L.D. Sunderland, 5 Griffin Drive, Apalachin, N.Y. 13732 #26

#26

SHAPING PARTS - Howard Warren says that by clamping plate stock to the table of his radial arm saw and using a two inch drum sander he has a handy surface grinder for shaping parts like the tail spring.

TEMPLATES - Two sets of templates are now making the rounds to various builders; one set is for the fuselage only, and the other is for fuselage and wing. The new set, including the wing was made by Guenter Steuer. We are very grateful to him for going to all the trouble to get the materials, copy the templates from Thorp's originals and ship them while working a lot of overtime at the Lockheed wind tunnel and trying to build his own T-18. So far I've had no reply from Sport Aero about pre-marking the kits. If you want to use the templates just write and say which set you need. They are a big help, but the only problem is the long time required to make the circuit to the various builders. I'll try to give you an idea of when you will receive them by sending you a list of those ahead of you.

WING RIBS - The idea of forming wing ribs still scares many people. In my opinion it isn't worth the effort to use soft sheet and then heat treat. . . Pounding relief pockets in hard brittle 2024T-3 also doesn't make sense. Just try the easy way with 6061 and follow directions. Use birch for the form blocks. Don't use a hard plastic mallet or a soft rubber one. Most good hardware stores have a mallet with screw-in heads. One is usually made of hard plastic and the other a hard softer plastic. Our discount store has them for less than $3. Cut a wedge shape on the end with the soft plastic.

SPINNERS - John Tonzer, 6658 Jumilla Ave., Canoga Park, Calif., 91306 can still furnish spinners but the price is now $50. each or $45. each in lots of 12, plus shipping.

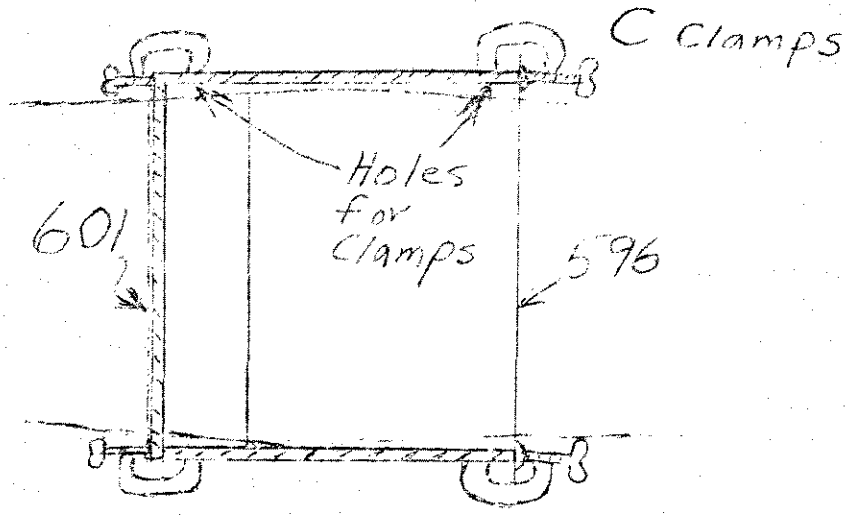
Also, B. Pershing Larsen, 7059 N. Moselle Ave., Chicago, Ill., 60646, is still supplying spinners with all the holes pre-drilled. He had his spinners on display at Rockford in the T-18 tent. I don't remember the price but they are reasonable.

TAIL SPRINGS - It looks as though even a 5/16" bolt is not strong enough for the front of the tail spring. Bernard Thalman had his break at the Fly-In with only a few hours on his ship and mine broke a week later while operating out of a rather rough sod strip. Fortunately, mine let go just as I was rolling off the runway so it didn't do too much damage to the rudder. I'm replacing the 5/16" bolt with a 3/8" one and recommend this for everyone unless you like to build rudders. If you want to be extra safe, install the bolt inside out with the nut on the outside.

DIMPLING - At the Fly-In I talked with many people who still are going out of their way to ruin their dimples. It is so very easy to make nice dimples with no surrounding distortion. First, make a simple tool as shown in Newsletter No. 8 (5/17/65). If you don't have the availability of a lathe to make this little tool, you won't be able to make the T-18 anyway. Dimplers used in the Whitney punch are a necessity for inside surfaces such as ribs but don't do a smooth enough job for skins.

EAA Amateur Builders' Handbook - Every T-18 builder should obtain a copy of this handbook from EAA. It is a general reference for the homebuilder containing FAA forms and procedures for certification. It tells how to conduct a flight test, gives fuel system requirements, and many other necessary items of information.

FUSELAGE JIG - B. Ham, Orlando, Fla., No. 259 - "I ran across something that might be of interest to others that are almost ready to skin the fuselage. Making a jig to hold bulkheads 601 and 596 on equal distance apart on both sides of the fuselage."



RIVET GUNS - B&F, 6141 West 95th St., Oak Lawn, Ill., 60453, has new rivet guns equivalent to 3X size for $37.95. List price is $69.00 so it isn't a bad deal.

NEW MATERIAL SOURCE - Kieth Shepherd, K&A Airfab, Rosemead, Calif., 91770, says he can supply complete kits of materials for the T-18 at bargain prices - everything including canopy and windshield for $950. He will also fabricate any part for the T-18. The kits do not include engine, propeller, wheels, and instruments. Write for quotes on any material needed.

