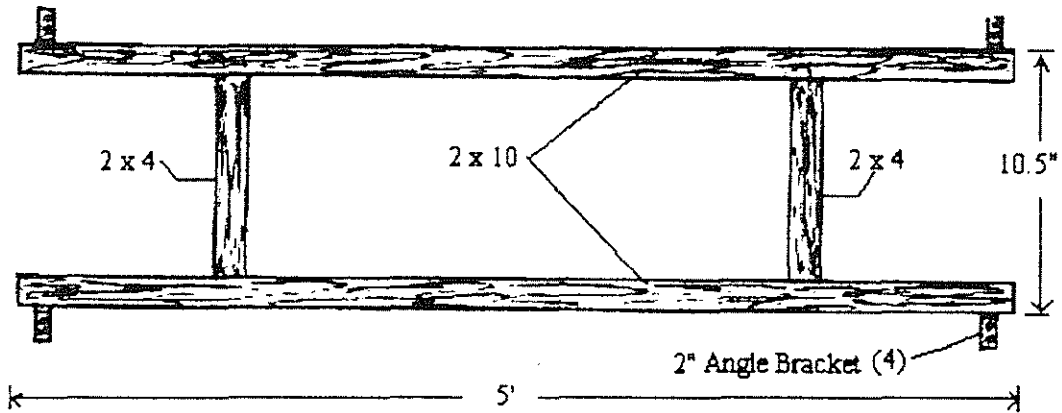
HOLE#	DISTANCE FROM PREVIOUS HOLE:	SQUISH TO:
1	1" FROM EDGE OF SHEET	3 1/2"
2	9/16"	2 19/32"
3	11/16"	2 9/16"
4	5/8"	2 21/32"
5	1/2"	3"
6	5/8"	3 1/4"
7	1/2"	3 1/2"
8	1/2"	3 5/8"

Example #1
Measurement point for Squish bends

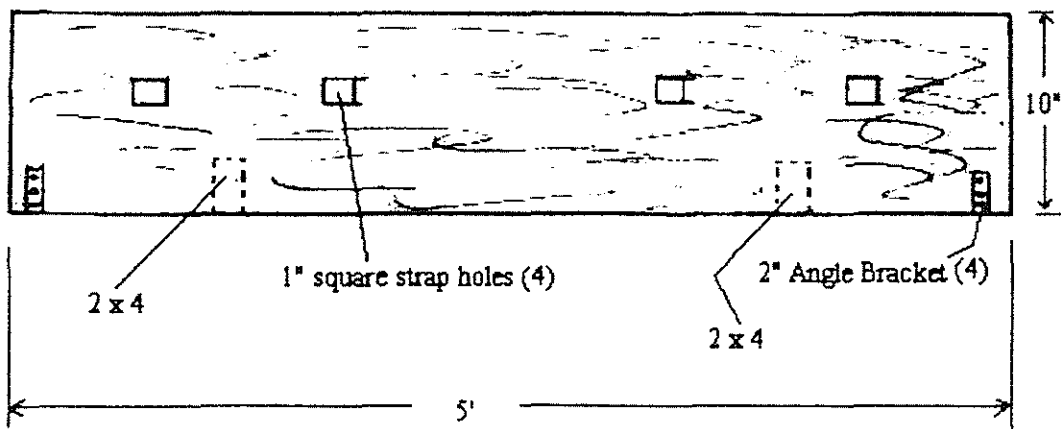


Assembly Jig

Top View



(Rear view is the same)



it needs to be a loose fit. Also be sure that the distance between the handles is wider than the flap skin. You now have a T-18 flap bending fixture.

Flap Skin Layout

Start with a sheet of .025 2024T3 aluminum 48" wide by 40" long. Use care and make sure the trimmed sheet is square. If it is not square, the flap will likely be warped. Reference the Flap Skin Flat Layout drawing. Mark and draw a full length center line at 20". Mark one half as the bottom and the other half as the top. Start on the top half, measure in 1" from the sheet edge, layout and mark 9 evenly spaced holes. Now go to the bottom half, layout and mark 9 rows from the edge of the sheet towards the center, that are spaced exactly as the holes you laid out on the top half. (see the flap skin flat layout drawing) On each row you lay out on the bottom half, you will measure and mark 8 hole locations. (see the hole layout chart on the drawing) Measure in 1" from the edge of the sheet, on all 9 rows, and mark the first set of holes. These are labeled as hole #1. Using the dimensions given in the chart, measure in 9/16" from the first set of holes and mark this location on all 9 rows, label these as hole #2. Measure in 11/16" from #2, mark, and label this location as hole #3. Measure in 5/8" from hole #3, mark and label as hole #4. Measure in 1/2" from hole #4, mark and label as hole #5. Measure in 5/8" from hole #5, mark and label as hole #6. Measure in 1/2" from hole #6, mark and label as hole #7. And the final set of holes, measure in 1/2" from hole #7, mark and label as hole #8. Now you should have 9 evenly spaced rows of 8 holes marked on the bottom half. These 9 rows should match the 9 holes located on the top half. Later in the bending process you will fold the sheet over polliwog style, as we have done on the wing, etc., so the spacing of the top and bottom holes must match. I hope this didn't confuse anyone .. just look at the drawing .. I think it will explain. Do not layout any rivet hole locations at this time! Recheck all your measurements. When you are sure you got it right, drill all the hole locations to #40. Layout both flap skins (4 skins for S-18) before you begin the bending process. You are now ready to bend the flap skins .

