

Dateline 16 Apr. '87: This is indeed a sad day. Early this morning Lu Sunderland's wife, Marilyn, called me to say that Lu had died this morning at 3 AM. He passed away at home and his last few days hadm't been easy. He had been suffering from cancer for over a year and when there was no denying the end was near he took himself off all medication and treatment to hasten the end, saying there was no point to prolonging the inevitable.

It began wwith a routine colon examination, which found nothing. Just a few days later, tho', he began having pains. A more complete examination showed a small tumor in the colon that was malignant, altho' operable. He went into immediate surgery, with an optimistic prognosis. Several weeks went by with no symptoms, but a routine lab test showed cancer cells were still present and he submitted to exploratory surgery, which showed the cancer had indeed spread.

He went through the agony of chemotherapy and radiation treatments, with apparent good results. When he and Marilyn came through here the past January he had to lie down in the back seat of my car on the way to the motel, ashe was having abdominal pain (that he thought was something else. The very next day he appeared as a guest lecturer on three syndicated radio shows. Only a couple of days before he had appeared on local TV in Los Angeles at the request of two LAX TV stations and also as a debater with a prominent evolutionist. His research and undeniable logic totally demolished his opponent, who had to publicly admit total defeat.

I first met Lu over 20 years ago when he knocked on my door one night and introduced himself as a brand new T-18 builder. He had read an article I had written for Air Progress about my first flight in Bill Warwick's T-18 and apparently my enthusiasm was highly contagious. Lu had previously built a gyrocopter and a Stits Skycoupe. We became fast friends from that point on.

The rest is T-18 history. I started the T-18 Newsletter and by the time #3 had been put out Lu had jumped in and helped get the next issue done. When I had to give it up because of my wife's heart attack he took over and singlehandedly put out the newsletters up thru #44. Somehow in between issues he found time to author over a dozen excellent technical articles for Sprt Aviation, most of them dealing with some aspect of building or flying the T-18. By the time he had put out #44 he felt it was time to cease publishing the newsletters, as we had covered nearly every aspect of building and flying.

Lu was always an enthusiastic and willing worker at the Oshkosh sheet metal project workshops, instructing people on the building of a T-18. He also conducted most of the T-18 forums and was frequently the MC of our annual T-18 dinners.

Lu was an aerospace scientist for General Electric, a top flight designer of advanced autopilots and complex flight systems for both civilian and military aircraft. I well remember his delight when in the course of developing an integrated flight system for Boeing he got to fly a 747 in the ait for a few minutes. He often came to DFW to confer with military contractors in this area. This gave us an opportunity to catch up on our visiting and T-18 talk.

LU SUNDERLAND, cont'd.

Almost from the very beginning Lu recognized that a folding wing on the T-18 would greatly increase its appeal to potential builders and would enable many more people to be able to afford an airplane and its upkeep. After studying the subject for many months and discussing it with John Thorp he sat down and designed a simple, workable system. In the process he added steel wing fittings that raised the aerobatic gross weight allowable from the original 1200 lbs. to 1500 lbs. Lu also was instrumental in designing an advance technology airfoil for the T-18, which gave higher lift with essentially the same drag. He also made a considerable contribution to the comfort of pilots and passengers in the T-18 when he re-designed the T-18 fuselage for two more inches of width at the shoulders, again collaborating with Mr. Thorp. In order to maintain the proper shape and fineness ratio that Thorp originally had in the T-18, he added 5 in. to the length, as per Thorp's recommendation. Since Thorp's health made it advisable to discontinue plan sales, Lu got his approval to redraw all the T-18 plans, modernizing them as necessary and incorporating the wing folding and wide body features. Since the changes were considered major and it now was actually a different airplane it was mutually agreed to call it an S-18. If all this wasn't enough, Lu went back thru all the 1st 44 newsletters and updated them, reprinting them in a very readable bound volume form, also including building instructions for the S-18 in the book. From all these things it's easy to see that Lu's main creed was to give of himself to the utmost, so that his fellow man would have life easier.

Along this same line, I'm sure most of you didn't realize that Lu was an intensely religious man and for the past ten years or so he had carried on at a man-killing pace in a one man crusade to turn the spotlight of truth on Satan's greatest lie...the unproven theory of evolution. He utilized every possible spare hour and minute in this fight, writing books that scientifically blew the theory out of the water, putting together an audio-visual slide presentation that overwhelmingly exposed the Great Lie, lecturing to legislatures, government officials, (even the White House), tirelessly appearing on national and local TV, either debating with evolutionists, or expounding an eye opening string of facts that demolished the phony claims, one and all, exposing evolution as the greatest fraud ever perpetrated on mankind. He was tireless in his efforts to have Creation taught in schools. When one realizes that probably 98% of the people today believe in the totally unproven theory of evolution, with most of the scientific community lining up against him, one can readily see what kind of opposition he faced daily, but it never fazed him. He won a string of victories that you wouldn't believe.

I am sad that most of you never had the opportunity to know this great man, Luther Sunderland, as I did. If you had, your lives would have been much richer. He accomplished*amount of things in his 57 years of life... all with the deep appreciation of knowing it's much better to give than to receive. Yes, we will indeed miss LU, all of us.

One of Lu's sons, Don, who lives in Phoenix, will get the T-18. He had just barely soloed it. His son-in-law will have the J-3 Cub, for now anyway. Marilyn feels she can continue to supply plans for the S-18, with others of us around the country acting as advisors for the new builders coming on line.

In the name of the T-18 Builders and Owners Association, we have made a donation the American Cancer Society in Lu's memory.

*
 * MY TYPING
 After proof reading the previous two pages I caught several typos, misspellings, and omissions that I should have caught and corrected as I wrote. Sorry about that, gents, but I'm in a hurry to get this NL done and in your hands by the first few days of May. I'm not an accomplished typist and I'm always too busy to take time out to learn. (I even hand write my copy for Sport Aviation, Light Plane World, and Vintage Aircraft and the editorial staff type them up for me).

LOYD TOLL'S WIFE
 Before going on to our regular format for the NL we'd also like to extend our deepest sympathies to our old friend, Lloyd Toll, who lost his wife last fall. We but learned of it just the past few days Mrs. Toll had been quite ill for several years. Lloyd is another of those that give of themselves most generously. Each year he goes to OSH in May or June and does volunteer work for the convention, returning to his Hazen, Ark. home in Sept. Lloyd also runs the welding workshop at OSH each year. He rarely gets to take his T-18 anywhere, but says he hopes to come to our T-18 reunion in it at Lake Texoma Lodge on May 9th, if weather permits,

DISCLAIMERS
 It looks like we'll have a good turn out for the event. Gary Green and Leroy Holt report that they are expecting about 20-25 to arrive in their T-18s, the rest arriving via car or personal airplane. It's NOT a fly-in, but is a "T-18 Family Re-union" dinner on Sat. nite, 9 May. Because of liability concerns, no one is specifically invited. Green and Holt just say anyone that wants to join them for dinner and talk T-18s is welcome. How they get there and what they do after arriving is up to the individual and no liability is expressed or implied.

DISCLAIMERS
DISCLAIMER: That's also true of our newsletter. NOTE: In all past, present, and future newsletters of the T-18 and S-18 Builders and Owners Ass'n (formerly known as the T-18 Mutual Aid Society), that from its beginning we would make you aware that these newsletters are only presented as a Clearing House for ideas, opinions, and personal experiences of both members or non-members in both building and flying the T-18 or S-18 and anyone using these ideas, opinions, and experiences, do so at their own discretion and risk. Therefore no responsibility or liability for the accuracy of material presented is either implied or intended and is present- ed without recourse to anyone. (Editor).

