

Complete less out of ... by Lynn in computer program
35134 Hollow Creek Dr., Yocoma, CA 92389 (909) 797-7594



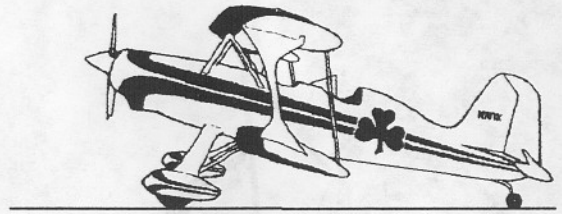
Starduster

MAGAZINE



Dedicated to the
ACTIVE Homebuilders

JULY 1994



COMMENTS FROM THE PREZ-

Well, finally made my trip to "Sun & Fun" - Same nice people and fine Airplanes, We see more and more of, at all the Flyins. Got a very good look at Gene Hudkins Starduster and was much impressed with the time he put in to build such a finely appointed machine. Which will raise the question, why I chose Al Tomlinson & Neal Ryngoudt's Starduster for the Designers Award - The answer, an excellent example of a clean machine. The typical Starduster Spartan, but very well done. My congrats to all that came, Joe Christen, Ken Poteet and one unknown - Baby blue with yellow from Texas, I think.

Sedona - I loved it - was very nicely planned and run by Dick Lucas & wife & Locals - Nice turn out - Bad weather in So Cal, kept 3 that I know from coming - I enjoyed the trip - and am looking forward to "95" maybe the "Nut Tree" - Vacaville, CA

Bad news - We've had another failure of Glass Tail Wheel Spring so am not going to pursue sales until problem of poor resistance to side loads is resolved. Fisher Products sent letter saying sales did not warrant continued MFG. Maybe there was more reasons.

Hope everybody is ready for Oshkosh 94 - & Watoma Banquet is Sun July 31st at "Radio Station" Watoma - See you there - My three brothers are coming from NY which pleases me. All of us have shared Racing cars - Skydiving - Flying or other Adrenalin Charging Capers.

Over & out for now,

"B.C." PREZ

"B.C."

Stolp Starduster Corp.

4301 TWINING
RIVERSIDE, CA 92509
(909) 686-7943
FAX (909) 784-0072
WATS 1-800-833-9102

HOME BUILT AIRPLANE PLANS
SUPPLIES • COMPONENTS • MATERIALS

BILL CLOUSE

a.k.a. "B.C." Prez

JULY 1994

THIS MAGAZINE USES MATERIAL SUBMITTED BY IT'S READERS. SOME ARTICLES OR STATEMENTS MAY NOT BE IN AGREEMENT WITH STOLP STARDUSTER CORPORATION OR IT'S EDITOR. INFORMATION AND ARTICLES USED ARE AT THE READERS RISK AND STARDUSTER MAGAZINE ASSUMES NO LIABILITY.

TABLE OF CONTENTS

PRESIDENTS COMMENTS	2
ODDS & ENDS FROM YOUR EDITOR	4
SAD NEWS	5
STARDUSTER HISTORY - N191DG	6
LETTERS	9
TECH TIP - SPEEDY "TOO"	18
STARDUSTER OPEN HOUSE SEDONA	22
OSHKOSH / WATOMA	33
ENGINE IDEAS	34
LIGHT WEIGHT STARTER	35
CLASSIFIEDS	37
ADS SERVICE BULLETINS	39

We would like to thank all of this issues contributors and respond to one and all for some interesting information and photos.

FRONT COVER - N78TK originally built by Tom Kilkelly now owned by Mike Mason, P.O. Box 223, Mt. Vernon, MO 65712.

BACK COVER -L to R TOP N80MM owned by Jeff Chambliss, Livermore, CA and N99DB Lew Adams, Phoenix, AZ.
L to R BOTTOM N519B Bob Bonde, Las Vegas, NV and N530LR Larry Rydberg from Albuquerque, NM.

SUBSCRIBE TO STARDUSTER MAGAZINE. PUBLISHED FOR PEOPLE BUILDING OUR AIRPLANES. TECHNICAL INFORMATION, NEWS & PICTURES. PUBLISHED FOUR TIME A YEAR. SUBSCRIPTION RATE IS \$12.00 PER YEAR, \$16.00 PER YEAR OVERSEAS MAILING (EXCLUDING CANADA). SEND CHECKS TO STARDUSTER CORP., 4301 TWINING AVE., RIVERSIDE, CALIF. 92508

THE EDITOR IS ALWAYS LOOKING FOR TECHNICAL AND EDITORIAL CONTRIBUTIONS TO THIS MAGAZINE, WHICH IS DEDICATED TO THE HOME BUILDER AND SPORT AIRCRAFT ENTHUSIAST. PLEASE INCLUDE YOUR NAME, ADDRESS, TELEPHONE NUMBER AND YOUR "N" NUMBER ALONG WITH THE ARTICLE SUBMITTED.

ODDS & ENDS FROM YOUR EDITOR

Your editor just recently took another job (within) the fire department, and although the work is no easier, the working conditions along with the people, are much more pleasurable. I only mention this because it also required a substantial pay cut. Which in turn effects aircraft ownership, as well as the ability to fly the number of hours I have in the past. I do not hunt, fish, ski, boat, bowl, golf, or own a BMW. My one thing is flying. But so far, it has had little effect.

My airplane as of the 25th of June is 5 years old. It has now has 900 hrs TT. Which translates to around 180 hrs per year on average, not bad for an open cockpit biplane in Oregon.

I still plan on attending Oshkosh/Watoma, and am looking forward to seeing all my old friends and hopefully some new ones with airplanes I have not yet seen before.

So far this year, I have only attended the Starduster Open House in Sedona, Arizona, the Yakima, Washington Airfair, and just recently attended Wings Over Walla Walla, Washington. I was able to meet many old friends at Yakima, WA. I was parked next to Lyle Taylor, who is almost finished with his Starduster Too, and is planning on attending Oshkosh/Watoma. Also Dave Mahre was there with his Starduster Too. And at Walla Walla, WA we stayed over with Del & Kay White, great friends. Del has a Starduster Too that is well along, and I have ben trying to get him to finish it as it is so close.

My good friend Phil Hax, was kind enough to send me a video tape of his Starduster Too on skis. It detailed the preparations that need to be made to fly, and what its like flying in Vermont during the winter months. It was filmed in February and was about 10 degrees above when they flew. Many of you who attended Sedona this year, saw this video in the terminal after dinner, and those who did will certainly agree it is spectacular. Thanks again Phil Hax.

Bill Clouse just recently relayed a story to me about John Kruger, a former Starduster Too owner of N99DB, who is now a T-6 owner and a Harley/Davidson rider. During his trip to the east coast and back on his Harley it broke down (you know about Harleys...ride a mile walk the rest) in Albuquerque, New Mexico. So he stopped at the local dealer, who said we only sell them we don't work on them. But he was told there was a guy on the other side of town at Larry's Custom Cycle that does work on them. This turned out to be Larry Rydberg owner of N530LR a beautiful Starduster Too, that I have had the pleasure of attending numerous fly-ins as well as flying together. Anyway, Larry was able to fix John Krugers Harley and get him back on the road and home to Redlands, California. So you see Starduster people are great where ever you go. I am looking forward to Oshkosh/Watoma. Hope to see you all there and fly safe.

D.C.B. Editor

SAD NEWS

As always any death in aviation is looked on with regret. We as pilots know the risks, and generally attempt to minimize them. So it becomes such a terrible thing when someone you know personally is fatally injured in an aircraft accident, and that the airplane was a Starduster Too. Bob Ely, owner and builder of N107UP a Ford V-6 powered Starduster Too, was fatally injured this past April at his home airpark in Baxter Springs, Kansas.

Apparently he attempted a slow roll on takeoff and was to low, along with momentary erratic engine performance, to recover. The official accident report has not been released. But several people have called or written regarding the accident, including his wife Renae Ely. They along with the witnesses agree that this is what happened.

I was very surprised to learn that he had done this before, on many occasions. At first I thought it was some sort of structural failure, like the engine mount or something. Because I could not believe him to be this kind of a pilot. Especially since I had spent time with him at Oshkosh 1992, and that we had flown back to Kansas with him on our return trip home. He impressed me, as a responsible and capable pilot, who was laid back and not one that would be so inclined to do this sort of thing.

His wife Renae, told me during our phone conversation that she was shocked that it had happened, but not surprised. I knew he did a lot of acrobatic maneuvers with his airplane, but I had always assumed that it was at altitude.

During our flight together, the airplane performed pretty close to ours, and after looking the aircraft over at Oshkosh, it was not a Grand Champion, but certainly solid, practical and functional.

For those of you unfamiliar with N107UP, it was featured in the March 1992 issue of Sport Aviation, and was quite factual. The airplane had over 300 hours on this engine and prop combination, and seemed to be capable of many more.

Bob, for the short time we spent together, left me with the impression as being a responsible promoter of aviation and the airplane. He never talked down about Dave Blanton's V-6 conversion, saying only that he never expected it to give him more than it was capable of.

Bob leaves behind a loving wife and family, plus the many friends who knew him. Perhaps this was his way of living and staying close to God by pushing the edge, as he was a minister of the Christian church.

April 2 ♦ Baxter Springs, Kan.: A homebuilt **Starduster**, taking off for a maintenance check flight following exhaust system repairs, climbed to about 200 feet, rolled inverted and descended to the ground, according to witnesses. The pilot, who was the owner of the homebuilt, was killed.

Editor and Friend
David C. Baxter

STARDUSTER HISTORY
SA-101 Super Starduster N191DG

The original single place Starduster and aerobatics were fine in the sixties, with the usual loop and roll, and although it was never intended for use at acro competitions, it did quite well for the weekend pilot. At the same time of course the Pitts was really starting to make a name for itself, and at its peak in the early 1980's, Dick Green, and his dad Tom, along with Bill Clouse decided that they would team up to design an aircraft that would compete with the new Pitts SIT.

The general plan, size and layout was based somewhat around the Acroduster One. The major difference was a .028 wall steel tube fuselage as opposed to the aluminum one used on the Acroduster. However it did retain the aluminum spring gear. The wings are wood, using much of the Starduster type construction. The other interesting thing about the airplane is the control system. It is a mixer control system designed by Vernon Payne of Knight Twister fame. It allows the ailerons to doop 1" when the stick is pulled back, and has the opposite doop when pushed forward. This helps in landing, and lowers the touchdown speed. The airplane has the Osborne A-1 symmetrical airfoil, a 28" cord, and is 4" thick. There is no dihedral or incidence in the wings. It does however retain the 6 degree sweep, and much of the Starduster look.

The ailerons are servo boosted with the interconnects inside the "I" struts. The performance with a 200 HP Lycoming is what you would expect, spectacular. VMAX 200 kts IAS, cruise 180 IAS, climb 3000 FPM, stall 55 MPH, takeoff 200 feet, landing 700 feet, ceiling 12,500 feet and range of 507 s/miles. The empty weight was 940 lbs and gross at 1,150 lbs. It was also designed to withstand 16 G's plus or minus. This airplane in my opinion would have competed in advanced and unlimited IAC competition, and in the right hands could have won!

The Greens competed locally and flew some airshows. They also planned on competing at Fond Du Lac, but apparently never did. The Greens, prior to this airplane, built two others. One was a Starduster Too N11TG and the second was an Acroduster Too N56RG. I have a picture off all three taken at Hemet, California sometime in 1984. Tom, at the time he sent me the letter and pictures, was working on a Lancaire (about Dec.1986), and said that it was no easier to build than the Starduster.

All of the airplanes have since been sold. The Super Starduster 101 going to Ormand Lavoie of Corvallis, MT., he was a retired Delta Captain with a very interesting and colorful past. Having flown Ford Trimotors for Johnson Flying Service in the late 1930's before WWII, and later retiring on DC-10's.

Les Homan and I stopped by and saw him during our trip to Oshkosh in July of 1992. We landed on his grass strip in Corvallis, Montana, and had a wonderful visit with him and his wife Darleen. Les wanted to see this airplane as he was, and is currently building a Super Starduster One of his own.



