

If you've been wondering what happened to the T-18 newsletter that should have been out last fall, it gets to be a long story.....but I'll make it brief. My wife and I took a long delayed vacation trip to Honolulu in October, but after a week there we cut it short. It was so hot and humid that we couldn't take it and I got where I could scarcely walk a half block without having to stop and rest. (It's pretty discouraging to have diabetes and peripheal artery disease, too). In late Nov. I went back to Wichita to do an update story on the Prescott Pusher and I got chilled and came down with pneumonia. It wasn't responding to antibiotics because of the diabetes, so my doctor hospitalized me and put me on insulin and I was able to come home after two weeks. Since then I've been going thru a program of careful diet control, exercise, etc. to get my blood sugar stabilized. It's a pain in the neck to go thru all this and it takes up about 3/4ths of my waking hours to do it, but I have no choice. I was also running way behind on my writing for EAA mags and I somehow managed to crank out five stories for them in what free time I had. I had to put the NL one notch below in priority I apologize for the delay and hope not to be so long getting the next one out.

JAVELIN V-6 ENGINE: You will read this a little later in Sport Aviation, but you might be interested to know that Prescott Aeronautical now has a used Cessna Skymaster that they will be using as an in-flite lab to test their new prop and also to flight test the Javelin V-6 engine conversion. They will first do a test program on their new prop, that is pitch controlled by a solid state electrical unit. They will mount it on the present rear engine in the Skymaster and fly it with the front prop feathered, using the front engine only for takeoff and initial climb and as an emergency stand-by. This will enable them to make very accurate readings on the thrust efficiency of this new prop and also to do a complete range of vibration measurements throughout its complete rpm range. All these readings can then be compared to original equipment readings.

When the program on the prop is complete they will then remove the factory engine and install the V-6 and go thru a complete program with it, too. and the resultant airspeed readings they get will be compared with the ones on the factory engine. As some of you may know, there have been several people in the aviation field that have said they don't believe the HP claims Dave Blanton has published for the engine. Dave says the dyno shows it will develop 260 hp, while others say it is much less than that. I do know that Dave has done more experimenting with converting auto engines for aircraft use than anyone else in the business and I firmly believe that the cog belt rpm reduction unit that he uses is a proven system. It is light, rugged, and is extremely smooth. I also know that Dave has found out the hard way on the things NOT to do, as well as the things you MUST do and much to his credit, he doesn't try to hide the fact that he has made mistakes and that he doesn't try to sweep them under the rug.

Perhaps you may think the engine doesn't figure in your future if you now have a T-18 that's currently flying on a Lycoming engine. It well may be in your future if your engine is anywhere near to a major. The big business boys seem to be determined to price the recreational pilot and plane owner out of the air. If you doubt that statement, here's an example that might shock you: The Marvel-Schebler carburetor people are under new ownership and as a result you can no longer as an individual go to a supply house and buy parts. You buy a kit if you want a new gasket, and the kit costs you \$400!!!! An overhaul kit for the carb will cost you \$2100...and you can't do it yourself. You have to take it to a designated M-S overhaul shop! I think a lot of you are aware that the cost of engine parts has simply skyrocketed in the past couple of years. Price a new 180 hp Lyc if you want a REAL shock.

COMMENTS ON EDITORIALS

ENGINE TALK CONT'D:

Supposedly the villain in the piece is PRODUCT LIABILITY. Actually the real cause is a combination of HUMAN GREED AND STUPIDITY. Greed on the part of the legal "profession", that make the Mafia look like pikers, and stupidity on the part of juries that award ridiculaously high amounts and idiotic findings against manufacturers, suppliers, and other commercial concerns. The lawyers always see to it that the juries are made up of people that are failures and want to revenge themselves against Big Business or anyone or anything that accomplishes anything worthwhile. Our society is far from perfect, but it's pretty great anyway, but we are now witnessing its ruin,

ENGINES

LATE FALL '87 T 18 REUNION: Our second '87 get together at TEXHOMA was another memorable time. While our turnout wasn't as big as the one in May, it was every bit as enjoyable. Five of our original 17 returned. Dave Eby, from Wichita Falls, Tx, had been to the big Dayton Air Fair in the interim and was the T-18 rep there this year. Leroy Holt (Savanna, OK) was again there with his 180 hp S-18, resplendent with a new paint job, his son, Gary Holt (Tulsa) was again there and again nearly wore his T-18 out while there. It was Halloween weekend and when Gary and Maxine arrived from Enid Maxine was costumed for the holiday, disguised as a tramp and wearing a flight suit, helmet, and goggles. Jim French, of Wimberly, TX, brought his bird again and this time he hauled me in and out. Paul Shifflet, drove down from his home near Des Moines, IA, and brought his removable instrument panel for all to see and study. (See photos). He also brought in an extra push-pull tube for Don Warner, who drove in from his home in Florida for the get together. We also had buddy rides going all day and I believe that every one that drove in got at least one T-18 ride and most had two or three. This gave them a chance to see how one T-18 compares with another and it also gave them a chance to feel for themselves how a T-18 flies. I got to fly Leroy's S-18, with its 180 Lyc and constant speed prop and about all I can say is that it really gave me a thrill to fly it. It just flew great! (Don't they all?)

LATE FALL '87 REUNION AT TEXHOMA

Everything was very informal and everybody loved it. When the day's flying was over at sundown we all retired to one of the large cottages that two of the couples had rented and we had a cookout around the outdoor barbeque pit, where hot dogs and sausage was cooked, with chili, chips, dips, etc. on the dining room table inside, where it was 'fix your own'. All of this, plus coffee, beer, etc. was brought in and everyone chipped in to split the cost of everything. Truly, everyone loved the arrangement.

After we all pigged out on hot dogs we brought chairs outside and had our own T-18 forum and general Bravo Sierra, exchanging ideas, experiences, and plans for future gatherings, while the women stayed inside telling lies about knitting and such.

MORE ON REUNIONS

It's hard to beat such a gathering to make new friends, to get to know each other well, and to get to know a whole lot more of the various ways to build the T-18. The real key is the size of the gathering and the location on an uncontrolled airport well out of a TCA. Not only can the flying be as frequent as we want, but it can be the type of flying that we particularly enjoy. It can be low passes formation, spot landings, etc. I hope more of you that are in the process of building will bring some example of your work i.e. like Paul Shifflet's fold-down instrument panel. Bring them to Sun 'N Fun, to Osh, or to anyplace we have a forum, whether it is formal or informal. An aileron or flap or rudder that would-be builders can examine would be a big help. You get the idea.

ENGINE MOUNT FABRICATION: The following from my old friend, STEVE HAWLEY, is a simple and clear description that new builders will appreciate:

Dear Dick,

In response to your request for articles on how different assemblies were fabricated and problems overcome, I thought I would describe the procedure by which the engine mount was fabricated. Engine mounts can be purchased but they are expensive. Using the following procedure, the fabrication is easy, economical, fun, and foolproof.

Fabricate a well braced table on castors so that it can be rolled around the shop. It should measure about 2'x 2'x 3' high. Rough 2x4's and 5/8" plywood was used along with bed type castors.

Support the fuselage on solid supports such as well braced saw-horses so the reference line (WL42) is level. The tires should clear the floor by a half an inch or so. Stretch a piece of steel safety wire tightly from wall to wall above the fuselage keeping it high enough for comfortable head room. Locate two points at B.L."0", one near the tail and one near the firewall. Use a fine pointed pencil and mark ϕ on a piece of masking tape at each location. Hang two plumb bobs from the overhead wire and position the fuselage exactly under the bobs.

Place engine on previously fabricated table using three small hydraulic or screw type jacks as supports. Extreme care must be taken to assure that the engine won't slip off the jacks! This gives infinite vertical adjustment and the table on castors give infinite horizontal adjustment. Level the engine using a surveyors level and a 6 inch rule graduated in 100th of an inch. I used the top of the outer four push rod housings at the point where they enter the cylinder heads as check points. Using the three jacks it is a simple task to raise the engine to the proper height relative to W.L.42 and at the same time keep it level.

Using the "split" line of the engine case as reference, locate two points equidistant from the ϕ of the engine as far apart as possible. I believe I used 14 inches. Scribe lines at these two points in the engine paint. Hang two plumb bobs from the overhead wire attached so they can be moved on the wire. Position the leveled engine in front of the firewall the exact distance from the firewall as shown on the plans and directly under the two bobs at the points previously marked on the ϕ of the engine.

The ϕ of the engine should now be precisely in line with B.L."0" and resting in a horizontal plane, the elevation of which was previously determined from the drawings. You are now ready to "cock" the engine downward and to the right.

The engine is pivoted in the horizontal dimension about the center of the engine (a point midway between the two marks on the split line) until the proper deflection angle is obtained. This is determined by calculating the offset from split line to the point of each plumb bob using the desired angle, the known distance between two points (7") and the trigonometric relationship. The rotation in the vertical dimension is similar using the distance between push-rod housings, and the deviation from the horizontal plane determined with the surveyors level and the six inch rule. In both cases the engine should be rotated about the center of the center main bearing of the engine.

ENGINE MOUNT FABRICATION BY STEVE HAWLEY

ENGINE MOUNT FABRICATION, cont'd.

STEVE HAWLEY

The engine mount rubber shock assemblies should be installed in the engine and squeezed to the proper torque. Carefully measure the assembly and fabricate some bushings of wood to simulate the rubber when crushed to the final dimension. You are now ready to cut and tack weld the engine mount assembly. I protected the paint on the engine and the firewall of the fuselage with wet rags, asbestos sheet, and scrap aluminum. After each piece was tacked in three or more places, the mount was carefully removed and welded solid. When reinstalled, it fit like a dream.