Bending The Skin

Step 1. After all this preparation, bending the skins is fairly simple. Start by placing the bending fixture on a flat work area. I placed mine on top of my 4' x 8' work bench. Fasten the fixture down solidly to your work table, or whatever you are using. I used several drywall screws and secured it to my wood work bench top, just make sure it is solid. As I said earlier, I made the first bend with the bending fixture 2 x 2's spaced 2 1/2" apart. I would recommend this, but you can try it at the final 1 3/8" spacing if you ate

your Wheaties. Ok now you have the bending fixture set up and ready now take one of your prepared flap skins, measure 11/16" and 3/4" from both sides of the center line and place a mark. These will be your index marks, with the bending blade down on the skin you cannot see the center line. Place the skin on top of the bending fixture 2 x 2's and under the bending blade. Align the index marks on each end of the skin with the insides of the 2 x 2', (3/4" index marks for 2 1/2" 2 x 2 spacing and 11/16" for the 1 3/8" 2 x 2 spacing) this will place the bending blade directly on the skin center line. Check one more time that everything is straight and the index marks are aligned properly. When everything is correct, apply equal downward pressure on both handles until the skin folds and the bending blade bottoms out along the entire length of the bending fixture. This will take a lot of pressure. I Duct taped a piece of 1" pipe across the handles so I could hang on it. I actually had to get my girlfriend Comelia to jump up and down on top of the bending blade while I bounced on the handles. Remove the bent skin from the fixture, set it aside and do the next one the same way. (do all four if you are building an S-18) If you managed to use the 1 3/8" 2 x 2 spacing then you are finished with the bending fixture. If you used the 2 1/2" spacing you now need to move one of the 2 x 2's to get the final 1 3/8" spacing. You will also need to reposition the end guide plates. Place the previously bent skins back in the fixture and repeat the process. When you remove them from the bending fixture this time they should have a nice tight radius, be perfectly straight, and have a bend angle of somewhere around 110 degrees.

Step 2. You have made the tough bend on the leading edge. Now we must form the larger radius sweeping bend over the top part of the leading edge. We will revert back to John Thorp's polliwog method to accomplish this task. Set the bent skin on your work bench with the bottom down. Pull the top half of the skin down on top of the bottom half and place cleco's in the 9 holes on the top and into the nine #1 holes on the bottom half. Place the folded skin on the floor on a large clean sheet of paper, or whatever you use to keep from scratching the skin. Using a 2 x 6 about 5' long, also wrapped in paper, starting from the back edge (cleco'ed edge), move the 2 x 6 toward the leading edge applying downward pressure. I call this Squishing. Be sure to keep the material behind the 2 x 6 flat. (the top half should be flat against the bottom half) Be careful here and do not apply too much pressure and overbend the skin. This part of the bending process doesn't require nearly as much pressure as Part 1. Apply some pressure, then remove the 2 x 6 and check to see what is happening. With the folded skin still on the floor and the 2 x 6 removed, measure the polliwog at its widest point. (example #1) Refer to the chart on the Flap Skin Flat Layout for the Squish To measurement. For the Hole #1 position the measurement is 3 1/2 ". So measure the polliwog

