USUA FLYING CLUB 1 NEWSLETTER

May 1990

FROM THE LEFT SEAT

by Tom Simmons

"As flies to wanton boys, are we to the gods; they kill us for their sport." Perhaps what the Bard intended to say is, "As fliers, the gods kill our sport with wanton weather."

Certainly the month of April, 1990, will not be remembered for its sunny, windless weekends. Yet there has been some flying activity.

On March 31st, the first scheduled mystery flight, Tim Hanson and myself actually flew to Berryvale airport, a short but exciting cross-country under a 700 MSL ceiling of foggy clouds. I'm pleased to say that our navigational skills were equal to the challenge, although I will admit that it was unusual to confine our landmark spotting to an area of no more than several hundred yards in any direction.

Several other club pilots have earned Frequent Flyer credits for their Mystery Flight exploits: Rob Brooke, Jim Laurenson and Andy Schaffer, that I know of. Any one else who feels they have qualified should contact me.

Looking toward May, I am assuming that the weather can only improve. An updated flight schedule is included in this newsletter, to whet your appetite and stimulate your participation. There is even talk of a flight to Kitty Hawk this summer. Anyone who's interested in that outing should contact me or Rob Brooke.

So, everyone whose plane is not airworthy, let's take advantage of the crummy weather to get it in shape. And when the great flying weather is upon us, as it most surely will be sometime, let's have no excuses. Let's fly!

Fly Safely!

ADVISORIES

Remember that June's meeting will be held on Sunday, June 3rd at Whitman Strip, not at Washington Gas Light the following Thursday. Meeting time will be 10:00 AM. As the meeting also falls on an odd weekend day - an automatic Mystery Flight - departure time for the Mystery Flight will be delayed until 11:30 AM.

Once again, June 3rd meeting at Whitman Strip, 10:00AM; Mystery Flight departure, 11:30AM.

By now, many of you may have heard about Al Carpenter's "incident" while flying with a student. USUA #6 published Al's report in their newsletter, and I have reported it in full in this newsletter. Consider it this month's installment of Jim Laurenson's IF column. It makes sobering reading.

EAA 186 is sponsoring their annual fly-in at Winchester on May 5th & 6th. Winchester is an insurance required airport for ultralights, but there may still be a contingent going. They miss us!

ACCIDENT/INCIDENT REPORT

by Al Carpenter

Narrative addendum to USUA Accident/Incident Report concerning incident occurring March 21, 1990, Maxair Drifter MU-532, pilot A. R. Carpenter.

After takeoff and departure from home field I flew at 1000 ft. directly to property belonging to the family of my rear-seat passenger. Upon reaching that property, I descended and circled twice at 500 ft. to enable the passenger to take pictures. While circling I visually evaluated a field on the property as having good potential for ultralight vehicle flight operations. It appeared to me to be approximately 200 ft. wide by at least 1200 ft. long, with a hedgerow of 50-75 ft. tall trees at the far end and scattered trees at the near end, starting about 100 ft. in height and becoming progressively shorter as the end of the field was approached. I carefully searched the field and its approach and departure areas for obstructions, particularly wires and cables and their support poles, and I saw none, other than the trees mentioned previously. Since the property is rural, not in a congested area, and the property owner has expressed to me an interest in ultralight vehicles and their possible operation on his property, I elected to make a practice approach to the field, no landing intended, and I so informed my passenger.

The sun was in front of me but high enough not to cause any glare or other difficulty in observing the approach or potential landing area. The field was flat, with 5-6 in. deep cover of wild onion shoots, medium green in color. I established a power-off glide at 50 MPH after turning final; again I looked for obstructions and again I saw none. I descended to approximately 15-20 ft. above the surface of the field and announced to my passenger that there was plenty of room in the field and that we had just completed a typical approach. Then I added power to level off, planning to traverse about half the length of the field at that altitude before adding power to climb out, thereby simulating a takeoff as well as a landing approach at this field.

