



Hello Members.

February has arrived, and around this time of year thoughts usually turn to those who have been fortunate enough to attend the Alpine Flying from January, and yes we have a good selection of reports and Photographs to show you the wonders of winter flying. Winter themed flying features heavily in this issue highlighting the fantastic photographic opportunities we get this time of year. Not only have we had a great response from those who flew at some of the events, but also from photographers who went to experience the spender and to capture the essence of the festivals for those of us who couldn't partake but still want to get a flavour of the spectacle.



As you can see from above, Graham Lockett from Fort Collins Colorado knows about enjoying the land. Here he is enjoying his Lindstrand 31A G-BZUK in typical winter settings. (Jpeg from Roger Kunnert ...many thanks)!

Winter flying by its nature can be difficult, sometimes dangerous, but mightily rewarding when it comes good, with some of the greatest sensory flying happening in truly awesome surroundings.

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Ed Speak- By Steve Roake- "Alpine Stuff"

This edition, I really don't have much to say. Hooray you all say! So what I want to do is let the quality of the jpegs submitted show you all the essence of flying in winter in clear sky surroundings where colours really show through .There have been so many jpegs sent in from Austria, Italy, USA and Switzerland that I cant do all the contributors justice in one issue .let me just say to each and every one of you, your contribution is valued, please continue to send me in stuff and let me indulge myself over the coming months with your finest stuff.



Even before the snow arrived midweek, Geoff Church captured above a great Chateau D'oex classic shot of the rarely seen

Lindstrand 21A G-CBYS enjoying perfect conditions, this time being flown by Jacques Bernardin from France.

One thing I would like to say is this! We have been given an unprecedented opportunity to take Hoppers to Metz for Free this year, (something that has never to my knowledge been allowed officially without registering again as a second balloon). Therefore, anyone taking a regular balloon to Lorraine Mondial Air Balloon please support us by making their decision the right one and keeping this in order for years to come. The organizers naturally would like a lineup mid week and a fly out of all of us together so that they can get some press out of it, but who wouldn't want to co-operate after such a great gesture.

Essential Extra's-

This section is practically on the way out now. I have tried to encourage you to submit some ingredients that people would find useful to help their flying ...the only conclusion I can make is that folks like to fly simplistically and that you are all sorted out for now.

Features this month-

Hopper building by Greg Winker-

Back from the rebuilding of his house foundations , Greg Winker (sorry about the name cock up for all those months-ed) delivers the next section of his balloon building program with the topic of envelope design. Be prepared, this is a serious installment!

Part 2 – The Design Process

I've mentioned that we have but two seasons in Seattle – the flying season and the building season. This year, flying season began June 11 and lasted through the end of October. Overall, the weather was excellent and we made the most of it.



Caption – Greg Winker on the maiden flight of Alegría, with Mt. Rainier (4,400m) as backdrop. (**Stunning shot ...Ed!**)

As you might expect, when you have a short, well defined flying season, you set your building projects aside and take to the air. But just as day turns into night, summer is now over and the rain has returned. We've carefully stored

our balloons for next year and are ready to return to the shop to continue our projects.

To keep Part 2 to a manageable length, I'm just going to focus on the design of the envelope. I'll briefly talk about the bottom end, but I'll save the details for Part 6.

To me, the design phase is the most interesting part of the entire project. When you begin, you sit down in front of a blank sheet of paper. By the time you are finished, you have an aircraft that meets your requirements exactly. The only compromises are those that are self imposed.

Any time you build a balloon, the first step is deciding what you plan to do with it. This should either be a reflection of the kind of flying you have been doing, but just as likely - the kind of flying you would like to do. In this case, I've decided this balloon will be a cloudhopper, and it will be my personal balloon. So it will be designed with my normal flying area and my normal weight in mind. But I want to make sure I design in enough flexibility so I can take it with me when I travel. And it would be nice if my friends could fly it too. The main goals of the design phase are to determine the system weight, select the appropriate volume for the envelope and define the materials and construction techniques that will be used.

The system weight, before considering the envelope is pretty straight forward. I expect the bottom end to run around 50 lbs. Fifteen gallons of propane will add 65 lbs. Instruments, drop line, radio, etc. should run 5 lbs or so. And me; I weigh in at 140 lbs. Total anticipated weight before considering the envelope is 260 lbs.

Now the fun part - sorting out the envelope! Before we can calculate the envelope weight, we first need to know the volume. And to determine the appropriate volume of your envelope, you need to evaluate several variables that are found in the hot-air balloon lift formula:

$$L = \left[\frac{d_o T_o}{p_o} \right] V_{pa} \left[\frac{1}{T_a} - \frac{1}{T_b} \right] \text{ lb}$$

Let's discuss the important variables one at a time.

T_a - Ambient Temperature – In Seattle, the temperature rarely gets above 80° F and it's unusual for it to get below 30° F. From time to time I travel to warmer (and colder) places to fly, so I'll also want to take that into consideration. But I don't plan to modify the design just so I can fly the balloon every place I might want to take it. I'm going to assume that most of the flying will be here in Seattle and I'll focus on the conditions are normal for Seattle. It's pretty typical for the temperatures to be in the 70°'s during the summer flying season, so I'm going to set my maximum expected ambient temperature at 75° F.