T-18 REUNION LAKE TEXOMA LODGE
WHERE IS LAKE TEXOMA LODGE? It's almost at the extreme east end of Lake Texoma and is on the north shore. It's about 10 mi. west of Durant, OK, which is on highway 69/75, some 25 mi. north of Sherman & Denison, TX. It can also be reached by hi-way from Ardmore, OK, which is on I-35. Take hi-way 70 from there. There's a state park close by and is an ideal spot for a family picnic, etc. There's a nice golf course just across the street from the lodge, too, as well as the marina. Oh, yes, if you need to double up with a buddy, the lodge will have roll-aways available. I'm going to bring my camcorder and try to get the whole thing on tape, so if you've secretly longed to be a TV star, here's your chance. I want to interview and introduce everyone there and I want to have each airplane owner there to take us on a TV tour of his airplane, pointing out its features, its history, etc. For those that live too far away to make it we might have some copy tapes made if there is any interest. We might also have a tape to show at OSH at our cocktail hour at Anchor Inn if someone can bring a VCR and TV.

OSH FORUM
 Now's an excellent time to write in what you would like to see covered at the T-18 Forum at OSH. Don't put it off if it matters to you and don't wait until the last minute. These things take planning.

TV TAPES

More TV talk: Now that we are deep into the TV-VCR age it's time for us to begin thinking about a TV tape annex to our newsletters, a simple system where MEMBERS can rent, buy, or exchange tapes of all the aspects of building and flying T-18s that we've covered in our NLs. From past experience, I know there are a lot of people out there that have never even seen a T-18, much less had a ride in one. TV camcorders are getting thick as fleas out there now, they are light, easy to use, and their picture quality is pretty good. We can also show the social aspect of owning a T-18. If you don't have a camera yourself, you probably have a friend that does, so start doing some experimenting now. Tapes are cheap (\$4-\$5), so a member should be able to get a rental tape for a buck or two and whatever UPS charges, don'tcha think? Work on that idea and let's hear from you...by letter, or by phone if you hate letter writing like 99% of you apparently do.

↓

Which reminds me...WHAT HAPPENED TO THAT LITTLE ARTICLE YOU WERE GOING TO WRITE FOR THE NEWSLETTER, HUH? THAT WAS THE ARTICLE WE TALKED ABOUT IN NL #65...REMEMBER???? THAT WAS WHEN I SAID OUR NL WOULD SOON BE A DEAD DODO IF you guys DIDN'T WRITE! You all were very quick and generous when it came to feeding the NL kitty and we have funds for the coming year, but amigos, out of the entire group of over 300 I received a grand total of 3 (THREE) letters and one of them was from the ever-faithful John Walton! That's about .01% response the way I figure it. Maybe I'm just not a very good motivator. Maybe we ought to do it like they do on the Q-2 NL. Unless a builder/subscriber contributes a tip letter he pays \$25 / yr. dues. If he contributes, he gets that year's NLs free by rebate!

SUN 'N FUN '89

I was in Canada at the Rotax engine nerve center while Sun N' Fun was going on, but John Walton did the T-18 Forum and said there was a good turnout for it. Five T-18s were there, but not all at the same time. I am devoting one of our picture pages to their pictures this month, but since I wasn't there I don't know who belonged to what T-18. I recognized Bill Cox's, Bob Highley's, and Jim Paine's, but I'm not sure about the other two. One was N3020, one of the Marietta, GA, group of modified T-18s. (You can always recognize them by the rounded corner on the bottom of the firewall).

FORMAT CHANGE

FORMAT CHANGE:In case you hadn't noticed, we have gone back to full size pages. We were doubling up to save postage and paper costs before, but since every one fed the kitty so well the past month or so we can now afford it. Several of you politely complained about the NLs being hard to read in the half size pages and I agree.

DUES NOTICE

ANNUAL DUES NOTICE: We are gradually getting everyone into the computer, which will record when and how much every one pays. The computer is being programmed to flag the address stickers list when a year elapses from the date of the last check. We'll then stamp "COMPLIMENTARY COPY" on the 1st page of the next NL to remind you. Okay? For those of you that sent in \$20 or more we won't do that. We'll just mark you paid up for another year, etc.

S-18 PLAN SALES

S-18 PLAN SALES: Since writing pages 1 & 2 I've again talked to Marilyn Sunderland and she has had second thoughts about handling the plan sales. She will be spending several weeks at a time with her children in other cities, as well as with relatives, so she doesn't want to be tied down. I have agreed to handle the #1 thru #44 newsletter book for her for the foreseeable future, which will be no great burden additionally. I called Phil Tucker (who now supplies nearly all the S-18 parts anyway) and he

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CONT'D FROM PG. 4

was willing to take it on, he said. He and Marilyn will discuss the details tonite, so I am reasonably sure that they will arrive at an agreement on the details.

T-18 SUPPLIERS

For newcomers to our NL, you may want to know we have 3 main suppliers of T-18 (and S-18) parts; Sport Aircraft (which is Phil Tucker, a Northrop retiree), 104 East Ave. K, Unit G, Lancaster, CA, 93535. Shop phone is 805/949-2312, Home phone is 805/ 945-2366. Also we have Leisure Aircraft Products, 12120 Park Street, Cerritos, CA, 90701 (John Adams)....and Ken Brock Manufacturing, 11852 Western Ave., Stanton, CA, 90680. Phone is 714/ 898-4366. All have catalogues.

TONY'S BOOKS

I've said this before, but I'll say it again for the benefit of any new builder. "If you are building an airplane the smartest thing you can do is get yourself a set (three) of Tony Bingelis' books on sportplane construction (Sportplane Builder, the Firewall Forward, and his latest, Sportplane Construction Techniques). All three books cover almost every subject you will encounter in amateur built aircraft, over 1000 pages of drawings and explicitly clear descriptions of all aspects of building. Look for his ad in Sport Aviation. All three books are about \$50. They'll pay for themselves over and over again. What's more, you'll KNOW how to do it RIGHT!

DAVE EBY'S NEW T-18

NEW T-18: By the time you read this a new T-18 will have flown...and it's going to be a good 'un. DAVE EBY, a retired USAF Col. has been on his project for four or five years and at one time had two of 'em going, but a year or so back he sold one of 'em to John Mihaila, who isn't too far behind Dave, maybe six months. They've built both of them side by side in a hangar on Wichita Valley Airport, just NW of Wichita Falls, TX. Dave has done crop spraying ever since he retired. His bird is a standard T-18 and has a brand new 160 hp Lyc 0-320 in it. If no glitches show up in his flight test period he plans to attend the Lake Texoma reunion, so maybe we'll all get to see it at the same time.

Dave and John have a number of parts left over, a set of pre-punched wing and stab'r skins, wing ribs to match, manual trim parts, a Thorp-type fiberqlas cowl and engine baffles, plus a number of other misc. parts, all at bargain prices. Call Dave at 817/ 766-2523 for details.

FOR SALE

DON LANKFORD, whose T-18 flew 12 or 14 years ago, will be another at the reunion and he will have the shortest distance to fly, about 15 Or so miles from Sherman, TX. Don also has an extra dynafoal engine mount that came from Ken Brock and will sell it for \$200. Call Don at 214/892-1943 (days) or write him at 217 E Park St. Sherman, TX, 75090.

KEN MORGAN

Ken Morgan, a local builder recently came over to my hangar the other day and cleaned me out of my stock of 0-290 G parts. He is putting one of the 4 engines he bought from me in his T-18 and will wind up with a whole bunch of left over parts. (See his letter this issue).

The rest of this issue will be letters from various builders.

TO: All T/S - 18ers

FROM: John G. Walton

Subject: T/S - 18 Forum and Banquet.

The annual T/S - 18 Forum and Banquet are scheduled for Tuesday, August 4th, during the EAA convention and Fly-in at Oshkosh.

The Forum will be at 2:30 pm and is scheduled to last until 4:00 pm. However, there is no activity in that tent following our Forum, so it WILL be available for a longer time, if needed.

The traditional T/S - 18 Builders and Owners Association Banquet will again be at Butch's Anchor Inn, as in past years. This is our tenth annual association get-together during the convention. At the present time, a Master of Ceremonies and feature speaker have not been signed, and your suggestions are invited.

OSH

On this subject, I want to mention that I have literally taken it upon myself to schedule the Forum and arrange the Banquet in recent years. This has evolved perhaps from back the the 70's when I lived in the Oshkosh area and a site for the Annual Banquet was not as established as now. Although I DO NOT wish to frustrate or pre-empt anyone else in our Association who would like to be involved, or take on some (or all) of these chores. These activities belong to all of us, and in the absence of the formality of having Association officers to appoint (or cajole) "Volunteers", this less formal arrangement seems to work. I have no big ego problems as far as these events are concerned, and I openly invite involvement and participation by any of you so inclined. My phone number evening and weekends in Houston is (713) 440-8093.

