CHAPTER 15

A Note on Windless Flying

Kitefliers have always been frustrated by a lack of wind. My guess is that the day after the mythical Indonesian fisherman invented the kite he said to his family "Come and see this thing fly" — with the result that he faced the first flat calm for a fortnight.

Early European kite designs up to the end of the 19th century required a reasonable wind. Designers in the 'Golden Age' were not much interested in low-wind flying since kites were being developed for lifting.

So, although modern designs and newer materials meant that kites could fly in lower winds (e.g. the lightly loaded Brogden used in Edwardian kite competitions), it was not until the Delta of the 1970's that low wind flying became possible for enthusiasts.

However, No Wind flying (and indoor flying) developed differently. Chapter 12 explains that if the centre of gravity of a kite moves forward of the centre of forces (e.g. by weight of the line or reduction of airspeed) then the kite will behave as a glider. This was well known to model aircraft makers — one of whom, William Bigge, by the early 1970's was using model aircraft technology to design kites which would fly in the 3 knot wind achievable by walking in a large hall (in his case an aircraft shed). When the speed dropped the kite would glide backwards 'downwind'. For details, see the books by Newman [1] and Moulton [2]. Bill Bigge is still involved in indoor kites and gliders (see AKA *Kiting*, Spring 2011).

A kite must always have an airfow to produce lift but 'no wind' flying minimises the windspeed either by the flier moving as described or by the flier's ability to pull the kite through the air. This second approach is obviously easier for two-line or multi-line kites. The 1980's saw fliers of two-line kites being asked by festival organisers to 'fly 360s' i.e. use a low down-wind speed as the basis for steering the kite in a circle — limited only by dizziness. By the mid-1990's there were a few skilled fliers of Revolutions who could fly on short lines on a stage — gliding one to be caught in the flier's mouth was a top trick.

At various times there have been indoor circuits and events for such fliers, but what nudged me into writing this has been the development of outdoor single-line "No Wind" flying — by which term I do include very low winds.

For several years I have seen Chinese fliers with large eagles sparred with heavy bamboo. They are bridled to lie very flat on the wind, they will glide upwind but can be turned to fly in a long downwind circle before being pulled round. This reequires rapid line in/out movements for which they will use special large circumferenced reels. The effect of a soaring eagle can be very realistic. For the last 3 years they have produced a modern fighter aircraft design (still using curved bamboo) which originally flew like an eagle. Most recently I've seen them perform a backward loop when pulled hard into the wind; a loop not a flip. Pedro Gonzales has one.

Apart from a 'No Wind' ultra-light delta (Le Malard, by Louis Sko from Germany (Illustration 1)) which I haven't seen flying, there have been two established English kites which can be pulled round in 'No Wind' conditions.

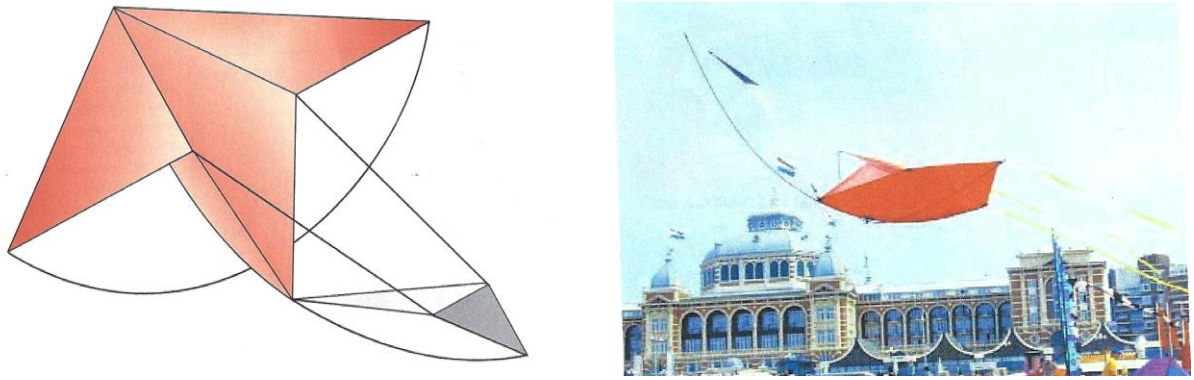


Illustration 1: Le Malard by Louis Sko

First there is the Bai Se Hui Die (Illustration 2) — a radical new design by Stephen Hoath and the Gonzales brothers. Not only is this kite great for 'tricking' but nothing approaches the Bai for toughness and ability to be unmoved by heavy crashes on hard indoor floors and immediately relaunch itself.

