POU du Ciel RENEW

The magazine for enthusiasts of Henri Mignet's designs

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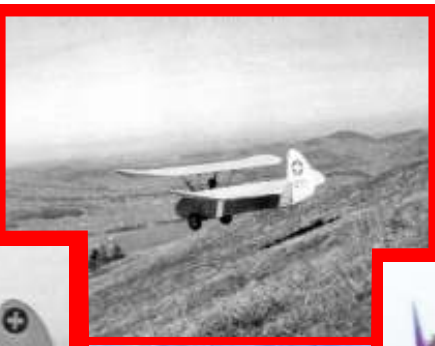
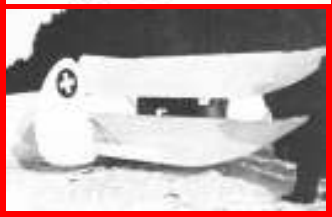










Cosandey

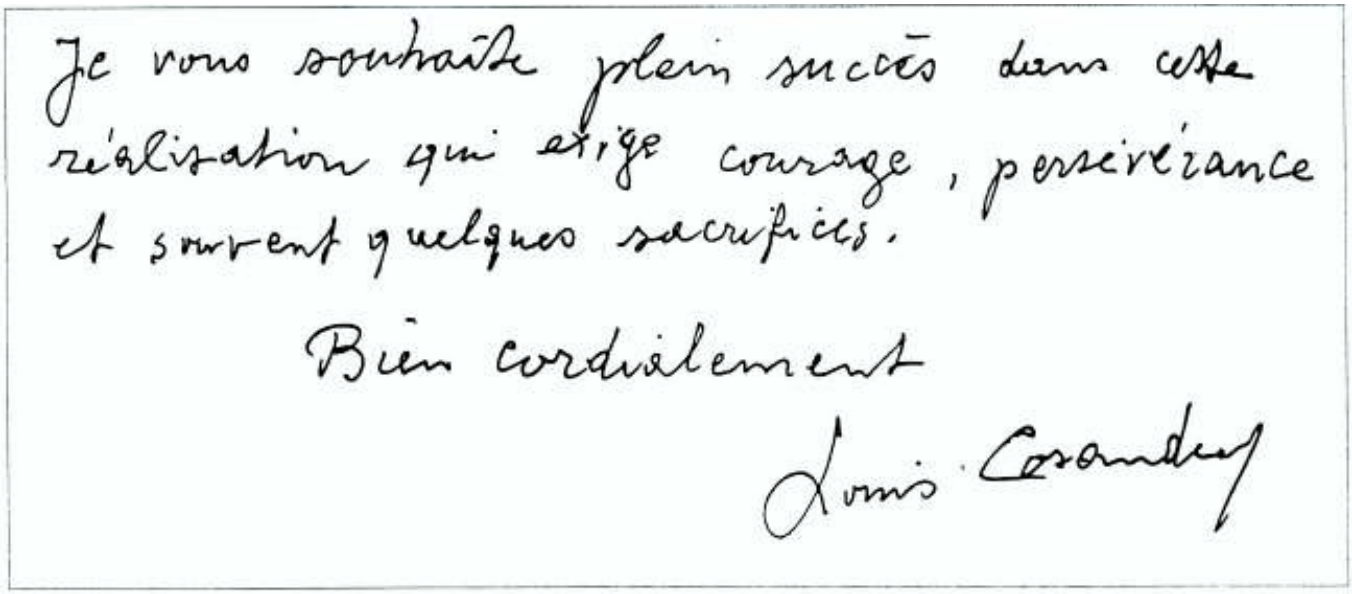
Many issues back, from #34 to #40, we published Louis Cosandey´s papers on centering the Pou: **CONTRIBUTION À L'ÉTUDE ET AU RÉGLAGE DES AÉRONEFS DE H.MIGNET**
Now is the time to tell you about the 10 Fleas he built, that Paul has translated from Rodolphe Grunberg´s AFM (L´Amateur Formule Mignet) bulletin. Quite long, so we will spread it out over quite a few issues.
To get into the right mood, I strongly suggest watching the following movie:

http://www.dailymotion.com/video/xbr0o5_entrevista-a-luis-cosandey_sport
Subtitled both in English and Spanish.....

My ten Flying-Fleas

By Louis Cosandey

FOREWORD,
by Rodolphe Grunberg.
Every amateur who plans building an aircraft starts with gathering information.
At that time, in Paris, Dahomey street, there was a very special character who officiated in a small bookstore under a huge full-length photograph of Henri Mignet, dressed as an aviator. This Flying-Flea fanatic was Yves Millien, who knew quite a lot about the Mignet formula. I visited him several times. He recommended the Motopou, a very simplified, rectangular wings, HM-14.
But, I was appealed by the esthetics and the qualities of the HM-293, and, to know more about it, I turned towards other advisers. I wrote to Louis Cosandey.
Like Yves Millien, he was very generous with his knowledge and answered me with long and detailed letters. We kept up a lengthy correspondence. I could appreciate the extreme kindness of this man who was suffering from arthritis and had difficulties in writing.
He had started with flying a Flying-Flea glider over the Helvetian mountainous slopes, but that was not the end of the story.
About ten Flying Fleas passed through his hands, including a HM-293, registered HB SUS, equipped with the famous Aubier & Dunne engine, the same engine which powered Mignet's HM-14, among others.
Louis Cosandey, who had written a booklet CONTRIBUTION TO THE STUDY AND TO THE AJUSTEMENT OF THE H.MIGNET AIRCRAFT, educated me about many things. It is worth noting that, thanks to his knowledge and to the seriousness of his flight tests, he contributed giving a professional reputation to our formula.
Louis Cosandey passed away on November 30th 1984.
Here is the conclusion of the last letter he sent me a year earlier:


Je vous souhaite plein succès dans cette réalisation qui exige courage, persévérance et souvent quelques sacrifices.

Bien cordialement

Louis Cosandey

I wish you full success in this work which requires courage, perseverance and often some sacrifices.