N191DG AT PRESCOTT
AZ DAWN PATROL 94



N11TG, N56RG, AND N191DG AT HEMET
CALIFORNIA MID 1985



N191DG OVER SOUTHERN CALIF 1985

It was interesting to hear him explain to Les how 360 degree rolling horizontal turns were made. He kept telling Les how easy it was.

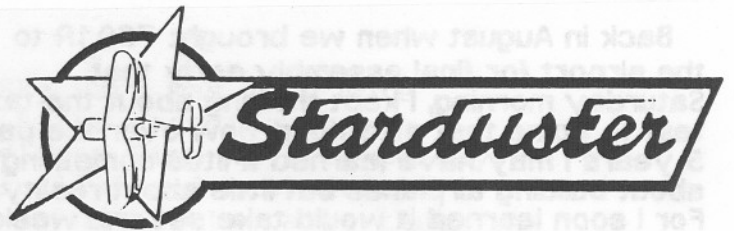
When I was trying to find out about the airplane, I called the FBO at Hamilton, MT. to inquire about the airplane, as I had heard a rumor that the airplane had been wrecked. But on talking with the fellow he emphatically stated that if this indeed the case, he could assure me that Ormand was not the person who wrecked it. As it turned out, it was only a rumor. Apparently many of the locals who live in the valley south of Missoula, MT. asked Ormand to perform aerobatics on many occasions for their relatives and friends who were vacationing there. He did and was happy to do so, not bad for a man in his mid 70s.

About a year and a half ago Ormand called me to see if I knew someone who might be interested in M191DG, as he could no longer pass the physical. This problem ended his flying days. There are so many things about Ormand to tell. I could write a whole story about him, his propane powered Skybolt, (yes propane). It was also powered by a 220 HP Continental W-670 radial! And his many stories about flying for Delta and even more after his retirement and reunions. It is sad that he had to quit. But he certainly stayed longer than most. I subsequently advertised the Super Starduster One in Starduster Magazine, and talked with several friends, Peter Cavallo and Dick Heath, who I thought had the ability and interest. Eventually Dick Heath, (a former Starduster Too owner) from Phoenix, AZ. bought the airplane and flew it to Arizona. It took him some while on the way home to get acquainted with the unusual control system. It spooked him at first, but now he really likes it. Ormand was not concerned to much with looks, so he removed the wheel pants, and C/S prop. He then installed big tires and a wood F/P prop. The general condition and appearance left something to be desired. After Dick bought the airplane he re-installed the small tires, wheel pants, and metal prop. Returning it to its original configuration.

It was at Prescott, AZ. for the dawn patrol breakfast and later attended Sedona, Arizona Open House. Dick next goal is to cosmetically touch up the wear and tear, and making it like it was. I can certainly say he is well on his way, as it looked pretty tired several years ago when we stopped to look at it in Montana. It now is in good hands and giving its new owner the aerobatic capability he has been looking for. Thanks Dick Heath for a job well done, and N191DG for giving him the opportunity to pursue his aerobatic interest.

That is the current history of the Super Starduster SA-101 - the only one Now Flying.

D.C.B. Editor - Historian



Hello Bill & Davel

FINALLY, I'm a part of the *flying* Starduster family and proud to contribute to our great magazine. As a contributing editor of our local EAA Chapter 709 newsletter I can certainly appreciate the hard work that you guys are doing in putting together Starduster Magazine. Thanks for doing such a fine job!

So, How's mine doin' you ask? Well, she's doing **GREAT!** But that's not half the story. How she came to be is equally noteworthy. Being the current Vice President and a technical counsler of our local chapter 709 may seem to indicate that I've come a long way in my aviation life since beginning as my dad's "*Hold while I tack it*" guy back in 67'. When we, **ostly** he, built a Cassutt racer. Even though I had no formal flight training I maintained a fasination for airplanes hoping someday to be able to build one of my own.

The years really went by before things were right to build an airplane. Finally though, after college, the marriage is strong, the house is finished, (or close enough) business is good and the kid thinks she's grown, it's time! So began a 5 year venture into what I thought would be a hobby, quickly became a way of life.

The first order of business was to build a shop large enough for the project. Another of my long time desires, 36'x48' with built in jig tables and paint booth, now I can make all the noise I want. My Starduster plans arrived on January 12, 1988 and I had the fuselage laid out on the jig table the next day and construction began. It went very well although slower than originaly hoped. What I remembered about being around a Cassutt project 26 years ago had'nt prepared me for so many little pieces and sub-assemblies. Thinking about the magnitude of the entire project could become discouraging, but building each subassembly as a separate project kept me excited throughtout the entire 5 years. I **inged** and bent and cut and welded and **nted** every piece of N7301R with seldom if ever an extra hand to *hold it while I tacked it*. So I had a lot of time in jiggig, probably a good idea anyway, paying off on the first flight as she flew straight and level with no subsequent trim adjustments.

From the very beginning there was no attempt to please any one group with my Starduster. I knew it would not be the most agile, or have the best speed, or be the most economical, but by golly it would be everything I had ever dreamed of and I held out for all of it! I wanted full upholstery with custom fit seating, with built in arm rest that house the custom throttle quadrant on the left and electrical panel on the right. Complete aluminum side panels, flooring and bulkheads, all upholstered. I wanted an IFR panel with 720 channel Narco Escort II nav/com, loc w/cdi and intercom. ELT remote, x-pond, horizon & directional vac gyros, elec. turn coordinator, g-meter, ivsi, the usual flight instruments and a full array of engine monitoring instruments. Each cockpit has its own heat which works very well. With the front cockpit covered, I comfortably operate in 29 degree temperatures. The front panel carries basic flight instruments.

Using bearings throughout the balanced control system produced a smooth and light feel. Fuel capacity is 44.5 gallons in tanks by Bill Clouse.

I **lucked** into a complete wing materials kit in Trade-A-Plane for about 1/3 price, and only 70 miles from home, one of the few times I told my wife that I had actually saved money. After fabrication of all wing fittings they were cadmium plated before the zinc chromate finish. Pryor to fabric, the completed wing panels received 4 coats of Stits epoxy varnish, sanded between coats at fabric contact points.

Also on my want list was a very slick paint job. Many months (off and on) of sketching paint schems produced the design that would take 15 months to complete. Using the Stits process throughout worked well for me. Thirteen coats of clear, silver, white and red Aerothane were all sanded back to almost nothing between coats with #600 wet paper. A lot of extra time spent ironing and sanding produced an outstanding finish.

To go with the comfort, the feel and the look, there had to be the performance to match. This is accomplished with the 300 hp IO-520D Continental, swinging a 3 blade McCauley c/s prop. If you want to hear Bill cuss, ask him about building an engine mount in California, without the engine, ship it to Georgia, see if this one fits... Oh well, maybe UPS made money on the deal.

Yes I know all these extras add weight but for my use I'm well pleased with an empty weight of 1440. I'll never regret the extra time spent in doing it right the first time, as so far I would'nt change a thing.

Back in August when we brought 730 1R to the airport for final assembly early that Saturday morning, I kept thinking about the taxi test to come that afternoon, now over the past 5 years I may have learned a little something about building airplanes but little about reality. For I soon learned it would take several weeks of fitting, rigging, re-doing and adjusting things before the first taxi test. Even then she wouldn't fly for another two months.

Before each taxi run I felt like this could be the big one. When every thing would work just right and we all could see some space between me and the runway. But again there would be weeks and weeks of fine tuning and de-bugging. Boy was my anxiety level high. I lost 16 lbs during those 3 months.

Just as well though, remember, I still didn't know how to fly the thing anyway! CFI Brett Cookston spent hour after hour with me in his Citabria until we both felt comfortable with my progress. Although helpfull, the 150hp Citabra did little to prepare me for the 300hp thrill that was yet to come.

Learning to handle a tail wheel was important even though I never planned to make the initial flight myself. I wanted a lot of experience behind the stick just in case it was needed to keep from un-doing all I had done in the last five years. That let ME out. I've heard just about every argument on why I should or should not make the first flight or just who should or should not do it. So as usual I would listen to each opinion, then do it my way. I liked the idea of my friend Bobby Allred helping out, not based solely on his 14,000 hrs flying ag. & sport, but also his many hours spent behind an engine identical to mine enabled him to know if that engine was doing right or wrong and why. That knowledge proved to be indispensable during the de-bugging period. I'm not sure who trusted who the most, he with my building or me with his flying my plane, anyway it was team work that worked!

On November 8, once again as in countless times before, N730 1R was rolled out and gone over with a fine toothed comb in preparation for still another run. This time felt different though, as earlier that week after some more changes were made I had done about 15 or 20 minutes of high speed taxi runs without a hitch. I had already called Bobby with that report and he turned out this time with his cold weather flying gear.

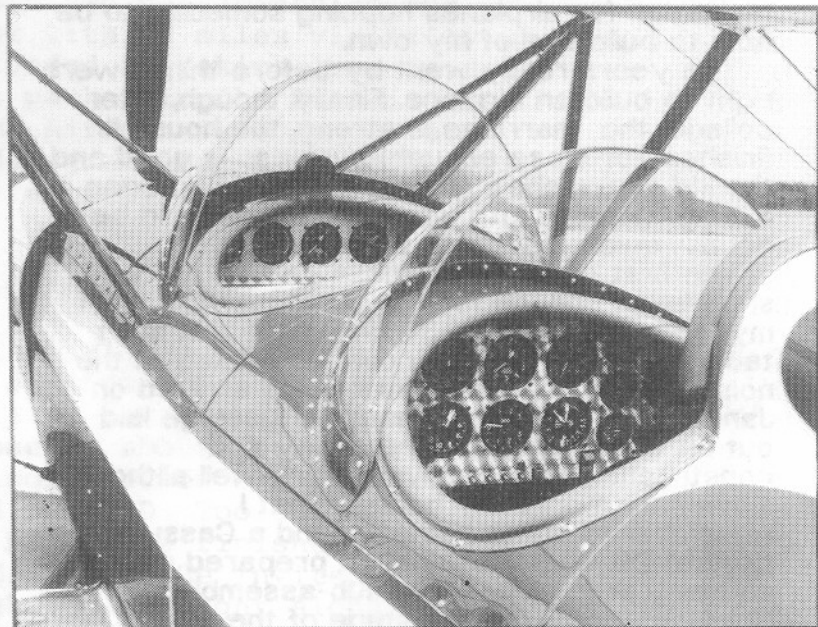
YES, EXPECTATIONS ARE HIGH TODAY!

Strap it on! Bobby is in the rear, I'm in the front. "Let's see if it still works!". Camera's are rolling...CLEAR PROPI! If you don't know the feeling of 300HP coming to life in a 1400 lb airplane let me tell you...WOW!! The deep rumble explodes from the twin 2-1/2" straight exhaust stacks just below your feet as the entire airframe torques left, the wind blasts into the open cockpit leaving no doubt in your mind that something is really happening just ahead of that firewall.

We're going to make 4 high speed runs down runway 1, testing and double checking

everything time and time again... until we're certain. The 1st run, 80mph, no problems, Bobbys wife Janie, who is obviously tense, says "Did you hear it cutout?", nobody answers. (On several earlier attempts, an elusive fuel pump problem had cut short an futher thought of that first flight), 2nd run 90 mph, Janie says "It sounded smooth that time, real smooth." 3rd run 100 mph, it want's to go, push on the stick, more runway "Boy it sounds good!" Bobby says "I think it's ready" "Yeah" I say "But we'll do it one more time, we never got past 3 runs without a problem before." As we taxi by the crowd at the terminal, Janie says "I think I heard it skip that time didn't I." 4th run, 110 mph, "WHOA...they liked ta took off" someone says. I tell Bobby "She's screamin now! . . . SHE'S READY!" Bobby says "Lets do it." As we taxi back to the terminal for me to get out, Janie says "It must be cutting out," but I bid Bobby good luck and get out she says "No, I guess it's not." *She knows what's next.* As Bobby taxis back to runway 1, everybody is quiet, waiting for the scream of the prop..... "HERE IT COMES I" I don't think my heart is beating, I know I'm not breathing,,, " HE'S UP ! , HE'S FLYING! ". "LOOK AT THAT ! , , , LOOK AT THAT !! "LOOK AT IT CLIMB !" He was to climb at 90mph but said he was afraid to pull back any more at 120. After a few laps around the field at 3000 ft he called me at unicom " How ta . . ta . . turn on heat ?