LETTERS FROM JOHN THORP -"Your spanwise stall pattern is normal; starting at the change of wing direction. I would prefer to have the pattern inboard to provide more aileron control at stall. A very small amount of twist will alter the pattern drastically, particularly if there is a little side slip introduced. Usually low-wing airplanes have an induced root stall caused by a poor wing-fuselage juncture. High wingers usually have a tip stall because the fuselage doesn't stall the root first. A little root stall is a good thing as it provides stall warning by shaking the tail. The T-18 wing stalls too close to the tip to suit me. I believe that the stall strip should be inboard of the wing break.

ROCKFORD, 1968 - Those of you who were at Rockford are undoubtedly all fired up and working hard on your own projects now. Lyle Fleming and I must have given 50 or more of you rides. We're sorry we couldn't get everybody up who wanted a ride but there were times when the traffic was so thick that we just couldn't fly. With three Breezys taking up passengers, there was nearly always one on the runway making it nearly impossible to land. Anyway, the Fly-In was a real thrill again, especially with eight T-18's there. Each year the T-18 population has doubled so next year there will probably be 16. That's not too unlikely either because there is a large number ready to fly.

Callibie Wood again had his there. Jack Park and a friend flew in with his and Lee Hamlyn's. Bernard Thalman brought his recently completed open cockpit model. Irvin Faur brought his 200 hp constant speed prop fuel injected conversion although he didn't do much flying in it. He says that no midget mustangs can catch him now. Lyle Fleming brought his 180 hp model and Les Andersen brought the 180 hp ship he bought from Ron Lee. Mine was the only 125 hp T-18 there.

The T-18 tent was kept busy with Bob Kaergaard directing the work of cutting down the fuselage deck for a canopy and building the flaps. John Thorp donated the parts.

The forum was held on Friday morning. First John told about the present status of various modifications and then gave an interesting talk on engines. Following this he asked each of the T-18 owners who had flown their ships

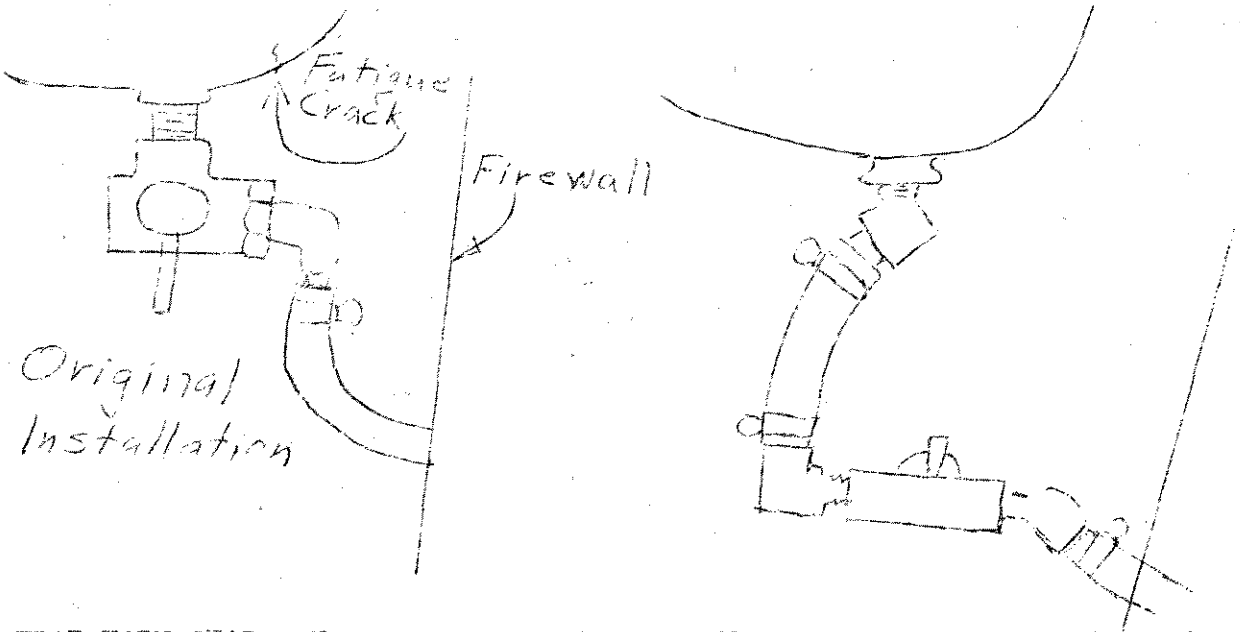
to relate some of their experiences.

Two hundred sets of drawings had already been mailed out on the tail spar mod and fuselage mod at 601. The other 400 will be sent out soon.

