JOHN THORP: Quite a few of you have recently inquired of the state of Jon's health. I recently had a letter from him in which he said that his condition (Parkinson's disease) had worsened to the point where he could no longer continue builder support and wanted to discourage new starters from buying further sets of plans, etc. He said he had been approached to turn over plan sales to someone else, but at this time he was not inclined in that direction. I know that ever since he was forced to hire a lawyer to defend himself from that ridiculous lawsuit he has been very gunshy on the liability angle, understandably so, too.He once told me that he felt that simply selling the rights to plans would not automatically absolvehim from liability. Whether that's true or not, I don't know.

It pains me to learn John's physical state and outlook on life has gone backwards. I'm going to be optimistic and hope that at a later date he will see fit to turn over plan sales to some responsible person that would be in a position to give adequate builder support and advice where needed. The T-18 is simply too fine a design to simply drift off into limbo and fade into obscurity. I'd also hate to see bootlegging of plans get started, as they have on some other designs. The very fact that the design has evolved from a plain Jane, no frills, open cockpit, minimum airplane, powered with a surplus engine of 125 hp, into a sophisticated high speed Mercedes of the sportplanes, with the capability to go anywhere in the world, to fly at 26,000 ft., handle weather encounters as well as bigger airplane counterparts, fold its wings and go home on its own trailer handle a 200 hp engine and constant speed prop,and fold its wings and go home on its own trailer, is the highest of tributes to the basic T-18 design concept. Statistics published by Aviation Consumer magazine in a recent survey of the relative safety of homebuilt designs put the T-18 at the top of the list. What accidents have happened have shown a very high degree of survivability, certainly due in part to the role the rugged landing gear plays in very high energy absorption and the protection it affords the occupants from engine penetration thru the firewall.

N.L. UPDATE

In any case we'll continue to keep the T-18 Newsletter going for some time yet....as long as there is still a need of it. I'm happy to report that since the last N.L. was published (in which I made a request for all members to bring their minimum contribution level up to $6) that a considerable number of you have responded and several have sent in more than the requested minimum, so we now have enough in the "kitty" to keep going for a few more issues at least. A few contributions are still trickling in, saying "Sorry to be so tardy, etc.".

In case you are wondering why it has been so long since N.L.#54 was sent out until this one is because our chapter offset press that I use to print has been out of service since early Jan. A part for it was accidentally lost and it has taken all this time for the mfgr. (A.B.Dick Co.) to get a new part to us. Having the N.L. printed commercially was out of the question for our budget, so there was nothing to do but wait. Sorry it's taken so long, but it was one of those things.

HELP WANTED

Along with expense money, one of our constantly occurring needs is a constant flow of INFORMATION FROM YOU THE BUILDERS! The following letter on the next page is an excellent example of what we need from those of you with airplanes that are now flying. This letter is from DON THOMSEN, and I have reproduced his complete letter as sent:

April 6, 1982
112 Station Ave.
North Hills, PA 19038

Mr. Dick Cavin
T-18 Mutual Aid Society
10529 Somerton
Dallas, Texas 75229

Dear Dick,

This must be the fifth or sixth time I've started a letter to you and never finished. First I wish to thank you for the super job you are doing with the T-18 Newsletter. I have almost 300 hours on my T-18 and still learn something from each newsletter

In the last issue you said some very kind words about an orange and yellow T-18 at Oshkosh; this was mine, thank you.

I fly from a 2100 foot strip and would like to offer my solution to short field landings. I have found a high, slow approach with full flaps works best for me. A 90 to 95 mph final, decreasing to 80 to 85 mph over the fence, seems about right. The rate of decent is controlled with power. At light weight there is a little float, at heavy weight almost no float. Three point landings are used exclusively. Flaps are retracted at touch down and very little braking is needed.

Most modern aircraft are flown to the flare with power. I am uncomfortable trying to land a T-18 as I was taught in a J-3. This may not be the best approach for everyone but it works for me.

I lost the form you gave me at Oshkosh so here is some data on N-88DT:

Standard wing and fuselage		
Empty Weight	932#	
Engine	Lycoming O-290-G	
Prop Sensenich	68-70	
Static RPM	2150	
Max RPM	2800	180MPH I.A.S.
Cruise RPM	2500	160MPH I.A.S. 6.4GPH
R.O.C.	1000-1100FPM	Gross Weight
R.O.C.	1500-1600FPM	Avg.Weight (pilot only)
Best R.O.C. Speed	100-110 MPH	

Equipment:

Full Gyro Panel
Dual Nav Comm
Glide Slope
Marker Beacon
ADF
Intercom and Audio Panel
Wing Leveler

(CONT'D) Center of Gravity 16.82-30.26 %

The C.G. will stay in range with any loading 0-75# baggage, 3-29 gallons of fuel, passenger to 200#, and I weigh 150#.

The aircraft seems to exhibit neutral stability at all loadings. The wing leveler(Doug Garner's design with my vacuum servos)is a great help on cross countries. I am working on a pitch axis with an electric servo. I am also looking for any information on an in-flight adjustable propeller that would fit my engine. A metal hub with wood or composite blades would be ideal. Here is my idea on exhaust heat exchangers. The difference in area between the O.D. of the pipe and the I.D. of the muff must equal the area of the carburator intake. A larger area means less heat transfer, a smaller area starves the engine. In order to get maximum heat transfer, the air to be heated must scrub against the exhaust pipe.

HEAT MUFFS

Here's an easy way to make a heat exchanger. Cut two pieces of .125" 6061 aluminum with two hole saws. One the size of the pipe and the other the size of the muff. You wind up with two donuts, these are the muff supports. Weld two stainless angles on the pipe (90 degrees apart) at the location of each support. Bolt the muff supports (donuts) to the standing leg of the angle. (Think ahead and position the donuts before you weld.) Wrap a piece of .032" 6061 around the donuts and hold in place with two hose clamps. Locate and weld the inlet and outlet flanges. Make the muff as long as possible. I made one on each side behind the ball joints.

HEAT MUFFS

I've gained so much from the newsletters over the years I hope someone can benefit from this idea. Enclosed is a donation to the fund keep the newsletters coming.

Sincerely

Don Thomsen

FLIGHT TIPS

As we said before, that was a superb letter, Don, and we really do appreciate your taking the time to gather all that info. I heartily agree with your technique for short field landings. To my way of thinking, that's the only safe way to do it. I've always been opposed to dragging a T-18 (or any other airplane)in in a very flat glide path. First of all, if you have any sort of power loss you're in deep, deep trouble. Most T-18s have minimal stall warning buffet and flying the airplane close to the ground and the stall at the same time is a form of gambling that's in the same category as passing cars on the top of a hill.With a steep approach you can precisely control your airspeed, sink rate, and glide path with a degree of accuracy that's simply not attainable with the other method.

FLAP USE

I give a considerable number of BFRs and if there is any one thing that is common in many private pilots is a reluctance, or timidity, to use flaps. If you will pay close attention to the way highly experienced pilots fly an approach, you'll see full flaps extended on all landings & you'll see landings with minimum float. When the pilot knows exactly

where his aircraft will touchdown and he has the airplane centerlined on the runway he then only has two simple problems to solve for a safe and smooth landing: What altitude to start his flare and how rapidly to make it. If we analyze the difference between a no flap landing and a max flap landing it's nothing more than the time factor. Speed will deca more rapidly with flaps extended, hence the flare must be executed in a shorter interval.