After that first flight came a complete inspection and OK of everything before the next flight a week away, which would be mi...



November 15, today, as with all the other Sundays, Bobby and family with my family and I turn out to plan todays flight. Though unannounced we are pretty much expected. A crowd begins to gather almost as soon as the hanger is opened. Each of us has a job to do today, although several positions are reversed. I will fly while Bobby coaches and my wife Jackie will be nervous as Janie tries to

convince her not to worry. Everything is ready, but the wind is up, so I stall for a while until it dies a little...

"I'm ready, You ready?"..... "Yeah, lets go."

Cameras are rolling again. Fire in the hole ! I love this sound. Bobby says " You got it," my reply "Yeah, I got it." Almost 5 hours of taxi testing in recent weeks had given me enough confidence to handle this bird on the ground, mostly because it handles so good. Almost like it had . . . power steering. But don't get too cocky now for more than once I got the feeling that she wanted to change my 'S' turns into a 'U' turn.

As I begin to taxi, my grip is tight, what a case of butterflies. Everything seems right but I'm really getting nervous. As we turn onto the taxiway to runway 1 things get busy, it's time to go to work, and never again do I notice my nerves. Holding position now, checklist checklist where is... oh yeah 1750, all needles green, check mags, cycle prop, set instruments, radios on, what else, nothing else, Just to go, thats all. A deep breath, & another. "Am I sure?" I ask myself, another deep breath and a little power gets things rolling, line it up, stop again, looking at everything again, it must be ready.

Another deep breath, ease on the power, right rudder, increasing power through 40mph, a little foward pressure on the stick and the tails up, THERE'S THE RUNWAY, MORE RIGHT RUDDER, to full power by now, 60 mph, ease back on the stick, 70 mph she's up, 80 mph pull harder to stop the rapid acceleration, 85 mph/2000fpm in about 7 seconds flat. using maybe 500 ft of the runway, It seems like we are going almost straight up I can't believe it, so much power, yet so smooth I can't believe it ! 1500 ' at mid field, Jackie with the video camera, whispers aloud "Stay up...stay up," turn cross wind, 3000' on down wind, OK power back 2200/20" 42% power 9.5gph, 135 mph, so smooth I can't believe it! WHAT A VIEW ! The airport never looked so good as from here. How about turns, push the stick left "Now that's turning !" I only thought I knew what flying was...

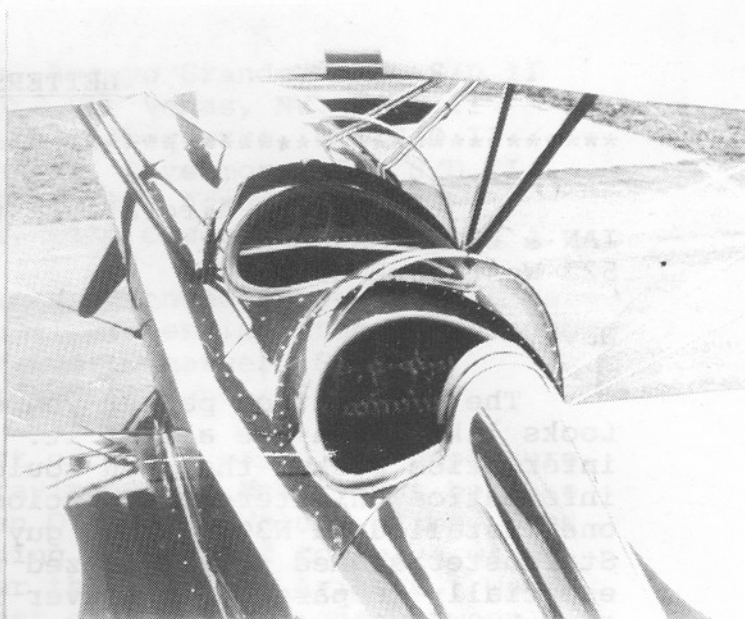
THIS IS FLYING !

Who said I missed the thrill of that first flight? What more could there be ! My face hurts from smiling so big, so long.

January 14, 1992, five years to the day from when I brought home the first bundle of 4130. N7301R flies off it's 25th hour and begins operating under PHASE 2 of the Experimental Operating Limitations Free at last. What a 5 years it has been, New skills, new sport, new friends.

Thanks to you all for your help.

LET'S GO FLYING !!!



MILES - STARDUSTER TOO, SA300
 CONTINENTAL IO-520 D 300 HP 2850 MAX RPM, 2700 CONTINUOUS
 EMPTY WEIGHT.....1440 GROSS WEIGHT.....2000+
 FUEL CAPACITY..... 44.5 45% RANGE W/RESERVE...550 MI
 STALL.....56
 MAX CRUISE.....170 75% CRUISE.....155
 BEST CLIMB.....85/2000 FPM CONTINUOUS
 FULL BACK AT 120/3800 FPM THROUGH 1000 FT+
 BEST GLIDE 65/850 FPM

LETTERS

Aircraft Restoration

IAN & LINDA MARNOCH
523 West Park Drive

NAMPA, IDAHO 83651
(206)467-6924

Dave,

The information packet you sent me arrived 5-1-94. Looks like I can use all of it. I read somewhere in the information packet that you could probably use some information on intercoms. Enclosed is information on the one installed in N307S. The guy checking me out in the Starduster seemed really amazed that it worked that well, especially compared to whatever is installed in the Skybolt that he usually flies.

Thanks Again,

Ian Marnoch

P.S. Address for AA80 InterVOX Intercom Systems: Northern Airborne Technology Ltd., Suite 14, 1925 Kirschner Rd., Kelowna, B.C. V1Y 4N7, CANADA. Tel: (604) 763-2232 FAX: (604) 762-3374

March 15, 1994

Dave Baxter
Starduster Magazine
5725 S.W. McEwan Rd.
Lake Oswego, Oregon 97035

Dear Dave,

Just a quick note my Starduster Too project. I started last summer installing an R755-9 Jacobs engine on my fuselage - finally got it running in January '94. I'm trying to keep it as light as possible, so I'm running no electric system and nothing not absolutely necessary to make it fly.

The wings are nearly done and now I have everything I need except flying wires to a set of 10" wheels & brakes for proper clearance. I made the prop myself, which was quite an experience (90 x 66).

Enclosed is a picture and keep up the good work.

Bob Gruber
20523 42nd Ave. E
(Shady Acres Airport)
Spanaway, WA 98387
(206) 846-2364

LETTERS CONT...

San Mateo, Ca.

Feb.1, 1994

Dave,

I just read the latest Starduster Magazine and it got me hopped up about getting my old machine back in the air. I also remembered (finally) to get you a check for the Starduster book and the poster, etc. Only nine months late. I don't recall the exact amount. If #30.00 doesn't cover it let me know.

Anyways, I can't wait to start having some flying adventures of my own. Being patient is getting old. Les has been very supportive along with Tom Morris. Les and I spent the weekend (Oct.'93) of Halloween with a variety of people and planes and Ruth's Flying "A" Ranch. It was great for me as I had a chance to get some Starduster stick time.

I also made my reservations for Sedona this morning. I am shooting to be in the April 1st. Hopefully this will allow me a month before the fly-in for de-bugging and partially for me to get a handle on the landing. The wing is in silver and ready for color. Some added work is the replacement of the inspection plates under all wings and center section, (22 in all). They were established by simply gluing the plastic ring to the painted surface. Fairly well torn up ... particularly in the prop wash area.

I have removed a circle of Imron with numerous applications of epoxy remover, followed by a bath of MEK. The new fabric glues to about 3/4" lip of clean old fabric and is then ironed and shrunk. After this its the ring on the ne fabric, a circular patch of fabric over the ring, dope, silver, color, etc...

I am still looking for 3 piece old fashioned wind screens, if you run across any. Oscar Bayer is selling me the one he made for the rear cockpit. I'll probably cut it down a little and try it. I also should be able to use it as a guide for the front one.

My new gear (after two attempts) fits like a jewel and will be 9 5/8" rear of the firewall (datum). Thats a rearward shift of some 5+ inches. It should unload the tail wheel some. Next week I should be starting metal work for the belly - need to remake some floor boards and then fit the brakes, wheel pants, etc...

Anyways, enough of this - my best to & your family.

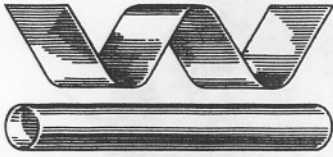
P.S. Enclosed are 2 pictures

- 1.) Your Starduster Too & my Champ at Fla-Bob.
- 2.) My "rocket sled" on its way to the welder.

Regards,

- Bob

N7989



The
Wallingford Steel
Company

Member Company of Allegheny Ludlum Industries

Wallingford, Connecticut 06492
Telephone (203) 269-3361

Hi Gene,

Feb 7 94
R22 BOX 110A
West Burke, VT. 05871

Enclosed is a very amateur video (yours to keep)
of my beloved Starduster - on skis..

I wanted to share with you and whomever else might
be interested the documenting of the versatility of
the Starduster design. I always feel like she looks
undressed without wheel pants but the skis are
the only way I can fly at all in the winter here in
VT.

My camera man had some difficulty because of rough
air but we flew past Mt. Washington - our highest mt. in
the N.E. 6258' ASL - a cog. railway can be seen as a
trail up the mountain. Also the worlds highest recorded wind
gust of over 230 mph. was recorded here.

The landings were somewhat hot as I had very
variable surface winds this day. (Excuses - Excuses)

Hope you enjoy the tape as much as I did
making it.

14

Respectfully,
Bill (Max) N13HX
(RETIRED)



May 26, 1994

Ken Humphreys
P.O. Box 1546
Moriarty, New Mexico 87035

David Baxter
David Baxter
5725 S.W. McEwan Rd.
Lake Oswego, OR 97035

Dear Dave:

I certainly enjoyed meeting you and the other Starduster nuts at Sedona. I would characterize the Fly-in as beautiful airplanes and neat people in a lovely setting. My thanks to Dick Lucas and all the others that made it such an enjoyable event. As you suggested, I am enclosing an ad for the classifieds in the Starduster Magazine. Hope you receive this in time for the next issue. Also hope it will fit in 3 column inches. I include a check for \$9.00.

I also am sending along a picture of my pride and joy, Starduster 1 N2581. I have owned it since 1983 and have flown it over 300 extremely enjoyable hours essentially trouble free except for replacing the original weak landing gear with a modified Starduster Too type gear. It uses Cessna axles so the geometry can be adjusted. Also made it taller for more prop clearance and used 6" wheels and a large Scott tailwheel to make it a proper cow pasture airplane. The plane easily handles my private rough strip that is 2200 feet long and 6500 feet high on undulating sloping terrain. It's one of the best crosswind airplanes I have ever flown... 20+ knots at 90 degrees are no problem. Unfortunately, being retired on an extremely low pension, there is no way I could pay for the inevitable pending overhaul on the Lycoming 150 engine... so I sold it while it was still running well and getting 12 hrs. to a quart of oil and have purchased a Subaru Legacy engine to install. The enclosed ad is for items I will no longer need. Hope to be airborne again by fall; will let you know how it works.

Regards to you and your wife, hope to see you again at future events.

Sincerely,

Ken Humphreys

KENNY WARE
PO BOX 9200-403
FOUNTAIN VALLEY, CA., 92728

6 JUNE, 1994

DAVE BAXTER
5725 SW McEWAN RD.
LAKE OSWEGO, OR., 97035

DEAR DAVE,

JUST A NOTE TO LET YOU KNOW HOW MUCH JANE AND I ENJOYED
THE STARDUSTER OPEN HOUSE AT SEDONA.
THE SCENERY WAS SPECTACULAR AND WE MET MANY VERY NICE
PEOPLE.

I AM ENCLOSING A TAPE WE SHOT THAT WEEKEND AND YOU WILL
NOTICE IMMEDIATELY THAT WE DO NOT MAKE OUR LIVING AS
PHOTOGRAPHERS, HOWEVER THERE ARE SOME PRETTY NICE SHOTS
OF DOGGIE AND HIS SE5A AND SOME NICE SHOTS OF THE DAWN
PATROL TAKEOFF. IF YOU THINK ANYONE WOULD BE INTERESTED
IN A COPY I WILL GLADLY SEND THEM ONE FOR THE PRICE OF
A TAPE PLUS POSTAGE.