Illustration 2: Bai Se Hue Die

The Pteranodon (Illustration 3) by Karl and Sara Longbottom is a wonderful varied flier. I'm amused by the way in which Malaysians see it as a bird even though it can't challenge the Eagle's swoops. Anyway, who knows how pteranodons flew all those years ago?

Illustration 3: Pteranodon

Admittedly these kites are often flown outdoors in low winds, but there is in my view a definite trend to fly single line kites which can 'trick' in a very low wind as well as indoor 'no wind'.

Two further examples. The first is Christophe Tournay's Ginga (see Illustration 4).

Illustration 4: Ginga

The second takes us back into history. Reinhold Platz was a German aircraft designer who worked for Fokker on the first world war Triplane made famous by the Red Baron. He designed a glider using jib sails — adapted from sailing ship technology and very reminiscent of the later Marconi jib kite. There is a drawing of the hang glider (Illustration 8) and also of one being flown in 1923 (Illustration 5).

How this sits with American claims to have invented the hang glider in the 1970's I do not know.

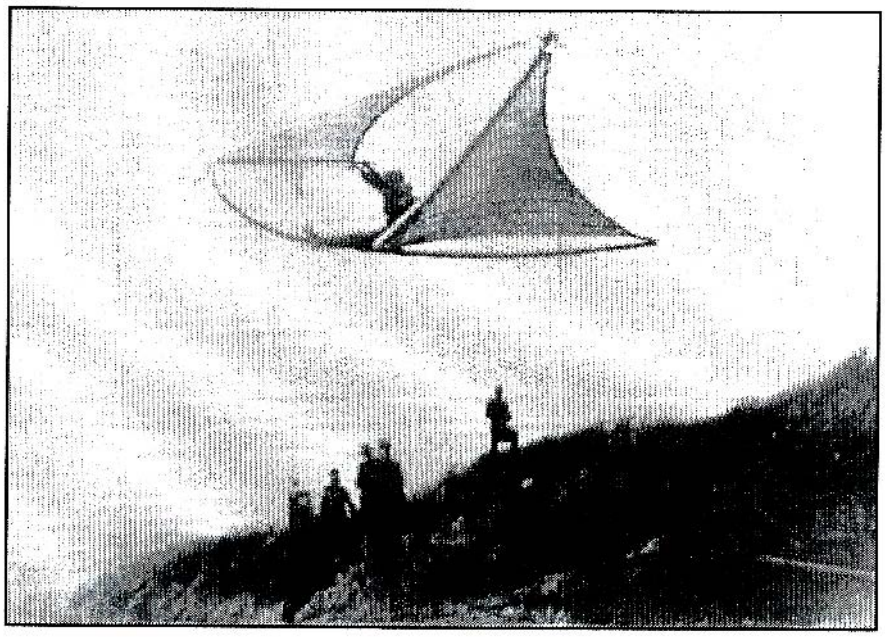


Illustration 5

The Marconi rigged jib kite was a new design in the UK in the 1940's, associated with W.M. Angas (see Pelham [3]). I have no idea whether Platz influenced Angas. I do know that the kite is difficult to make, involving a vertical post and notoriously difficult to bridle. The 'Modern Marconi' of about 2004 (Illustration 6) with no post seems to stem from Platz.

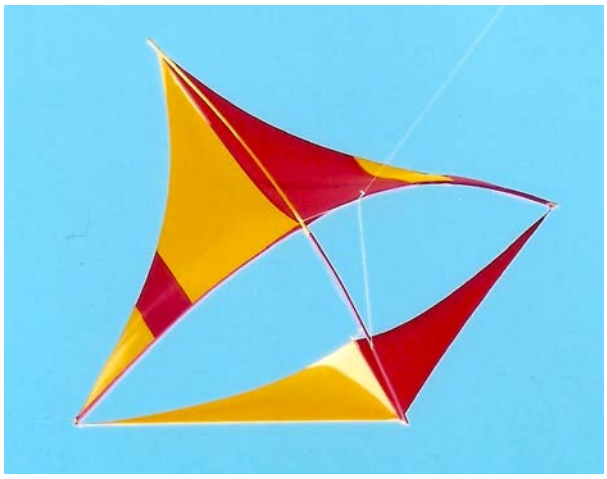


Illustration 6: a 'Modern Marconi'

Recently (2011) Ceewan –the Malaysian designer of the Langkawi Pointer (see Chapter 10), a very good low wind flier– has produced a kite more closely based on

Platz called the Plutz to acknowledge its inspiration. It has a single bridle point and performs well indoors and 'no wind' outdoors (see Illustration 7).

