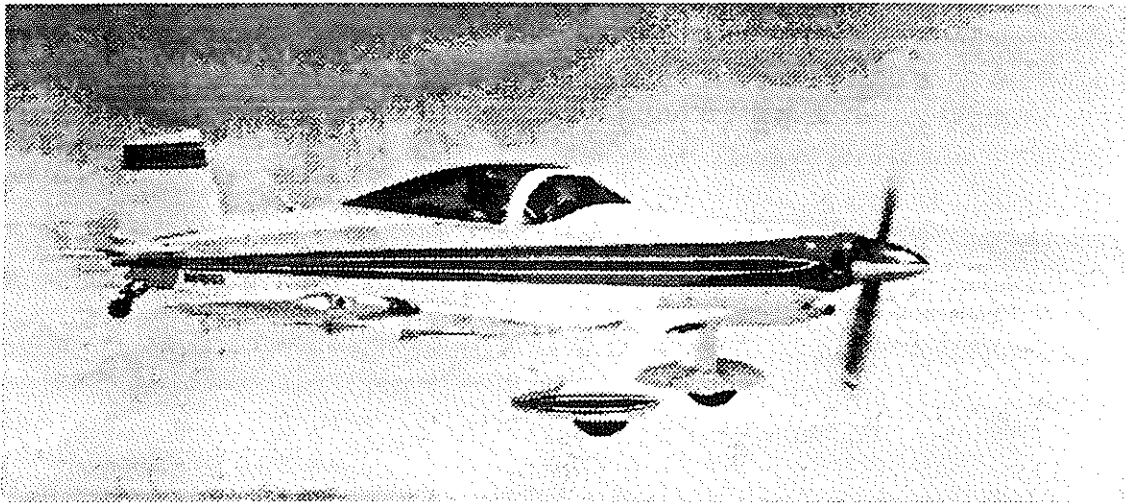


T-18 NEWSLETTER

ISSUE NUMBER 76



Wendell Green's 180 hp T-18 (built by John Walton)

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Editor's Trim Tabs

Letters to The Editor

Oshkosh 90

First Flight of the Snedeker Thorp

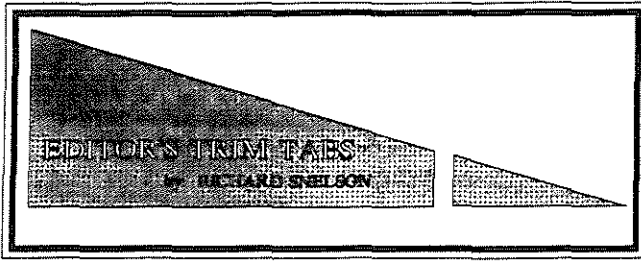
Grand Prairie Buzz-in by Dick Cavin

Fiberglass wing tips

How to avoid "Oil Cans" by R. Snelson

T-18 Pilot Report by Alex Sim

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.



I'm trying my best to get this letter out early in Sept so you will know about the get-together at Kentucky Dam in Oct. I talked to Judy Paine and had several people call to remind me that we should call for reservations as early as possible. I've really had a good time at the Ky get-togethers since it gives a lot of time for looking and talking about out projects, and also a chance to get rides! So why don't you fly or drive in for the Oct 5,6 and 7 or whatever part of that weekend you can make it. The phone number for the lodge is 1-800-325-0146. I've included a picture from Patti's Restaurant folder since it shows a small map and also someother places to stay if the lodge is full. Patti's is one of my favorite places, at Ky Dam, they have two inch thick pork chops and some sinful big pies. "Sky-high Meringues and Mississippi Mud Pies too!

Here's an up date on my Project: After completing the fuselage basic structure I remove the top aft and hip skin because of an oil canning problem. See the article on my new approach to building them. I have installed the trim motor behind the baggage compartment and cut off the top of the tunnel to install a four inch pipe for the horizontal tube cover. I've also built new rudder pedals that extend 1 inch on the left and right sides to take the rudder cables down each side of the fuselage, Dave Eby told me about using Nyloflow tubing as a conduit aft through the bulkheads for the rudder cables, "no pulleys" so I'm looking into this. Still a lot of work ahead, but I really enjoy it. My new shop is great, it's wonderful to be out of the basement. It's 16 feet by 40 feet and air conditioned and heated so the work can go on no mater what the weather.

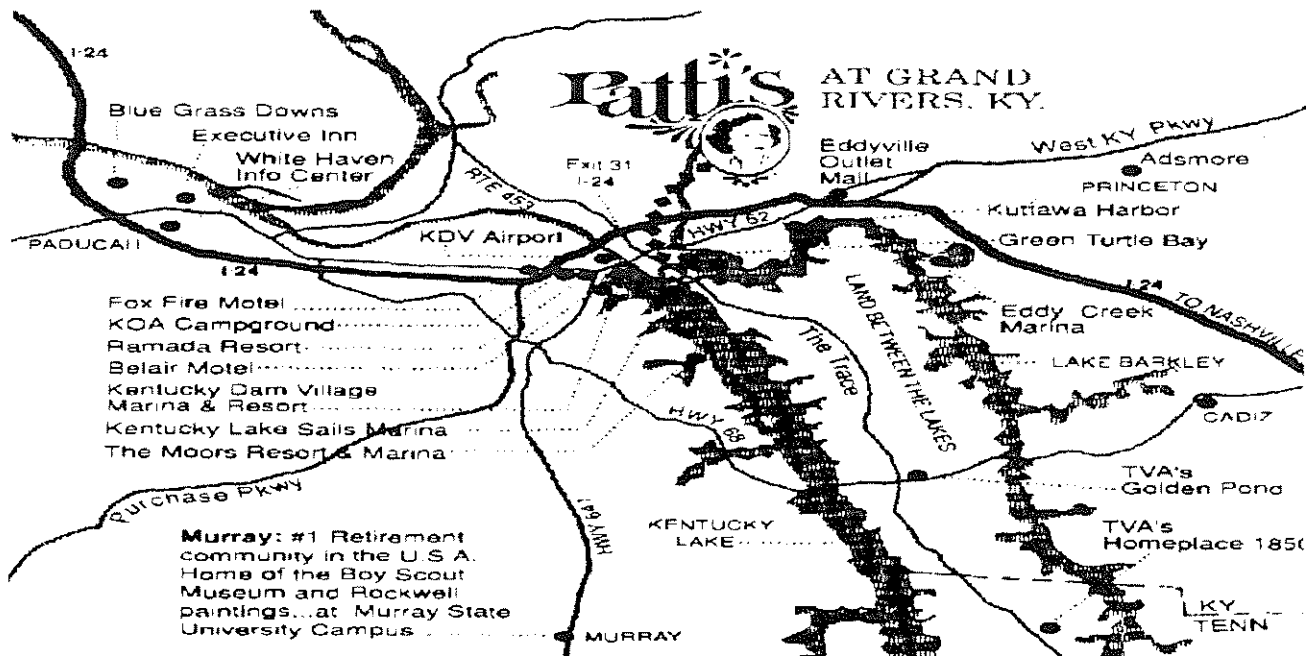
Phil Tucker at Sport Aviation let me know that he now has some one to do his fiber-glass work, he says the first pieces look very good. They are made with epoxy instead of polyester and stronger and lighter.