With my very best regards,

Louis Cosandey

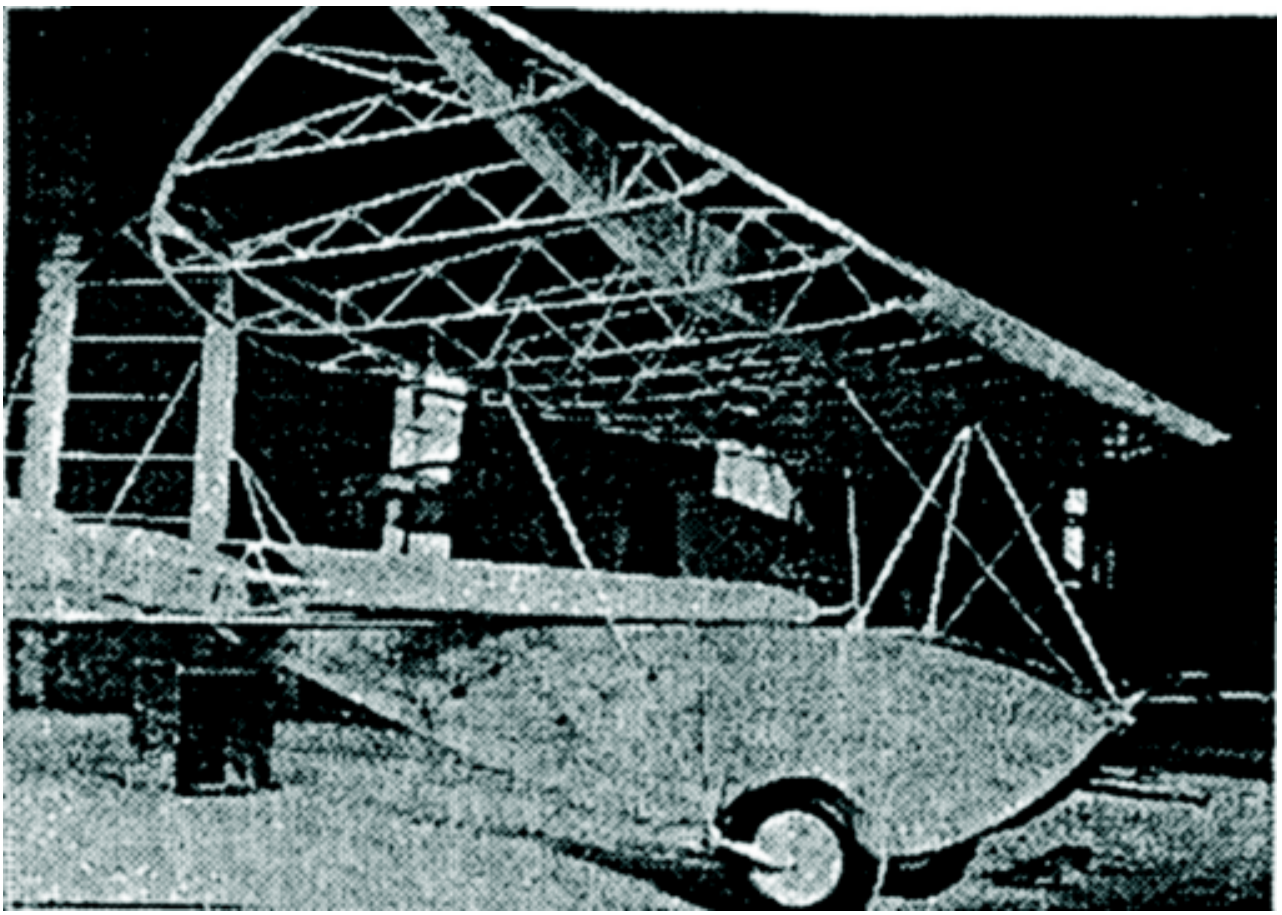
My ten Flying-Fleas

By Louis Cosandey

I would like to begin by making clear that I did not really built ten of them, but I gave each of them a number which differentiated it. As an example, my Flying-Flea N°2 reused the wings of the N° 1 installed on a motorized fuselage.

What is the Flying-Flea? At first, it was the HM-14 designed by Henri Mignet. (fig.1) who is really the father of amateur aircraft construction. In 1934, he wrote his famous book “The Sport Of Air”. Captivating to read, full of drawings and photographs, this book allows a clever with his hands amateur to build his Flying-Flea. The front wing rotates around a pivot. The change of incidence is controlled by the stick which also actions laterally the rudder. No feet controls.

At the end of 1935 more than 100 Flying-Fleas were flying, including two made by Swiss, Albert Perrin (Geneva) and Donat Guignard (Ste-Croix).



-Flying-Flea # 1-

Since early childhood, I wanted to be a pilot…This never happened. Then I was contaminated by the Mignet virus and in 1937/38 I built my N° 1, The flea-glider. I counted 400 building hours. It had two identical wings; 5.0 m x 1. 40 m. How come only 5 meters? Because I built it in my basement. I contacted the Aviation Federal Organization. Plans, calculations, visits before fabric covering. Everything was fine. I quickly completed the covering, varnished with tension dope. Replaced wheels with ordinary skis…and, on January 5, 1939, I slid down in straight line, 6 times, at Bulle, 2 km from my place. The next day, from a steeper slope. I took off for the first time. With the kind help of a few friends, I very gradually learned flying, the ground altitude and the length of time of my flights being determined by the height of my point of departure.

My ten Flying-Fleas

By Louis Cosandey

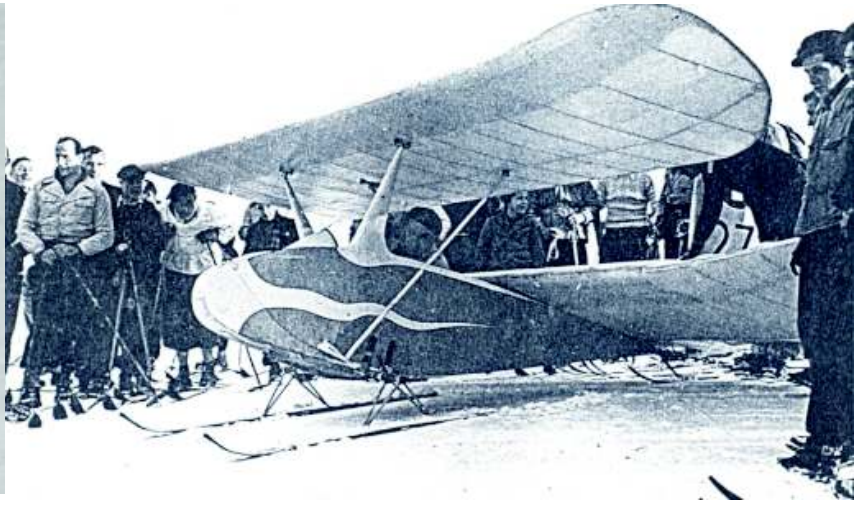
It takes off from anywhere.

On my logbook, I read: February 12, 1939. 20th flight. Time: 26 seconds. Height: 15 m. turn 180°, landing at the bottom of the slope. Adding the seconds of the previous flights I logged a total of 5 minutes and 34 seconds, was I ready for the 21st flight?

My “manager” and friend, Max Firmann, mechanic, artist, experienced welder and hunter, told me: We'll bring your Flying-Flea to the top of the mountain and, from there, you will make a wonderful flight!

On February 26, we arrive, around 8 A.M, my small Peugeot car + 4 aviation buffs + our bags and skis + my Flying-Flea on tow, at a height of 900 meters. As the Peugeot refused to climb higher in this Motélon valley, we decided to hand- push the Flying-Flea and to haul it up to the “Plan de la Monse” at 1450 m of altitude! It is 8 in the morning, the four of us start pushing. At 5 P.M, we are only Max and I left, exhausted, in the snow nearly up to our knees, but we nearly reached the goal. We tie our glider to fir trees then eat and sleep in a nearby chalet.