The above procedure sounds very involved and tedious but it really isn't. From start to finish the engine mount was only a weeks work in the evenings. The total cost of materials was in the neighborhood of \$35.00. No jigs of any kind were required. This method will work whether the engine is "dynafocal" mount or straight.

Sincerely,

Steve Hawley

Steve Hawley

Excellently written article, Steve. Thanks again We'll be looking forward to your account of the Warneke "Almost constant speed" prop on your T-18.

YOUR ARTICLE ON

I would like to call attention to the TYPE of the above article. It's a HOW TO DO IT article, which is the type article a lot of us are eager to see and I'd like to encourage all of you (note the words ALL and YOU) to write a simple description of some operation in the building of your airplane. Exactly how did you do your brake system? Exactly how did you install the wheel pants? How did you set the stabilator angle for zero -tick position? How did you rig your ailerons and check their travel? Etc, etc, etc, etc, It's time for you to pay back some of the info you got in the NLs when you first subscribed, you know. It's a little past time, as a matter of fact, gents. As I've told you in previous NLs, I can see the final end of the T-18 NEWSLETTER if the members aren't interested enough to send in an article....and it doesn't have to be something that we haven't covered before, either. It's always good to see how someone else does things.

RV NEWS

Later in this NL I've included several pages on constant speed props from Dick Van Grunsven's RV newsletter, which is one of the best in the business. As you may know, I owned the RV-1 (the prototype of the RV-3) for quite a few years and still have a soft spot in my heart for the RV airplanes and I have the greatest admiration for Dick as a fine designer and a man whose word you can depend on 100%. We've also included some info on items that he has for sale that you might be interested in. His address is Van's Aircraft, P.O.Box 160, North Plains, OR, 97133.

DISCLAIMER

STANDARD DISCLAIMER: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 and non-members in both building and flying the T-18 or S-18 and anyone using these ideas, opinions, & experiences do so at their own discretion and risk.

Here is the first part of the material from the RV NL and because so many of you indulge in formation flying occasionally, it's pertinent information.

FORMATION FLYING:

As mentioned in the March RVator, we received formation flying materials from several builders with military flying background. We chose to print the following which was written by Jim Pohoski, 24214 Northcrest, Spring, TX 77389. Jim has instructed in the T-38, F-5, F-101, and currently in the F-4. He is also a First Officer with Delta Airlines.

While some of this presentation may repeat what we have said before, it is more thorough and comprehensive.

"The military uses various formations to move many aircraft as one, deliver air to ground ordnance, as fighter escort, for area defense, air superiority, and so forth. Although we as RV-4 pilots will not be tasked to do these things, all of the basic principles of formation flight apply equally to the RV-4 as the F-4. Flying formation is fun and can become as second nature as a trip around the traffic pattern. However, two or more aircraft flying within a couple feet of each other present quite a potential for a midair collision. There is no room for carelessness, a lack of knowledge or a lack of proficiency.

Ideally, formation should be taught as other phases of flight-by dual instruction. Since there are few qualified formation instructors in our ranks, I will try to offer some information on formation flight using the building block approach. We'll start with something familiar--straight and level flight--and work our way toward more advanced maneuvers using what we've learned previously. I'm not trying to insult anyone's intelligence or flying skills. Trying to teach yourself formation is comparable to teaching yourself to fly instruments; it can be done, but must be approached slowly and carefully.

There is more to formation flying than just two aircraft together in flight. Just as being a fighter pilot is an attitude not an occupation, flying good formation requires the right frame of mind. You're not out there by yourself; both lead and wing must work together for formation to be safe and look good. As lead you are responsible for the conduct of the flight and anything that goes wrong. As a wingman, you are responsible to stay in position, do as lead directs, and be safe.

A formation flight will only go as well as it is briefed. Both pilots should be satisfied they understand what, when where and how maneuvers will be accomplished. A few minutes spent briefing the flight will be well worth it. Here are a few things to think about:

CALL SIGN--What are you going to call yourself, i.e. RV Flight, N4RV Flight, etc.

WORKING FREQUENCY--If radio equipped.

VISUAL SIGNALS

TAXI

TAKEOFF--Single ship, formation, trail

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FORMATION FLYING cont'd (page 2)

REJOINS--Straight ahead, turning, airspeed lead will hold

RENDEZVOUS--Place to meet if separate takeoffs were made, altitude deconfliction until tally (gaining sight of the other aircraft).

MANUEVERS TO BE FLOWN--Minimum/maximum airspeeds, altitudes, G's, abort criteria.

RECOVERY/LANDING--Single ship, overhead pattern, formation.

LOST WINGMAN--How will you insure separation if lead inadvertently flys you into a cloud and you lose sight.

BREAKOUT--How will you insure separation if you have to rapidly leave formation.

EMERGENCIES--Will you stay with the other aircraft or recover separately.

I am gearing this article to those of you who have never flown formation, and must teach yourselves. If you feel I'm being too basic, bear with me. I'm not the only word on the topic of formation; I'm only offering techniques which have worked for me and my past students. Although flying on the wing is more demanding "stick and rudder wise", leading a formation is more demanding mentally. Military pilots fly as wingmen for a couple of years before being allowed to upgrade to flight lead. First a few generalities before we start with flying specifics. As lead, you must think far enough ahead of the aircraft so as not to be abrupt. It is difficult to stay on the wing of lead who is always making large corrections. If as lead you have over-flown your level off, it would be better to overshoot slightly and correct smoothly than to do a 4-G pullout (assuming you have the room). Try to be consistent in your roll rate into and out of turns. Don't over tax your wingman nor yourself. Don't fly to the edges of the flight envelope--too slow/fast, excessive G's, etc. Do not attempt a maneuver for which either of you may not be prepared. Be smooth, positive, and think well ahead. Always give your wingman a performance or power advantage-e.g. don't use full power or idle power, don't pull up with 6 G's if he is limited to 4, etc.

As wing, trust your lead (you wouldn't be flying on his wing if you had doubts, would you?). Try to relax; a death grip on the stick is no way to be smooth. Attempt to fly an exact position--it is as easy to fly in position as it is to fly slightly out of position. Make correction back into position as soon as it becomes apparent that you are out of position. It is easier to make a small correction than a large one.

Let's fly! Line up on the runway 20-30 degrees aft of lead, with 2-3 feet clearance between wingtips. Find some visual references for this position and remember them - this is fingertip formation. Sight a line from leads wingtip to a point on his cowl. Extend another line 90 degrees from your head to a point on leads empennage. This triangulation will define the fingertip position. See Fig. 1. Route formation is an extension of this position. Route is flown 2-3 shipwidths away from lead from 20-30 degrees back to line abreast. Since this position is further away from lead it requires less concentration. It is used to accomplish checks, clear for other aircraft or just relax. See Fig. 2. We will begin in route, and move in toward fingertip as our proficiency increases.

Since it would be foolish to try and take off in fingertip on our first formation flight, we'll do an extended trail departure. Lead scribes a circle at the top of the canopy with his finger as the signal to run up. When wing is ready, he gives

FORMATION FLYING TIPS PG 2

FORMATION FLYING cont'd (page 3)

lead a big headnod. Lead takes off; wing delays 10 seconds and takes off behind lead. Stay 100-200 yards behind lead. Try to maintain a constant spacing and fly slightly to the side of lead so that he can easily see you. When lead turns, let him drift 20-30 degrees to the side before you begin a turn to match his bank and heading. This will keep you from "cutting him off". See Fig. 3.

Once away from the airport, lead can signal a rejoin by rocking his wings, or calling for the rejoin over the radio. As wing, accelerate to 20-30 knots above the briefed rejoin airspeed and drive forward toward route position. Always rejoin to route, this will give you room to pass lead safely if you have a flightpath or airspeed overshoot. Begin to decelerate to match leads airspeed so as not to pass lead. If you are in idle and still can't stop, slip the aircraft to kill a little more speed. If you overshoot lead slightly, stabilize and move back into route position. If you overshoot a great deal (to the point of having to fly looking backwards) stop at the rejoin airspeed and let lead join you. Never fly formation looking backwards, ALWAYS BE SURE SOMEONE IS LEADING. Just as there have been accidents with two pilots in the same aircraft thinking "I thought you had it", there have been accidents in formation by both pilots thinking "I thought you were leading".

As lead, allow your wingman to settle down into a steady route position, then do a few gentle turns, climbs and descents. As wing gains proficiency, increase the turns and pitch changes to the point of doing shallow lazy 8's. Be careful about max/min airspeeds, altitudes, etc. Occasionally allow your wingman to relax. To move him into fingertip, the signal is a wingrock; yawing the aircraft is the signal to move back out to route.

On the wing, hold the references you saw on the ground for fingertip/route formation. Small heading changes (aileron) will move your aircraft in toward lead or out away from him. Power changes will move your aircraft forward/aft of lead. Pitch changes will move you up/down. Anticipate pitch becoming more sensitive as airspeed increases. In a low wing aircraft do not get high on lead. This could result in losing sight of lead under your wing. If this should happen, don't hope for the best, BREAK OUT OF FORMATION. Move your aircraft away from the last known position of lead. Lead will then tell you to roll out and direct a rejoin. A little forward trim seems to smooth things out a little in pitch (as opposed to flying in perfectly neutral trim). As lead rolls into and out of the turn. Also, if you are on the inside of a turn, anticipate the need to reduce power, as you will be flying a smaller diameter turn; the opposite holds true for turns on the outside of lead. when you can hold a steady position in route, move in toward fingertip. Don't fly any closer than is comfortable. NEVER overlap wingtips. Consider yourself proficient in wingwork if you can hold a steady position in fingertip through large bank, pitch, airspeed and G changes on either side of lead.