T_b - Internal Temperature - I like flying on the cool side because I believe it gives me greater ability to maneuver. Even though balloon fabrics typically can be heated to 250° F, I've found that I prefer to fly in the 190-210° F range. That's my personal preference. Your's might be different. I've also noticed that if the temps get to be too cool, it's easy to over burn and piloting can actually take more attention. Since I'm designing the balloon for a variety of flying areas, I'll set the maximum design temperature at 225° F and aim to have the normal everyday flying temperatures in my preferred range.

p_a – Pressure, we think of it as altitude – The city of Seattle is right at sea level and all of our launch fields are below 500 ft MSL. Based on the kind of flying I anticipate doing with the hopper, it would be unusual for me to fly more than a couple thousand feet above ground level. I'm sure I'll find the need to go higher from time to time, but that would be the exception. The highest ground elevation where I fly is Albuquerque, at about 5,600 ft MSL. As a result, I'm setting the maximum design altitude at 7,000 feet MSL.

L – Lift – i.e. the amount of buoyancy required to bring the weight of the system, the fuel, the passengers and the equipment to equilibrium. Since the weight of the balloon envelope is partially determined by the volume (it's a

function of the surface area), determining the exact weight is not quite as straight forward as the other variables. Fortunately we only have to get close.

My friend Tom Deering, the founder of the homebuilder e-mail list, wrote a gore pattern calculator using Excel. Included in the spreadsheet package was an envelope weight estimator. Simply enter a few numbers for volume, unit weight of the fabric and the spreadsheet will calculate the weight of a natural shape envelope.

In my case, the envelope is expected to come in at about 70 lbs. Add that to the 260 lbs calculated above and I expect the all up weight to come in around 330 lbs.

Burner	
(lbs)	15
Tank	35
Propane	65
Misc.	5
Pilot	140
Subtotal	<u>260</u>
Envelope	<u>70</u>
Total	<u><u>330</u></u>

When I run the numbers through Tom's spreadsheet, I'm going to be aiming for a volume that will allow me to fly at 75^o F at 7,000 ft MSL with a maximum envelope temperature of 225^o F. Based on these parameters, I end up with an expected volume of around 27,000 ft³.

Taking this, I recalculated to see that I can expect an internal temperature of 175^o F for a typical flight in Seattle (75^o F, 1,000 ft MSL). That's a little bit below the low end of my preferred range, but it allows me some leeway if I underestimate weights. Or worse, I put on a few pounds.

U.S. homebuilders will notice that the dry weight of the entire balloon is just 120 lbs, allowing me to fly as a Part 103 ultra light if I choose.

By the way, if anyone would like a copy of Tom Dearing's gore pattern calculator, I would be happy to send it to you. It's a fun tool to play around with. And if you have any questions about balloon design, I'd be happy to hear from you.

Now that we have established the volume for our new balloon, the question that we are faced with is this: How do we take the calculated volume and turn it into a gore pattern for a tetrahedron shaped cloudhopper? The answer requires a basic understanding of geometry. Fortunately for us, the math has already been worked out. All we need is a basic understanding of calculators. Even I can handle that.

A tetrahedron is a geometric body that consists of four identical equilateral triangles. The volume of a tetrahedron "V" is equal to $\frac{1}{12}(\sqrt{2})(a^3)$ where "a" equals the edge length of the triangles. The important point to note here is the direct relationship between volume and edge length. As presented above, the equation has us solving for "V" with a known "a". By rearranging the formula, we can solve for "a" as we already know "V". When we do this, we find "a" is exactly 60 feet.

To verify our answer, let's go back to the original equation and solve for "V" using 60' for "a". Hmm..... now we get a "V" of 25,456 ft³, not the 27,000 ft³ we were expecting. What's up with that? A slightly embarrassing story, that's what.

Mathematicians can tell you there is more than one formula you can use to calculate the volume of a tetrahedron. When I did the original design work, I was working with a formula that used height as a variable: $V = \frac{1}{3}(h)(b)$. Where "h" is height and "b" is surface area of the base. Using a "V" of 27,000 ft³, I was calculating an "h" of 51.96'. This is the measurement I used for my gore pattern. And having the utmost confidence in what I was doing, I set about cutting fabric.

When I did some additional research for this article, I came across a formula that uses edge length instead of height. I thought to myself (rather smugly I might add) what fun; I can confirm the accuracy of my results using a second formula. Problem was the new formula gave me a new answer. Oops!

So what happened? It turns out I had a brain fart. I had incorrectly assumed that “h” - the height of the triangle - was the two dimensional height of one of the triangles that make up a tetrahedron. Instead, “h” refers to the vertical height of the completed tetrahedron – which is a shorter distance than the height of an individual triangle. And the shorter distance translates into a smaller volume.

Since I had already cut out most of the fabric, it was too late to make any adjustments to the pattern. And I wasn't about to throw out 400 yards of fabric and start over. I had to live with what I had. So, let's quantify the damage. A recalculation shows I now have a volume of about 24,500 ft³. That's about 90% of the volume I was originally aiming for. The impact of that goof results in an increase in envelope temperature of 10° F from my earlier calculations. Since I was on the low end of my preferred range to begin with, this moves me toward my targeted temperature range and keeps me within acceptable limits. Whew! Not a show stopper. The first construction problem is overcome. Let's hope it's the last. With that behind us, let's get back on track.