As a postscript, let me report that the Sun 'N' Fun T/S-18 Forum in March was very well attended. We focused much of the discussions toward the new or prospective builder(s), of which there were many in the group. The S-18 (T-18CW) designation was explained as well as the sources of plans. (T-18, used market; S-18 Lu Sunderland). The current major parts suppliers were mentioned, with Ken Brock and John Adams (Leisure Aircraft) being in attendance. Oh yes; a Forum would not be complete without a few "Testimonials". In addition, John Starr explained why his T-18 wasn't finished. [He's making progress, but is also spending alot of time working on the Sun 'N' Fun year round committee; as well as being Chief Custom Built Judge for the Fly-in].

*THANKS, JOHN, FOR
YOUR DEDICATION OVER
THE PAST 10 YEARS!*

Good Flying!

John G. Walton
#46 & #52

*DON'T FORGET TO
SIGN UP FOR THE
BANQUET BEFORE TUES. EVE*

Here's a classic example of a builder report for the NL. Note the wings for sale at a really good price. Here's a way to get your T-18 into the air many months quicker. Don't look down your nose at the original standard wing airfoil, either, just because the newer airfoil is a wee bit better. It's only fractionally better from a practical standpoint.

2/9/87

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

Dear Dick,

For Sale: (1) set of standard T-18 wings. Original Airfoil. Complete with flaps, airleons, tips with flush position lights, internal VOR, walking beam, control sticks. Built in John's shop. Has .032 center skins. Unpainted. Also, has roll trim in right airleon per Lyle Trusty. Reason for selling: Building new wing per Lyle Trusty's design...wet wing, flaps as drag brakes, etc. Price on wing \$2,500.00

The 2nd bit of information for the Newslettter is that original T-18 metal cowls are available thru the efforts of Gary Strele (T-18 builder) and John Thorp. Thru Gary's efforts, Mr. Jim Logan, ex Lockheed sheet metal wiz was contracted to produce duplicate tooling. John Thorp co-operated by lending his original cowlng tooling for a period of 1 year. I played a small roll...I lent my metal T-18 cowl as a sample. The first cowl has been completed and it looks exactly like the original. Certainly the cost is higher than a fiberglass copy. To obtain a quote call Jim Logan at: 408-734-8842 or 415-961-5883.

SEE PHOTOS

Update on the Hunter T-18 project. Hopefully this will be the year. Installed a thicker windshield (obtain from gee-Bee) and am fitting canopy. Canopy is as everyone says tedious. Suggestions: Where forward stainless rails attach to roll bar, make attach tabs long enough for two screws, Run these 2 screws thru the roll bar and put nut on them. Reason for this suggestion: when you get in and out of the aircraft there is much stress on these single screws and the rails and side skins can easily flex.

In order to get a perfect allignment all the way around the roll bar and the front caNOPY bow we fabricated tapered al. shims about 6 in. long and tapering from about .025 at the thick end. Additional canopy mods include a locking pin just above the forward wheels...the pin engages in the roll bar when you slide the canopy shut. This accomplishes two things: first, it insures that the relative position of the bow to the roll bar is always the same so that your canopy seal can be effective; second, it insures that the canopy bow can not lift off the rails (if this happened you run the risk of the canopy being "pealed" off the plane.)Mr. Logan is assisting in the canopy install. At Lockheed he installed canopies on T-33's for a short assignment.

There are 4 very active T-18 projects here in the San Francisco Bay area and we would be pleased to talk with any T-18 builders who might pass thru the area.

Tom Hunter, 8313 Mayhews Lndg. Rd.
Newark, Ca. 94560 415-793-1940

THANKS, TOM, FOR AN EXCELLENT REPORT (AND FOR SETTING A GOOD EXAMPLE)

GOOD NEWS! METAL COWLS AGAIN AVAILABLE!

Dear Dick,

Thanks for the copy of #65. Finally finished the bird (after 10 years) in August '85. After a year and a half of flying (including 2 trips to Miami and one to Oshkosh) and maintenance most of the bugs have been ironed out - and now I am an EXPERT. So let me comment on a few items in the latest news letter.

SPINNERS

P2, Spinner Talk: I made a glass spinner over a male mold on a hand spun "lathe". I made it fairly thick, probably around $\frac{1}{4}$ " at the back, so I could counter sink the screws and so it would be "STRONG". Bulkheads were aluminum. On a full throttle run during test a separate piece behind the prop cut-out departed (with a bang). This was replaced, riveted to the bulkhead, and screwed to the spinner. On the way back from Miami one of these pieces and a sizeable hunk of the spinner departed with a hell of a noise and continuous vibration. After "calmly" noting engine instruments in the green we rattled into Meridian, Mi, trashed the spinner, and continued on our way. Once home, Robbie Grove, designer/builder of Whisper aircraft let me build a new spinner in his female mold - under his supervision. Some of these kids are pretty smart. Three layers of glass are strong enough. Keep it light. Weight and centrifical force don't mix. The new bulkheads are also made of glass. So far so good.

LIABILITY

P4 Liability: I haven't gone back to look, but some of the info you passed out with the "T-18 Manual" issue a couple of years ago contained a story of someone's problems following sale of a homebuilt. There was a copy of a sales agreement therein that was supposed to be fairly protective.

40° FLAPS

P7 Full Flap Pitch-down: When I started on my project (early in this century) there was much concern here with the pitch down problem. The solution was to block off the full flap position. I cut the full flap notch out. About the time I was finishing up, you had a letter from a young Aero. Eng. from McDonald/Douglas. He had closed off the bottom of the wing root fairing exposed when flaps are lowered. So I did that and I don't get any pitch down with full flaps. Of course, if I want full flaps, I have to hold the handle in position.

DRILLING
PLEXI

P5 Drilling Plexiglas: We found using regular ^{*}paddle type [?]bits worked just fine.

I ASSUME THAT "PADDLE TYPE" BITS LOOK LIKE THIS:

(MORE LATER ON THIS)

—CONT'D—



- CONT'D FROM PG-8 -

DUAL BRAKES

P5 Dual Brakes: We put dual brakes on our bird and plumbed according to the Spruce catalog. The master cylinders are on the pilot's side and, originally, were some I got from Ken Knowles in '03. Whenever the pilot's brakes failed (every other flight) I could always move to the right side and continue the trip. Eventually I replaced the masters with Cleveland cylinders. No more trouble. Be sure to use proper fittings and hoses, preferably aircraft quality.

OIL LEAKS

In addition to the brake problem we had persistent oil problems - high consumption, front seal leak, and leaks in general. We ~~had~~ the Lyc 160HP that you (Dick) sold to Rick Keller. We overhauled it. We did some replumbing and stopped the major leak, but we were still using too much oil. We hooked the breather hose to an oil separator, and I forced myself to not baby the engine, to use more RPM in order to set the piston rings. There was still evidence of oil leaks. Finally I made a good size oil separator (fiber glass) into which I run both the engine breather hose and a hose from the wet vacuum pump (into separate tubes). The oil returns to the engine through a single hose, and the air air pressure releases through a stand pipe in the separator. Now oil consumption is minimal and there are no leaks. I think the front seal was leaking because of back pressure into the case by the wet vacuum pump feeding into too small an oil separator.

I am planning to make a tow bar in two pieces, one of which will double as a control lock.

I love my bird.

THANKS, BUD, FOR YOUR COMMENTS
AND CONGRATS ON GETTING YOUR
BIRD AIRBORNE.

Sincerely,

Bud

Carroll H. Wight

USING MOGAS?

If you are, one of your real concerns is whether or not your fuel contains alcohol, so how can you know for sure?

Get yourself a graduated beaker and pour it 10% full with water. Now fill up the remaining 90% with your gas, hold your thumb over the end and shake it up. Now let it settle for a few minutes and read the new water content level. Since alcohol has a strong affinity for water the reading will be GREATER than 10% if you have alcohol present in the fuel. If there is significant change, DON'T USE IT! Drain it out and put it in your car perhaps, but don't gamble on it in your airplane!