Lead signals wing to move to the other side by dipping his wing toward the side on which he wants the wingman.

Return to base individually or in trail. A pitchout signal is the same as a run up signal, except it is given at altitude. Wing acknowledges this signal, as all others, with a head nod. Lead will do a 180 degree turn; wing delays 5-10 seconds and turns behind lead. This puts you back in trail to practice more rejoins or return to the airport.

Future topics I can cover: Turning rejoins, echelon, close trail, formation take-offs, formation approaches and landings, 3 and 4 ship formations, overhead traffic

FORMATION FLYING TIPS (Pg 3)

patterns, and IFR formation considerations. If there is any interest, I could also get into BFM (Basic Fighter Maneuvers) for you "Top Guns" out there.

Fly safe."

Ed. Our decision whether or not to ask Mr. Pohoski to write additional articles on formation flying will depend on the requests we get from readers. We rarely get feedback on anything printed which leaves us guessing about directions to take on editorial policy. So readers, speak up please.

ELECTRONICS INTERNATIONAL - DIGITAL EGT/CHT INSTRUMENTS:

In the Mar. '87 RVator we mentioned the dilemma encountered while trying to determine accurate cylinder head temps (engine cooling verification) during the testing of the RV-6. As you may recall, our solution was the installation of what we felt to be an unquestionably accurate CHT, one manufactured by ELECTRONICS INTERNATIONAL INC., a small company located in Hillsboro, OR. Talking with EII personnel including the president/designer convinced us that they had a good product. They calibrate all instruments they manufacture to 1/2 of 1 percent error. This would mean that a 400 deg. CHT reading would be no more than 2 deg. inaccurate. They have designed these instruments so that the length of conductor (lead) does not affect the reading as it did in most of the older instruments. Plus, the leads and thermocouples are of substantially better construction than those of a commonly used inexpensive line of similar purpose aircraft instruments. One gets the feeling that they will last for quite a while.

Our experience thus far is limited to the 4 position CHT which we have installed in the RV-6. It is consistent in its readings and we have no reason to question its accuracy. Since the digital read out is to the degree, you can read the temperature even when the engine is cold and is of value even to determine amount of priming necessary for cold weather starts. We have checked the respective cylinder temperatures with the aircraft parked with a cold (outside air temp.) engine. We can usually see a temp. difference from one side of the engine to the other depending on the position of the sun. In our book, that's accuracy.

One nearby RV-4 builder installed an EII EGT in his RV-4 because he had previously damaged the engine because of improper leaning. With the EII instrument he gets a more instantaneous reading and one he is more confident of.

EII manufactures instruments which read up to 12 positions (for 6 cyl. twins), but for our airplanes we will most likely be most interested in a maximum of 4 to 6 positions. One interesting feature of these temperature gauges is that can read a variety of different temperature functions on the same instrument, given the correct thermocouples. This means that you could, for example, read CHT, EGT, OAT, CAT, and Oil Temp. on the same instrument. For an airplane with its flight testing completed and the need for four position CHT and/or EGT minimized, some of the positions could be converted to other functions like OAT and CAT. This could be a real space saver on small instrument panels.

If you haven't guessed by now, we have become dealers for EII instruments. These are fairly expensive instruments. For example, an E-4 (4 channel EGT) lists for \$465 with probes and 6' cables. However, discount houses such as SAN-VAL sell them for \$376, which is only a small mark-up over dealer price. So, our prices will be have to be essentially the same as you could get from the discount suppliers. We might be

NEW INSTRUMENTS BY VAN

(Here's Dick Van G's article on constant speed props. Would appreciate an article from some of you on the subject, also)

CONSTANT SPEED PROPS: (page 1)

As most of you now know, I have been flying the RV-6 prototype with a Hartzell constant speed prop installed since June. No doubt that many of you feel, as I have already been reminded by many, that this represents a contradiction to my long held philosophy. Not really. If you had carefully read my pro/con comments on the subject you would find that I had said that constant speed props were not a necessity for good performance on the RVs, not that they were an overall detriment. On occasion, while summarizing, I stated that "we do not recommend" or "do not encourage the use of" constant speed props. My intent in such instances was simply that of saying that the extra work, weight, and expense of a constant speed prop was not a necessity for the RVs, and that they flew very well without. It was meant to encourage RV builders to take the path of least resistance; to build their RVs in a minimum time at a minimum cost.

Several factors combined to prompt me to further investigate constant speed props. First: the fact that a number of RV-4 builders were installing them, was slowly altering my awareness of the changing financial and utilization status of many builders. In other words, while we had always strived to keep the RVs as inexpensive as possible and assumed that all builders operated on tight budgets, many builders in fact could afford and desired to add extra cost features. And, a high percentage of RVs were being used almost exclusively for X/C with little emphasis on aerobatics and sport flying. Second: I wanted to enhance the RV-6's competitive position in the CAFE competition, and the constant speed prop promised to do this.

Lacking a complete knowledge of all constant speed props which may be available, I started by looking for a "Compact Hub" Hartzell prop. Most if not all of the constant speed props (metal) being used on RV-4s were of this type, and it is also the prop specified for the Stodard Hamilton Glasair. We found that there are as many different models of the "compact hub Hartzell Props" as there are different series of Lyc. 0-320 engines. The following model designation list should be of interest to all who have been using the term "constant speed prop" in a generic sense. Our main concern is finding a hub suited to our engine (crank shaft flange) and cowling, and blades which are both matched to the engine and to our ground clearance requirements.

First, we need an extended hub to replace the 4" prop shaft extension used with fixed pitch props around which the cowl was designed. While it would seem that we just need to select a hub with a 4" extension, this is not the case because the dimensional relationship of the mounting flange and prop blades are different on this constant speed prop than they are on a fixed pitch prop. The sketch below illustrates this, and we found that the "M" hub was best suited for an RV-3, 4 or 6 installation. The next variable in the hub designation is the number of blades. I don't believe we have any choice here, at least if we are shopping on the used market. Two blades. Similarly, the "Y" designator for the blade shank apparently is fixed for this series of props. The fourth symbol is important in that it refers to the mounting flange which must be compatible with the crankshaft flange of our engine. For the SAE No. 2 flange on Lyc. 0-320s, the "L" flange is best suited and for the Lyc. 0-360 the "R" flange is correct.

For the prop blade, the "Design basic number" is "63" for the 0-320 and 0-360 blades. This is not necessarily the only blade design useable, but is the one most commonly used and best suited for this discussion. The "Basic diameter" refers to the diameter for which this blade was originally designed and manufactured. In some instances, blades are shortened by the factory before delivery, and blades can also be shortened by prop repair shops as in damage repair situations. The "63" blade has a design diameter of 76" and a minimum approved field service diameter of 70". Thus,

CONSTANT SPEED PROPS PAGE 1

a 7663 prop which has been shortened to 70" would be designated "7663-6", or 6" shorter than original.

So, for my purposes a HC-M2YL-7663-6 prop would seem the best choice for my Lyc. 0-320 engine. There is one big obstacle though; it is nearly nonexistent on the used market. Few production 0-320 powered airplanes used constant speed props, and even less, if any, used this specific model. There were several limited production models which used an M2YR hub for Lyc. 0-360 engines, but even these are scarce on the used market. They are available new from Hartzell and retail at something over \$5,000. Stodard Hamilton purchases these props and sells them to Glasair customers only (terms of agreement with Hartzell) for \$3400 and \$3900 respectively for standard and aerobatic models. When they can be found on the used market, expect to pay between \$2,000 and \$3,000 for a re-conditioned example.

I found a M2YR-7663-4 which I purchased for installation on the RV-6 prototype. Though the diameter was 72" as opposed to the 68" dia. wood prop it was to replace, the RV-6 has a bit more prop ground clearance than the RV-4, so I deemed this to be OK, at least for test purposes. Actually, I didn't realize until after I had purchased it that its flange mounting holes were too large for my 0-320 crankshaft. So, we had to machine some rather intricate bushings to adapt it. Also, the drive lugs used in the crankshaft flange are different for fixed and constant speed props, so we had to purchase new ones. \$76 discounted cost.

Constant speed props with standard (non-extended) hubs are much more common on the used market. Then why not just bolt this onto the front of the 4" spool type extension used with fixed pitch props? First, Hartzell says "absolutely not". It's possible that product liability is a factor in this admonition, but we must also consider the very real consequences of bolting a 50 lb. prop on the end of an aluminum spool and expecting it to stay put through whatever gyration we may subject our sportplane. And aside from these considerations, the extension would have to be machined to take an O-ring seal for the oil which operates its pitch change mechanism. And then, referring again to the sketch of the extended hub, we can see that a 4" extension is really too much to locate the prop blades in the same position as a fixed pitch blade would be. A 1 3/4" or 2" extension would be more nearly correct, and as such would have to be a solid block extension rather than a spool type using two separate mounting flanges. While we know of instances of constant speed props being used with separate extensions, we don't know enough about them at this time to comment further, so will exclude them from this discussion.

The simplistic question I continue to receive since installing the constant speed prop is, "do you recommend them now". I don't feel that simplistic answers are acceptable in this business. So, if you want a simplistic "yes" or "no" answer, fill in the blanks yourself. If you are willing to evaluate a more comprehensive, qualified answer, then you can either read what I had written years ago or the following update of same. When I am forced to give a one word or even one sentence answer, I must generalize and therefore am misunderstood more often than not. This generalization has usually favored the fixed pitch wood prop, because, everything considered, I honestly think them to be the best choice for the typical builder as I perceived him to be.