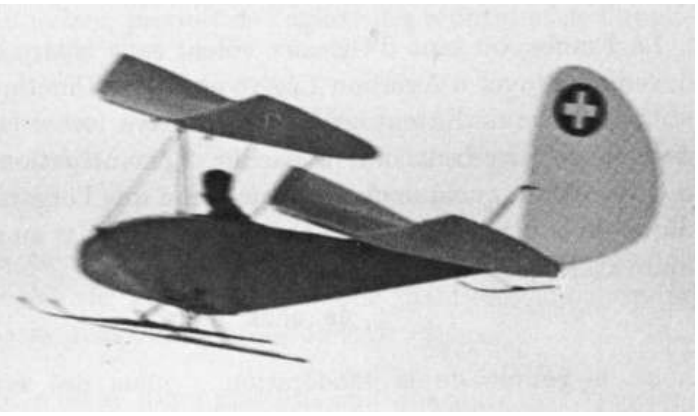
The next day, we find the flea covered with snow. We bring it to the top of the mountain and from there… I see…the slope of the Jogne valley from where I was supposed to take off. I also see the 550 m. hollow I will have under me and I have the feeling to have the same kind of hollow in my stomach! I still have to wait for my buddies who want to see my feat…Well at 2 P.M I am strapped to my seat and ready to go. I tell them: If everything is going fine after takeoff, I will yodle*. It is what I did…but laboriously!



My ten Flying-Fleas

By Louis Cosandey

It was a wonderful flight! I flew to La Villette, then I passed in front of “les dents vertes” (the green teeth), I flew over Charmey. As it was the Carnival Monday, there were plenty of people in the streets. I let out a iooh, hoo hoo hoo which had listeners, this time! I flew over the chamois' park, the cock of the church tower, the Javroz bridge, and I came back to the village, just missed a power line, and landed, beaming with joy, on a beautiful snowy meadow. 4 minutes and 20 seconds I will never forget, I was happy and ravenous!



Later on, I made more flights on the mountain side, but unfortunately, war came.

-Flying-Flea # 2-

During the 1939-1940 winter, I built a fuselage with a motorcycle Douglas engine on its front. Through a chain 1/3 reduction drive, it drove a 1m 60 diameter propeller. I could only fly in secret… on a meadow, in a remote corner. I only made a few short and low-level flights, During my last flight test, my carb froze and I damaged the machine.

-Flying-Flea # 3-

During the war, only gliding was authorized. I got back the pieces of my # 1 and made a new front wing held by two masts cut out of a steel sheet, shaped and welded. The airfoil was the fashionable NACA 23012. It is only in march 1941 that I could make the set up on the hills where everything had started. A flight instructor, René Tolck, was very interested and filmed in 8 mm these slope soaring takeoffs.

On April 23rd, my small Topolino car towed the glider beyond the village de Estavanens (Gruyère). In the morning, I made two short flights, keeping in shot of the camera. After sharing a lunch on the grass, we went higher in the mountain.

There was a pretty strong south-west wind and, Oh, surprise, I could remain 4 minutes in the air. You may think that a 4 minutes flight is not so much, but, you see, I was still a big ninny and I did not stay in the lift zone. Nevertheless, I learned a lot from this first soaring lesson.

The Chiaz is an area of low hills (what we call a mountain for cows), located between Bulle and Le Moléson. Its top is about 1,350 m. Altitude.

To be continued

http://www.dailymotion.com/video/xbr0o5_entrevista-a-luis-cosandey_sport

CALCULATING VERTICAL TAIL VOLUME COEFFICIENT Vv

This issue David brings us CALCULATING VERTICAL TAIL VOLUME COEFFICIENT Vv
Readers are invited to send us, or David (isleycantileverpou@yahoo.com), your comments and suggestions.


David Isley

Thank you David,
The Pou Renew Editors

VERTICAL TAIL VOLUME COEFFICIENT

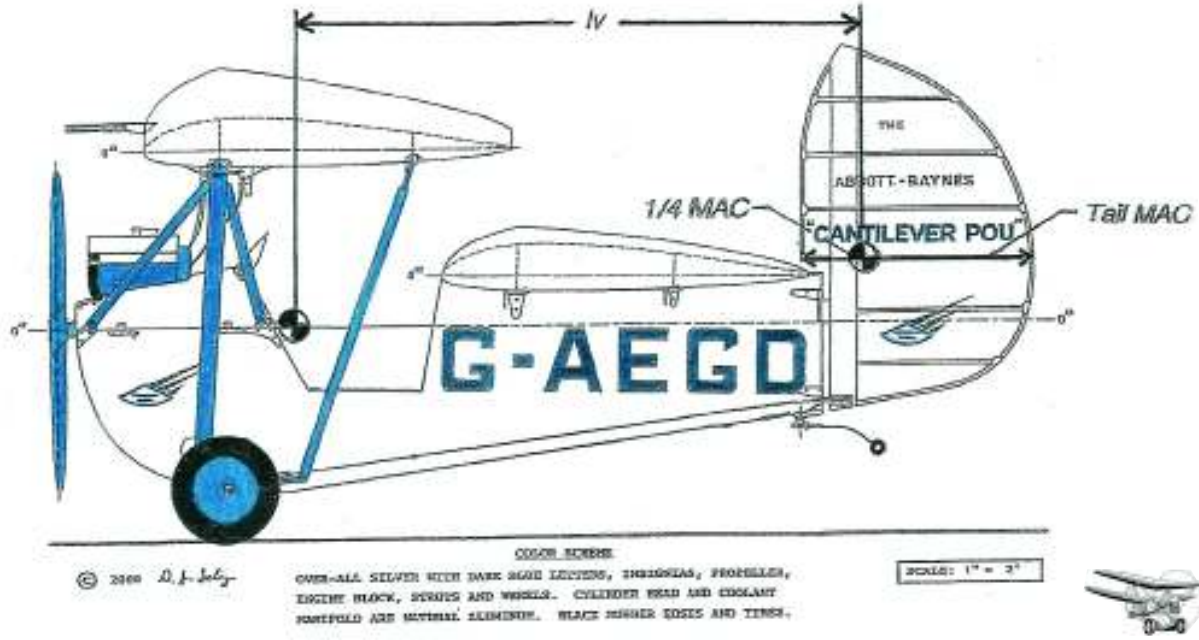
The following formula is for aircraft tail volume. There is a horizontal tail volume coefficient and a vertical tail volume coefficient. We will do the vertical one, as this has everything to do with the directional stability of the airplane, especially important for the Flying Flea. It does not have too much to do with the ratios of the forward vertical fin area vs the rudder area, but the moment arm [distance] from the aircraft center of gravity [C.G.] to the ¼ MAC of the vertical tail area is of utmost importance. The reason being is that the Flea is really a flying wing when it comes to [directional] stability, hence, a very, very short moment arm, which then requires a much larger total [vertical] tail area than conventional aircraft.

