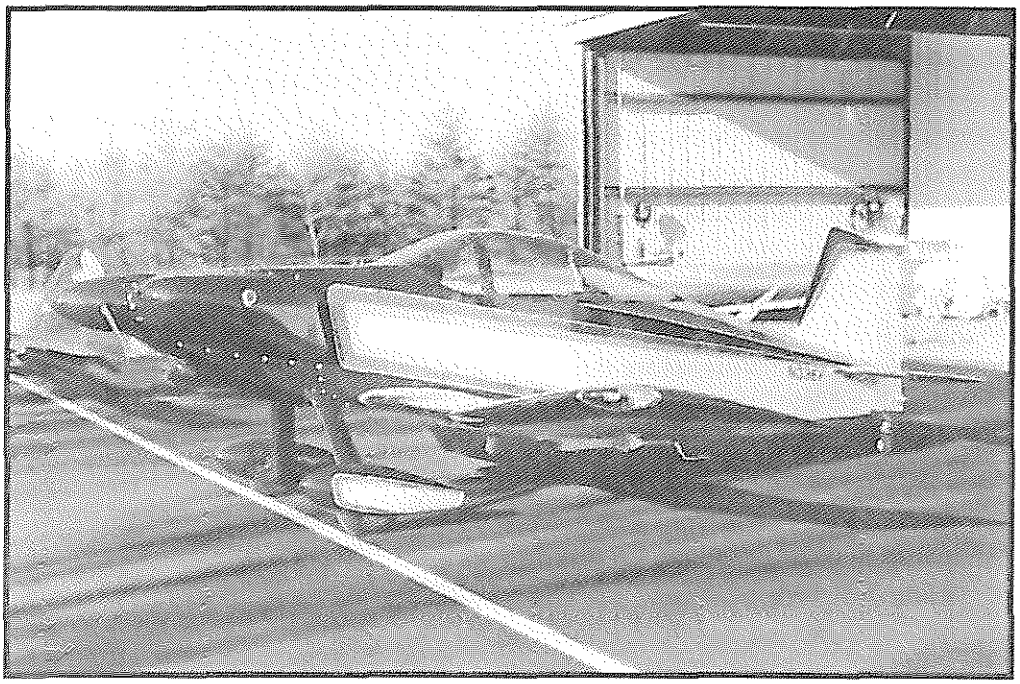
T-18 Newsletter

December 2001

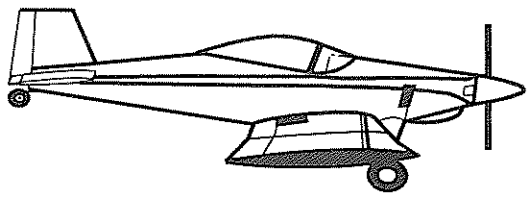


Edmund L. Frechette ~ N33EF ~ Crossville, TN.

IN THIS ISSUE:

Wow .... a lot has happened since the last issue, and most of it bad. The terriost attack on September eleventh got all of our attention, and the effects it will have on aviation will be around for a very long time. I believe that some new rules and regulations are bound to turn up and be with us forever. Just today, I learned that the small local airport that I operate from received a letter from its insurance company. In order for us to remain insured, it listed a page full of new security rules that must be complied with before the renewal date. The list was ridiculous, we have to install a complete perimeter fence around the entire airport. We must lock all the hangers, and they must be monitored by an alarm system, as does the office building. We must have a full time security person on duty. We must have mandatory drug testing of all employees, and the list goes on. What are these people thinking? What will this do for national security? You got me ... but what it will do is pose undo financial burden on the airport. I am not sure it can handle it, could yours? If this is happening here, it will probably be happening where you are as well. What do we do? We need to be contacting our senators and representatives and expressing our concerns. If we don't who will?

I was saddened by the news of Ken Brock's tragic accident. I spoke with him at length this last year at Oshkosh. He was truly a gentleman and an outstanding Thorp Ambassador. The aviation community has lost one of its best. We will miss him.



ARE WE DOOMED??

I am constantly amazed at those of us who expect something for nothing. I took the job of writing this newsletter, because of my love for the T-18 and the chance to see the T-18 Mutual Aid Society grow and become a close-knit group of proud Thorp owners and pilots. I am doing my best to see that this becomes a reality. In the year and a half or so that I have been writing the newsletter, I have seen our numbers drop by about forty percent. Of the remaining members, fifty percent haven't paid their dues for this year (2001), and thirty percent of them haven't paid any dues for two years. How am I to operate with these numbers ?? The sad truth is that I cannot. I simply can't afford to keep printing and mailing out newsletters for free, its getting into my pockets and they are not very deep. I really enjoy publishing the newsletter and will gladly keep it going if that is what you want, but I cannot continue with things as they are. If you owe dues, please send them to me asap. I will no longer mail newsletters to those who owe for two or more years.

For those of you who are not sure if you are paid up, please check the mailing label on the back cover. Look just above your name .. if you see "PD" then your dues are paid in full. If instead you see "25" or "50" then this is the dollar amount you owe. (I.E. 25 means that you owe $25.00) I would appreciate it if everyone would check the label and react appropriately. If you are receiving this newsletter and do not wish to, please take the time to send me a note stating that you would like to be removed from the mailing list.

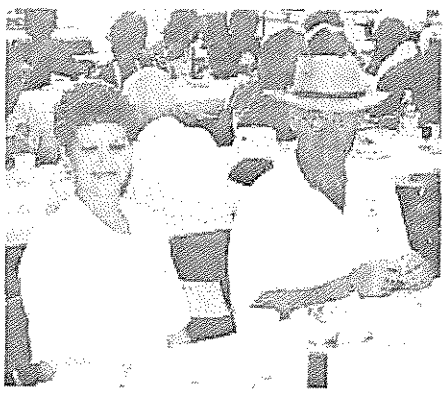
One other thing, I know that there are many pages of good technical information out there. Some of you guys are still building, and some have many hours of operation on your airplanes. All of you have knowledge that others could use. That's what this newsletter is all about. Please take some time, jot down some stuff and forward it to me. It doesn't have to be fancy, just info on building, flying, and maintaining our T/S-18's.

Sport Aviation Legend Ken Brock Killed In T-18 Crash

Legendary sport aviation pilot, designer and manufacturer Ken Brock passed away Friday in a tragic landing accident near his desert home in El Mirage, California. According to information disseminated by a family friend, Brock was landing his homebuilt T-18 when a reported failure of the tail-wheel assembly resulted in the aircraft running off the runway and flipping over. Brock was accompanied by his wife Marie, who is reported to have survived the accident with "minor injuries." Ken was apparently the victim of a broken neck and despite attempts to rescue him, he perished in the crash. Brock was, without doubt, one of the most loved SportPlane designers and pilots in the world. He was especially well-known for his skill with gyroplanes and small rotorcraft, as well as the owner of a small aircraft parts manufacturing business that supplied both GA and SportAv devotees with parts and assemblies. Brock flew the first documented sport gyro US cross-country, many years ago, but was most well-known for his many airshow extraordinary performances in his McCullough powered KB-2 gyroplane... an act that nearly always culminated in a dramatic deadstick landing at airshow center. Affable, pleasant, and renowned for an unerring sense of honesty and fairplay, Brock was a man who's presence will be sorely missed within sport aviation circles from here on out. Ken Brock was an amazing presence in this industry and one of the nicest guys we've ever worked with... our condolences go out to Marie, the rest of his family and his many, many, MANY friends.