Yes, I also recommend CS props, if you are prepared to pay the price to get one. This includes the price, either monetary or logistic, to obtain one suited to your aircraft's particular needs. Also, be prepared to locate a suitable engine for it, and a governor and governor adapter drive as well. Then be prepared to compensate for the resulting C.G. shift by another alteration such as relocating the battery, and probably altering the firewall for governor installation. (depending on governor and engine model) Then for the 5-10% of you who manage to break a prop during early

CONSTANT SPEED PROPS PAGE 2

(CONSTANT SPEED PROPS, page 3)

testing, be prepared for an expensive prop (and possibly crankshaft) repair or replacement. Wood props are inexpensive to replace and rarely cause damage to crankshafts.

What you get in return for this "price" is a prop which can be flown through rain at high RPM with little concern for damage, and one which will idle smoother at low RPM. It will also require more throttle to taxi and maintain speed on landing approach, but will permit steeper landing approaches and tend to limit speed in reduced power aerobatic down-lines. It will shorten take-off rolls by about 25% and improve climb rates by 10 to 20% depending on forward speed. It will improve cruise efficiency, not necessarily cruise speed, by reducing fuel consumption by 1/2 to 1 GPH while offering lower cabin noise through reduced RPM. It permits full throttle cruise at a much wider choice of altitudes and engine RPM than does a fixed pitch prop. (for a fuller understanding of the benefits of full throttle operation, please read "HORSES THAT EAT BUT DON'T PULL" in the August 1985 issue of SPORT AVIATION. Then read it over again until you understand every word, its an excellent article.

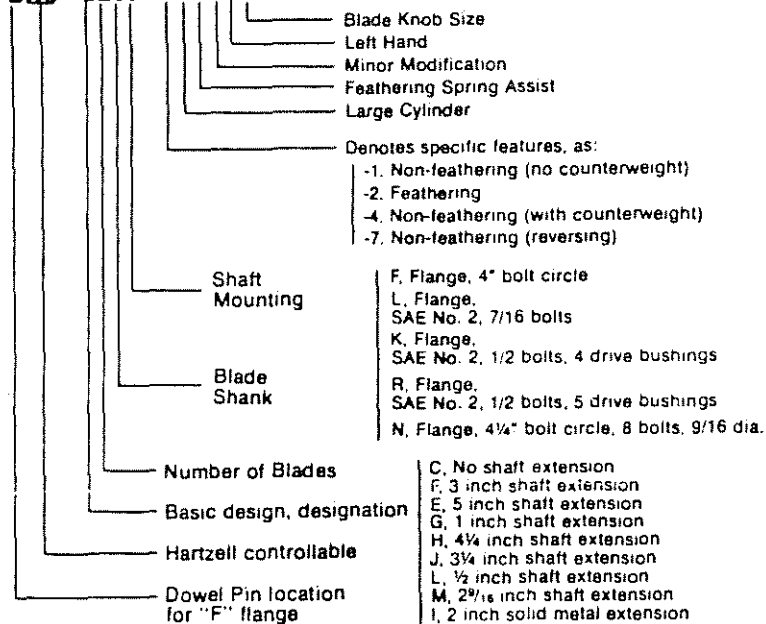
I also recommend fixed pitch wood props; for those with a modest budget who are willing to accept the particular compromises associated with it. Neither gets an exclusive recommendation; every evaluation must be qualified by surrounding circumstances. It all depends on what you want, need, think you need, or can afford or want to afford.

Model Designation-Compact Hub Propellers

CONSTANT SPEED PROPS PG 3

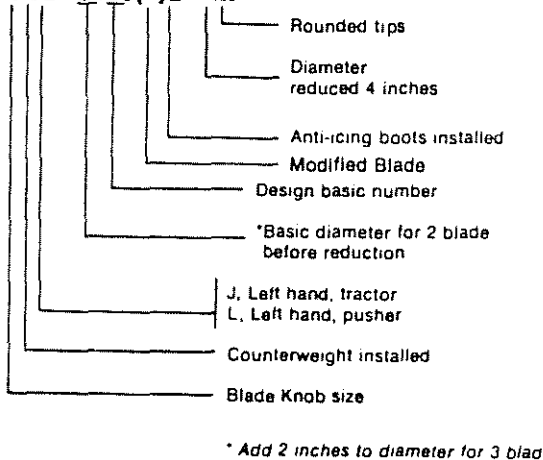
A HUB MODEL

BHC - C2YF - 2RUALF



B BLADE MODEL

FCL - 8468()B - 4R



Thank you, Dick, for this very timely information. We also appreciate your allowing us to use this material in our newsletter.

Note that the latest in new airfoil shapes bears a remarkable resemblance to the S-18 airfoil, that Lu Sunderland developed several years ago. This news release was sent me by ??????? (Please identify)

Airplane Wings for Faster Climbing and Slower Landing

Reshaped airfoils improve performance.

Ames Research Center,
Moffett Field, California

The performances of general-aviation airplanes can be improved by modifying airfoil shapes. An equation is used to determine a new contour for each type of wing. The calculations are straightforward enough to be done on a hand calculator; a computer is not necessary.

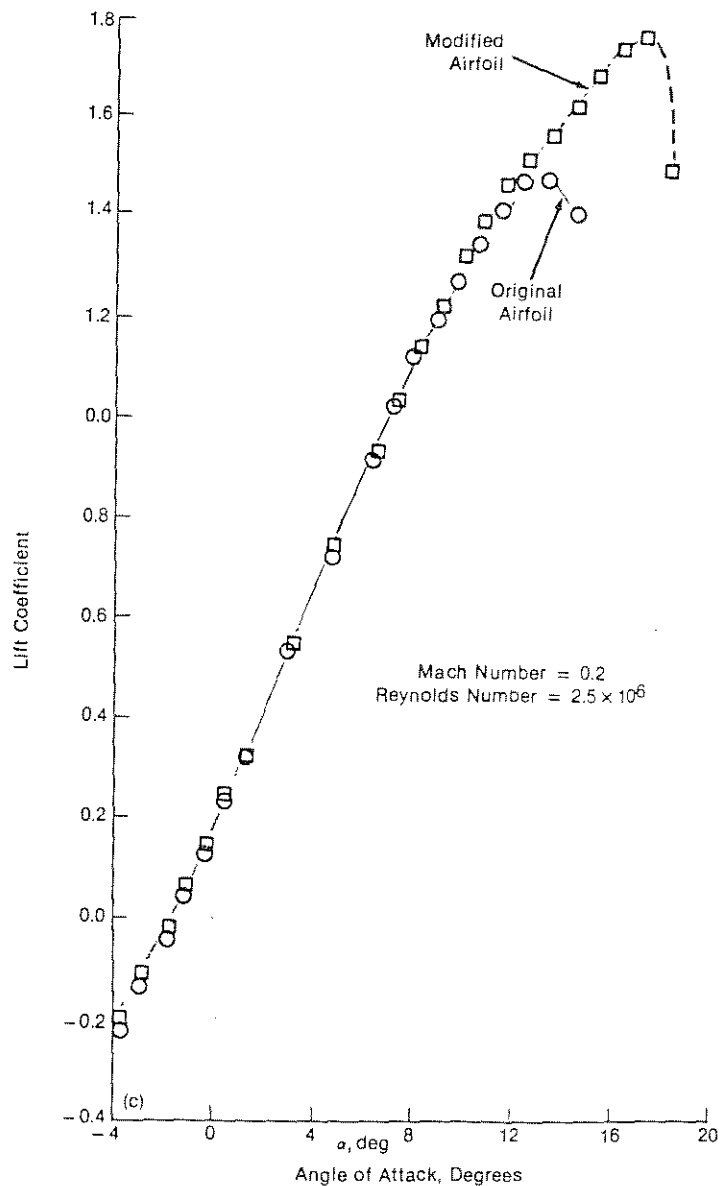
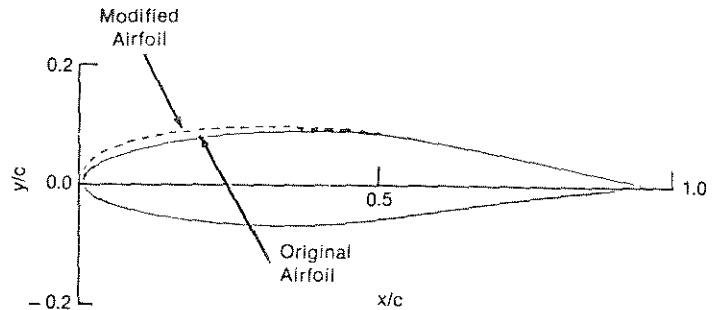
The equation applies to National Advisory Committee for Aeronautics (NACA) 63-, 64-, and 65-series airfoils with lift coefficients between 0 and 1 and maximum thickness-to-chord ratios between 0.06 and 0.18. These airfoils are used on a variety of general-aviation aircraft, including single-engine, propeller-driven airplanes and small passenger jet airplanes. The calculations determine new shapes for the upper surfaces of cambered airfoils or for both surfaces of uncambered airfoils.

The modification of an airfoil increases the bluntness of the leading edge and adds forward camber. It does so without introducing discontinuities in curvature anywhere, not even in the region where the modified shape blends with the original shape.

The increase in the forward thickness of the airfoil reduces the adverse pressure gradient near the leading edge of the upper surface at high angles of attack and results in a larger maximum coefficient of lift. Stalling characteristics are thereby improved, shorter and slower landings are possible, and the rate of climb is increased.

When it was used to modify a NACA 63-215 airfoil shape (see figure), the equation yielded a shape that gives approximately a 20-percent increase in the maximum lift coefficient. It also substantially increased the allowable angle of attack. The equation can be used to design new high-performance airfoils and to modify existing designs.