MY PROJECT 311JK IS COMING ALONG NICELY AT FLABOB. I AM
CURRENTLY RIBSTITCHING WING PANEL NUMBER FOUR AND WILL BE
FINISHING UP FUSELAGE AND TAILFEATHERS SHORTLY.

HOPE TO SEE YOU AGAIN BEFORE TOO LONG.

REGARDS,


KENNY WARE

N94TM

Dave,

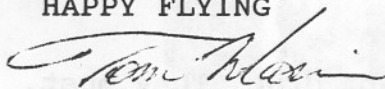
Finally getting this article done that you asked me to do about making the Starduster go a little faster.

Thanks for the banding material for the fuel lines. I should be getting those on this weekend. Work has been very hectic for the last several months so any spare time I have had has been spent flying not tinkering. I was also elected President of Schellville's Antique Escadrille a chapter of the Antique Airplane Association. That too has been some busy work.

I will not be able to make Sedona this year, Deb and I have just to full of a schedule to do them all. What's the rumor I hear about a Starduster shindig in Northern CA?

Will you be at Watsonville, Merced, Porterville? I'm sure we'll see you at one of them.

Till then
HAPPY FLYING


Tom Morris

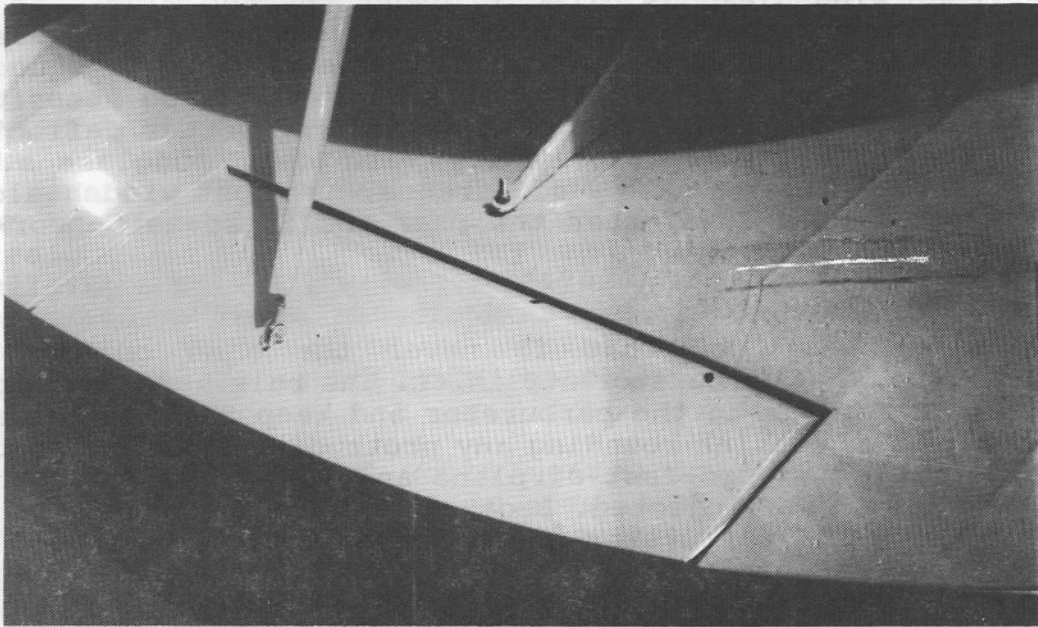


SPEEDY "TOO"

Homebuilders are no different than any other people involved with a hobby. We want the shiniest, the biggest, the fastest, the highest, or whatever. What almost every pilot talks about is how fast his or her airplane is.

When I was building my Starduster Too (N94TM) two things always came to mind. Weight and speed. These two things are also directly tied to each other in that the lighter the airplane the faster it will probably go. Streamlining is also very important but fairings add weight. I think the idea is that there must be a compromise in how much stuff you tack on in order to add speed to the airplane. Lets face it, biplanes have a lot of stuff hanging out in the breeze. What I did was try to slick up all of the things that are there anyway by incorporating in the building process items that would reduce drag without adding pieces. Here's what I did and it seemed to work for me.

1. Aileron gaps create an appreciable amount of drag. They must, every speed enhancement outfit selling to production types offer some sort of aileron and flap gap sealer. This is usually in the form of an added on strip of aluminum to close up the gap. The approach I used was to reduce the gap during construction by fabricating the aileron bay trailing edge such that the clearance to the aileron is reduced to about 3/8". It is important not to go overboard in closing this up since there will be several layers of fabric over the aileron and in the aileron bay. The end result is a gap of about 1/4". I'm also not sure how this effected the flight characteristics of my ailerons as the only other Starduster I have flown only had two ailerons. My ailerons are very responsive and are effective down to and even after the airplane has stalled. They do however get pretty stiff over 130 MPH. Not two handed but stiff. At speeds lower than 130 they have a very nice feel. I have also been to 180 mph with no sign of flutter.
2. It seems that Windshields are a very personal thing when it comes to the Starduster. Some say military Stearman type are the only way to go, others say wrap around or even bubble (I used the wrap around). If you are installing a canopy some of the following may even apply. The more you can lay the windshield back the better off you are. Look at any of the thirties go-fast biplanes. They are all very rakish. I spent a lot of time looking at various biplanes trying to get the best of the best and use it. No point in reinventing the wheel. The other thing I noticed on the early biplanes is that the front windshield was almost always lower than the rear one. This made a lot of sense for a couple of reasons. First



N94TM ABOVE Very close aileron gap below windshield installation.



the front windshield is directly under the top wing. The air traveling over the windshield is compressed as it is squeezed between the wing and the windshield. The less it is squeezed the less drag is created. I'm not sure but it also seems that the rear windshield may get cleaner air and better deflect it from the pilot. I regularly fly with only sunglasses. It doesn't take much to make a difference, my front windshield is about two inches lower than the rear and it seems to work. I like the looks too.

3. Here's another item that is never the same on any two homebuilts. The carburetor air inlet. The rule here is simple. Get clean ram air to the carburetor and keep the frontal area to a minimum. I think rounding any protruding edges helps too. Again look at any go-fast airplane and learn from the pro's. My engine is fuel injected. Because of this I was able to use a sump with the carburetor inlet on the rear of the sump and mounted the throttle body facing aft. I really didn't need a scoop on the bottom of the cowling but I opted for one anyway as I felt it helped blend the angle of the bottom cowl to the belly of the airplane. I did use a scoop with a very low profile (about 1 1/2") and built a tunnel up into the cowling to get enough area for the carburetor inlet. This also provided a larger outlet at the firewall. The scoop I used by the way is off of a mid sixties Corvette purchased from the local speed shop. The other change I made on my airplane was to use a Piper or Pitts style nose bowl. Some of the purist Starduster builders may take offence to this as this is not the way Lou Stolp intended it to be. But again this is a personal thing and I think that it may be worth some speed. Shortly after I had finished building the cowling a friend suggested a twin Comanche nose bowl. Too late for me, no way was I going to build another cowling (I had already built two to get the one the way I wanted it). Besides I hate building cowlings, but wouldn't that look sharp? It is also even more streamlined than what I used and could be worth a little more speed.

4. Cowling outlet and exhaust again vary greatly from one airplane to the next. As mentioned about the carb air scoop, an area was created at the back of the cowling that protruded slightly below the belly of the airplane. I had hoped that this would be adequate for cooling however this did not prove to be the case. The air tended to roll up under the backside of the scoop. I suspected this to be true and later proved it by taping a tuft at this location. Sure enough it left a mark up on the firewall indicating a reverse airflow. The good news is that if you kept the corners on the front end rounded it only takes about a 1/2" to 3/4" lip to correct this and get the air moving in the right direction. I had been experiencing engine temperatures within limits but at the higher end of the scale. Adding the lip at the air exit dropped C.H.T temps

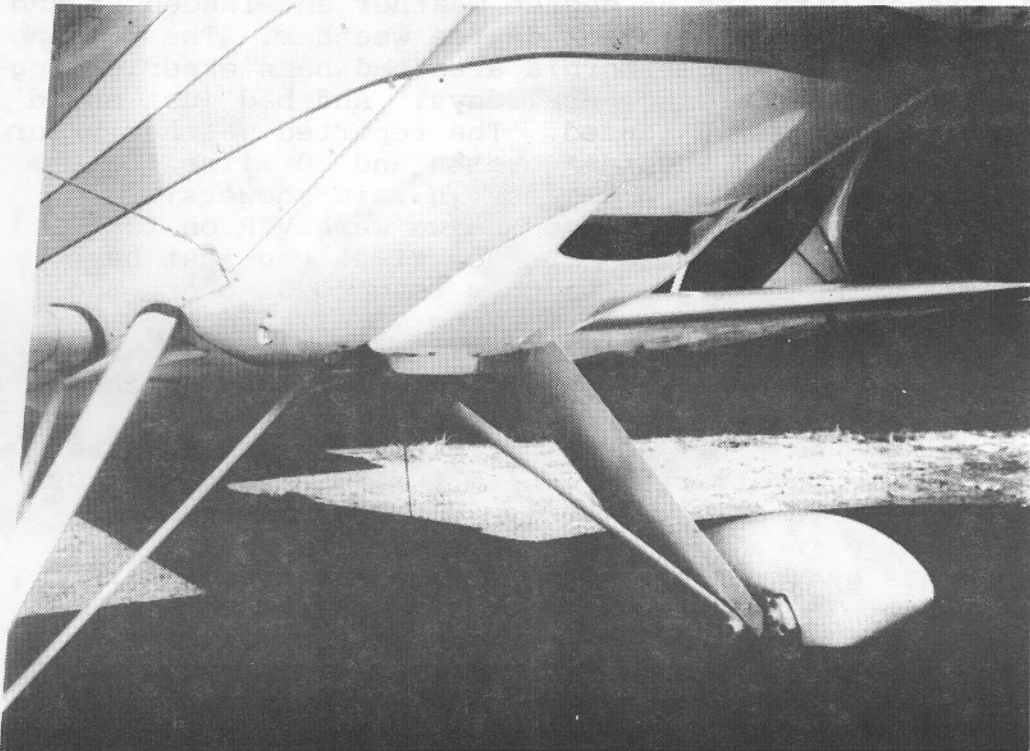
about 20 degrees. Remember it doesn't take much. Even this very small lip I added cost about 2 MPH.

All of these items are easy to incorporate during the building of the airplane and add up to a slightly faster than average Starduster. My airplane has a fuel injected Lycoming HIO-360-A1A, 180 horse engine. The prop is a 74-60 Sensenich and I have dual straight exhaust. I did try and watch the weight during the building . My empty weight is 1170# which isn't too bad considering the airplane has a wing tank, smoke system, radio transponder and intercom, strobe lights and a metal prop. The airplane indicates an honest 125+ MPH at 2500 RPM (honest).

I'm not sure that I would tear into anything on a completed airplane for the increase in speed that I apparently enjoy. After all, these are open cockpit biplanes and if yours isn't as fast as Johnny down the street, then you'll just be able to enjoy your flight to who knows where, just that much longer. Even ten MPH on a typical two hour flight is only an extra ten minutes. On the other hand

For additional information about N94TM the Speedy
Too Please contact:

Tom Morris
351 Heavenly Place
Martinez, California 94553
(510) 370-0855



STARDUSTER OPEN HOUSE
SEDONA, ARIZONA - MAY 1994

Well Sedona turned out to be pretty Ho Hum, after all the concern over the airport. The real problem turned out to be the weather in the Southeast, and ground fog, smog in southern California. As a result at least five airplanes that had planned on attending were unable to do so.

We, Donna and I, left Friday afternoon on the 6th of May for our trip south. The weather here was very unusual compared to the last several years. It was sunny, clear and hot.

We landed in Medford, Oregon to overnight with my old friend Jim Patterson. I had not seen him in over 25 years, and had recently found out that he lived here in Oregon. We had done a lot of flying together early in my aviation career. He had, and still does run a little company called Jan Tech Tool & Engineering, and had this same company years ago at Fla-Bob.