Almost immediately after adding power to level off, I felt unusual but light deceleration and bumping forces on the aircraft and the engine started to run rough, sputtered, then quit. The deceleration and bumping continued for a moment until the aircraft pancaked almost straight down from 10-15 ft., landing slightly right-wing-down. The right gear leg collapsed and the aircraft continued the right turn imparted by one of the two electrical cables I had flown into. That caused the aircraft to come to rest approximately 300 ft. from the first point of contact with the cables, approximately 4 ft. from point of impact with the ground, with 180 degrees of heading change from the heading at first cable contact. My passenger informed me that he was unhurt and I determined that I was unhurt also. Although the pancake descent had been very rapid, the bending of the chronology gear leg had dissipated most of the energy in landing and the landing sensation was not at all severe. Pilot and passenger then unstrapped seat belt and shoulder harnesses, exited the aircraft, removed

safety helmets and took stock of the situation.

There were no injuries; property damage to third parties was limited to two copper cables belonging to the utility company being severed; aircraft was minimal - one gear leg, prop, elevator pushers and Pitot tube destroyed and minor repairs needed on the fiberglass nose fairing and the rear portion of the aluminum fuselage tube. Some miscellaneous small plastic parts will need to be replaced also.

Investigating the scene the following day and analyzing the evidence to reconstruct the incident produced some interesting and thought-provoking information. The poles supporting each end of the span of cables I hit were effectively buried in trees or bushes well clear of the open field and the cables themselves were bare copper, corroded to a medium green color very similar to the color of the field full of wild onion shoots. Only three strands thick, they were virtually invisible under the conditions existing at the time of the incident. Not only did I not see the cables prior to hitting them, we could hardly see them later, on the ground, to avoid stepping on them. Close inspection of the aircraft reveals the first contact with the lower cable to have occurred just below the vertical center of the nose fairing at the Pitot tube. Ten inches higher and it would have deflected up and into the pilot somewhere between waist and neck! Instead, it was deflected down and into the left tundra-tire, which rolled it down farther and clear of the left gear leg. The cable caught on the right gear leg, however, slid down it until contacting the right tundra-tire, which appears to have rolled it down and clear also. It is not clear what the next contact point was between the lower cable and the aircraft, but the cable did part, probably from contact with the tail wheel support spring, although I cannot confirm that theory. First contact with the upper cable was about ten inches above the pilot's head, at the wing leading edge, where the forward kingpost attaches to upper fuselage assembly. Its path can then be tracked quite easily by scrape and burn marks up the kingpost where it catches the parachute canister, rolls it 90 degrees to the right, impacts the kingpost again and bounces over and into the prop (turning at approximately 5000 engine RPM). The prop, a 3-blade Arrowprop with epoxy leading edge, stubbornly wound up and cut the cable before the engine quit under the load. The prop still looks pretty good but it suffered far too much splitting, mashing and gouging to remain serviceable, even with a huge dose of the Krazy Glue Kure!

At some point, the severed top cable, still attached to one of the poles,, became wrapped around the fuselage tube just in front of the tail. As the aircraft continued forward in flight this cable was quickly pulled taut, squeezing the fuselage tube, crushing the elevator pushrod and bringing the aircraft to a virtual halt in the air before it released and snapped back to the base of the pole to which it was still attached. Arching as it contacted the ground, the high voltage electricity started a small fire in dry leaves near the base of the pole. Better there than at the crash site! The aircraft meanwhile, retained about 15 ft. of the top cable wound around the prop and

gearbox. Vertical measurement between first point of contact of each cable with the aircraft is 45 inches!

This incident was investigated by the State Police at the scene and reported to the nearest FAA FSDO where it was classified "INCIDENT" - no further investigation required.

OVERHAUL

By Rob Brooke

My Rotax 377 was pushing one hundred hours and winter was on the way. Rather than wait for something to go wrong or for the engine to start gradually losing power, I decided to embark on a do-it-yourself top-end overhaul. I figured I'd spend over $150 getting it done at Windstar. Why not plough the money into the tools I'd need and henceforth be independent for routine engine maintenance?