LANDING TIPS

LANDING TIPS

When I check a new pilot out on the T-18 the first thing I show them (before we even start the engine)is where the horizon is in the 3 point position (which is fairly close to the stalling angle of the wing). On most T-18s it will be pretty close to the front and top of the nose cowl. I point out that if they don't quite raise the nose that high on landings that they won't drop it in and 95% of their landings will be good ones,and at the most they might get a little skip. I go on to say that as one feels the mains first roll,to bring the stick all the way back. I also have them record that horizon position in their minds for use as a quick guide for a safe climb angle for takeoffs and waveoffs.

I'll also pass on a little tip I use to use on pilots that seem to have a problem in focusing their eyes the proper distance ahead of the ship (which usually is the primary reason he'll flare too high). On takeoffs I try to get them to notice how far ahead that marks on the runway,or blades of grass, stop blurring from our speed and come into sharp focus and I try to get them to zero in on this at what they think is 2 or 3 ft of altitude. I also usually have them fly 6 or 7 approaches down to 3 feet without landing and then fly most of the way down the runway at that altitude before climbing out. The T-18 should never be flared above that altitude and if you will take care to do these things when you first fly your airplane (including the series of approaches without landing) you shouldn't get into trouble. Until you get very used to the airplane and get a bounce of a couple of feet or more, don't hesitate and try to save it, get full power in and go around and do it again. This time try to improve your airspeed control on final and concentrate on your flare height and rate.

It goes without saying that before you do all this with a new airplane that you should do a series of simulated approaches at altitude to investigate any peculiar characteristics that might be found when the flaps are extended. You are going to be approaching the ForwardCG limit on your solo test flight or flights, so remember the pitch down with flaps is a combination of Forward CG and too much airspeed, both of which are not hard to correct. One T-18er I know normally carries a 50lb tool box in his baggage compartment. Other obvious solutions might be to move the battery further aft or add a reserve fuel tank in the baggage comp't.

OTHER FIRST FLIGHT TIPS: At any time you do any fast taxiing be absolute sure THAT BOTH YOU AND THE AIRPLANE ARE READY TO FLY AROUND THE FIELD! I know of three accidents and one hair raising incident that happened when the airplane got airborne when the pilot was not expecting it and when insufficient runway length remained for landing and stopping. In one of these cases the airplane ran out of gas just as it was crossing the field boundary on takeoff, causing major damage to the airplane. The pil said his throttle stuck open and it rattled him so that he forgot the switch and mixture. A couple of years back a T-18 pilot found himself 10 ft. high, the airspeed indicator not hooked up, the stick only stuck in

the socket and he had drifted off the runway to the side...AND it looked like he didn't have enough runway left to get back on and stopped!!! Guess he had no choice but to try and somehow or other he did get back on and stopped, altho' it ended up in a hair-raising, tire screeching ground loop out in the grass at the end and nothing got bent except his ego.

TAXI EXERCISES

TAXI EXERCISES

I have mixed feelings about the worth of doing high speed taxi runs and most of those feelings are negative. If the pilot is not CURRENTLY a PROFICIENT tail dragger pilot he should make every effort to put in 3 or 4 hours minimum of takoffs and landings (not touch and go wheel landings). The T-18 is quick on the rudder and that takes a little getting used to. If you have only flown tri-gears,it might take a lot of getting used to. One thing I always advocate ANY new T-18 pilot do is to get on a wide, unused runway or taxi strip and starting out at VERY slow speed (5 mph) make precision taxi turns of say 30° on each side of the center line.Do this upwind, downwind, crosswind for perhaps a half hour...at least until you are truly proficient with stopping the turn EXACTLY the same amount on each side of center. I have noticed that new T-18 pilots doing this with me riding shotgun with them that they inevitably slight the turn to the right, only going about 20°. I foumd out the reason was that they were using the spinner to sight the turn, not an invisible sighting line parallel to the C/L of the airplane. When I stuck a piece of tape on the nose cowl directly in front of them and had them use that for their front'gun sight' and that ended that problem. As you become proficent doing this at 5 mph you can gradually increase your taxi speed in 5 mph increments, but as your speed increases to a maximum of 25-30 mph it is advisable to cut down the angular deviations from the center line to perhaps no more than 10° at the high speed end. While this exercise is best done using no brakes, you certainly should have your foot in such a position that you can immediately use brake if the occasion demands it.

T-18 TAKEOFFS: The T-18 has a marked tendency to turn left as the tail comes up on T/O, due to P effect. This usually starts the pilot to over-controlling the rudder and getting one oscillation out of phase with the nose swinging. Fortunately the airplane is ready to fly at this time before the pilot embarrasses himself too badly. The airplane is accelerating so rapidly and the rudder is becoming so sensitive with full power slipstream that there is a very natural tendency to overcontrol on the rudder and even experienced T-18 pilots will also do it if they haven't flown a T18 for awhile.

The cure for all this is simple: Just let it fly off in the 3 point position unless you are very heavy and on a very short runway. In my airplane flying solo I can't tell the difference in the length of the takeoff roll. On a very hot day and with a load I have found that if I raise the tailwheel no more than an inch or so after I am about 3 seconds into the takeoff roll,that takeoff roll distance and acceleration after lift off is about optimum. In this way I can take full advantage of the available tail wheel steering, which is much less sensitive than the rudder alone.

If you are inclined to be offended by such elementary advice as above it isn't intended to offend. While building one's own airplane is a noteworthy accomplishment, it's wise to be aware that our ability to properly and safely fly our creation is completely UNrelated to the building process and the first flight should be approached with an

attitude of humility. Tempering that attitude with a little bit of knowledge coming from practical experience will help to reduce the number of surprises.

SAD NEWS DEPT.: In addition to Dr. JOHN SHINN's recent passing, another of our regular contributors to the N.L., BILL JOHNSON, of 913 Cherry Hill St., Kent, Wa. recently suffered a sudden and fatal heart attack. Bill was an engineer for Boeing. He had plans serial #272 and his T-18 was one of the earlier ones to fly and made its national fly-in debut at Rockford. Bill was an inveterate and incurable experimenter and his experiments with lowering the stall speed of the T-18 are well documente in past newsletters. Bill also designed and built a retractable landing gear for his T-18, a project that got so involved that he once said it would have been easier to have built a new airplane from scratch. As a matter of fact, he did a complete re-design on the T-18 and called it the Eagle and had intended to sell plans, but as far as I know he never did.Bill did an article for Sport Aviation a few years back on his r.g. T-18 and in it he mentioned that it would cruise right up on the red line. We'll all miss Bill. Sport Aviation can ill afford losing people of Bill's caliber.

BOB GODWIN, of 1209 W. Evans St., Florence, S.C., was another of the early day T-18 builders that passed away a few months back. He also succumbed to a heart attack. Bob had stored his T-18 away for several years, but had gotten it out and flown it quite a lot the past year or so. He wrote me about a year ago, telling me how much fun he was having flying it again.His wife put his T-18 up for sale after he died, but I haven't heard whether or not it sold.

COWLING SAG

COWLING SAG

QUESTION ON COWLING SAG: In a previous N.L. HARLO Mc KINTY asked the question as to whether to allow for future engine sag, resulting in a mismatch between the top of the cowl and the spinner. Here is an excerpt from a letter from one of our most dependable sources of authent information, CHRIS FAST:

"Regarding Harlo's question on spinner mismatch, my T-18 had the O-290G with the 3/4" horshoe plate for an engine mount (the so-called flat-back engine mount instead of the dyna-focal). I washered the lower legs of the engine mount forward a couple of times the first 200 hours to remove the sag. This was when the rubber mounts were new and this worked out pretty well. It never changed after that and is still going OK today, so I would say to allow about a 3/16th" mismatch between the prop spinner and the cowling when you first set it up. On KEN BROCK's ship that I am just finishing I have left the spinner 1/8" high, as it is an O-360 (180 hp) with constant speed prop and the dynafocal mount." Thanks, Chris, for the info.

