

The *Starduster* Magazine

Vol. 28, No. 1, January 1998

Published for the biplane builder, the biplane owner, and the aviation enthusiast



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Published by –
Stolp Starduster Corp.
129 Chuck Yeager Way
Oroville, CA 95965

The *Starduster* Magazine

Stolp Starduster Corp.

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Secretary
Mary Homan

Operations Manager
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Front Cover

No, you're not seeing double. Anthony Simcic constructed this quarter-scale version of the Starduster Too built by Richard Miles, of Rome, GA. Anthony built his version from a photo of Richard's plane that appeared in *Sport Aviation*. See article on page 8.

Inside Back Cover

Bryant Anderson and Ralph Lewis savoring the moment, while Glen Olsen test flies Bry's new Starduster Too.

The Starduster Magazine

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This magazine uses material submitted by its readers. The articles printed do not necessarily represent the views or opinions of *The Stolp Starduster Corp.* or *The Starduster Magazine*. The Corporation and the Magazine assume no responsibility nor liability for the accuracy of the printed material.

President's Comments

December 15, 1997

To All Valued Customers of Stolp Starduster Corp.

I want to let you know what is happening with Starduster Corp. There have been several changes this year with more planned next year. I finalized an agreement with Bill Clouse in May 1997 to purchase the Stolp Starduster Corp. We had been talking about this since the fall of 1996. Bill Clouse will be available on a consulting basis for several years as we go into the future.

This year has been a year of studying the business, looking at air shows from a new perspective and studying the catalogs and the aviation business. The first major change you will be noticing is we are moving to Oroville, California and will be open for business at our new location on January 5, 1998. Our new address and numbers:

Stolp Starduster Corp.

129 Chuck Yeager Way

Oroville, CA 95965

Phone: 530.534-7434

Fax: 530.534-7451

E-mail: stardstr@pacbell.net

An 800 number will be set up in January for ordering parts; and the existing numbers will be forwarded to Oroville for a period of time.

There are several reasons we are moving to Oroville. When I started thinking about getting involved with Starduster there were many areas of concern. One of these concerns was the location of Starduster. I have flown and driven into Flabob many times. I determined that if I was going to put my energies into Starduster it will grow. As it grows I want people who visit us to feel safe, both on the ground and in the air. If a person brings his family with him to a fly-in or to visit, I want them to have other things to do if they want. Other criteria included a place where we are wanted, a place where flying is unlimited and unrestricted. Flabob is a great place, a part of aviation which will never be forgotten; however it is not a place where I could live and fulfill my vision of where Starduster needs to go. There were several places throughout the country we considered. We had the 1996 Starduster fly-in at Oroville and were very impressed with the people and the surrounding area. Oroville is located in Northern California about an hour's drive north of Sacramento. The open fields

of the Sacramento valley surround it on the west, Lake Oroville and the Sierra foothills on the east. On a clear day you can see Mounts Shasta and Lassen. From an open biplane standpoint it does not get much better. Oroville's airport has no control tower, two paved runways—nice and long, and the city is providing for the future with their airport.

Other changes which will be effective the first of the year include, new catalog, promotional video, updated promotional literature, Starduster Too and Super Starduster drawings on AutoCAD, and a new computerized inventory, accounting and invoicing system. We have many more changes in the works, including builders manuals, improved aircraft kits, all aircraft drawings on AutoCAD and a web page. We have placed our first ad in a national aviation magazine in several years. Look for the March issue of *Kitplanes*. Later this spring we will have ads in *Sport Aviation* and other aviation magazines. We will have exhibits at Sun-N-Fun, National Biplane Fly-in, Arlington, Oshkosh and the Golden West Air Show this year. Our intent is to let the world know we are here and we are back.

The first of June we are going to have the first Midwest Starduster gathering at the National Biplane Association Fly-in at Bartlesville, Oklahoma.

As we move forward we want to improve our relationship with all our existing and new customers. Please feel free to call, write or e-mail us with comments, complaints, ideas for improvements or anything we can do to help you and your interest in Starduster. We will from time to time send out and call regarding client satisfaction surveys. Please let us know what we can do to improve.

Our mission statement is: **SERVICE, SUPPORT AND EXPAND STARDUSTER AIRCRAFT.** Toward this end we are committed and we appreciate your business and look forward to the future.

Please contact me at 530.534-7434 or 510.426-9233 with any questions.

Sincerely,

Les Homan, President

Correspondence

John Reed
1925-1997

—From a letter to Les Homan from C. Eugene Glackman

I wanted to inform you of the passing of John Reed (owner of Starduster N76NP, on the front cover of *Starduster Magazine*, Oct. '97.) He died at home December 11. He and I flew either his or our Starduster about every week, weather permitting. John enjoyed his Starduster experiences immensely, and had only been flying ten years. In that time he had just passed 2000 hours.

We will all miss him as he was a great person and fun to be around.

Sincerely,
C. Eugene Glackman

The Power Of The Pen

When we find something that ought to be changed, especially with respect to our National bureaucracy, we often consider the thought of "Write your congressman" as an exercise in futility, and end up taking no action and consequently witnessing no change. That is not always the case. A refreshing example of correspondence with the bureaucracy, pertinent to aviation safety, was sent to *The Starduster Magazine* by Verne Reynolds,

and by his permission is reprinted below. We can thank Verne for influencing the Office of Aeronautical Charting and Cartography to make some very significant and much needed changes in the Sectional Aeronautical Charts.

Verne, a long time Starduster pilot, has recently acquired his second Starduster Too. [See article on page 14.]

Ed. HCG

October 31, 1997
US Department of Commerce
National Oceanic and Atmospheric Administration
National Ocean Service
Washington, D C 20230

Is there anybody out there? I'd like to say Dear Somebody....
but I'm not sure a real person exists at our Nation's Capitol. Just computers, and red ink, and
pork barrels, according to the evening news on CBS.
BUT I WILL TRY!

Dear Mr. Commerce

I'm a pilot. I'm not a very good pilot, but I've been flying airplanes since I first soloed
during WW II, more than 50 years ago. I still fly. Legally, I hasten to add.

For many years now, I have bought and attempted to use the SECTIONAL AERONAUTI-
CAL CHARTS that (maybe) are published with your guidance and approval.

I WANT TO COMPLAIN!!!! I am not color-blind. I am reasonably intelligent. I am a
careful pilot. I want to do what is right. I want to fly safely. But your charts are a pain in the
butt!!

Specifically, there is so little difference in the shades of color that separate water from low
level land that here in the Seattle area, as an example, it is terribly difficult to quickly tell where
you are. That's unfair. And can be deadly to a pilot trying to conscientiously navigate over
unfamiliar territory. We have many islands and tidelands to consider, and the colors, which
should be instantly helpful, are not.

I know. I know..... we've always done it that way. And that still doesn't make it right, or
reasonable. A deeper shade of blue for water is all it would take.

I think if some cartographer had to fly one of his or her creations, they too would be of my
opinion: this is another dumb idea perpetuated by an insensitive, if not uncaring, government
agency.

PLEASE FIX IT. It's broken.

A weary, well-meaning citizen,

L. L. Reynolds
1609 East Broadway
Mount Vernon, Washington 98274

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
Office of Aeronautical Charting and Cartography
1609 East Broadway Silver Spring, Maryland 20910
Nov 14, 1997

Mr. L. L. Reynolds
Mount Vernon, Washington 98274

Dear Mr. Reynolds:

Thank you for your letter of October 31, concerning the Seattle Sectional Aeronautical Chart. As a cartographer on the Director's staff of the Office of Aeronautical Charting and Cartography (AC&C), National Ocean Service (NOS), your letter was forwarded to me for a response.

The Sectional Aeronautical Charts, and all other aeronautical charts and publications of NOS, are produced according to the specifications of the Interagency Air Cartographic Committee (IACC). IACC is composed of representatives from NOS, the Federal Aviation Administration, and the Department of Defense.

NOS shares your concern about the color differentiation between lowland areas and open water. That is why the IACC has researched this problem and agreed to make changes to all of the visual charts, beginning with the March 26 publication date. The lowland areas will be a darker shade of green, which should help separate them from the blue of the water. Unfortunately, these changes won't appear on the Seattle Sectional until the 55th Edition is published on June 18, 1998.

In addition to this change in color, there are numerous other improvements to the visual charts that will be implemented by the IACC at the same time. I have enclosed a copy of the special notice that will be sent to all visual chart subscribers and aeronautical chart agents in January to describe these changes.

I apologize for any inconvenience or unsafe conditions that the Seattle Sectional has presented to you. NOS is constantly looking to our users for input on chart errors and suggestions for improvements. That is why we include a toll-free phone number on every one of our products. If you have any additional corrections, you can reach us at 1-800-626-3677.

I hope this addresses your concerns about our products. If I can be of any further help, please don't hesitate to contact me at the address above, or by calling 301-713-2629.

Sincerely,

Marsha Adelson, Staff Cartographer
Office of Aeronautical Charting and Cartography

SPECIAL NOTICE

TO PILOTS AND AERONAUTICAL CHART AGENTS

Beginning with the March 26, 1998 publication date, there will be numerous changes to the Visual Aeronautical Charts, including Sectionals, Terminal Area Charts (TACs), VFR Flyway Planning Charts, World Aeronautical Charts (WACS) and Helicopter Route Charts.

Changes to the aeronautical charts will include the following:

- The water tints will be changed to distinguish between open water and inland water.
- The roads will be changed from magenta to black.
- There will be new symbols indicating areas of hang glider, ultralight and glider operations activities.
- The Parachute Jumping Area symbol will be changed to magenta (brown on Helicopter Route Charts).
- Boxed notes indicating Approach Control frequencies for Class B and Class C airspace will be changed. The wording will be more concise and they will have a white background to make them more visible.
- The Mode C symbol and type will change to magenta (brown on Helicopter Route Charts).
- There will be a new IFR arrival/departure route symbol on TACs and VFR Flyway Planning Charts.
- The border shown on Sectional Charts to indicate coverage by a TAC and/or Inset will be changed. It will be shown by an absence of color (white) with blue identifying type. The corresponding note will also change.

Published by the
DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Ocean Service

The Starduster Too-ur

By Anthony Simcic

For the Catholics it's the pilgrimage to the Holy Land, for the Islamic a pilgrimage to Mecca, for me it was a journey to Rome. Rome, Georgia, the home airport of a Starduster Too. The following is the two and a half year story of my Starduster Too.