To make a tetrahedron, we take a rectangle of fabric, sew the short ends together to form a cylinder and then finish off the open ends at 90° angles to each other. I have calculated the fabric rectangle needs to be 120' by 51.96'.

From here, finalizing the gore pattern for a tetrahedron shaped balloon is really straight forward. I'm going to go with 24 strips of fabric, 52' 1¾" long by 62¼" wide – the slightly larger measurements include seam allowances. My double needle sewing machine has a spacing of 3/8" so I'm going to go with ¾" French fold seams. This seems to be the standard on both sides of the Atlantic so nothing creative here.

Let's spend some time talking about load tapes. Load tapes transfer the weight of the payload to the structure of the envelope. On a normal shaped balloon, this structure is pretty straight forward. The tapes are placed on the vertical seams and extend from the throat of the balloon all the way to the top. I've noticed a lot of hoppers have load tapes that only go part way up the balloon. I'm not really sure why, but it seems to work.

But the way I'm building this tetrahedron shaped balloon, the seams aren't vertical. I don't have the luxury of placing all my load tapes on equally spaced vertical seams. Occasionally they may cross a seam, but for the most

part I need to be prepared to sew them to a single layer of fabric. So how do you design a safe load tape structure for something like this? It's not an exact science and nobody seems to have the definitive answer. I'm not aware that anyone has done a stress analysis on a tetrahedron shaped balloon to understand how stresses are distributed. So in the absence of knowing, we should err on the side of "too much."

Initially I was planning to go with 12 load tapes that extend 10 feet up from the throat. But after I spent some time talking with other homebuilders and thinking about catastrophic failures, I came to the conclusion that I better have something more robust. This didn't sound like "too much."

For loading purposes, I've decided to treat the tetrahedron as a normal shaped balloon with three protruding cones. I think it's a decent approximation, but certainly not spot on. On each of the three sides, I'll have a load tape running from the throat to the center of the crown. I'm going to assume that these are the only load bearing tapes and size them accordingly. In addition to these, I'll have load tapes that extend 15 feet up from the throat. These will primarily be to keep the throat round and the burner pointed up, but they will probably also carry some of the payload. All in all, an unusual design, but it should work. Over the life of the balloon, I'll make a point to do a lot of inspections to make sure the integrity is being maintained.

In addition to these vertical load tapes, every third seam will include a load tape and the seams with the two "horizontal" color changes will also have load tapes sewn to them. This will provide a "cage" that the vertical load tapes can tag into and should provide a bit more security against catastrophic failures. At the very least, it will make me feel better.

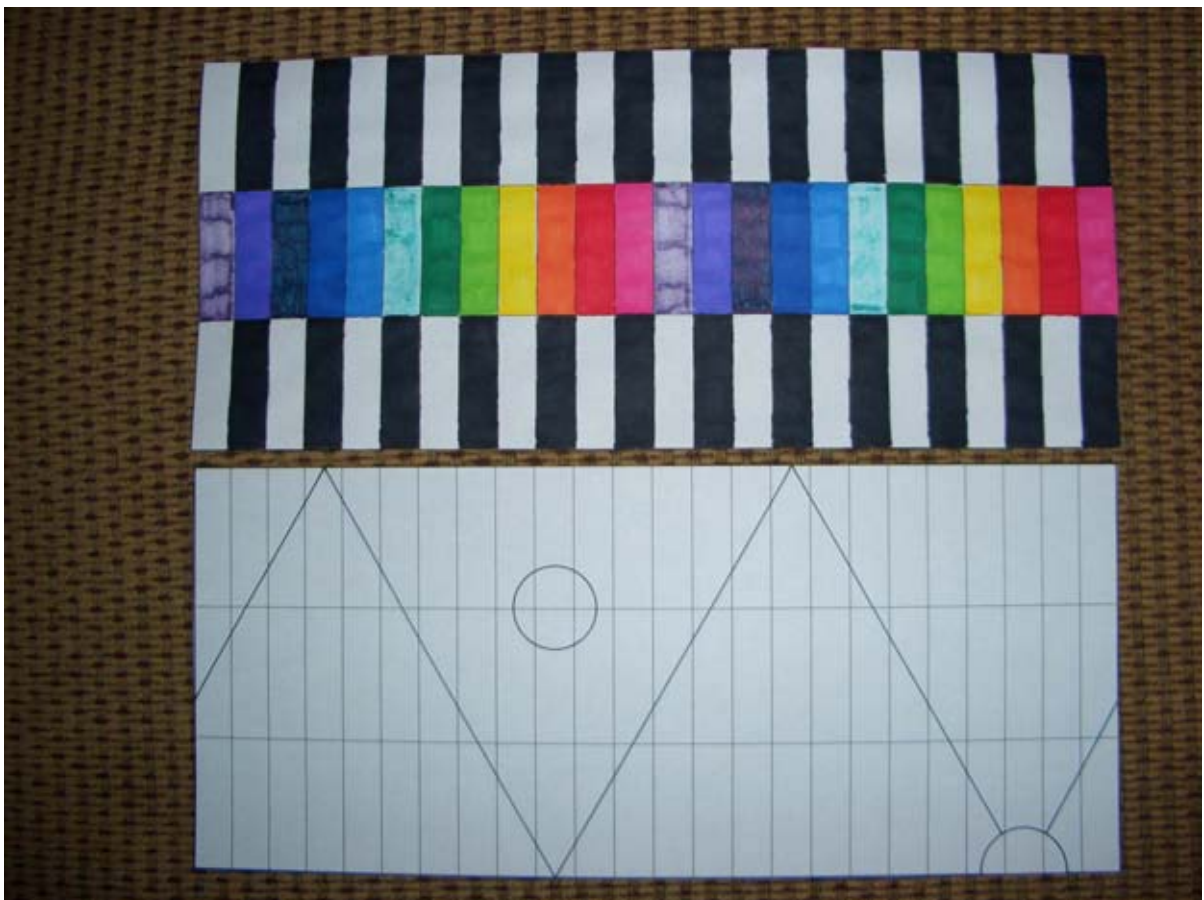
More or less, the balloon will have a standard sized hopper throat - approximately 6½ feet in diameter. It will be all lightweight rip stop nylon with a two foot Nomex base panel. Since the throat is three sided, it will work best to have 12 suspension cables. Plus, this has the advantage of being a really easy number to work with for load tape positioning.