What have some of the rest of you found out on this line? We would all appreciate your comments and opinions.

Another area that we are constantly in need of your input is in the engine hook-up department. I recently got a letter from a new builder and he says: "How about asking some of the builders and A & P's out there to send in some detailed information and sketches on how they rout throttle, mixture carb heat flex cables from the firewall forward and where and how should you clamp them enroute to the carb?" Now here is a chance for some of you that have finished your bird to contribute a goodie or two for the new troops. OK?

The following letter from Gene Sloan is reproduced in its entireity. (Further comments on page 4B)

Mr. Dick Cavin
T-18 Mutual Aid Society
10529 Somerton
Dallas, Texas 75229

Dear Dick:

Enclosed is $15.00 for "renewal" of my T-18 newsletter subscription. I've appreciated very much the information the newsletter has provided over the years and wish to continue to get it. The sketches for the firewall cabin heat box awhile back were a great help--I made one according to the sketch but have it oriented horizontally instead of vertically. My project (Serial #805) continues to make slow progress. All of the structure is now closed, panel details finished (full IFR), canopy fitted etc. Currently fitting fiberglass wingtips. Still have cowling work to do, prop installation, many details in engine compartment (O-320-E3D), paint, trim, etc. I have a Cherokee 140 that keeps me in the air but I'd like to get the T-18 done.

I have also sent to you via UPS a copy of a thesis I wrote a little over a year ago in connection with a masters degree I was working on at the University of Tennessee Space Institute. The professor that was my advisor, Professor Ralph Kimberlin, is an active test pilot and I had several courses under him dealing with aircraft performance, stability and control, etc. His opinion was that a thesis should be a "fun" thing so we did it that way. Incidentally, Mr. Kimberlin has been one of the "lecturers" at Oshkosh and Tullahoma speaking about aircraft performance and flight testing. Anyway--the thesis deals mostly with performance testing of homebuilt aircraft. This part was not a good thesis area but there was method in my madness. What I did was outline a test program to develop "handbook" type performance curves for a homebuilt aircraft using techniques available to the average homebuilder. The example used was a "fictitious" T-18. The real "thesis" part of the thesis dealt with a mathematical way of developing an engine performance chart when only the horsepower vs rpm variation is known. But you don't have to read that part.

A couple of news letters back there was some discussion of airspeed calibration and if I remember correctly I think there was a slight error in technique suggested, having to do with the way two-way speed runs are averaged. This prompted me to send the thesis to you but it has taken me awhile to get around to it.

I feel that the homebuilders could clean up their act some by better documentation of the performance (and maintenance features) of their aircraft. I plan to do this with my T-18 following the outline in the thesis. If you think it might help some other T-18'ers, I would give permission for it to be used.

I myself am employed by Calspan at the Arnold Engineering Development Center, an Air Force R & D center for wind tunnel testing, where I supervise an operations engineering group.

Sincerely,
Gene Sloan

Gene Sloan Jr.
412 Lillard Road
Murfreesboro, TN 37130

The copy of the thesis Gene sent me was most impressive and very professional looking. It's more than an inch thick and contains about 200 pages of double spaced copy, charts, and graphs, plus an impressive list of reference material that he used in compiling his data. I wish I could reproduce several portions of his material, but inasmuch as it is copyrighted and I don't yet have his permission to do so I'll have to defer that until I have had a chance to discuss it with him. I will report on that at the earliest possible moment. I will also ask Gene about the possibility of obtaining complete copies of this very scientific treatise. I'm well aware that most people aren't all that interested in doing a truly scientific analysis of the performance capabilities of their newly completed bird, but then again I know that a significant number would find this sort of information fascinating.

PARTS SUPPLIERS

T-18 PARTS SUPPLIERS: I've had a couple of comments that gently took me task for only mentioning Ken Knowles as a supplier of pre-fab parts. I apologize for this oversight, as I had no intention to slight Ken Brock's most excellent quality of T-18 parts. I of course assumed that all of you knew that Merrill Jenkins had retired quite some time back and that left only Ken Knowles as the only major supplier of T-18 parts on an exclusive basis. Ken Brock's Co. supplies a considerable number of assorted parts for several makes of homebuilt airplanes and gyroplanes. Recently two former employees of Merrill Jenkins have resumed T-18 parts fabrication (no widebody or folding wing parts at present) under the firm name of "Leisure Aircraft Products" and their address is 16627 Parkside Avenue, Cerritos, CA, 90701. Their phone no. is 213/926-4545. They also handle various sizes of sheet stock, aluminum plate, extrusion, bar, and tubing, plus various hardware options. The owners (John Adams and Mike Hanich) invite you to write for their catalogue. As far as I know these three firms are the only ones supplying T-18 parts in any quantity. I think it only fair to point out that the mixing of parts from one supplier with those from another might not match in hole registe so please be aware of this possibility.

PLANS

SUPPLEMENTARY PLANS STATUS: As you may or may not have noticed in a recent classified ad in Sport Aviation that Pete Hodgens (Australia) is advertising his supplementary plans for various T-18 items, with funds to be sent to him direct. Those of you that sent me funds for plans be advised I have forwarded them to Pete, so no doubt you'll hear from him soon. There is still an area of uncertainty as to what price he wants for the various options, but it will be clarified soon I'm sure.

A NEW T-18

NEW T-18s to look for at OSHKOSH: After 17 long years LEE SKILLMAN, of 7 Worthington Lane, Parkersburg, WV, 26101 (our T-18 dinner MC last yr.) got to see his T-18 fly and fly perfectly it did! Lee has lived all over the country in those 17 years and the project went with him on every move. There were gaps of many months, when things were too hectic to work on it, but he never gave up and kept plodding. There were a lot of things along the way that were bitterly disappointing at the time and required backtracking and sometimes it was two steps forward and one backwards, but the month of May saw #294 with daylight under its wheels.

Lee was fortunate in having Ed Burke, a long time US AIR captain who has his own T-18, to do his initial test flights for him. Ed flew his T-18 over from his home in Pittsburgh, PA, for the occasion and was truly delighted with how perfectly Lee's airplane flew. Since Lee was

was not tailwheel qualified and actually had done very little flying in the past few years he was most agreeable when some of his old friends suggested he approach Ed to do the initial test flights for him (Ed was just one of the old friends making that suggestion). Here's Ed's letter that he sent a few days after the test flight:

"Hi Dick,

Surprise! A real letter! As you know from the phone calls how elated Lee Skillman was when his airplane finally flew. You should also know how proud I was that he asked me to fly it. It was so clean, so truly aligned, it ran and flew so straight! Very few factory aircraft built on super jigs could match it.

It was a simple task to check out his friend and instructor, Charlie Pickering (who really could have flown it the week before), so that Charli could get Lee checked out when I left.

This machine will be a REAL competitor in many fly-ins and it will certainly be a real credit to the T-18 design, but its real beauty and craftsmanship can only be appreciated in flight. No shims, no trim tabs to keep it straight...absolutely true!

The actual first flight was a TV event, with a big front page story, too. It will take six months for Lee's chest to relax and wear the grin off.