Several years ago I built a small scale Skybolt from Dario's drawings and was so pleased with it that in August of '93 I decided to build from another set of his plans. I happened on to a set of his plans from another club member and purchased them for the exorbitant price of a cup of coffee. I sat down to start the project with a 4x6x50-inch piece of balsa, a 1x6x72-inch piece of spruce, a 1x6x50-inch piece of bass and an assortment of plywood from earlier projects. I prefer to work from plans because you can cut things to fit better. The first few weeks were filled with making templates and cutting a rough kit. In the evenings when it got too late to be running a band saw, I would sit down and look through magazines to try and get a color scheme. I had pretty well settled on one when a friend showed up to coffee one morning with the latest issue of *Sport Aviation*. It took only a matter of seconds to realize that not only was it the best looking plane I had ever seen, but there was just about enough photos to take care of the documentation, so one major hurdle had been overcome.

Now here is where the story starts to get interesting. The fuselage was fully framed up when I had compiled a list of questions that no one could answer except the builder of the full-scale plane. So first, out came the map in order to find out which area code Rome, GA fell into. A quick call to information and I had it, the phone number of "GOD". It took two calls to find him at home and I found myself more than just a little nervous when Richard Miles said "Hello". To my surprise he seemed very enthusiastic about my project but I could tell in his voice he had been through this before. Richard answered all the questions I could come up with and within a few days I received a care package in the mail. It included photo copies of other articles on the Starduster and additional photos of his as well as information on how to

receive the *Starduster Magazine*. Thus started a long and ongoing correspondence. Every few months either I would send him a few new pictures of the Starduster's progress or he would send me more detailed photos of his. When the long and arduous task of construction was about to come to an end I started to realize a couple of things. Not only had I created a plane that truly reflected me and my personality but that without Richard's approval there would have been some intangible void. The only solution was to get the two planes together!

It started with a letter informing Richard that the Memphis Belle Classic would fall on my previously scheduled vacation. Since that would already put me halfway to Rome, I would like to continue on down to Rome and introduce the two planes to each other. I also informed him that, by the way, the Belle Classic was to be held at the full-scale Charles W. Baker airport and if he was looking for a small road trip he was welcome to meet me there. At this time the Belle was a couple months away and I still had a lot of little things to do before the Too would even make its first flight. Although only a static appearance, I managed to make it to my own club's (the Jumbo 49er's) annual fly-in. A week later I was ready for the maiden voyage of the Starduster.

The first flight was a white knuckle adventure. I thought this would be just like all the other bipes that I had built, needing a lot of control surface movement (typically in the 27-30 degree range.) Oh boy, was I wrong! I've backed it off to 21 degrees and it's now flying as smooth as silk. The only other teething pain that I had was keeping my tail brace wires intact with 32 solder joints in them. It took awhile to weed out the bad ones. Now I was feeling comfortable enough to take it out on the road.

The first stop was Memphis. I got into town Friday afternoon to be greeted by some friendly hosts but some very hostile winds. In the back of my mind this was just perfect. Since I had become comfortable with the Too and made the plans to take it to Georgia I was becoming paranoid that something would go dreadfully wrong. I could

think of nothing worse than having to call Richard and try to explain to him that the Starduster had met with an untimely death. Sure as the world Saturday dawned to a modest and lessening north west breeze. Fortunately for me a new acquaintance from Alabama was having some engine problems and that gave me a good excuse not to fly. By afternoon though, I had run out of excuses, the winds having decided to drop to almost nothing. Playing like it was just another flight I went to the line and proceeded to bore the world with a very modest and short hop. I enjoyed the rest of Saturday and early Sunday before packing up and heading on to my real destination by eleven.

The journey through southern Tennessee was beautiful but the pessimist in me came to haunt me again. Actually it had worried me since Friday when I heard that hurricane Opal had done some damage as far north as Tennessee. Had the storm damaged the N3701R, Richard's Starduster? That occupied my mind until I got to Chattanooga and Chickamauga. I got there just at dusk and in the clear skies after the storm the twilight over the mountains and the Civil War battlefield was incredible. If I had known how little of a drive that I had left I might have stopped to take some pictures. Instead I pushed on. I got into Rome about 8:30 P.M. local time, found some food and a bed for the night. After settling in I called Richard to see what his schedule held for Monday.

Like most of us Richard still has to work for a living, but being as hospitable as he is, he offered me the choice of meeting him in the morning and he would conduct business in the afternoon or he would run into Atlanta and take care of things in the morning. I chose letting him get things out of the way early, so as not to put us in any time constraints in the afternoon. Monday morning turned out to be yet another perfect day. It didn't take me long to find the airport and even less to be welcomed and invited to make myself comfortable while waiting for Richard. He must have been looking forward to the meeting as well because he showed up an hour earlier than even he expected. In the early going the conversation felt a little awkward but fortunately I could bury myself in the

assembly of my plane and the taking of photographs to calm my nerves. After the pictures Richard invited me for a flight but unfortunately electrical problems made that impossible. So it was off to a local flying site that Richard had found for me. After mine was back safely on the ground I felt that the purpose of my journey had been met. Over dinner and a couple of brews, something dawned on me. The conversation had gone from talk of the big Starduster and the little one, to the full scale and the quarter scale and finally to his Starduster and mine—the meaning of size almost totally lost. To me the discussion of flying characteristics (similarities and differences) was the most interesting. We closed the evening with a quick look through the photo album of his Starduster's construction and some thoughts of when we might get together again. I hope not long! Now it was time to think about heading home.

With my goal accomplished it was much easier to have fun flying, so on the way back I stopped in northern Arkansas to fly with the guys that taught me to fly some 13 years earlier. This visit was also too short, but I was starting to get road weary so I made a bee line for home with my plane still in the right number of pieces and a lot of film ready to be developed.

A thought for the scale modeler out there. Next time you look at a museum piece to build, think about replicating one that is still out there flying, something that a living pilot would be as proud to see as you would. They say that imitation is the sincerest form of compliment! Also here is one that Richard taught me for all the hangar queens out there who say that it will fly just as soon as this detail or that detail is on. There comes a time that you'll just have to fly it or else maybe you just have a model, not a plane. Who knows, once in the air you may just forget what you wanted to do anyway!

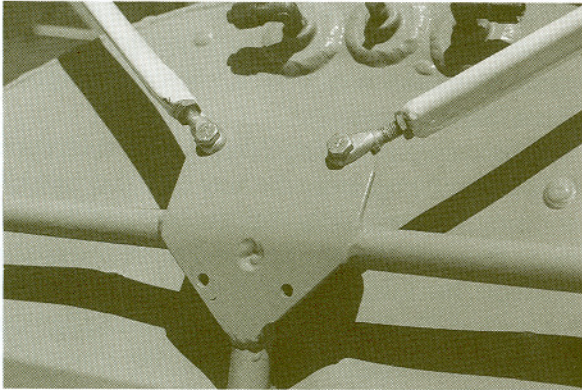
I would like to close with one more 'thank you' to Richard Miles for all his help and hospitality for the past two years and wish him and his family (that includes the Starduster Too) good flying!

Dear Dave,

In February 1996, I acquired an Acroduster II project, serial number 302, from a local (Atlanta Chapter 3) I.A.C. member. Currently I am painting using the Poly-fiber process and the Aero-thane finish.

Dave, I would like to contribute some technical assistance and I have enclosed photos pertaining to these subjects.

The fuselage was purchased from the company and was up-to-date except for revision C on drawing sheet #5 addressing the cabane cross (roll) supports where they attach to the fuselage.



Cabane Support Per Dwg. 5, Rev.C

I purchased .090 and .125 chromemoly 4130 sheet. You can get this in 6"x12" sheets from Aircraft Spruce for \$6.35. Later a decision was made to use the .125 sheet. To remove the existing fittings I used a high speed (die) grinder and cutting disc. Strike a line to follow, cut close to the tubing, not cutting completely through. Using vise grips, break off the old fittings and sand off the remaining rework to a smooth finish. Filing by hand is OK although I changed the mandrill in my high speed and used a sanding disc followed by a 3m scotch bright pad. Total removal and clean-up was approximately 5 minutes. I fabricated a plate per the print, bent the angle on a brake, used an angle protractor to get the 24½ degrees. Note: smooth or polish the edges before bending to prevent cracking at the bends. Next drill a ½ inch hole in the center to weld in a rosette, adding a 4th attachment. I used a uni-bit to drill the ½ inch hole. Starting a hole with a uni-bit is possible with aluminum, but with

steel pre-drill a pilot hole. Load your uni-bit and go slow. This provides a clean hole especially if you do not have a ½ inch drill bit or drill press. Hold the gusset in place with clamps, tack weld, recheck, then final weld t.i.g. method. Perform a post-weld heat treat to stress relieve the rework. Finally, I installed two floating 10-32 nut plates in the gusset to secure the firewall. Prime and paint to match.

For the brake lines, I welded in two additional tabs onto the horizontal brace and installed the brake lines to enter under and forward of the brake cylinders. Use a flex line to connect the hard lines to the cylinders. Clamp and add hardware as required to secure the lines.

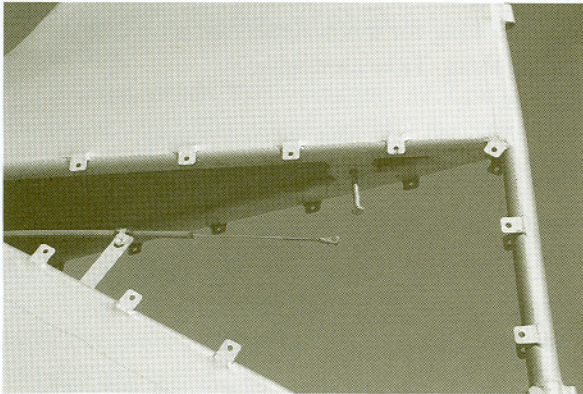


Landing Gear/Brake System

To assist in rigging the horizontal stab during flight tests, tack weld a ¼ inch floating nut plate on top of the structure at the horizontal stab aft attach bolt. Now you can install the bolt from the bottom access opening. This will facilitate adding or removing shims (washers) to trim/rig your hori-

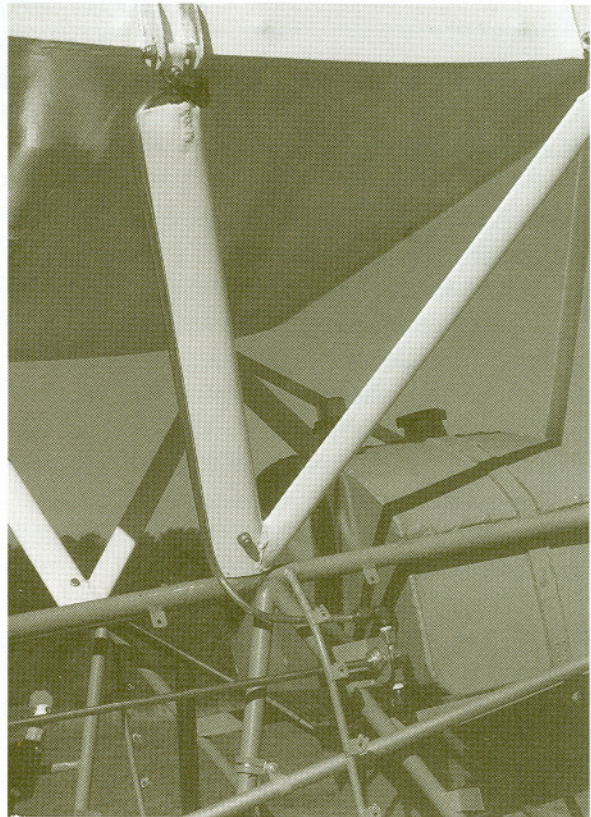
zontal stab.