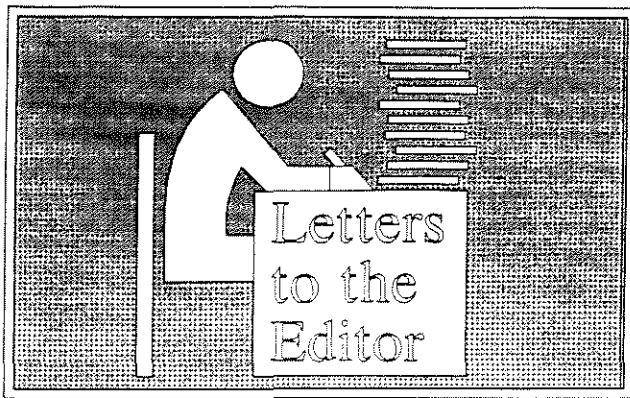
So much for now!

Richard Snelson

RR 3 Box 295

Clinton, Ill Phone 1 (217) 935-4215





The T-18 Mutual Aid Society sent Mrs Cavin Flowers during her illness, I wanted all to read her reply. This lady has done so much over the years in getting out past newsletters that we owe her much thanks!

To All the T-18 Tigers

It only takes a moment to send you thanks-- but then your thoughtfulness will come to mind time and time again. The flowers are beautiful after all this time and I am still very touched to have you all think of me.

It has been a rough go but I hope to make another T-18 Fly-In in about 6 months or so. Sincerely, Lynn Cavin. Mrs Dick Cavin.

Dave Eby sends some Prop Data:

Prop Data

SN 1202 N53PD

0320 D2A 160hp (new)

All speeds MPH-timed on a measured course at 2000 msl

Prop #1 Pacesetter 68/66

Full throttle rpm 3100

Full throttle top speed 186

Prop #2 Sensenich 66/76

F.T. rpm 2950

F.T. top speed 189

Prop #3 Sensenich 66/78

F.T. rpm 2850

F.T. top speed 192

Full throttle at 9-12m 2650 rpm

Sensenich performance charts are accurate.

Dear Richard:

Thought I'd drop you a note relating to some problems I've had during the early flight phases of my T-18 N922H. Like a few who have written earlier about mismatch of carburetor to engine, I had a similar situation ... or so I thought. I changed fuel nozzles in my MA4 SPA 10-3678-32 and found my original nozzle still the best. Still, when flying the plane, it would occasionally miss, especially when changing throttle settings. I checked for induction leaks and found none. Finally, the problem was traced to a loose carb throttle shaft. After changing the shaft and bushings I've had no "missing" problems. Another problem developed when I decided to extend my oil breather tube down to the gear leg fairing. I used a bicycle inner tube down the facing and extended it about 7-8 inches past to keep the oil off my wheel pants. Unfortunately, the slip stream bent the tube back in flight and pinched it off creating more pressure in my engine case. I realized the problem quickly but not after developing a few oil leaks in various places. To locate the leaks, I "dusted" the engine with talcum powder after cleaning thoroughly with solvent. I then ran the engine about 15 minutes and the leaks easily showed up. I now have an aluminum tube down the leg fairing. You live and learn. I also had problems with my brake lines. I used 1/4 Nylaflo tubing to brass fittings. The Nylaflo slipped over an inner tube machined in the fitting and then was crimped down by a plastic bushing around the tubing. A nut secured it in place. Unfortunately the plastic bushing didn't hold and twice the brake lines squeezed off. I now have the same fittings with brass compression sleeves around the Nylaflo. This seems to work well. My plane has about sixty hours since first flight in July of 1988. I've been learning to fly it since it's completion and hope to solo soon. A lot of time was spent after the first flight dealing

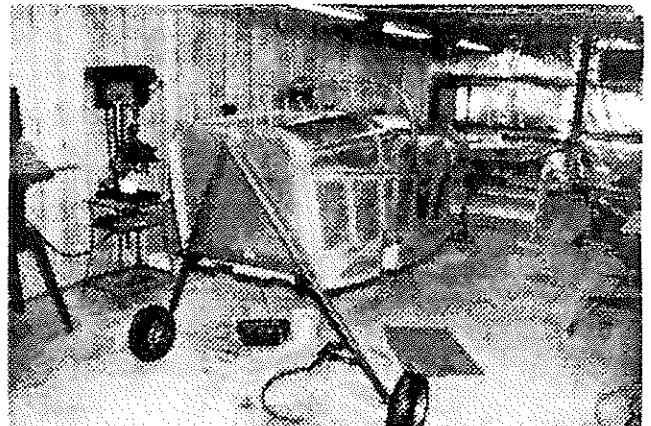
with minor "glitches" along with the problem just mentioned. It seems like I've spent about 3 hours on the ground for every hour in the air during this period. I also had radio and transponder/encoder problems which I won't go into now. It's been frustrating during this post first flight phase, but when I stand back and think about it, I have learned alot more about this airplane through these problems. I also have learned that through perserverence you can eventually achieve what you set out to accomplish. A few of the Portland area builders recently noticed that the prop installation on some T-18s varied as to the depth of the prop bolt from the extension into the engine prop flange, while others fell short of extending completely through the lugs. I've called around and haven't got a definitive answer as of yet. Maybe a reader could help. Thank for continuing the newsletter Richard. Greg Halverson, 2533 North East 11th Ave, Portland, OR 97212



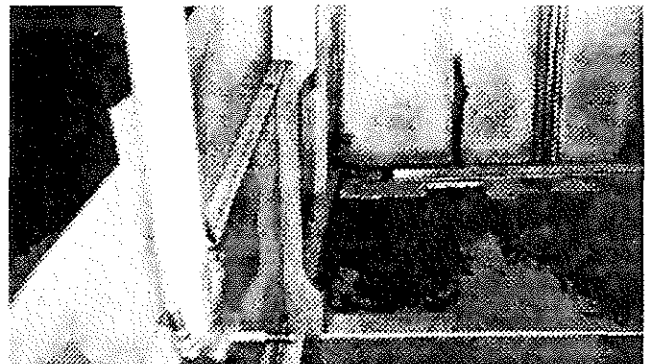
I think I made the same mistake about 20 years ago! Don't drill this fitting and expect the gear to fit later.