This work was done by Susan Cliff-Hovey of Ames Research Center. No fur-



The New Shape of a NACA 63-215 airfoil (above) increases the maximum coefficient of lift and angle of attack (below). The ratios y/c and x/c represent the thickness and chordwise dimensions, respectively, of a wing normalized to the chord, c .

NEW AIRFOIL SHAPES

An up-to-date report from Mr. Temperfoam himself, Harlo McKinty, Lincoln, NE. on a long neglected subject. Thanks again, Harlo. We really do appreciate your prompt response!

January 28, 1988

Dear Dick:

You said that there was very little in the newsletter in regard to upholstery. I don't know that I have any great words of wisdom, but I can tell you some of the things the professional upholsterer for Duncan Aviation told me.

I had used the aluminum backed foam (Y-370) (sticky on the one side, thin aluminum on the other--much cheaper than it used to be) for sound deadening on all the floor and side panels in the cockpit, firewall, and up over the fuel tank. I used Scott aphonic foam in the baggage area because it is cheaper and lighter weight. I stuck the Scott aphonic foam up with 3M 08080, but I understand you can get it sticky on one side, too.

The FAA recommends cotton/wool fabric combinations for fire retardancy, but you can spray fire retardant on any of the other more combustible materials. After you decide the pattern and combination of naugahyde/cloth, sew it up to cover .016 aluminum panels that come close to fitting the area to be covered (allow peripheral edge distance for fabric wrap around). I fastened the covered panels up with 3/4 X 3/4 angle clips pop riveted to the WL42 Longeron and the #5 Longeron on the lower area, with Nutzerts and #8 counter sunk screws and upholstery washers in several places. A layer of cheesecloth glued over 1/8" foam under the naugahyde/cloth exterior covering makes a smoother looking job.

On the floor, I remember the Sunderland's advice in the N.L. and used the Scott aphonic foam over the Y-370, and 1/8" plywood over that to build up even with the 3/4 floor stiffeners to lay the floor mat on. I used Velcro to fasten down the front side panels and the floor mat to the plywood, and the #8 Nutzerts in three places for the upper part.

I used 1" of Sunmate for the backrest, fastened in place with Velcro, and 3" of the laminated Temperfoam for the seat bottoms. I sweat a lot, so I don't think that any unbreathable fabric should be anywhere next to the body. It's a crime to put naugahyde over Temperfoam.

If you have John's seats with the O25 on the back of the tubular frame, you can glue in lumber yard dense styrofoam to build out even with the frame and then just use 1" of Sunmate, if height and legroom to the rudder pedals is a consideration. Shorter people can use regular dense polyfoam for economy and thickness. 1" of Sunmate (84) is as good for comfort as 4" of polyfoam for the backrest, but I think 3" of Temperfoam is the best for long-term sitting for the bottom; naturally, I'm a bit prejudiced. Our supplier said that they were raising the price again, and its terrible now.

Wherever I used Velcro, I used the sticky backed, sewed in place, or stapled to wood. I followed Paul Kirik's advice with holes in the glare shield for panel ventilation, covered in back with cloth screen. I also made fiberglass defroster vents, but they may not be necessary; time will tell.

I'm sure that there are many ways to skin the cat; I've seen a lot easier methods that looked good, too. A Veri-Eze I saw last summer had a sprayed in flocked paint that looked very nice, but that was on fiberglass.

Thanks again for all your work on the N.L., Dick; I hope you get that physical back.

Best regards,

Harlo

HARLO'S UPHOLSTERY STORY

TEXHOMA VIDEO TAPES

MORE FROM TEXHOMA GATHERING: One of the things PAUL SHIFFLETT brought along to display to the troops was a new manual/ electric trim system he designed and built. He also had a tilt-down instrument panel there and a very different bucking bar for the horizontal tail tube spar. He showed great originality and design expertise on all three items and a high degree of craftsmanship as well. Paul is a graduate E.E. and worked in the Naval Research Labratory until his recent retirement. He has graciously sent us a complete written report on the trim system, plus a schematic wiring diagram of the unit, that we reproduce on subsequent pages.

If you are seriously interested in the unit, his instrument panel, or the fancy bucking bar, you need to get a copy of the VHS tape on Texhoma, in which Paul explains the unit and its components, as viewed from several angles. (Instead of sending us a blank tape and postage, just send us about \$6 and that should cover the costs). In addition to some flying shots the tape allows you to sit in on our informal forum on flying the T-18. We now have both the May and October gatherings, as well as the building of an outer wing panel on the ~~same~~ tape. Allow us a couple of weeks for getting them in the mail, as John Crook can only do a couple during his working day. (If you didn't get the same tape back that you sent us we apologize, as John's secretary got some of them mixed up. If you only got the May event on your tape and would like to get it all on your tape, just send your tape back to us and we'll update it. Allow about \$1.25 for postage and padded envelope). SEE NOTE:

'88 TEXHOMA

Both of the T-18 re-unions were so successful and so much fun for everyone that it has been decided to do it again this coming May. Last year we inadvertantly chose the Mother's Day weeked of 9th and 10th, so this year we made it a week later, the weekend of the 14th and 15th...I would encourage you to make plans to be there, whether you are building or flying the T-18. If you are reasonably sure of coming it would be a BIG help if you would let us know NOW (or as soon as possible). It will be necessary for everyone to make their own room reservations. Again, don't delay. The lodge is a popular place. Call TEXHOMA LODGE, 405/ 564-2311.

MORE ON VIDEO

We have received so much good comment from those viewing the tapes that we plan to expand the coverage, doing detailed interviews on the people and airplanes that attend, covering as much info on building and flying as we can with two or three cameras. We already have people on both coasts that have said they will be there for sure, plus a half dozen others in between. You can cover 1000 miles in a day's flying in a T-18 without breathing hard and maybe half that if you drive. If you've got a component of your bird like Paul brought in, bring it along (maybe a seat, an inst't panel, a flap, an aileron, rudder, etc. If it's too bulky to carry, how about making a VCR tape of your project, with full commentary? If you can't come, send us the tape and we'll make a copy, maybe putting several on the same tape if they are fairly short. Include pictures of yourself and wife, as getting to know other T-18ers well is part of the reason for having our organization.

With the widespread popularity of TV cameras and VCRs I can foresee that much of our future communication will be with that medium. I WELL KNOW that the great majority of people nowadays have an overwhelming aversion to writing a letter (oh, how well I know!). I have great hopes that they will be more comfortable with the TV camera. Incidentally, if you have items that you would like to see covered in interviews on tape, please let us know...by letter or phone (214/ 351-4604)

One of the things I'd like to see a tape made on would be the building of a rudder, either from scratch or from kitted parts. Who'd like to volunteer?

4618 BURNET RD.
AUSTIN, TEXAS 78756

TELEPHONE 512-452-9751

BUD PAYNE, Owner

BUILDING AILERONS: The following from Bud Payne. Bud was a WWII military pilot and now is an M.D. Thanks a lot, Bud.

November 9, 1987

Dear Dick,

Scanning the newsletters for information on building Ailerons gave me no help. Ailerons are probably one of the easiest parts to build (I have read) so I just built one. Came out smooth and pretty. While admiring my workmanship I laid it on my work table. Left side lay flat, right side was up about an inch. Right side flat, left side up an inch. Somehow I figured that wasn't going to fly. I must have done something wrong. Back to the newsletters. Still no help. So here's a rookie builder writing to the newsletter with a solution to Aileron warp. First, I found that thin gloves and heavy shirt sleeves are helpful while riveting the bottom skin to the front spar. Reaching past the stiffeners with the bucking bar can slice and scratch you up pretty quick. Everything is routine in construction except for the trailing edge rivets. Apparently when the rivets expand, they cause the trailing edge to take the course of least resistance-- both vertically and horizontally.

To solve the horizontal (warp) problem, I used a 4 1/2' length of 1" x 1" angle one inch forward of the trailing edge rivets. "C" clamp it to the overlap on your work table. I used clamps on each end and in the middle. I dimpled each rivet hole and countersunk the .5 x 48" spacer. Gives a nice smooth upper skin. To solve the little waves between rivets (vertical warp) I laid the trailing edge on a large flat metal sheet 1/4" thick and used a rubber mallet between rivets. I am pleased with the results.

At the Texoma rendezvous I learned that tie down rings are made of angle bolted to the end of the outer wing main spar. Drill out the top and bottom rivets holding the nose and rear ribs. The tie down ring bar is attached with 2 AN 3-6A bolts. I made the hole for the tie down so that a snap-swivel could not be used. These common tie down accessories are notoriously brittle and are the first things to go in a high wind, leaving you with one wing tied down and the other flying.

I hope some other builder finds this of use--as far as I can tell, it's not in the newsletter.

I have a complete Rattray cowling I'd like to sell. It's off John Walton's bird with no damage.....\$150.00.....complete.

(Bud said someone left an expensive pair of sunglasses in his car at the Texhoma gathering. If you were the one give him a buzz)

Best regards,

Bud Payne

Bud Payne

BUILDING AILERONS



TEL. (715) 543-8451 MANITOWISH WATERS, WISCONSIN 54545

from B. C. Roemer

January 20, 1988

Dear Dick:

I don't know what value this letter may be to T-18 builders so feel free to delete anything or everything.

I suppose it should be called "reflections" as 18TT has over 1000 hrs, is 16 years old and is flying fine. I'm sure many builders can relate to some of these experiences.