As for the seats, I welded in additional tabs, four per side and installed a .050 alclad 2024-t3 sheet to the front and a .063 sheet to the rear seat bottom as it is larger in size. The back rest seat pans are .050 alclad sheet to accept the radio rack and especially the high "g" loads.



Aft Attach Bolt for Horizontal Stab (Nut Plate Is Welded Onto Top Of Structure) Note: Elevator Trim Tab Cable And Added Tab Welded To Frame To Support The Cable.

The fuel system will use two valves driven by $\frac{3}{8}$ inch stainless steel torque tubes with the handles in the aft cockpit. An attach angle was welded onto the fuselage on the right side to accept the fuel transfer valve. This two-way valve will allow the fuel to transfer from the upper center section into the main fuselage tank. The emergency fuel shut-off valve will be located on the fire wall downstream of the filter and electric pump.



Fuel System: Upper Center Tank To Lower Main Tank. Shut-off Transfer Valve Driven By A Torque Tube With Handle In Aft Cockpit.

I have enjoyed building this well-designed aircraft and I hope this information will help you with your project.

Sincerely,

Fred R. Myers III
8447 Magnolia Dr.
Jonesboro, GA 30236
770.478-2269
e-mail: GVQG25C@prodigy.com

6 December, 1997
RR2 Box 110A
West Burke Aerodrome
West Burke, VT 05871

Hello Dave Baxter,

Good to know you and Les are operating Starduster Crop. Only good things can come of association with a "Starduster"! Good Luck. . .

I came out of retirement, commute to Conn. and build vibration testing equipment. N13HX is my "commuter" when weather permits. The snow is on the airstrip at West Burke Airdrome, not yet deep enough for the skis—soon though.

I am enclosing some photos of my "first love". (Don't let this news out.) Keep the wires whistling!
Respectfully,

Phil Hax, N13HX (See photos Page 19)

3 November, 1997

Dear Dave and Donna,

We wanted to tell you how much we enjoyed your visit with us while you were here for the fly-in. It was nice to meet you and get to know you both. I have enclosed a photograph from the Sundays Phoenix Republic newspaper of the tail of your airplane and Bill. He really got a lot of copies of it from people who saw it. I think he got a little teasing from it. Maybe it will boost your sales a little. I was really surprised that it was in the paper. We hope you had a nice time with us. We should do it again sometime. Maybe you will come for the AAA Fly-in at Casa Grande in March or make the Copperstate again next year, hopefully more Stardusters will show up



Maybe we will try to make the open house in May, we will wait to see the dates.

We have not been doing a whole lot since you left. There was a Discover Aviation day at Falcon Field yesterday. We took Justin out for a couple of hours. They had several kinds of airplanes. There were model airplanes, things for the kids to play on, helicopters, and fire trucks. It was a nice event. Bill is looking for a newsletter. He sure enjoys reading them. Take care now.

Always,

Peggy and Bill Gauger

23 November, 1997

Dear Les,

Enclosed is a picture of Starduster SN 584, probably one of the longest running projects in the land. If you look close there is a 7" stretch at the firewall, which allows a space for the battery and a small baggage compartment. The 0-320 is light enuf to allow the stretch. The GeeBee belongs to Lt. Caler Edwards (my 3 yr. old grandson in Kentucky,) which is why I didn't finish the big one this summer. I'm a sucker for caps and T-shirts and really need a decal for the vertical tail, so send me a catalog when it's done.

WNY is a hotbed of Stardusters—Max Bennett's Too is getting an annual at our Akron airport, bob Hammond's Acroduster Too is 30 miles away at Niagara Falls, and Wolf Buerget has a Too 20 miles south near East Aurora which was originally built by Earl Laverentz. (Wolf has his own Too he's never finished.) (But soon the RV's will outnumber us.)

Best wishes to you and Dave on your new venture.

Dave Millikan,
Akron, NY

(See Photo, Page 20)

6 December, 1997
15045 Longview Road
Rapid City, SD 57701

Dear Dave,

Before I get carried away, let me tell you how much I enjoy the *Starduster Magazine*. You, Bill and all your contributors deserve a big "THANK YOU" from all Starduster fans for your always informative and frequently entertaining articles.

Like so many others, I am a longtime admirer of the SA300 and later the SA750. My 'plan A' was to build one over a period of 8 to 10 years to spread out expenses. Following our discussion one extremely hot day during Oshkosh '95, while lying in the shade of N96576, I took your advice and located an SA750 project with wings and fuselage nearing completion. I traded up to a full-size GMC pickup, borrowed a suitable trailer from my boss, convinced my wife to help drive the 5-day round trip from Rapid City, SD to Flabob, and was on the road by 4 pm. A day and a half later I was happily inventorying and loading airplane parts for the return trip. Bill was gracious enough to spend some time to provide an overview of what I had purchased and advise me how to proceed. I ordered a set of plans, an I-strut kit, and other miscellaneous supplies. After months of comparing the drawings to the completed work, I reached two conclusions: 1) The original builder, who I understand once worked at Starduster Corp., had intended to 'improve' the design. 2) This may *yet* take 8 to 10 years to complete, even though it is on the gear, the controls are mostly in, fuel tanks are installed and the engine mount is complete. I guess our FSDO maintenance chief best summed it up when he surveyed the progress and advised that I will have "no problem complying with the 51% rule."

Rationalizing and scheming again occupied every waking hour. I don't need to *fly*, I *need* to fly

a *Starduster*. Solution: acquire an older SA300 with the desired engine/prop which can, at the appropriate time, be used for the Acroduster. Meanwhile I maintain tail dragger proficiency and improve Acro skills. Great plan! I wondered what my wife would say, "It sounds like a good idea, dear. If you can afford it, do it." By the time that comment filtered through male selective hearing, I had already refinanced the next 15 years and started my search.

September of '96 found me responding to an ad by Lee and Sharon Dorrance to sell N1468, which they had owned for 22 years. A deal was struck—sight unseen—which I felt good about. Two weeks later, I was in Chewelah, WA, to see and fly their aircraft. I now feel very good about owning it.

This past year has been the most enjoyable of my 30 years and 10,000+ hours of flying, and all indications are that it will only improve. I once took a hobby and turned it into a job. My association with Starduster airplanes and owners like Glen Olsen, Clay Gorton, Les, Bill and yourself has made flying fun again.

Most 30-year old, 1200+ hour airplanes can stand some rework. My phase one, firewall forward rehab started last month. Spring will hopefully see a refurbished engine mount (majored engine with aggressive cam,) lightweight starter, Slick start, re-plumbed fuel system and instrumentation reduced to basic VMC requirements. Recovering and painting will happen, but probably not until the SA750 flies.

Guess I better sign off now. All this enthusiasm may depress my wife, and I need her to type this letter.

Congratulations to Glen and Clay on assuming editorial duties. My renewal check for 1998 is enclosed. Hope to see you at Bartlesville in '98.

Fly safe and often,

Dan Benkert

(See photo page 21)

29 December, 1997
1609 East Broadway
Mount Vernon, WA 98274

Dear Clay,

You asked for some documentation regarding my new ownership and entrance back into the STARDUSTER family. So—
“O.K. Verne, it’s your airplane . . .” With those words, John Renquist turned his beautiful beast over to me at 2,000 feet for some exploratory maneuvers. Some steep turns, a couple of stalls, and a whiffledorf later I was hooked! Back to the Arlington airport where John greased on a wheelie, just to impress the local gawkers. Then I gave him a bunch of money and he gave me the keys to his STARDUSTER TOO, N8331A.

After some careful ground school instruction about how to protect and preserve his award-winning DUSTER, John flew back to California inside another airplane, leaving me the one with the outside view and the subtle paint scheme. Since then, the first of August, the DUSTER has been lovingly inspected, tweaked and fretted over by a variety of

mechanics and self-acclaimed experts. John loved bells and whistles and found a place for all of them when he built N8331A. After a few years, I’ll figure out how they all interconnect and the story they tell. In the meantime, I’m learning. I’m learning.

My first flight included the shortest touch and go landing in the history of aviation. Three inches! I tried to land it about 20 mph faster than it wanted to (the airspeed indicator has a mind of its own.) One bounce and we were back in the traffic pattern again. But it’s becoming more comfortable now. Our Puget Sound winter weather doesn’t give much opportunity for open cockpit flying, so I’m looking forward to springtime. And maybe John will come back and demonstrate another wheelie for me. I’ll tell the gawkers I did it.

In the meantime, if you want to see a really classy airplane up close, give me a call.

Cordially,

Verne Reynolds

(See Photo Page 21)

4 January, 1998
P.O. Box 172
Sabin, MN 56580

Dear Glen and Clay,

In your letter you state that you wanted to have me write a little about my flying experiences and my Starduster. My flying history is pretty boring (no Steve Canyon here.)

I’ve loved airplanes and flying since I was a little kid. There was a small grass airport about five miles from where I lived, and as a youngster I used to go over there on weekends and hang out. (That’s where I learned to become an airport bum.) The FBO owned a PT22 and instead of paying me for helping around the airport they would give me a ride on Sunday evenings. That’s where I got my first taste of aerobatics. I bummed a lot of rides in different airplanes, besides the PT22, there was a PT19, a PT17 and even a Driggs Skylark biplane. How many have ever heard of that one?

From 1967 to 1971 I did my obligation to my country as a jet engine mechanic in the Navy. I didn’t get to fly but at least I got to work on airplanes—if you consider jets airplanes. Jets can sour your taste for aviation in a hurry. To this day I hate the smell of burning kerosene.