I now owe you my profound thanks for two things: You told me about the Keaargaard T-18 for sale that I bought and then put me in touch with Lee. This is truly the T-18 Mutual Aid Society!

Some time ago I told you that Ken Coleman and I had put the gear extensions on our two airplanes (both with the short gear) and what a GREAT improvement they made. I have since learned to fly the ship into much smaller strips and have also learned to wheel land it. Please extend our sincere thanks to the folks responsible for such a simple device which has made such a great improvement possible.

GEAR EXTENSION PRAISED

The airplane now seems to sit up in a very pert, saucy attitude, similar to a Cessna 180 and by presenting more wing and fuselage frontal area in this higher 3 point attitude it definitely will slow down much quicker without the use of brakes. Maybe the best point of all is that I no longer get the tail wheel on first and then bang the mains down as I did before when I did full stall three point landings.

The Sensenich wooden prop you recommended (66dia-72 pitch) has also been a real improvement. With the O-290G turning 2650 rpm wide open at 3000 ft on a warm day, with full fuel and Jody and I in it, we are now indicating 163 mph, without gear or wheel fairings. With the gear and wheel fairings installed we almost certainly will pick up 50 rpm to get full rated power of 2700 rpm and probably another 10 mph, too. Kinda has me thinking about a conical mount 160 in it one of these days."

O-290 PROP?

Ed went on to say how sorry he was to hear about Braniff and how it had really generated shock waves in the airline piloting profession.

Ed's an old,old friend that goes back to the pin feather days of the T-18, when we (five or six of us) built a T-18 fuselage in 4 days at

the '63 or '64 Rockford Convention. Our workbench was a couple of old wooden folding chairs in a tent and we had no electricity. Had to use hand powered breast drills and we used pop rivets to put it together.

I'm most anxious to see Lee's creation at OSH this year. He sent me a couple of color photos of the interior when the ship was unassembled and it looked plain gorgeous even then. Lee called me again a couple of weeks later after the test flight to tell me that he was now flying it solo and getting along very well with it. He also said he planned to make two or three fly-ins with it before OSH and it wouldn't surprise me to find out he had copped an awrd or two in the process.

Lee has promised a complete story on the airplane very soon, so in the meantime we'll just say, "Congratulations, Lee, not only for a job well done, but also for hanging in there for 17 long years!"

SERIAL #1 FLIES! FRANCIS RICHARDSON, 2608 N. Johnson, Denison, TX,75020, finally flew in May 1982. #1 has a long history. D. B. Underwood, of Dallas, bought John's first set of plans. I laid out a set of skins for him from my templates and made him a set of bulkheads. D. B's fortunes took a turn for the worst, so he sold the fuselage to another builder, who never got a rivet in it either. I acquired it in a three handed swap a few years back. Francis decided to build his second T-18 shortly after that. He was being discharged from the Air Force after 23 years of service and very soon enrolled in college to finish his degree in Aircra Maintenance Management and the T-18 went to school with him for after hours work. After graduation he took on a brief stint as a factory rep for Northrop in Iran, but Iran soon wasn't to his liking and he came home and went to work for Texas Instruments looking after their fleet of planes at Dallas. This kind of work was a natural for him, as he had managed large detachments of maintenance people for the AF for all those years. We had run across each other in Bien Hoa when I came in there on a 707 MAC flight and we got caught up on some concentrated visiting in the two hours I was there.

ANOTHER NEW ONE

While he was with TI in Dallas he and I got together nearly every night in my shop to build two sets of the folding wings. I also had another fuselage standing by for a set of wings, so we found it just as easy to make two of everything as we went. The big steel wing fittings were the hardest part, as we didn't have access to a metal cutting bandsaw and had to rely on an outside party to cut them (which started a chain of headaches). Francis chose to leave his wings as quickly removable, rathe than folding, as hangar rental in the Denison area was still a bargain. Francis moved back to Denison when the wings were finished, as he was was thoroughly sick of big city traffic by then. He had to completely remodel his house and commute the 140 mile round trip to Dallas, so working on the airplane was few and far between. To eliminate the long commute each day he transferred to TI's plant there, but it was back to school 3 nights a week to get his degree in Electrical Eng'g this time.

Little by little, all those hundred little jobs got done and finally he took it to the airport to fly it. Because he took the time to do all these so-called little things so thoroughly the only squawk he had after his first flight was to adjust the idle mixture!

Francis has a unique T-18, inasmuch as he does not have a sliding canopy

He has an all metal, fixed, super-structure built up in the general shape of the canopy, but he has forward opening doors on each side. He has side and aft windows built in and the effect is quite pleasing to the eye. It reminds me of the Meyers 145 canopy. Forming the door frames of .063 was the toughest part. All of the windows have compound curves in them and this meant making plaster molds for each. (yes, he made a spare set or so of each, "just in case").

His cowl is mostly metal and looks to be very close to the Thorp cowl. I made him up some fiberglas pieces for the front end part of the "cheeks" but the rest of it is metal. The compound lines of the belly cowl are most difficult to do in metal, but he came out with a reasonable facsimile. You may wonder how he did the top piece in metal. It's actually made in two pieces, a top and a front piece. The top piece is made of .040 and was rolled in a sheet metal roller to form the curves to match the corners of the firewall and the circle at the front end.

METAL COWL TIPS

To form this front piece he made a circular form block and clamp block of 12½" dia. to match the rear of his spinner. Using .040 6061 T-6, he made a circular blank of 14" in dia. and spaced ¼" dia. holes all the way around on about 1" centers. The outer edge of his form block was exactly even with the center of this ring of holes. He next took a pair of shears and clipped out a strip of metal from the outer edge to the edges of each of the ¼" holes. This left a series of tabs approximately 3/4" wide all around. It was then a simple matter to bend these tabs down on the form block and then rivet the part to the top piece. Of course this circular piece was cut in two after forming, so,that one of the halves could be used for the top piece and the other for the bottom. If you should choose to go this route to form these pieces, don't forget to make an adequate radius on the edge of the form block and use a sufficient number of clamps to hold the form block and clamp block tightly together. Flush rivets should also be used. A solid disk of metal is permanently attached to either the top or bottom cowl. The other part is attached to the disk with camlocks, nutplates, etc., making both the upper and lower halves of the cowl removable.

Francis built up his O-290G engine and overhauled it. He has a Sensenich metal prop on it, (M74DM, 70/68) and gets about the same performance out of it that Ed Burke gets out of his. He is especially impressed with the larger flaps of the CW in shortening the landing roll and steepening the approach path. He also has the longer gear on this one.He also says he can tell no appreciable difference in aileron response with the shorter CW ailerons.The airfoil used is the standard one, not the LDS2. So more congratulations are in order for another well done for Francis' 2nd T-18.

STILL ANOTHER NEW ONE

Another one flies!....JOHN HARDY, Rt. 1, Box 292K, Natchitoches, LA,71457, also flew his T-18 in late May and is most pleased with it. John's fuselage and wings came from this area from one of the original gang of 28 T-18 builders we had in the DAL-FTW area umpteen years ago. John picked up a run out IO-320 (160 hp) from a Twin Comanche shortly after he got the bare airframe and zero timed it. It also had a 6" prop extension on it and the regular constant speed prop, too. (Standard equipment on the Tw. Com.).