My good friend Bob Caravas in Grants Pass is never going to forgive me for not stopping by to see his Starduster Too that is almost complete. I have been trying, honest, and even recently with Merced or even the local Medford airshow. But weather would not allow either to happen, so maybe soon?

We had a wonderful visit with Jim and his wife Jean. We had planned on leaving early and were all packed up and ready to go when, ye old starter would run, but not engage. After several hours of disassemble, repair drive and reassemble, we were finally on our way. Jim and several of his airport friends were very helpful.

This is the first time in five years that I left Medford, Oregon with its 84 degree weather and landed at Red Bluff, CA. to be greeted by 62 degree weather. The Redding Red Bluff and Northern California area had been experiencing rain and cold weather for several days. And had just moved out only hours before we landed. The reported weather prior to our departure was 2,500 feet broken and 20 miles for Redding and Red Bluff was much less in rain showers.

From about Mt. Shasta to Redding we were VFR on top, I do not recommend doing this. But sometimes you just have to. We were going from good weather to good weather, and I was able to talk to Redding tower from 70 miles out. They were impressed by my Val radio, and reassured us that the broken weather was improving to scattered. The view on top from an open cockpit biplane was awesome. By the time we got to Redding, Red Bluff had cleared allowing us to land there for fuel. Our starter problem turned out to slow us down just enough for the weather to clear, and ended up being a blessing in disguise.

As it was getting late, I elected to overfly Livermore, and go straight in to San Carlos and the bay area to spend several days with our daughter Debbie, son-in-law Dave and grand son Matt. Boy grand kids are great.



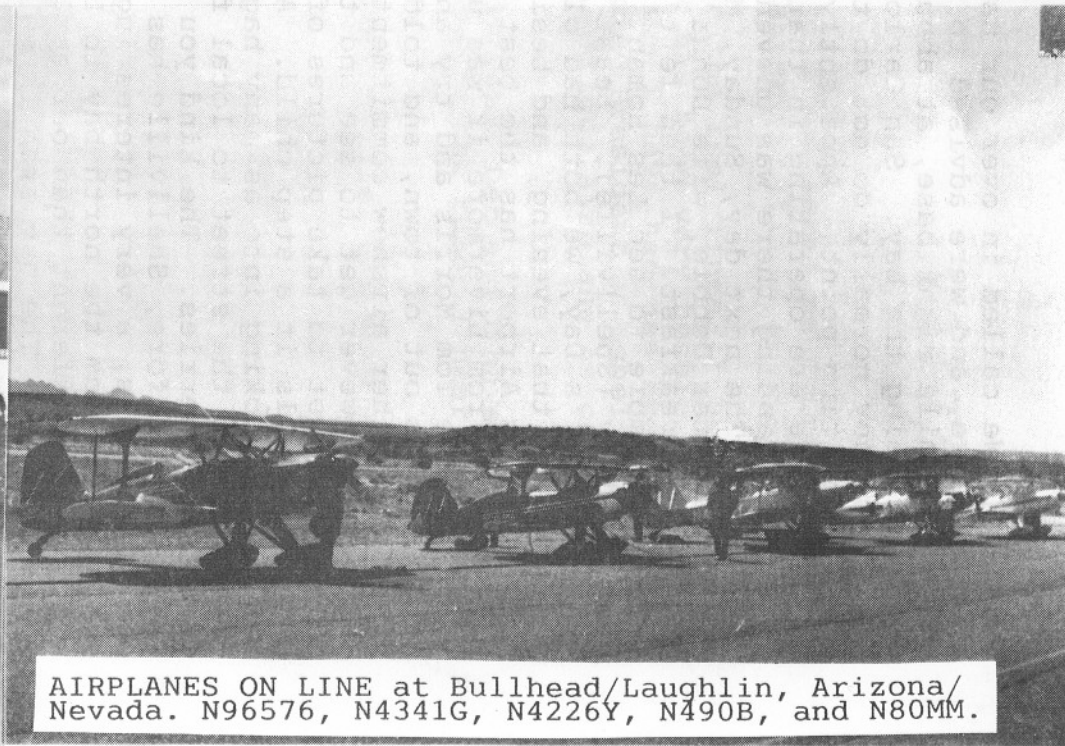
Plane N96576 VFR on top 20 miles south of Mount Shasta in Northern California.



AIRPLANES ON LINE at Sedona N490B, N96576, N80MM, and N4226Y.



Guests in attendance at Sedona, AZ. airport, Starduster Open House, Cowboy Cookout.



AIRPLANES ON LINE at Bullhead/Laughlin, Arizona/Nevada. N96576, N4341G, N4226Y, N490B, and N80MM.

We called in over our usual reporting point, Sunol Golf Course, and were advised to report the cement plant and a two mile right base, at about Coyote Hills just before crossing the bay. San Carlos tower squawked me very unusual as they normally do not do this when you report over a known reporting point. Apparently what has been happening is some people are operating in that airspace without a transponder. Our landing there was uneventful but right at dusk.

The next day, Sunday, Mother's Day found us, my daughter Debbie, wife Donna and myself at the Sky Kitchen for Breakfast. I then left the girls and flew over to Livermore to see Les Homan. He wanted to fly up to Sonoma Valley (Shellville). Least you think we do not care about Mother's Day, we both had plans to take our wives to dinner later that evening, and besides the Sky Kitchen at San Carlos Airport has the best Omlets in town.

From Livermore it was up to Sonoma Valley, I had hoped to see Tom Morris and try and pump him up about Sedona, but he was out of town, and told me later that with his job and the other airshow commitments he was unable to attend. I did however get to see and talk to his dad Lee Morris. I also got to take pictures of his 2/3 rds scale Fairchild 22, he calls it a step child. After spending sometime with Lee and looking into as many hangers that were open, we ventured across the street to local fruit stand for my favorite, strawberries. The kind you use in short cake. As I have said before, Shellville has quite a number of homebuilts and antiques, a very interesting place to visit. On our flight back from the north bay to Livermore, the weather was clear, much different than our earlier flight over scattered clouds. The bay area is such a pretty place when the weather clears.

When we landed at Livermore, Jeff Chambliss was shooting touch and go's and stopped by to say hello.

I then returned to San Carlos to spend the rest of Mother's Day with Donna and Debbie as well as several more days. We left Wednesday afternoon to overnight with Les and Mary Homan, so that we could meet at Tracey, CA. early Thursday morning. Our gathering at Tracey is what I enjoy the most. The start of a great flight, wondering who will show up. Departing as a group, and flying together. What a good bunch of guys and airplanes. Besides good ole N96576 my airplane, we of course had Les Homan and Mike Mattei in N4226Y and Jeff Chambliss and Bob Pisani in N80MM our number four airplane was Craig Barton in N4341G, the only Acroduster.

Our first stop was Porterville for lunch and fuel. I had hoped to see either Doug Teal or Paul Amey, both Starduster Too owners who live close by. Doug was unable to attend Sedona due to spray season, plus his sisters wedding, and I'm not sure what happened to Paul, as he previously indicated his plans were to go. Oh well, what a grand trip they missed. Our route of flight was just east of Bakersfield and across the Tehachapis by Mojave from there it was around Edwards A.F.B. and into Barstow/Daggett for fuel. It was at Barstow that we picked up Oscar Bayer in N490B, it was unplanned although not unexpected. As we had talked about meeting at Bull Head/Laughlin, our next stop for fuel and overnight. I am not much of a drinker or gambler, but the rooms were very nice and the food and

conversation were excellent. They also have a very interesting way to get from the airport to the casino. As the airport is on the Arizona side, and the Riverside Hotel and Casino is on the Nevada side of the Colorado River. As you might have guessed, it was by boat.

For most of the trip I was up at 7,500 feet, it was much cooler, smoother and more pleasant. The boys were fooling around down below, where it was much hotter and bumpier. They did however experience some interesting low altitude tail chasing, on one leg Jeff's Italian auto pilot quit working. That is what he referred to when talking about Bob Pisani his copilot, who happens to be Italian. I am not quite sure why he quit working, it must have been the heat.

At any rate, we had a very pleasant and enjoyable stay at the Riverside Hotel, finally getting off by late morning. Once again I elected to go high and Oscar went with me. The boys were still playing around low. But as the terrain increased in height, they came up with Oscar and I.

From Bull Head/Laughlin it was pretty much direct along the highway over Kingman, AZ. and on to our turning point, which was Ash Fork, AZ. we turned south and east towards Prescott, AZ so that we could come in from the west and avoid some of the very high terrain just north of Sedona. Mike supposedly had a friend who lived south of Sedona around the Camp Verde area and wanted us to fly over his house. We tried flying over several groups of houses, but no one was able to spot the white sheet he was supposed to have covering his roof. Oscar and I tired of this and headed for Sedona airport.

We entered crosswind for a left downwind to runway 3. Our concern was the wind and landed with about 8 to 10 knots down cross wind. This is not the kind of conditions that open cockpit tailwheel biplanes like. I landed after Oscar and the biplane went on just fine but when I pulled the stick back to nail it we were flying again. When it came down the second time I had lots of rudder in and when it hit this broke the steering arm clear off the left side after which it necessitated full opposite rudder and all the brake I could get to keep some control. We did however get off into the grass where control was restored and the rest of our roll out was uneventful. I knew something was wrong as we taxied in because I could only steer while using the brakes. The damage was inspected, the broken pieces found (right where the skid marks ended) and Dick Lucas put me in touch with the local IA. We then moved the airplane up to his shop. He fixed me up with another steering arm and the airplane was fixed and ready to go by the time Dick's wing ding at the hanger got started.

All the early arrivals along with some locals the most notable was Doggie Kline in his 2/3rds scale SE5A complete with machine gun and WWI uniform. He is a very colorful person and the guests really enjoyed his comments. About the only other thing to occur was Larry Rydbergs landing attempt out of a thunderstorm from the north. He hit pretty hard with somewhat of a tailwind but went out turned around and landed the other way. This is where I took some beautiful pictures of my airplane with a rainbow in the background. These get togethers are what it is all about the wonderful people, the conversation, and hosted by Dick

FIRST PLACE AWARD to
Glen Olsen for his
beautiful Acroduster
Too N34LG. Glen is
from Sandy, UT.



SECOND PLACE AWARD
to Tom Macario for
his equally
beautiful antique
Starduster Too
N14MM. Tom is from
Tuscon, AZ.

THIRD PLACE AWARD
went to Craig Barton
for his beautiful
Acroduster Too
N4341G. Craig is
from Vacaville, CA.



and Donna Lucas great folks the red carpet and cold drink treatment, he provided for every Starduster pilot and crew after they landed, what more could you ask.

Saturday morning found us up early, 5:00 am, and briefing for the Dawn Patrol Breakfast at 5:45 am. Our destination was Prescotts Love field for a special Starduster breakfast. About 11 planes departed for this event. The flight over was calm, clear and beautiful for that time of the morning. Upon landing at Prescott we discovered more airplanes already there waiting for us. They were Dick Heath in N191DG the Super single place Starduster and Lew & Sara Adams in N99DB both had flown up from Phoenix earlier. The breakfast, the conversation, the picture taking and of course the hospitality of the Prescott Airport personnel and the flight back was equally pleasant. My passenger was Titus Haynes a friend and Starduster Too Builder from Glendale, AZ his wife and mine did not want to get up that early but Titus was more than happy to do so. Both landings were uneventful just like the previous weeks and my repair seemed to work fine.