If any of you have used auto gas (by itself or in combination with avgas) how about a report on your findings for the NL?

GUS GORDON REPORT #1

THROTTLE STUCK

After 15 months of rebuilding, N633GG is flying again. My 2nd "1st flight" was on Nov. 1, '86 at Camarillo Apt. Everything went fine...well, almost. For some reason my throttle got stuck and I couldn't push it back in! My CFI, Joe Biviono, was with me and with his experience we got it back down. We were doing some stalls and approach glides when the throttle stuck at about 2200 rpm. We tried to push it in..NO GOOD...then very carefully we pulled a bit and lost about 100 rpm and left it alone till we had the runway made. Taxied back to the hangar, took the cowlings off, but couldn't find any problem. By then it was working okay. The next day I went back and took off the carb, checked the throttle, etc. and oiled everything that moved, and re-assembled it all. I still didn't find anything wrong and so far the problem hasn't re-occurred. Sure wish I knew why it happened.

FLARING TOO HIGH

Anyway, after a few more hours of dual with Joe, he cut me loose again. On one particular approach and landing I found myself flaring with the nose too high and my landing at Alamosa flashed before my eyes. A go around solved that. What I had done in Alamosa (CO) was hold the nose too high, the tailwheel hit first and slammed the mains down hard. I bounced, stalled, and the rest is history. I found a reference point on the windshield and if the end of the runway drops below that point, I'm too high and I do a go-around. It was sure a hard lesson to learn.

ELECTRIC TRIM (SEE PIX)

Enclosing some pictures of my electric trim. The window is an '84 Mustang window motor and the relays are VW. There are up and down limit switches back on the trim torque tube, that interrupt the ground to the relays, eliminating a runaway trim. It works good, except it's a bit touchy, too fast, so I'm going to put in a resistor. I tried a 3 ohm 10 watt one, but that's too much and the motor has no power. I think a 1 ohm or 1/2 ohm will be just fine. The VW part # is 171 959 143 or 171-959-143a. Either one will work. Just a slight change in wiring and what's nice is that VW put a wiring diagram on the case of the relay. I made a bushing, drilled out 1/4" for the trim tubing & slipped it over the gear pin on the motor and tack welded the bushing to the gear. A split pin thru the bushing and tubing (safety wired, of course) & that's all there is to it. Next thing will be to make some sort of indicator for T/O trim position.

FOLDING WING

I have about 80 hrs. total on it now and I'm having a helluva good time. I get a lot of compliments that sure help to fatten ny ego. It's especially gratifying when I tow to and from the airport. It sure draws a lot o f looks. Guess people aren't used to seeing an airplane being towed on a trailer by a '80 Scirocco. Set up time 20-25 min. Ditto putting on trailer.

I averaged 6.5 gal/hr at 2400 rpm, giving me about 155 cruise. Having too much fun flying to come up with specific numbers in performance. Later maybe.

Here's a few bucks for the NL kitty. Keep up the good work. I especially enjoyed your T-18 article in Sport Aviation.

Gus Gordon

A super report, Gus, and I appreciate! Your paint scheme is a knockout. One of the very best I've seen.....I will make some comments on your letter on pg. # 17 where there is some "spare" room.

GUS GORDON REPORT #2

11312 Haskell Ave.
Granada Hills, Cal. 91344
March 27, 1987

T-18 MAS

Hi Dick,

Just a line or two to let you know what's going on.

GEAR ALIGNMENT

I'm in the process of doing my first 100 hour inspection.

The first problem I encountered was excessive toe-out. There was 3 degrees on the left and 1 degree on the right. I dropped plumb lines from the center-line of the fuselage for reference, took off the tires and reinstalled the wheels and with a good long straight edge, marked the floor and used string to lay out the lines and a protractor. Nothing to it.

AUXONICS

I'm also installing a blind encoder. What with all the rule changes for group II TCA's and all that. Plus, I figure it's like having another light on to be seen with.

I've updated my Loran to the 612B. I feel I can find the needle in the haystack with this unit. Just keep the bearing and track angle the same and you can't miss.



I went to my first fly-in Jan 11, 87. Got first place for Best Custom at Cable Air Show, Just outside of Upland, Cal.

SEE PIX PAGE

I'm enclosing some pictures of N633GG, showing the T-18 on its trailer. It's about a 10 minute drive to Whiteman Airpark from my house. It takes bout 25 minutes to load or unload. I plan on doing some Modifications to the wing cradles on the trailer and that might cut some time off the process.

Keep up the good work on the newsletters. Building my T-18 would have been much more difficult without all the information I got out of all the newsletters.

THANKS A MILLION FOR
ANOTHER EXCELLENT REPORT, GUS!

T-18's Rule,

Gus Gordon

REPORT FROM STEVE HAWLEY, 7300 N. San Anna Dr., Tucson, AZ, 85704

February 24, 1987

Dear Dick:

It was good to talk to you again last week. As promised, here is the story of what I think was vapor lock, what caused it, and what was done to prevent it from reoccurring.

The engine is a Lycoming O-360-A3A, 180 HP, with a homemade induction system. The carburetor is an HA-6 horizontally mounted. The details of the installation have been printed in the T-18 news letter several issues back. The incident happened on a very hot day a year ago last August. It was about 90 degrees Fahrenheit when my wife and I left Eloy, Arizona and flew down to Douglas, a distance of about 150 miles. The flight down was normal in all respects. We visited with friends who are missionaries with Tribal Air, the aviation arm of New Tribes Mission, a world-wide Christian Evangelical organization. After lunch, we climbed in and cranked up, taxied out and took off. It was so hot that the metal buckle parts of the seat belt/shoulder harness would burn the bare skin. I would guess that it was around 105 degrees Fahrenheit. The takeoff was normal and we headed home across the desert. About 7 miles northwest of the Douglas airport, as we were climbing through 7,500 feet, the engine quit. Perhaps a better description is that it lost power. At this point, we were about 3,500 feet above the ground. I turned back toward the airport and the little used state highway that runs between Willcox and Douglas. I knew we would have no trouble reaching the highway. During the decent, the engine gave about two one-second bursts of power. We made it back to the runway with about 100 feet of altitude to spare. The engine ran fine at 600 RPM, so we taxied back to our friends hangar. I thought perhaps the electric boost pump had malfunctioned, so we rigged up a bypass, using only the mechanical pump. I attempted to take off again (by myself) after a successful run-up and the engine quit cold just as I became airborne. I pushed it off the runway (plenty long) by hand, then cranked up again and taxied back to the hangar. A young man from Phoenix was down and agreed to give us a ride back to Eloy. I removed the carburetor and all fuel lines and away we went for home. The T-18 was left in Tribal Air's hangar.

The carburetor was taken to a certified shop where it was checked and found to be in good working order. All along I had suspected vapor lock. Shrouds were fabricated for the gascolater, mechanical fuel pump, and the electric boost pump. One inch cool air blast tubes were fed to each from the top rear baffle. Radiant head shields of aluminum were fitted to the exhaust tail pipes shielding about 120 degrees of arc along both pipes for about 14 inches each. The shields were kept one inch off the tail pipes with stainless steel supports and attached with stainless steel hose clamps. All fuel lines in the engine compartment were checked for obstructions and then fitted with fire resistant sleeves.

VAPOR LOCK = ENGINE FAILURE?

CONT'D FROM PG#12

When the loss of power was experienced, I had about 390 hours on the airplane. Since then, I have logged about another 25 trouble free hours.

It would have been nice if I had found something wrong and could fix it. As it is, I can only surmise that the problem has been solved. I now have two fuel pressure gauges, one electric and one mechanical. I want to be sure!

The biggest problem I have now is convincing my wife that it is safe to fly in the T-18. She flew up to Sedona for lunch with me the other day so she is slowly coming around.

I guess a logical conclusion is that given the right combination of circumstances, vapor lock can happen even after many years of successful flying!

Keep up the good work - we all appreciate it!