John hasn't had a chance to really nail down his performance as yet, as he's having so much fun flying it to really get serious yet. You'll see all three of these gents and their new airplanes at OSH this year and I will corner them there for their promised specs, wts. CG, etc. for

inclusion in N.L.#56, which will come out very shortly after OSH. I would like to get a complete rundown on each and every T-18 at OSH in '82, so if you are planning to fly your T-18 there this year it would save me a lot of time if you would sit down before you leave and record all the vital statistics: Engine, prop, empty wt., IAS at stall, full throttle (alt. & temp), rpm & M.P., cruise at 75% power, battery location, new or old airfoil, type of paint used, type of cowl, exhaust type, carb air box details, avionics, etc. In fact, please inclu any and all details that would be of interest to the troops. If you have something a little different please do a short description of it.You don't have to write a fancy article. Just scratch it out and I'll be glad to rewrite it if needed....PUT PLEASE DO YOUR PART IN THE SUPPLYING OF MATERIAL FOR THE N.L.....A lot of you have said, "I appreciate the time and trouble you are going to to get the N.L. out, so keep it up,etc ....but the N.L. can't keep going on if you guys don't take the time to write your experiences!?!!If you are at a loss as to what to write about go back over the newsletters and take note of the subjects that have been covered. Many of those things are only one person's experiences. Even tho' the quoted technique may be the best, it might not be the easiest for everyone. It's also of value to newcomers to learn of more than one way to do something. If you can't think of anything else, sit down and make a detailed sketch of your brake sytem from top to bottom. Call out the specs for tubing and other hardware, what type of master cyl's used, how mounted with brake pedal, etc.....Another good subject is your fuel system....again with complete call out on all hardware. What type of fuel tank cap used, scupper drain, how vent lines located, fuel tank sender used & how calibrated, how accurate? All of these, plus your personal opinion and recommendations are of great value. There are a LOT of uncompleted T-18s out there and many of them are in desperate need of the very information YOU could supply. Now, of course if YOU never asked John or any other person for advice on some part of your airplane (whether it's completed or not), then the above doesn't apply to YOU, but if you don"t fall into that category you might want to take note that you have incurred an obligation to make payment in the same type of "currency" that you "borrowed" in.Now in case you think you might be a little embarrassed if others knew about some of your 'goofs' along the way, please remember that each and every T-18 builder has made a bunch of them along the way, so let's put that crutch away for good.

N.L. MATERIAL NEEDED

'82 T-18 FORUM OSH?

'82 OSH T-18 FORUM: For some reason a T-18 forum was NOT scheduled for OSH in '82. I don't know why. It's hard to believe it was simply an oversight. No doubt the T-18s won't be the most numerous among those present, as they have been in past years, but when over 350 of a type have been built, with another thousand under construction, it doesn't seem very likely that it was simply overlooked. I can't help but get a little hot under the collar at the way Headquarters has seemed to snub the finest design of them all over the years.

We will have our annual T-18 dinner at Butch's Anchor Inn at the regular time on Tuesday evening, with a cocktail hour preceding the dinner.

"COWLINGS OFF" MONDAY 12:00 NOON!

Also, as per usual on Monday at 1200 noon we will again have our "Cowlin Off" display. This is one of the most educational things that take place out there on the flight line and we solicit your cooperation in making it a 100% effort. I know some of you have the Rattray cowl, which is more difficult to remove, but perhaps you could remove the bottom half without too much trouble. It REALLY IS appreciated! If you are taking pictures, you might want to use a flash for better detail.

PLEASE DON'T FORGET! 1200 MONDAY

MORE ON TURBOCHARGING: Excerpts from a letter from our old buddy, BOB DIAL, 5175 Wing Lake Rd., Bloomfield Hills, Mich, 48013:

"I am motivated to write specifically after reading about Ken Hansen and his turbocharging efforts. It should be CLEARLY and FORCEFULLY pointed out that aerodynamic damping of the flutter regime is a function of TRUE AIRSPEED and not INDICATED AIRSPEED, as you well know. John has pointed this out most emphatically and the T-18 has NOT been tested above the present maximums of speed. Therefore, at altitude he would still be limited as to maximum top speed. (Actually, the maximum speed would be lower than at sea level).

MORE ON TURBO-CHARGING

If he would contact TOM BACSANYI, 18815 Blue Skies Dr., Livonia, Mich., 48152, he could obtain much valuable information about turbocharging a T-18. Tom designed and built a "controlled leak" in place of a wastegate. This eliminates all the complications of a mechanical wastegate and simplifies the cockpit controls to the simple, single throttle lever. He installed an intercooler to reduce inlet air temperature at higher altitudes, thus eliminating the very real danger of detonation and increasing the density. He has his "calibrated leak" set to develop 31" at T/O and he can hold 31" clear up to 24,000 ft.! From FL240 on up the MAP decays, but at a slower rate than on an unaspirated engine at the lower altitudes. Service ceiling is'somewhere above 35,000 ft.' He also designed a scavenging pump for the turbocharger, which works fine. I believe he has never flown the airplane above 25,000 ft, but he routinely flies at 18,000 to 20,000 ft. He abides by John's speed limitations religously and his biggest advantage in addition to cruise speeds of 220-230 mph is the phenominal fuel consumption he gets. With 180 hp and a 30 gallon fuel tank he has a range of about 1000 miles! He has several hundred hours on a proven system and since he is an engineer with a wide background in turbochargers I believe his counsel is certainly worth worth listening to on its merits. He has much technical and engineering on his system and you might be able to get him to write something for the newsletter.

WIRING

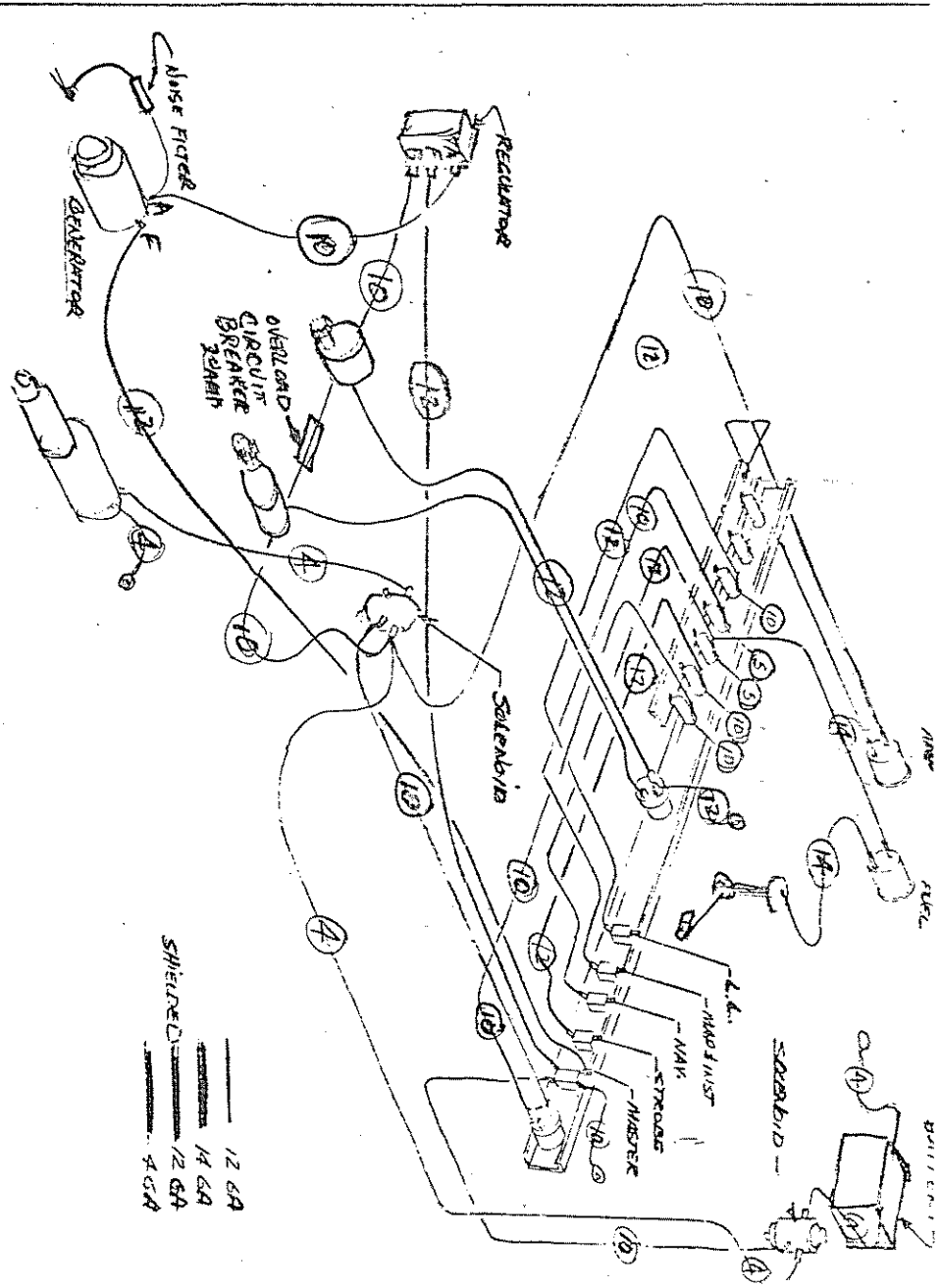
I am sending along a simple schematic of a wiring system for the T-18. It needs the addition of radios, etc., but maybe it will help give someone some ideas to go from. This sketch was by courtesy of Dick Penman. (See page 7B).