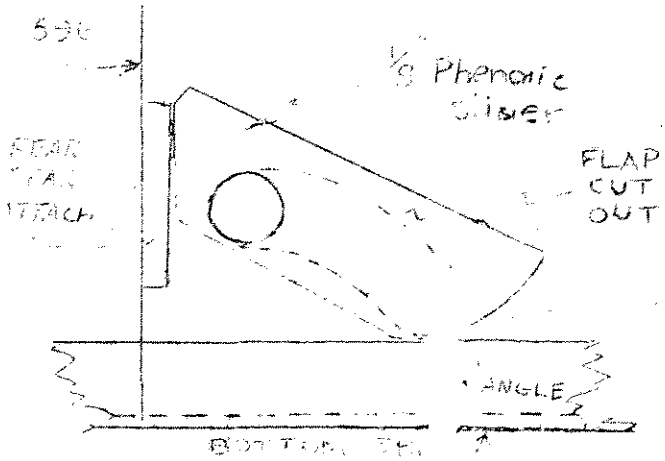
FROM IRVIN FAUR (4-26-68) -"Last year I had to turn too high to get any cruise and burnt to much gas. These constant speed props are costly and heavy but worth it. I can cruise 130 with 2100 and 15" manifold. That is just idling that 200 hp engine. Still have not full bored it in six hours. Am having vibration troubles yet. Still have one stack touching cowling.

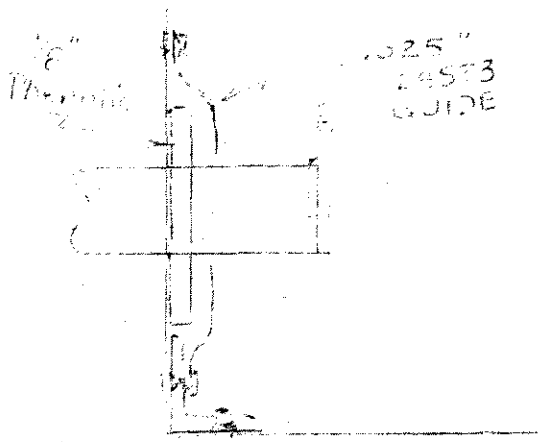
Wish I had my old 160 back with the prop I have now. It is impossible to use crossover exhaust with the 200 and crossover is almost a must. It is so much quieter. I just hate those stacks on mine. I cannot give you any figures near accurate on mine. At sealevel I don't believe I'm a bit faster than the 160 was. But at 10,000 the only place dared use some power 2400 and 20 it trued at 190. Will make a round trip flight at around ten soon and see what it will do at 2400 + 24. I figure 210 but figures are easy to write. I use the same ram air as Mooney and can pull quite a bit more manifold pressure than normal. So far have had no trouble propping the fuel injected engine. Starts right off. Just cannot use electric system with this heavy engine and prop either. I am fairly light overall at 860 empty, however." Since then he has observed the 180 redline so no more news.

FROM BILL JOHNSON - "My gas leak turned out to be a fatigue crack in the tank (Fig. 1). Apparently the vibration on the heavy valve and/or actuation of the valve caused the crack. I have solved the problem by mounting the new valve on the tunnel and isolate the tank with 3/8" hose. Figure 2 shows the cutout detail in the tunnel. Fig. 3 shows the installation. The fitting which goes in the tank must be brass so a finger screw can be soldered on. The valve part number, 709GG 1/4B Republic valve can be obtained from Dupar Dynamics, 250 Andover Park West, Seattle, Wa., 98188 for about $10.22 plus tax. This valve has a flange and is tapped for 10-32 screws for mounting. Removing the gas tank is a real messy job, so I hope this information can be passed on to benefit others.



FLAP HORN SEAL - Here is a seal for the flap horn cut-out in the side of the fuselage from Norm Rassler. He says it really works well. It slides along with the tube and closes the hole with a rocking action when it bumps into the spar attachment fitting.





CONTINUED IN JANUARY 1969 - You have all no doubt wondered what happened to the Newsletter. As you can see by the date at the beginning of this one the first few pages were written in October. Heavy travel commitments prevented me from finishing it and then recently I have been holding it up awaiting the results of a testing program John Thorp has been conducting on the new horizontal tail. More on all that later in the Newsletter.

THORP ENGINE SYMPOSIUM - John gave an interesting talk at Rockford on the subject of power plant installation. The only way to get the full benefit from such an educational experience is to hear it first hand, but for those who were not so fortunate, here is a synopsis - quite brief because my shorthand is all long.

Starting with the propeller, he pointed out that you won't get the best performance out of your engine unless you have just the right match of propeller, engine and airframe. Tip speeds no higher than 750 to 850 ft/sec are preferred. Activity factor is important. A wide blade gives a high activity factor. For best performance it is desirable to have the largest diameter, lowest activity factor, lowest RPM and the best blade angle. It is not always possible to have all your desires, however, due to the limitation on blade length and the amount of available horsepower. The body shape behind the propeller is very important. A prop extension places the propeller further ahead of the front cylinders and thus by minimizing blocking of the propeller, it improves its efficiency. The cowling should be well faired to minimize the change in direction of the air flow.

The induction system is extremely important. The Tri Pacer type air filter gives a drop in manifold pressure and a corresponding loss in horsepower. Power is a function of the amount of air taken into the engine. When Lee Hamlin changed to a new induction system with an automotive type air filter on his T-18, he picked up 15 mph airspeed.