We have truly lost one of sport aviations and T-18's greatest ambassadors. Ken was a true gentleman and a friend to so many. His bubbly enthusiasm and upbeat personality made him a joy to know. Ken, and his wife Marie, were always the happiest looking couple at Oshkosh and Sun N Fun and enjoyed attending the Thorp gatherings. Ken will be sorely missed by us all. Please keep Ken and Marie in your thoughts and prayers.

Robert Jaeger



I've spoken with Patty at Ken Brock Manufacturing and conveyed our feelings and condolences to her. She will relay them to the family. Ken's son met with the FAA yesterday and reviewed the accident. Apparently the "tail wheel" broke and there is a gash in the dirt runway of over 300 feet long showing the point of breakage and the path of the craft after that point. There are "berms" on the side of the runway I'm told which Ken's plane ran into and then the plane inverted itself. His wife received a head injury but was well enough to not go to the hospital...so she said. A call back at the end of the week will hopefully tell us precisely which part in the tail wheel assembly failed.

Hal Stephens

Editor's Note: As of this writing I have not been supplied any further information as to what actually failed.

CHANGING THE LANDING GEAR BUSHINGS ON YOUR VINTAGE THORP

By: Bob Highley

There comes a time in your T-18's life when things that you or the builder lovingly put in service when the plane was originally assembled need to be replaced. The rubber isolator bushings in the main gear fit this category. These are the ¼" neoprene washers and tube that serve to provide some shock mount to our rather stiff gear.

When the plane was assembled, the gear was most likely put on the fuselage before the engine was installed. We all look forward to the time when the plane is "up on the gear." It is a real pain to remove the engine for such a small thing as replacing these bushings. I looked at the job for a long time before I could not put it off any longer. The bushings had mushed out from between the gear and the firewall washer. The gear was hanging loose in flight and tracked poorly. Look at yours next time the cowl is off.

My solution to the replacement goes like this: Obtain the use of an engine hoist and a hydraulic jack. Lift one wing with the hydraulic jack until the wheel is off the ground. Now put tension on the engine with the hoist. This is a jack one/lift the other operation. The idea is to take the compression off of the gear mount. I built a removable floor in my Thorp, so the next part was relatively easy. With the floor removed, I was able to take the main gear mounting bolt loose and slip the rubbers out and put the new ones in. You will need the help of a small friend to get the bolts out if your floor is per the plans. Then you repeat with the other side. Doing it one side at a time keeps the gear aligned and things don't get too far out of hand.

Of course, you need to chock the non-raised main wheel and the tail wheel while all of this is going on. I also had chocks to control the movement of the free wheel.

I found the rubber at a local sheet rubber supply house. It is called gasket material in the trade and shore ratings and durometer numbers don't mean much to these guys. The kind I used has two layers of fabric fused into it. The original material that met Thorp's specs didn't hold up in compression and squeezed out.

You will be surprised at how the replacement of those bushings helps the handling.

Toe In/Out Correction

"In the for what it's worth" department, I have corrected my toe in/out and camber by sanding the axle stubs. Yep! I just set up the ole Shopsmith disc sander and carefully take off what ever is necessary to correct the problem. We are talking half degrees here. While on landing gear, I just discovered (and fixed) a loose gear situation. Yes, after 1600 hours, the rubber discs were shot! The called out "40 shore" rating is too soft. I learned that right away. My local dealer sold me some neoprene gasket material that has three layers of fabric molded in. It is 1/4 inch thick and cuts well on the band saw. I drilled out the 1/2 inch hole with a wood bore. The specs are in the range of 60 durometer. The gear is now solid and tracks well. If you have an older Thorp, you might want to check this maintenance item.

Bob Highley
N711SH, Ser. # 835

Editors Note: The first article on this page describes Bob's method of replacing the landing gear rubber.

More on Toe In/Out

I recently received a question concerning toe in, toe out and camber so Im forwarding my response in case someone else runs into a problem and needs the information.

1. Level the airplane, making sure that you account for the angle of the floor. (Most floors have a 1/4" per foot drainage rise or fall built in. One degree is one inch in 60 - actually 1 in 58 point something) Knowing that number you can ratio out just about any length; i.e. 1/2" in 30" is one degree, 1/4" in 15" is 1 degree, etc.

2. Put a greased plate sandwich under one wheel so you don't get any bias in your readings. (The gear splays out or in as you roll the airplane if there's any toe out or toe in)

3. Drop a plumb bob from butt line zero at the tail and at the firewall.

4. Snap a chalk line on the floor between the two points.

5. Lightly clamp a piece of 1 x 1 x 1/8 extruded angle 60 or more inches long, to the outboard rim of the wheels. You want to be able to measure from a point 30 inches forward and 30 inches aft of the centerline of the axle to the butt line zero chalk line. If the difference between the two readings is one inch you have one degree of toe out or in. Shim it to get zero, that's the best setting for low tire wear and the best handling. (Toe out produces a vector to reduce ground looping and toe in produces a vector to increase ground looping tendancies. Which way depends upon the effect of weight transfer to the outside wheel in the turn because it becomes the predominant steering force generator.) Fortunately, most new gear A frames are right on, and unless there has been some pretty rough useage they stay that way. Ken Brock's is made to aircraft standards, and I've never heard of one of his being off.

6.Use an accurate inclinometer of some sort, (a propeller protractor that measures in tenths of a degree is what I have used) to determine what your camber is. You want it to be zero at your normal takeoff gross weight. You can also work out a method with a square and a 15 inch long straight edge if you can't find an inclinometer. Just don't forget the floor angle error source.

7. Repeat for the other side.

8. If you want a quick and dirty overall measurement just use two 60 inch long straight edges, one on each gear, and measure the difference between the front and the back of them and ratio it out. If the difference is significant you'll have to use the above procedure to determine where the problem is. We used to get drilled, tapered shims for the 500 X 5 Cessna axle from places like San Val, All Aircraft Parts or Spruce Specialty but the last time I heard of anyone ordering shims from them they were very expensive. (See page 214 in the current Spruce Specialty Catalog) Sometimes aircraft salvage places have a box of them in a corner and will sell them at a reasonable price. In recent years, I've heard of some guys having a friendly machinest make them up.

Lyle Trusty

I got my shims from an aircraft junk yard in Sacramento. They come in various wedge angles and go between the axel stub and the landing gear strut.

Harvey Mickelsen
Fat Cat

More on Toe In/Out

Let me tell you about my recent experiences regarding wheel alignment. I noticed that one of the tires on my T/S18 was wearing off the thread unevenly. I also need to mention that ground handling was terrible to the point that I would avoid paved runways if possible. To solve the problem I was prepared to install one of Lyle Trusty's springs.When I removed the wheel fairing the offending wheel was visibly canted inward on the top (probably always was), upon checking I found both wheels with zero toe-in, one wheel canted as mentioned and the other at zero canted in. I did not relate this to ground handling at all but decided to correct the problem to reduce the tire wear.I begun to think about the reasoning for having the wheels toe out and not in, as everyone recommends, the answer is not obvious. On most airplanes and especially the T-18 the landing gear is swept backwards and outward. In this situation when one lands and the gear is deflected by the loading, the wheel will toe-in and the top of the wheel will be driven inward, or toward the center line of the plane. Now if the wheels are initially toed in and one lands on one wheel first (which will almost always be the case) the wheel will severely toe-in send the plane off in the direction opposite that wheel. Add a little bounce and the opposite will happen when the other wheel hits the pavement. (Pavement is grabby and is the reason I always did so well on grass).I used shims to toe-out both wheels about one degree and cant outward on top about one and a half degrees. Now when I view the wheels from a distance they stand with a slight outward tilt. It took me three iterations on shimming and one flight and landing to get it right. This realignment changed the landing/roll out ground handling of the airplane so completely that I have no thought about mounting the new tail spring assembly. Hard surfaces no longer concerns me.Never in my wildest imagination did I every think doing what was done would make that much difference! My recommendations should be obvious.