In the mid ’70’s I started to get serious about flying lessons. After about ten hours of lessons in a Citabria I was told by my life insurance company to quit flying or they were going to drop me. It was seventeen years before I would get back into it.

In the early ’90’s a friend who is an Ag pilot and a CFI bought a 172 spam can and talked me into taking lessons again. This time I finished and got my ticket. The lessons were pretty uneventful but it took two tries with the examiner before he felt confident—something about hard landings. I’m still pretty good at those.

My first airplane was a Stinson 108. It was a pretty good airplane and I flew it for about 300 hours. It was a good plane to learn tail wheel in because of its large tail. I was in the process of

rebuilding the Stinson after an incident with a snow drift when an opportunity came along to trade it for a GCAA Citabria. The Citabria was a little ratty looking but it flew and had a fairly new engine in it. Also, it was aerobatic.

I had the Citabria about two years, putting about 300 hours on it. A lot of that time was spent practicing aerobatics. It was a pretty good aerobat but without an inverted system it was limited in what you could do. Every time you did anything negative it would puke oil all over the side.

In the summer of '96 I started I started thinking it was time to change airplanes again. I also felt I needed something with an inverted system. I always liked the looks of the Starduster Too; to me it was the prettiest biplane on the home-built market. I looked at an AcroSport, but it didn't seem right. I thought about a Skybolt, but I couldn't find anything I liked. It was about this time that I met Ron Powers from Grand Rapids, MN at a fly-in. Ron had his Acroduster at the fly-in and we had a pretty good conversation about flying, aerobatics and Starduster. Ron flew over to my farm about a month later and gave me a ride in his Acroduster. That was like putting icing on the cake—I was hooked. I immediately started shopping for a Starduster.

I sold my Citabria in March of 97. When you sell your airplane it really gives you incentive to get serious about finding another one. I delivered the Citabria to Green Bay, WS and from there went to eastern Ohio to look at a Starduster Too. The airplane was a little tattered and didn't have an inverted system. There were several other things wrong with that airplane too, and I thought, if I'm going to spend a whole bunch of money on an airplane I want a whole bunch of airplane for my money. I went back home and started calling everybody in Trade-A-Plane who had a Starduster for sale. I got lots of pictures and even some videos of some really nice airplanes, but it was always one thing or another that I didn't like, or they were too far away.

In April I heard about a Starduster for sale in Missouri. I got the phone number from a dealer in Denver and gave the owner a call. He seemed really honest about the plane. He told me all the things he felt needed to be done to it—nothing major, so after looking at about twenty pictures of it I bought it. It had everything I thought I needed—IO-360,

constant speed prop and inverted fuel and oil. It even had a smoker.

Mike McClean, who is a good friend of mine and an airline pilot as well as an A&P, flew up to Springfield from Dallas to look it over. Mike said it looked pretty good, so he topped off the tanks and flew Starduster 860SG up to Minnesota for me. It took Mike two days to get here because it was so darn cold he couldn't go very far without stopping to warm up. Mike had to get back to Dallas that same day, so I only got to fly it from my farm to the Moorhead Airport—about three miles. Mike went back to Dallas and there I sat with an airplane I didn't dare to fly. Now don't get me wrong; I'm not a coward, I just couldn't see wrecking a perfectly good airplane because of inexperience.

I taxied up and down the runway for about a week when Gene Martin, the fellow that taught me to fly, came over to look at my Starduster. Gene used to own a Pitts and offered to help me get comfortable with the new plane. The take-off went pretty well and we flew around and got used to the way it flew—a little slow flight, some stalls and we had to fly it upside down to make sure the inverted system worked. Now it was time to go back to the airport and practice some landings. Downwind was good, base looked fine, now turn to final. Hey, where's the runway? Can't see over the nose, and besides, Gene's head is in the way. Can't see down over the side, there's a wing in the way; feel my way down to the runway; ah, there it is! I see the edge; I'm just about there; oops, I am there! I bounce about ten times before I come to a stop. Hey, nothing to this; I can do it.

After about six hours of dual from Gene and Bob Lund, another CFI friend, they cut me loose and I was one with my Starduster, alone in the sky in an open cockpit biplane. What a feeling! A lifetime dream come true! It's a feeling that only a pilot in an open airplane can feel. Richard Bach said it best, something like "You can't experience life until you've seen it through the two wings of a biplane!"

I flew 860SG about seventy hours last summer. I went to quite a few fly-ins where it always attracted quite a crowd. You don't see a lot of open airplanes around this area. The big problem with having a unique airplane at a fly-in is keeping people off it. I've have people climb up and sit in the cockpits. There was even one fellow that had his

kids stand on the bottom wing so he could take their pictures.

The highlight of the summer was flying to Wautoma for the Starduster gathering. I imagined that it was going to be fun, but I didn't realize how much fun. I arrived on Tuesday, July 29, in the afternoon after an uneventful but chilly flight across Minnesota and Wisconsin. Upon arriving I was met by a group of people that were about the nicest folks I've ever met. When I got out of my airplane I was greeted by Glen Olsen, Clay Gorton, Les Homan, Bill Clouse and Jack and Terri Mullenmaster, our hosts at Wautoma Airport. After about five minutes I felt I had known these folks most of my life. Talk about making you feel welcome! I could go on and on about Wautoma, but I won't. Those of you that have been there already know what it's like, and those that haven't better experience it for themselves. I had to leave on Saturday, August 2nd. I wanted to stay for the banquet but couldn't. I'm a farmer and it was harvest time at home. The trip home gave me time to think about improving the cosmetics on my airplane. A lot of people said it's not bad, but compared to all the other Stardusters I had seen, to me it was bad.

I flew 860SG until about mid October when it got just a little bit too chilly to fly anymore. About the first part of November I pulled 860SG around to the front of my shop where I took the wings off. All I was going to do was to fix up the paint a little. Well, you know how that goes, one thing leads to another. I wound up peeling all the paint off the wings. That went a lot better than I thought it was going to. You can get between the fabric and the paint with a kitchen butter knife and boy, does the paint fly! I was going to do the same thing to the fuselage, but it was so oil soaked from the smoker that I just removed all the fabric. I haven't found anything wrong with the structure; the wings look like new inside. So now it's just a matter of putting it back together. I removed the old smoker tank which sat behind the rear seat under the baggage compartment about two feet back and replaced it with a new tank that is attached to the back of the backseat. I hope that will help a little in getting weight off the tail.

I hope to have the airplane done in time for the fly-in at Bartlesville, OK, but if I don't, I will be going tack to Wautoma I'll keep in touch and hope to see everybody in Wautoma.

Chuck Krabbenhoft

(See Photo Page 22)

Back Country Flying In Montana And Idaho

By Grant Cunning, Ogden, Utah

This past summer, a group of airplanes departed Ogden for the fly-in at Three Forks, Montana. The flight up was clear and smooth until we reached the Henry's Lake area. A broken cloud cover was below us from this point all the way to Three Forks. Occasional patches of open area allowed us to continue. It is surely inspiring to see the mountains poke up through the clouds with the bright sun shining off the clouds below. This kind of flying sure makes you aware of your vulnerability. Thank goodness for a good GPS. Over Three Forks Airport was a very light drizzle, but a large open area of cloud-free sky allowed for an uneventful arrival.

We all pitched our tents on green lawn, used the hot showers available and participated in the food and activities. When it came time to leave Sunday morning, there was a solid cloud cover at 1500 AGL. As we departed, it was apparent that our usual flight level was not achievable. As we passed over Ennis, Montana, we decided to fly down the Madison River. So down we went, and what a wonderful experience! The moose and other wildlife were breathtaking. The river with its rapids and waterfalls was beyond words. When the Madison River split our only option was to the right and through the valley to Henry's Lake. At Henry's Lake we turned east to West Yellowstone Airport.

When all had arrived, we acquired a courtesy car. This mode of transportation is a completely different story. We drove (herded) the car into town for breakfast. With our stomachs full we decided to see the I-Max movie. What a visual feast! With the experience of low flying the Madison and now viewing the film it felt weird because the movie was filmed below the tree tops.

Leaving Yellowstone Airport and heading southwest toward St. Anthony, we ran into light rain. At this point, the clouds started to lower. As the rain changed from a drizzle to a toad strangler, Rexburg Airport sure looked good. With a call to Flight Service, some candy bars and soda pop, we left with the assurance of clearing weather.

With the arrival of a fellow flyer, our group had grown to six airplanes. From Rexburg to Pocatello the skies lightened and the sun broke out

into a clearing sky. With one last lightening display over Malad, the flight came to a close with all happy and excited for next year.

Idaho offers some of the most pristine and wonderful back country flying anywhere in the country. One of these back country strips is sixty miles north of Sun Valley. It is called Smiley Creek. Ground elevation is 7000 ft. with a 150 foot wide by nearly 4000 foot long runway, and it is grass.

The last week in July we departed Ogden for a weekend at Smiley Creek. I had never landed on grass, so apprehension was running strong. At 9500 ft. we cleared all the mountain ranges ahead and overflew Sun Valley. The valley ahead was lush green with small lakes everywhere. As my GPS said, we were four miles from our destination, but no obvious runway came into view. Having looked at the Idaho back country book before departing, I spotted the lodge that is next to the airport. On final, the grass looked inviting and the landing was everything all had said about landing on grass. As we taxied to the tie-down area the tents of our friends came into view. After a short walk across the road to the lodge a fresh trout dinner was inhaled. Back at the tie-down area it was discovered that we had our sleeping bag, air mattress, ground cover and light, but our tent was back in Ogden. Luckily, one of our group had an extra space for us.

On the morning that we were to depart for home we had ice hanging from our airplane when we got up. I thought to myself, "This is July and I am waking up to ice on my plane. This is fun?" It was after 10:00 a.m. before the plane was free of all the moisture and all items stored away for the return flight. The take-off roll seemed longer, but on grass and at 7000 ft. elevation, the Starduster's wheels left the ground and spun off the last of the morning's dew. The climb-out over the mountains with the morning sun on them is awesome. Flying south over Sun Valley with four other airplanes, with friends along and enjoying a weekend with no crowds, birds singing and wildlife so close you think you could touch them—It doesn't get any better than this!

(See photo of Grant's Starduster Too on page 22.)