I'm also including a couple of pictures of the 450 lbs. of equipment that was installed in my airplane several years ago when we did the prop vibration tests (see older newsletters about the tests that were done to set guidelines for a safe metal prop). My gross weight for these tests was 1981 lbs. At that weight I had to do stalls, 2G pull-ups, vertical turns, dives to 220 mph IAS, and climbs to 15,000 ft. I'd like to get these pix back when you are thru with them.

I'm still working on my #2 airplane and hope to finish it this coming summer sometime. I will sell one of them, but I haven't decided which one as yet. I'll send pictures and info soon.

Keep your airspeed up!

BOB DIAL



MORE ON FLUTTER :

Thanks again, Bob, for all your words of wisdom on the flutter speed's fixed relationship to the TRUE airspeed. I sincerely hope one and all clearly understand the inherent danger associated with foolishly pushing the airplane's speed up to or beyond what is known to be safe. The T-18's speed and control response makes it an exhilerating airplane to fly and in some people this also generates an overwhelming surge of "Look at me, Mom-itis"....the show-off urge, to be plain about it. Most of us can resist that urge at low altitude, but be alert about Vne at altitude. Don't ever assume you could react fast enough to stop flutter after it began. You can't. I interviewed two eye witnesses within 15 minutes after they saw the start of the tail flutter until the airplane self destructed in mid-air and they both agreed the total time interval was considerably LESS than 2 seconds!

If you don't have an OAT gauge in your airplane perhaps you ought to sit down and figure how much less your airspeed indicator will read for each thousand feet of altitude you go up and make a little chart to keep in the airplane and refer to. You can use standard temp dropoff figures and be pretty close. Right now you should also be asking yourself "I wonder how accurate MY indicated airspeed is?????" That's a pretty good argument for finding out just how accurate your airspeed is. Right?

HORIZONTAL TAIL

Here's a letter (in part) from T.J.McCormick, Box 105, Rowland, NC,28383 in which he says:"I have been working on the horizontal tail. The left and right sides are made and I used matched hole procedures as you suggested and it worked out OK. The biggest mistake I made was to lay out the #613 beam template for the holes real accurately. I was sort of scared of making a mistake somewhere and spent extra time with dividers etc. to get it just right. I then had a hard time identifying the position where it should go. Everything was marked, but still this thing gets touchy when the two sheets are drilled at one time and one has to be turned over to get one right and one left elevator. Anyway the elevators are clecoed together now and now I'm up to installing both to the tube spar,etc.

I am learning though. I built a Baby Ace back in 1958 and I still have it. I also built a Pitts Special and have it licensed and it has 12 hrs. of test time on it as flown by a crop sprayer friend a year ago.I haven't flown it myself yet. It needed a few things to finish and now I have all of them done.Now I can concentrate on the T-18.

TRANSFER PUNCH

One problem I had with the MATCHED HOLE TOOLING was with the transfer punch (the #30 punch with the nib). The nib, or center punch part of mine is too rounded and it leaves a mark that is too sloppy to center a drill or punch in. I made a punch out of a 1/8" punch and made a good sharp little in the center that works very well. The taper on the punch matches with the #30 template hole and no tight fit has to be made like with the Whitney punch. I find this more accurate.(I'd like to go over this with you at OSH this year, T.J. and make a sketch for the NL).

SHEET METAL GRIND BITS

The subject of SHEET METAL GRIND DRILL BITS has been mentioned several times in the NLs, but there seems to be a great vacuum of information when it comes to someone telling in detail exactly how to do it. I get mine thru another builder, who in turn has a machinist friend make them in his spare time.In case you are just starting and have just discovered

that an ordinary drill bit is prone to drift out of that tiny punch mark that you needed to hit accurately...especially after it began to get a little bit dull. With such bits you simply cannot perfectly reproduced the hole layout that you have center punched.The Sheet Metal Grind bit makes it possible not only to hit the exact center of the punch mark with the center of the pilot drill part, but also the bit will drill straight and true and won't "walk". It actually works like a miniature hole cutter, as the outer flutes cut out a perfect disk.

GRINDING A SHEET METAL GRIND DRILL BIT

HOW TO GRIND A SHEET METAL GRIND BIT: T. J. continues: "I found out how to grind sheet metal grind drills, also. I played with grinding them various ways and found out that if you support a Dremel hand grinder so way (I put mine in a vise) and use a mounted grinding wheel (Mine was about 3/4" dia. and 1/8" wide). Mount a magnifying glass over the wheel so you can see and dress the wheel so that it will run true.Grind the drill bit so that it has a center pilot, which is sharp and about .020 to .030 long. Then very carefully grind the lips at a good biting angle and you will have something that will drill a very accurate round hole. Look at it this way:with the sheet metal grind drillyou have a center pilot to guide the bit and with an ordinary drill bit the only pilot you have is the tapered point and it was ground to drill steel, not aluminum. Consult any shop manual and it will say to grind the drill wit a much sharper point and give it a lot of rake angle. This sheet metal grind bit does not wander and does not have to have a punched or drilled undersize pilot hole to start accurately, but we all know you really need a pricked point dimple to be very accurate.Take a look at some of the FLAT type wood bits that are used for larger hole sizes in wood and you've got the idea.

I also found out that a high speed air drill works much better than an electric drill, iz lighter, and you have a wide speed range by controlli the air pressure.