The average vertical tail volume coefficient *(Vv)* for conventional aircraft is 0.026 and for the Flying Flea it should be equal to, or greater than, that because of the very short moment arm. Also, directional stability is improved if the vertical tail Is divided into a vertical fin with an attached rudder as is done for conventional aircraft.
(From Richard Fraser's web site: http://www.fraseraerotechnologycompany.com)

The following equation is from *Light Aircraft Design* by Ladislao Pazmany. All measurements are it feet.

$$Vv = \frac{Sv \times lv}{Sw \times b}$$

b = Average wing span for a Flying Flea (foreplane + aftplane) ÷ 2
lv = Moment arm from aircraft C.G. to ¼ MAC of vertical tail.
Sv = Total vertical tail area.
Sw = Total wing Area.
Vv = Vertical tail volume coefficient.



CALCULATING VERTICAL TAIL VOLUME COEFFICIENT Vv

Given the following specifications for the Pou du Ciel on the previous page, the vertical tail volume coefficient can be calculated as shown in the example problem below.

Wing chords = 4.6 ft
Foreplane = 22 ft span
Aftplane = 13 ft span
b = (22 ft + 13 ft) ÷ 2 = 17.5 ft
lv = 7 ft
Sv = 9.6 ft
Sw = (89 ft + 48 ft) = 137 ft

$$Vv = \frac{Sv \times lv}{Sw \times b} = \frac{9.6 \times 7}{137 \times 17.5} = 0.028$$

This vertical tail volume coefficient is greater than the average (0.026), but with the Pou du Ciel it is better to be oversize than undersize with the rudder. The rudder is very powerful on the Pou du Ciel and use of a rudder control system to provide progressive movement to prevent over-control*, especially during take-off and landing, would be a desirable option. See issues # 27, # 28, and # 29 of the Pou du Ciel Renew for examples of this.

* * *

It is often desirable to calculate the total area required for the vertical tail (Sv) when designing a Pou du Ciel, or to check the area of one you may wish to build to determine if it is adequate. An example is shown below:

Wing chords = 3.75 ft
Foreplane = 18 ft span
Aftplane = 20 ft span
b = (18 ft + 20 ft) ÷ 2 = 19 ft
lv = 5.82 ft
Sw = (18 x 3.75) + (20 x 3.75) = 67.5 + 75 = 142.5 ft?
Vv = 0.030

$$Sv = \frac{Vv \times Sw \times b}{lv} = \frac{0.030 \times 142.5 \times 19}{5.82} = 13.96 \text{ft}$$

Therefore, the required total vertical tail area is approximately 14 ft for a Pou du Ciel given the design specifications above.

* See Pou Renew #27: Frank Easton´s Progressive Rudder Control

Fleas in Sverige
Land of Pippi Långstrump

With the kind permission of *Björn Zereba and Lennart Oborn, Editor of EAA-Nytt, the Swedish EAA newsletter, we are publishing a translation of Björn´s article.*

Flight tests of the Flying Flea type HM14 with HM290/3 wings, registration SE-XJH

This particular machine is very unique as it is the first in the country to have an official registration and is built according to a set of rules in modern times. Additionally, it has a complete electrical system with generator/alternator, battery, starter, three fuel pumps and a lot of other equipment in general such as radio, GPS, mode S transponder and fuel computer.
This machine is the latest in the line of constructions of HM14 type that have been built in Sweden. Manufacturer Henry Nyberg (wings and working methods for woodworking and gluing) and Björn Zereba (cloth covering and everything in general including the wing-ribs. A work from scratch out of various drawings mostly provided by Robin Germon (New Zealand) who has revised the drawings of designer Henri Mignet and his basic design from 1933.

The idea of building one's own aircraft began in the winter of 2003. It had to be small so that it did not take up so much space. One had heard about the Flying Flea and it apparently would be small. That was all I really knew about the type, plus that it was built out of wood which of course suited a former model builder.
I ordered home the plans I found online. Studied the design in order to, together with my technical reviewer Anders Ljungberg, go through solutions / calculations and a final configuration of the machine.

Fleas in Sverige
Land of Pippi Långstrump

The HM14 proved more quirky than I had imagined. With a front wing moveable responding in pitch to a joystick, a lack of ailerons and that the side movements of the joystick were linked to the rudder. Ground control is of our own design with pedals and allows excellent maneuverability and small turning radius. Anders said that the fuel tank should be placed behind the pilot instead of on top in the front wing so that is where it went. It was also necessary to link the flying-wire brackets on the fuselage with steel-bands so that they can carry the load. These can be seen under the fuselage.

To enhance the directional stability and to increase the maneuverability we elected to extend the fuselage longerons so the rear body would contribute to the base for a fin and thus get more fixing points for the rudder.

The wing structure of the first HM14's leaves much to be desired. The early version was ineffective with a very outdated airfoil, no torsional rigidity and lacking calculated spars. So, a more modern variant was needed from Mignet, who was a designer that constantly developed his designs with continuous improvements. The choice fell on Mignet's HM 290/3 wings for they have the same span and a more modern improved airfoil, two wing spars that are very rigid. Additionally they are folding, so that the machine does not take so much storage-space. Early HM14's had a wing chord of 140 cm but HM290/3 wings fly well on 121 cm. The position is similar though, with the rear trailing edge of the front wing level with the front leading edge of rear wing.

Henry Nyberg built the wings with cabane/pylon mounts attach points for both types of wings, so that, if you wanted to in the future, could use another variant. The rear wing was also mounted with a Cosandey flap. A rear-wing adjustable flap that can only move upwards. This as an extra safety feature in the event that the machine would have an uncontrollable diving tendency during flight testing. It has so far proven to be a completely unnecessary detail, but it's nice to know that it exists.

Fleas in Sverige
Land of Pippi Långstrump

Then on to the engine choice: we settled for a used 45 hp two-stroke with a reduction-transmission that after an extensive renovation to a new condition turned out to cost more than a newer new model from the same manufacturer. For a propeller a ground adjustable three-blade was elected that, which options, can be made adjustable in flight, but that will be a later question. The fuel is premixed with the oil on ground, so that is a little tedious procedure in itself.

So how is it to fly the machine?
Two test pilots are trying to determine this and the answer is that, so early in the flight testing, with 60 flights and 4.5 hours of air time, you can conclude it interesting yet not difficult to fly. We who are flying the “cart” are Per Widing and undersigned. The machine lifts at very low speed around 40 km/h and climbs well around 60 km/h up to level flight, reaching 100 km/h in cruise. One should not approach under 65 km/h on final to have a direct positive control.

I've been trying of up to 10 kts crosswind take-offs/landings and must admit that it is rather insensitive with the right technique. Landings have been undertaken with speeds up to 100 km/h and nonetheless it stops on a surprisingly short ground-run stretch without brakes. The most important thing to remember is that the sideways joystick movements keep the course and the rest comes by itself.