After some deliberation, I've decided to go with a Velcro rip panel instead of the more common parachute. I've heard that under light loading, parachutes do not always reseal. This has happened to me a couple of times as well. So after an evaluation of construction differences, flying characteristics and operational differences, I've decided to go the old

fashioned way. If I'm not happy with it, I can always change it later on. I expect the top to have a diameter of about 15 feet, typical for a natural shape balloon of this volume.

The bottom end is going to be a "tank rider" configuration. The price of a second hand lay down stainless steel tank is minimal when compared to a hopper bottom end. Plus, I can always upgrade down the road when I'm ready. The burner will be an old Raven "one-can" burner mounted in a cloudhopper load ring. I've been fortunate to borrow one from a friend. Stainless steel cable will hold everything together, and I'll be secured to this rig by a 5-point racing harness.

With these details worked out, the only step left is to finalize a color scheme. I like balloons with lots of color. My new Thunder & Colt knockoff (Alegría) has 12 colors and provided lots of leftover fabric for the hopper. So based on supplies currently on hand, inventory at my supplier and considering the panel configuration, it will work out best if this balloon has 14 colors.



Caption – Tetrahedron pattern showing placement of throat and deflation panel. The color scheme.

One final note for the design phase. I've estimated construction time for the envelope to be 70 hours. The detailed schedule is as follows:

	<u>Budget</u>
Cut panels (hrs)	20
Basic Fabrication	18
Form tetrahedron	4
Install throat	5
Attach load bearing tapes	3
Attach centering tapes	5
Install top	10
Install turning vents	<u>5</u>
Total	<u><u>70</u></u>

This could prove to be funny, because I'm not very good at estimating how long it takes to do things. I'm the eternal optimist and always expect things to go efficiently and trouble free. But at least by taking a stab at the hours, I get a sense of the time commitment I'm going to need to make. Then I can look at my calendar, schedule out the project and get a realistic idea of when it will be finished and ready to fly.

Good Floating! Coming up next – Locating the Parts.

Greg Winker

Excellent article this time Greg thanks (almost a newsletter in itself).

Propeller Man -Jim Romain (the update as promised)

Not good news I'm afraid folks. Jim Romain, a very nice man from Hertfordshire UK who hand makes Laminated propeller blades has been very poorly and although Jonathan Dyer and myself went for a quick visitation to Jim's house , we found him in not the best of health with I believe a collapsed lung .Therefore the article I want to write on him and his fantastic work will have to wait until he is seriously better and up to receiving madmen at his door once again .His work is a dieing art form and I really want to do justice to his craftsmanship and at 72 years young, we must respect his need to be fit first and foremost before we nag him crazy about props. Interestingly two things Jim did divulge to me. The most efficient prop construction would be a single sided blade with a counter balance on the opposite side for maximum push of air. Secondly, Jim will never make a three bladed prop, in his opinion it is inherently dangerous. The opposite side to the blade is unsupported and more importantly , the closeness of the three blades means that the blade cutting through the air following the previous one is in dirty air and therefore is inefficient in its performance. In Jim's opinion, too many three bladders fail for this to be a good design.

Any way , more from this fascinating chap when he is better.

Ian Berry - (TZaviation) photographer

In the first or a couple of features on photographers, this month we highlight Ian J Berry or as more of you will know him "TZ Aviation". Ian is a very agreeable fellow whose work seems to crop up everywhere. His photography skills are right up there with the very best, and his ballooning photographs are always of the highest quality with a unique ability to frame the content perfectly. For this reason I have wanted to use his jpegs of hoppers (particularly those you see here from Chateau D'oex),

and whilst these are not free, he does do prints which are available for a reasonable donation towards the Charity The British Heart Foundation, for which Ian is running the London Marathon for. Many of Ian's compositions regularly make their



G-BVCY from Chateau D'oex 2004 © TZ Aviation

Way into the magazine "Aerostat" and his ability to go anywhere and the quality of his work speaks volumes of the man himself. For further examples of Ian's work, I would recommend a visit to his website address (particularly if you are into fixed wing stuff). The url is www.tzaviation.com.