Steve Hawley

Steve Hawley
N9008Z SN.# 810

Another really great report from Steve and some real food for thought, too. All of truly appreciate your sharing this experience with us. It just might save another T-18er's neck one of these days. Appreciated your thoughts on road landing. The T-18's 21 ft. span makes it possible to use most roads for emergency landings without hooking a wing tip on poles, etc. Have to eagle eye for wires, tho'. Wheel landings probably best. (for directional control on roll out on gravel roads). Thanks again, Steve.

TAIL WHEEL SPRINGS: PROPER TENSION on tailwheel springs VERY important. I recently heard of a check out situation that resulted in loss of directional control on landing roll out that culminated in a full ground loop, causing damage to the outer wing panel and rolling the tailwheel tire off the wheel. In describing the situation later he said that you could not taxi his airplane using ONLY rudder pedals. He had to use brakes to maintain control. This strongly indicates the tailwheel springs have been stretched to the point that there was too much delay in following the rudder cable position. I don't know whether the springs sre the double action type, but I strongly recommend that no other type be used.

I had personal experience with this situation a few years ago and I wrote an account of it in one of the NLs of about 4 years back. Mine got so bad that I could just barely taxi crosswind in a 35 kt. wind. Changing to the double action springs made a tremendous difference. I then was able to taxi out without ever touching the brakes!

As someone once said, "It's the little things that causer accidents... things that you don't put in the same category as water in the gas, etc." A real truism. Sometimes it's a combination of a couple of those little things that bite you when you least expect it.

Anyway, make it a regular feature of your walk around, ok?

STEVE HAWLEY STORY

WALT GIFFIN'S COMPARISON OF O-290 AND O-320 PERFORMANCE

Dear Dick,

Thank you for your prompt response to my plea for the missing newsletter. My \$10 contribution to keep us in business is enclosed. We need this communication device and I hope the T-18 crowd will come forth with enough material to fill many more issues.

I have nothing earth-shaking to report but thought I might relate some of my experiences in changing engines in 78WG. I went from a 135hp O-290-D2 with a Pacsetter 68x63 prop to a 160hp O-320-B2A with a Pacsetter 68x69 prop. The mechanical installation was not difficult but I did have some problems with the induction system. I had a Grumman-American AA-5 air box with a standard foam filter on the O-290 which I reinstalled on the O-320. The new engine ran very rich and required aggressive leaning tactics to even develop smooth running take-off power. Much experimentation with filter (and no filter) types led me to believe that the engine simply was not getting enough air. I subsequently designed and installed a Thorp-type banjo box with a Furolator AF 3137 oval shaped automobile air filter. The oval shape and unique box design were required to fit under my Rattray cowling. Carb heat was initially provided by a simple trap door on the nose extension of the box which closed off the ram air and admitted ambient air from inside the cowl when activated. Since that provided virtually no drop in RPM I later modified the box by building a chimney over the trap door extending to near the crossover pipes. That new air source was supplemented by attaching scot tubing between an opening in the side of the chimney to a heat muff on the exhaust pipe. This final installation works very well having cured both my rich mixture problems and the carb heat deficiencies. I particularly like it because both ram and heated air are filtered.

Some numerical comparisons follow: (Aircraft has approx. 850 hrs tt.)

	O-290	O-320
Aircraft empty weight	927	941
Aircraft gross weight	1500	1550
Empty c.g.	64.69	64.12
Top speed measured on 4.69 mile course, 2000ft msl, 1350 lbs.	185 mph	191 mph
Flight plan cruise 4500 ft, 2450 rpm	160 mph	170 mph
Average fuel consumption - mixed operations	7.2 gph	8.0 gph
Measured ROC 2000 to 3000 ft. at 1350 lbs. and 76 to 80 degrees F.	1063 fpm	1220 fpm
Extrapolated S.L. ROC at 1350 lbs.	1500 fpm	1700 fpm

I do not have accurately measured takeoff distances for the O-320 yet but my perception is that they are much shorter than for the O-290. I leave to the reader's judgement whether or not the performance differences justify the cost.

Walt Giffin, N7BWG

Walt

3-20-1987

BRAKE FLUID NOTE

Dear Dick:

Happy First Day of Spring!!!! It's not been a bad winter but just bad enough to keep me from flying as much as I would like.

Find enclosed my check for a \$20 contribution to the Society. Sorry that it's been so long.

BRAKE FLUID

I have had some brake problems. Someone told me that it OK to use automobile brake fluid instead of aircraft fluid. After I had a fitting fail on my left brake assembly, I replaced it and added automobile fluid. Worked OK for a bit then one day after runup the brake would not release. I don't have parking brakes. Upon disassembly I found that the O rings were softened and had to be replaced. Now I use aircraft brake fluid.

NEW CLEVELAND BRAKES

I have purchased a Cleveland 199-93 Conversion Kit. This upgrades my 40-78/30-9 Series wheel and brakes to 40-230/30-181 Series. This kit provides thicker brake discs, heavy-duty lining and necessary hardware to modiby my 5" weels and brakes. I will install them with my annual this spring. I haven't been completely satisfied with my old ones. I had a hard time finding anyone to sell me a kit, but finally got it from Aircraft Spruce fo \$128.75. I would recommend that this heavier duty Series be purchased initially for those who have not already purchased wheels and brakes.

Your stories in SA are great. Your style is very readable, entertaining and informative. This is no surprise to those of use who have been reading your newsletters for so long. Thanks for both.

We plan to join Green and Holt at Lake Texoma in May. Hope to see everyone there too.

Nate Eastman
416 West 2nd St
Kimball, NE 69145

KEN C. MORGAN
439 LOVELLA DR. W.
HURST, TEXAS 76053

April 5, 1987

Mr. Dick Cavin
T-18 Builders/Owners Association
10529 Somerton
Dallas, Texas 75229

GPU PARTS

Dear Dick,

I have enjoyed spending the time with you during the past few weeks. I am particularly pleased to have the 0290G engine parts and will make good use of them in building an engine for my T-18. I have always had confidence in the GPU having experience with this engine in my Starduster SA-100, two place. I have inventoried the parts and will have several complete cases with cylinders if other builders have an interest in going with the 0290G. I plan to use the 0320 sump and the MA-4SPA Model 10-2356. This is a very old model carb used on the Lyc 0435-1 engine. I'm not sure parts are still avialiable for this particular unit. Perhaps others could enlighten me on this. This is the carb that works very well with the GPU, according to Mr. Thorp.

There are several parts I need for my project. These include lord mounts for flat back GPU, spinner and wooden prop, if someone had converted to larger engine or has these parts surplus to their needs.

KEN MORGAN LETTER

My project has suffered during the past few years as I have gotten involved in other production aircraft rebuilding/maintenance. However, I have made a vow to concentrate on my project with no other aircraft taking my time. My fuslage is on gear and partially riveted. Am working on the fuel tank, rudder cables(to outside), and have the instrument panel blank ready to punch. The tail group is complete except for assembly of horizontal tail components. Folding wing main spar has been fabricated and is ready to rivet. Am working on steel wing fittings and other folding wing components.

I have been going over old newsletters and am most grateful for the wealth of information contained therein. Hopefully, in the very near future, I will have more to report regarding my project and building experiences. I am eagerly looking forward to the May 9, visit to Texoma Lodge. My wife J'nene, is great in her support of my T-18 project; however, she has not had the opportunity to see numbers of this beautiful aircraft. See you at Texoma, May 9.

Personal regards,


Ken C. Morgan, 817-268-1834

THANKS, KEN,
FOR YOUR LETTER.

Earl Ody
28903 Gunter Rd.
San Pedro, CA, 90732

Dear Dick:

I received N.L.#65 with "complimentary copy" stamped on it, so I guess I assumed you weren't doing it anymore and noticed that I had missed #64. At any rate I'm glad you're continuing and enclosed you will find my check.

My co-pilot, Pat Condon, and I are continuing work on our new T-18. All structures are finished, the 180 h.p. is mounted and baffled, and we just finished the instrument panel and baggage compartment. Since we are flying a T-18 and have other interests, we aren't as dedicated as we might be.