In 1966 Son, Peter couldn't get into vocational training in high school. Class was filled up. So old BC decided we should build "something" at home to develop some mechanical knowledge in Peter. That summer we went to Rockford (EAA conv. site at the time) and what I seen I couldn't believe. Bob Kargard had the 2nd T-18 built there. Open cockpit, GPU and all. Now I never heard of John Thorp - and I could not understand why 150 people would send him over \$100.00 for a set of plans before the 1st airplane even flew -- not even the proto type! But they had! I went home more confused then ever. So after a short time I picked up the phone and called a Dick Cavin (yep, the same guy who prints our newsletter). He was the lead person in the very young T-18 movement and printed the newsletter. My question: I've never even built a boat -- could I build a T-18? (I have done some building of swamp buggies, etc.) I asked the wrong guy I soon found out because when Dick got threw with me he had me convinced all you had to do was cut it out like a paper airplane and stick it together. In fact, I had it all but built and flying before we even got off the phone! He should have been a salesman instead of a 747 Captain!

So off we sent to John for the plans and next I got some aluminum from a steel company in Chicago.

In those days there was no "kits" of parts -- you get whatever you needed wherever you could. Some pre-fab parts were available - roll bar - canopy glass, exhaust system - all from different sources. Boy the newsletters sure were

B.C. ROEMER'S STORY - PG 1

a godsend for people out in the sticks, like me. We have a grass field and not a single airplane is based here. It's a tourist field for people who come up in the summer - it's closed in the winter -- and I knew nothing about airplanes. I was a simple private pilot with 800 hours in J 3 and a 65hp Luscoms. This fact bothered me later on just before I got the 18 finished -- I had nagging fears that I couldn't handle it - which proved unfounded and was a needless concern. Of course I couldn't read the plans and when the aluminum sheet arrived I didn't know what to mark it with. Another phone call to Bob Kargard in Chicago got me to use a common no. 2 lead pencil. Talk about being stupid! Oh well 18TT got finished 5 years later.

T-18 Parking

In the late 1960's a few T-18's arrived at Osh Kosh - every year a few more. There were no separate parking areas for them -- they were scattered all throughout the show planes and for a builder it was hard to run around to look at them. The next year I made up some "T-18 only" signs on sticks and getting there early I put them at the runway side of our present "area". Next I got hold of "Sonny" a fellow who drove mini bikes to lead planes to a parking place. He agreed to bring all T-18's to our "area" and he informed the other bike drivers to turn all T-18s over to him. Two or three other T-18's ^{helped} helped create this area and that's how the T18's were the first to park together. In the late 70's we had 50 planes in three rows some parked tail to tail. Now the builders could look them all over to see how things were done.

Feathers

Still a problem existed. I couldn't tell who was a T-18 builder or pilot. And lots of times I wanted to have a cowle opened to see how to build or hang the exhaust pipes for example. Now being in the feather business the next year I brought a bunch of yellow feathers for builders, pink for pilots of T-18's. And we all wore them in our caps. It sure made it easy to get a ride or ask questions.

Table

In the 1970's I made up a sign "T-18 question answered here" -- brought a card table, some chairs and set up business right in the middle of the T-18 area. It served as a sort of gathering point -- later the whole shebang was transferred to Ken Knowls airplane as it got too much to "run" this all day every day and most questions were about parts anyway.

B.C. ROEMER'S STORY PG 2

Informal Racing

Every year a bunch of T-18's of the same H.P. (180) would take off - put our radios on 122.9 and meet over the lake. On the ground in our area were a bunch of T-18's listening to a radio on 122.9 to keep up with the progress. This wasn't a true "race" in that sense but a loose formation lined up at each of four altitudes: 2000, 4000, 7500, and 10,500. The object being to be 100 feet above the assigned altitude - dive down to it and open her up. Whoever left the pack "won". Many of the T-18's had constant speed props - I had a heavy Blank (76) Cherokee prop cut to 68" fix pitch. Wide open got me 2800 RPM and N18TT won all races every year. After a few years of this the race was discussed at our forum tent. After the meeting Big Bob Dial (11BD) came storming out and said "Roemer - I don't know what your doing but your doing something". Naturally I denied it. It was many years later when I knew him better that I told him. In case you would like to know here's how it's done. Only 4 things: 1 - Have a pretty "clean" ship. That won't do it by itself because lots of the T-18's in the race were clean. 2 - Go up to, say, 4000 feet on a nice quiet evening and use a high cruise setting. Hold the rate of climb real steady (not easy to do) and with feet on the rudder, center the ball. After 30 seconds note the air speed. Then repeat with the ball out of the cage a bit to the left and then right. Chances are you'll get a bit more speed with it out a hair or more one way. That's where you fly it. 3 - Fly with 1/2 tank of gas and 4 - load aircraft at or near aft CG. I had two bags of lead - each 40 to 45# that I would put in the baggage compartment. This along with 1/2 fuel worked just fine. The object is if you have forward CG you have to trim the tail to force the nose up. This puts the tail in a high drag position versus an unloaded (near aft CG) streamline configuration.

Speed restriction at Osh Kosh

The late Al Neuntofel had a 180HP '18 and of course always raced me. He wouldn't settle just for "the race" - every year he would make some improvement and we would go one on one at 7500 feet. Of course I always beat him. (I wonder why?) After our little race one year he came over and asked if he could fly 18TT. I said sure so with him in the left seat and Pete Roemer in the right off they went. After flying around a bit they returned to the fly by pattern. Now in those days there were no restrictions on type or speed - the pattern had lots of airplanes in it all going around and around. Al figured he would run the pattern once before landing. He did and passed 19 airplanes in one loop. I was at the parking area so I didn't see him. He and Pete were too busy going around

B.C. ROEMER'S STORY (CONT'D)

airplanes to count so how do I know it was 19? Well sir, when they got parked a guy from the tower wearing a FAA patch arrived on a motor cycle. He promptly said "this airplane (18TT) is grounded for the rest of the convention". Then he said 19 airplanes on one pass. I objected saying I wasn't flying - so why should it be grounded. Well after heated words we did get permission to fly. (I didn't because I knew they might get me for something else and I wanted no part of that fellow!) The next year we had type and speed restrictions. Chalk up another for the T-18! Sorry fellows.

The LBF Race (Discontinued in 1987)

I looked at the published results in 1977 and again in 1978. I knew a T-18 could not win the Lowle or Baker part (most miles per gal and fastest speed) but I figured we could take the fastest lap (Faulk) part -- if we kept our mouth shut. The race was 500 miles long - one trip to Osh Kosh and back to Fondulac, then 6 trips (78 miles each around a triangle course. Single place got 18 gal of gas - 2 place got 22 gals. You had to carry 4 extra gals for safety. The race had to be flown in 4 hours. Single place had to take off in 1000 feet over a 5' barrier (string across runway) 2 place had 1200 feet - any head wind would decrease the take off distance. I needed another person so I got Bob Dial to fly while I figured. The field of racers was impressive - lots of formula 1's, (Steve Wittmen etc.) and vary eases and long eases (one piloted by none other than Dick Rutan!) 18TT was the heaviest and had the most power of anyone in the bunch. Race promoter Nick Jones confessed he felt sorry for us and couldn't figure out why we were there. A few weeks before the race Bob and me practiced taking off in 1200 feet (fixed pitch prop of course) over a 5' barrier. We used about 10" flaps and would make it O.K. Peter Roemer figured that at 127 indicated we could make it in the 4 hour limit and be within fuel burn. So I marked the air speed. Getting Bob to fly the mark was another matter. I have no fuel analyzer so I drained the tank - put in 4 gals. leveled the ship and noted the needle on gauge. Anything below that and we disqualified. All the above is fine but won't win anything. We got to have a faster lap than the rest of the guys. Here's the plan: we have to fly the 1st lap fast - (Steve Whittmen always flies the last lap fast when he's the lightest) we take off, fly slow (127) to Osh Kosh, go around pylon head back to Fondulac for the laps. On the way back we climb (using no more throttle to save fuel) to 1500 or so. (All pylons must be rounded ~~AT~~ 500 feet or less.) Then push it over and dive at the pylon at Fondulac and be to the west of it (our next pylon is to the east) this is so we have a small angle to make to get on course to the east. At 500 feet or less, we had to be over 200mph and on our way. If we used any other lap we would be coming from the east and going west and have about a 300 degree turn to make at the Fondulac pylon which is the lap starting point.

B.C. ROEMER'S STORY (CONT'D)

The airplanes are impounded the night before and weighed in the morning. All gas is drained and you are given 26 gals. (2 place), by weight. Airplanes are pushed by hand to the starting line. You crank it up and wait your turn for take off. (About 15 seconds apart) you are racing the clock - not other airplanes. There was wind right down the runway so the take off distance was shortened to 800 feet for the single and 1000 feet for the two place. That's the point they put up the 5' string. All the singles got off and ahead of us was a Very easy. He charged down the runway and ran right under the string never touched it. We were flagged off than and made the string O.K. and later found out they forgot to move it to the 1000 foot mark for the two place!

I timed the 3rd lap and projected our total time to be within the 4 hour limit. We used 3 hours and 45 minutes so it was no sweat. You are required to land, taxi to a parking spot, turn 180 degrees into it and shut down. Then you are put back on the scale to determine how much fuel was used.

Results: we used only 20 gals of gas. Fast lap was just under 208 mph. Good enough for 1st place in the lap race. If we would had a constant speed prop it would be higher. The turns at the pilon kill your speed a lot and it takes a fix pitch quite a few miles to get speed back up. Before the race I checked our tack to be sure it was right. We have a bad freq. on our prop at 2875 RPM so I didn't want to turn it near this. It would turn 2800 top so after leaning I enriched mixture to keep RPM at 2750 -- better for engine of course too.