I sat down with my catalogues (CPS, LEAF) and started making lists of what I'd need. When I came up for air, here's what the list looked like:

Flywheel puller	CPS	$41.95
Dial gauge & adapter	CPS	57.95
Brass feeler gauge	LEAF	3.00
Buzz-box indicator	LEAF	44.95
Cylinder aligning tool	CPS	11.65
Glaze-breaker hone	local	16.95
31mm socket	local	8.26
		$184.71

O.K., a little steeper than $150. I could have saved money by not buying the cylinder aligning tool (more on that later) and a could have purchased a timing light ($9.95) instead of the buzz-box. I guess I'll just have to do another overhaul in a year or two to finish paying myself back.

There's another list I had to make, namely, the expendables that need to be replaced whenever you tear an engine down, and items that wear or break and must be replaced. Here's what that list looked like:

Gasket set	CPS	$43.02
Piston rings	CPS	50.54
		$93.56

I was stupid to buy the gasket set. The set contains several expensive-looking items (like oil seals) which are not needed for a top end job. I would have been better off ordering individual gaskets instead of the set. The price of piston rings is, of course, shocking.

Missing from the "Tools" list is a wrist-pin puller. I elected to do the job without removing the pistons. Next time, I will add that tool to my inventory. It will be a lot easier to decarbonize the pistons, clean ring grooves and install rings with the pistons removed.

I won't glaze over your eyes with a step-by-step description of my disassembly, overhaul and reassembly of the engine; that information is spelled out very well by Mike Stratman in the current CPS catalogue, almost one third of which is dedicated to "how to" information about Rotax engines. What I want to do is pass along what I learned that isn't covered by Mike and explain some decisions I made.

The first thing I decided was to spring for a buzz-box instead of a timing light. My rationale was that the audio

indication by the buzz-box would free my eyes to look solely at the dial gauge as I set the timing. That decision was a good one - the buzz-box does keep you from going wall-eyed looking at both the timing light and dial gauge.

Experience showed that it has another virtue. It will tell you about the condition of the points and whether they are making good contact. If the audio tone change (when the points are open) is very sharp and definite, the points are in good shape. If the tone change is ambiguous and occurs at differing indications on the dial gauge, the points are dirty, pitted or otherwise not making good contact.

Which brings me to my second decision, which was not to put in new points. My reasoning here was that the phenolic cam rider on the old points was already "worn in" and would remain unchanged after my resetting the timing. New points tend to retard the timing slightly in the first twenty hours or so as the rider wears.

As I was setting the timing, the buzz-box revealed that the points needed some attention. My solution was to clean them, which solved the problem. Current folk wisdom says never to file or use abrasives on the points, so I soaked a strip of IBM card in carburetor cleaner and drew the strip through the closed points. After drying the contacts with some dry IBM card strips, they made perfect contact. Setting the timing was a breeze.

My third decision was to reuse the rings and simply decarbonize the heads and pistons. This decision was altered for me by events. I discovered when I removed the heads and cylinders that the lower ring on each piston was partially frozen in its groove. In both cases, my careful attempts to remove the frozen ring resulted in a broken ring. O.K., new rings. The lessons learned were that 1) even a low-time engine showing no abnormalities and developing good power can be building up to a problem, and 2) piston rings for Rotax engines are expensive! Wow!

There was some payback to the ring replacement. I beveled the end of a piece of the broken lower ring and made a very useful tool for cleaning the lower ring grooves. That and general decarbonization was achieved with liberal doses of carburetor cleaner, which helps dissolve carbon deposits. As I said above, next time I will take the pistons off. It will be simpler and more effective to soak the pistons for a day in the cleaner.

I made a scraper for decarbonizing out of a scrap of hardwood,sharpened to a chisel edge. I didn't think it would be a good idea to scrape with a metal implement and risk scoring the piston dome or the cylinder head. The wooden scraper did a good job and left the metal pristine.

Reassembly after the timing and ring work was not straightforward. My nice cylinder aligning tool (used to make sure the faces of the intake ports are in a single plane as the head nuts are tightened) was useless. It turns out that with a Rotax geared reduction drive mounted on the crankcase with the prop hub "up," the lower half of the cooling shroud must be installed before the cylinders - unless you want to remove the redrive. No thanks! The presence of the fan cooling

shroud, with its internal intake manifold gaskets, makes the aligning tool useless (it'll work fine on free-air-cooled engines, or on engines without the geared redrive). I used the intake manifold itself as an aligning tool, torquing it lightly in place as I gradually brought up the torque on the head nuts. More folk wisdom says that if the cylinder intake ports are out of line, it's possible to crack the intake manifold when it is torqued, resulting in major overheating problems.