Our T-18, N8952, has turned 1925 hours and will be 16 years old in July. It has taken us all around the U.S., Canada, and Mexico and has been a delight to fly and own.

We have lost a couple of our many T-18s at Torrance Airport. Oliver Smith sold his T-18 to a man in San Diego and has given up flying. Doug Kelly has moved his to El Monte to be closer to home. Bill Warwick has retired and moved to Arizona. The big push around here now is compost airplanes. We have two 300 mph Glasairs being built, both by experienced builders, and several Lancairs under construction.

George Leider is finishing his THIRD T-18, in addition to the beautiful Pitts S-1 he built. I don't know how he does it, since he works long hours and sails a 30 ft. Newporter sail boat.

Thanks for remembering me, Dick, and my apologies for being too lax.

Best wishes,

EARL D. ODY

Re Gus Gordon's letter about flying his airplane and over-flaring: At the risk of being repetitious, me made a point in a previous NL about using a point on the windshield as a bench mark reference on the maximum angle of attack to use on a landing. Each time you get in the airplane (any airplane) take careful note where the horizon cuts across your windshield. In the 3 point position this angle is only a little less than the stalling angle of attack, but it is a high drag, high sink angle, one that will rapidly decrease speed, so you should make certain that you are within 1-2 ft. of the runway (preferably 6") before you allow the airplane to be in that attitude. In case of doubt, do what Gus did, punt! Go around, do it again. Make a habit of always using your full (30°) flaps. Don't come dragging this airplane in on a flat approach. Make a steep approach and control your airspeed within 2mph from 500 ft. up on final. You may also want to make another mark on the center tube of the roll bar for this angle (one that will give you about 90 mph av. It could come in mighty handy if your airspeed indicator was kaput, etc. You may also want to put a piece of tape on the front and rear of your cowl, like a front and rear gun sight to cross check what you are really pointed at. Some new ones on the airplane seem to have a tendency to use the spinner as their front "sight", landing the airplane in a slight crab. I know all of you know these things, but some times it's helpful to refresh one's memory from time to time.

EARL ODY'S LETTER

SOME TIPS ON FLYING THE T-18

T-18 Mutual Aid Society
10529 Somerton
Dallas, Texas 75229

Dear Dick,

Enclosed is my dues for an excellent newsletter, keep up the good work. For years I have been intending to contribute something, so here goes, on canopy latches:

I have seen and flown in several T-18's that require at least two hands and too much time to get the canopy locked or unlocked, this could be hazardous if an emergency exit was required.

The enclosed sketch shows the latch that has served me well for over eleven years. It is made from a miniature overcenter locking toggle clamp, available, off the shelf, from many tooling component supply houses.

It is small, rugged, neat and requires a single forward motion to close and lock the canopy and an aft motion to unlock and open, all without having to look at what you are doing.

I routinely "pop" the canopy open in flight for increased ventilation, it will open about $\frac{1}{2}$ inch and stay there until locked closed.

For a ground security lock, I use a modified showcase sliding glass panel key lock, available from most local hardware stores, carried as loose equipment, it hooks into the aft turtledeck structure under the aft canopy fairing and stops the canopy from opening when the lock is in place.

Sincerely,

Al Chivers

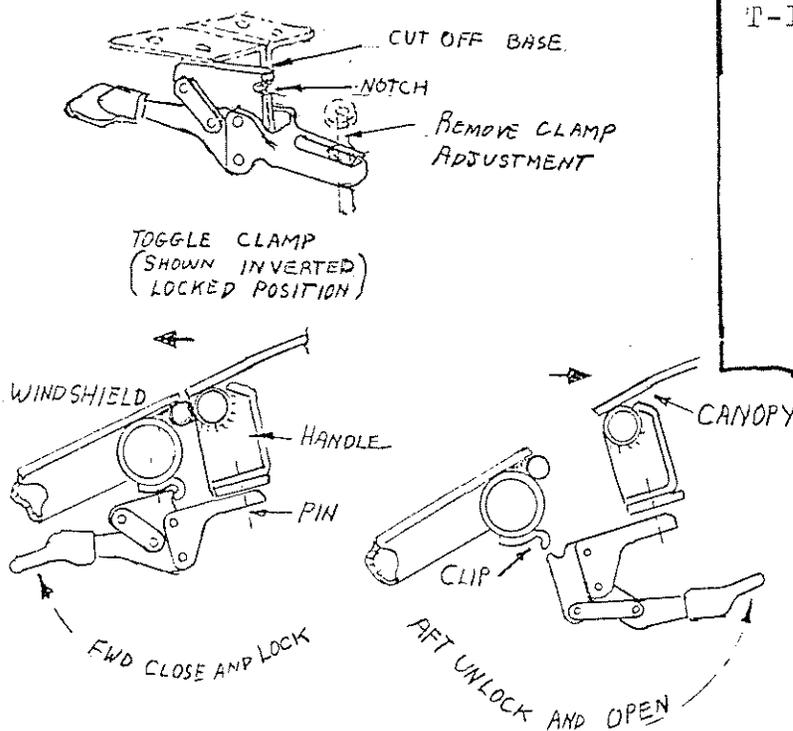
Al Chivers

T-18 N18AL SN 287

HEY, AL, THANKS FOR THE GOODIE. I REMEMBER SEEING THIS ON YOUR AIRPLANE AND THINKING IT WAS A SIMPLE SICK WAY TO DO IT.

I TOO, FLEW MY T-18 OFTEN WITH THE CANOPY OPEN AN INCH - ONCE ALL THE WAY BACK FROM OSH.

SEE YOU HAVE A NEW ADDRESS, TOO.



Doug Frantz
1019 S. Meadow Lane
Mustang, Okla. 73064
(405) 376-4492

T-18 Mutual Aid Society
10529 Somerton
Dallas, Texas 75229

Dear Dick,

Enclosed is my check for \$25.00 which I think should get me paid up through 1987. I sent a check for 1985 dues on 12-19-84, according to my records. If this does not agree with your records, please let me know.

REHAB WORK

I've enclosed a couple of pictures of N58K for your collection. I had it torn down for a year and a half for engine overhaul and a lot of other assorted work. This included painting the wings, building a new fin tip from fiberglass which incorporates a small Grimes position light originally used on the Stearman PT's. I also installed a cabin heating system (manifold type) and a lot of other small jobs that didn't seem like much, but took forever to complete.

PIPER BLADE TYPE PITOTS

One interesting thing I discovered was that Piper pitot static heads are apparently made to work in different speed ranges. You may have noticed that the static port is located so that the airstream holds a back pressure on the static side. The amount of this pressure is regulated by a bleed hole drilled in from the back of the unit. The airspeed indicator in my aircraft always seemed to read too low. So, I rigged an alternate static source to the inside of the cockpit, and discovered an 8-10 mph differential at cruise. The bleed hole in my pitot static was smaller than a #60, so I started drilling this hole out one size at a time until I got no differential with the alternate source open. The hole size wound up being a #52. Since then, I've looked at some other Piper aircraft, and the faster ones (Arrows) seem to have a different angle cut on them. Anyway, the indicated cruise speed is now about what it should be, about 160 mph at 3000' and 2400 rpm using a 76 inch pitch prop.

Sorry about the dues delay. Keep up the good work on the newsletter! I've learned a lot about the breed from reading it.

Sincerely,

Doug Frantz
Doug Frantz

DOUG, WE DO APPRECIATE YOUR COMMENTS ON THE PIPER PART. YOU SEEM TO HAVE NEATLY SOLVED A FAIRLY COMMON PROBLEM, AGAIN, THANKS,

FROM JOHN & KAY THORP

Dear Dick Cavin:

I'm sending you a copy of Dick Cottingham's last two Christmas notes in case you had not heard of his T-18 statistics. I guess 3700 hours is quite a lot. He writes interesting little notes, to say the least.

I read the newsletters to John and actually find some of the "news" interesting. He takes in every word. We received a beautiful water color of Don Taylor flying over the North Pole. That big bleak place actually looks pretty.

We thought your story re John (and me) in SPORT AVIATION a while back was very good - also the recent one about Edna Gardner. She is some lady! That old picture of us was pretty bad, tho. Some people didn't know that John had been married before I showed up on the scene. That old thing was taken in 1977..... before I had white hair.