Talk about running off at the mouth -- er -- pen, I better stop. I've had more experiences with the T-18 than any other airplane. (Also have a Bananza) It's the easiest airplane to land in a crosswind I've ever flown. One's life isn't complete till he or she flys a T-18!

B. C. (ROEMER)

It isn't enough to just say "Thanks a million, B. C." Not just for the latest in your always excellent reports, but for all the effort and enthusiasm that you've put forth in behalf of the world's best sportplane. When OSH '88 rolls around and B. C. and his bird are back there on the flight line I hope each and every one of you will take the time to thank hime for all he has done for the T-18 group. He's one of the greatest guys you'll ever meet

B.C. ROEMER'S STORY (CONT'D)

VIDEO TAPES

CORRECTION RE VIDEO TAPES: I previously made the statement that we had both Texhoma gatherings on one VCR tape. Not correct I just happened to mention that to John Crook, who has been doing all the tape duplicates at his place of business, and he said, no, it requires TWO tapes to cover both events. Tape number 1 is of the May '87 meeting only. Tape #2 is the Oct '87 meeting only, and it includes the interviews with Paul Shifflet on his fold down instrument panel, his electric trim set-up, and his tail spar bucking bar. It also has our night time "forum" on the porch of one of the cottages (flight test procedures, performance, etc.) If any of you want Tape #2, but sent two tapes and got only #1, please advise & we'll send it. If any one else wants either #1 or #2 just send the price to buy a tape, plus postage (\$6 is plenty). Sorry about that, gents.

SUNDERLAND BOOK

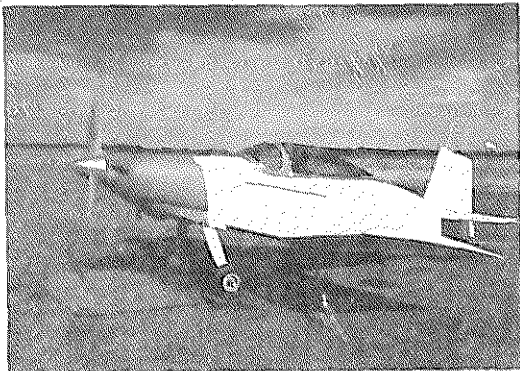
We had Mrs. Sunderland send us all the T-18/ S-18 books she had left over when Lou passed away, so she wouldn't be burdened with it. We now have 45 left and when these are gone there probably will be no more, so if any of you have been intending to get a copy and have been putting it off, this may be your last chance. I have an ad coming out in Sport Aviation this next issue on the books and this will probably clean them out. The cost is \$25 ppd. Not only will this help Mrs. Sunderland out, but the book is truly an education in building the T-18, flying it, etc and is a valuable addition to anyone's library. It is beautifully bound and printed and it covers Newsletters #1 thru #44 (edited and updated). I think you'll agree it's worth the price. If you don't, send it back and I'll send you your \$25.

T-18 SILVER ANNIVERSARY

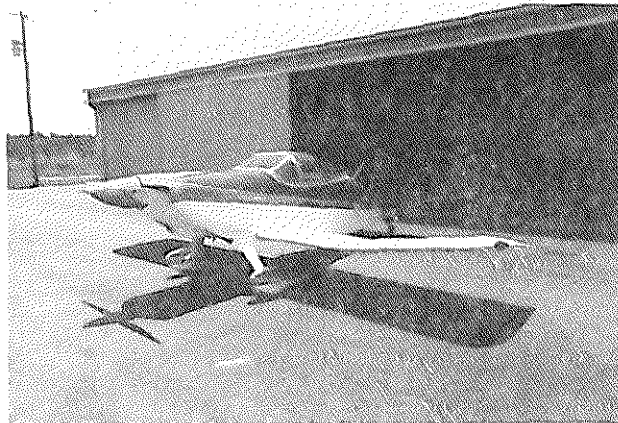
OSHKOSH '88: The T-18's SILVER ANNIVERSARY. To all of you that now own flying T-18s or S-18s, I sincerely hope that ALL of you will make the supreme effort to have your airplane on hand for the PARADE OF FLIGHT, which will honor the T-18's place in aviation history. Don't worry if your paint job is ailing or your upholstery is getting shabby. The main thing is to BE THERE!!! Don't get it torn down for an annual or such and not have it airworthy at OSH time. We would like to put 50 T-18s in the air in trail formation at one time. All of you that have T-18s have said many times how grateful you were to JOHN THORP for giving us the T-18 design, so this is the time for you to show it! We are planning the parade to coincide with our annual dinner on TUESDAY and we are planning to interview each and every T-18 owner and builder on video tape with their airplane, plus taping every airplane in the fly-by parade...plus the speaker part of the dinner...plus what ever shows up in the way of component parts, etc. It will probably come out to several tapes. We also hope to have our regular "Cowlings Open" feature around noontime Tues and this, too, will be taped. To properly prepare for all this, we ask your help and cooperation. PLEASE send us a postcard that gives your N number, engine, and serial # (if you know it, or date first licensed if you don't) and also state, "I WILL BE THERE" or I can't be there, or I HOPE TO BE THERE if...and PLEASE do it NOW.

RE NL #69

To close #68 the rest of the NL will be pictures. For #69 I have a four page article by Paul Shifflet that I'll have to re-type as it wouldn't reproduce, an article on Loran by Pete Roemer, a three page full size drawing of Bob Highley's home built military type throttle quadrant, another two page article on several items by Harlo McKinty, an article from the Seattle Chapt nl that diagrams a fuel system like John Walton's, and at present that is all....unless YOU get with it and send in a story. This issue WILL come out the day after I get home from Sun'n Fun and it also have a reminder about our MAY 14-15 TEXHOMA GATHERING and RE-UNION. JOHN WALTON has been in Boston at the Harvard Medical School hospital the past two weeks taking chemotherapy treatments for his lymphoma and he is getting good news from his tests. Our prayers are with him. He'll be back home soon, so maybe you like to send a card or give him a call. Home # is 713/ 440-8093 and his address is 5726 Boyce Springs Dr , Houston, TX, 77066.



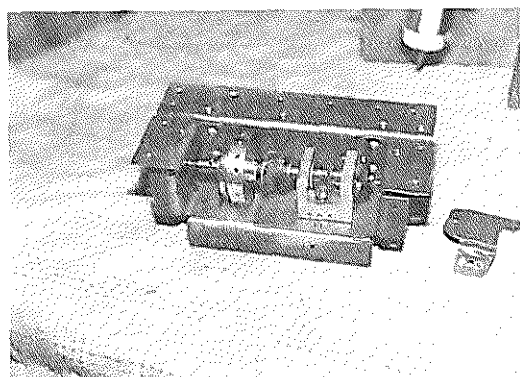
FRANK LANIER, COLORADO CITY, CO, RUNS UP HIS BRAND NEW T-18 RIGHT AFTER FAA SIGN OFF.



WORTHY WARNACK, BAYTOWN, TX, and his round back T-18



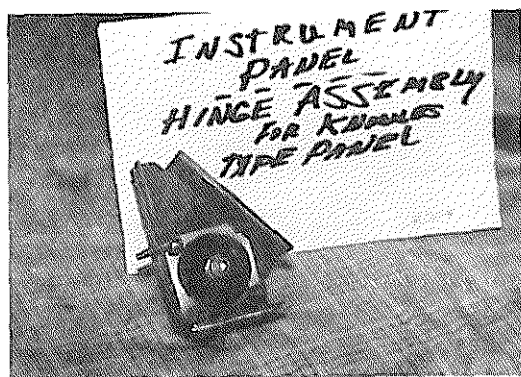
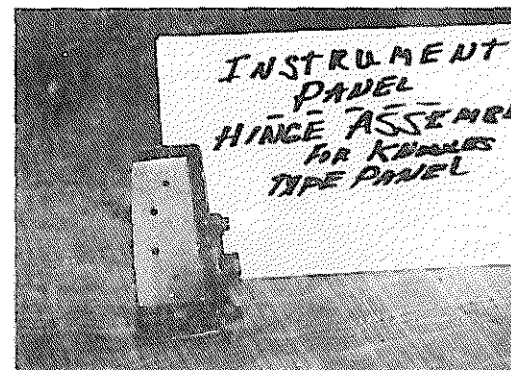
WHO IS THIS OLD PAT FELLOW JUST TAXIING BACK AFTER FLYING LEROY HOLT'S S-18? NOTE LEROY'S NEW PAINT SCHEME.