Tech Tips

AC & DC Switches - How They Differ

Art Bianconi, EAA Tech. Counselor #1216

Submitted by Shane Rosanova, Salt Lake EAA Chapter 23

Some years ago I was fortunate to be able to work alongside engineers from Underwriters Labs (UL) during destructive testing of electrical devices. This was part of my apprenticeship as a designer for a major electrical manufacturer. It was during this period that I acquired an appreciation for the real-world differences between AC and DC current and the impact those differences have on switch design and applications.

I share this with you because I am growing increasingly concerned at the widespread lack of awareness most homebuilders demonstrate when selecting switches for the cockpit environment. Each time a builder asks me to perform a pre-FAA inspection of an aircraft, I carefully examine the switches. To date more than 75% of the projects inspected have contained AC rated or non-rated switches in DC circuits.

Using an incorrect switch for the application often results from not knowing or understanding the differences between AC and DC current. The load carrying capability of AC and DC switches is dramatically non-linear and is best appreciated by carefully inspecting a high-quality switch carrying both AC and DC ratings. The MICRO Corp. roller and bar microswitch is a typical example. Rated at 10 amps @ 125 or 250 VAC, the same switch can only carry 0.15 amps @ 250 VDC. In real terms more than 98% of the original load carrying ability was lost by switching from an alternating current to a direct current load at the same voltage.

As you can see from the example above, current carrying capability is a key limiting factor of a switch. Using a switch with an AC voltage rating that is much higher than the DC voltage it is being subjected to won't help either. For example, those of you who can still remember the old Kettering coil ignition systems will recall that when the condenser in the distributor went bad the points generally turned blue and melted down in just a few minutes. Cockpit switches don't have the benefit of condensers to absorb the electrical inertia pres-

ent in a DC circuit. As a result, the gap temperatures get hot enough to weld the contacts closed. The current in a 14 VDC circuit can do this to a 120 VAC rated switch, even one made with an exotic high temperature alloy.

AC current changes directions 120 times/second in a 60-cycle circuit. As a result, there are 120 times each second when there is no current flow at all. The current actually helps turn itself off the moment it sees a gap. Switch designers use this phenomenon to help reduce the cost of manufacturing AC switches. In DC circuits however, the current 'push' is constant even when the points begin to open. The resulting flash is DC current's way of demonstrating its resistance to flow termination.

A common misconception is that the circuit breakers in a system will protect against welded switch contacts and related electrical system damage. They won't. Fuses and circuit breakers provide overload protection. A welded set of contacts will not, by themselves, cause an increase in circuit load. What often happened during the UL testing was that the contacts welded shut making it impossible to open the circuit. Cycling the switch to the open position was often misleading; yes, the lever moved, but inside the switch the cam had separated from the welded contacts. While it appeared to break the circuit, the circuit was in fact still 'hot.' Think of what the consequences could be if the component controlled by that switch was your fuel boost pump and it was left running continuously when it should be off. Flap, trim and landing gear motors can all be driven full-travel one direction, with disastrous effects, if the contacts weld themselves in the closed position.

DC rated switches cost about three times more than AC rated switches of identical current capacity. In a panel with 10 switches the cost difference would be around \$50 or less. You've gotten this far on your project. Is it worth jeopardizing your investment or your safety by cutting corners with even one less expensive switch not properly rated for your application?



N18HX – Phil Hax, West Burke, VT





SN 584 – Dave Millikan, Akron, NY

Control Panel, Dave Simcic's 1/4 Scale Starduster Too





N1468 – Dan Benkert, Rapid City, SD

N8331A – Verne Reynolds, Mount Vernon, WA





N860SG – Chuck Krabbenhoft, Sabin, MN
(Private airstrip only 3 Mi from Airport)

585AG – Grant Cunning, Ogden, UT



Refueling Plastic Funnel Ignites

By Joe Scoles, Aviation Safety Maintainer
The 170 News, Third Quarter 1996

The latest horror story concerns the pilot of a C172 who performed an act of environmental friendliness during his preflight check by draining about a liter of fuel from each tank into a metal can. The fuel appeared clean and free from water so he decided to put it back into the aircraft tank, using a plastic funnel with a chamois wired to the funnel in an attempt to dissipate static. While pouring the fuel he noticed flames around the filler neck. He managed to put them out using the entire contents of one fire extinguisher and most of a second, and suffered third degree burns to one hand.

Although the aircraft was inside a hangar with fans running overhead, the air was cold and dry, so probably the draining and general sloshing around of the fuel in the can caused a charge to build up in the fuel, the chamois, the plastic funnel and possibly on this person. These were ideal conditions to create a spark that set off the fuel vapor in the funnel and around the filler neck.

The Shell Oil Co. has stated that polyethylene plastic containers and funnels should not be used for refueling aircraft. Plastics have insulating

properties which can accumulate static charges. High density polyethylene containers made from pure material are okay, but you must take extra precautions and there are certain standards to adhere to. If you aren't sure about the plastic refueling equipment you are using, then use metal cans and funnels. These are safer if used properly.

There seems to be an element of luck in transferring gasoline that breeds complacency. I would hazard a guess there are many pilot-rigged fuel systems out there just waiting for the right conditions to go "bang".

Editors Note: by Glen Olsen

This same horror story happened to me in my Acroduster. I was inside my heated hangar pouring some fuel out of a plastic gas can through a plastic funnel into the main fuel tank of my airplane when a spark shot from the funnel down into the tank. Although it made a bright flash, luckily it didn't ignite.

Solution: Never pour gasoline into an airplane unless you're at a fuel pump or using a metal funnel and fuel can and properly grounding the can, the funnel and the airplane.

Applicability of Airworthiness Directives

FAA Aircraft Certification Service, Washington DC. 29 May, 1997

The FAA has become aware of some confusion regarding the applicability of certain Airworthiness Directives. An AD is issued to address an unsafe condition that is likely to exist or develop in products of the same "type design," which means products that have a U.S. Type Certificate. Under

current certification requirements, an aircraft with an experimental certificate is not considered to have an approved "type design." This means that an aircraft with an experimental certificate is not required to comply with Airworthiness Directives. However, prudence dictates . . .

Airworthiness Directive AD-97-15-11. Avco Lycoming and Textron Lycoming.

Supercedes AD 97-01-03, Amendment 39-9874. Applies to Avco Lycoming and Textron Lycoming 0-320, 0-360, 0-480, 0-540, TIO-541, IO-720 series reciprocating engines that meet any one of the following conditions:

1. Engines with serial numbers listed in Textron Lycoming Mandatory Service Bulletin No. 527C, dated April 18, 1997; or
2. Engines that had Textron Lycoming cylinder kits installed after Dec. 15, 1995, or

3. Engines that have been overhauled, or had cylinder head maintenance performed by a repair facility other than Textron Lycoming after Dec. 15, 1995. To prevent piston pin failure, accomplish the following:
 - (1) Check the piston pin code in accordance with Textron Lycoming SB No. 527C, dated April 18, 1997.
 - (2) Remove from service piston pins, Part No. LW-14077, code 17328 and replace with serviceable piston pins.

No action is required for engines that have been inspected in accordance with AD 97-01-93.

Priming Metal Aircraft Parts

By Brent Anderson

Taken from Portland/Twin Oaks EAA Chapter 105, March, 1997

Priming and painting is a broad topic beyond the scope of a brief article and certainly beyond my own knowledge and experience. As such this article is limited to solvent-based primers as typically used on metal parts and hopefully will be helpful to new builders or others who find a need to paint parts at one time or another.

Determining which primer is 'best' for each builder is a personal decision that depends on the relative emphasis between a number of important factors. There is no such thing as a single product that is best for everyone or every application. To make matters more interesting, government regulatory agencies are cracking down on emissions related to air quality standards and disposal of hazardous waste. As a result, new builders can't necessarily rely on even recent experience of more seasoned builders. The materials used may have been outlawed, or if available may have been altered for regulatory compliance, affecting things like surface pre-treatments or other application-related issues. To help make a good choice for a given application, start by asking a few basic questions, and then prioritize the following factors to suit your personal situation:

1. What material is being primed? Aluminum? Steel?
2. How important is maximum corrosion protection?
3. How important is minimum labor?
4. How Important is lowest cost?
5. Am I prepared to cope with potentially serious health risks involved in using solvent-based materials?
6. How important is compatibility of the primer with a final finish system?
7. Will the materials I choose today be available for the duration?

Primers of interest to home aircraft builders fall into two major groups with different properties to consider:

Group 1— Self etching primers require minimum surface pre-treatment before application; typically

a solvent wipe. Minimal labor is a primary reason for their popularity. The etchant in the primer chemically bites through surface oxidation and promotes adhesion of the primer to relatively unclean metal. Some of the locally popular self-etching primers are wash primers (e.g. PPG, Sherman Williams). Wash primers are not the latest technology, nor the best choice if corrosion protection is high on your list.

Group 2— Non-self etching primers require full surface pre-treatment to achieve good adhesion. Recommended surface pre-treatment depends on the material. Aluminum parts are etched/scrubbed with an acid-based aluminum cleaner and a scotch-brite pad, rinsed with water, then treated with a chemical conversion coating (e.g. Alodine) and rinsed with water again. Not a difficult process, but definitely more work than the self-etching primers. The etchant gets the aluminum clean, and the conversion coating stabilizes the surface to prevent oxidation. The two steps together are critical to get good adhesion. How do you tell if the metal is clean? Sprinkle some water on it. If the water beads up, it's not clean. Water will sheet off of clean metal without any beading. After the final rinse, the parts can be hung to dry. Don't touch them with your bare hands prior to painting, or you will contaminate them with oil from your skin. Blow the parts off with an air gun prior to paint application. Drops of water will be slow to evaporate from holes, corners and the like. If this step is omitted, it will likely not be realized until actually spraying paint, and chasing water droplets around the part. "How do I know this," you say? Well I certainly never made this dumb mistake, but I ran into an inexperienced builder once who told me about a friend who . . .

Steel parts go through a similar pre-treatment process to aluminum parts, but require a different etchant and a different type of conversion coating. They must also be blown completely dry immediately after the final rinse or they will rust right in front of your eyes before you can prime them.

Professional painters (at least the ones I have

come in contact with) use non-self etching primers and go through pre-treatments like those described above. Examples of non-self etching primers are two-part epoxy materials. The popular Courtald line offers quite a variety of materials to choose from, specifically formulated for aircraft use. PPG's DP series of primers also fall into this general group, and there are many others as well. Epoxies are impervious to most chemicals and petroleum-based products, and are a good choice if maximum corrosion protection is high on your list. One exception is aircraft hydraulic fluid. If your parts might be near your brake system, a urethane finish coat over the epoxy primer should give the required protection. Epoxies do not have good UV resistance and will turn chalky over a long time exposure to sunlight. As such, areas like your cockpit should receive a finish coat of some sort to provide this protection. Urethane again would be a good choice here.