Adequate fuel flow must be provided to the engine under the most nose-high climb attitude and lowest fuel level. To check fuel flow, block the wheels up to simulate the maximum pitch attitude during climb and with one gallon of gasoline in the tank, run the engine at full take-off power for three minutes. To determine the maximum pitch attitude, measure it in the air with a bubble protractor.

Cooling system baffles should be made of heavy enough aluminum to prevent cracking - .032 or .040 is needed. Reinforcements made of stainless steel should be riveted on at rub and attachment points. Copy a good commercial design rather than trying an eyeball design which could be costly if it results in a ruined engine. Poor cooling causes rings and valves to go first. To make sure of the effectiveness of a new installation, instrument the engine with cylinder head temperature gauges. These are worthless unless they are accurate, so have the gauge, exact length of wire to be used and the sensor all calibrated together.

Cylinder head temperatures should not exceed 500°F but 400 is preferable with 350 maximum at cylinder base. Although the Lycoming manual states that oil temperature can go as high as 245°F, a temperature between 190 and 200 is safer. Remember, outside air temperatures have a direct effect on engine temperatures so do the testing under the hottest expected conditions or you'll get a surprise when summer comes. A properly shaped large spinner has considerable effect on engine cooling. The T-18 spinner is an example of a good spinner. To determine the size of the cooling system inlet use the formula area = 0.35 in^2/hp. The exit area should be from 5 to 10% larger. For an O-290 engine developing 140 hp, the size of the inlet on one side would be 70 hp x 0.35 = 24.5 sq. in. This is only a 3 in. by 8 in. slot. Anything much larger means so much useless drag.

Cowling cooling air exits should be at one point (on each side) only. It doesn't work to take air out at two levels like at the botton and on the sides. The exhaust stack clearance holes on the T-18 should be plugged up as much as possible since the main air exits are on the cowling sides.

Cooling should be satisfactory if a pressure differential of 5" of water exists across the cooling system baffles. This is the amount of pressure existing in the pitot tube when the airspeed is 100 mph so to check your cooling system, use an airspeed indicator with the static line connected to the exit side of the engine compartment and the pitot line connected to the inlet side of the baffles.

Both an oil filter and oil cooler should be used on an aircraft engine. To mount the oil filter, buy the standard corvair adapter and cut off all the excess material. Tap the inlet and outlet holes in the casting for 1/4 pipe fittings. Make a bracket and mount to the firewall using high-pressure flexible hose for connections. The filter should be oriented so oil won't spill when filter is removed. The inlet to the filter can be from the 1/8" pipe outlet on top of the oil screen housing or from the oil passage at the base of the right front cylinder. A brass fitting can be used for this connection. It can be brazed shut and then drilled out to make a bleed hole to regulate flow through the cooler. Adjust the size of the hole between 1/16" and 1/8" diameter to obtain proper cooling. Make sure the oil pressure when hot and at idel RPM does not fall below minimum pressure for your engine.

A corvair oil cooler works well with the O-290 engines. There are three sizes. Use the largest available. It is used on the supercharged models (Corsa) and the bus. Mount the cooler forward of the left front cylinder for best results. Lines should run from engine to filter to cooler and back to sump. Don't re-circulat the rocker box covers. If a fuel pump isn't used, a brass fitting can be brazed to the plate covering the fule pump opening. Use high pressure flexible 1/4" hose for connections. Remember that a broken oil line means an engine failure.

If a good automotive air filter and oil filter are used, your engine should never wear out. The oil should last 80 to 100 hours between changes. The design of an induction system to take advantage of the ram air effect can be beneficial for fast airplanes. Thirteen inches of water equals one inch of mercury. Since 100 mph ram air is equivalent to 5" of water, this is less than 1/2" of manifuld pressure and not too significant. At 200 mph it becomes more significant, about 20 inches of water or nearly 2 inches MP. The carburetor air inlet should be little larger than the carburetor throat. This gives a diffusing action inside the inlet and slows down dust particles so they won't penetrate the air filter as far.

FORMING WING SKINS - To make forming the leading edge bend on wing skins a real snap, add 1.7" to the trailing edge of the bottom inner and outer wing skins. Then punch an extra row of rivet holes exactly 1.7" aft of the bottom row for the rear spar. To form the leading edge bend, fold the

unbent skin over until the rivet holes for the top rear spar line up with this extra set of holes and cleco all holes. DANGER Don't use the wrong row of holes! Place skin on a smooth surface. Pad a 4 ft long 2 x 4 with folded newspaper to protect skin from scratches. Place 2 x 4 across skin spanwise at highest point and press down with body weight. As bend forms, move 2 x 4 forward and push down again. 2 x 4 should be located such that it is always level. Continue until a nose rib fits nicely after clecos are removed. If this procedure is followed, you can't get the skin bent cockeyed. On the other hand, if you try forcing the skin down between two 2 x 4's with a pipe, don't be surprised if you end up using the pipe over the head of the guy who suggested it.

SEATS - Way back several years ago, I described my bucket seats but never managed to get a sketch included so here it is on the next page. This stencil material is a mess to draw on but I hope you can get the idea.