at this time, on both ends. You want it to be 3 1/2". By checking both sides you will keep the bend even across the skin. Repeat the "squish" until you get the 3 1/2" measurement on both ends. By angling the 2 x 6 you can work one end more than the other to keep things even. I found that plus or minus about 1/16" is sufficient. I used one of the flap ribs to check the radius after each squish, that way you can refine the process as you need to. Remove the cleco's and let the skin relax, then place the flap rib into the radius to check it. When you get 3 1/2", move the top half of the skin forward and install the cleco's into bottom hole #2. Refer to the chart to find the squish to measurement. We want 2 19/32" for the #2 hole position. Place the 2 x 2 along the back edge and again work it forward applying downward pressure. Keep the skin pressed flat behind the 2 x 6. Apply a little pressure, then remove the 2 x 6 and check the measurement for 2 19/32". Repeat the process at position #2 until you have the correct measurement. Now move the top half forward and install cleco's into hole #3 on the bottom half. Refer to the chart for the correct squish measurement and then squish the skin until you get it. Keep repeating this process for bottom hole #'s 4, 5, 6, 7 and 8. After making the squish bend at bottom hole location #8, use one of the flap ribs to check the progress on the leading edge bend. I found that the area close to the original tight bend became slightly deformed when making the last couple of squish bends. I needed to move the top half back to the bottom half hole location's 3, 4, and 5 and slightly resquish. This worked out really well. On these last three or so tweaking squish bends be careful not to over do it. Just use the flap rib as a guide and do what is necessary, it won't take much. My skins formed perfectly around the flap ribs with no pressure at all. Now do the remaining skin or skins.

Flap Assembly

Start out by roughly trimming some of the excess material from the trailing edge of the skins. Don't do the final trim yet, just get it to within an inch or so. You now need to build the Assembly Jig. Refer to the Assembly Jig drawing. Take a couple of 2 x 10's about 5' long. Run both edges on a table saw to get them straight, and both 2 x 10's exactly the same height. Cut 4 square holes in each 2 x 10 as shown on the drawing. Set one edge of each 2 x 10 on your workbench so that they are parallel with each other and measure 10 1/2" between the outside edges. Cut 2 pieces of 2 x 4, 7 1/2" long, and fasten them between the 2x 10's as shown on the drawing. Using 4, 2" angle brackets, fasten the jig solidly to your workbench. Again I used drywall screws for this purpose. Use a level and make sure the tops of the 2 x 10's are level and parallel with each other. Use shims where needed to get them level. Double check that the outside measurement at each end remains at 10 1/2".

Layout the rivet holes on the flap ribs and the flap spar on both top and bottom. Make sure that they are correct, then go ahead and drill all the holes with a #40 drill. Assemble the inboard and outboard ribs to the spar with cleco's. Wrap the skin around the spar/rib assembly and place it on the assembly jig with the bottom side down. Start on one end rib, measure from the edge of the skin to the rib flange. Refer to the flap drawings here, but set the rib into the skin the amount needed, plus a little extra, you will trim it off later. Double check your measurements and be sure the rib is square with the sheet edge. Clamp the rib into this position with c-clamps or whatever you use. Now go to the opposite end and repeat this procedure. When finished you should have both end ribs positioned where you want them and they should be square. Using a reverse strap type hole locator, locate the rivet hole location from the ribs onto the top and bottom of the skin. Keep a slight downward pressure across the entire flap assembly to insure the flap remains flat against the jig. I used a 1 x 3 board laid across the flap to help. There may be a few holes that you cannot locate because the jig is in the way. Don't worry, you can locate them later. Center punch the hole locations and drill them to #40, and insert cleco's. Take the assembly off the jig, locate and drill the remaining holes that you couldn't get to. Remove the skin from the spar/rib assembly. Use a couple of small wood blocks cut squarely, and clamp at the spar/rib joints to hold the ribs square to the spar. Make a strip template of the top and bottom spar rivet hole locations. I used a 4" wide strip, as I found out that a narrow one would bow a little and cause inaccurate hole transfer. Cleco it to the spar, then on each end of the spar, pick up 2 or 3 rivet holes in the rib, they will be used to index the template when the skin is placed back on the spar/rib assembly. Mark which ribs holes you use. Once you have both templates made, replace the skin on the assembly, and place it back on the assembly jig with the bottom side down. Place the top strip template on the top skin and cleco it down on each end, using the previously marked rib holes. Make sure you hold the assembly down flat on the jig, and mark the spar hole locations across the skin. Remove the skin and drill the holes to #40. Replace the skin again on the spar/rib assembly and insert cleco's in some of the top spar and end rib holes. Place the skin back on the assembly jig, this time with the top side down. Cleco the bottom strip template to the bottom side of the skin, again using the previously marked end rib holes. Hold the assembly flat on the jig and mark all the bottom spar hole locations. Remove the skin and drill them to #40. Replace the skin on the spar/rib assembly, and place it on the assembly jig with the bottom side down. Use a board or something to keep the flap flat, then locate, mark and drill the rivet holes across the trailing edge to #40. Remember that at this time the skin is still oversized, I measured from the spar rivet line to get the