T-18 at Oshkosh 1990

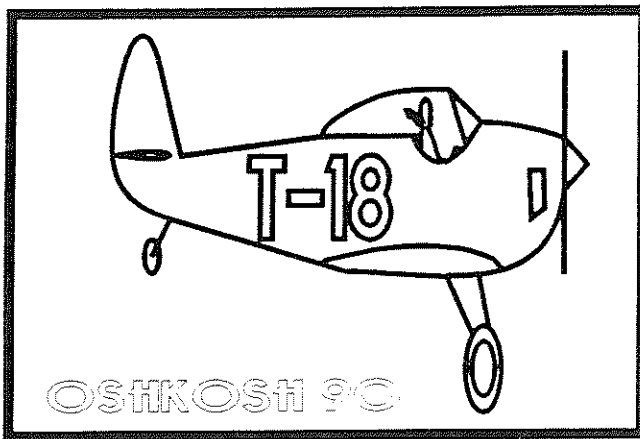
Russ Ross	N45R
Wendell Green	N51863
Gayle Lacount	N5GL
Jerry Stallings	N1369B
Goodman Brown	N6GN
Dean Cockran	N11DC
Paul Kirik	N11PK
Jim Alexandre	GGEMP
Dave Eby	N54PD
Mike Wolfe	N89RB
Gary Green	N18GG
Gary Cotner	N304RW
Al Cousineau	N4749C
John Olds	N1051Q
Dick Amsden	N32AH
Max Booth	N1488
Bryant Rowand	N66BR
Ron Gerrard	N586RG
Robert Ryan	N67RJ
2nd Story Fly Club	N583C
Mike Howard	N74RC



My project in the new shop!



My dash mod to give me more leg room.



My trip to Oshkosh this year was fast, only two days, and just a little too exciting! Arriving Monday morning just a few seconds before the T-18 Forum was to start I was informed a T-18 had just been involved in a "Mid-Air" collision, and no one was sure of Who! or what were the results. This left me speechless and unable to recover my composure until several hours later when the T-18 pilot and passenger, Bryant Rowland and his son, showed up at the fly-in looking for help to get their T-18 out of a nearby field. The other aircraft a Cessna made it into Whitman Field in spite of a 42 inch prop cut that went through his wing, aft of the right wing strut, and some bad dents in his vertical stabilizer and rudder. The T-18 had a badly damaged right wing with the right tip bent up, and the center section looked like crumpled paper. Bryant said he had a very exciting several minutes after the collision, with the T-18 in a tight descending turn wanting to stall at 135 mph. At the last moment he was able to get some aileron control and level the wings to land, resulting in some additional damage to the gear. Wow! Somebody was looking after these folks! This accident doesn't help my case with my wife of wanting to someday fly to Oshkosh in our T-18, but it does demonstrate the structural strength of our fine 25+ year old design. Bryant is a great T-18er, even after all that, and with his bird loaded on a trailer for the trip back to Texas,

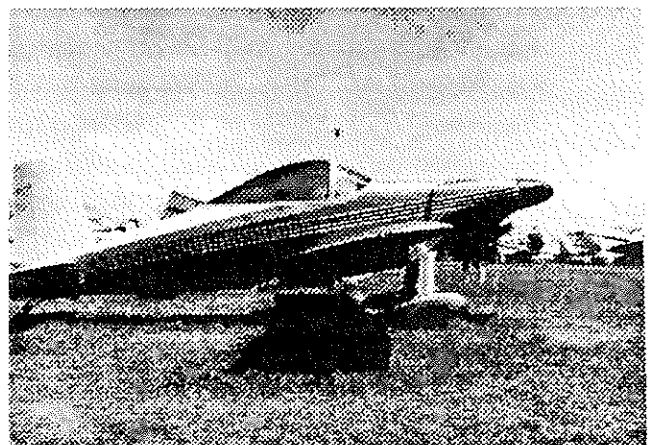
he showed up Tuesday evening for the T-18 banquet. We're glad all were safe!

Now back to the Forum:

About 100 people attended with over 60 builders and owners asking Paul Kirik questions on safety, material sources and flight characteristics of the T-18.

After the forum I spent most of the day on the flight line looking at the T-18s and discussing everything I have left to do on mine. I have a list of the T-18s at the Fly-In but it may not be complete so please don't feel bad if you were there and got left out. See list attached.

Wendell Green of Argyle, Texas was there and mighty proud of his T-18, and very quick to tell me it was built by John Walton. (Pictured on this newsletter cover). N51863 is 15 years old, a standard body with 180 hp and a constant speed. It has a Sky Tech Starter and Wendell recommends it. The plane was built with the Lou Sunderland folding wing and also contains the fuel tanks. The ship weights out at 1060 lbs empty. Wendell likes the center mounted radios and the full instrument panel, (by the way he also flies for a living). His canopy

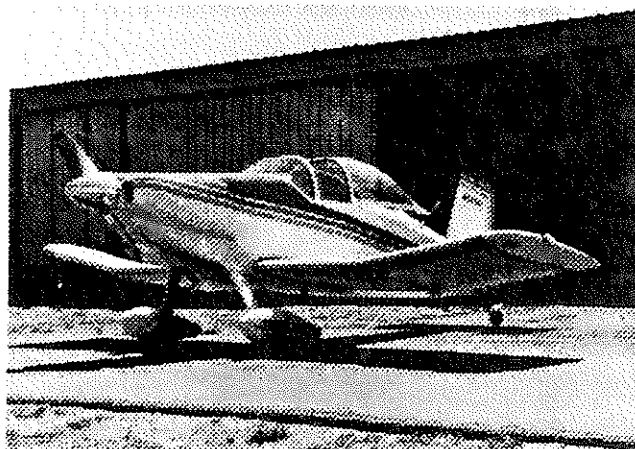


Bob Ryan of Cook MN N67RJ

is raised 1 inch and provides good clearance to tall individuals. In the engine compartment it's all nutplates and bolts so all sections and covers can be removed without fuss & bother. Clearly a beautiful airplane inside and out.

A new arrival at Oskosh this year was N67RJ, a T-18 built and flown by Bob Ryan of Cook, MN. It first flew on Nov 2, 1988, and completed the required 40 hours on May 21, 1989 (poor flying weather in Minnesota during the winter). To date it has flown 175 hours. Its a T-18 WC with Imron Paint, metallic medium blue gray stripped with metallic midnight blue. It has a O-320 150 hp with a pacesetter 200, 68X66 propellor, electric flaps and electric trim, Terra radios, dual com and nav and transponder with encoded also has a Apollo Flybuddy Loran. Bob did all the test flying himself, very exciting, but had no problems. He had about 3 hours of dual from Jim Borg of Minneapolis in his beautiful polished aluminum T-18 a few weeks prior to his first flight. Bob is currently flying out of a sod strip as the local airport is under major rebuilding. He states the T-18 handles the short sod well, but he isn't taking an passengers. All in all he thinks the T-18 is a real good airplane. (see photo)

Just a few rows away was Dick Amsden beautiful ship, it is S/N 1268 and was built by Dick and Bill Hair. It first flew in 1983, plans were purchased in Jan. 1978. Dick purchased Bill's half interest in 1983. It is painted with Imron in 1984 and now has over 600 hour T.T. (mostly Autogas time). The engine is 150 hp 0320 E2G turning a Sensenich wood epoxy prop 66 max 76 pitch. Its max speed 187 mph @ 1500 feet 70 degrees. The panel has a Terra radio w/glide slope and a Terra transponder w/encoder. To complete his navigation equipment there's an Apollo Flybuddy Loran and a full instrument panel. The fuselage has .032



Dick Amsden N32AH first flown in 1983



Ed Ludtke 1990 Winner of Best T-18 at Oshkosh



Ken and Marie Brock , good program Ken a great adventure we'll all watch for the Sept 15 Special on tv.

side skins, also the center wing, no tunnel on the front floor, electric trim and elec flaps (Chrysler window motor). A picture of his ship is included.