My own personal favorite of Ian's work is the following shot because not only is the jpeg crystal clear and well framed, but also the hopper is quite rare and quite small and lives in Sweden with its owner Sten Ericson who I believe takes it to Chateau D'oex for its annual inspection being a British registered Colt

14A. Now how many of these do you see regularly? Not too many I'd guess! Anyway, here is G-BHPN dating from 1980 in all its glory and still looking good for a balloon of 27 years young!



Sten Ericson at Play in G-BHPN ©TZ Aviation (chateau D'oex 04)



Finally a fine shot of "Baby Champion" G-BGHS which is a Cameron N-31 dating from 1979, and in the BBML collection but looked after by Bill Teasdale , here given an airing at Kelmarsh Hall last summer. ©TZ Aviation. Finally Ian's email address should you want to get him directly is ian@tzavation.com

Alpine Reports

Plenty of winter flying has taken place since last month with major events in Switzerland, Austria and Italy with some attempts on world records. Malcolm White and Pauline Baker seem to have been to most of them with flying taking place in Brunico Italy and Chateau D'oex. Ian Chadwick and son Gavin have also e-mailed in a report from Mondovi and even the elusive G-CEGG new Lindstrand 31A for Chris Dobson has been photographed (at Distance) "out of it's Bag"!

Over in Brunico, Pauline Baker made the first of her new records in the women's class flying the ex Chrispin Williams lightweight Colt 14A G-BVKX . Taking off with two tanks, she successfully extended the Women's record for duration in the Ax-2 category from 2hrs and 40mins set in 1975 up to 3hrs 36mins (more in Malcolm White's report). **An interesting side note to this record, the balloon that held it previously was owned by Donna Wiederkehr from Minnesota and made by our very own Greg Winker(list member).** A few days later and flying with only one tank, Pauline added the

distance record to that of Duration with a flight at the same venue stretching the record from 18.25 kms to 22 kms in the women's category .

Meantime in Mauterndorf Austria , both Pieter Kooista and Jeff Lawton / Gary Madelin managed some hopping as witnessed by myself live on the Mauterndorf webcams. Jeff and Gary had a few problems to get over, whilst Pieter send in a lovely jpeg of his old fully hyperlast fabric Colt 31A. flying in the valley.



PH-PUK has done over 60 hours so Pieter tells me but still flies like a dream.(I would be curious to know how much heavier a fully hyperlast 31 is compared to a normal fabric balloon).

Chateau D'oex

Probably the event with the biggest hopper turn out was Chateau D'oex with many of our members present (and not just the pilots). This venue lends itself to photographs and a vast array has turned up thanks to those already mentioned and all those credited either individually below or at the end of this month's magazine.



Sandy Mitchell reported nine different hoppers and a Swiss Duo present including the rare Bombard hopper which took part in the Nightglow. As you can see, not only is G-BUDY Colt 17A hard to see, but it doesn't glow particularly well and I'm told by Steve Trieber that they only glow it these days. (jpeg from Sandy Mitchell).



Another balloon to feature at Chateau D'oex was Eric Martens with the Mascot Kubicek Special Shape OO-BOV. This balloon has featured quite a lot at recent bigger events also being noted at Warsteiner by your editor last summer.



Sean's Bar Livery now adorns G-MLGL the Colt 21A as seen here tethering in Chateau D'oex (photos from Paul Sweatman).

Updates on the website /List/ Newsletter- Success for Us!

Success can be measured in many ways. One measure of the success of an entity is the way it serves its members and I am very pleased to say that through the list membership in January we have been able to effect two balloon sales that whilst significantly different in the way they evolved, no doubt proves the effectiveness of both the newsletter and the list. Just prior to xmas I received a call from Kelvin Oakley at Lindstrand Hot air balloons Ltd UK, telling me of a potential client of his who would like to purchase a new balloon but had to offload a Colt Duo chariot system before the deal could materialize and could we help? This turned out to be a 1993 Colt 56, G-BVCN, which had only done 30 ish hours in its life and hadn't been out of the bag since 1997.

Contacting via the list, many of you were interested with a lot from abroad and as usual the "early bird got the worm". First out of the traps were Jonathan Dyer and Graham Bell who wanted different things out of the system and ultimately both got what they were after.

In Graham's case, a close friend in America, Michael who is disabled, had his own chariot stolen on one of the first days at Albuquerque, and whilst suitable envelopes were/are relatively easy to find, a replacement bottom end was what he wanted for his disabled friend to assist in getting him back into the skies. Jonathan on the other hand wanted a 56 envelope for flying over a lightweight basket and burners which he could use with his

daughters and once he heard Graham's ideas, immediately agreed to help the two of them affect a solution that could suit all. The result was satisfying for both sets of parties, Graham went and inspected the kit, and ended up with the duo bottom end for Michael and Jonathan got the envelope which on closer inspection looks great for all its time in the bag. He and I have tethered it recently and considering its age, G-BVCN is looking good for some considerable time in the future.



