U S U A FLYING CLUB 1 NEWSLETTER

May 1988

FROM THE LEFT SEAT

by Paul McCLung

We had a pretty good work day at Whitman Strip. The field looks a lot better, sort of "Spring Cleaned". I'd like to extend thanks to some people who went the extra mile. Thanks to Wendell Edmonds for recharging our fire extinguishers and situating them at the hangars. Wendell's one of our Safety Officers. It's great to see safety consciousness at work. Thanks to Jim Laurenson for zapping our windsock with Day-Glo Orange paint. The faded fabric was getting hard to see from the air. You can now see what direction the wind at Whitman Strip is blowing all the way from Charlottesville! Thanks to Tom Allder for supplying paint for the hangar eaves. There are still two hangars to go, but the two which have been painted look one hundred per cent better. And special thanks to Ed Whitman for his continuing assistance in keeping Whitman Strip a happy place to fly. He provides the land, the equipment, the materials, the help and the friendly hospitality which make Whitman Strip a reality. On the work day just past, not only were we using Ed's pickup truck to cart off all the trash, Ed was out harrowing and grading the rough areas in front of the hangars.

The Winchester Fly-in is just about to happen. There's been a lot said about how much fun it's going to be flying up and pilots this and pilots that. Well, whether you're flying or not, the Winchester Fly-in is an enjoyable event. There's no reason not to drive up, be with some of your friends from the club, see a number of interesting aircraft and talk up the virtues of ultralighting. It's an excellent opportunity to show off your new club patch. If it looks like a do-nothing weekend, then throw a little camping equipment in the car and join the ultralight tent city that will be blossoming on the airport grounds Saturday night. We are all interested in aviation, or we wouldn't be members of a flying club. This is one of the premier events of the year for the aviation buffs in the Washington area. Join us at Winchester!

Fly Safely!

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ADVISORIES

Please welcome new member Jay Dunn, who joined the club at our last meeting. Jay is from Hedgesville, W.Va.

The EAA 186 Spring Fly-in at Winchester Airport is right on top of us. The club's flight to this event will take off from Whitman Strip on Saturday morning, April 30, promptly at 9:30. This affair is shaping up to be a real success, with eight to ten club pilots taking part. If you want to make this flight and campout, get yourself (and your camping stuff unless you already have ground support) to Whitman Strip in time to take off with the flight at 9:30. Questions relating to the flight itself should be directed to Tom Simmons (703)548-7420. Questions relating to the campout and the weekend in general should be directed to Rob Brooke (301)279-2816.

Your attention is called to two

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scheduled events in May: the club's planned May 14 Ultralight Lunch Flight to Orange County Airport, followed by some festivities at Whitman Strip and EAA 186's May 29 Luncheon Flight to Luray Caverns Airport.

CLEAN-UP DAY

Saturday, April 23, was scheduled as a work day at Whitman Strip and, in spite of a disappointing turnout, a lot of work got done. Most of the morning was spent loading up a considerable amount of trash, castoff building materials from the recent hangar construction and other indescribable stuff and carting it off to the dump. The result in space-saving in and around the hangars, not to speak of the improved appearance, is impressive. Two of the four large hangars got a coat of paint on the south-facing eaves and some of the siding in back of the hangars, damaged by wind, has been replaced. The space immediately in front of the hangars has been disc-harrowed and graded. This last operation was sorely needed. There were some pretty severe ruts impeding the rolling of planes in and out of the hangars. A tip of the hat in gratitude for their day of effort to: Tom Allder, George Andrews, Rob Brooke, Jim Laurenson, George and Paul McClung, Steve Osten and, of course, Ed Whitman.

KEEP 'EM FLYING

In last month's issue, we were reminded of the threat to your sport posed by the FAA's NPRM relating to Mode C transponders. We have still got time to make a response. The deadline for responses is May 12.

A lot of us are willing to get up on a soap-box at club meetings to take issue with anything that we perceive as injurious to our treasured "freedoms" as ultralight pilots. Well, its time to put our money where our mouths are. The money? One dollar! Yessir, one dollar, the price of four first-class postage stamps. That's what it will cost you to mail a letter to your U.S. Representative, both of your U.S. Senators and to the FAA. Most of us are usually willing to sit back and let other people do our acting and speaking for us. But if you care a damn about continuing to fly from Whitman Strip, now is not a good time to let others fulfill <u>your</u> responsibilities. Numbers count!