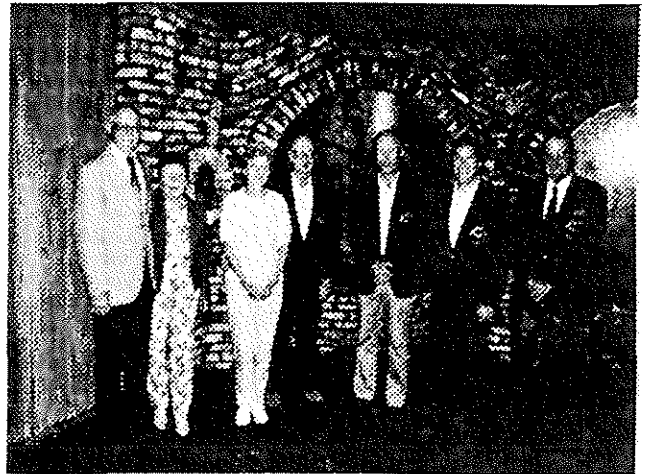
Close by to Bob's plane was another T-18 owned by a fellow that shows up at just about all the T-18 events Ed Ludtke of Sioux Falls, SD. With out question Ed has a beautiful plane, I've mentioned it before when he attended the KY Dam Fly-In earlier this year. I like the tight air box system he built and have talked him into loaning me the molds to make one for my ship.

N89RB parked in the next row was creating a lot of attention since it was for sale! Mike Wolf its' owner had three people looking at it all at the same time! and ended up with a bidding war, resulting in a check for more then his asking price.

Lots of fine T-18s were there and I don't have enough time to discuss them all in this newsletter, so will try to cover more later.

Tuesday evening at Butch's Anchor Inn over 100 people attended the anual T-18 banquet. This turned out to be a wonderful time with everyone on the edge of their chairs, listening to our guest speaker Mr Ken Brock and viewing slides of his recent trip to Antarctica with the National Geographic Society. "Thanks Ken" we really enjoyed your adventures and are looking forward to seeing the National Geographic Special on Sept 15. with Ken flying his famous gyroplanes. For those of you that don't know, Ken is a T-18 builder/flyer and also makes many of the T-18 parts that are available through Ken Brock Manufacturing, Stanton, California.

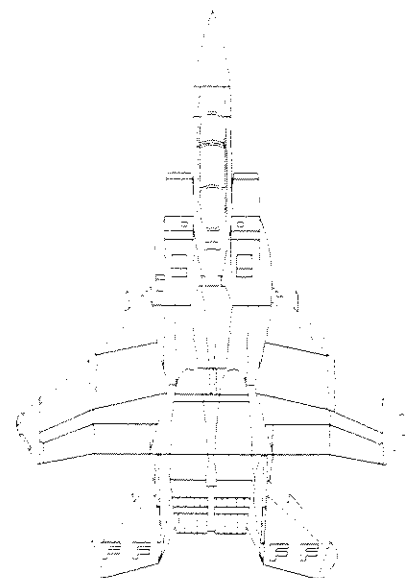
After Ken's show we asked all the former Wright Brother award winners to come up and take a bow. We had quite a crowd! I won't list all the name here since I will have



From the left the Wright Bros Award winners are Carl & Mazie Lipscom, Gene & Thelma Sloan, Paul & his son Steve Kirik and Dave Eby



Ed & Jeannette Ludtke winners of the best T-18 for 90



Steve Kirik's flying machine a F-15

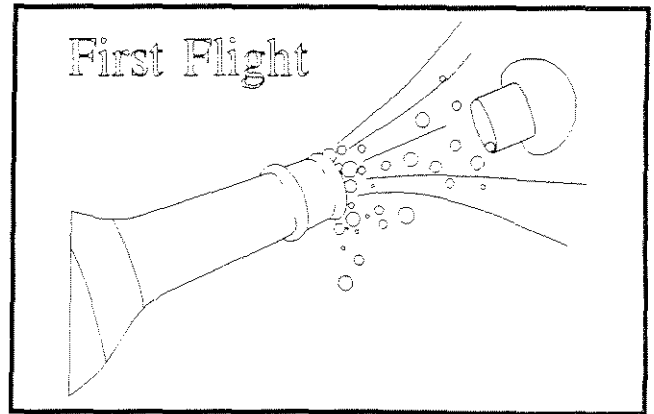
them under the included picture. I do want to mention that this years winner was Gene and Thelma Sloan of Murfreesboro, TN. Congratulations Gene and Thelma it's really quite an honor folks!

This years winner for best T-18 at Oshkosh was Ed and Jeannette Ludtke from Sioux Falls, SD. A picture of Ed beautiful ship is also included in this newsletter.

I want to mention a fine young man that I met at the banquet and later got to know sitting around a camp fire back at the campgrounds. This would be Steve Kirik, Paul's son from Moline Ill. Steve was home on leave from the airforce where he flies F-15s. Get this folks: he planning and looking forward to building his own T-18. Steve flew his dads T-18 back to Moline on Wed (Paul had to drive the Camper "too bad dad"). When Paul finally got to Moline they gased up the T-18 and headed for the east coast and Steves airforce base. Five hours later they were there. A couple days later Steve climbed into his F-15 and flew 14 hours non-stop to Saudi Arabia. Last week Paul called me to get the old news letters to send to Steve as he wanted some good reading material. A day or so later Steve was on the national news "CBS" with Dan Rather in an interview about the FF Squadron in Saudi. I for one am proud to know this fine young man! Good luck and God Speed Home for Steve and all the other fine American Servicemen in Saudi Arabia.

Richard Snelson T-18 Newsletter Editor,
RR 3, Box 295, Clinton, Il 61727

PS: We were going to have the banquet as Dick Cavin night but Dick had to return to Texas since Lynn was feeling bad. We send out thanks to you Dick and Lynn for all that you did for the T-18 Mutual Aid Society. Hope to have you both at the banquet in 1991.



First Flight of the Snedeker Thorp
(reprint from "Wind in the Wires" Newsletter
Chapter 26, Seattle Washington, Frank Snedeker
Editor)

All first flights are exciting! Many questions will be answered. Anticipation and excitement run high. Expectations become suddenly real and the proof of many years of work is written. Many questions have yet to be answered. This first flight was filled with that excitement and with a measure of high anxiety. After climbing full power (Lyc. 0-360-A3A--wood prop) to 4000 feet the power was reduced to 2450 at which time the engine ran rough. Setting power to 1700 RPM found the engine power bleeding off further to a point of quitting entirely. Power was maintained by actuating the accelerator pump to keep the engine running and an immediate landing was made...total flight time: 16 minutes.