In the air she banks a little after the last turbulent upset but is stable on course and altitude. One just has to get used to it and not try to correct side tilts unnecessarily with Joystick. She straightens up on her own (... has a relatively large wing area). It is very easy to place the machine where you want it and it's basically like a Bergfalke in vertical glide but a little Pitts when it goes into turns, that also can be performed with very small turning radius, very much due to the machine's low speed.
For low speed range, it is highly interesting. I have flown her down to where you hardly have any indication. If one reduces power a bit it maintains its attitude. The rear fuselage sinks down with decreasing forward speed. With a further power reduction, it becomes an elevator ride in the corresponding attitude (parachutal descent). A substantial reduction lowers the nose which is very positive. The recommendation for this kind of machine in stall, is reducing the engine to idle and it is important so that the wings fly free having as little effect on each other as possible. The engine air flow runs mostly under the front wing and over the rear wing. Joystick position also varies with the speed one conducts the machine.
Now one can say that we have progressed so far flight testing, that it is time to evaluate trim controls to adjust the joystick feedback of air loads, which are not necessarily unpleasant, but for the long flight may need to be adjusted.
Finally, it is a great asset to have an additional test pilot in the evaluation program.

Fleas in Sverige
Land of Pippi Långstrump

It is a way to keep the aircraft from being placed in a museum where some believe that such machines belong, instead of the air.

Together we can increase the pace and generate more flights and compare our impressions of the machine. With time it will give an opportunity for others to see Sweden's only "Flying Flea" in the air, where it is actually fairly nice to look at, even if it is a bit odd in the design.

Björn Zereba, test pilot and builder

...An uppdate on the figures max tested speed so far 120kmh and constant cruise 115kmh so a little more to go to Vne 140kmh. Flights more than 70 and time 5h

Regards
Björn

...And we must not forget those who participated in this adventure...

Anders Ljungberg and Henry Nyberg with HM14 wings

Outdoors first time with some help from my parents

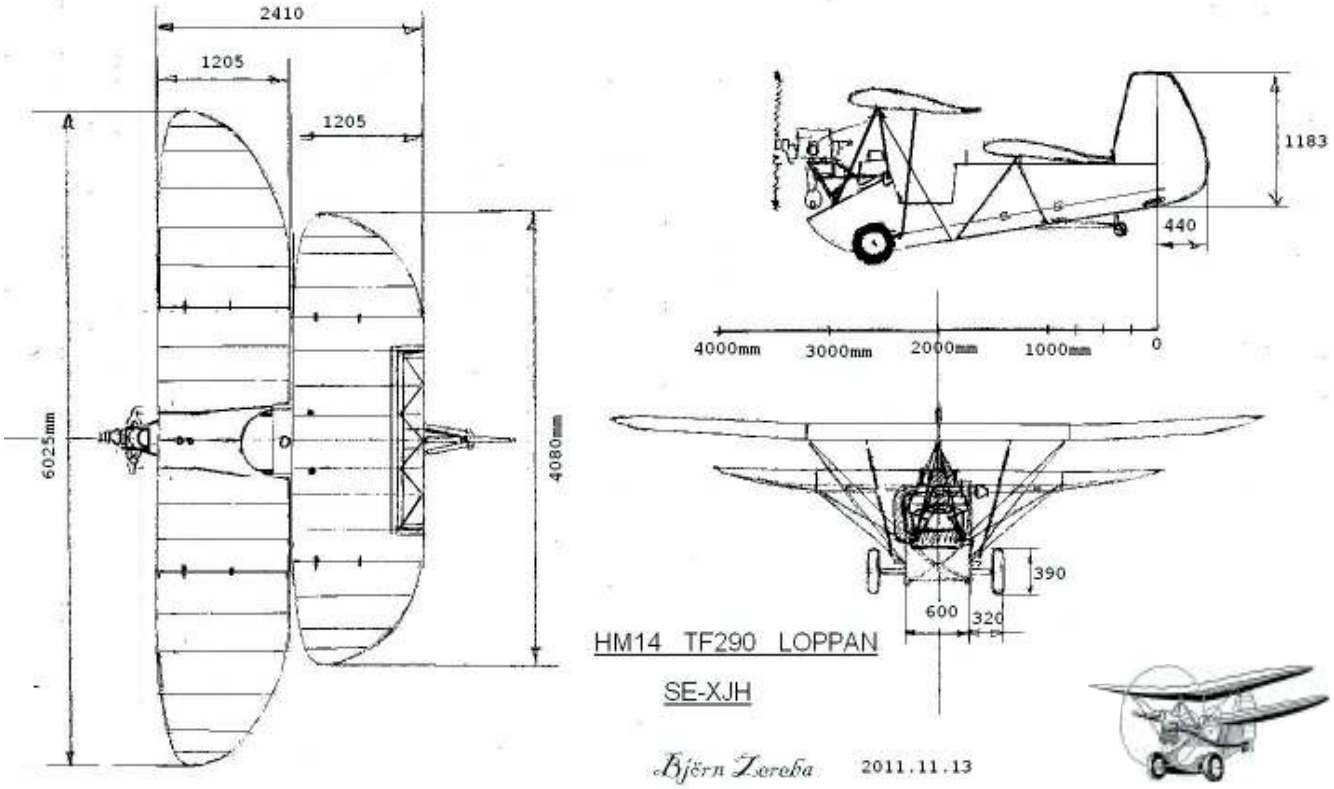
Also a previous edition:
https://mail.google.com/mail/u/0/?ui=2&ik=246702ff31&view=att&th=13a31101e31aee58&attid=0.2&disp=safe&realattid=f_h7xbby1w1&zw

Fleas in Sverige
Land of Pippi Långstrump

Myself in working gear

Per Widing testpilot Hm14

Sven Nilsson Aeronautical Maintenance Engineer and builder advisor



The photo does indeed show the Flying Flea built in late 1935/early 1936 by the editors of the aviation magazine Flygning. The construction of the Flea was reported over several issues of Flygning. The Flea was subsequently test flown by Lieutenant Björn Bjuggren, then serving with Flygvapnet (Swedish Air Force), Wing F 2 at Hägernäs.

Bjuggren experienced several mishaps with the Flea, and considered it "A most dangerous thing". The exact fate of this particular Flea is unclear. One report speak of it as being sold to Finland, but it may as well have ended up on a bonfire. The attached magazine article, written by Kurt Karlsson, was originally published in the aviation magazine MACH during the 1980's.

Jan Forsgren

More Swedish Fleas:

http://mobil.hd.se/klippan/2006/05/05/litet_och_farligt_plan_visas/

and

http://arlandaflygsamlingar.se/?page_id=2503

Fred' s Corner

GENERAL.

Gentlemen just some follow up. Pigeon holes keep opening in my brain, sorry you will have to be patient with me. You can find articles by Patrick who now flies the Flea. By Kirk in varies places. Some you know better than me. We are the lost tribes of the Flea here in OZ.

Now a bit of an overview.

If I was to continue or build another these things would be included or changed.

First let me say I agree with most that Henri was for his time a great inspiration.

I will put down in individual order things as they come to me, this has no preparation , just as it comes to mind.

Material:- I know in different country's you have your own source.

The wings:- I was originally Not shore of the spar if to be tapered front and back at the tip. I now, think that a straight front face is the way to go. It helps with so much for future assembly. Here let me say why is the rear wing built to the same material weight standards and takes so much smaller loads.

The leading edge:- Because the front of the spar is at the peak of the air foil it must interrupt the flow. So move it back to the rear of the spar. Add 6mm glue strips there or even of the spar with the ply moved back an extra say6 to 8mm. it is not needed on the lower surface. I explained about the ply on rib tops and lower surface. The cut out in the centre rear if rounded is a pain to make so use a square shape or fit small riblets to taper the sides.