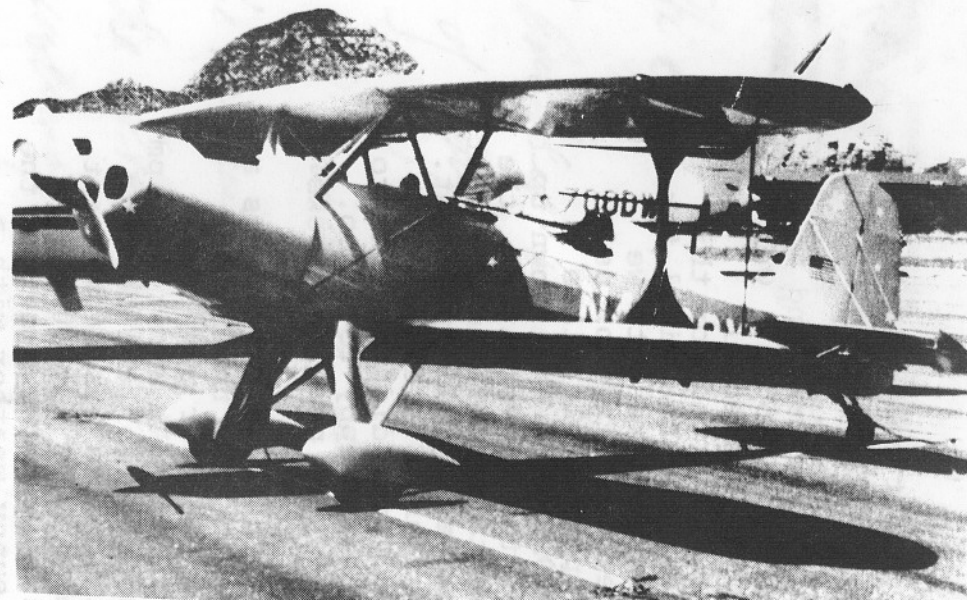
The rest of Saturday was filled with the usual things a number of people rented cars or jeeps to tour the Sedona area. The airport was very busy with the tour airplanes, the locals and of course transit aircraft. At about 4:00 pm the tables, chairs and food set-up started for the Cowboy Cookout. The food was great the set-up area was right next to our parked airplanes. We were threatened a little by some thunderstorm activity and light rain showers off in the distance but it avoided us and left sunny weather with a light breeze. Our guest speaker was Jack May a RAF pilot who flew Spitfires during WWII. He talked about his two loves flying and his wife who he had met here during his training in Arizona, and returned after the war to marry her. It was a very interesting and wonderful story.

After dinner, dessert and our enjoyable speaker Bill Clouse handed out the awards. First place went to Glen Olsen of Sandy, UT for his beautiful Acroduster Too N34LG, Second place was awarded to Tom Macario of Tuscon, AZ for his Kinner powered antique Starduster Too N14MM. Third place went to Craig Barton from Vacaville, CA for his beautiful red Acroduster Too N4341G. The true grit award was won by Charlie Wolf of Stuart, FL for his determination to complete, fly and pursue aerobatic competition in N626CW his big engined Starduster Too. He is also first to admit that his son is much better in aerobatic competition than he is. They had planned on flying it to Sedona but instead flew his Beech Baron around towering cumulus almost the entire way. And last your editor received an award for longest distance and had Charlie flown his Starduster Too to Sedona he would have definately won the farthest distance award as it is almost twice as far as the distance I flew! Aircraft in attendance were:

N14MM Tom and Eileen Macario, Tuson, AZ. Starduster Too
N31DW Weldon Glines, Sandy, UT. Acroduster Too
N34LG Glen Olsen, Sandy, UT. Acroduster Too
N56AM Dick and Donna Lucas, Sedona, AZ. Starduster Too
N80MM Jeff Chamblies and Bob Pisani, Livermore, CA. S/D II
N99DB Lew and Sarah Adams, Phoenix, AZ. Starduster Too
N191DG Dick and Bernie Heath, Phoenix, AZ. Super S/D One



N31DW Owned and built by Weldon Glines of Sandy, UT. A fine example of the Acroduster Too.



N4226Y Owned and built by Les Homan of Livermore, CA. A great performing airplane.

28



N490B Owned and built by Oscar Bayer of Arroyo Grande, CA. Also a great performer.



N56AM Owned by Dick Lucas of Sedona, AZ. What a great host he and his wife Donna.

N490B Oscar and Jeanne Bayer, Arroyo Grande, CA. S/D II
N519B Bob Bonde & Judy Taylor, Las Vegas, NV. Acro II
N530LR Larry and Kathy Rydberg, Albuquerque, NM. S/D II
N4226Y Les Homan and Mike Mattei, Livermore, CA. S/D II
N4341G Craig Barton, Vacaville, CA. Acroduster Too
N96576 Dave and Donna Baxter, Lake Oswego, OR. S/D II

Only 13 Starduster airplanes attended, however there were a number of other interesting airplanes in attendance. One each Stearman, Waco UPF-7, Marquart Charger, Skybolt, Long-EZ, Midget Mustang, 2/3rds SE5A, and a Fly Baby.

Sunday morning found most of us up early for departure. I had originally planned on staying until Monday but because I wanted to go north with Glen Olsen and Weldon Glines, and they were leaving Sunday morning, I elected to leave with them as I had never flown over this part of Arizona. We departed to the north just west of Flagstaff and between Kendrick Peak 10,418' and Humphreys Peak 12,633'. From there it was up to Page, AZ about 120 nautical miles, beautiful but very desolate. I took some pictures east of the Grand Canyon, but the area is so vast that little detail showed up on the film. We landed at Page, over flying the southern tip of Lake Powell on our base turn. After fuel and drinks we were on our way departing over Lake Powell to the northwest. Glen has done extensive aerial photo mapping in this area and is quite familiar with it. My airplane is slower than Glen's so during most of our flight north he was flying under and over as top and bottom cover, he did say that he got some good pictures though.

My next stop was Richfield/Monroe, UT as I wanted very much to see George Rice who I worked with many years ago at Starduster Corporation in Riverside. We passed just east of Bryce Canyon where I took several more pictures. I landed in about a 35 knot wind at Richfield. I was somewhat concerned with the conditions but when I called in George answered me on his portable radio from the restaurant in Richfield and advised me that it was pretty much down the runway. After landing we had lunch and George finished his. I could not just over fly him and had planned on stopping here originally as this is where the prototype N1300S Starduster Too is currently located. I had wanted to talk to him regarding it and what his feelings were about price and restoration costs. This is the airplane that should be in the EAA Museum. The other interesting thing is that George is also scratch building two Boeing FB-5s for some doctors in California. The FB-5 was the Navy's first carrier fighter about 1925 and is powered by a Packard V-12 aero engine. It is also the only water cooled carrier fighter the Navy ever had. It is also a very big airplane, two fuselages and one set of wings are pretty well along. George also has the only Itty Bitty biplane one of a kind single place biplane about the size of a Smith Miniplane. We visited and stayed the night and thoroughly enjoyed ourselves.

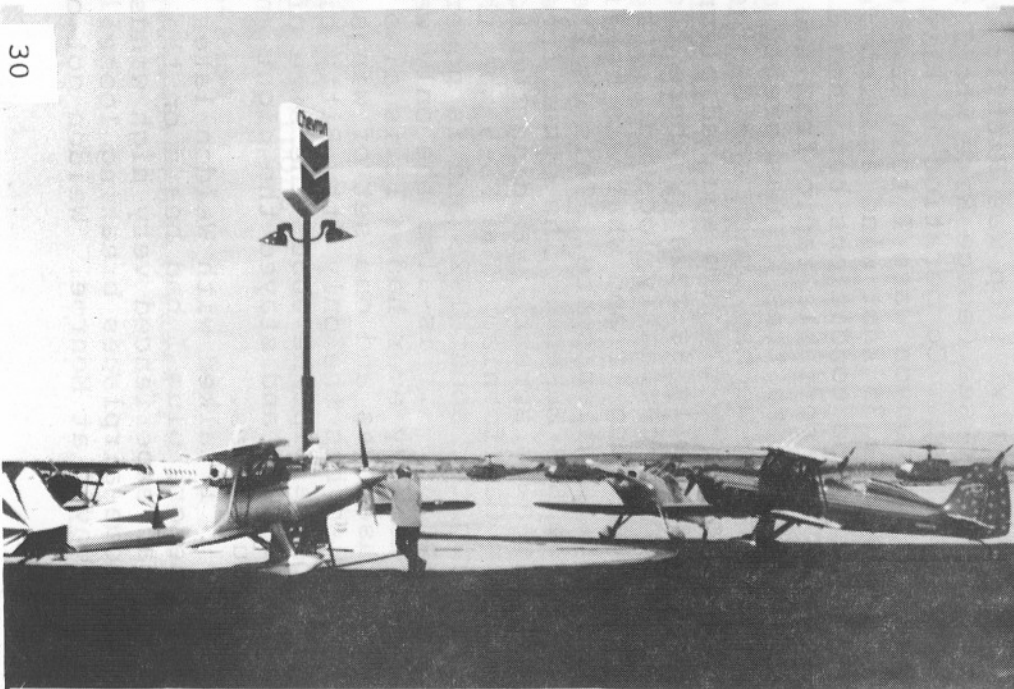
I talked with Weldon later about the trip north the day before plus I had heard on the news that the Salt Lake area had experienced very high winds with uprooted trees and even some airplanes breaking loose. So it was a good thing I stayed at Monroe. Weldon got on ok at Salt Lake #2 airport, 29



UNUSUAL ROCK FORMATION just east of Bryce Canyon National Park in southern Utah.



N585AG Grant Cunning's Starduster Too just recently finished at Ogden, UT. Airport.



Airplanes at Barstow Daggett. N490B, N4226Y, and N96576.



N312LT Lyle Taylors Starduster Too at Yakima, WA. Airfair May 21st, 22nd 1994. Almost finished.

and Glen's landing at Bountiful Sky Park was much more demanding but both got down ok. After spending such a wonderful time with George and Delores Rice we left Monday for Salt Lake. Our flight was beautiful and uneventful. I tried calling flight watch, but was unable to raise them. Apparently to low even at 8500'. We did however get current Salt Lake weather from a Bonanza pilot who was much higher. I was concerned as we had talked with flight service earlier, and they indicated the possibility of not only high winds, but scattered thunderstorm activity over the lake and Salt Lake itself. It turned out not to be a problem. Our landing at Salt Lake #2 was uneventful and after fueling my good friend Weldon Glines just happened to show up, thinking we might be there, and was right.

We spent the next three days in Sandy Ut. with Weldon and Doreen Glines visiting with friends and relatives. My wife Donna finally got to see Temple Square after being there so many times before and not being able to. Doreen was her host for this and other memorable places in the Salt Lake area.

Monday night found us at Heber City Utah with Weldon & Doreen Glines, Glen & Loretta Olsen for dinner with the Andersons. Bryant is a S/D Too builder who lives there. After looking over his project which is almost through silver and should be flying soon. We had a very pleasant dinner at the local golf course restrant, the company and conversation were as usual the best. Bryant Anderson also has a very pretty single well educated daughter in late 20's. Apparently, there is not a lot of elegable young men in the Heber Midway area. You single S/D pilots take note.

On Wednesday Weldon and I drove up to Bountiful Sky Park to see Glen. We poked around the airport and then drove up to Ogden Utah, to visit with Grant Cunning. I had talked to Grant numerous times over the last several years as he had bought a S/D Too project repowering it and finishing it. The Airplane turned out to not only look beautiful, but the performance is also noteable. I took a bunch of pictures for my collection and again the conversation along with finally meeting Grant was very enjoyable. We left Thursday morning out across the Great Salt Lake. I had originally planned on going across Bonnevillle to Battle Mountain, NV and then up to Lakeview, OR. but the weather wasn't as good that way and not only that I did have commitments to the Yakima Airfair plus I wanted to meet Red Marnoch a new S/D Too owner from the Bosie Idaho area. Our first fuel stop was Twin Falls Idaho. We got rained on just after landing which delayed our departure. Then it was onto Nampa Idaho to visit and a late lunch with Red. Again another S/D Too Owner I had talked with on the phone, but had never met. It is truly amazing the friendships that can be generated from the association with this airplane. After a pleasant meeting and lunch we were on our way if everything went well we would be in Yakima right at dark.

Our flight proceeded uneventful over Ontario, Oregon and up to Baker we had left at about the same time with a Cherokee pilot from Nampa, who was also in route to Yakima, Just north of Baker in the La Grande Oregon area we ran into towering Cumulus with very heavy rain showers. I elected to return to Baker and wait it out there were several other aiplanes already stuck there. We were afraid that our wait

would be a long one as this weather had been here for several days . The Cherokee pilot told me later at Yakima, he found a hole and had to climb up to 14,500 to get through and still there were higher clouds around him. With no foreseeable let up, we elected to stay the night.

We did however enjoy the company of a Pitts S-2 pilot from Bosie who was on his way to an IAC meet in Ephrata Wash.