Just after the deal over G-BVCN was concluded, I happened to be speaking once again to Graham Bell who suggested he may be looking to sell G-CDIW his 2005 Lindstrand 35A hopper(40 hours only), which lives in the USA. With the knowledge of how little used equipment comes up that is good quality at the right price, I thought I knew of potential buyers on our list and suggested that I "softly" advertised it through the list membership. At the price Graham wanted it seemed a bargain to me and this proved to be the case again. "Baby Bell", as Graham affectionately calls it was hot property and again interest came from all continents.



The Lucky man who after all the negotiations won the stampede to buy was our very own Greg Winker, and it is pleasing to see the

balloon is going to continue Flying at Washington state in the USA.

Two things spring to mind about both the above deals. Firstly, it proves this is the place to buy and sell your kit and that is satisfying for me because that was an indirect position I wanted this entity to get to becoming and I hope you all feel that this is the case too.

Secondly I have had for sometime now one of the most complete databases of hopper information worldwide and I believe that there is a stronger demand for second hand kit than there is supply , so if you have old unused equipment get in touch and let's get it back where it belongsIn the Air!

Malcolm White /Pauline Baker - World Records and Particularly G-CEHX the Ax 1

Let me say firstly, many thanks to Malcolm White who whilst getting ready to go off on his trip with Pauline Baker to Italy and Switzerland answered all my emails (loads regarding G-CEHX a remarkable Lindstrand 9A (yes 9000cubic feet only Ax-1). He really got me fired up about the challenges that lay ahead for Pauline as she strove to break more World records (previously having already achieved two in EI-DJZ Lindstrand 31A in Ireland in September 2005 flying for 90kms and over 4hrs 2mins total in the Ax4 category), to the point that I contacted Simon Forse at Lindstrand Hot Air Balloons UK and insisted he sent me a swatch of the fabric used (Tripsi) so I could understand the magnitude of their attempt in what looks like "cling film " material.

Secondly I have taken and reduced the actual achievements from Malcolm's website in Ireland and recommend anyone to read the whole story at www.balloons.ie under the section "New Records". Thanks for permission to use extracts here and all jpegs are copyright to Malcolm unless otherwise stated.

BRUNICO-ITALY

The trip to Italy and Switzerland was in order to attempt to add to the precious records and the team decided to attempt class records in the Ax1, Ax2, Ax3 and Ax4 categories with specific types on offer for Duration, Distance and Altitude both in the Women's class and Open to all "General Class". Having taken a fact finding mission in 2006, the balloons to be used were all high spec, specially built examples built for breaking records. All used Lighter weight, shorter lifespan fabric with better heat retention properties with the Ax1 (G-CEHX) being the most weight sensitive. Hotel X-ray is made out of a Mylar fabric (Tripsi), with the weight of the whole envelope only 9kgs. The fabric is actually a composite sandwich with two layers of Mylar and a mesh inner layer.

The Burner frame is a special design. It is basically a regular liquid fire and liquid pilot in a custom block/frame. It weighs about 2kg or so. It has a dual feed using 1/4 inch hoses. The hose lengths have been shortened to suit the application. There is no main burner. Inflating the balloon requires a significant amount of care. The fan has to be shut off before putting in any heat. And two titanium cylinders would be used.

Even Pauline the pilot was subjected to the lightweight program, her flying suit was specially constructed in one piece Goose Down with Goose down Boots being selected for their superb heat retention properties whilst remaining light weight. Utilizing a

paragliders harness and shackle the pilot is slung under the burner frame using a swivel attachment from all four corners with tanks directly mounted to the pilots harness to ease jettison when empty during the attempt. It was also hoped that ambient temperature would be -15deg Celsius or lower during the flight.



Pauline testing the harness and tank attachments prior to departing for the attempts.

First female world record Pauline attempted was the Duration for an Ax2/3 class balloon (up to 400 cubic meters capacity). This had been held since 1975 and the balloon used was Colt 14A G-BVKX .Pauline took off on January 7th from Brunico Italy using

the harness and two titanium tanks. Light winds were forecast for the Brunico valley and with surface temperature of -3 deg C and a strong temperature inversion, conditions kept stable. Within several minutes of launching, a fog bank crept into the area from a northern valley meaning that Pauline had limited visibility. The first fuel tank was dropped to the ground after 2 hours in the air from a height of about 3 feet. Pauline flew for 3h 36mins before landing in Fassine, Italy only a short distance from where the launch took place with less than 5% fuel remaining in the fuel tank. Unfortunately, weather conditions in the Alpine areas have been very mild for this time of year and this would have significantly reduced the duration that could have been expected.

Sunday 14th January 2007 - Female AX-2 Distance record

Distance records are regarded as being the most difficult of all ballooning records as it does entail flying in winds that are faster than those that would normally be chosen to fly in. In addition, having a smaller balloon with a paraglider harness offering little physical protection, you can see the risks involved greatly increase significantly.