Bob Pernic ~ N966RP

More on Toe In/Out

I have access to a milling machine and made my own shims out of aluminum which we zinc chromated. Check out shims from a Cessna which I believe will work, you'll need a selection to work with. If you are very lucky perhaps you can measure how far you are from that desired, collect the shims and hit it right the first time, however don't count on it!

Bob Pernic ~ N966RP

I made my own shims. They are a lot cheaper than the commercially available ones. Just take a square of Aluminum stock the same size as the fitting on the end of the landing gear and the thickness determined by how much angle you want to change your toe-in/out. Drill the holes to match the landing gear. Clamp it in a vice and work it into a wedge shape by filing off one edge with a file. The cross section should look like a triangle when viewed from the top edge. It is a slow process; mine took about an hour each. Then I had to experiment to see which angle worked the best. My handling was helped far more by changing the angle of the tailwheel than by adjusting the toe out. I made the pivot lean forward from vertical at the top about 13 degrees. That really improved my ground handling.

Carl ~ N647C

A Question

Does anybody see any reason why there would be a problem if the top of the rudder skin was finished flush with the top of the top rib. Under no circumstances

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A Question, cont.

do I believe this to be better than John Thorps design it is purely for cosmetic reasons only and I don't want to compromise strength. I want to shape a fairing to match the fin and hold it in place with anchor nuts in the top rib. If anyone has done this or seen it done I would appreciate your thoughts.

Mick Obrien ~ AUSTRALIA

The question above centered on the consequences of cutting the skins off at the top rib rather than bringing them together as per the plans.
My experience is that I have had no problems in 1500 hrs of flight with my modification. The original design, while efficient, lacks some visual appeal (my opinion only).

Bob Highley
N711SH, Ser. # 835

Editors Note: Bob's T-18 has fiberglass fin and rudder tips. They look good and apparently cause no problems. I have seen many Thorps with this simple modification.

Power Loss

Gents,

I just flew an 8 hour XC around the southeast in my dream T-18. What a joy, until....I had a power loss on takeoff out of Western Georgia. Here's what I found out. The lineman fueled my plane WAY too full. I had fuel dripping out the scupper drain, as well as the vent opening. After normal taxi and runup, I attempted to takeoff. I got full power (2200rpm), and lifted off at 65kts. At about 3 feet in the air, my rpm dropped to 1500. I checked mixture, throttle and carb heat - all ok. I pulled power and landed straight ahead - no damage. My fuel tank has a vent hose (alum) that enters the top center of the (alum) tank. It runs across the top, down the side and out the bottom of my plane. I have no boost pumps. My A&P and I duplicated the situation. First we disconnected the fuel line at the carb in order to watch/measure the flow. Then we overfilled the tank. As soon as I put the gas cap on - fuel selector off - fuel SHOT out the vent opening. When I turned the fuel selector on, the flow to the carb was VERY restricted. As soon as I popped the fuel cap off, all flows returned to normal. After draining about a half gallon out, we could no longer duplicate the problem. I've been flying fine since. Bottomline, do not allow anyone to fill your tank to the top. The weight of the fuel in the vent line did not allow proper vent airflow which prevented proper fuel flow to the carb.

My best guess is that a boost pump would have prevented the power loss. The reason I say that is that the fuel flow increased when the tank cap was removed. I assume a boost pump would be able to overpower the weight of the fuel in the vent line. I never considered a boost pump until now.
Anyone with a boost pump care to comment?

Jim Grahn ~ 831GR

Editors Note: This event and Jim's question on the boost pump has opened a very large can of worms. Following are some members comments.

Without a fuel pump, it is important that the forward-facing tank vent on the fuselage bottom acts to pressurize the fuel tank in order to overcome the cracking pressure of the carburetor float valve. "It assists the head-pressure of the fuel in the tank, so to speak". A quick check of this is

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Comments on Power Loss

to attach a short hose to the fuselage vent and pressurize the tank with your lung-pressure. If it won't pressurize, the vent system is disconnected somewhere. Trust me, the engine doesn't run very well below a 1/4-full to 5/16-full tank level if the vent hose is disconnected!

Ed Pernic

To add my two cents to this incident..... I often fuel my Thorp all the way full to the brim. What I notice is that on climb-out I get a smell of fuel coming into the cabin - Which I suspect is going backwards down the vent pipe and flowing out along the belly and in through an inspection cover. Smell soon disappears after burning off a gallon or two. If I only fill to an inch below the brim then the smell doesn't happen. I have a Lyc O-320-E2D, 150 hp engine, with fuel pump. I have had no problems with fuel starvation due to the vent issue. But I have had vapor problems in my Thorp and in another T-18 using auto fuel. In my Thorp I put blast cooling onto gascolater, fuel pump, and fuel flow transducer. I also do not use auto fuel anymore.

I know there is much controversy over the need for a fuel pump in a Thorp, however having run hundreds of hours of carburetor tests over the years for a manufacturer of aircraft fuel systems, I do not feel the Thorp has anywhere near sufficient head pressure in a gravity feed configuration to be safe. Yes, the airplane will run, but it's not safe. There is just not enough head pressure to ensure uninterrupted fuel flow in all typical flight regimes reliably.

Another problem that I had was a pinched vent line. The vent line from the top of the tank that went out through the bottom of the airframe was all rubber, except for the last 6 inches going out the belly. Going around the curve of the fuel tank at the top forward end the fuel line had (over time) been compressed flat severely restricting the opening. It was a hard problem to locate, and looking at the bottom of the vent line it looked to be an aluminum tube. Further investigation revealed that it changed to rubber and removal of the tank was required to find the problem. Replacement was an aluminum tube.

I was flying a friends T-18 on a hot sunny day when the engine quit running - just like someone shut the fuel off! I unfortunately was low to the ground over inhospitable terrain and had only a few seconds to "do something". I did the usual of slowing the airplane to best glide, checking mag's, checking the fuel selector, carb heat, etc. I picked a landing spot and as one final try I pumped the primer - Amazingly the engine caught and started producing power, but only for the length of the primer pump! So I pulled the primer out again, however it takes time to refill as you know..... In any case it took me 45 minutes of flying, pumping the primer and soaring like a glider, to reach the nearest airfield. When I landed I tried draining the gascolator but all that came out was steam! The airplane had no fuel pump, no blast cooling on the various engine compartment fuel components, and was running auto fuel. I think if any one of those variables had been different I would not have had the problems (Or lived a lifetime in those first 30 seconds).

There's my two cents - hope it helps.

Ross

I have a fuel pump on my engine and I have filled my tank on many times to the very lip. I always have a fuel smell during the first 20 minutes or so and I never really understood why and how I was smelling it. Now it just makes sense that it must be coming out of the vent tube. This being the case it seems my situation is very similar to the power loss problem but I have never had that problem. I suspect it's because of the fuel pump???

James ~ N2NE

Comments on Power Loss

I have a small hole drilled in the gas cap to provide emergency air to the tank in case the main vent gets plugged, I think is .040. I have been flying a 180 HP Thorp for years without a pump. A fuel flow test with 7 gallons in the tank indicated 18 gallons an hour.