If the parts primed are intended to receive a finish coat, timing of that final finish will be important if maximum adhesion is to be achieved. For example, PPG recommends application of final finish within one week of primer application in order for best performance to be achieved. In other words, the bonding of the finish coat is not just mechanical, but chemical as well, and the chemical receptivity of the primer coating has a limited life. Chemistry aside, it would be difficult to keep the parts from becoming contaminated with dirt, oil, etc. over a long period, which could be another source of disappointment with the end product.

Safety can't be over emphasized when dealing with priming and painting in general. Start by requesting material safety data sheets (MSDS's) when you buy your materials, and not just for the paints, but for the solvents as well. MSDS's will provide detailed information on both the physical and health hazards involved with the materials being used, as well as important information on personal protective equipment, recommended engineering controls and waste disposal.

Start by protecting yourself. Gloves of the appropriate material are mandatory, as are splash goggles and an approved respirator. A positive pressure respirator with a fresh air source is by far the best, and a minimum respirator would be a

respirator intended for use with the specific solvents and paint products anticipated. Respirators can be acquired from your paint supplier, so check on their recommendation. In order for the respirator to be effective, it must fit tightly against bare skin. Check the fit by covering the air intakes and attempting to inhale. There should be no noticeable leakage. A respirator will not seal effectively over facial foliage, so if a beard is an important part of your personage, be forewarned. If you just can't bear to shave, consider positive pressure respiration to be your minimum acceptable protection. The respirator will leak, but will be leaking fresh air out of the mask, not hazardous chemicals leaking in, as would be the case with a disposable respirator. Don't even think about painting epoxies without a respirator. The uncured paint mixture is deadly and will cause irreversible damage to your lungs. The most obvious route of entry for paint products and solvents is inhalation, but it's also quite important to protect your skin. Don't just wear gloves, but also minimize exposure to any bare skin while using these products. Solvents are easily absorbed right through the skin, and material like the epoxies are strong skin sensitizers, to which some people will develop allergic reactions. If paint is spilled on the skin, using a solvent to get it off is a mistake. The solvent may dissolve the paint, but will also cause some of it to be absorbed through the skin along with the solvent.

Engineering controls include such things as spray equipment, and some means of controlling overspray. If you are just starting a project, strongly consider investing in a high-volume low-pressure (HVLP) system. It will deliver a much higher percentage of paint to your parts and leave much less overspray all over your shop; and believe me, it will find its way onto EVERYTHING if not controlled! Like many builders, I started by using tarps and drop cloths to protect against overspray. What a mess! After some period of time, I just couldn't stand it anymore, and decided to implement an overspray collector. The basis for my collector is a high-volume explosion-proof paint booth fan. The fan is mounted inside a plywood box which is on wheels for easy moving. The box is sized to take advantage of 24" square disposable spray booth filters (2 each) providing a useable intake area of 24" X 48", which is large enough for

the majority of parts encountered. Air is drawn through the filters, extracting most of the overspray, and forcefully exhausted away from the painter. A perforated baffle is positioned behind the paint filters. The purpose of this baffle is to produce an even air velocity over the entire filter area, and it is reasonably effective in doing so. The effective open area of the baffle increases proportionally with distance from the fan. The collector can be used in an upright orientation. In the upright orientation, parts are hung in front of the collector on a swivel hook. The collector is equipped with shutter doors which can be opened to expand the effective collection area and deflect overspray into the filters. The collector can also be used in a horizontal orientation. In the horizontal mode, one of the shutter doors folds out of the way, and the other becomes a backboard. In the horizontal orientation, a grille is positioned over the paint filters to hold small parts.

Some builders may scoff at the cost of an explosion-proof fan, but just remember that we are spraying an extremely flammable mixture passing very close to an electric motor, which is a potential source of ignition. I justified the cost of the motor (\$400 from Grainger) by rationalizing that it was far less expensive than even the most modest explosion would be in my shop. All in all, the collector can be fabricated in a day's time and provides good performance. It has improved the quality of my own priming experience measurably, and practically eliminated the overspray mess. A similar piece of equipment is well worth the time and dol-

lars involved when considering the large quantity of parts that will be painted on an average aircraft. Obviously this is just one of many forms the design could take, and suits my own needs for general portability.

Disposal of hazardous waste should not be overlooked, but since we deal with relatively small quantities here is an approach to consider. Mix only what you need to start with. Consider saving the leftover paint in a small closed container to use for touch up. Undoubtedly, the first time the parts are really inspected after painting, small bare spots or thin areas may be found. Don't use the paint after its pot life has expired. It may look useable to the eye, but may not be of suitable chemistry any longer. Let the paint harden, then dispose of it as solid waste. When you clean your paint gun, use minimal solvent, and try collecting the waste solvent in a metal container. Put in a safe open place to let the solvent evaporate, and only minimal solid waste will remain for disposal. After nearly completing the construction of an aircraft, I have a 3-lb coffee can only half full of solid waste.

In summary, painting can get to be a very complex subject, but the application process is really simple. Articulate your requirements, and prioritize what's important to you.

1. Choose a product line from a reputable manufacturer.
2. Follow the manufacturer's recommendations for pretreatment and application.
3. Take the proper safety precautions.

Battery Maintenance

From The Gill Newsletter, October 1997

A new battery must be charged to full capacity before being installed into the aircraft by using a quality charger. If the battery is placed into service without being properly charged, poor performance and short life can be expected. Even though the aircraft is equipped with a charging system, an average flight of a few hours is not enough time to charge a new battery to full capacity.

Teledyne recommends using a constant current charge such as the TDMC charger with adjustable current rates to accomplish this step. After the battery has set for one hour after the electrolyte

has been added and the charge rate has been determined, connect the charger to the battery. Make sure the charge is in the "OFF" position before making battery connections. Set the charger to the desired voltage. Next, set the timer (constant current) to about 18 to 24 hours and then adjust the current charge rate to the predetermined number. Using a constant current charger such as the TDMC, charge the battery until the charge voltage reaches 16 volts for a 12 volt battery or 32 volts for a 24 volt battery. When this voltage is reached, the charger can be turned off. There are a few

more steps that should take place before the battery is placed into service. Remember, it is very important not to exceed the correct charge rate when using the constant current charging method. Under normal conditions, the charge time will be less than 18 hours. Check the battery from time to time and record the specific gravity in each cell as well as the charge voltage. Make sure the vent caps are installed during the charge process. This keeps the electrolyte from splashing onto the top of the battery during charge which will cause the battery to discharge after being placed in service.

The best way to check the state of charge in a serviceable lead-acid battery is to measure the specific gravity of the electrolyte. A good hydrometer is the device used in this step. Aircraft batteries are generally small in size and have small electrolyte reservoirs. Therefore, a small hydrometer is recommended such as the FR-1, available from Teledyne. Automotive or industrial hydrometers are large and require large amounts of electrolyte to get an accurate reading. Hydrometers that use three or four weighted balls are usually set for 1.265 S.G. electrolyte and will give inaccurate readings on batteries using 1.285 S.G. electrolyte.

Gill batteries use 1.285 S.G. electrolyte and when the battery is fully charged, the float in the hydrometer will read slightly above this number. The range on the hydrometer is 1.100 to 1.300. Low electrolyte readings indicate low capacity in the battery. The operating range for the Gill battery is 1.250 to 1.295. Anytime the specific gravity falls below this range, the battery should be recharged.

Battery cell temperature should be kept below 115 °F when charging. This is the temperature of the fluid. If the correct charge rate is being adhered to, this temperature will not be a factor.

After the battery has been fully charged, the charger can be turned off and the cables disconnected. At this point, the battery will be warm. Check the electrolyte level to be sure the fluid level is not too high. The correct level with the battery warm and directly after charge should just be touching the bottom of the split ring indicator. If the fluid is low, add additional electrolyte and bring the level to this position. Do not add water at this time.

The next step is very important and is used to determine if the battery is self discharging. One of the earlier steps in charging the battery was to put the vent caps on before charging. If electrolyte is splashed or spilled during the activation process and not cleaned properly, this film of electrolyte will cause acid bridges between the cells and cause the battery to discharge.

Using a voltmeter, set the voltage range to that of the battery, attach the negative probe to the negative terminal of the battery. Slide the positive probe around the top of the battery in between the cells. If any voltage is present, this indicates that the top of the battery has electrolyte present and is self discharging. Neutralize the top of the battery using baking soda and water. Make sure the vent caps are on tight before this is done. Mop this solution around the top of the battery. Wash off excess and dry. Repeat the voltmeter test. No voltage should be present.

Apologies to Oscar Bayer

At the Starduster Fly-in awards banquet in Wautoma last year, I was awarded the plaque for the longest distance traveled to the fly-in. It is a curious geographic anomaly that Salt Lake City is farther west of Oshkosh than San Louis Obispo.

Oscar Bayer, who flew in from San Louis Obispo, was enough of a gentleman not to correct this geographic anomaly at the awards banquet.

When the distances were re-measured, it became apparent that the plaque for the longest distance flown to Oshkosh really belonged to Oscar. I want Oscar to know that I've taken good care of his award. It's still in the box, and it will be an honor to present it to its rightful owner the next time we see him.

With sincerely apologies,
Glen Olsen

Wood Prop Installation

The Sidewinder Flyer, Winter 1997

Before slapping the wood prop on the crank hub, a little preparation is required. The bolts, bolt holes, drive lugs, and drive lug holes should be coated with a light coating of beeswax to lubricate the bolts and provide a moisture barrier between the wood and the bolt. Be careful not to get any wax on the mating face of the prop and hub, as you want to maximize surface contact and friction here. An inexpensive source for beeswax is a toilet bowl wax seal ring available from your local hardware store. Should be enough to last a lifetime.

Melt a little wax to the point of liquefying and use a swab or artists brush to coat the holes and bolts. Wipe off any excess.

Install the prop on the hub so that the blade is in a comfortable position for hand propping, should the need ever rise. Cylinder on compression at about 10 o'clock works well for me. A wood prop requires a crush plate on the front face of the prop to supply clamping pressure necessary to hold the prop to the hub. These are usually 3/8"-1/2" thick aluminum, although steel is acceptable if you need extra weight up front for C.G. reasons.