This airplane was designed by John Thorp and it is a pleasure to work with. There is a great latitude for modifying and much of the satisfaction of building her was in this ability. She is a real beauty even though her builder didn't get the skin as smooth as if fiberglass were used, or that her makeup ran in places, but, all esthetics aside, she flies beautifully. The first flight was not exhilarating to me but there was a real feeling of satisfaction, of accomplishment. Even though all of the testing, adjusting, tweeking, massaging were yet to come this

creation of years of work had come to fruition. She was flying.

My Biennial was believed to be out of date, making my 'license' to fly her illegal. Cecil Hendricks, having much experience with T-18's, flew the first flights, with me in the right seat taking notes. The pride of the first flight is not in the pilot but in the airplane. The pleasure of the first flight was in both pilots and those persons left on the ground sharing in it. For the record, those present for the first flight were Sabrina Snedeker, Fanny Hendricks, Bill Moor, Jim and Pat Evans (flew up from Vashon in their Cherokee), John Kenton, and John Ammeter who was just finishing building his RV-6, and John McCornack now flying a Kitfox and is starting an RV-4.

But, back to the flight...N54FS (for Frank and Sabrina) lifted off the 5,334' runway at Arlington, Washington smoothly at 11:00 a.m. on July 8, 1990, climbed rapidly to 4000' and made the first power reduction. With power at 2450 there was a roughness in the engine. It was necessary to determine the stall speed and Cecil proceeded with that process. We had installed stall strips on the leading edge of the center wing sections and they worked better than expected. The center section stalled strongly at 61 knots indicated but with full aileron control, right and left turns were made without diminishing the buffet. After Cecil, I did the same stall and we returned quickly to land sounding like a War One rotary engine as Cecil worked to keep the engine running.

In subsequent flights the same condition presented itself but we knew how to get the airplane back on the ground. After reworking the carburetor (MA-4-5), and cleaning and gapping the plugs, and rechecking the magnetos and several hours of flight checking the answer came during a flight test and as this is being written a fix is slowly devel-

oping in my dreams...ideas...you name it.

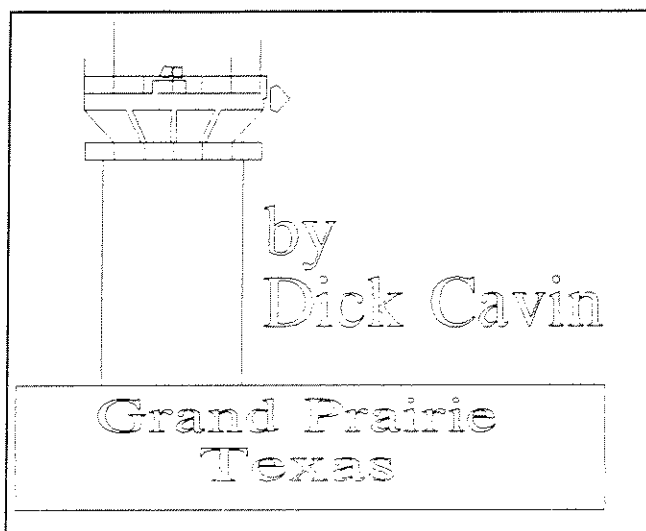
The carburetor air filter box is John Thorp design that fits over a well at the base of the carburetor. It has an automotive AC filter. There is a valve that opens the full intake for cold filtered air from the engine compartment. This an excellent system and since each T-18 system installation is different the problem may not manifest in every T-18. On N54FS it may be that the air entering the carburetor is swirling and I may have to design and install vanes to redirect the flow...to straighten it before it enters the carburetor.

During inflight testing it was determined that with full throttle it ran smoothly (mixture full rich and carb heat cold, of course). With power reduced to 2450, and below, roughness came in and in the lower range the engine power would bleed off possibly to quitting. On applying partial carb heat, at these lower settings, the engine would smooth out. With the control pulled out 1/2" it would be smooth in the range from idle to 2450 rpm. If it were left in that position and full power applied the engine would run rough until Carb Heat was returned to full cold.

Looking into the air intake opening, the 1/2" setting places the valve in the mid position (a 45 degree angle) with half the intake going to the carburetor and half being directed up into the engine compartment past the exhaust pipes. It is an interesting problem. The first mod has been to install a fence in the bottom of the carb box, parallel to the intake including the throat of the carburetor. The situation is improved in that less carb heat need be selected so additional baffling will be installed.

Because N54FS has a wood prop (Ted Hendrickson) forty hours of flying is required within the 25 mile radius of the 'test' airport

so, again, Oshkosh is cancelled for Sabrina and me and this is a disappointment because there will be four other T-18's making the trip, camping out along the way. Our flying is still ahead of us and the FIRST FLIGHT will be well remembered for the friends that were present and that the airplane that I built really flew.



Grand Prairie, TX

T-18 Squadron Buzz-in

About a couple of weeks ago, Ken Morgan came up with the idea of a mini fly-in and brunch for all the T-18 builders and owners in and around the Dallas/Fort Worth Metroplex. Letters of invitation were sent out to some 25 or more T-18 addicts.

The August 11 date was perfect and by 9:30 we had four T-18's parked side by side in front of the terminal building, with 2 more taxiing in. In a few minutes, the 7th T-18 arrived from Wimberly, TX, with Jim and "Sweet Sue" French on board. His T-18 was built in 1967.

The next oldest T-18 was Bob Miller's, built in 1970 and he hangars at Arlington, just four miles west of Grand Prairie. He has about 400 hours on it after 20 years and it

still has its original paint job on it.

Dave Eby came down from Wichita Falls in his bird with John Mihaila riding shotgun. (John's T-18 has about 6 hours on it now.) Gary Cotner came down from Tulsa, nosing out John French by a few miles for the title of longest distance flown. Gary Green and co-pilot Maxine came in from Pecan Plantation, about 35 miles SW of Fort Worth. Marty Sidener had previous plans, so he couldn't fly formation with Gary from Pecan Plantation. Maybe next time.

Leroy Holt didn't make it down from Mc Alister, OK, for some reason, neither did Jim Putney, who lives in Arlington, and is in the process of painting his T-18.

Wendell Green and John Kleber had a 20 mile formation hop from NW Regional Airport (formally called Aero Valley) where they share a hangar. Wendell has John Walton's beautiful T-18 now and he's so happy with it he just stands around and grins and giggles every time he looks at it. John Kleber's T-18 is his second. Like Wendell's, it is powered with a Lyc. 0-360 and has a c/s prop. John also built Dave Eby's wing.

John passed on a couple of good tips (see sketches). He has a sure fire method for getting control surface trailing edges straight. He clamps a pair of 3/4 x 3/4 steel angles on the last 3/8" of the surface, with the angles right up against the clecos in all the holes (almost). He leaves room for the rivet head and uses a rivet set that's ground off flat on one side for clearance. Works beautifully.

John used the new airfoil on his new bird and he says you can't buy wing tips that fit perfectly, so he made his own. (See the photo comparison with it W. Green's) He first stood the outer wing panel on end over a piece of metal scribed around it to make an exact template.