The part shown is the seat bottom. The back is similar except that no springs are included and the foam is only 2" thick. This gives good leg room for a 6'2" person but if you are short of stature you could stand to move the rudder pedals back an inch. This is preferable to get more clearance for the brake pedals. Don't do it if you are tall or you will be cramped - especially with a back pack chute. If you already have the rudder pedals located and are short, you could make the seat back thicker. The back is attached at the top with two pop rivet nuts placed in the tubular frame with screws coming up through the frame. This assumes that you have a hole cut in the deck under the canopy like I have. A third pop rivet nut is placed in the side of the tunnel and a screw is passed into it through a fitting at the bottom corner of the seat back.

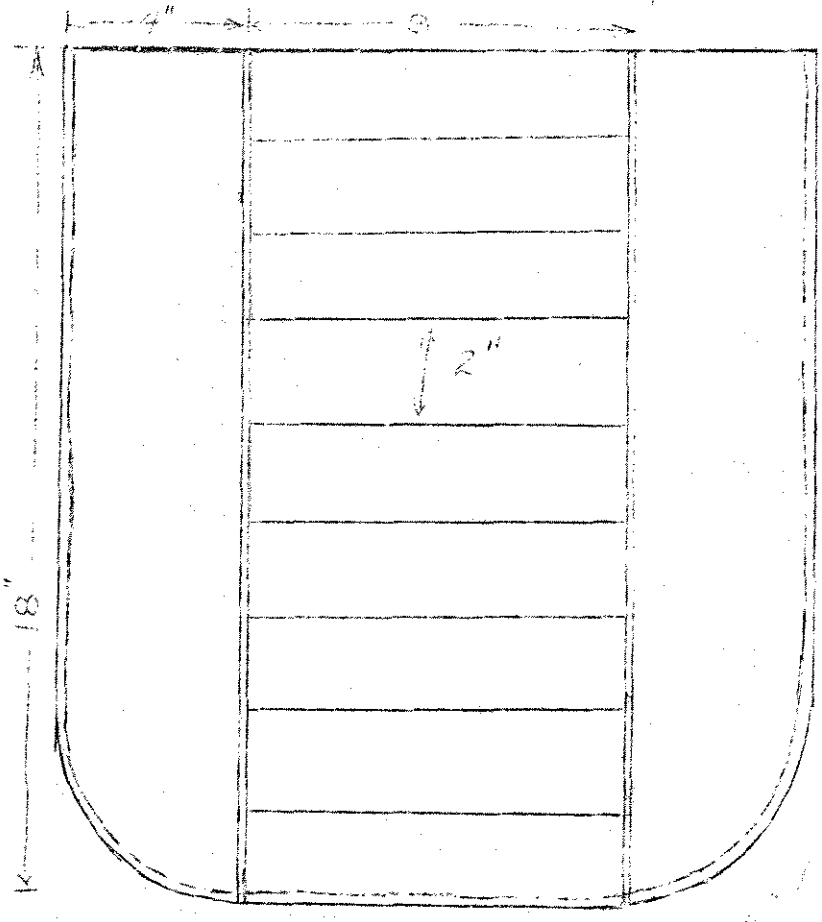
The seat frames were made from a scrap lawn chair. The bottom frame shown is not too clear but splices were made with pop rivets at three places -- front center, and at the aft two corners.

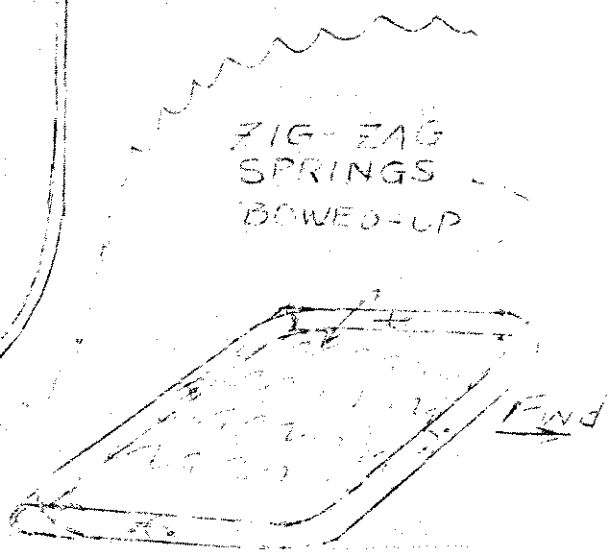
To support the seat bottom at the forward edge and adjust it for proper leg support - something extremely important for comfort on long trips - I bent up a rectangular post about 1" x 2" by 2" high from .040 aluminum. Tabs were left at the top to permit pop riveting it to the finished seat frame. Two were used on each seat.