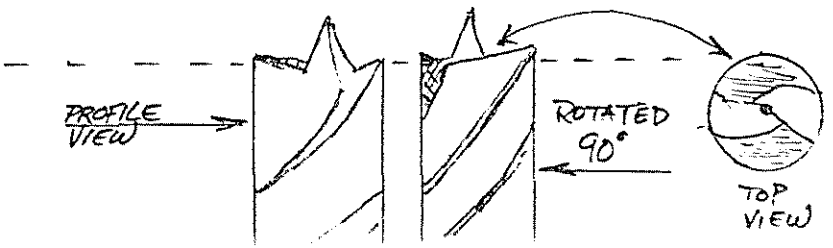
Well now that I have my hole drilling problems worked out, I'm ready to get at the riveting and I hope people won't be laughing at my riveting sometime in the future.

One more thing on the drill subject: The drill bits are much easier to grind than the regular ones."

Sincerely, T.J.

T.J. that was GREAT! If it wasn't for those like you that take the bull by the horns and go ahead and do these things....and then pass on what they've learned, the homebuilding movement would have died on the vine years ago. Anyway, thanks a million, T.J.

Just below this I'm making a crude sketch of a Sheet metal grind drill bit, just in case the writeup still isn't clear.



ABOUT READY TO FLY: Paul Carabelli, Address unknown, Los Angeles area; Tony Russell,406 Cardinal Drive, Slidell,LA, 70458; Lou Falconi, 1917 W. Freeway, Apt. 5, Grand Prairie, TX,75051; Tom Kerns, 4218 Ticino Dr., Arlington, TX, 76016; Ken Brock, 11852 Western Ave., Stanton, CA,90680; Bob Dial (#2), 5175 Wing Foot Rd, Bloomfield Hills, MI,48013; Cecil Hendricks, P.O.Box 68097, Seattle, WA, 98188;plus about a dozen more in the "maybe soon department", that I haven't had any info on recently. If any of you know of an advanced T-18 project near you or have heard of someone who recently bought a flying T-18 (or an advanced project) I'd appreciate a card from you with the details.

T-18 BUILDER LIST

BUILDERS LISTS (continued): Repeating, if I know that one of those that are listed as T-18 MAS members has an airplane now flying I will underline his name. I'll also do the same for any that might be flying in the very near future. Address changes from previous listings will be updated as they come in. State by stae listings began in NL #52.

OREGON:
Wm. Ayres, 761 Stinson St.,Independence, OR, 97351
Dean Adams, 16575 SE Sager Rd., Portland, OR, 97236
Ron Arnoldson, 1539 Roberts Ck. Rd., Roseburg, OR, 97470
T.V.Anderson, 2235 NW 16th St. Corvalis, OR, 97330
Larry Eversmeyer, 4725 SW 207th Ct., Beaverton, OR, 97007
Robert Furrer M.D., 427 Oakway Mall, Eugene, OR, 97401
Ronald Gerrard, 85 T St.,Sprigfield, OR, 97477
Wayne Heigel, Rt. 3 Box 140-E, Sherwood, OR, 97140
Howard Martin, 10270 SW 80th, Portland, OR, 97223
Amos Ranck, 3536 Poinsetta St. NE, Salem, OR, 97303
Denell Zander, 13700 SW Hall, Tigard, OR, 97223

MICHIGAN
Richard Amsden, 16434 Concord, Fraser, MI, 48026
Wm. Beswick, 7144 Heatherwood Dr., Jenison, MI, 49428
Al Bosonetto, 32625 Benson Dr., Westland, MI, 48145
Douglas Boyer, P.O.Box 236, Eastport, MI, 49627
Bob Dial, 5175 Wing Lake Rd. Bloomfield Hills, MI, 48013
Anthony Dabrowski, Jr, 3104 Temple St., Muskegon Hts., MI, 49444
Orville Green, 34 W. Dale Ave., Muskegon, MI,49441
Bob Hudgins, 2502 Leroy, Flint, MI, 48502
Don Hackney, 6647 Hatchery, Pontiac, MI, 48054
Mark Lamos, 25687 Kilreigh Dr., Farmington Hills, MI, 48014
Merlin Miller, Rt.David Dr. Springport, MI, 49284
Roy Oberg, 6040 Shadybrook, SE, Ada, MI, 49301
Dick Penman, 5918 Bordman Rd., Dryden, MI, 48428
Vincent Reno, 11483 Kennebec, Detroit, MI, 48205

OHIO
Larry Baker,4330 Chippewa Falls, Jamestown, OH, 45335
Francis Boehlein, 6206 Timberlane Dr., Indepenxence, OH, 44131
Craig Cihlar, 3407 Revere Rd., Richfield, OH, 44286
Carl Cole, 7927 Heatherglen Dr., Cincinnati, OH, 45230
Walter Giffin, 4277 Kenmont Pl., Columbus, OH, 43220
Paul S. Jones, 302 E. Main, Oak Hill, OH, 45656
Jas. Mach, 7274 Butternut Ln., Mentor, OH, 44060
Robert Neitman, 4017 Glenheath Dr.,Dayton, OH, 45440
Jas. Paine, 4240 Wagner Rd., Dayton, OH, 45440
Kenneth Patsch, 2102 Jeanetter Dr., Sandusky, OH, 44870

Clifton,Redden, Rt. 1, 609 Wise Rd., Lynchburg, OH, 45142

OHIO (cont'd)
H.L. Starcher, 10588 Norwalk Rd., Litchfield, OH, 44253
Ted Williams, 640 St., Rt 314, RD12, Mansfield, OH, 44903

ILLINOIS
Kurt Ayres, 5951 Guilford Rd., Rockford, IL, 61107
Alfred Cousineau, 8332 N. Octavia, Niles, IL, 60648
Keith Claypool, 826 W. Broadmoor Dr., Peoria.,IL, 61614
Lewis Corbett, 8202 Grand Oaks Ct.,Gurnee, IL, 60031
WM. Gillen, 3228 Brookmead Dr., Rolling Meadows, IL, 60008
Robert T. H. Hubbard, 437½ 1st St, La Salle, IL, 61301
Wallace Hunt, 1658 Plaza Dr., Rockford, IL, 61108
Bob Jaeger, 2405 Melrose, Melrose Park, IL, 60164
Donald Kames, 3N375 Keil Rd., West Chicago, IL, 60185
Paul Kirik, 2921 28th Ave.A, , Moline, IL, 61265
Allen Lurie, 605 E. Armstrong, Peoria, IL, 61603
Tom Morley, 5721 W. 55th St., Chicago, IL, 60638
Gaylen LeCount, 301 E. West St., Georgetown, IL, 61846
Kenneth Rhoads, 175 Hickory Lane, Far Hills, Peoria, IL, 61611
Joe Robinson, 602 N. Cross, Robinson, IL, 62454
A.A. Repeta, 4300 N. Marine Dr., Apt. 1704, Chicago, IL, 60613
Ron Sassaman, 931 16th St.,Rochelle, IL, 61068
Gary Smith, 512 S. Waterman St., Arlington Heights, IL, 60004
Warren Spencer, 1512 North Ave., Crystal Lake, IL, 60014
Richard Secrest, 134 Mattek Ave.,De Kalb, IL, 60115
Bernard D. Scola, 1823 Palm Dr., Mt. Prospect, IL, 60056
Jerry Turner,RR#5, Box 132, Marion, IL, 62957
Rollin Tippet, 208 S. Jackson St., Waukegan, IL, 60085
Thos. Weinberg, RR #2, MT. Vernon, IL, 62864
Joe R. Wood, 602 N. Cross St. Robinson, IL, 62454
Bob Young, 512 S. Olmstead St. Oakwood, IL, 61858
(Other states listings will follow in future N.L.s)

UPDATE ON BACK ISSUES OF NEWSLETTERS #45 thru #54:

As I mentioned in N.L.#54, I am in the process of making a complete new set of printing plates for ALL of the above N.L.s and right after OSH I will run off about 100 copies of each of these issues. I have kept each and every letter and postcard that any T-18 member has sent me, so I do have a record of the ones that have not received one or more of the N.L.s as a result of the Post Office Dept. carelessness,etc. It's going to be a time consuming and wearisome job to print, staple, collate, address, and mail all these back issues and since I have to do all this myself I would appreciate it if you'd give me a little help and immediately after OSH if you would (again) mail me a simple postcard saying, "I need N.L.s #.....&....etc. That would save me a good many hours of precious time if you would take a couple of minutes to do this. All back copies will come in the large mailing envelops like we now are using. We have found that the P.O.Dept. is much less likely to "lose" them, as compared to those that are just folded and stapled and the extra cost of the envelop is worth it.