Love and best wishes to you and Lyn,

Kay

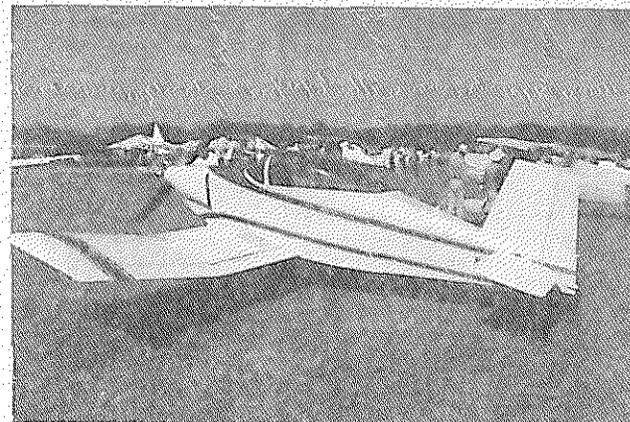
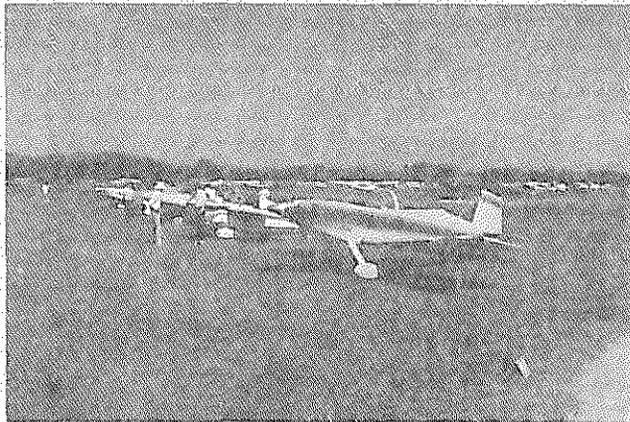
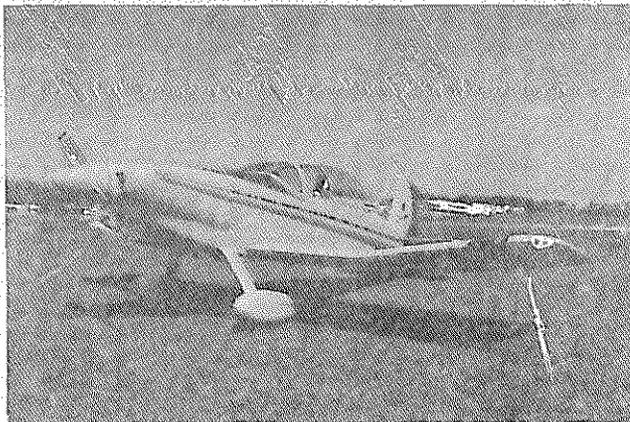
Dec '85
"Finally have 299V back in the air after replacing right wing section after goose collision last year. Near 3600 hours on her and she needs paint, wheel pants, and gear leg fairing. I'll probably wear out before she does. I'm nearing 9000 hrs. and only half deaf from the noise (?). Hope you enjoy a super 1986"

Dec. 86
" I guess this is a musical card. Don't know why there are no pretty cards with airplanes on them, but I keep looking. 299V still flying. 3700 total hours on her now. She was grounded for four months this year. Crack showed up in gear leg. I already had another cracked gear in garage. Got both X-rayed by an industrial unit in Milford Trade School (E. Neb.). Inner tube is tough to see, even in these films, but looked okay. Finally found a large enough heat treat oven in Minneapolis. Ken Brock's man, Paul Green, supplies me the heat treat process data. Minneapolis folks had the gear 2½ months. I had to guarantee that I would not hold them liable if the heat treat was inadequate. Finally got both gears back and has done fine in 25 hrs. since. Liability insurance doubled this year to nearly \$600...and me with over 9000 hrs. and no accidents. Nobody can accept any risk anymore. My children are thriving. Ex wife has advanced breast cancer. Had surgery, chemotherapy, and radiation this past 9 months and hoping for the best. Hope you both have a good '87. I'll get to Calif. again one of these years.
Sincerely, Dr. Cottingham

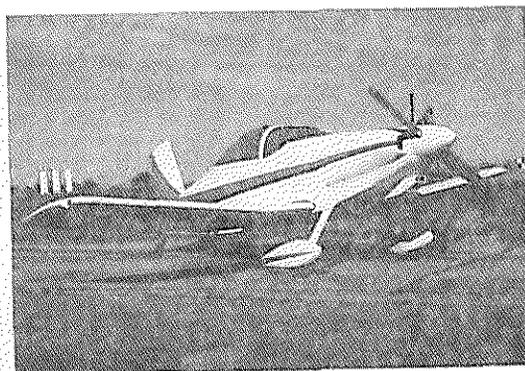
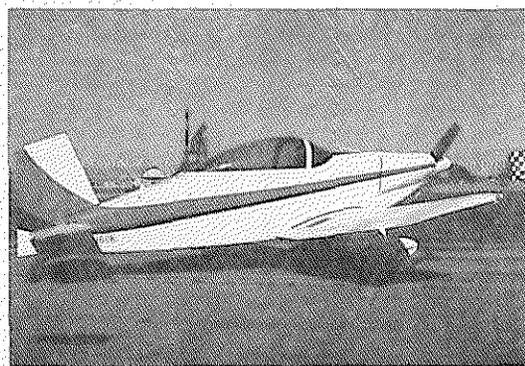
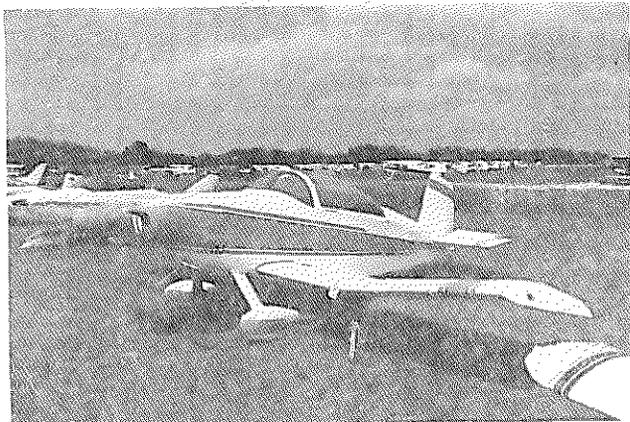
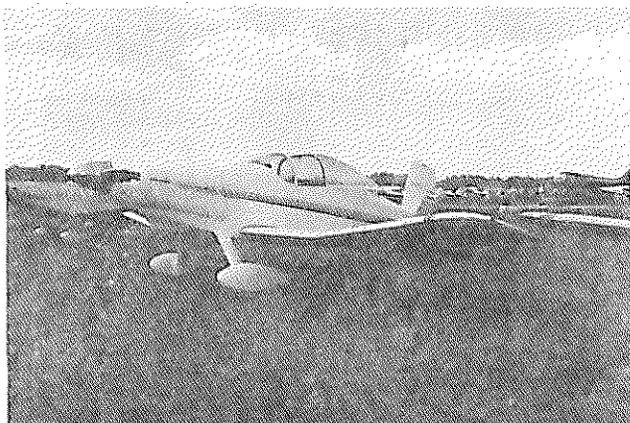
3700 hours total time, as of Dec. 1986! Fantastic! I'm sure the total is up to nearly 4000 hrs. by now, as Doc really uses that bird..hard. Doc is a radiologist and he uses the T-18 to commute to a number of small towns in rural Nebraska that he serves on a scheduled basis. I don't recall all the details, but most of the towns have only very rudimentary sod strips, probably quite rough, too, so you can well imagine what a beating the T-18 takes..and takes..and takes. Can you also imagine the variety of rough weather that has pounded 299V, also? A tremendous tribute to the T-18! He once brought it to CA for John to tear down and inspect after 2000 hrs. Incredibly, nothing of significance was found!

—o—
NOW ENJOY THE PICTURE PAGES.