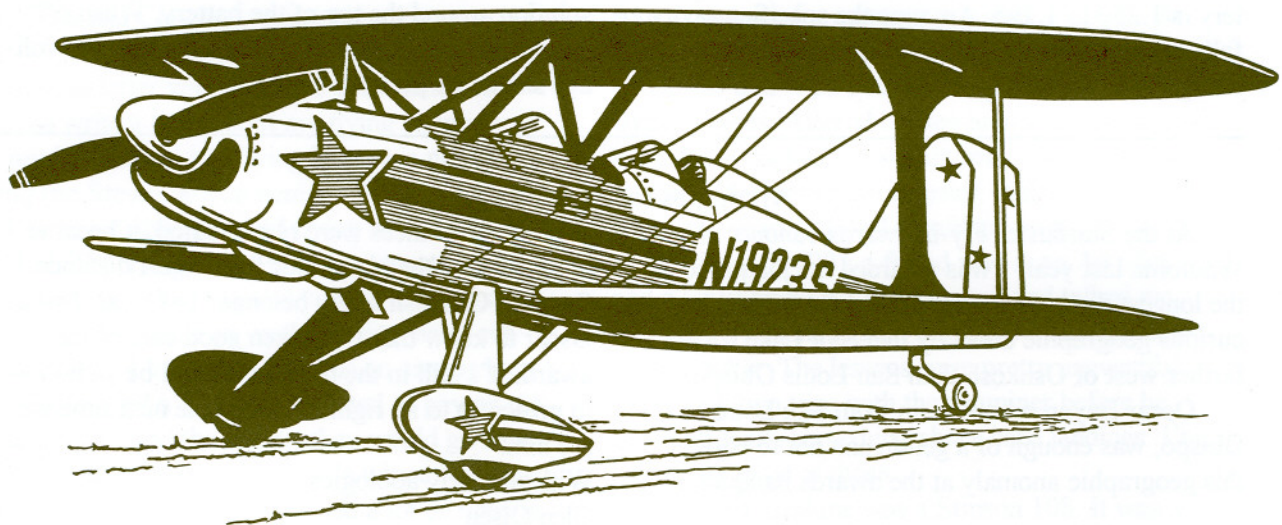
If a prop extension is used, you must use either self locking nuts or drilled shank bolts and castle nuts with cotter keys. If the bolts thread directly

into the crank lugs, drilled head bolts are used and safety wired in place.

It is important to correctly torque the prop bolts using the prop manufacturers recommended torque. Be sure you understand the difference between foot pounds and inch pounds of torque! Don't laugh . . . I recently read where a lad ruined a wood prop by torquing his prop bolts to 240 foot pounds rather than inch pounds! Doing that will result in a small pile of kindling for your fireplace!

When torquing self locking nuts, the bolts install from the front with the nuts on the rear face of the hub (or extension). The torque should be applied to the nut while the bolt is held from turning with a box end wrench. Use a crow's foot socket on your torque wrench installed at 90 degrees to the handle to maintain the torque value. Use a light setting first, with a crossing pattern to gradually and evenly bring the bolts up to the proper tightness. After all bolts are at the proper torque, go around one last time in a circular pattern to ensure all bolts are at the same torque.

The bolts should be re-torqued after five hours of engine run time and at least every 20 hours or three months thereafter.



Odds And Ends

We Have More Pilots Than You

Dateline: Unidentified California Newspaper Quick, how many active pilots are there in California? According to the aviation division of the state highway department, as of last July there were (ready?)... 79,950 pilots, of which 9,119 are flight instructors.

In other words, approximately 12.7 percent of the nation's 622,261 pilots and 11.7 percent of the nation's CFI's make California home—the largest pilot population in the country.

While the national pilot population has declined by a drastic 25 percent over the past decade, the number of California pilots has remained relatively consistent, dropping only four percent over the past 10 years.

The number of maintainers in the state corresponds pretty well with the number of aircraft. According to the Caltrans report, there are 23,279 aircraft registered in California, which represents 12.8 percent of the country's total population of 181,341 General Aviation aircraft.

California has 256 public-use airports, 31 primary commercial airports, 140 medical heliports and 27 military airfields.

There was a total of 9.9 million aircraft operations at towered airports in California. With three of the top 10 busiest airports in the country (Los Angeles International, John Wayne-Orange County and Van Nuys), the L.A. basin has the largest amount of flying activity in the U.S.

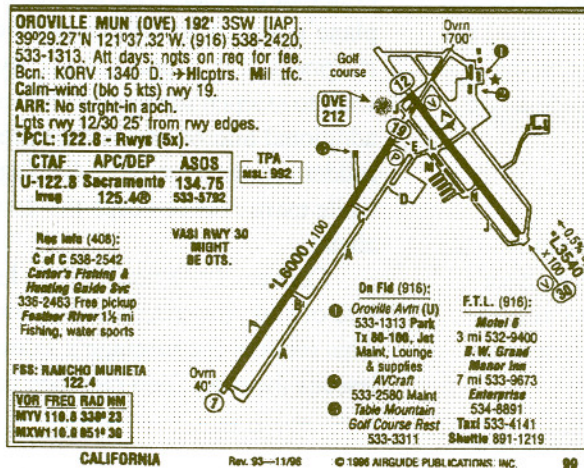
Despite the state's high ranking in aviation activity, fuel sales figures compiled by Caltrans evidenced an overall decline in GA activity in California. During fiscal year 1990-91, 44.7 million gallons of avgas were sold; in FY 94-95, that number was down to 36.6 million gallons.

Jet fuel sales, on the other hand, increased during the same period, from 57.3 million gallons in FY 90-91 to 66.6 million gallons in FY 94-95. Maybe all those GA pilots bought jets?

Editors note: Since the editorship of the *Starduster Magazine* has just changed from California to Utah, there appears an inherent obligation not to let the above claims go unchallenged. We accept the above facts without question. However, when considered in light of the fact that California is the most populous state in the Union, with a population of 29,760,000, they may not be all that impressive.

Let's compare Utah and California on a per capita basis. On a per capita basis, Utah has 1.25 times the number of registered pilots as California; 1.17 times the number of CFI's; 1.8 times the number of ATP's; and 3.5 times the number of airports. Given that California has three of the top ten busiest airports in the U.S., Utah, while only fifteenth in population among the fifty states, operates the thirteenth busiest airport in the U.S., Salt Lake International.

Oroville Airport Facility



① Starduster Corp. Headquarters

The Lost Art Of Flying

By Ron Fowley

Plane & Pilot, November 1996

When grizzled old pilots sit in the lobby of a modern airport, they tend to hunch in the far corner of the room and grumble about how the slip to a landing has become "the lost art of flying." And, of course, they're right. After all, what good is a slip nowadays? In the old days, it was the pilot's only means to steepen an approach over the treetops and onto a short landing strip.

But now we have efficient flaps and longer runways. Therefore, the slip to a landing became an outmoded, inefficient and unsophisticated means to steepen an approach. But it also provides some of the greatest fun that flying has to offer.

Pilots who can skillfully slip their airplanes seem to get no end of pleasure from the procedure—stiffening the slip to increase the rate of sink, reducing the sink at will with a deft flick of aileron and rudder, steepening the glidepath a final time with a mash of rudder—landing the airplane exactly where they wish. The difference between an accuracy landing and "just getting it down" is whether or not the upwind wheel plants exactly dead center on a hubcap-sized touchdown target.

Probably the first step in learning the slip is to simply stand near a runway's end and watch a bunch of planes slip in over the tree line, studying the maneuver from a vantage point outside the cockpit. You won't find these slips going at a big city airport catering to Bonanzas, Mooneys, King Airs and the like. Instead, go out to the uncontrolled sod field that fills its Saturday pattern with Luscombes, Cubs and Taylorcrafts (*And Stardusters!*) Study each little slip as its pilot slips to a butterfly touchdown on the turf. And, make no mistake, those pilots don't really need to slip. They could easily make two or three landings on the average country runway of today. They do a slip just because it's fun and looks good.

Why Slip?

The purpose of a slip to a landing is merely to steepen the glidepath on final approach without increasing the airplane's airspeed. Pilots accomplish this feat by simply flying the airplane sideways through the air.

To see how this maneuver works, imagine a pilot who has just turned from base leg and now is established on final approach. At this point, the pilot realizes that the approach is too high and decides to steepen it with a slip.

The first move is simple—close the throttle to idle power. It would make little sense to lose altitude with a slip while maintaining power that tends to reduce the rate of sink.

Crosswind Down the Approach

Once the throttle is closed, the next step is to remind yourself which way the crosswind is blowing over the runway. True, the direction of the crosswind has little affect on the slip during the final approach. But, somewhere prior to touchdown, you must shift from the "slip to a landing" to "slip for crosswind correction." And this shift is easier to accomplish if you've slipped with the "down-wing" into the wind.

Assuming that you're facing a left crosswind, you'd establish the slip by using considerable aileron to bank left while simultaneously mashing in firm right rudder to swing the airplane's fuselage to the right and at an angle to the forward flight path. With equal firm aileron and rudder pressures, the airplane descends straight ahead but flies sideways through the air—banked left, yawed right.

Controlling Rate Of Sink

It's this sideways flight attitude that steepens the approach. The attitude presents the side of the fuselage to the oncoming relative wind. The excess drag that the maneuver creates causes the airplane's descent to steepen appreciably. And yet the steepness of the approach is easy to control. If you wish to steepen the approach even further, apply additional aileron and rudder pressure. The extra rudder swings even more fuselage into the wind, while extra aileron keeps the descent going straight ahead.

Conversely, if you wish to lessen the airplane's rate of sink, just decrease the control pressures. This reduces the fuselage's sideways attitude and lessens the drag. You can then control the rate of

descent to make a perfect glidepath toward the touchdown target.

Managing Airspeed

But here's the tricky part—for a touchdown right on the mark, you must maintain the proper approach speed throughout the slip to the landing. And doing that means knowing your airplane, since in many airplanes the airspeed indicator is inaccurate during a slip. This inaccuracy stems from a pitot tube that's not aligned with the wind and a static port that may no longer be receiving neutral pressure as the fuselage is turned into the wind. Add to this the fact that the airspeed changes during the cross-controlled attitude. Many airplanes slow down in the slip and you must lower the nose slightly to maintain approach speed.

Some airplanes, on the other hand, may tend to gain speed. In either case, you must know your airplane well enough to determine the correct airspeed by the sound of the wind over the windshield and feel of the controls. As you roll out of your slip at the bottom end of the approach, the airplane's nose must be returned quickly to the attitude that will continue to produce the correct approach speed.