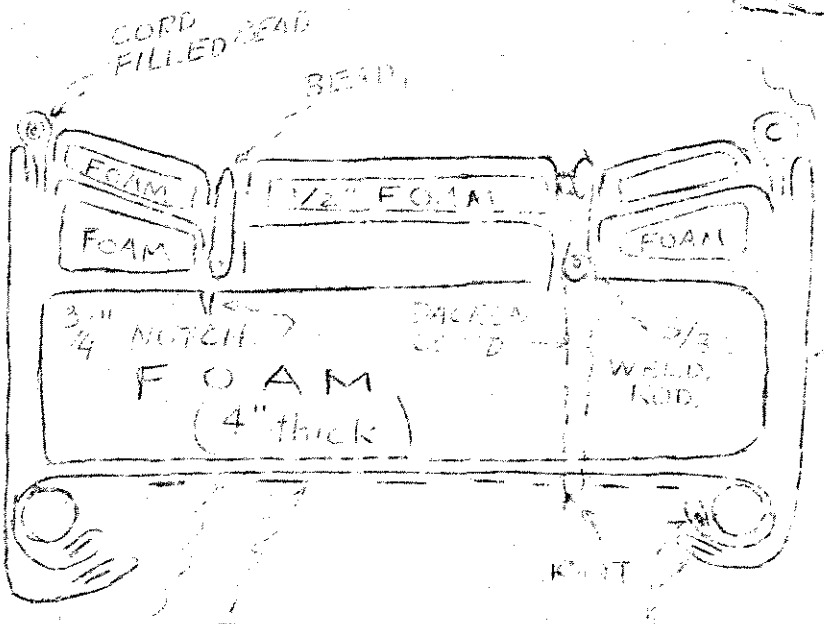
Don't use foam rubber for aircraft seats. It is much too heavy. Instead use polyurethane foam which is not only very light but also inexpensive. It can be cut with an electric knife or a ground sharp hacksaw blade in a sabersaw.

NEW TAIL TUBES: Fred Kracht, 31 Caronport Cres., Don Mills, Ontario, Canada I have the material to insert into the tail plane tube, which John Thorp suggested we do. I have enough 2" O.D., .120 wall thickness tubing for thirty to forty pieces. The material can be had already machined or unmachined. The inserts for the tail plane spars cost $16.80 and the machining an additional $18. I had a very difficult time to buy this tubing and it was only possible to pick up 36 feet lengths - therefore the surplus.

CANOPY LATCH - Just noticed a picture in the January, 1969 issue of Private Pilot, page 20 showing the latch on the bubble canopy of the Waco Meteor. This is where I got the idea for the latch I installed on my canopy. It is the one described previously in the Newsletter. I highly recommend this kind of latch either in the top center or one on each side. In addition it would be a good idea to have a finger attached rigidly to the fuselage to engage the rear of the canopy as it slides forward to hold it down better in flight. My canopy is built according to the prints except that I added a stiffener to the cross piece holding the bearings and the rails are made of stiffer 0.050 stainless but the canopy still bulges up in flight leaving a very noisey and drafty crack all the way around the bottom.







AL. TUBING FROM LAWN CHAIR

LEATHERETTE

ZIG-ZAG SPRINGS

CANVAS BOTTOM

½" RIVET THRU CANVAS & ½" AL. STRIP

Drawn by EJ Shinn

This is a drag producing leak that should be sealed well. Leaving a big bulb on the deck upholstery is alright if it is large enough to still touch the canopy after it bulges up and out about a quarter inch.

CARB HEAT MUFFS - Bill Johnson says he has had good experience with a very simple heat muff design. He just wrapped a screen door spring in a spiral around a straight section of exhaust stack and secured it with wire. Then he wrapped the aluminum muff tightly around this spring and clamped it in the conventional manner with screws along the side. The ends were left open for air inlets and nothing was welded to the stack. This looks like a good arrangement. If you need to weld end caps for heat muffs to an exhaust stack, by all means, don't weld a continuous flange perpendicular to the exhaust tubing like some manufacturers do. A Super Cub exhaust system made this way used to crack everytime it would be welded. Form the ends in a conical shape from .015 to .025 stainless. This shape doesn't cause such high locked up stresses during heating and cooling conditions.

RETRACTABLE GEAR - Just saw Bill Johnson's drawings for his retractable gear modification. Gear legs, made of double tubing like on the regular gear, will be pivoted in aluminum castings attached to the main spar. Wheels will swing into wells between main spar and rudder pedals. This requires a new inner wing and fuselage modification. The same extrusions are used for the inner wing but the web is beefed up and extra stiffeners are added in the wing walk area. He had made new outer panels also because he wanted to try a new airfoil with less camber. For outer wing extrusions he substituted three laminations of bent up .040. Each layer was of a different length to save weight. No bonding was used. He didn't fabricate inner wing spar caps. Too much trouble. Bill is lucky because his wife who is a draftsman at Boeing, is making all the drawings. He plans to supply drawings and machined castings at a later date but don't write now.

MATERIALS - Spencer Arcraft tells me that we T-18ers cleaned them completely out of 1/8" clecos and they don't expect to get more. Anyone know of a good source? They still have a few vacuum regulators.

FUEL GAUGE - Bill Johnson says the 100 octane fuel must have attacked the seal in his VW fuel gauge float mechanism and it began to leak so he replaced it with a Stewart Warner type. The 80 octane hasn't affected mine.

RIVNUT TOOL AND POP RIVETS - by Dick Dalen - Make your own rivnut puller from an ordinary pop rivet tool. Mine is a PGM 402 model made by United Shoe. Simply take 1-1/2" 8-32 bolt and turn down on a lathe so that it slips easily through the 5/32 tip, leaving about 5 or 6 threads on the end. File the keyhole with a small knife file. Screw the bolt into the rivnut and insert into the hole. When pulling, pull gently so as not to pull the threads up into the tip or they will strip. A few practice pulls and presto you've saved $32 on a pop rivnut tool. Filling pop rivets holes can be done quickly and easily. Buy a tube of GE or Dupont silicon rubber and squirt into the hollow rivets. Leave an ice cream top. Allow to cure for a day or two. Merely slice off with a razor blade and presto a smooth flush finish with no sanding required. (Editor's note Don't get carried away with the use of silicon for sealing external cracks like I did for you will soon find paint won't stick to it.)