William Beswick

Thank you all for the help and encouragement. This is a great use of email and I don't know why I didn't know about it before. Now, the fuel flow test. I tried the test some time ago right after I took the pumps off. I used the FAA system, but I'm not sure I did it right because the flow was a little less than the FAA recommendation. I started with 9 gallons. I couldn't dig a tail wheel hole so I put the mains on a pair of these auto ramps (about 10 or 11 inches high). It has been sometime since I made the test and I don't remember the exact results. I have ground run the engine several times to check some instrument problems (solved). I haven't made a full static run, but I have had it to 1700 rpm and very smooth. Any other ideas on proper fuel flow testing? Thanks a bunch!

Bob Clayton

I had a partial power loss just after lift-off on a short runway that had a four lane divided highway at the end. In hindsight it probably would have been smarter to dive it into the chain link fence but pumping the throttle (accelerator pump) kept it surge running and by the time I made it to the crosswind runway the engine cleared up. I now use an electric fuel pump for takeoff and landing and anything below a thousand feet. Two deadsticks is more than enough.

Hurant Karibian

I have to respectfully disagree with the theory that a gravity feed system on a Thorp is unsafe. After putting the airframe in an extreme climb attitude (on the ground), with just a couple of gallons of fuel, I was able to measure a fuel flow rate double that required by an O-320 at full power. However, I think it is important to have an electric boost pump looped into the fuel system with a check valve that will guarantee positive pressure for critical phases of flight, such as takeoff and landing. I originally had a defective check valve, which resulted in no additional pressure from the boost pump. During takeoff, hot day, second flight, auto gas, I got a burble because of vapor lock. Since I have fixed the check valve, it has performed flawlessly. Also, if you are using auto gas, make sure you use the highest octane available. There is also an inexpensive vapor pressure testing device which is sold by Peterson Aviation (the auto gas STC guys), that will show you if the vapor pressure of your auto gas is safe. It is amazing the vapor pressure difference between the winter gas formula and the summer formula.

Jimmy Cash

1,300 hours on my T-18 included 200 with a boost pump and check valve. I got rid of the pump and valve, too many things to leak and fail. I have two tank vent tubes pointed forward, both with screens on the face. One bug will not take me down, and I trust gravity to keep feeding! Build a good vent line, use quality aircraft hard-line that will not kink...

Tom Kerns
N10TK

I am flying N8TT, Jim Critchfields creation and he has both the engine driven pump and an electric pump installed along with the vent to pressurize the tank should both fail. I have been in all

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10TH ANNUAL THORP GATHERING
SEPT. 1, 2001 PORTERVILLE, CA

By Hal Stephens-N8TT driver.

When the summer is coming to an end and the weather could be less than perfect—hot as hadies or laced with frontal activity it is a perfect time for a John Thorp Gathering.

I believe it was in the fall of 1965 his new design for a "sport" aircraft was debuted and soon thereafter many were under construction throughout the country. A shop was opened in a suburban area of Los Angeles for builders to come and work on their construction under the guidance of the guru, John Thorp. Many airplanes were hatched from that early beginning. And so it was.... a beautiful late summer day when the Tenth Annual Thorp Gathering took place in P'ville. Porterville is a salt of the earth agricultural community in the lower San Joaquin valley of California just a few miles north of Bakersfield and just west of Mt. Whitney, the highest mountain in the entire continental United States. Yes, there could have been a frontal system that traced its way across the state as last year or it could have been 103 degrees in the shade, but on this day, John's day, it was beautiful. Classic Sport Aircraft's Frankie and Mike Archer hosted the Gathering. They put together a meal to be dreamed about. Deep pit beef barbecue with all the trimmings including lemon cake desert was the fair. Drinks: all you wanted in water, colas, wine, and more. Mr. and Mrs. Archer provided transportation around their fair city for the flyers and the flyers gave them the opportunity to show off their "under construction tri-gear" Thorp S-18. Will it be called an S-18A, who is to know?

Once again Lyle "Dad" Trusty as he is called on the Internet conducted a very successful two and a half hour Forum talking about the speed mods that can be put on the Thorp Tiger and as well provided time for the vendors to mention progress they are making in behalf of this great airplane. Richard Eklund of Eklund Engineering talked about progress being made with precision pre-cut metal components for the T-18 for which he holds the rights. Mike Archer, Classic Sport Air, discussed the Tri-Gear development including the new engine design using General Motors components. As well, he led discussion on fuels, which will be able to be used in the future (his background was in fuel supplies). Dean Cochran was pressed into talking about his precision air vent, which can be made available through him or other suppliers, which are under license to sell the vents. T-shirts by John Evens featuring the T-18 were offered and sold hotly at the pre-dinner raffle. Ken Brock whose reputation is well known for precision machined parts for the aircraft industry and who's personal Thorp T-18 was used in the CAFÉ performance tests by the AOPA Air Safety Foundation gave the group several ideas to better their aero machines. Danny Eggleston, a new builder, explained why he chose the Thorp S-18 over the many "more popular" designs that have caught the fancy of the kit-building crowd. He believed the Thorp to be a faster, more proven and classier design than most others available and at a much better price for components.

Awards for the Longest Distance was given to Walt and Bev Giffin who flew some seven hours from Pueblo West, Colorado to get to Porterville. Dean Cochran lives just a tad farther but took the direct route over the Rockies and did the flight in about five hours. Tom Worth came from Washington State, which took about the same time as Dean's flight. Shortest Distance was mentioned to Mike Archer who just opened his hangar door but no plaque was awarded.

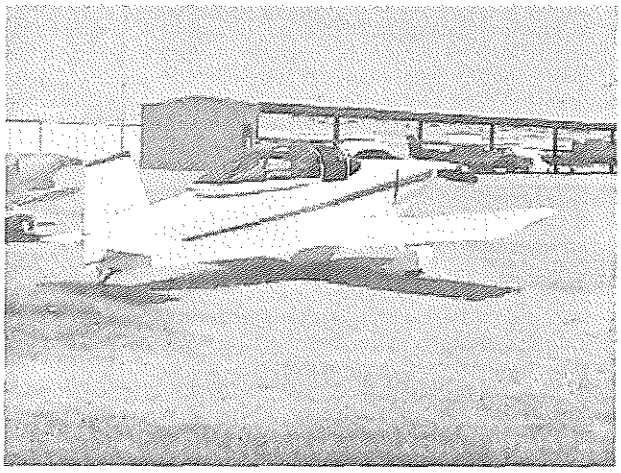
Mel Clark, the oldest pilot who flew in, and who resides in the Los Angeles area was awarded two plaques one of course for the Oldest Pilot. In the early days of the John Thorp shop, Mel assisted John and the builders, thus having no time to build a plane for himself. The years changed that and for the past 25 or so years Mel has been building.

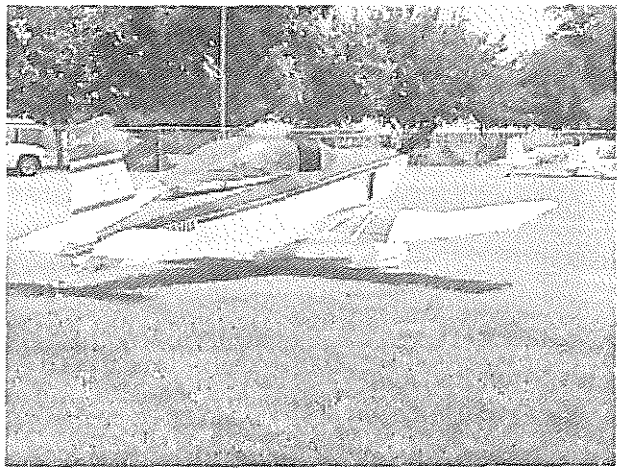
cont next pg.