trailing edge rivet line. Once you have drilled the trailing edge rivet holes you can final trim the trailing edge. Remove the skin again. This time install the short nose rib on the spar, using one of the square wood blocks to hold it square. Make a strip template of the rib using a piece of .032 material. Wrap it from the top spar all the way around to the bottom. Leave it in place and then make another one over the top of it. The first one sets the skin thickness, this makes the second one more accurate. Throw the first one aside and use the second one. Pick up 3 spar rivet holes on both the top and bottom and mark the ones you use. remove the short nose rib and reassemble the skin to the spar/rib assembly. Place the nose rib template on the skin and insert cleco's into the previously marked spar holes on both top and bottom. Mark and drill the holes to #40. Disassemble the entire flap assembly. Refer to the flap drawings as needed, and assemble the flap hinge, and torque tube parts to the end, and short nose ribs. Once the hinge parts are installed on the ribs, make templates that will fit over the hinges and set on the rib flange. You need to make one for each end of each flap. With the template in place over the hinge, locate and drill 3 holes that correspond with 3 in the rib flange. Now place the correct template on the bottom of the flap skin and insert cleco's in the corresponding rivet holes. Make sure you use the correct holes. Double check, then mark the hinge cutout through the template, remove the template and cut the slot. Once all the slots are cut, you need to reassemble the flap assembly, and place it back on the assembly jig, bottom side down. Install the torque tube, it should slide right in, if not find out why and remedy the problem at this point. Now, take 4, 1" wide nylon ratchet straps, insert them through the 4 square holes in the assembly jig, up and over the top of the flap. Using the ratchet, snug each strap. The hinges will hit the assembly jig on the bottom and hold it square. I also c-clamped a small wood block at each end on the bottom up against the rear of the assemble jig. This keeps the flap from sliding rearward. The flap is now held flat against the jig, Remove all of the cleco's on both the top and bottom of the flap. This will allow the assembly to relax and will show any hole mismatch. If a hole shows much mismatch use a round jewelers file and file the holes to a better match. Begin drilling the holes to 1/8" and inserting cleco's as you go. Continue this process until all the top holes are drilled to 1/8". Remove the straps, and turn the flap over on the jig so the top side is down. You will need to remove a few cleco's to do this. Insert a few #40 cleco's in the bottom, reinstall the straps and wood blocks as needed. Remove all the cleco's on the bottom and repeat the hole drilling process until all the holes are drilled to 1/8" and cleco's inserted.

Deburr all of the holes and dimple. The flap is now ready to rivet together by whatever means you choose to use. You can use solid rivets or the pop variety. I built my flaps with a folded type trailing

edge, which made bucking the solid rivet nearly impossible, so I chose to use Cherry Max pop rivets. I strapped the flap assembly back on the assembly jig and used a pneumatic rivet puller. With the flap strapped flat on the jig, there was no way I could induce a twist in it while I riveted. The Cherry Max rivet is close to a solid flush driven rivet in appearance, and I wanted a straight flap. If you build the standard flap, you would probably want to use AN470AD rivets on the trailing edge, but you could pop rivet the rest of it. Once you have completed the riveting you need to trim the flap ends to the correct length. Your Finished !! I am really pleased with the way my flaps turned out.

I hope this article helps someone out there build a set of T-18 flaps. The article got quite lengthy, and I hope I didn't loose anyone. I will be more than happy to answer any questions, please feel free to give me a call at (618)723-2594.