Once you've brought your plane down accurately toward the touchdown target, you make a shift from the "slip to a landing" to the "crosswind correction slip." To do this, simply release enough rudder pressure to let the fuselage align with the flightpath and the runway centerline, maintaining just enough aileron to correct for the crosswind touchdown and roll-out.

Different Slips

Pilots sometimes ask what the difference is between a slip used to correct for a crosswind and a slip used to lose altitude. The only difference lies in the degree of the slip and the degree of control

pressure. In a slip used to correct for a crosswind, only enough aileron is used to prevent the plane from drifting, and only enough rudder is applied to keep the fuselage aligned with the centerline. In correcting for a left crosswind, for example, the airplane is banked to the left, but the nose points straight ahead. In a slip used to lose altitude, however, stronger rudder pressure is applied to deflect the fuselage away from the flightpath, while matching opposite aileron keeps the airplane's flightpath on course. The airplane's wings are banked left while the plane's nose is pointed right, for example. Think of the differences in control use in this way:

Slip to a landing: Ailerons—used to maintain flightpath; rudder—used to deflect fuselage.

Crosswind correction slip: Ailerons—used to prevent drift left or right of centerline; rudder—used to keep fuselage in centerline alignment.

Practice At Altitude

Begin your in-flight practice by taking your airplane to 3000 feet AGL. (After, of course, reviewing your airplane's flight manual to make certain that prolonged slips are an approved maneuver, a few models prohibit them.) At this altitude, align your airplane with a long, straight road and throttle back, leaving 1500 rpms in the engine to keep it warm. Then practice rolling into and out of the slip as you descend several hundred feet.

After you feel comfortable with the cross-control attitude of the slip to a landing, carry your practice to a runway for the full approach and landing sequence. Practice until you're good—really good. Then carry your act to an audience that will appreciate your skill—a country airport pattern. And spend the afternoon in the company of those Cubs, Luscombes and Taylorcrafts (*And Stardusters*) as you preserve "the lost art of flying."

18TH ANNUAL STARDUSTER OPENHOUSE

Oroville Municipal Airport



Friday, May 1, 1998

10:00 a.m.	Registration opens
1:00 p.m.	Complimentary snack & soft drinks
4:00 p.m.	Leave airport for houseboat cruise
4:30 — 7:00 p.m.	Houseboat cruise (drinks & hors'd oeuvres)
6:30 p.m.	Social time, Bidwell Rec. Hall
7:00 — 9:00 p.m.	BBQ Dinner

Saturday, May 2, 1998

5:45 a.m.	Briefing for dawn patrol
6:00 a.m.	Depart for Willows for breakfast
8:00 — 10:00 a.m.	Pancake breakfast (At Fly-in) \$4.00
10:00 — ??	Local flying, rides and informal folklore
	Organized flight over City & Lake Oroville
11:00 — 1:00 p.m.	Sack lunches available
12:00 p.m.	Antique store tours and other sightseeing
6:00 p.m.	Social hour
7:00 p.m.	Awards Banquet

Sunday, May 3, 1998

8:00 — 11:00 a.m.	Pancake breakfast, \$4.00
8:00 — ??	Local flying and departures

**Let us know if you are coming
Please contact one of the following—**

Ray Bell, EAA City of Gold Events Chairman

530.345-3453-home, 530.345-3453-FAX

Dave Baxter, Starduster Operations Manager

Les Homan, President, Stolp Starduster Corp.

510.516-1094-home, 530.534-7434-office, 530.534-7451-FAX, stardstr@pacbell.net- e-mail

Hotel Reservations should be made in advance

Travelodge— 530.533-7070, FAX 530.532-0402

Villa Motel (AAA)— 530.533-3930

Grand Manor Inn (Best Western)— 800.626-1900, or 530.533-9673, FAX 530.533-5862

Days Inn— 530.533-3297, FAX 530.533-4809

(See Oroville Airport Facility Diagram Page 29)

CLASSIFIEDS

ADVERTISING CLOSING DATES: MARCH 1, JUNE 1, SEPTEMBER 1 AND DECEMBER 1.
CLASSIFIED ADVERTISING RATES \$5.00 PER COLUMN INCH, MINIMUM CHARGE \$5.00.
MAKE CHECKS PAYABLE TO STOLP STARDUSTER CORPORATION. THANK YOU.

Starduster SA-100 project. Fuselage, controls, cabanes, on gear, ready to cover. Sheet metal to S/S firewall, dynafocal mount for 0-320, all instruments, ribs, new Clev. wheels/brakes/tires, Scott 2000 tailwheel. \$6,000. Also, Starduster II I-struts, \$200. Call Bob at 520.722-3117 evenings/weekends. Tucson, AZ.

Acroduster Too fuselage tacked together. Make offer. Jonny Nimmons, 6426 Rayo Del Sol, Houston, TX 77083. 281.934-4707.

Starduster SA-100, needs lower left wing, landing gear straightened. Engine available. Fun, economical flyer. Call Gary Melton, home 310.694-3098, work 714.759-2930.

Starduster Too. Airframe 2/3 completed. Materials to complete airframe. Fuselage on gear, Wing ribs on spars. Fuel tanks, fiberglass turtledeck, cockpit fairing, wheel covers, nose bowl, much more. A&P-A&I, FL 850.927-2432.

Starduster SA-100, good electronics, 180 hp, new paint. Call John Thomas, 209.532-2006.

1978 Starduster SA-100, 130 TTSN, 6:00x6 Cleveland wheels and brakes, Scott master heal brakes, standard day VFR plus G-meter, wheel pants, Maule full swivel tailwheel, cotton fabric, always hangared. Disassembled, with plans. \$4,500. New, zero time, 0-290-3 for \$3,000 more. Call Jim, 916.646-4504.

1988 Starduster Too, 180 hp Lycoming 0-360-A4M, 335.5 hrs TTSN, NARCO Escort II, NAV/COM, fuel cap. 45 gal, cruise at 135, hangared, white w/ brown trim. \$27,500. Call 619.562-7467.

Starduster SA-100, airframe TT 525, Lycoming

0-320, 100 SMOH, starter, generator, King KY 97A digital radio, Cleveland wheels and brakes, Scott tailwheel, wing lockers, G-meter, turtledeck cargo mod., enlarged cockpit, Acroduster II gear, 18 gal. fuel, polished spinner, metal prop, white with yellow starburst/blue trim, polished gear legs, wheel pants, \$17,000. Call James at 915.859-7272.

1976 Starduster Too, built by an ex-FAA inspector, re-covered 1994. White with red stars, 0-540 Lycoming with inverted oil and fuel, constant speed prop, Narco comm, xponder with Mode C, intercom, airframe 550 TT, engine 550 SMOH, approx. 2000 TT since new. Needs loving care by a new owner, \$32,000. Call Tevis 903.796-0383.

1989 Starduster Too, 160 hp Lycoming, smoke system, all extras. This aircraft has won numerous awards, including the Doctor Bede Perpetual Award at Merced. Capable of all sportsman category aerobatics. Call Baron 619.562-7467.

Starduster Too, Lycoming 0-360, Bendix-King 97A, Mode C, Stits, heater, spring gear, \$35,000 or \$33,000 less radios. 503.399-0809.

1964 Starduster Too, N1300S. Recently completely refurbished, painted, new prop. I'm not a pilot, so don't know of the many features it possesses, but if you want the first of its kind in existence, it is now available! Unknown engine time, but always hangared. Much TLC, labor put into preserving this in its original. California based. Call Jack 714.744-6901.

1993 Starduster Too. 225 TT airframe, 450 SMOH Lyc. 10-360. \$38,000. Call 510.370-0855.

Starduster Too, 0-360, C/S prop, 498 TTA&E, KY-97, PTT, headsets/helmets, spades, dual

controls, fun basic aerobatics. \$25,000. Call 425.252-4985.

0-435-1 190 hp Lyc. and parts. \$3500, or offer. Landing gear, SA300, modified to latest design, \$500 or offer. Call Dave, lv. msg. 810.648-1949.

1983 Starduster AS300, 220 TTA 220 hrs. on 180 hp Lyc. 0-360 w/ fixed pitch prop, looks like Pitts S2A, recent KY97A Com, Magellan GPS, hangared, 26-gal. fuel. Make offer. Call Joel, 941.643-2500.

1973-1994 Starduster SA300, SN2718, TTAF+3 256 hrs. Rebuilt 1994, new spars, brakes, strobes, cables, long range 42-gal., com 760, encoder, new paint & stits, reduced to \$26,000. Call Bob Simpson 407.884-5893, or Denny Moore 305.367-3690.

1980 Stolp V-Star SA900, 0290DI, 125 hp, 3" G-meter, EGT, CHT, Vernier throttle, full electric, Maule tail wheel, 450 TT & SMOH, very nice, \$12,000 or trades. Call 812.523-8029 or 812.522-7824.

1985 Starduster Too, 762 TT, 0-360, \$29,500, Call 501.372-3131 or 835-6703.

Starduster SA100, 1993 Rebuild. 60 TTAF, 0-290D Lycoming, full electric, seatpack chute, \$17,000. Call Gene 931.635-2325.

Starduster Too Project. Back on market, fuselage, tail feathers done and on gear, wings built, many extras. \$5,000. 248.347-1791.

1979 Starduster Too. 910 TT, 400 SMOH on IO-540, 275 hp, full gyro panel, spare canopy, King digital radios, M1 Loran, Call Don Patch, Northeast A/C Sales, 207.774-6318, or 207.883-4976 evenings.

Starduster SA-100, 650 TT, 150 hp, inverted fuel/oil, Sensinich 74DM-6-060 prop, 9 inside/ out, fresh annual 9/79, \$14,000. Call 602.938-5922 or 581-7481.

Calendar of Coming Events

May 1-3— 18th Annual Starduster Open House, Oroville, CA. All types of biplanes invited. Food, fun and fellowship. Houseboat cruise on Lake Oroville, sightseeing, fly-in breakfast— and lots of Stardusters! There is a possibility that the EAA B-17 will be at the fly-in also.

April 19-15— Sun 'n Fun EAA Fly-in, Lakeland, FL. Look for the Stolp Starduster Corp. display booth.

June 4-6— National Biplane Fly-in, Bartlesville, First annual Starduster gathering at Bartlesville. Starduster forums and displays are planned. Let's make Stardusters a major presence!

July 8-12— Northwest EAA Fly-in, Arlington, WA.

July 29-August 4— EAA International Fly-in Convention, Oshkosh, WI. Again, look for the Stolp Starduster Corp. display booth at the Oshkosh Convention.

September 25-27— Golden West Fly-in, Castle-Merced AFB.



Dave Baxter
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