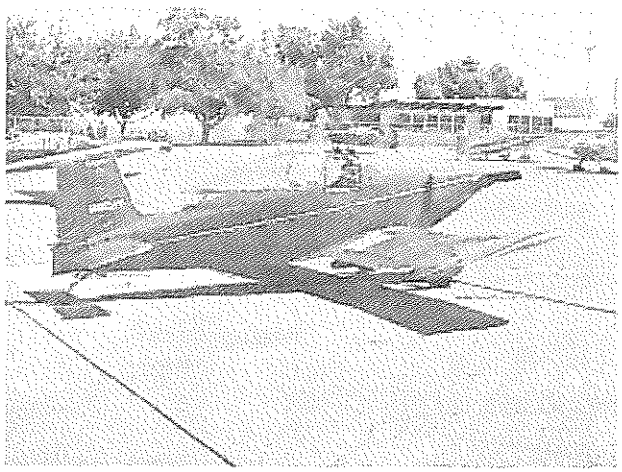
Porterville, cont.

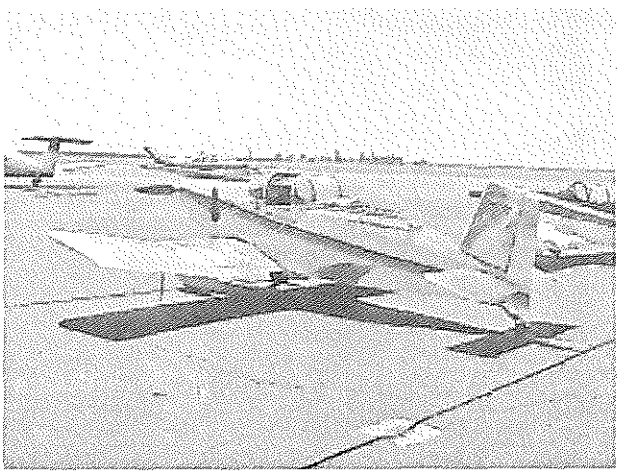
He has also attended almost all of the P'ville Gatherings, asking questions and taking pictures. This year he had his Thorp T-18 finished and pretty it was! So pretty the ladies chose it as Ladies Choice for 2001 and gave him his second plaque.
Will there be an Eleventh Annual, P'ville Gathering? From the enthusiasm expressed by the flyers, it seems highly likely I'll coordinate yet another one. As to the Labor Day Weekend, a change from that date seems likely also. Comments and concerns would be appreciated. My thanks to the "Gathering" Team, Phil and Phyllis Key-N975PK, Jim and Lil Critchfield-N8TT builder, Rena and Mac Booth-N1488, Mike and Frankie Archer-builder, Carl and Sue Daughters-N647C, Lyle and Anne Trusty-N851LT as well as to Nancy Stephens, my wife.

Pictures From Porterville Gathering

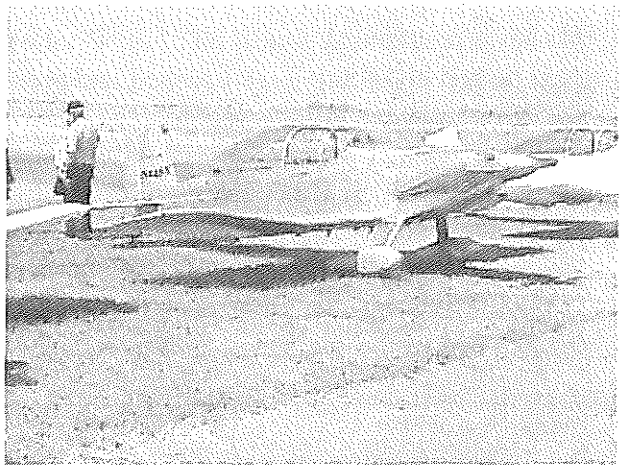


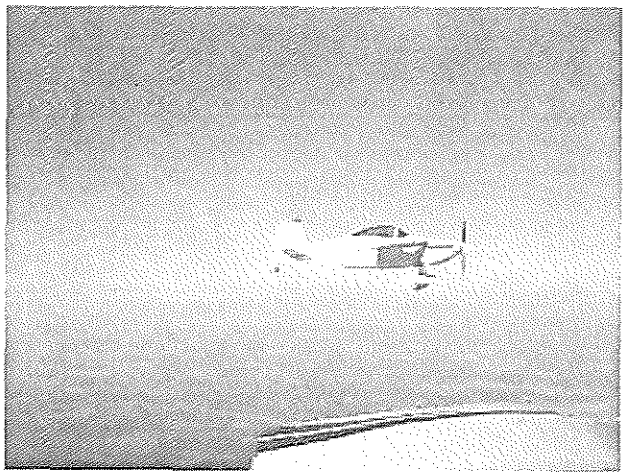


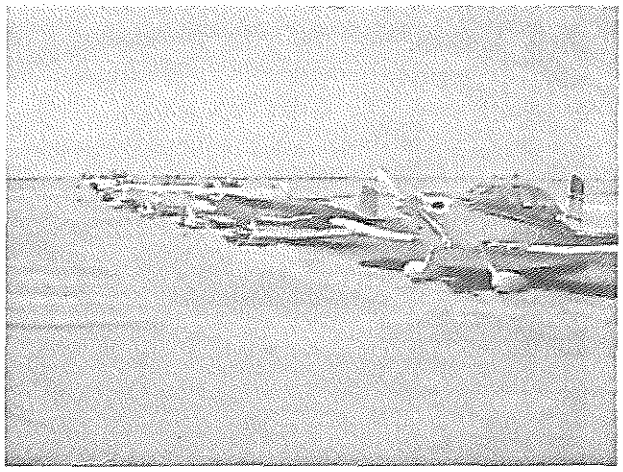


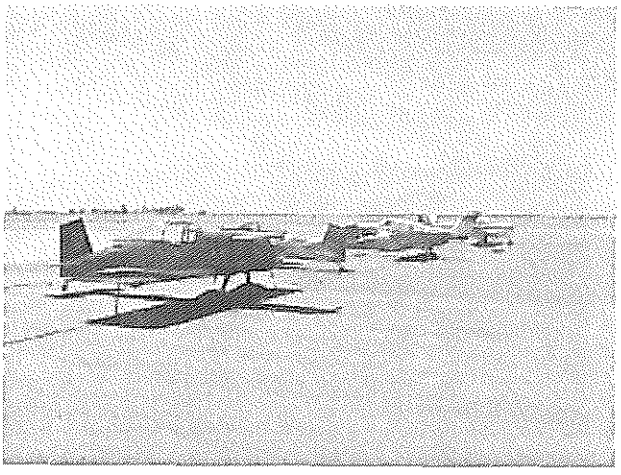


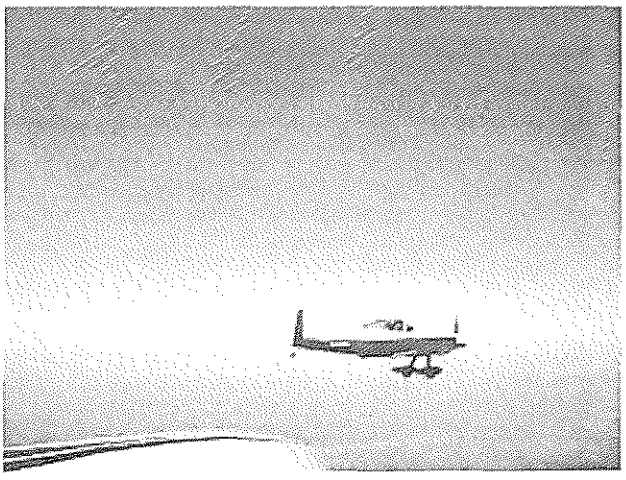
More pictures from Porterville











Comments on Power Loss

kinds of attitudes, including inverted and have had no loss of fuel nor do I smell any fumes in the cockpit when the tank is at the maximum as I have installed new gaskets on the fuel cap to keep the fuel inside the tank. As I pilot, I feel very good about having the added insurance of the three (3) systems feeding the engine. Try it, you'll like it!