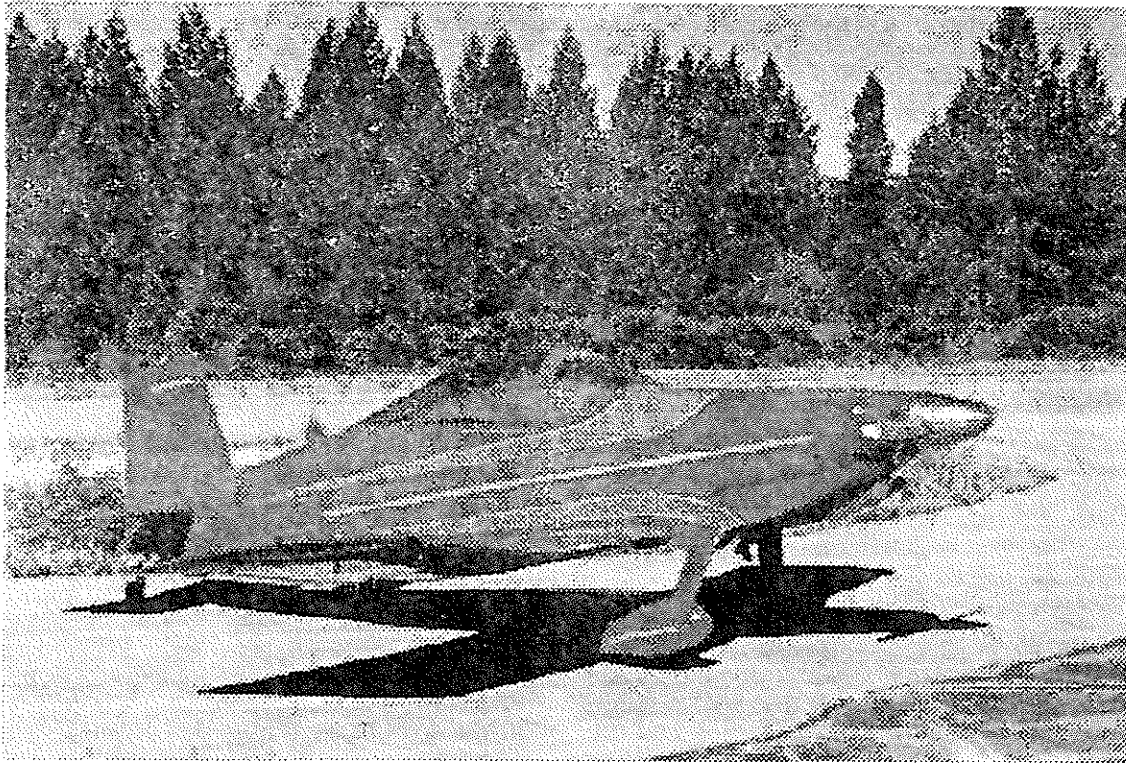
Roy Farris

FOR SALE ITEMS:

For Sale S-18 Project, structually complete, with all controls and fiberglass parts to finish, canopy mounted, fuel tank, aux tank, engine mount, Clevelands. All Ken Knowles componets. \$9500 firm Matt Null 734-975-2317 before 9pm EDST

For Sale. Wright Brother's Award Winner T-18, 150 hp with IFR equipment. Pat Rokus 541-672-8575

For Sale Thorp T-18 Standard Body, Folding wing. Extra fuel in wing tanks. 0-360 engine 180hp. 164 hours since overhaul. O'berg oil filter, John Thorp design airbox, Prop Hendrickson Wood 68/80 Static and Dynamic Balanced. Cleveland wheels and Chrome brake rotors. Stall strips, Whelen double flash strobe, 170 RST Comm. Garmin 55 GPS with mounting bracket. Antenna connection for handheld. Mode C. Transponder, ELT Price \$24,950 Frank Snedeker 425-392-0124 or email snedeker@nwlinc.com



Jerry Denham's red and gray trimmed in gold T-18! Voted "prettiest" Thorp at Placerville

PLACERVILLE 1998

Thorps Galore!!!!

From the hot 107 degree days to cool ones, the temperature dropped as did the number of Thorps. Weather closed out the opportunity for 10-20 Thorp designed planes from attending the 7th Placerville Thorp Fly-in even though 24 enjoyed the nice weather we had at the Fly-in. At the previous fly-ins we have had as many as 34 planes.

A hurricane in Baja California sent warm moist air Northern up the Sierra mountain range allowing for evening showers that came first as the raffle for prizes ended and the last bit of dessert was eaten. Southern California was much more severely impacted as well as the coastal range when fog set in there.

Many of the previously attending pilots and passengers enjoyed the camaraderie that has developed within the group. People have become great friends and Thorp planes have become better examples of the design due to the

sharing of information that has taken place over the years.

Jerry Denham and wife April of Mt. Shasta own N118DT which was voted as the "prettiest" Thorp by the ladies of the Fly-in. A carefully detailed new Thorp (less than 50 hours total time) with a bright red base color and gold trim that caught the artistic eye and drew the most votes. Placerville was the first fly-in for the plane and its owners were ecstatic to have been chosen the winners.

Joe Pengilley, after having been coached by Gus Gordon won the 1st prize for the Champagne Cork Flying Contest with the longest shot over 15 other contestants. A #1 pilot coffee mug will keep the memory of his achievement alive.

Jim Critchfield was master chef with the beef tri-tip. Those who preferred steak burned their own to their personal pleasure.

Harvey Mickelsen won the grand prize raffle drawing by presenting the matching ticket pulled from the can for the Critchfield Thorp T-18 clock which all participants wanted badly.

Planes for sale this year included Art Trask's continental powered T-18, Jim Critchfield's newly flown T-18, David Hamilton's O-290 powered older T-18, John Hendericken's project as well as Chuck Patton's ground looped T-18's remaining parts. Several people, who attended, expressed interest in becoming Thorp owners. ClassicSport Aircraft and Ekland Engineering discussed progress they have made this toward the support of the Thorp design. Even a tri-gear version is in the offering.