NEWSLETTER INDEX - A.O. Challis, Henry St., Bridport, Tasmania 7254, Australia -- Each member can easily index his newsletters himself and thereby become more familiar with contents in the process. Put them in a loose-leaf binder, get a pack of press-on labels, label each second page using the labels as tabs in staggered order - cut off only half of the backing so that they won't stick to adjoining tabls.

SPORT AVIATION - By now, most of you have seen the color picture of my T-18 in the December issue of Sport Aviation. I was hoping that it would make the cover, but then you can't have everything. At least you readers no doubt agree that T-18s are more important than midget racers, Breezies and Bearcats, but then you too are probably prejudiced.

The photo was taken by Ed Aswad, our plant photographer. The landscape is typical of that in this area. The Susquehanna river flows from left to right through the center of the picture just back of the right wheel. The little town visible at the left is Owego, N.Y. which is 10 miles west of Endicott. If you can't find Apalachin on the map, it is 4 miles west of Endicott along the river. I fly out of Tri-Cities airport at Endicott. If any of you want to see my airplane, drop in anytime. The T-hangar is unlocked.

I've written an article for Sport Aviation about the tuft testing I did on my T-18. It includes a number of pictures and some performance data. It was supposed to accompany the color photo but for some reason it didn't work out that way and is being scheduled for the March issue.

ENGINE TOOLS - In case you want to go first class and obtain your own offset wrenches needed to torque the cylinder hold down nuts on Lycoming engines, they can be obtained through your Lycoming dealer. I innocently ordered the two required without first checking the price. You can imagine my surprise when I got them and discovered the list price for the 3/8 size, 1121-B is $25.80 and for the 1/2 inch size , 64952, is $9.65. If you want to save over $30. you can easily make your own from a couple of box end wrenches and some 1/2 inch solid steel bar stock. Use the sketch of the wrenches in the engine manual as a pattern if you can't find a mechanic who will loan you one. First, heat the box end wrench and re-form the handle to conform to the desired shape. While forming clamp the end in a vise so it won't lose its hardness. Then cut off the handle and weld on a piece of 1/2" bar stock. Form this to match the desired shape, cut to size and weld a large hex nut on the end to permit use with a standard socket. Since the weld is the weakest part, and it can't be hardened there is probably no point in heat treating the wrench. The 1/2" shank should take the required 50 inch-pounds torque. You might use an alloy welding rod and heat treat the finished wrench.

FOR SALE - Aluminum Plate - 478, $10., 3 on hand, 2 p. 15-7/16 x 22-11/16 which will make two 478 and many other 3/4" parts- $25.00 each. 510 - $1.00; 522 - $1.50, 527 - $7.00 602 - $1.50 1/2 plate 495 and 509 $2.00, 526 - $6.00 3/8 plate 537, 552, 556, 678 - $6.00 1/4 plate 503, 537, $5.00 3/16 plate 565, 492, 597 - $1.00 1/8 plate 538, 541 $2.00 Control socket (2) $2.00 I have material for 4 people now, could locate more if there is a need. Regulators, gauges and filters for compressors, $5.00 Angle for rudder, must be milled $1.00 - Norman Dibble, RD #3, Windsor, N.Y. 13865.

RETRACTING THE T-18 MAIN LANDING GEAR - William R. Johnson, 23321-106th Ave. S.E., Kent, Washington, 98031 - After a spring and summer family pacification program I have finally gotten back to work on the retractable main landing gear for the T-18. The new center wing section is about half complete. I also have a draftsman working part time on the layouts and detail drawings. With luck the plans should be ready for sale in about six months. I will not sell any until the modification is flight tested. Tricycle gear was considered but rejected because of the extra weight of the nose gear and the fact that there is no place to hide it. If it can't be hidden, the extra weight isn't worth while aerodynamically. For those who are interested in starting here is a list of what can be done to get ready. The extensiveness of the changes precludes any salvage of the

existing wing other than the aileron control linkage. (flaps also if installed). The parts can be broken down into three categories: 1. Unchanged; 2. Minor modification, 3. Complete or major redesign. Parts from the first two categories can be made from existing drawings by use of the following information. Unless noted, quantities are the same as original.

1. Unchanged Parts: Fitting, Main Beam Attach, Dwg. N. 522, Rib Assy, Center Wing BL 64,125, Dwg. No. 536; Rib, Wng leading edge, Dwg. No. 544, (-2R & -2L 1 each, -4R & -4L 1 each); Stabilizer Modification, No. ~B502; Control Mounting, No. A566.

2. Minor Modification - Rib Center, Wing BL49.875, No. 535, Same as Dwg. but use .040 material. Main Beam Inner Wing, No. 537, (Don't drill any holes between wing BL 19.374 and BL 40. An extra thickness of .040 web 80" long in center of beam.) Rear Beam, Inner wing, No. 538. (Make -1 of .040 material. Make -3 of .188 plate. Otherwise same as dwg.)