I guess things are in pretty good shape. I have the engine back on the plane and the neighbor-infuriating break-in was conducted with everything "in the green." I have re-torqued the heads and I'm ready fro some serious flying.

Now, you will probably want to see how my engine fares over the long haul after my novice invasion of its private parts. But I offer my help and my shop for similar work on your engine if you can get it to Rockville. The deed can be easily done in an afternoon if the engine is pretty much bare when you bring it (no exhaust system, no carb, no upper shroud). I can handle Rotax 377 and 447. If you have a 277, buy the small roller for the dial gauge (needed for the 277's angled spark plug hole). In addition, you should bring new gaskets (cylinder head, base, intake and exhaust). It would be wise to have piston rings and, if you've got a fair number of hours on it, points and condensers. Just give me a call.

FLIGHT PLAN

May 3 - Club meeting, Washington Gas Light, Springfield Center, 7:30 PM.

Mystery Flights this month:

May 5 (Saturday)

May 13 (Sunday)

May 19 (Saturday)

May 27 (Sunday)

This is in accordance with our new plan to have a Mystery Flight on the odd date of any weekend when a planned flight is not scheduled. Also, we have decided to make Sunday an automatic rain-date for any Saturday Mystery Flight. So start thinking about flights you'd like to make, and propose a flight plan to the group that shows up. Any number can play!

Scheduled Flights for May:

May 5 & 6	Winchester fly-in
May 12	Kentmorr airport
May 19 & 20	USUA #6 fly-in
May 26	Luray & Front Royal

Mystery Flight timetable:

9:30 AM at Whitman Strip for pilot briefing.

Pilots not based at Whitman call Tom Simmons (548-3347) or Jim Laurenson (266-9532) on the previous evening to coordinate.

10:00 AM departure for wherever.

Remember your frequent flyer credits, and plan to fly often!

* * * GENERAL INFORMATION * * *

The United States Ultralight Association's Flying Club #1 is a non-profit, educational club dedicated to the sport of recreational ultralight flying.

Meetings are held at 7:30 P.M. on the first Thursday of each month in the auditorium of the Springfield Operations Center of the Washington Gas Light Company, unless stated otherwise in the newsletter. To reach the WGL Center, take the Edsall Road West exit from I-395; turn left at the second light (Industrial Road); continue until the "Y" in the road; bear right and continue until you reach the WGL Center at 6801 Industrial Road on the left.

1990 Chapter Officers

President	Tom Simmons	703\548-7420
Vice- President	Tom Alder	703\356-9133
Secretary\Treasurer	Charles Maples	703\941-8167
Member at large?	Jim Lawrenson	703\266-9532
Newsletter Editor	Paul McClung	703\787-0631

*** Members are encouraged to submit items for inclusion in this newsletter. Articles and non-commercial classified ads will be run, space available, free of charge for current members. Commercial ad rates are: full page - $20.00; 1/2 page - $10.00; 1/4 page - $5.50; business card - $3.00.

Membership application: Mail to: Charles Maples USAU Flying Club 1 4656 Conwell Drive, Annandale, Virginia 22003

PLEASE SUBMIT YOUR DUES OF $15.00 BY MARCH 1 TO KEEP THIS FINE PUBLICATION COMING TO YOUR HOME ! TIPS EXCEPTED.

MEMBERSHIP APPLICATION

Dues: $15.00

NAME: _____ **DUES INCLUDED:** _____

ADDRESS: _____

PHONE H: (___)___-____ **W:** (___)___-____

UL'S OWNED: _____ **USUF#:** _____

USUA#: _____ **EXAMINER?** __ **2-PL?**__ **EAA#:** _____ **AOPA#:** _____

FAA RATING: _____ **DEALER:** _____

INTERESTS: _____

_____

may 90

Robert B. Chapman
Rt. 1, Box 51AA (Lenah Road)
Aldie, VA. 22001

Paul McClung
13337 Point Rider Lane
Herndon, Virginia 22070

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