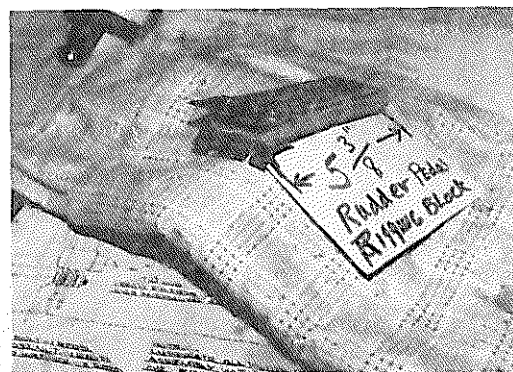
PAUL SHIFFLETT'S ELECTRIC TRIM UNIT (ABOVE)
SEE TEXT N. L. #69



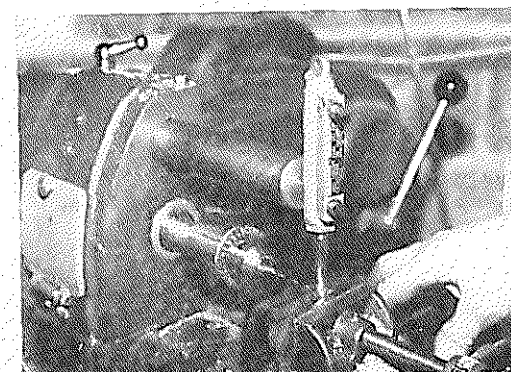
GARY NIVA, MONTE SERNO, CA

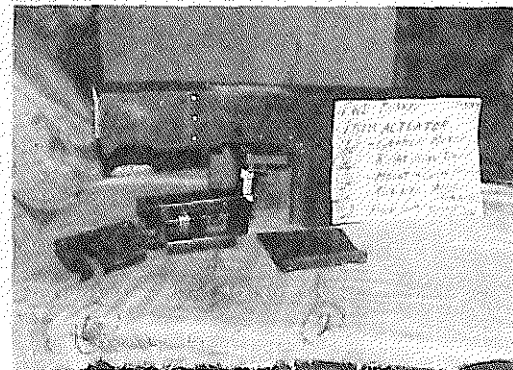
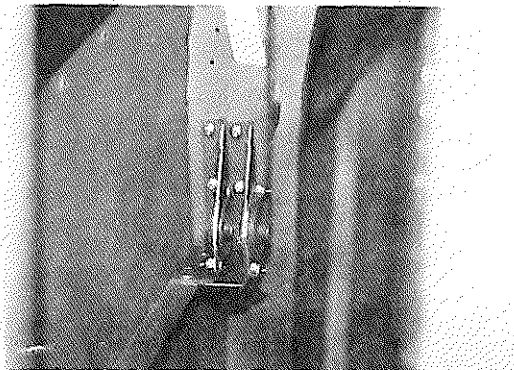
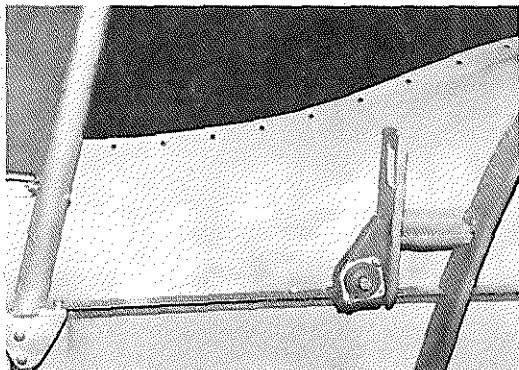


SIDE VIEW INSTRUMENT PANEL HINGE (PAUL SHIFFLETT)

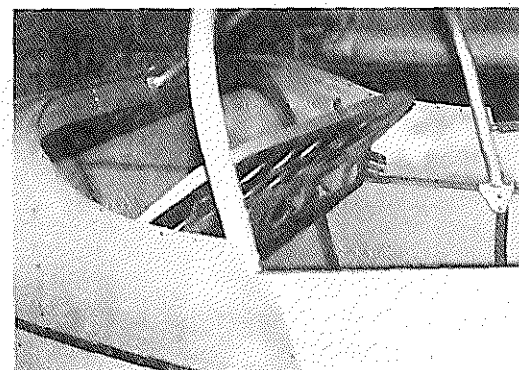
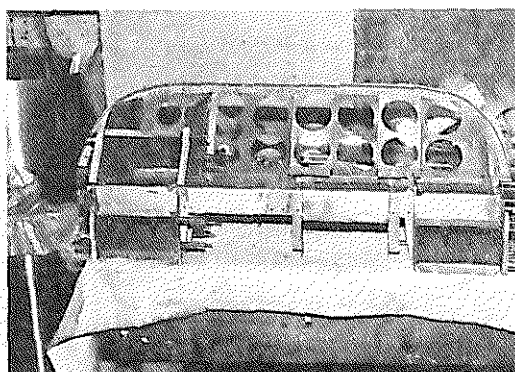
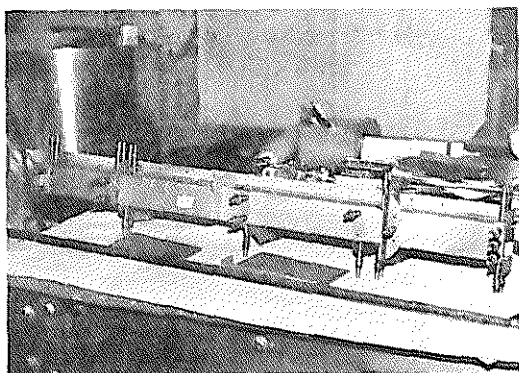


PAUL SHIFFLETT'S INSTRUMENT PANEL HINGE (ABOVE) AND MODIFYING A PIPER BRAKE CYLINDER (BELOW) (SEE TEXT) N. L. #69

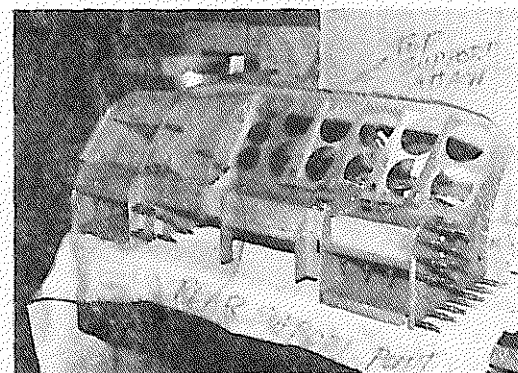
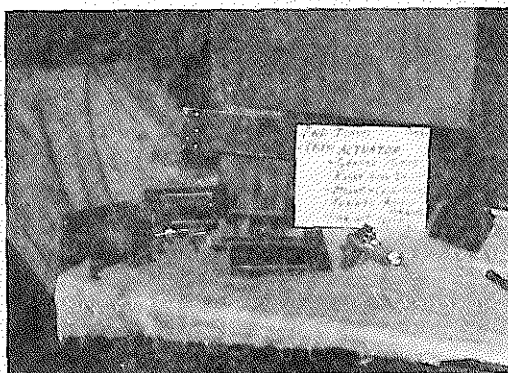




ALL PICTURES THIS PAGE ARE OF PAUL SHIFFLETT'S TILT DOWN INSTRUMENT PANEL AND ELECTRIC TRIM SYSTEM, AS SEEN AT TEXHOMA IN OCT. 87



AVAILABLE SPACE THIS N.L. DIDN'T PERMIT US TO PRINT ALL THE EXPLANATORY TEXTS TO ACCOMPANY THE PHOTOS. IN THE NEXT ISSUE (#69) WE WILL PUBLISH THE EXPLANATION OF PHOTOS AND PAUL SHIFFLETT'S WRITE UP ON THEM.



I hope all of you appreciated the effort and attention to every little detail that PAUL SHIFFLETT gave in your behalf in the pictures in this issue and the upcoming texts in N.L. #69.

I also hope this will motivate some of you (hopefully YOU) to at least take some good quality pictures of either your completed airplane or some component...either while it is being built, or after completion.. and send it to me.

Those of you that have bought T-18s are very much included in the above, too. We would like to have pictures of your airplane to include in our photo section. If you submit in-flight pictures you will probably need to have the picture blown up if the airplane doesn't take up more than 10 to 15% of the total size of the pix. If you can get a shot over a lake as a background (like we do at OSH for the mag) it adds a lot to the shot. A forest or large field of grass also makes for a pleasing backdrop.

TALK ABOUT PHOTOS
If you shoot the airplane on the ground, it's especially important to choose your background carefully. Shooting in front of hangar doors isn't the best, but it's better than having a background telephone pole that appears to grow up out of the fuselage, etc. I would advise you first of all look around your airport or home for the background FIRST, study it through your viewfinder before you move your airplane to the area. Also try to see what shadows do to the area in morning, at noon (usually bad), and in mid afternoon. You also need to shoot your whole roll of film at one session when you shoot. Shoot the airplane from several angles. Be sure to fill up the viewfinder with the airplane as much as possible, but don't overdo it and cut off half the spinner, etc. Leave a little margin, as viewfinders aren't always exact at all distances. If you can borrow a pickup, shoot standing up in the bed, for an exceptionally good angle. Also you might get a shot or so lying down. Sometimes that makes for good shots. 3/4 front and rear views are good and sometimes a side profile is very good if the paint scheme is especially attractive. If you shoot your engine compartment or cockpit it's a good idea to use flash fill, even in bright sunlight. Watch your focal length carefully, too, and talk to a pro about depth of field if you don't fully understand it.

In case I haven't mentioned it before, my diabetes forced me to sell my T-18 in early Oct last year. Jim French, of Wimberly, TX, recognized my phone no. in my ad in S.A. and told his neighbor, Jim Hidalgo about it and the next day they were up here in French's T-18 and Hidalgo bought it. He's had a ball with it every since. He wasn't quite ready to solo it when we had the OCT. gathering at Texhoma, but shortly after that he and his wife went Cross-country in it to visit relatives in Enid, OK. Guess who met him on the ramp at Enid? Gary Green, who heard his unicom call in and recognized the number. Jim also got to make a 25 kt. crosswind landing at an OK town on the way up, so I guess he got thoroughly T-18 qualified before leaving. He's now putting new upholstery in it and a new instrument panel in it during the cold weather. He'll report on this later. Jim runs a mail order business for fine sunglasses. You've likely seen his block ad each month in Sport Aviation, so the next time you're in the market for good shades give him a rattle. He does prescriptions, too.

His buddy, French, the trouble maker, is repainting his airplane and also replacing his gear with one cut in two (longer, too) and we'll have some fotos and copy on that operation in #69, also. It was another gear with tiny cracks at the gussets and we couldn't get it re-heat treated in one piece, so it was make two pieces. See ya, Dick.