Hal Stephens

I've been flying 647C for 0ver 700 hours now. I have no fuel pump. Gravity has never failed in all that time! I do get some smell of fuel if I fill the tank to the brim and I have verified that this is fuel that siphons out the vent tube, so I just fill to about an inch below the top. Don't worry! Just be sure you have sufficient fuel flow as measured by a timed test before you fly.

Carl

I am surprised at the continuing controversy over gravity feed. John Thorp told me personally that the T-18 fuel system installed PER HIS DESIGN worked fine on gravity. Gravity never fails. But you have to have the vent line correctly installed and the tube positioned properly so that it gets ram air input from the prop blast and relative wind. John had gravity feed on his personal Thorp which was a 180 hp 0-360. That is what I have been running for 21 years. Every drop is usable. I routinely fill it up to the brim and even overflow the scupper on occasion. Fix the vent system, don't add more complexity. If it ain't there, it can't fail!

Gary Green

Amen Gary!

Richard Eklund ~ Eklund Engineering, Inc.

Letters From Members

The addresses for the two publications I mentioned during the lunch/forum at Oshkosh 2001 are:

Skyranch Engineering Manual ~ $20.00
Sacramento Skyranch
6622 Freeport Blvd.
Sacramento, CA. 95822
800-433-3564
web: www.sacskyranch.com
email: john@sacskyranch.com

Bob Nuckels
Aero Electric Connection Manual ~ $50.00
6936 Bainbridge Rd.
Witchita, KS. 67226-1008
web: www.aeroelectric.com

Both of these publications will save thousands of dollars of your money and literally years of aggravation. I learned more about engines and electricity from these manual than twenty five years as an A&P/AI working on airplanes. I feel so strongly about the Skyranch engineering manual, I bought one for every aircraft owner that I do an annual for. I have also given them to several pilot friends. If you fly, you must have one ... period! The Aerolectrics Connection Manual is a must for any aircraft builder. It clearly and in plain English, explains aircraft electrical systems completely, including batteries. The first chapter alone will save you ten times what the manual cost. A must have.

One topic of discussion at this years forum was T-shirts. I finally located the ink printed t-shirt vendor and had one made up. I must admit that it is not very flattering. A T-18 sitting on the ground with the canopy open. Jim Willis, 531 Haylett St. Neenah,WI. 54946 (417)729-9068 said that if we will get together and select a better view or a good photo, he will have his artist draw it up and cut the template. He is willing

cont pg 14

Members Letters, cont.

to give us a club discount price of less than $10.00 each, 100% cotton, and a choice of colors. Lets kick this around this winter and come up with something for him to print. I vote for a good quartering or full side view of T-18 number 1, Bill Warwicks T-18 "Tiger"

Matt

Editors Note: I think this is a good idea. Will someone offer to run with this ??

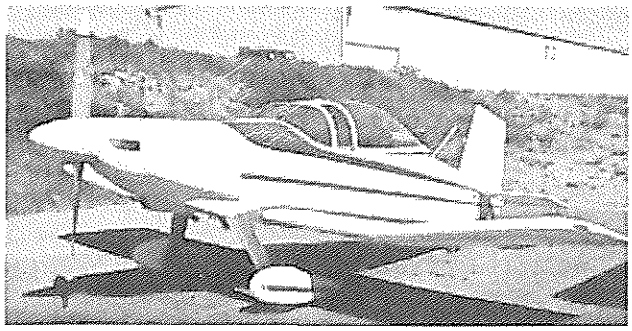
Hi guys,

This is our new plane (100hrs) We are based near Newburg, New York State. Near the Hudson River. It's my dads second T18, my first.

We used an O290D2 out of a 1952 Piper, which now has 1000 hrs and a new top overhaul. The wing is Sunderlands new NASA airfoil, and we used wide-body mods, tall gear, and the tail mods. It's 826 lbs. empty.

We also went a tad thicker on the 2 side sheets to cut back on the oil-canning (it works). The only parts we installed "used" were the fuel tank and the engine. It's VFR, and we completed it for $19,500.

Bill and Elmer Hymen, New Jersey



Bill and Elmer's Thorp

Members Letters, cont.

I am by no means an aircraft engine expert but I have been a life long fan of anything flying with a particular interest in powerplants. Until you get into the 300Hp+ area there isn't really much success in auto engine conversion due to many factors. Weight and torsional stresses being major problems coupled with the fact that it is just very difficult to get the HP and the torque in the RPM ranges we need. Belted Air Power has a very nice GM V-6 fire wall forward package for the RV-6. It works well having been designed by a "team" of dedicated engineers and the installation in the RV-6 is attractive plus fits inside the cowl. Bottom line, it cost as much as a first run overhauled 0-320 and even though comparable in HP, the losses through the belted reduction unit reduce overall performance.

My logic is this, while I take great interest in the efforts expended by those developing the auto conversions, I do not have the time available to adapt them to an airframe not designed for them. I flew behind an 0-320 in a Cherokee for 11 years that always seem to be quite buzzy. When I overhauled it I was determined to cure this so we balanced everything. I used a set of balanced pistons and rods, and everything the spins was checked for straitness and balance. That solved lots of problems but it was still not a smooth as another Cherokee that was owned by a friend of mine. So as an experiment I borrowed his prop. Same prop model and MFG as mine but with his prop my engine was as smooth as a sewing machine. Even with a static and dynamic balance my prop was never as smooth as his. Something in the makeup was just different. Ideally, if you have tried everything else, find (borrow) a few props that you can experiment with and see if you just don't have an unhappy match up front.

I am not all that experienced with the T-18, having just become interested. However, if someone really wants to adapt something different, then there

cont pg 15

Members Letters, cont.

are some very smooth engines around at reasonable prices. The continental 0-300 is a 145Hp six and is as smooth as they come. Weight compares well with the 0-320 and the parts are cheaper. Well, at least they used to be. Has anyone flown one of these in a T-18? There are plenty of swifts out there flying behind them.

Steve Ivy
Houston

I cannot tell you much about the building process and I will not try here as I have been an owner now for just 2 years. I can tell you this that the finished product is worth every minute and dollar invested. The T-18 / S-18 is an exciting and good looking little airplane, fun to fly and very quick. I do most of my cross country flights at 180-200 mph range with the O-360 180HP engine. There may be easier planes to build out there, cookie cutter airplanes, but if you decide to build a T-18 I can say you will have lots of help from this forum and join a small but very proud group of owners and flyers.

James N2NE
McMinnville, Or.

Editors Note: Pretty much says it all doesn't it.