The HM 360 type folding joints are the best. It eliminates the long hole drilling.

We wont go into tips here.

The fuselage:- I think the ply covered rear and the tapered bottom could be changed. I would build the Piel Emeraud style fuselage. I had lots of experience in them. Simpler to lay out and assemble. And give a neater interior and leaves the possibility of minor changes or additions. Bur most of all less weight at the rear which helps to keep the CofG in control.

I originally had trouble with the tail wheel steering operated of the stick , so installed pedals .Also eliminated the cable springs. That is even after making the compression style using Car valve springs, the tail swing could overcome these.

The fitting of spoilers:- I in talking to Phillip Howell about his spoilers for cross wind landing. I fitted a set but again had to adept some bits Micro switches etc. Kirk , Patrick and Gus stoped using them. Maybe as it is a tail wheel ,I whereas Phill's is a trike?.

I also discovered that even though the small, Yes hobby style electric motor is only mouse power, when converted to longitudinal operation it is Too strong to hold. A faulty micro and it could damage the rear spar. So unless you can find a simple mechanical, hand operated type. Land across or diagonal to the strip or paddock.

With all respect a better UC system is needed. Some of the types fitted to other small AC types could be adapted. I even changed to rubber in compression, mainly for simplicity and better energy reduction.

Fred' s Corner

WING AND FUSELAGE ALIGNMENT.

In looking to the alignment of your wing. Let me stress that it all begins with your ribs. The rib jig needs to be made accurate, as you will use many ribs the same. Slight profile problems can be in the area behind the spar. Now the vertical rib members that go in front of the spar are the most important, for if they are not your rib alignment will be all over the place. I use a cam action clamp on the jig to ensure it is in good contact with the jig block. this cam is nothing more than a circle of 6mm ply with an offset hole for a screw. You place the vertical rib member in and turn the circle till it holds it firm. You may have too experiment to get it to hold firm.

Also I strongly recommend that you obtain a thin sheet metal to make a master template of rib No A .Carefully cut a couple of slots at the front vertical position. The idea of this is that when you have made your ribs it can be overlaid to mark the LE edge cut out, the cord line and most of all the shape around the nose area so you can mark and clean up to an accurate shape. As I have explained in my drawings, I leave the rear spar vertical loose to be glued in after the ribs are installed. The reason for this is that it only takes a minute fraction of thickness change in the spar width to jam the rib while being installed. This means filing the rear member which it a lousy job and not very satisfactory. This rear member is taken out and fitted later. Of course the diagonal and gussets are installed. the final gusset is fitted with the rear member.

This may seem a bit of work but it means assembly will be accurate.

I use a piece of timber as a spar jig with a width to suit the spar and about 50mm thick. Select a dry piece and very straight. Mount on say 3 or 2 fixed stands or weighted saw horses. 2.4m is what you want. You can attach bit of ply or timber up one 50mm edge to keep alignment when assembling the spar's.

To the assembly of the ribs to the spar I have pieces of timber coming out from my bench top, these I align very carefully. I use eye sighting. I first use a level then I position myself at the end and raising my head up and down LOOKING for when one end disappears behind the other, if there is a twist it will appear like a wedge one end going first. The stands you use for the spar can be used with timbers hanging out off to one side. It all depends what space you have. Hard to set up in the bed room or lounge. This is a double check. Now when you sit your spar on these you will also see if there is any gaps under the spar. You will have marked the rib positions while making the spar. This assembly point will need to be high enough for the trailing end of the rib to be clear of the floor. Once you have slipped the ribs on and glued the front member in place and dry you can turn the whole thing over and check the alignment of the trailing end of the ribs. One thing when fitting the ribs either sit the top cap strip of the rib on the spar or with a packer to even the gaps top and bottom. I should have told you to do a dry run with the ribs either tacked in place or a way that suits you. And get down and look along the rib ends to check alignment. If you have done it well they will. I also purchased a length of aluminum flat bar 50 x 3mm to use as a straight edge.

Now you can add the rear spar (same rules apply) the trailing edge strip, ash blocks etc. When sturdy enough lay it on your work bench and use 2 sight bars to check for twist. These sight bars are 2 bit of timber that sit on the spars or even the end ribs. They only need to make contact at 2 points \ The front spar or on top of the rib at the spar and the rib at the back. If you use a couple of small bit of ply hanging down to clamp to the end rib

Fred' s Corner

WING AND FUSELAGE ALIGNMENT

ply. They must I repeat must be the same. Then you can sight or even use an adjustable level.

The same checks apply when fitting the LE ply.

Now to hold this while the glue sets there are many ways. Use staples if they are the thin wire type, and you have help and more than one staple gun. Not the thick rectangular type, they can split the timber Tack strips can be used but take a lot of time to set up. I have used them a lot 3/8" in strips of scrap 1.5mm ply. My time is my own. I don't pay myself at all..

Luggage straps. Bungee straps. and any thing that suits. But don't use something that will twist or bend. The lower surface may need packers to keep the ply in contact.

Back a bit, the leading edge cut out and trailing are a good indications if you are on the right track..

Treat the wing tops in the same faction. So what ever you use, either levels, sight boards or laser levels or beams, take your time.

I have not gone here into the blocks or hinge fittings etc they are discussed elsewhere.

There is one more thing, I carried the ply on the LE top back to the rear of the spar. This will be better. Also I used 8mm wide fill strips between ribs to attach the ply.

Once the LE ply is fitted there is no reason why the wing sections will twist.

One sight board can be used with an accurate level or 2 if using the sight method. If you use 2 they must be the same. As I said earlier you can fit ply scraps to hang over the side if using on the joint ribs. Laser leveling can be used but it depends on which type of equipment is used.

This is my basic way of doing this operation. I look check and double check every step of the way.

To be continued

Butterflea SAGA-Part 2

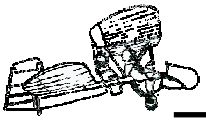
Restoration has slowly begun...

Engine mount prototype almost ready for testing...

Checking wing travel angles...

Prop laminations ready for glueing and carving...

Inspection and evaluation by my local expert friends Hector and Beto (on the camera)...



To be continued

N-381HM

Pou across the pond... Transatlantic Tribute Flight

Pilots, Friends, Pouducielist's! Let me tell you a fantastic tale about a Man, a dream and the sport of the air. This is not the tale of Mr. Mignet, for his is well known, but of how that story, and his supporters have impacted current day passions for flight.