The forecast winds in the Dobbiaco Valley (alpine region of northern Italy), were from the west. A launch site was chosen in Monguelfo as it offered good protection from the wind with mountain ranges to the immediate North and South. It was expected for Pauline to fly down the valley past Villabassa, Dobbiaco and San Candido with a landing near to the Austrian border.

The balloon was rigged up and Pauline sat in her harness with one fuel cylinder at her side. The recording barograph and GPS

systems were fitted and the FAI- appointed observer took notes of the exact time and location where Pauline took to the skies.

The first part of the flight was fairly uneventful with Pauline reporting her position, direction and speed while her flight crew and observer followed by road, keeping her in visible contact throughout the whole flight.

As the region is very hilly, Pauline was forced to climb higher to ensure that she remained clear of any low-level turbulence around some of the hills that she over flew. She flew overhead the towns of Villabassa and Dobbiaco before climbing to clear hills before San Candido.

With a lightweight balloon and minimalist burner without Piezo ignition to provide a spark to keep the pilot light continuously lit, Pauline's only source of ignition was a Welders Striker. This became detached from her harness around the time she was crossing a hill into San Candido, falling to the ground leaving Pauline with no means of re-lighting the pilot light should it go out! Within a few minutes of losing the striker, conditions deteriorated with significant turbulence shaking the balloon and deforming it. This in turn caused heat to be lost from the balloon forcing a rapid descent. During this descent with a need to burn to arrest the loss of height the flame pattern was seen from the ground to be going sideways causing a number of lower panels to be burnt. Particles of fabric rained down on the pilot and throughout this period the pilot light spluttered causing unburnt propane to drip onto the pilot. She had no other choice than to let the balloon continue to cool and descend below the turbulent layer, and landing in fast conditions, dragging for 50 metres on a 50 degree slope above the village of Sillian in Austria, suffering only light bruising. The AX-2 distance flight was beaten with the

previous record of 18.1km; Pauline had completed 22.75km and secured the class record.

Pauline later confirmed that during her ordeal, she was terrified but would not be put off continuing attempts at Chateau D'oex during their two week festival.

So two records in the bag, but not all was plain sailing in Italy. G-CEHX had been scheduled for an attempt on the Ax1 class records but problems with the Vent meant a switch to the Ax2 attempt. The panel had ripped and was sent back for repairs to the factory to be later returned to Switzerland.

CHATEAU D'OEX- SWITZERLAND

3 More World Records Broken

Following on from Mild conditions in the Italian Alps, Malcolm and Pauline were disappointed to find on arrival in Chateau D'oex on January 16th similar conditions. Typical sub zero temperatures and Snowy landscapes were no where to be seen. The festival started on Saturday 20th and at that time the only snow present had been trucked in to the launch field, however this was to change by Tuesday evening when a constant downpour of snow transformed the surroundings into a more suitable and colder climate.

Having had the AX-1 balloon (G-CEHX) sent back for repairs following the tear in the deflation panel and following discussions with the manufacturers, it was decided to sew it up permanently. This would ensure a good seal but had the disadvantage of removing any capability to deflate the envelope quickly, leaving only natural cooling. With a fabric specifically designed to retain internal heat, this constituted a potential problem when

attempting a landing in a tight space. The repaired balloon arrived in time for an attempt on Friday 26th January and forecast colder conditions arrived, so it was decided to fly from Saanen Airfield in Gstaad, some 15kms east of the festival site.

The surface temperature was -15deg C in that location and by its proximity to the mountains in that area, sunshine is rare enabling it to retain the cold air required as the coolest spot in the region.

The Balloon was prepared for flight and variable winds made this task tricky with the balloon being moved around in all directions. Once all checks had been completed and the barograph and instruments attached to Pauline, she launched with the intention of staying aloft for more than the existing record time of 1hr 11mins, with a secondary goal of breaking the distance record of 4.81kms at the same time. The third record category of altitude would be attempted nearer the end of the flight once fuel load and possible stresses to the tiny balloon had both reduced.

Within ten minutes of the flight, a fire developed in the burner engulfing the controls whilst overhead an electrified railway line. Wearing protective gloves, Pauline managed to carry out an emergency landing, and with crew close by the fire was extinguished. A decision to change to a conventional burner and seat was swiftly made in order to continue the flight rather than abort, and whilst the penalty in weight of between 15-20kgs reduced potential duration, it still remained feasible that the record could be broken.

Taking off once again, Pauline flew around the valley for 45mins before becoming stationary back over the airfield, but monitoring the rotary traffic that operated from the field. Any close contact with helicopter turbulence potentially could have ended the flight, so Pauline was mindful of her separation and managed

to stay airborne for a total of 1hr 40mins breaking the record for duration landing north of Saanen in an area with lots of high voltage lines. Whilst the distance record remained intact, she had in fact climbed during the flight to 458m breaking the altitude record of 148m set previously in 1978.

The remaining unbroken record for Distance would now be tackled on Saturday 27th January from a new launch site in Rougemont, some 6kms east of the festival launch site. The visibility on take off wasn't ideal with low cloud and falling snow but adequate for the attempt which initially increased as Pauline started the attempt but soon abated with subsequent conditions generally better than before time of launch. Light winds in one specific direction helped, however frantic calculations followed to ensure Pauline had sufficient fuel onboard to challenge the 4.81km goal.