I am in eastern KY, based at the Big Sandy Regional airport (K22). I am An A&P I/A and an EAA Technical counselor. I am retired and have lots of time to work on airplanes, and have all available data for the T-18 and S-18 that I own. If an owner wants to get his hands dirty and help with his annual condition inspection thats OK.
Phone: 606 789-7379
Cell 606 424-4097
av8rus@bellsouth.net

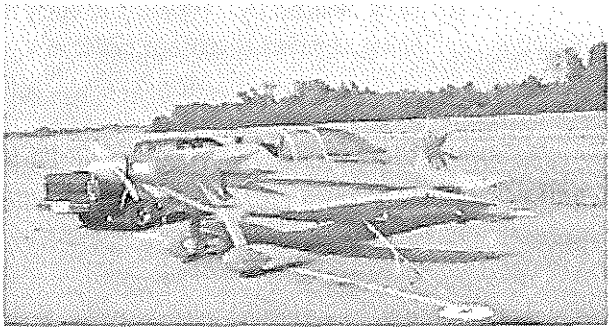
Bob Morrison

Members Letters, cont.

Hello all,

I have finally taken ownership of N314JA. After months of waiting to purchase, being weathered in near St. Louis, and getting grounded for 2 weeks in Cullman, AL due to the WTC incident, I finally flew her home this weekend. I must say it is a great flying plane. Now I just need to figure out how to land it without feeling like a basketball :) Attached is a picture of my new purchase.

David Taylor N314JA
Warner Robins, GA



David Taylor's T-18

During my annual condition inspection on Fat Cat. I noticed some loosness of the elevator anti-servo tabs. Upon investigating I discovered that one of the 3/8-16 check nuts on the Jack screw was loose. See plan # A-701 "Installation Elevator Trim Jack Ass'y" and #704 "Jack Screw Elevator Trim Syst.". Plan #704 calls out two #40 drill holes to be done on assembly. Plan A-701 calls for 3/32x1/2 roll pins 2 req'd. through the nuts. I apparently missed the callout since there were no roll pins installed allowing the nut to loosen after three years of flying. If the assembly drawing had called for the drilling of the holes I probably would not have missed this. I recommend that all builders check their memory or their jack screws for the roll pins.

Harvey Mickelsen ~Fat Cat N118HM

S-18 Bellcrank Alignment

By: Bob Pernic ~ N966RP

To have a smooth operating aileron on the folding wing T-18, it is absolutely necessary that the two push/push bell cranks at the wing detaching point have the same axis of rotation. Anything but the exact same axis will always bind on one extreme or the other. Couple this binding with that of the other wing operating similarly, there will not be good feel on the stick as it is moved through its extremes. The following is what I have learned to be a quick and very accurate way to accomplish the task of getting the two bell-cranks on the same axis.

1: Build the center wing per Lu Sunderlund's plans, mount the Bell-crank attach fittings permanently on the rib.

2: Build the outer wing complete but with two exceptions; (1) When making the outer Bell-crank attach fitting do NOT drill the pivot holes. Do not use a center punch to indicate where the center of the hole should be. Assemble the attach fittings temporarily to the rib using clecos or screws. (2) Do NOT rivet the main rib that the bell-crank attaches, use clecos so the rib can be removed.

3: Make the modification to the wing joint and skins as necessary to get it to fit and attach perfectly when folding and unfolding. (I found it necessary to roll over the inside hidden edge of the appropriate skin).

4: Once one is satisfied with how the wing fits and slips together, remove the rib and main attach fitting from the outer wing. Attach the rib to main attach fitting in a manner that imitates exactly in dimensions as it was when fully assembled in the wing. Likewise with the rear attach fitting. (photo #1)

5: Carefully grind the end of a slightly undersized 1/4-inch rod (shank from a cheap bolt) to a nice flat end. Drop the rod into the pivot holes of the center section bell-crank attach fittings. (Photo #2). Place a 3/16-fender washer with its center hole drilled out to a nice 1/4-inch hole, over the rod.

6: Place the main fitting/rib/un-drilled bell-crank assembly onto the center section, simulating the outer wing being attached. (Photo #1)

7: Slide the rod upward until it's in contact with the bottom of the two undrilled bell-crank attach fittings. While holding the rod tightly against the fitting slip the washer upward against the bell-crank fitting, clamp the washer and fitting together with a pair of vise grips. (Photo #3) This now locates the first of the two holes needed to be drilled.

8: Remove the rib assembly, secure the washer with a second vise grips, remove the fitting from the rib and drill the hole. (Use a drill sharpened with a rather flat cutting edge so the drill will center itself in the washer.)

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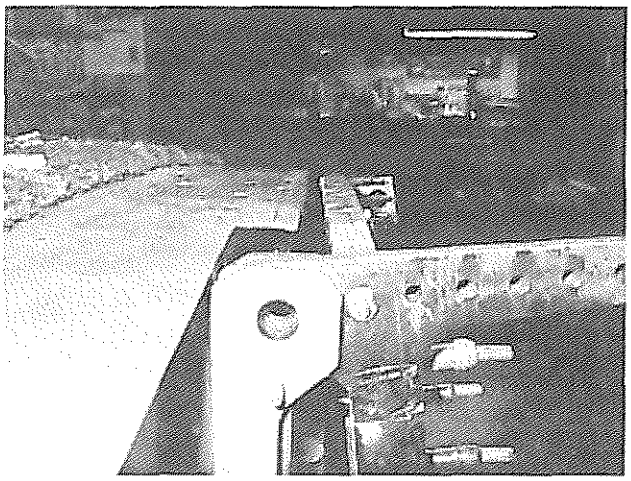
S-18 Bellcrank Alignment, cont.

Assemble the bell-cranks per the drawings; adjust out the clearance with the screw provided. (Photo #4) Now you can permanently install the main attach fitting and rib into the outer wing, being assured of proper alignment.



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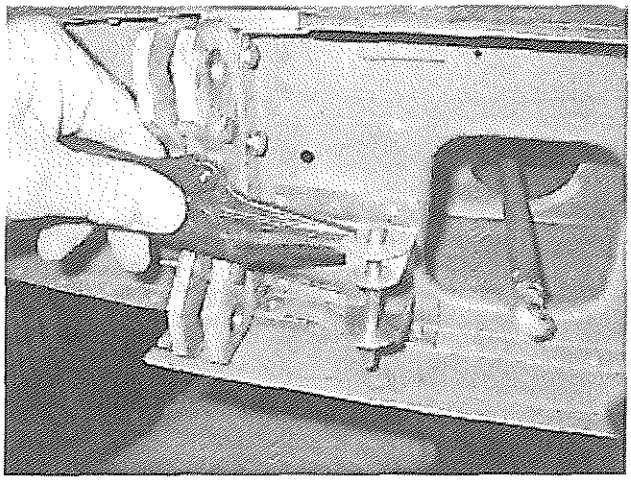

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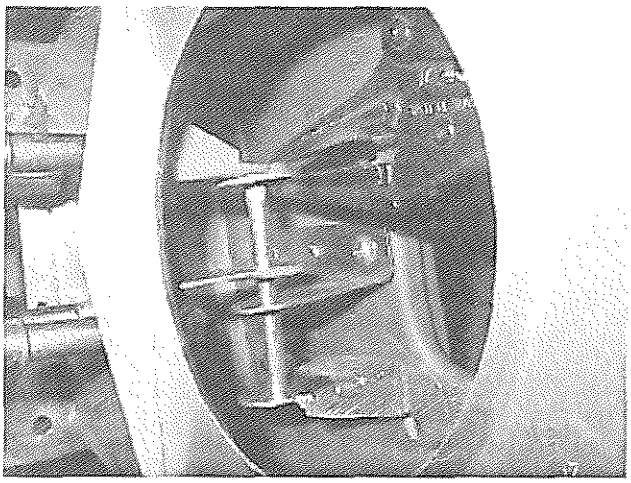