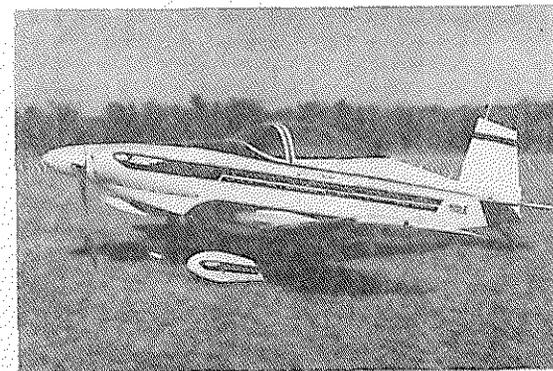
SUN N FUN PHOTOS COURTESY JOHN WALTON



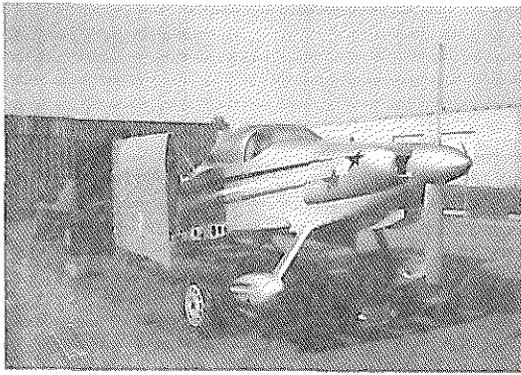
THESE TWO ROWS (ABOVE AND BELOW) ARE T-18s THAT WERE AT SUN 'N FUN



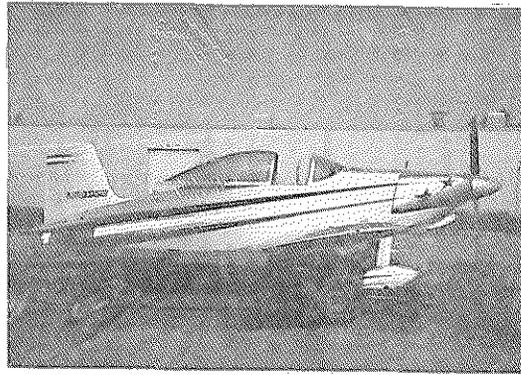
THESE TWO VIEWS ARE OF DOUG FRANTZ'S PROUD BEAUTY FROM MUSTANG, OK



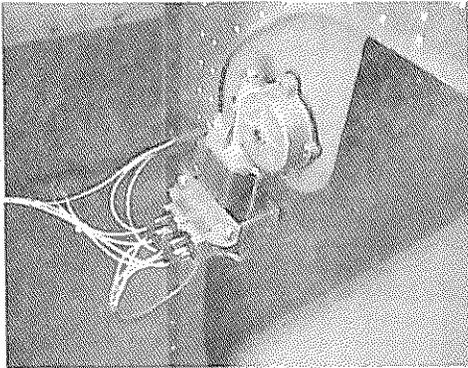
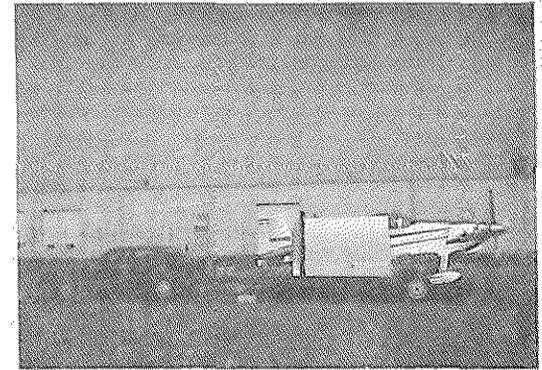
LEE REILLY, WAGGONER, OK AND HIS YELLOW AND RED VERSION OF LU SUNDERLAND'S ORIGINAL PAINT SCHEME. NOTE MATCHING STRIPING.



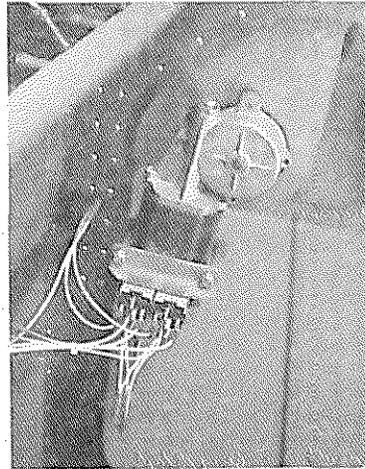
THESE THREE SHOTS ARE OF GUS GORDON'S BEAUTIFUL BIRD SITTING ON ITS CUSTOMIZED TRAILER. NOTE SIZE OF VW SCIROCCO THAT PULLS IT.



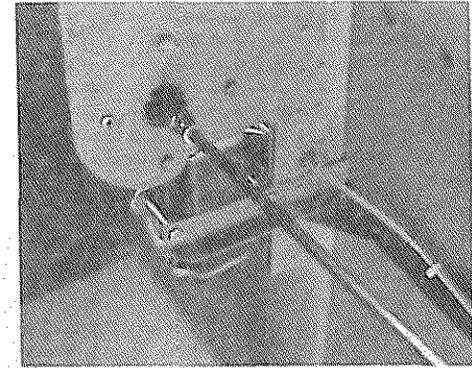
AN OUTSTANDING EXAMPLE OF A SIMPLE BUT SUPERB PAINT SCHEME OF RED, WHITE, AND BLUE STRIPES FLEETING INTO MATCHING COLOR STARS ON THE COWL. NOTE TASTEFUL MATCHING MINI-STRIPES ON FIN AND WHEEL FANTS.



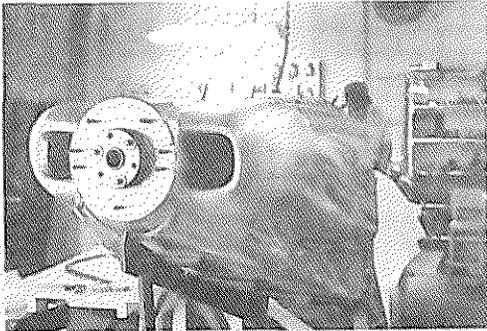
GUS' ELECTRIC TRIM MOTOR ON SHEET OF .063 RIVETED TO BULKHEAD (LOOKING AFT).



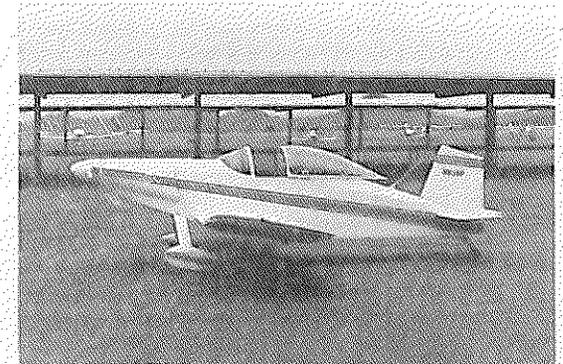
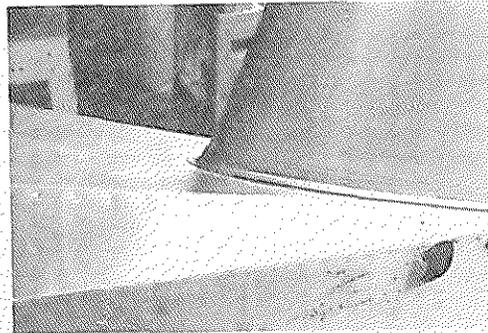
CLOSE UP VIEW FROM SAME ANGLE. (SEE STORY THIS ISSUE)



VIEW LOOKING FORWARD. NOTE ANGLES, GUSSET BRACING, WIRING TO LIMIT SWITCHES.



TWO PIX FROM TOM HUNTER (SEE STORY) SHOW OFF METAL WORKING EXPERTISE OF MR. LOGAN, A RETIREE FROM LOCKHEED.



ED FOE (PHOENIX, AZ) DISPLAYS ANOTHER NEWLY COMPLETED BEAUTY AND ANOTHER SIMPLE BUT BEAUTIFUL PAINT SCHEME THAT SAYS "SPEED"