So sit down immediately and scrawl out a letter decrying the FAA's action and mail copies to the four destinations above. The letter should say reasonable things about how misguided the solution is in achieving improved air traffic safety and control. Recommend the adoption of AOPA's alternative solution. Ask that controlled airspace be reduced, not expanded. Request that the FAA be made independent, not part of the Department of Transportation. Don't use obscene language. <u>DO WRITE</u>. Do ask for a reply...and tell them you don't want a copy of a form letter from the FAA.

The mailing address for all U.S. Senators is:

The Honorable (name)
Senate Office Building
Washington, DC 20510

The mailing address for all U.S. Congressmen is:

The Honorable (name)
House Office Building
Washington, DC 20510

The mailing address for the FAA response is:

Federal Aviation Administration
Office of the Chief Counsel
Attn: Rules Docket(AGC-204)
Docket Number 25531
800 Independence Avenue
Washington, DC 20591

(KEEP 'EM FLYING, cont.)
The following are the names of the legislators from Maryland and Virginia:

Maryland Senators -
Paul S. Sarbanes
Barbara A. Mikulski

Maryland Congressmen -
Helen D. Bentley
Beverly B. Byron
Benjamin L. Cardin
Roy Dyson
Steny H. Hoyer
Tom McMillen
Kweisi Mfume
Constance A. Morella

Virginia Senators -
John W. Warner
Paul S. Trible

Virginia Congressmen -
Herbert H. Batemen
Thomas J. Bliley, Jr.
Frederick C. Boucher
Dan Daniel
James R. Olin
Stan Parris
Owen B. Pickett
Norman Sisisky
D. French Slaughter, Jr.
Frank R. Wolf

STITS IT
by Paul McClung

Looking for great UV protection? Want your sail colors to come alive? Want to tighten that loose fabric? These and other advantages can be yours by covering your sails with Stits.

What's Stits, you say? Well, Stits is Stits Clear Aerothane Enamel, an aircraft fabric finish (dope), one of many on the market that have been used for years on fabric-covered aircraft. Many of our club ultralights are enjoying the benefits of the Stits finish.

The finish comes in two parts, like epoxy. It can be sprayed, rolled or brushed on. Spraying will get you the best results, but must be done in a well-ventilated area using proper techniques and equipment, including a respirator. This stuff is toxic! Along with all that, your spraying area must be free of dust, dirt, bugs, etc.

One gallon of the stuff will cover the top of an MX wing as well as the tail feathers, two coat's worth. Along with great UV protection and color enhancement, your sails will "smooth out" and the weave of the fabric will "fill in", become non-porous. This can maybe improve the performance of your airfoils, resulting in higher speed, better climb and better economy. I say "maybe" because it adds weight - six to eight pounds, which could offset your smooth sail's slippery advantage. Stiffened fabric is also not as easy to unzip and move aside to inspect the inside of a double surface wing, much less to put in a new tube.

If it sounds and looks good to you, but you don't want to go to the trouble of doing it yourself, Windstar Aviation, a national distributor of Stits process materials, will spray your plane for $200 for a single surface wing, $250 for a double surface wing, tax included.

GETTING THERE
by Rob Brooke

This fourth chapter in the series on cross-country pilotage has officially to do with your airspeed indicator (ASI), but what we'll really be talking about is airspeed itself, and how your airplane behaves. Every airplane has two special airspeeds, unique to it, which are important to cross-country flying: 1) trim speed and 2) best L/D speed.

Trim speed is the speed the airplane tries to fly. If you chop the power, the plane will assume the glide necessary to maintain trim speed. If you add power above the minimum necessary to maintain level flight, the plane will assume the climb necessary to maintain

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trim speed. If you dive the plane and pick up speed, as soon as you release the forward pressure on the stick, the plane will zoom, trading speed for altitude, until trim speed is again regained.

To fly at trim speed is nice for long cross-country flights because it is effortless. The plane flies along steadily at that speed with little attention from you. If you're going to be drilling holes in the sky for an hour or two, you will enjoy it more if you don't have to keep pushing or pulling the plane into a speed it doesn't want to fly. Far better to settle into a speed the airplane likes and make only minor corrections. Having to maintain constant stick pressure is **BAD NEWS**. You will arrive tired and unhappy.