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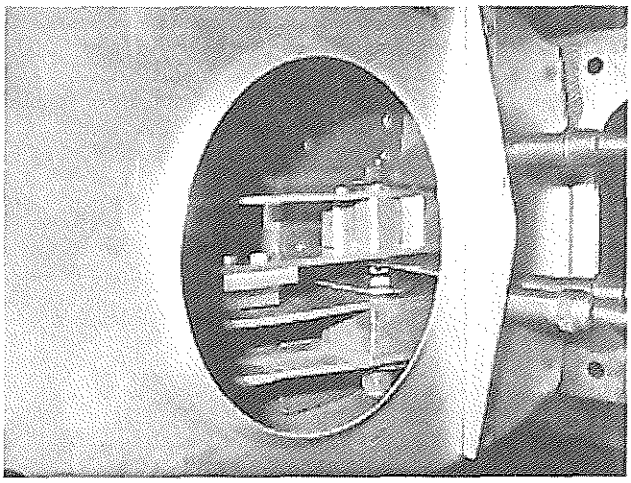


Photo# 4

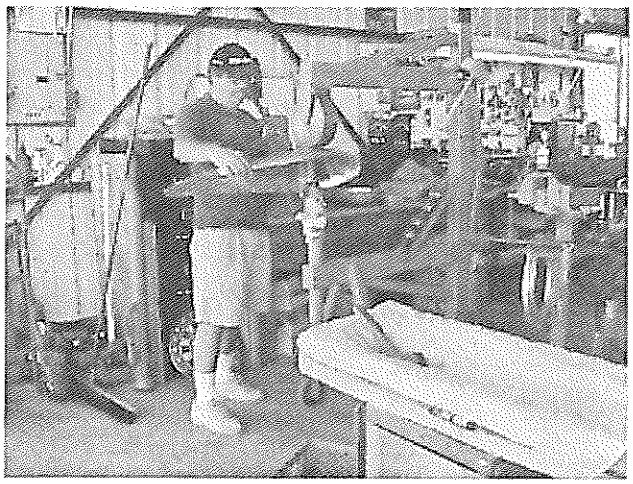
On The Lighter Side

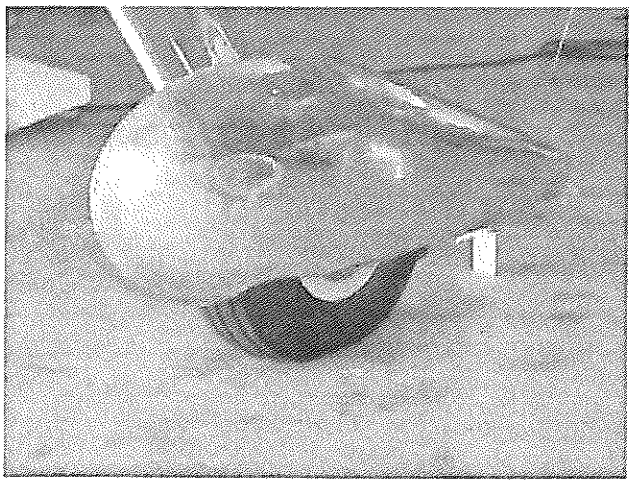
A Cobra helicopter practicing auto-rotations during a military night training exercise had a prob lem and landed on the tail rotor, separating the tail boom. Fortunately, it wound up on its skids, sliding down the runway doing 360s in a brilliant shower of sparks.
As the Cobra passed the tower, the following exchange was overheard:
Tower: "Sir, do you need any assistance?"
Cobra: "I don't know, tower. We ain't done crashin' yet."

Metal Wheel Pants

Pounding out a pair of wheel pants for my Thorp. The mold for the wheel pants was made from a commercial fiberglass wheel pant that I cast in concrete. I put a towel into the cavity and beat the .040 5052 H32 into it.

John Kerr





Bent Wingtips?

Does anybody know whether wing tips with fins turned up or down really help, and turned which way?

Hurant Kariban ~ 407HK

My understanding is that "bent" wingtips help to prevent the high pressure under the wing from escaping, much like a longer wing. I read somewhere that a small extension would generate nearly the same additional lift whether straight, bent up, or bent down. STOL kits with curved wingtips are reputed to be very effective.

Rich Woodcock

I remember seeing a Thorp some years ago at Oshkosh (late 70's) with down turned tips. My dad asked the owner (i don't remember who it was) if it helped performance. He said he did it for the looks and made no appreciable difference in performance.

Doug

I'm told that John Thorp used to say that the important wing parameter is the length of the trailing edge. Turned up, turned down or sheared wingtips all lengthen the trailing edge and have the same (slight) beneficial effect.

Harvey
N118HM

I don't recall seeing any on a Thorp, and I have photos of *numerous* Thorps. Of course, the fun part of experimental aircraft is getting to do something new or different. Well, to experiment, if you will. That said, the Horner (I know that's misspelled) type wingtips will probably do as much good as anything else.

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If the amount listed on the mailing label, above your name is $50.00, then this will be the last issue you receive, unless you bring your dues up to date.

Please continue your support of this valuable exchange of ideas, building tips and safety information covering John Thorp's greatest design. Please make checks payable to: Roy Farris P.O. Box 182 Noble, Illinois 62868. Make check for $25.00 US, $30.00 for outside the U.S.

Bent Wingtips,cont.

These are the wing tips found on most of the RV-x aircraft, i.e. the upper surface of the wing extends to the tip and the lower surface of the wing tapers up to meet the upper surface. And as Mr. Woodcock noted, the effective span (what the air thinks the span is) is increased. Go to http://www.vansaircraft.com/public/rv-3int.htm and scroll down to the front view of the RV-3 to see what I mean.

Andrew Robinson

Fuel Guages

I'm currently building my wings (folding type) and to the point of needing fuel probes or sending units. I will be using three units in all. One at each of the leading edges of the outer wing sections (for the four outermost cavities) and one for the fuselage mounted tank as noted in the 514 dwg.

Because of the dihedral you will need to put two or more sending units in the tanks. Wire them in series, and each will have to be calibrated for the fuel level at the sending unit point. SKYSPORTS used to have a drawing that illustrated

cont next col.

Fuel Guages,cont.

I have a S-18 with fuel in the wings.. I installed a prox switch or float switch in the end of low end of the tank, calibrated it to close at about 1 1/2 gallons of fuel in the tank, this in turn turns on a red lite next to my main fuel gauge. Did the same for the other side. Two LEDs, a switch to arm the indicator lites, and a momentary position to check the LEDs. Been flying this way about five years, no problems. I used a four way fuel selector valve, left wing main, right wing , and off. Take off and land on the main tank, cruise about 20 minutes left side, switch right for 40 minutes, back to left until tank is empty [LED on], then back to right tank until LED on, finish flight with main tank. Sixty three gallons goes a long way!!!.

Bill Williams

For the discussion on fuel gauges: There is a note in the latest RVAtor to caution folks of inaccurate reading on capacitance type fuel gauges when using fuel containing either MTBE or alcohol.... A word to the wise...

Joe Gauthier

T-18/S-18 Thorp Newsletter
Roy Farris
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Noble, IL. 62868
Phone: (618)723-2594
email: rfarris@wworld.com

December 2000

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