3. Complete or major recesign - Dwg. Nos. 601, 515, 532, 533, 534R, and 580 require modification or complete replacement. Some additional new dwgs will be required. Two rather complex castings will be required for the main gear bearings. All other parts will be similar to existing structure as far as complexity. If there is any reader who is a pattern maker or has an aluminum foundry connection, please let me know.

VISIT TO SAN FRANCISCO - Had a nice visit with James R. Shelton, 255 Heat St., Milpitas, California who works at the United Airlines Maintenance Shop at San Francisco. He has his fuselage nearly all riveted up and most of the parts made for the wings. He's doing a nice job on his riveting and spends quite a bit of time answering the questions of T-18 builders and prospective builders in that part of California. His ship will be made exactly according to the plans but he didn't think the matched hole tooling would sork so he drilled the holes in the center wing skins from the inside out. He says he wouldn't do that again because it is too much work. He has a 125 hp engine and will use either that or a 150 model.

ACCIDENT REPORT - As was announced in the November issue of Sport Aviation a second fatal accident has occurred involving 180 hp T-18's. During the Southwest EAA Fly-In at Georgetown, Texas, a T-18 experienced what is believed to be flutter of the horizontal t il followed by failure of the spar at the 510 fitting. During the Fly-In, the pilot-builder was observed to make high speed passes across the field followed by abrupt pull-ups and zooms at extremely steep angles. The day before a passenger reported seeing between 210 and 220 on the indicator. A credible witness said that during the final pass, the tail was observed to flutter before it failed. The wing was bent down and separated and the fuselage struck the ground under full power killing the pilot.

Prior to the Fly-In, the builder had parked his airplane in his driveway and it had rolled down a hill tearing off the horizontal tail and associated fittings. Repairs were made and a new tail built including the doubler tube. Three deviations from the plans were made. The ribs were not riveted to the spar because he didn't think it was necessary. The 509 fitting was attached to the spar with a 1/4" bolt instead of rivets. 5/32 rivet holes were also drilled but not used because the fitting had been positioned wrong. This is where the failure occurred. It is evident this accident would no doubt have been prevented if the red line speed had been observed. Just had a talk with John Thorp on the phone to get the latest progress report on the testing program. He thinks they have identified the problem as being related to the bending frequency of balance weight arm. Everyone will be notified when tests are completed.

John expects that the program will allow the establishment of a red line speed of 200 mph or slightly higher. He expects however to recommend that all horizontal tails be modified to the new configuration. If you haven't built your horizontal tail, I would recommend holding up until we receive word from John on any modification that might result from the test program. In the meantime, be sure to adhere to the present 180 red line which has been verified through tests as being safe.

HEAT TREAT FACILITY - Joe Martin of Saddlebrook, N.J. and Lee Everle of Somerville, N.J. say they found a shop which can heat treat the complete landing gear in one piece. It is Braddock Heat Treating Co., Bound Brook, N.J., 08805, Phone 201-3562906.

EXHAUST STACKS - Someone at Rockford had some fancy looking red exhaust stacks. He said he simply used automotive stack material and then painted the finished stacks with exhaust pipe paint available in hot rod shops. Looks real fine and apparently doesn't burn off. Seems like a perfect solution to a big problem since obtaining stainless steel tubing bends is difficult in most areas.

CG MEASUREMENTS - One of the toughest problems in getting ready for a first flight is weighing the airplane and determining the c.g. First is the matter of finding accurate scales with sufficient range. The airplane should have the tail raised to level the fuselage reference line and scales should be placed under all three wheels at the same time. It is nearly impossible to get consistent readings if the airplane must be moved to place scales under different wheels. The reaction at the main wheels will be about 400 lbs., so single bathroom scales won't do the job. If anyone knows a good source to rent or borrow platform scales, let me know. A poor substitute is two bathroom scales under each mail wheel with a plank across them.

With the aircraft in a level attitude on the three scales, remove all extra articles and close the canopy. The fuel tank should be empty and oil should be full. Now, read all three scales. Drop a plumb bob from the leading edge of the wing and measure the distance from it to the center of each axle. This is extremely important in order to find the empty c.g. The axle location may vary from station 53 to 55 depending on the length and amount of deflection of your gear. If the two axles are not at exactly the same station, just split the difference. Locations for the various reaction points are: Oil sta 28, fuel 48, main wheels 53 to 55, wing leading edge 55, passengers 87.6, baggage 111, tail wheel 214. Next issue I'll put in a set of sample cg calculations for my ship.

NEXT ISSUE - I will try my best to get out the next newsletter sooner. Why don't you set down right now and write some sort of article or little tip that might be of interest. And all you guys who are now flying, you've been getting a free ride for a long time reading newsletters other people wrote, now how about sending in some news. I've not even heard a word from many of you since you've flown.

Don Carter who put the first 50 hours on his T-18 in record time during November, and December, has written a very interesting article on aerobatics and it will be in the next issue.

307. R.G. Campagna
7853 Sprucewood
Woodbrige
Downers Gr., Ill.
60515

BG

55450 Tatnall
Naperville, Ill
60540