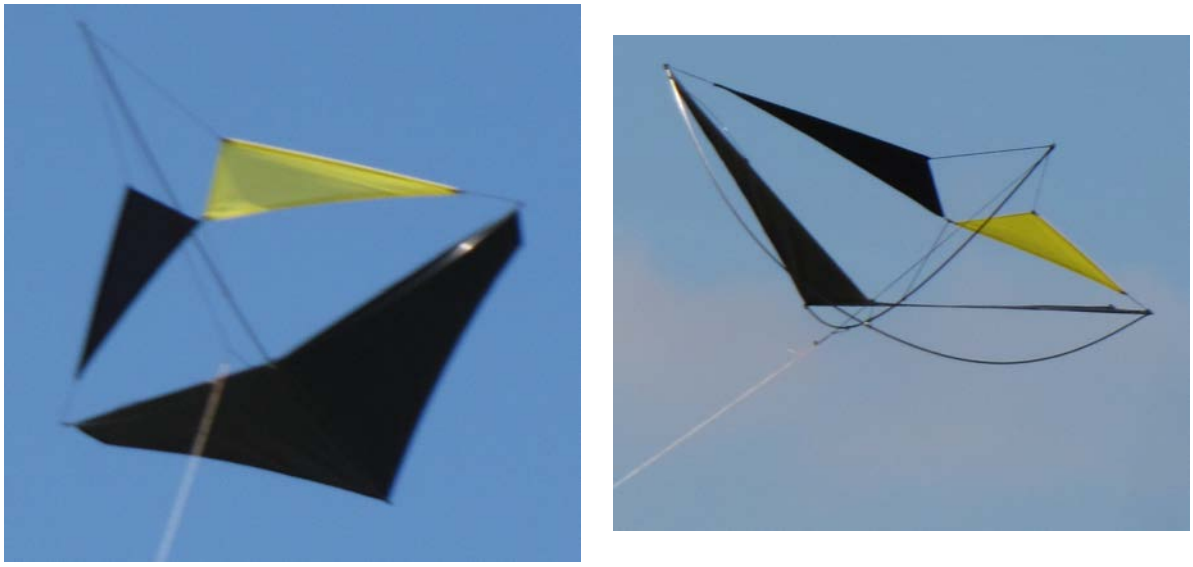


Illustration 7: Plutz, a low wind kite by Ceewan

Bibliography

[1] Newman, L.S. and Newman, J.H. (1974) *Kite Craft.*

[2] Moulton, R. (1978) *Kites.*

[3] Pelham, D. (1976) *Kites.*

It is, by now, well known to our regular readers that the sport of hang gliding is far from being a new invention but the following article, first published in 1924, does appear to be a little different from most. The overall design will be instantly familiar to kite fliers as the Marconi rigged kite and, indeed, photographs exist (not, unfortunately, in our office) of this machine being flown as a kite with a pilot aboard.

A NEW IDEA IN GLIDERS

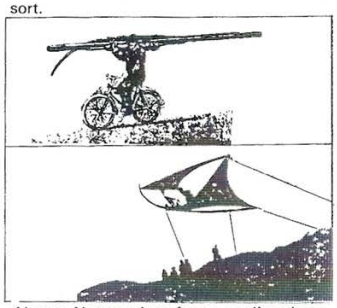
A German 'Sailplane' of Unorthodox Design

One of the most extraordinary gliders ever built was designed and constructed in Germany towards the end of 1922, and flown in February of last year. It is not, however, until now that any information relating to this machine has been published. The January 26th issue of our German contemporary *Zeitschrift für Flugtechnik und Motorluftschiffahrt,* otherwise 'ZFM', contains an article by R. Platz, and some illustrations of the 'Sailplane'. In an editorial note it is stated that the article was sent to 'ZFM' as long ago as February 1923, but that, according to the wish of the author, it has not been published until now. Some of the illustrations from 'ZFM' are published herewith, and we have further prepared a set of diagrammatic side and front elevations and plan so as to show the general arrangement a little better than does the photograph.