The Thorp T-18 Mutual Aid Society surprised the Placerville organizers with a check to cover the costs of using the Chapter 512 facility and the portable toilet required by the airport. With that, due to the lesser attendance than expanded the budget balanced.

John Evens and Dean Cochran of Denver Colorado announced a Thorp gathering in Colorado next summer, either in June or September - date to be firmed up later. The location may be in the Pueblo, Colorado area.

A sad note is that Lyle Trusty, of Lancaster, was unable to attend the fly-in due to a medical procedure done in late August. Lyle has con-

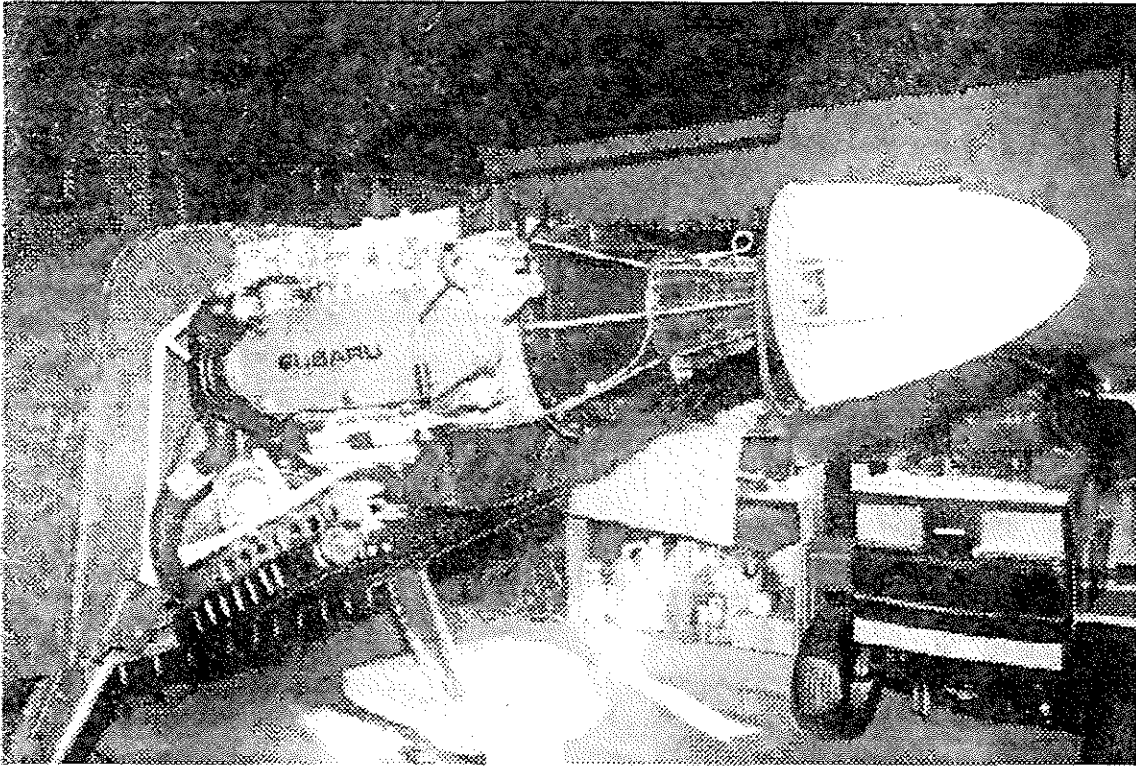
vened the Thorp Forum for the past several years and built up a strong following of Thorp owners, Anne, Lyle's wife, has helped with the food preparation. We missed them both. Hopefully he is doing well with the changes and soon regain his airman's medical certificate.

Mac and Rena Booth - now both pilots- own a beverage business and as in the past years donated cases upon cases of soft drinks and snack foods. It was appreciated by all as only a few diet sodas remained in the ice chest when the last of the Thorps flew out.