One more thing: I inadvertently sent out my "Master Copy" for N.L. #50 to someone. I would appreciate it if you would check your #50 N.L. and if it is TYPED instead of printed that is it.If you happen to have it,please send it to me PDQ. If I have to re-type #50 from one of the printed copies to make the new plates for it and re-draw the sketches in it it'll use up,a week of time best spent otherwise. THANKS

UPDATE '82 OSH T-18 FORUM: I talked to Wes Schmidt today (who schedules the forums for the convention) and asked him for an explanation as to why there had been no T-18 forum scheduled. I never really got a satisfactory answer. Wes said that NASA had come in with a lot of forums, some of them to run twice. What it boiled down to was they said WE hadn't contacted them. He finally offered a spot at 9:00 to 10:00 AM on Friday, August 6th. I very reluctantly accepted, as I feel most of the people will have gone home by then. I've had quite a few of you call me (some pretty hot under the collar about it) and when one looks at the forum line-up and sees forums on Pietenpol, Pixie,CPR, flapping wings, Flying Fleas,The Flying Companion, etc....well,why don't YOU look it over and draw your own conclusions. You might look at that list and ask yourself how many of those programs called EAA and asked THEM to put them in a forum slot. You might check the forum line up when you get there. We just might want to make some arrangements on our own....perhaps something like an open-air auditorium meeting on say, Tues. morning (the one just south of the antique area in the woods if not in use).

FITTING THE FIREWALL AND DASH FRAMES

FITTING THE FIREWALL AND #603 DASH FRAME TO THE SKIN OVER THE TANK: Getting a perfectly airtight fit of these two to the skin above isnt very easy in most cases, whether you use matched hole tooling and pre-purchased parts or not. Sometimes you will have a series of little "flats" between the rivet holes or sometimes you will have a series of gaps that let you see daylight around the firewall or dash frame. You obviously don't want openings where fumes, heat, fire, or noise can penetrate the cabin area. Some people have made thin shims to fit the gaps, others have caulked, etc.

Ken Hamilton, 1357 Camfield Way, Frisco, TX, 75034, came up with a pretty good way of getting a first class fit all the way . He is using Ken Knowles parts and all holes matched pretty well. He first drilled everything with a #40 drill, checked the fit, and found he had a series of these small gaps. Part of the problem is that the angle on the flange of the firewall and the #603 must continously change (a small amount) as it makes the curves at the upper corners of these two. He then drilled all the holes out to #30 size and rechecked to see if this would relieve the problem. It didn't. He had clecos in EVERY hole, too. He made a hardwood "chisel" out of an old hammer handle, sanding down an edge on the end of the "chisel" that had about the same radius of the radius of bend of the flange of the firewall and dash. Getting inside, he tapped the other end of the chisel while the "sharp" end was held just barely on the FLANGE side of the bend radius. In effect, this makes the firewall and dash frame flanges a small amount narrower and the vertical part of them a little taller. The galvanized steel of the firewall is actually quite malleable and relatively soft, so it is quickly responsive to the chisel strokes. The dash frame is somewhat less responsive, but it, too, will accept the light reforming with no trouble. At the same time this is taking place, the flanges are re-shaped to the exact angle needed to match the skin. Using the same ball pein hammer he had used to tap the other end of the chisel, Ken used the small end of it to drag it around the radius of the flange, using heavy hand pressure. This further softened and blended the new bend radius area. Ken says the final result of all this is such a tight fit between the bulkheads and skin that you could hardly pour water between them.

I had previously warned Ken that around the firewall where you have 3 separate layers of metal to tightly pull together just before the

SQUEEZING SHEETS TOGETHER

rivets are inserted for driving that you should use 1/8 in.(fully threaded)machine screws to pull the pieces together as tightly as possible. The firewall flange has much more noticable stretching from the forming process than aluminum flanges and when squeezed between the skin and the vertical .063 doubler it looks very wavy. I believe Ken's use of the wood "chisel" could well be used to advantage in this area also,to minimize some of the effects of this over-stretching. Of course if you use this method here , it would be best to do it before you match drill the doubler with the skin and firewall, to avoid a possible hole mismatch after the re-forming takes place. I also believe it would be wise to tightly "bolt" the entire perimeter of the firewall with the little machine bolts, so there will be no shifting of hole positions.I think you also should use washers on each end of the machine bolts to squeeze as large an area as possible. If you are new at riveting you should be aware that a rivet will try to swell up between two sheets in the upsetting process if the sheets are separated and of course that's a no-no. If that happens, drill it out and do it right. That's why you should be diligent about deburring before riveting.

DEBORRING TOOLS

DEBURRING TOOL: I ran across a good little deburring tool recently in a Tru-Value Hardware store. It is made by GENERAL HARDWARE MFG. CO. of NYC, NY, 10013 and is called a "Swivel head deburring tool" (#430) and the retail price was $4.79. It can be used in holes by rotating it or on sheet edges by a straight pull. It's about the length of a pencil and has a little joggle at the business end.

You can make a very good tool for deburring the wire edge from sheet stock by taking an old screw driver and making a 90° bend in the shank about an inch from the end and grinding a sharp Vee in the end. By dragging the Vee toward you down the edge of the sheet you can peel the standing wire edge off neatly. One used to see knife sharpeners made like this that worked on the same principle.

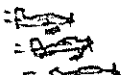
JOHN's '82 BIRTHDAY PARTY : I talked to John a day or so after his last birthday party (around June 20th) and he said about 60 people showed up for the now annual event. Bad wx in the LAX area kept quite a few from that area from coming, but I think he said 19 airplanes came up and 2 of them were Skooters. Several were from Northern CA, too. John was delighted with the day and to be with so many old friends again I believe this one was his 70th birthday. At my current age of 66 that doesn't seem at all old.

ACCESS COVER NOTE

FROM CHRIS FAST's LAST LETTER ALSO: Chris said he has the tooling for the #751 air box seal, that he has made many from, and he has offered it to John first for $50 (since he doesn't plan to make more). If John doesn't want it someone of you might. The hot air intake is picked up via a shroud from the crossover exhaust just above. Chris also said to remind the troops that the access cover over #575 & #576 bulkheads was stressed and not to go too far afield in this respect.

AVISO-NOTICE

As a final note for this issue, please be aware that as always our newsletter is presented as a clearing house for ideas and opinions only and anyone using these ideas or opinions does so at their own risk and discretion and no responsibility or liability is expressed or implied and is without recourse against anyone.



I plan to fly my T-18 up to OSH again in company with several other T-18s from this area, so hope to see all of you there.

Dick

#56 WILL HAVE SEVERAL PHOTO PAGES.