We slept late friday morning as low clouds and light rain prevailed, out at the airport around noon gave us some hope. Flight service was not of much help, the local pilots said we could at least get to La Grande by going east of the highway following the railroad tracks. As it was a much lower pass than the highway. We did do this and landed at La Grande in light rain and marginal visiblity 3 to 5 miles not much fun. I thought we would be here for several days when we landed, but after fuel and talking with the locals and Flight Service, decided to follow the highway over the blues. It looked really good when we started and the locals said that several airplanes which had been stuck overnite had made it through ok earlier, even with low ceilings. Everything went fine until we were with in 20 miles of Pendelton and almost over the blues the clouds went right down to the highway with the cars, so a 180· turn and back to La Grande we went. Again after landing, fuel and Flight Service things cleared up. Even better than before this time we went through with no problem. Flight Service had told us of possible severe thunderstorm activity in the Pasco Tri-Cities area with convective sigmet for golf ball size hail. I had not felt this to be a problem as it was well north of our track and when we were east of Pendleton Oregon I called flight watch giving them a pilot report and asking about Yakima. The sigmet had been canceled and Yakima was 12,000 thin overcast with 70 miles visibilty what a change from La Grande. We landed at Yakima late friday, reported the union gap and was parked in the Airfair area. The nice thing about the Yakima Airfair is when you are invited they pay for fuel, lodging and tranportation plus they are nice folks. There were the usual airplanes on display. Mostly military, but they try to do is get one each of every kind of homebuilt and antique. I had talked with several military pilots who told me that military partisipation in these events were being severly cut back and did not think they would beable to attent next year. The most noteable airplane in attendance was Neal Rose's British Hawker Hurricane its first airshow attendance after a 25 yrs. restoration. It is one of about four still flying in the world. The owner is also a former S/D Too owner.

Lyle Taylor a good friend and S/D Too Builder had his airplane on display, although not quite finished was parked between my airplane and Dave Marhres. He invited Donna and I over for dinner saturday night. I brought along videos of S/D open house 1993 and Phil Hax's tape of his S/D Too on skis. Lyle should be flying his Starduster by now and is planning on attending Oshkosh/Watoma. We left Yakima Sunday after noon to good weather, but some headwinds. Are last leg and home landing at Hillboro Oregon late Sunday afternoon with not quite 30 Hrs. to show for the trip.

Editor D.C.B.

ENGINE IDEAS

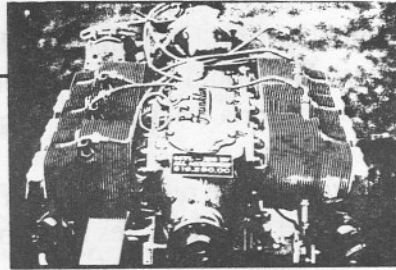
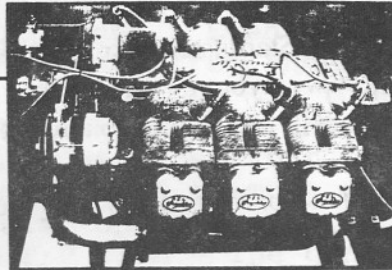
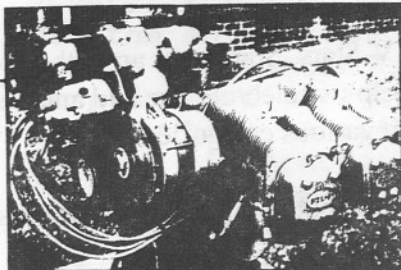
Are you building, rebuilding or thinking about re-engineing your Starduster Too. I think I have found an engine that is worth considering. It is the 220 HP 350 cubic inch 6 cylinder Franklin. So before you poo-poo this away read on. It only weighs 300 pounds and makes 220 HP.

My good friend Red Marnoch has just recently purchased a Starduster with this engine. I can attest to its performance, as he lives in Nampa, ID., which is 3,000 feet above sea level, and has 80 to 90 degree days.

They are readily available through salvage or surplus. As they were in helicopters, Maules and some were installed in military drones. You of course can buy a new one for \$11,125 less accessories or \$16,250 with the accessories, including a prop governor. Parts are easily accessible from the Carl Baker Co., and at a much more reasonable rate than either Continental or Lycoming. It is a much simpler engine and runs easier. The new model is a 6A-350C. Some of the other models are 6A-335 A&V, 6A-350 A&V, and the 6A4-200. This may be the last good buy in engines.

I still think the 200 HP IO-360 is the best all-around engine for the Starduster Too. But with the outrageous prices, we should start looking for alternatives.

D.C.B. Editor



You can buy New Pezetel-built Franklin engines (PZL-F) for the cost of a rebuilt engine! Complete engines include: Bendix magnetos, Delco starters, carburetors, shielded ignition wires, spark plugs, and the 6A-350C even comes with the prop governor! Engines come with logbook, parts & service manual, and a small spares kit.

4 cylinder
225 cu. in. • 125-hp
4A-235B
\$8,000.⁰⁰ LESS ACCESSORIES
\$11,185.⁰⁰ COMPLETE
(Replaces Cont. 0200)

Call for Free Spec Sheet
or Complete Info Kit,
and Tee-Shirt For Only \$15.00

6 cylinder
350 cu. in. • 220-hp
6A-350C
\$11,125.⁰⁰ LESS ACCESSORIES
\$16,250.⁰⁰ COMPLETE
Includes: (Stinson STC)

Atlas Motors, Inc.

WINCHESTER, VIRGINIA

(800) 336-9878

685 NORTH LOUDOUN STREET • WINCHESTER, VA 22601

Ever wonder where someone found that access door that perfectly fit both their need and their cowling? After a search at the salvage yard I found several different types, sizes and shapes but none seemed to be just right for my use. Mostly due to the shape of the cowling. That left fabricating one of my own.

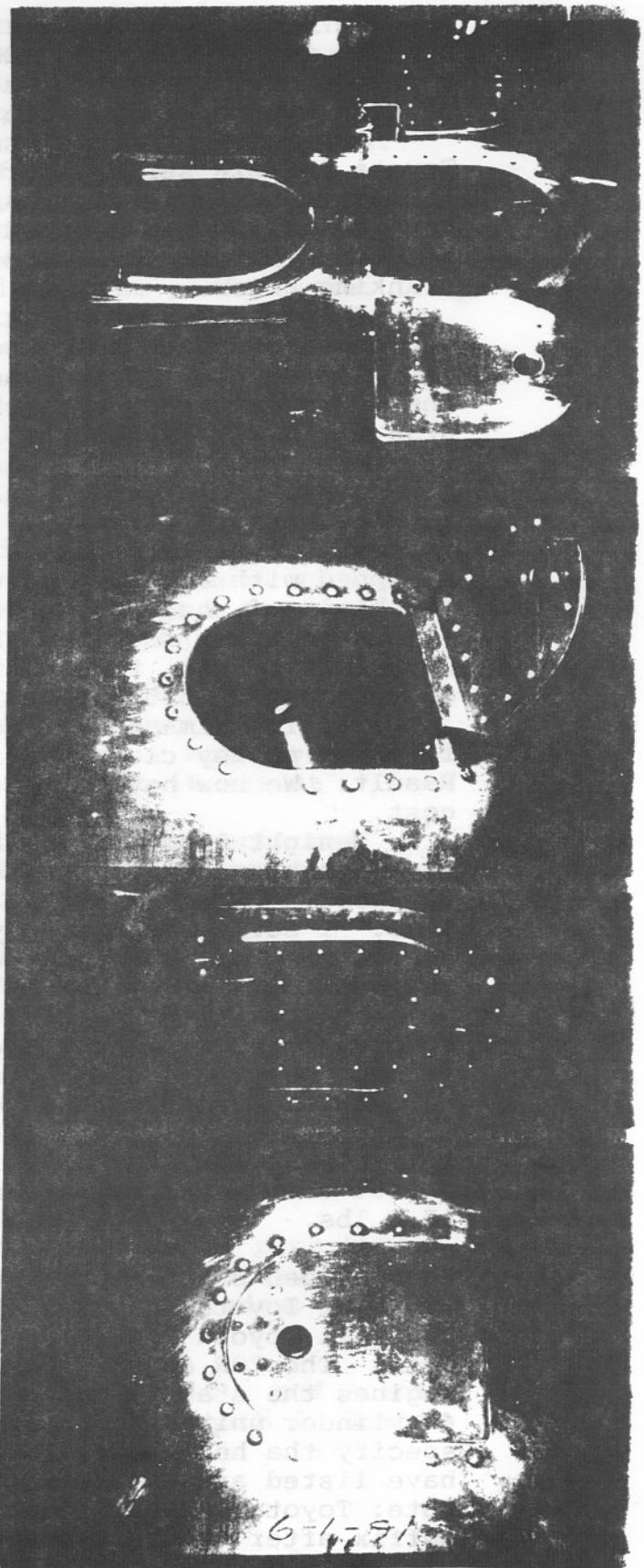
First making certain that location is correct, layout the door opening on the cowl with pencil. Locate the hinge parallel to, or up-wind of the slipstream to prevent the door from being ripped off during flight if the latch fails. Cut out, shape, file and sand the opening edges ready for painting. For a flush fitting door, use the exact type material as the cowl just cut, tape securely underneath the opening and trace the outline with a fine point. Cut oversize, filing and sanding to the exact shape of hole so cover will fill the entire hole with no gaps. Leaving about .020 clearance all around. This leaves room after painting to open and close door without chipping the paint.

Next for the cover seat and cowl doubler I used .032 x 6061-T6. Cut a piece that will overlap the door 1" with an inside opening 3/8" smaller than the door. This will provide a 1/8" shoulder for the door to seat against and a 1/4" stiffening flange that must be formed in a jig. If the door is on a flat or slightly curved surface, simply cut an opening in a piece of 3/4" plywood that is 1/8" smaller than the door, clamp in the piece and carefully hammer the inside edge down to form the 1/4" flange. File and sand the edges of this piece ready for painting. A slight curvature can be formed in this piece now by slowly and carefully working by hand. For a sharply curved surface the jig should have the same curved form.

Finally, the doubler for the door made from .032 x 6061-T6, is cut 3/16" smaller than the door to provide clearance with the seat. Leaving the hinge end extra long, trimmed to fit after final shaping of the hinge bend. Piano hinge is MS20257-P2B, 1" open width. The bend in this piece allows a flush and concealed hinge which will support the door in the open position without it touching painted surfaces.

All pieces must be pre-formed to match the curvature of the cowling before drilling rivet holes, which are all match drilled. Layout rivet holes to maintain proper edge distance of 2 x rivet diameter and spacing of at least 3 x the rivet diameter. Rivet diameter should be about 3 x thickness of the thicker sheet being joined and length should protrude through all sheets 1.5 x diameter before bucking. I use a hole punch, instead of drilling, for a cleaner hole. Cleko everything together, fit and install the latch to be sure it will latch securely. Latch is Cessna # KM610-64 @ \$15.60, the only expense of the job. Prior to flush riveting, treat all pieces for corrosion prevention. I like to assemble while the zinc chromate wet, this seems to provide a good seal against corrosion.

As with any custom built assembly this one sounds complicated, but according to my builders log only 8.5 hours went into the trial & error, jigs and installation. Time well spent for such a neat looking and good working addition.



BACKGROUND DEVELOPMENT OF THE LIGHT WEIGHT STARTER

In early 1987, I started to look for a light weight starter for my Lycoming 0235 engine. Basic ground rules were that the starter be a standard automotive unit and to bolt on with a simple adapter.

After many hours of searching, the selection of the Toyota 20R/22R series starter was made. This unit was bolted to a simple right angle aluminum bracket. The stock Toyota starter was mounted to my engine in mid 1987. It offered a weight savings of 6 pounds and a major increase in cranking power.

This starter was then tested on the larger Lycoming engines and proved to be very capable.

The simple aluminum angle bracket will interfere with the 9 3/4" alternator on the later Lycoming engines. My 0235 has a 7 1/2" generator pulley.

Also, most larger engines have a fine tooth flywheel ring gear. This was the cause for more research for a gear to mesh with the flywheel.

The Toyota starter is made by Nippon-Denso. It is equipped with a gear that will mesh with the 122 tooth flywheels of the 0235, 0290, and some 0320 engines.