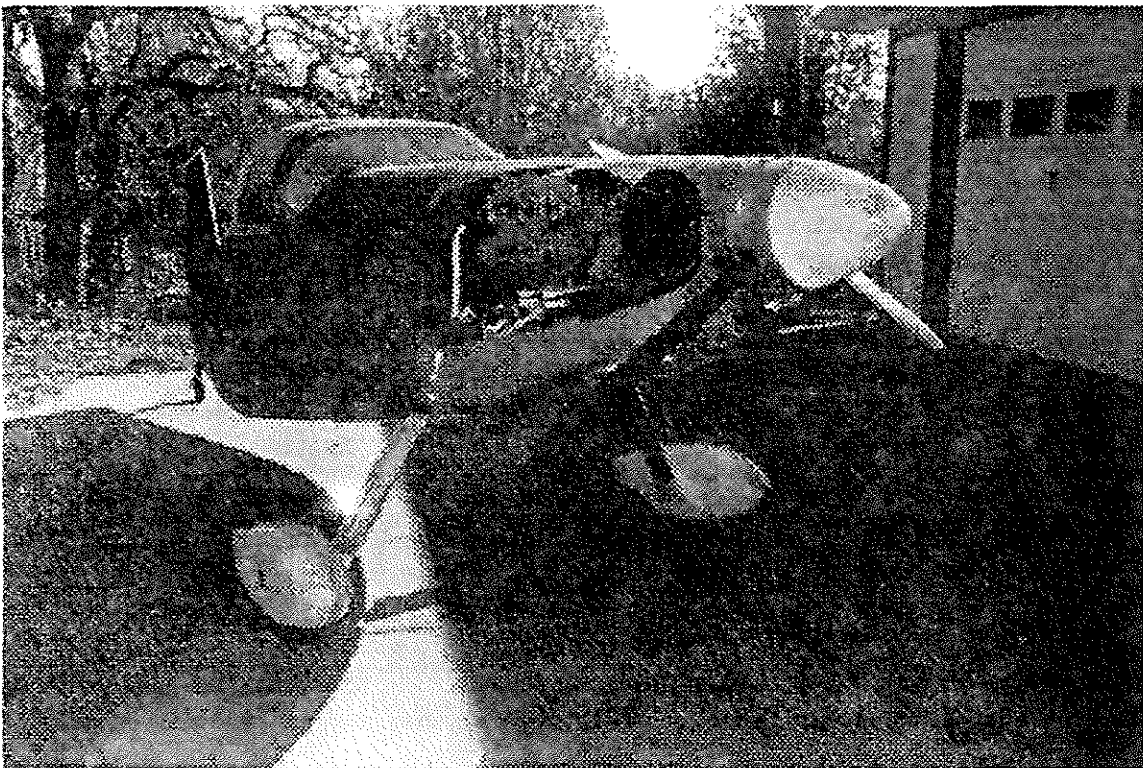
Some of the attendees were Brad and Sonya Chapman, David Hamilton, Dean Cochran, Jerry and April Denham, Norm Hibbard, Bill Cordoza, Frankie and Mike Archer, Phylis Ward, Phillip Key, David Neustel, John and Vicki Evens, Les and Merry Bunker, Harvey Mickelsen, Amos Ranck, Art Trask, Steve Dillard, Steve and Holly Irving, Tony and Starr Ginn, Gus Gordon, Chuck George, Joe Jr. and Sr. Pengilley, Larry, Roselynn, and Gina Cresse, Brian Haynes, Jack Haynes, Carl and Sue Daughters, Bob Taylor, Steve Taylor, John Mallon and Larry Mitchell, Mac and Rena Booth, Jim and Lil Critchfield and Hal and Nancy Stephens.

P. S. Hal purchased the parts of Charlie Patton's ground looped plane and hopefully with other T-18 parts will try to be in the air for Oshkosh '99 or '00.





My Subaru X T6 is now on my T-18 with a Warp Drive 3 blade propeller. Tied to our garage at Hidden Valley -NW of Dallas- The T-18 put a goodly amount of tension on the rope connected to the tail wheel. The Subaru engine is rated @145 HP with 5200 rpm. The 2.17 gear reduction by Ross Aero of course allows the power to be developed by the Sabaru. The initial aim of this aircraft is to quiet it down compared to other small planes. The insulation used on the Diesel Olds some years back is what I intend to try. The three blade prop is ground adjustable and will be set for 2300 rpm or so at full throttle. Best Regards Bob Yeakey



COLORADO 1999 T-18 FLY-IN

Where: Fremont County Airport (IV6), Canon City Colorado

When: June 11-13, 1999

Accommodations: Canon City Inn 719-275-8676 (Fax 719-269-1033)
Special rate \$60/night including tax.
Cancellation 11:00am Friday June 11.
Ask for the Giffin T-18 party.

Details: The Tigers will rendezvous at Walt and Bev Giffin's hangar 129. The Inn is located five miles from the airport so transportation is being planned. However, if you would like to rent a car, reasonable rates are available at Practical Car Rental (719-276-1425) in Canon City. Perhaps you would like to extend your Colorado trip with white water rafting on the nearby Arkansas River, Rocky Mountain sight seeing or gambling at the restored mining town of Cripple Creek. The airport also boasts a glider school and parachute school for those seeking more aviation adventures.