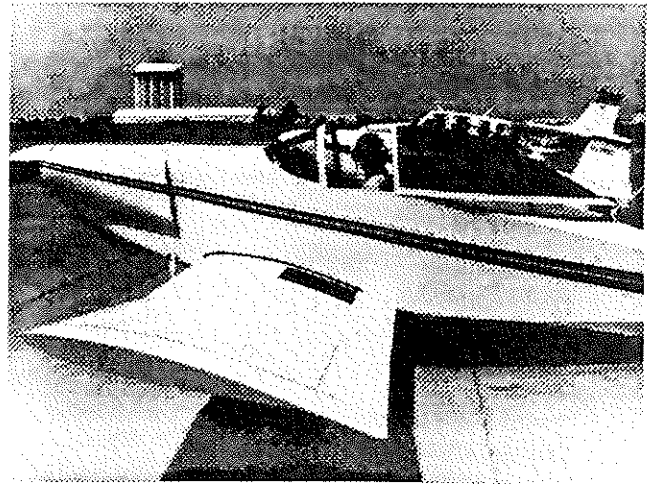
Using that template to make a duplicate tem-

plate, he used the pair to "hot wire" a block of blue foam in the classic Varieze manner. After doing this he wrapped a strip of about 1" wide aluminum from the center of the L.E. to the center of the T.E. (for the bottom side of the tip). Then he used this 1" strip as a guide to hot wire a line from the top of the aluminum strip to the very tip of the flock of foam, which still retained one of the rib templates. (The one inch at the bottom allows for a flat space to attach to the top.) I think the sketch will fill in details.

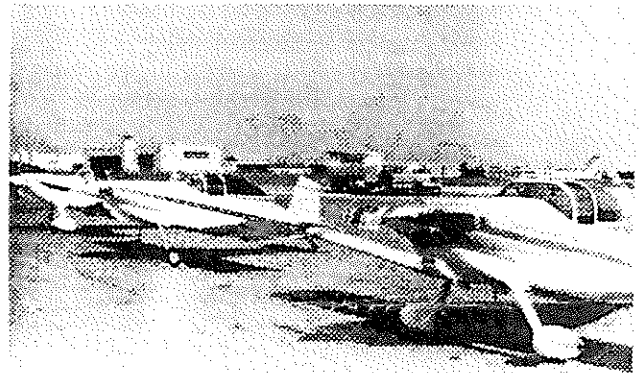
After a certain amount of T-18 ogling we all filed into the Wheels Down Cafe, and had brunch and T-18 talk at a long table.

Others there besides Ken Morgan were Bob Yeakey and Wife, Evan Roberts and wife, along with Eddie Eiland and son. Yeakey just returned from Tuscon where he picked up a Subaru 6 cylinder engine with Ross gear box to go in his T-18 (which could fly next year). More later on this. Evan Roberts has a T-18 that has flown, but is doing some restoring and modifying on it. Eddie has a T-18 project about 50% done plus a flying Sonerai II. There are a couple more T-18 projects in that area that are well along, in addition to Ken Morgan's two projects, one which has flown. John Austin's T-18 has flown but is down for some re-work on the wing. Bobby Collard has completed a T-18 hull, with no systems installed , but he too, couldn't make it.

As is usual in these gatherings, there was time for a few buddy rides for builders/ dreamers before it was time for T-18 Squadron #1 to scatter. All in all, we all enjoyed the get together immensely, and it unanimously agreed that we should repeat the Buzz in a month from then, the week end after Labor Day, so stay tuned. Better yet, Come join us!!



John Kleber's second T-18



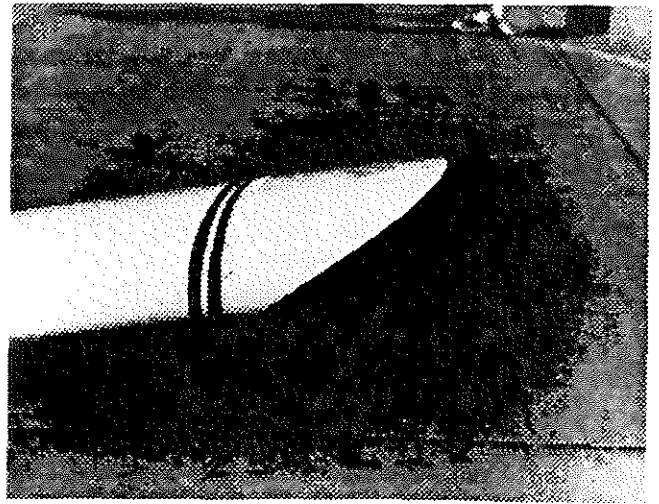
Right to left Wendell Green, J. Klebers and Jim French



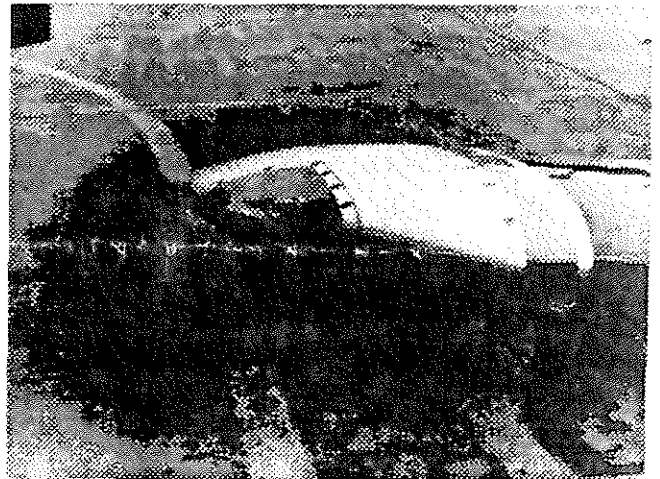
Wendell Green and J. Kleber

Steps to build wing tips

1. Stand wing up vertically with outer rib resting on template blank. Then scribe around it and cut out template to exact size.
2. Make duplicate template to use at each end of block of foam as guides to "hot wire" a block of foam for each wing tip.
3. Sculpturing of foam (male mold) to final wing tip shape- Wrap a 1-1 1/2 inch strip of alum. around base of airfoil shaped block to use as cutting guide for both side of wing tip.
4. Cover foam with 1-2 layers of fiberglas and after cure sand to desired smoothness. (use peel ply to minimize sanding required).

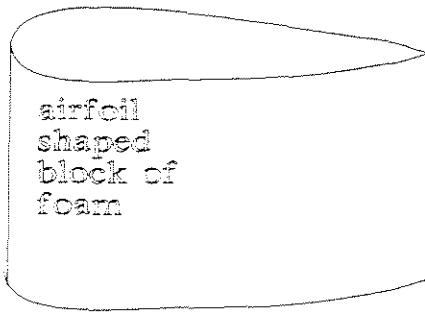


J. Kleber's new style wing tip

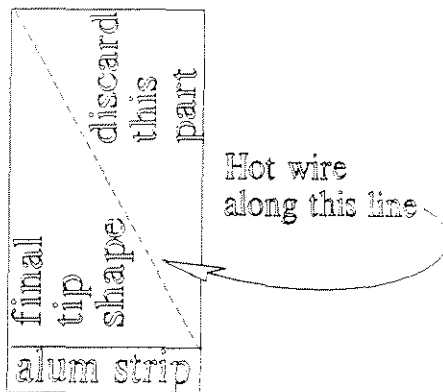


Wendell Green wing tip Note the strobe.