The author of the article states that what gave him the idea for the 'sailplane' was the memory of past experience with a sloop-rigged sailing boat, in which, by suitably trimming the sails, it was possible to steer without using the rudder, simply by hauling in or paying out the jib sheet. He conceived the idea that it should be possible to apply the same principle to a glider, and he furthermore set himself the conditions that the machine should cost no more than an ordinary bicycle, should be capable of being transported by one man, and should be so constructed as to enable it to be folded into a space sufficiently small to make it possible for the owner to take it with him on a passenger train. Our illustrations show the form which the solution of these problems has taken. First of all, a small paper model was made, as shown in one of our diagrams. The slotted forward area corresponds to the jib of a boat, and the triangular area at the back represents the mainsail. The model was weighted by a paper clip in the nose, and by bending down the corners of the 'jib' the model could be made longitudinally stable. Turning down the starboard corner made the model turn to the right, and similarly an increase in the angle of the port corner resulted in a left-hand turn. Both corners turned down elevated the model, and turning them up made it dive. Thus directional and longitudinal controls were provided. For the sake of simplicity it was desired to avoid any lateral control, and the 'wings' were therefore given a very large dihedral angle, which is stated to have done away with the necessity for lateral control. It is stated that the directional control was so effective that even when the model was dropped flat, i.e. without forward velocity, the rudders were effective.

After the first experiments had shown that the paper model would glide, a larger model of wood and silk was made, having a span of 1.3m (4ft 3in) and a 'sail area' of 0.4sq m (4.3sq ft). This model, which was flown in November 1922, 'sailed' in a light wind, with a loading of ½lb/sq ft, and repeatedly gained height. In order to ascertain how a larger machine was likely to behave, especially with deflection of spars and the variable 'section' formed by the single-surface wing covering, a second model was built having an area of 14sq ft. There was no appreciable difference in the performance. It was then decided to build a full-size machine, and in a few days this was accomplished.

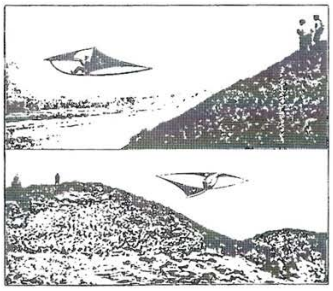
The large machine has an area of 172sq ft, and consists of a central skid, of steel tubing in front and of circular section wood at the rear. Two large sockets welded to the sides of the skid receive the spar roots. The spars themselves are also of circular section wood, but it is not stated whether solid or hollow section. A change will be noted in the full-sized machine compared with the paper model. By bending the central skid upwards the 'jibs' are raised a considerable height above the central portion of the 'mainsail'. Cables run from the spar tips to the front and rear ends of the skid. The wing surface is fabric, but there are no ribs of any sort.

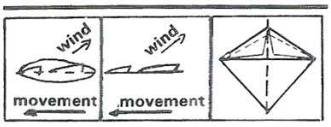


Above: Not much as far as quality photographs go, but enough to show that it really does fly and is also portable.

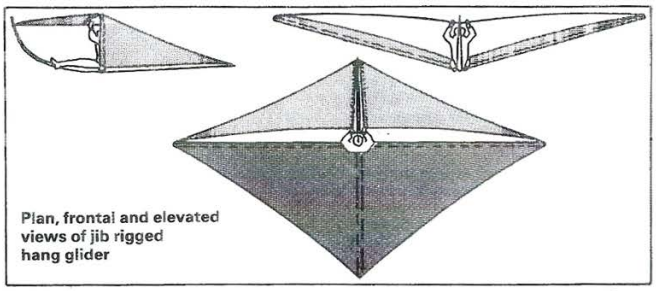
The machine was first tried over the slope of some sand dunes, being weighted by ballast and held in position by four ropes, the wind being strong enough to keep it 'kiting'. Pilots of various weights were then taken up and were able, by operating the jibs, to keep the machine trimmed and facing the wind. The first free flight was made in February 1923 and is said to have been quite successful. When folded, the machine packs into a space measuring 11ft by 14ins by 10 ins and weighs 88lbs (3.3m x 35cm x 25cm - 40kg).

Although by no means the first hang glider, this design never enjoyed the current popularity in the sport although it is often to be seen on kiting fields. Perhaps there is room for further experiment. ●





Just as a jib enables the mainsail of a yacht to make use of more wind than would otherwise be possible, so the jib-rigged 'Marconi' is able to lift more weight than might be supposed.



Plan, frontal and elevated views of jib rigged hang glider

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Illustration 8: reprinted from *Popular Science*, July 1940