It is important to give a bit of history, so that we may better understand the circumstances which have lead to the current state of affairs, so please bear with me. I have myself been interested in flight since I was a young boy. I made many model gliders, and remote control airplanes over those early years, and I have often looked back and wondered if the nitro-methane fumes from the fuel has had any lasting effect on me I suppose only time will tell. I also spent much of my life sailing boats, and living and traveling on some, so my adventurous spirit was fostered early in life, not being one to accept convention at face value. I remember my first flight in an airplane like it was yesterday. My father and I had sailed our fourty foot ketch across lake Erie to move it to a summer location, and a dentist friend of his was to fly us back in his airplane. At the ripe old age of six, I demanded I sit in the copilot seat!, as surely I was best equipped to command such a craft in the event the owner required assistance. It was fantastic, to look over a large body of water, and realize this was the first time I have ever seen the top of a bird in flight! ~ Many years later, in 2007 I took my then six year old daughter for her first flight, in the same make of aircraft, a Piper PA-28. Sharing with your children the love of flight is one of the best things I can imagine. I think the first time you are in a true airplane it either has a big impact on you or it doesn't, I say true airplane since a machine that is effectively a submarine tube, with wings at 35,000 Ft, insulated from the air, and commanded by computers, is more of a conveyance. It steals from us the sensations, smells, and (mostly) the passion for flight. IF you ask any air traveler what there best part of the flight is, it will be the take off and landing, below five thousand feet where we can see the ground clearly, and look at the world as a does.

Every pilot remembers the first solo flight, the anxiety, and excitement. Even if your first flight is never out of sight of the instructor, frantically pacing the ramp with his hat in hand... you will never forget it. I felt as though all my childhood dreams had come true, that all those imagined flights with my painstakingly constructed models, were now real. I have said all that to say this. Flight can be many things for many people, a way to get to corporate meeting, or loved ones. However to a few, it is much more, a realization of a dream, a embraceable, tangible freedom; this is as it was with Mr. Mignet.

(Be patient friends, we are getting to the good part)

Marshall Lowry

In the Fall of 2008, I was for a few months unemployed, and spend much of my days in a local coffee shop down by the river, learning about the finer points of Espresso, and thinking about how I wanted to spend my time. I have long been a fan of a better mousetrap, not that I have a problem with rodents mind you but I enjoy when people think things through and are not satisfied with the status quo. I was looking for a new aircraft to build, as I still enjoy building, just now on a size I can ride in! Having done some restorations, I had learned that I enjoy woodworking, and fabric, with some metal fabrication. I built a Jodel D9 and studied this series of aircraft with great interest. It was then that I found the French Avions way of thinking and wood airframes,to be fantastic, if not a bit on the small side. I also eventually learned that I hate to drill out rivets, have you ever split a Mooney in half? I have, I don't recommend it as a hobby, it will cause damage to your liver eventually. On my quest to find a new and interesting airframe to build, I was searching for information on flying wings, and came upon a funny little website "Nest of dragons", I thought to myself, my wife likes dragons, what must this be about. - and you know what happened. next.

I began to watch the Flying Flea lessons on you tube, then I watch it again.... and a few more times. My first impression was that this fellow and I could get along very nicely should we ever find ourselves somehow mistakenly locked in a pub overnight; and that secondly, I was very impressed with the formula behind the Mignet design. I read the English translations portions of the book available to me, and was within the first twenty pages, fully immersed in Henri's passion for flight, and further for his need to do it on his own, experimenting, fixing, and camping. I was amazed, that his thoughts and feelings seemed to echo my own, I could feel the chill in the air on the damp mornings he bounded across the field, I could imagine, carving replacement propeller in the tent

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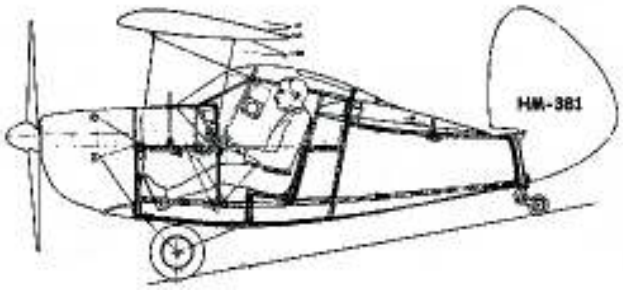
Pou across the pond... Transatlantic Tribute Flight

during a passing shower. I too have had days where I hardly could stop for a moment, obsessed with getting my craft back into the air, I fell in love with his vision, and in these times, I had been brought back to an era of purity in flight. It was somewhat hypocritical me to do my G1000 and IFR training, and flying databases and autopilots, instead of varnished wood and supple fabric after knowing that here a man, many years ago, has felt what I have.

Upon the realization in my life that I do not, for the foreseeable future want anything to do with either Airbus, or Boeing aircraft, I had the unfortunate happenstance to begin flying helicopters, I say unfortunate, because if you ever want to feel financially impotent, take a good long look at becoming a commercial helicopter pilot. But I digress, where were we? Oh yes!, Parachutal descent. Let's pause just a moment to have a serious reflection about safety. I am a father, and like Mr. Mignet, I have an interest in seeing my prodigy grow and flourish over time. We have a wall at our club, that has pictures of all the pilots we have lost, most I am proud to say were very old when they "went west" as we say in EAA.

It was flying helicopters, with there parachute like descents into auto-rotation that I fully realized the safety of this idea. We have been flying powered aircraft for over one hundred years now, and still we find stall and spin fatalities every year. True, pilot training, and better understanding of aerodynamics can help, and has. However if we simply choose an aircraft that is safer to fly, or provides a wider envelope of protection against such things, we would be so much the wiser. Additionally, the argument of varied lift in the living wing, mimicking the nature of a birds method of flight is not to be discounted.



I had previously been in contact with a man from Canada, when I ordered plans for a Jodel style airplane, and some plans for fleas, which I purchased, and built as an ultralight (290), it was good, however for my first attempt a heavy as I used larger materials than I should, and I am ashamed to say, also too was a bit heavy. However it was time well spent, and a good education in the design and formula. I wanted to learn more! I had spent some time in the Yahoo Group, and listened and learned from the living brain trust of these designs, and finally ordered 360/380 plans and set about building my new dream... And working on a four place design, as I have three in my immediate family, and by this point my daughter has developed an allergic reaction to long rides in the car, and an affinity for airport cuisine.

Now, this next bit may be some struggle for you younger readers, but the older of you will understand. As I get along in my life I begin to wonder, where are we going, what have we done, and what does it all really mean. While pondering the times and life of Mr. Henri Mignet over a rather attractive wheel of brie, I began to feel that my dear hero, has not had due tribute to his efforts. True, he was inducted into the EAA Hall of fame, in 1999 for which I am very pleased, but I am disgusted with the sour thoughts that so many retain about his designs. Should we feel this way about Burt Rutan? or should we celebrate the achievements of his work, and scaled composites? He too has had lives lost, in his designs, however we now live in an age of acceptance of unconventional thinking, or so would be my ideal. I am afraid my friends, that Mr. Mignet, is in need of some vindication, of a rebirth of the spirit in which he brought flight to so many, the man of the street, the non-aristocratic aviator if you will.

I have decided dear readers, that I must fly a Mignet design home to Marennes France. To pay tribute to the man that has inspired me so much, and to allow those whom have supported him and been so close to him over the years to see that his work lives on. Why do you ask must such a feat be undertaken? Many small Pou scatter about fields and valleys, on short flights, near the landing areas, however I have a feeling, that should a Pou cross the pond, it will mean so much, to so many. The flight will be planned from Florida, to Wisconsin for the annual EAA convention, through Washington DC and the national air and space museum up through Canada, to Greenland, Iceland and Scotland, along the northern route and on to the birthplace of not only the design, but of the fabulous diary of Mr. Mignet that has inspired so many.