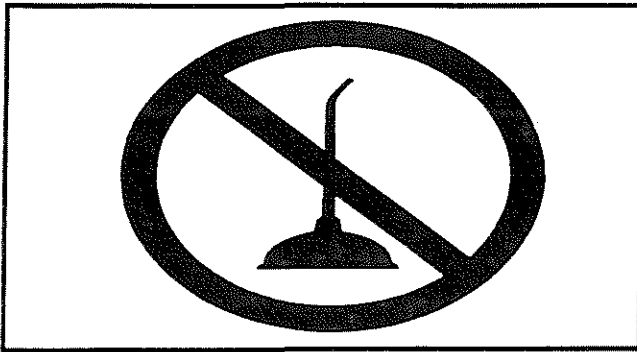
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2



FRONT VIEW



HOW TO AVOID "OIL CANS"

by
Richard Snelson

After having installed the worst looking aft and hip skins I'd ever seen, and on top of that, having to listen to the sound of my wife's index finger pushing on the nasty "oil cans" every time she came into the shop, it became clear that they would have to come off and new ones installed. I had used a roller to start the bends and then spent hours trying to get them into some sort of flat state, with no luck! Here's my new approach (they are 100% flat with no oil cans"). I did use .032 and am pleased with the results. This is what worked for me:

Starting point for hip skins and top aft skin building.

Either have the fuselage in clecos with bottom skin in place to square up the assembly or start after riveting the side skins to bulkheads and longerons, again have the bottom skin clecoed in place for alignment.

1. The first step is to either make a rough pattern or to get premarked parts, don't drill any holes at this time.

2. Get a straight 2x8 about 8 feet long, and run it through a table saw to establish a 52 degree edge for a bend line, this represents 45 degrees plus 7 more for spring back allowance. Using a small hand plane and a file cut a nice smooth radius on the form block flange. Using this as a form block will

result in a 45 degree flange in both the top aft skin and the rear portions of the two hip skins.

3. Make the top aft skin using either a cardboard pattern or a premarked part. Bend the edges using the form block above, punch no holes in the mating flanges for the hip skins at this time. Now drill the holes for the mating of the top skin to the bulkheads also the cut-out for the stabalitor attach fitting. Temporarily install it and check the fit at the top corners, they should be tight and flat to the hip skin flanges, correct by removing and bending the flanges with flanging pliers or a bending stick. It also helps here to have left the flanges at least 1 inch long as this will stiffen the sheet and keep it level for the next steps, it will be cutoff later when everything gets trimmed.

4. Now comes the black magic portion of the work, black magic and good luck that is. Using a pattern or a pre-marked part, the rough hip skin is now cutout leaving a 1 inch flange at the bottom and an extra inch or more on the top. Because of this wide flange it's not necessary to be exact in locating the flange bend line, just set the piece on the 2x8 with 1 inch sticking out and bend away using a firm rubber hammer. By taking your time and working back and forth a nearly straight 45 degree bend can be achieved. Only the back part of the hip skin is bent at this time, stop the bend at the tallest point on the hip skin. Another form block is needed from here forward since a slight curve is involved. This curve can be patterned off the bottom edge of the hip skin, again use a 2x8. However save time and cut it at 90 degrees on a bandsaw or with a jig saw, file and sand it to a smooth radius on both sides as it will make both right and left hip skins. Put the hipskin with rear bend complete on the new form block, over lap the bend and place it on the new radius, complete the bend forward with a rubber

hammer, stopping to check for 45 degrees and working back and forth as you go. Holding the flanged skin next to the fuselage note the curvature from bulkhead 572 forward. Mark the rough location of the holes that will be later drilled in this flange, from 572 forward only. Using a pair of crimping pliers put a small crimp in between each of these holes watch the curve form and compare it to the fuselage curvature from 572 forward. The hip skin is now ready for a trial fit test.

5. "This step is critical to a good flat fit for the hip skin".

Test fit the hip skin if the flange is 45 degrees it should lay flat from bulkhead 572 aft.

From 572 forward is not a problem at this point. Be sure there is enough material above the top deck skin and adjust the flange location for a nice even appearance from front to back. Correct problem at this point by removing and rebending the flange for a flat fit at the hipskin, top skin junction, primary from 572 aft.

6. With the hip skin in place drill holes from bulkhead 572 aft and cleco as you go. If the skin is still flat on the top skin its time to locate the top holes. Using a small thin ruler, establish on the hip skin the hole pattern so that it falls correctly on the top skin flange, this is fairly easy as you can lift the top skin and get a reference point on the top skin.

7. Now the hipskin and top skin flange can be drilled starting at the back and working forward, it must be nice and flat to do this. Don't pull down on the top skin, just hold them together for a nice fit and drill and cleco. Work all the way forward to bulkhead 572. At this time the forward portion of the hipskin is still floating and is not drilled. Work forward from 572 and drill the top holes as previously done on the rear, do 5 to 6 holes and then do 5 to 6 on the bottom edge (hipskin to side skin). By working

forward in this manner the front skin should work out with no oil cans or rough spots.

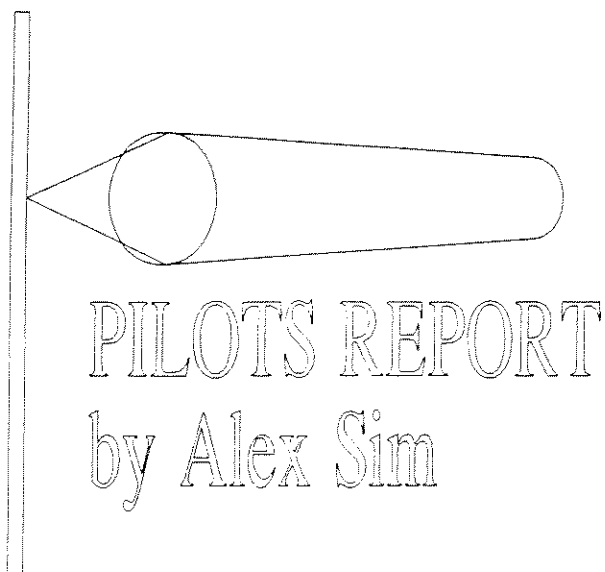
8. The holes from the bulkhead edges can now be located by laying out on the hip skins and lining up with marks on the bulkheads or by backdrill if the bulkheads are drilled. Watch the top corner holes on the bulkheads as they maybe too close to the top edge of the hipskin, by planning ahead this won't happen.

9. Now remove the skins and trim off the extra material on all flanges, deburr and dimple if using flush riveting.

10. As part of the final assembly before riveting check by pushing down on the hipskins at the bulkhead flanges if the bulkheads appear low, install a flat shim to level this area out, it will look a lot better than a sunken rivet line.

11. Follow the same pattern for riveting that was used in drilling the skins working from the tall part to the rear then returning to rivet forward, completing each section as you go.