Paul Sweatman catches Pauline mid attempt near Chateau D'oex

The flight was fairly uneventful except that as Pauline approached Chateau D'oex a number of hazards presented themselves. Wires in the area are plentiful, both High voltage and cable car variety and as you can see above large stretches of Forrest reduce potential landing spots.

Approaching Chateau D'oex with a dwindling fuel supply and subsequent reduced burner pressure, the record of 4.81kms was surpassed, coincidentally by the thousands of visitors and participants at the balloon festival as she passed south of the field over the river and the adjacent line of trees on the riverbanks. With fuel running out and no chance of finding open land for an approach Pauline descended into the trees above the riverbank, her crew frustratingly only 15feet away and yet unable to prevent tree contact. Once a few trees had been "manicured" by a chainsaw both balloon and pilot were safely retrieved. The distance record had been extended to 6.59kms and with an unscathed pilot and balloon envelope with minor easily repairable damage the team went to celebrate their collective 8 female ballooning world records.

Pauline now places Ireland on the World aviation map with an aim to inspire others to follow in Pauline's footsteps. I am told other attempts will be planned when suitable sponsorship has been found.

Thanks from Malcolm, Pauline and the team to Timmy and Ashley Donovan of Sean's Bar in Athlone who sponsored the attempts, also to the observers Donatelli Ricci and Giovanni Piccinini in Italy and Patrick kearley in Switzerland and to the National Aero Club in Ireland who supported the team. The Aviation authorities in both Italy and Switzerland also deserve praise for their assistances



Another action shot by Paul Sweatman of the very tightly packed envelope.

Thanks again to Malcolm White for all his help with the article and for use of his text etc from the website.

Homebuilding Section

Manufacturer News / Updates / Event News

News from Kavanagh

Hot news from Kavanagh Balloons in Australia, Sean Kavanagh contacted me recently to say that in the next few months, details will emerge of the new range of Kavanagh Hoppers starting I

believe with a 21,000cu ft envelope. Sean thinks that the whole range of sizes from 21, 25 and 31 will be catered for but as soon as he knows then he will let us know. One comment from him was "How much do the others cost"? so that they can be really on the button in terms of price. Watch this space!

Event News

Graham Phillipot has reminded me that the SOLO meet is on running from 6th April to the 9th and again based at the Black Horse Pub, Great Missenden in Bucks .Proceedings start with booking in from 1pm on Friday afternoon and flying commences at 18-00. All the details are on www.solomeet.wanadoo.co.uk and for your £25-00 you get an up to date map included so it represents great value. I'm in for it, see you there. Let's try for even more hoppers in the air at one time this year!

Hoppers to Metz

For anyone who is contemplating going to Metz this year there is now an added bonus. Following discussions with the organizers, they have agreed to allow hoppers as a secondary balloon entry FREE of additional Charge. As you can see below, there is now no excuse not to hop in France.

I am delighted to confirm you and your hoppers matter a lot to us. We do indeed agree your deal.
So please just let it know!

Cheers for now!

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Gallery Pages-Editors choice of New and Older choice hoppers
and Duo chariots



Chris Dobson sent in this jpeg of G-CEGG at its first tether .It is
a Lindstrand 25A C/N 1120 first registered in July last year.



Pat Bubb sent in this jpeg from 2002 Chateau D'oex when she and Husband Tony attended. What you don't realize is that Pat is flying in the financial times shape balloon with Peter Mason when she took this shot.

Beautiful Ultramagic H-42 HB-QLI is seen lifting from the launch field below at Chateau D'oex (I guess midweek after some snow had arrived) photograph by Paul Sweatman.



Last of the current crop of alpine jpegs features two more regular hoppers .Firstly G-IAMP which lives with Bill Mackinnon but is owned by the Balloon Preservation Group and was flown at Chateau D'oex by amongst others, Mike Scholes, Jonathan Dyer, Bill and Possibly Richard Ashcroft. Which one is in the chair who knows?



Secondly , a balloon which is based in Mondovi Italy and can be hired if you ever visit for about 80 euros' per hour is G-OBLU Cameron H-34 , recently flown by list members Ian Chadwick , Jonathan Dyer and Roger Kunert seen here who sent in the jpeg



For Sale / Wanted Section -

Nothing new this month for sale or wanted. See last month's newsletter for current items for sale.

Next Issue

In the next edition of the newsletter, I will be hopefully looking into the following items.

- More from Greg Winker on his Homebuilt hopper
- Second in our series of features on photographers. This time Peter Gray of BMSS will be under the spotlight.
- Mike Colliers article on hopper building from www.ultralightballoons.com

And finally....



A Taste of Peter Gray's photographsmore next month!

Fly Safe everyone, Membership stands at 276 plus (mid February 2007).

Soft landings and happy flying Steve

All articles for inclusion in future issues, please forward to the editor at Information@cloudhoppers.org and all feedback good, bad or indifferent will be welcome. In future we might even run a letters/email section. Views aired by contributors may not be those of the editor.

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