A banquet will be hold Saturday June 12 at the Canon City Inn with cocktails at 6:00pm and dinner at 7:00pm. The menu will feature a complete prime rib dinner for \$18.65 per person including tax and gratuity. We will be taking reservations and money up to Friday evening June 11.

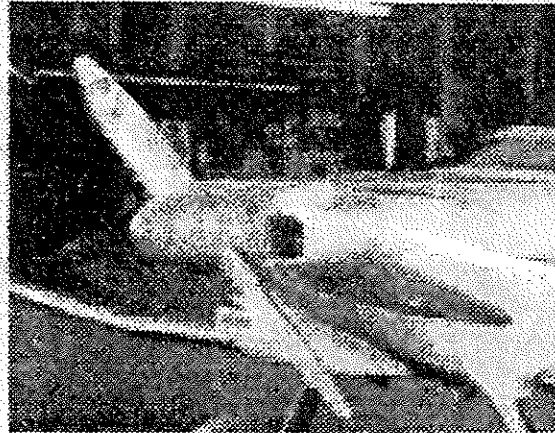
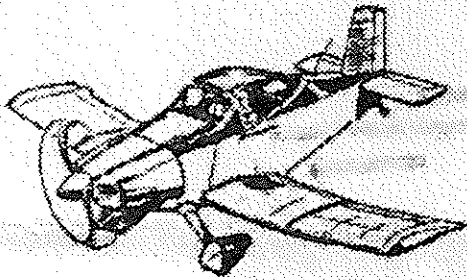
During the day Saturday Vicki Evens and Bev will plan off-site sight-seeing or shopping excursions for anyone who is interested.

Dean Cochran and John and Vicki Evens will be helping to make this get-together enjoyable for everyone. Come join us in beautiful Colorado. Call any of those folks or Bev and Walt Giffin at 719-547-2906 if you have any questions.

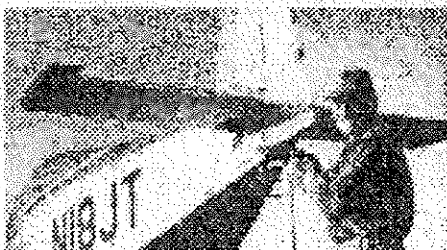
*****EAA Chapter 808 Sanctioned Event*****

This is an informal get-together. If anything unfortunate should happen to you or your airplane., it shall not be the responsibility or liability of the above mentioned persons, EAA Chapter 808, or the Fremont County Colorado Airport.

Paso Robles Municipal Airport Second Thorp T18 Fly-In and Bar-B-Que Saturday February 20, 1999



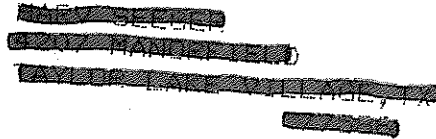
- Fly-In Sponsored By Chuck Borden
- Our first Fly-In Bar-B-que was February 1996. Sorry it took so long to have #2.
- Aircraft Judging : Best T-18, Oldest T-18, Furthest Distance.
- No Charge for Bar-B-Que: Small Donations accepted.
- Arrive early for tour of local wineries and wine taisting.
- Spot Landing Contest on arrival.
Look for line on runway



John W. Thorp
(1912-1992)

RSVP Chuck Borden
805-438-3478 or e-mail cbt18@concentric.net
snail mail 9031 Tsassajara Creek Rd.
Santa Margarita, Ca. 93453
Check our our web page
www.concentric.net/~cbt18

T-18/S-18 Thorp Newsletter
Richard Snelson
Route 3, Box 295
Clinton, IL 61727
Phone: (217) 935-4215
email: rsnelson@dave-world.net



25

FLASH! California Fly-In Feb 20 at
Paso Robles Municipal Airport

1999 Dues by the end of Feb

Help me out and get your dues in by the end of Feb. So I can plan my printing and mailing requirements. For those 25 guys that haven't paid for 98 what are you waiting for?

THORP T-18/S-18 MUTUAL AID SOCIETY 1999 DUES

Please continue your support of this valuable exchange of ideas, building tips and safety information covering John Thorp's great design. Make checks payable to Richard Snelson, Route 3 Box 295, Clinton, IL 61727 \$25.00 US, \$30.00 other.

Name: _____

Address _____

City: _____ State _____ Zip Code: _____

Phone: _____

Aircraft: _____ Hours on Aircraft: _____

Email address: _____

Notes: (Building?, Flying?, Thinking about it?etc.) _____