So get to know your airplane. Discover the engine RPM's needed to keep the plane at a steady altitude (yes, use your altimeter) with a minimum of stick pressure. Some ultralights are stable enough to allow hands-off flight; others require constant shepherding, but all have a natural trim speed which you should find out. When you think you've gotten to know your plane, when it's flying at trim speed, check your ASI to find out what it is. It'll vary a little with load differences, but it doesn't change much. Check it a number of times until you're sure you've got it and the ASI is reading about the same speed each time.

The other speed I mentioned, speed of best lift-to-drag ratio (L/D), is the speed for your airplane at which the wing operates the most efficiently. Without going into a lot of technical detail, at this speed, the wing is generating the most lift for the least penalty in induced drag. If you fly any slower, you start using more engine horsepower in generating lift; if you fly any faster, you start using more engine horsepower overcoming drag. The two traits of your plane which are evident at this speed which are useful for cross-country pilotage are: 1) best rate of climb and 2) best fuel economy.

If your manufacturer hasn't provided you with a best rate of climb speed, get out and discover it for yourself. You'll need your altimeter, your ASI and a stopwatch. Do your testing at a time of day when thermal activity is not a factor. Start each test climb from the same altitude. Conduct each climb at the same engine RPM. Do your best to maintain a steady airspeed during each climb. Using the stopwatch, see how long it takes to climb some selected increment of altitude, say 500', as indicated by your altimeter. Make a number of test climbs, each at a pre-selected airspeed (best rate of climb for most ultralights will be somewhere in the 35 - 45 mph range). Vary the selected airspeed in small increments until you have narrowed down the range, then conduct more tests until you are sure you have nailed it. Be nice to your engine; you don't have to use full throttle. Eighty percent power will yield the same information. Of all the speeds you try, shortest time for unit altitude gain at the selected RPM's wins. That's your best L/D speed.

Now comes the useful part. What you'd really like to have happen is for your trim speed to equal your best L/D speed. Back when I owned an Eipper MXL, I was the happy beneficiary of such a circumstance. Trim speed was about 41 mph and so was best L/D speed. The mileage I used to get out of that plane on <u>long</u> cross-country flights was legendary. The thing burned an honest two gallons per hour which gave me a still-air range of 82 miles with a gallon in reserve. Give me a tail wind and, gang-busters!

So let's revisit trim speed. If your trim speed is somewhat faster than your best L/D speed, you might want to leave it alone (unless your fuel usage is atrocious), reasoning that trading a little fuel economy

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for a better airspeed is a good compromise. Reducing your air time reduces your fatigue, and that's good. But if your trim speed is slower than your best L/D speed, you want to fix that. There is no sense in paying a fuel penalty to go slower so you can be more tired when you arrive.

The two normal methods of increasing trim speed are moving the Center of Gravity forward or raising the leading edge of the horizontal stabilizer. Other methods include adding a trim tab to the elevator (bent UP to force the elevator DOWN to increase airspeed) and using bungee cord to induce a fixed amount of forward pressure on the stick.

When you get through with all this experimentation and adjustment, you will know how fast your plane cruises. Next month, we explore the last of your cross-country flight instruments, the lowly wristwatch. You will now have all of the knowledge you need for successful ultralight cross-country pilotage: course, direction, altitude, rate and, last-but-not-least, time.

NEW PLANE
by Rob Brooke

This series, for those of you new to the NEWSLETTER, has been dealing with my ongoing experiences in the construction of a Kolb Firestar ultralight. Prior to the beginning of April, the airframe was complete, except for some few small details, and covering (Stits process) had begun on some of the smaller control surfaces.

The month of April, while not a record setter, has seen a steady progress on the Firestar. My last session with the fuselage saw the control cables led through the bulkhead fabric and temporarily attached to stick and rudder pedals. Permanent attachment will have to wait until the rudder and elevators are permanently attached, so the cable length adjustments can be made properly. In addition, I got the fiberglass reinforcing done on the fairing while it was riveted to the cage and could then remove it to get the instrument panel mounted and get it patched and prepared for painting. You have all had to suffer through my dissatisfaction with the fairing. What really put the cap on it was my having ordered and received a pair of wheel pants from an outfit called "Harbor Ultralights" on the west coast. They came a couple of weeks ago and they are beautiful. They represent what should be expected from commercial fiberglass work. They have a flawless gelcoat finish, the glass is impeccably molded, they are as alike as two peas in a pod and perfectly symmetrical. The Kolb fairing, on the other hand, looks like it was laid up by a drunk kindergartner on his first papier-mache project. The thing doesn't fit the cage it was (supposedly) designed for, is unsymmetrical, poorly braced and has a finish that looks like smallpox. Ah well, such is the fate of the kit builder. Having got the wretched thing home after bracing it with fiberglass on the cage, I have spent hours and hours patching with polyester body putty to get it presentable for painting. That and lots of sanding. Anyway, it's done. The fun part was mounting the instruments.