I hope this helps you to do a better job the first time around and to not have to do it over. Call me if you have a question and you think that I could help. Richard Snelson
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PILOTS REPORT by Alex Sim

I bought my T-18, N512S, in 1984 and have flown it about 250 hours since. My prior 400 hours of flying had mostly been in Luscombes. I have found the airplane to be an honest taildragger on the ground, and an absolute delight in the air. Its builder, Hank Steinganga did an outstanding job on the airplane and was honored in 1981 for having the best T-18 at Oshkosh and with the Wright Memorial Trophy. N512S is a Standard Thorp, O-360 Lycoming, CS prop, Thorp cowl, flush rivets, and a 29 gallon forward fuel tank. It does have .032 skins on the inner wings and fuselage and has an empty weight of 1015 pounds.

I have taken a number of other pilots for rides. They invariably are aware that performance will be good and seem relieved that I insist on doing the takeoff and landing. However, most seem genuinely surprised how good the handling qualities are in the air. To quote one pilot, "the airplane really does have all the accelerations of your own little fighter".

I do not have a good outside air temp. of a Loran and thus do not have a good direct indication of true airspeed. However, keep-

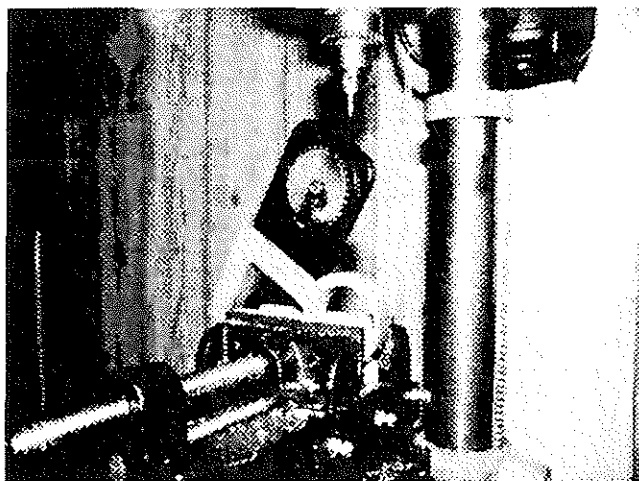
ing track of time and distance, the average speeds (including full patterns, climb, cruise and descent) for flights over 2 hours are around 190 mph at 8.3 gph (68% power) and 200+ mph at 9.5 gph (75%) with cruise near 7,500 to 10,500 ft. I once flew a four hour cross country (one fuel stop) along side a wide body, folding wing Thorp that was otherwise similar (ie. engine, prop, cowl, and passenger load). I seemed to have about a 10 mph advantage in cruise. I rationalized this to be a reasonable increment given the extra fuselage cross section, airfoil mods, and extra wing weight of the other airplane; however, I do realize that one data point is hardly conclusive. If any reader has made a more formal comparison, I would like to read about in an upcoming newsletter.

Back when I initially bought the airplane from Hank, he had placed a bolt through the 40 degree slot in the flap selector. He explained that it is possible to stall the tail with 40 degrees of flaps and a forward cg. The forward cg. condition occurs any time I have full fuel and fly solo--a common situation. Al Chivers, a CFI and T-18 builder/owner checked me out in the airplane and also cautioned me about using even as much as 20 degrees of flaps when on a final crosswind. Although the "old-timers" all seem to know about this, many of the newcomers do not. I have verified the presence of significant tail buffet when slipping the airplane with 30 degrees of flaps and a forward cg. The 10 degree flap position seems to work well on final with gusty winds. When practicing power-off landings with forward cg and 30 degree flaps, I find it is best to be at 90 mph (rather than my normal 80) on very short final to avoid running out of elevator control in the last second of flare. The undersized horizontal tail is not a new topic, just one that receives little mention. It is also very heavily engineered, highly analyzed, and

extensively flight tested part of the airplane that is not to be messed with (something about literally tickling the tail of a tiger).

The Thorp style metal cowl over cooled my airplane. In the winter, my cylinder head temps ran around 310 degrees for the front two and 350 degrees in the rear. In the summer it was 330/370 degrees. I wanted to get them all in the 370-400 degree range. I had too much respect for the metal workmanship to attempt the obvious mod of reshaping the exit area. Thus, I have taken the indirect approach of moving the oil cooler from the front of the engine to the left hand cheek exit blocking off about half of the LH cheek area. Secondary goals were 1) to get the oil cooler off the engine [personal preference] and 2) to switch the original Corvair cooler to an aircraft one. [also personal preference] This mod has raised the summer operating temps to 350 degrees in the front and 370 degrees in the rear and should slightly reduce overall cooling drag. However, the engine cylinders are still a bit cooler than I desire and I may try blocking off some of the right hand cheek as well.

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Angle level at work

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Phil Mandel had his airplane for sale but he called me before the newsletter came out to say it was sold. Cong. to Walt Cannon The new owner.

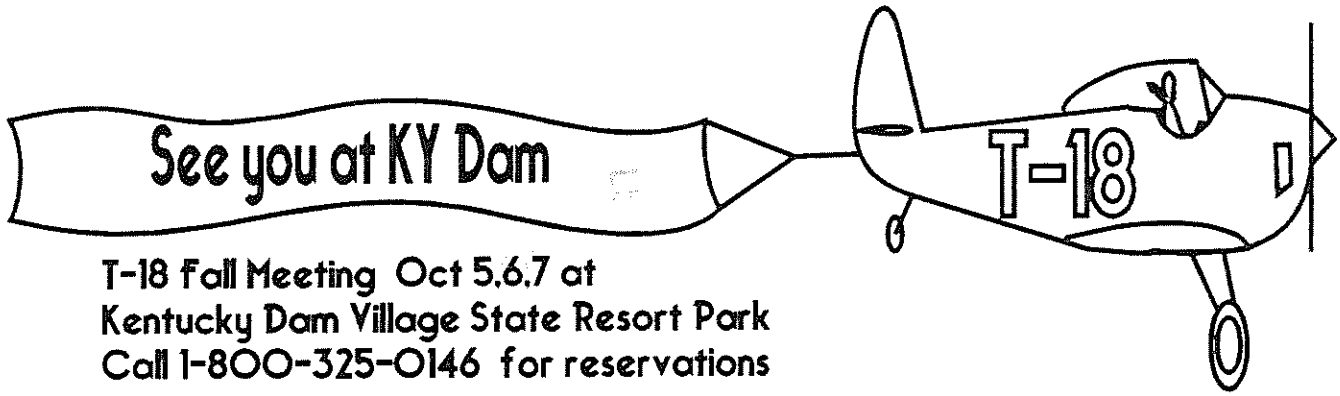
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I now have the angle level for sale to T-18 builders. I use it for about everything, from machine work to building rudder pedals, aligning of control surfaces, checking wings and control surfaces for twist as you are building and on and on. The level is oil filled with a ball bearing pivot which it accurate to 1/2 degree. Its now in B&F's Catalog in Chicago and I'll try and get it into some of the other suppliers soon. It's \$38 from B&F however direct from me it will be \$30 including postage. I'll try and write up some of the many uses later.

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