A gear was found on the N-D starter used on the Chrysler 'K' car, to mesh with the 149 tooth ring gear used on the latter 0320 and the 0360 engine.

An investment casting was developed to solve the flywheel pulley clearance issue.

Result: We now have a reliable lightweight starter at a low cost.

Denight Aircraft has available an adapter bracket for the Toyota starter, and a gear for use on the 149 tooth flywheel.

Note: I sell brackets only, as the starters are available everywhere. I can supply used starters at \$50.00 on an "as is" basis.

Bracket Model T122 (for the 122 tooth flywheel) \$125.00
Bracket model T149 (for the 149 tooth flywheel) \$145.00 *
* This includes the replacement gear for the Toyota starter.

The bracket weighs 1 lb. plus 20R starter weight of 11 lbs. or the 22R starter weight of 9.7 lb. The Lycoming direct drive starter weighs 16.5 lbs./geared starter weights 17.5 lbs.

Recommended starter part number:

20R unit Toyota P/N 28100-34052 or P/N 28100-34053

22R unit Toyota P/N 28100-35020 or P/N 28100-35040

Note: The 20R and 22R designation refers to the Toyota engines the starter was originally intended for. This is a 4 cylinder unit used in larger cars and trucks. On the 22R specify the heavy duty 1.4 KW starter. All part numbers I have listed are 1.4 KW rated starters.

Note: Toyota factory remanufactured starters will have a suffix after the part number. Example: P/N 28100-350-84

Contact : Denight Aircraft, 11864 Quam Drive, Northglen, Colorado, 80233. Or call (303) 452-0458.

CLASSIFIEDS

ADVERTISING CLOSING DATES : DECEMBER 1, MARCH 1, JUNE 1, & SEPTEMBER 1.
CLASSIFIED ADVERTISING RATES : \$3.00 PER COLUMN INCH, MINIMUM CHARGE \$3.00.
MAKE CHECKS PAYABLE TO STOLP STARDUSTER CORPORATION. THANK YOU.

STARDUSTER I PARTS - Dynafocal engine mount, removed from Starduster I, \$190.00. Mount bushings used, good \$60.00. Inverted oil system with hoses, horiz., sump adapter, \$300.00. 2 1/4" G-meter, \$140.00. (10 amp-hr. Gel-Cel system to operate panel aircraft radio in non-electric aircraft. Includes battery, holder, wiring, panel switch, digital panel volt meter & custom battery charger. 8 lbs in airplane \$140.00.) Glider tow hitch, essential for hand-propped airplanes, \$50.00. 2 Primer, Lunkenheimer, \$25.00. New Gerdes mag ignition switch, w/o Start pos., \$30.00. Used Bendix mag ignition switch, w/Start pos., \$30.00. Metal prop, Sensenich M74 DM 56, with 6 bolts, \$800.00. Prop available late summer. Call (505)264-1944.

STARDUSTER II - 506 TTAF, Continental E185, TTSN 214, Cleveland Brakes, transponder/encoder, canopy KX145, Nav.Com intercom, \$23,900. Call Ken (303)682-0816.

1984 STARDUSTER II - 75 hrs TT Hangared. Beautiful condition. \$40,000. Call (810)979-6594.

1982 STARDUSTER TOO - 335 TTA with IO-360 Lyc. with c/s prop, inverted system, spring gear, Com radio with Loran, dual controls, very nice and well built with awards won for Best Homebuilt in three states. Call (704)744-5934. \$29,500.

ACRODUSTER II SA750 - Full bubble canopy, Ford V6, asking \$24,900 or auto trade OBO. Call (904) 732-9535.

1977 ACRODUSTER I - Single seater, airframe 870 hrs. TT 180 HP Lycoming, press. carb., since new 1060 hrs., Christen fuel & oil system, tinted canopy, smoke system, IC-A2 Com. radio, wheel pants. Asking \$22,500, price includes complete extra set of wings (signed off) and fuselage plus instruments, also parts of tail surfaces. Call (405)822-3897 or (405)822-3837.

STARDUSTER II - TTAF&E 200, Lycoming O360, 720 Narco, transponder w/encoder, Loran, Full Canopy, can be flown with or without canopy. National Grand Champion 1987. \$32,000. Call (217)498-9959.

WANTED STARDUSTER TOO - Lycoming 200 HP+, CSP. Must be nice, clean, hangared aircraft. Have cash for quick purchase. Preferably in Florida. Call Keith (305)981-5858.

WANTED STARDUSTER OR SKYBOLT - Project or flying, needing recover OK, ready to buy 2 aircraft, have cash. Call (319)235-9898.

ACRODUSTER II - Lycoming IO-360, 200+ HP, 200 TT, 50SMOH, inverted fuel & oil, CS prop, strobes. Nice airplane. \$27,000. Call Craig (707)448-6409.

BIPLANE PROJECTS - Both on gear. Jungster I, \$2,500 or Starduster I \$3,500. Lycoming O-290, \$2,500. (214)255-3817.

STARDUSTER TOO PROJECT - Wings 80% complete, fuselage 70% complete, new wheels and brakes, full blueprints, have most parts to finish project. \$6,500. Call (217)787-7608.

STARDUSTER TOO - O-360 Built by Lou Stolp 1974, xpdr., 2 Coms, GPS, 975 hrs. TTSN engine and airframe, canopy, fly opened or closed, lights. Must sell, serious inquiries only. Call (303) 792-0723 or 795-7670.

STARDUSTER SA-100 - 930 TT, SMOH 355, Lycoming O-320, inverted fuel & oil, PS-5 carb, removable plexiglass canopy, hand-held radio w/internal mount and ext. and always hangared. \$12,500. Call (919)965-8490.

1984 STARDUSTER TOO - 205 HP Lycoming HIO-360, fuel injected, TTE-1137, TTAF-212, always hangared. Stits, basic instruments. No radio. Fun machine! \$25,000. Indiana. Call Jim (219)638-4317 nights (219)483-3179 days.

1991 STARDUSTER II - 60 TTSN, 180 Lycoming, 60 SMOH, Apollo 618 TCA Loran w/altitude kit, Narco 710 Com, Narco AT50A transponder w/encoder, full gyro panel rear cockpit, intercom, David Clark headsets, 2 security 250 chutes, A & P built. Show quality. \$38,500. Call (817)446-8817.

1974 STARDUSTER II - Lycoming IO-360, 990 hrs. TTAF&E. Beautiful red, white & blue paint scheme. KX175 Com Nav, xpdr. with encoder, full canopy with heat. \$30,000. Call (619)991-4296.

STARDUSTER TOO - O-360 808 SMOH 188 STO, 4 years on new cover & paint, hangared, fully inverted. See "Sport Aviation '91", page 70. Fresh annual. Com, intercom. \$29,000. Beautiful. Call (214)254-2040.(TX)

STARDUSTER TOO - Open cockpit biplane, 135 HP, recent overhaul, low time, extras. Will deliver, possible trade Tri-pacer. \$19,500. Call (916)244-6150.

STARDUSTER TOO IO-320E2A, 215 SMOH. \$17,500. (214)255-3817.

STARDUSTER II - 650 TTA&E, new Stits cover 1986, KX170B, ADX, xponder, gyro panel, Lycoming O-360, Hartzell controllable prop, Nav & landing lights, stobes beacons, Aux tank, Cleveland wheels and brakes, wheel fairings. Inverted oil system. Best Starduster II at Oshkosh 1987. New annual. \$35,500. Call (414)836-2969.

STARDUSTER II - Inverted system, Lycoming O-360, Hartzel C/S prop, \$28,000. Without \$14,000. Call Bud (818)332-6339.

STARDUSTER TOO - 225 HP O-470-B, Red and blue, sell or trade for airplane. Call (803)877-1154 or (803)877-2804.

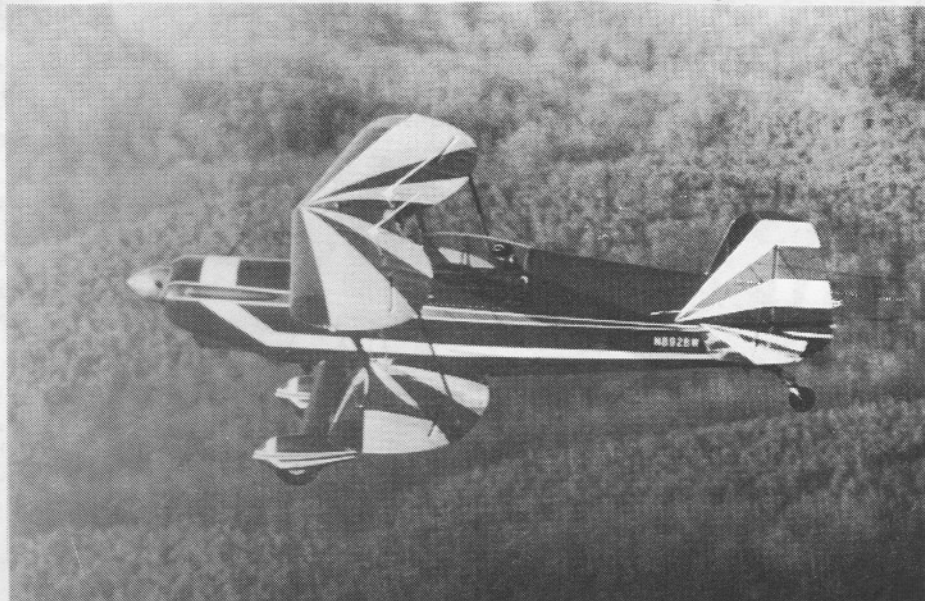
1980 STOLP STARDUSTER V-STAR - Biplane, O290D Lycoming, new prop, new tires, electric system, always hangared, August annual. \$17,500. Call (318)742-4206.

STARDUSTER I, 460 TT, 150 hp Lyc., 460 since new, Aircraft built by Lou Stolp. S/N 003 N2314C. \$11,000 or trade for Long-Eze project. (916) 245-9234.

STOLP STARLET PROJECT - Fuselage on gear, tailfeathers and wings. No engine. \$2800 OBO. (412) 346-2953.

STARDUSTER TOO PROJECT - BASIC FUSELAGE, vertical fin, horizontal stabilizer, seats and landing gear. No controls, wheels or tailwheel. WINGS CLOSE TO COVER, need hardware and leading edges to finish. Asking \$3000. Bill Everett, 1395 Marshall Dr. SE. Salem, OR 97302. (503) 364-3698.

FOR SALE - 0360 A4M, complete less carb. 0 - time, overhaul by Lycon hi compression pistons \$12,000 OBO. Dennis Brown, 35134 Hollow Creek Dr., Yucaipa, CA 92399. (909) 797-7595.



SA300 N892BW 1983 - Full Panel. Canopy. Lyc. IO 360. 470hrs TT A&E Show Quality. \$40,000. Ask Bill Clouse about this one or call Hank Holmes (615) 484-3103.
SEE PICTURE ABOVE.

AS ALWAYS YOUR ORDERS WILL RECEIVE OUR PROMPT ATTENTION. QUALITY PRODUCTS AND WORKMANSHIP AT A COMPETITIVE PRICE.

NEW ADS

94-05-05: Continental C-75, -85, -90 -125, -145, O-200, O-300 series engines. Requires inspection of cylinder rocker shaft for cracks.

94-06-09: Bendix SC-20, SC-200 and SC-1200 magnetos. Replace certian capacitors within 10 hr. of time of service.

FUEL HOSE FAILURES

The FAA said it has recived 340 reports of "flexible hose" failures during the past three years. A recent report said that while removing the motor from the Piper Comanche, the hose from the firewall to fuel pump broke into two pieces. All other flexible hoses were found stiff and deteriorated. The report recommended that the FAA issue an AD requiring replacement of all engine compartment hoses every five years.

BRACKETT AIR FILTERS

The neoprene gaskets on Brackett air filters should be inspected periodically, according to the FAA. The agency said a six inch piece of gasket material was found lodged in the carburetor of a Cessna 172 following a forced landing of that airplane.

The FAA said recommended inspection procedures during filter element replacements every 100 hours may not be adequate to enable detection of a deteriorated gasket. Noting that Brackett air filters are used in a wide variety and a large number of aircraft, the FAA recommended "conscientious inspection to ensure the integrity of the air box filter gasket" at regular intervals.