See Page 20 for a larger and extended view

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Pou across the pond... Transatlantic Tribute Flight

To WHAT end? Should I get wealthy from this flight? In truth a book written of the adventure, with pictures would not be out of place, but no, I simply undertake this task as I feel it needs to be done, and there has not been that I am aware of anyone else to do it. I feel that the HM legacy deserves this, he was never able to get his designs fully appreciated, or put into mass production, indeed were it not for a war, and some minor circumstances, he may be as well known as Piper or Cessna, perhaps one day he will be. But my friends, his work, and the work of those continuing to lecture on his designs is important, and has in today's aviation, fills a need more pronounced than ever.

I am constructing a presentation booth to be taken to airshows, and fly in events to show his work, complete with a HM14 flying, which will be parked next to the 380 series aircraft what will tour before the flight. I am in the process of coming up with a tail art, as is HM tradition to show a cartoon Pou hopping the stops across the North Atlantic. At this time, the flight is anticipated to take place in the summer of 2014, with more work done locally before then. Although I would like to go now, I will take every measure to ensure a successful, and uneventful passage. This flight plan has been used frequently by many small private aircraft, and the requirements and experiences well documented. But it must now be done in the HM way, and I doubt Mr. Mignet would for a moment disagree with the project. I have not detailed all the painstaking calculations of weight, weather, engine consumptions, and tests conducted to make this tribute a reality, for that is not the purpose here. Although I have expressed some romantic ideals, I assure you that myself, and those in my corner have the utmost ability to analyze each facet of this project. The communication I wish to bestow upon you, my friends, is that we must still today feel and portray the Sport of the air, for the meadows smell as sweet, and the streams glisten as brightly as the day the first HM14 took to the air and make that initial successful circuit. If we loose that feeling in our hearts, lost to radar screens, and pressurized cabins of the hundreds, we have lost a valuable part of our humanity. I would hope that my work to educate more about these designs spawns new thinking, and experimentation, while paying homage to a man that said the hard things, and went against convention in a time where it was not easy to do. I frequently review his words to get inspiration, even to the remarks of focusing on the task at hand

" you have a airplane to build man!" I am very lucky to be thus far avoiding the A.I.D.S (Aviation induced divorce syndrome) my lovely wife Lauren has supported me so much in the past few years for me to follow my passion, and do what I feel I must, for which I am very grateful. I draw many parallels between Henri's life and my own, I too have suffered tragedy, and setbacks every day I ride my motorbike to the airfield, I feel that I understand more the excitement he did working to get his works of art airborne. I can only imagine, what I will feel flying over the French countryside, and those areas he camped and lived.

Long live the Sport of the air, may his dream, inspire others to follow there own.

~ Marshall Lowry

Do be careful !

I will be waiting for YOU !

Dear Marshall,
the entire POU RENEW team
wish you the most succesful flight on this marvelous enterprise !

Vive le Sport de l`Air

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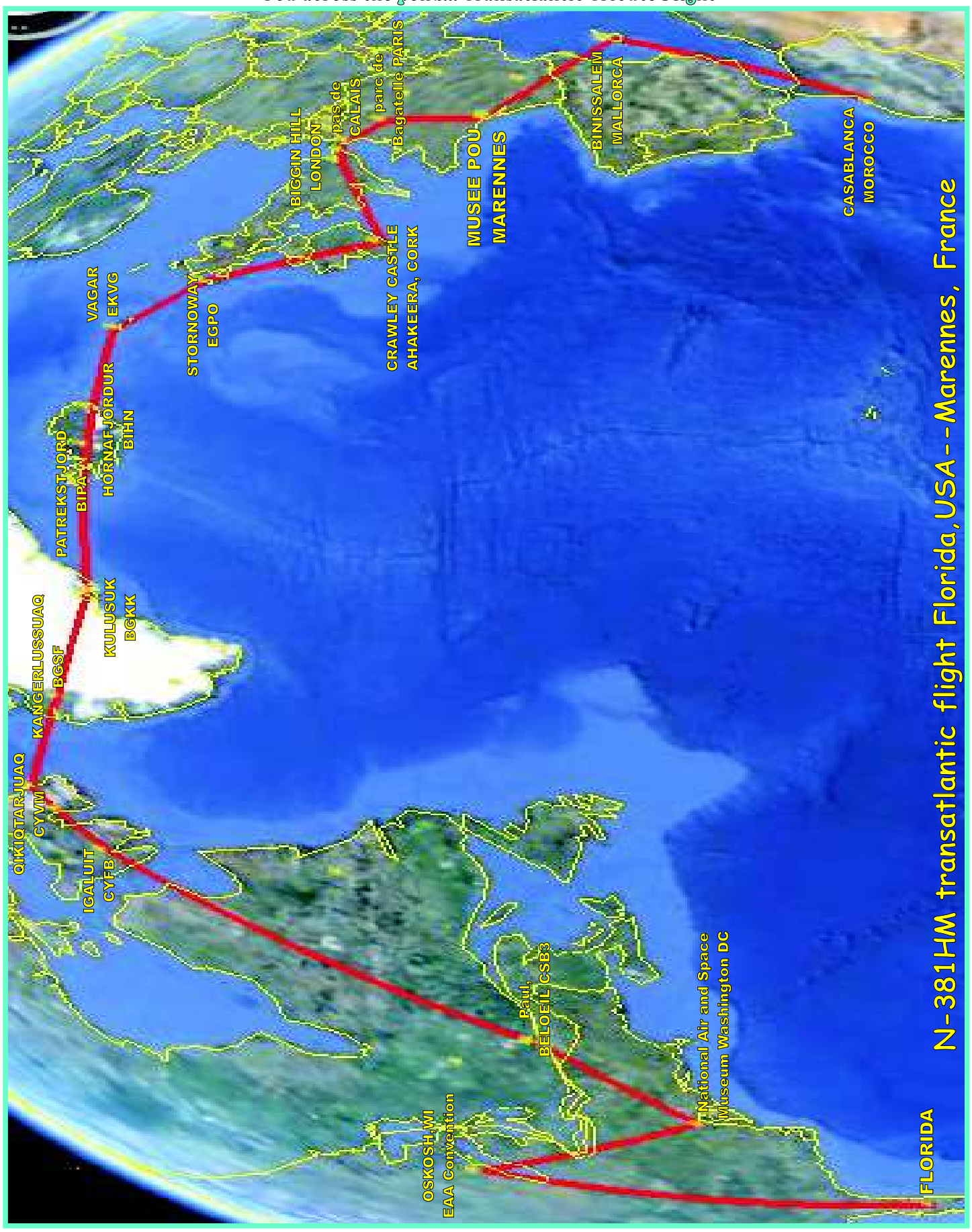
Pou across the pond... Transatlantic Tribute Flight



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