I got my instruments from SkySports in North Carolina. They have a nice catalogue of instruments, so it was easy to draw up my shopping list. If you have been following my Getting There articles, you know exactly which instruments I bought. For the engine, tachometer, hourmeter and CHT; for flight instruments, ASI, altimeter and compass. I also bought a sheet of black ABS plastic stock for an instrument panel and some itty-bitty Lord mounts to mount it to the fairing to provide some vibration isolation. Planning the instrument layout, drilling all the holes and fitting the whole thing to the fairing was sheer Erector Set ecstasy. The fairing isn't

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painted yet, but I can look at it with its complement of instruments and know that it will be nice to use in flight.

Covering has been proceeding steadily. All of the tail group is now covered, with the exception of the lower vertical stabilizer, which cannot be covered until the fuselage tube has been primed. That will occur soon after I have retrieved my paint spray gun from a friend in USUA Club 4, who is using it to prime the fuselage frame of an Avid Flyer. I have got one aileron covered and the other will probably be underway or finished as you are reading this. That leaves the really major part of the covering job, the wings and the fuselage cage. I expect to make serious inroads in those areas this month.

The only other accomplishment I can think of was the installation of a fuel sight gauge on the left side of the cockpit bulkhead. This is the only departure I have made from the stock Firestar and, given my aging stiff neck, will be worth its weight in gold. It was easy to engineer. I riveted a piece of .032 aluminum (left over from kit supplies) to the rear cage in such a way as to stretch, top to bottom, the height of the fuel tank. The flanges that are riveted to the tubing of the cage are bent so that the main surface of the plate lies along the plane of the bulkhead fabric. A couple of 1/2" holes drilled in the plate at the top and bottom level of the fuel accept the same sort of elbow fittings as are mounted in the fuel tank itself. By stretching a vertical piece of fuel tubing between these elbows on the pilot's side of the bulkhead, and by connecting the elbows with fuel line to similar fittings at the top and bottom of the fuel tank, I can view the fuel level in the tank by looking at the vertical tube beside my left arm. I killed two birds with one stone when I leak-tested the whole system. I filled the tank to its limit with pure gasoline (yep, it holds exactly five gallons). I had prepared a plastic jug which I calibrated with a magic marker for exactly four quarts, using a quart-sized kitchen cup measure at home. I then withdrew the gasoline, one gallon at a time, from the fuel tank (easy to do when your fuel line isn't attached to the engine, just let 'er down into your jug). After each gallon was withdrawn, I marked the fuel level in the fuel tank with the airplane sitting on its gear. I then raised the tail wheel to flight attitude and marked the fuel level on the bulkhead next to the sight gauge. These markings should allow me to: 1) know how much fuel I have the capacity to add when I'm sitting on the ground next to the fuel pump and 2) know how much fuel I have remaining while I'm in flight.

The trailer is (I hope) under construction. I expect to have the use of it by the end of April. I also have the offer of a locale and some professional quality paint spraying equipment within 20 minutes drive of my home. It's beginning to feel as if I have most of the problems solved. What remains of work is to get the remaining covering done and then some weeks worth of painting chores. Once the plane is ready to paint, with the trailer, I'll be able to move it to the paint sprayer and get that job done as quickly as I can. Once painted, the mounting of the engine and final rigging of controls and windshield will go very quickly. I hope to be able to announce, at least, the completion of the covering chores next month.

FLIGHT PLAN

Apr 30/May 1 - Club flight and campout weekend, EAA 186 Spring Fly-in, Winchester Municipal Airport. Takeoff at 9:30 AM.

May 14 - Lunch Flight to Orange County Airport and Whitman Strip hangar party. Takeoff at 10:30 AM. Hangar Party at 3:00 PM.
Rain date, May 15.

May 29 - EAA 186 Luncheon Flight to Luray Caverns Airport. Plan arrival for 12:00 noon.

CLASSIFIED

FOR SALE - Pioneer Flightstar, very low time ultralight, floats, trailer, electric start, wing covers and more. Maintenance logs available, excellent condition. Leaving the country, must sell, $5000. Call Stephan Francois, (301) 391-4431.

CALVIN AND HOBBES BILL WATTERSON