23 Hazledene Road, Aberdeen, AB15 8LB, Tel 01224 208617

SHORT FINALS – 1st DECEMBER 1998

Gents,

Well here we are into the depths of another building season, unfortunately we have had a very disappointing flying season, apart from the weather being unhelpful the attendance's on Tuesday nights at Calder Park was poor and a miserable attendance of nine stalwarts attended the AGM.

Some discussion at the AGM and subsequent committee meeting centred on how to stimulate some enthusiasm in the club and the committee is going to promote several initiatives to give some focus on the Tuesday night sessions.

a) To promote the SAA awards scheme to train up our membership to a minimum level of competence. – Examiner and dates to be resolved.

b) To encourage the membership to participate in competition format flying, the idea being to form teams of 3 people and rotate the duties of flying, timekeeping, and towing. THIS IS NOT A COMPETITION, but is designed to train up our membership in the various disciplines and remove some of the mystique of contest flying.

c) The committee is in the process of procuring an electric winch; hopefully this will dispel the frustration experienced with the current winches. Training will be given in the safe use of this winch before members will be allowed to 'go solo' on it.

Hopefully these initiatives will give some focus to our Tuesday night sessions, I must reiterate THIS IS NOT A COMPETITION, but an opportunity to improve the general level of skill in the club. The success of this initiative relies on competent members taking time to encourage and train novices.

It looks like the Calder Park redevelopment is gaining some inertia and to this end as per the motion at the AGM the committee have written to the Arts & Recreation department asking to relocate our activities to Hazelhead Park, watch this space. If the move to Hazelhead happens we will be in the public eye and will need to tighten up on our safety procedures like marking out the pilot box and landing area and checking insurance details. It is the intention to remodel the peg board and move to the tagged keyring which will hang on a board, the tag will be removed and replaced on the hook by a membership card, yes these will be issued, **NO CARD, NO TAG, NO FLY.**

The committee has decided to bestow a lifetime honorary membership on Davie Davidson and to name one of the club trophies in his honour for services rendered over the past years.

YOUR CLUB SUBS ARE NOW DUE THIS WILL BE THE ONE & ONLY REMINDER YOU WILL RECEIVE.

t' Committee

23 Hazledene Road, Aberdeen, AB15 8LB, Tel 01224 208617

Minutes Of AGM

Once again our Annual General Meeting was held at the Royal British Legion considering the poor turnouts at Calder this season we had a good representation at the AGM . Thanks for all of those who attended.
Below are the Minutes of that meeting:

Apologies for absence were received from David Davidson and Norrie Kerr.

Davie, due to ill health and Norrie, due to the obvious logistical problems.

The Minutes of the 1997 AGM were read by N. Masson accepted by B.Ord and seconded by T. Bartlett.

Treasurer's report . It was reported that with a profit for 1997 of 105.25 this now brings our bank balance to 1,074.17. This report was accepted by T. Bartlett and seconded by G. Whelan.

Competition Report. Due to the poor turn outs for the Tuesday night competition this was abandoned. The only one competition the we did hold was our annual June competition which was won by Alastair Hunter.
It was proposed by B Ord that the Tuesday night competitions be abandoned until the Club regains momentum this was agreed by all present.
B. Ord raised the point of the proposed new Scottish League which if this transpires our annual June competition will be one of the Six events. It was agreed that the ADS shall support the proposal.

Club Fees. G Whelan proposed that club fees remain at the present levels.

Adults 10.00
Juniors upto age 16 5.00
Over 65 years Free.
The above was agreed and Seconded by G. Donaldson.

Flying Sites. As many of you are aware Calder Park is in the process of being looked at by Cove Rangers to develop this site and due to this there was much discussion on this topic. It has been decided that the committee are to seek permission to use Hazelhead Park however until this has been confirmed we can continue to use Calder Park. If anyone knows of any other site's the committee will gladly investigate.

Committee Resigned.

New Committee was appointed.
Chairman G. Whelan Proposed N. Masson Seconded T. Bartlett.

Secretary/ Treasurer N. Masson Proposed T. Bartlett Seconded B.Ord.

Events Organiser B. Ord Proposed G. Whelan Seconded T.Bartlett.

We wish all the above success in their new positions.
And we thank the resigning committee for their efforts and contributions in the past years.

Any Other Business. N. Masson raised the issue of Winch reliability. It was proposed that the club invest in a new winch, which was put to the vote and accepted by 8 for to 1
Against.
N. Masson questioned the whereabouts of the club trainer, which was donated by J. Barnes this was resolved and Bill Stark has agreed to build and complete the above model. Many thanks go to Bill for volunteering his services.

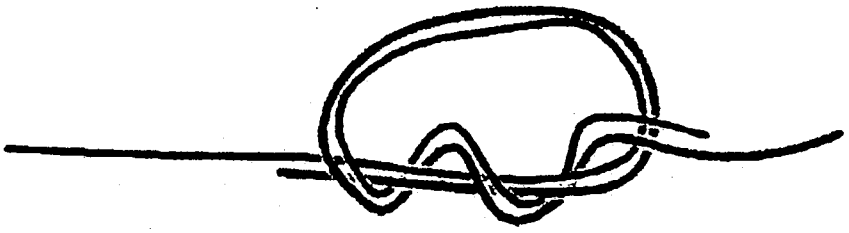
As this was all the business we closed the meeting at 21.30.

DATES FOR YOUR 1999 DIARY

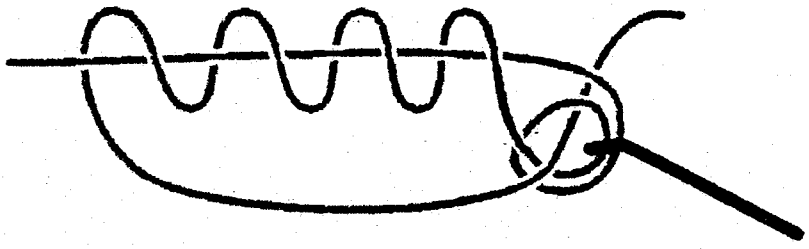
12TH January	**Foam wing cutting demo**	**23 Hazledene Road @ 19:30 hrs**
16th February	**Vacuum bagging demo**	**23 Hazledene Road @ 19:30 hrs**
16th March	**Video evening**	**British Legion Bon Accord Terr 19:30 hrs**
6th April	**Bring & Buy**	**British Legion Bon Accord Terr 19:30hrs**
9th May	**Slope Day**	**Venue tba**
5th & 6th	**June Fly in & Comp**	**Hazlehead Park**
12th & 13th June	**Reserve comp date**	**Hazlehead Park**
5th September	**BBQ & Fly in**	**Venue tba**
9th November	**AGM**	**British Legion Bon Accord Terr 19:30hrs**

We are also looking to publish 6 newsletters this year, alternate months commencing approx. 1st December, all contributions welcome.

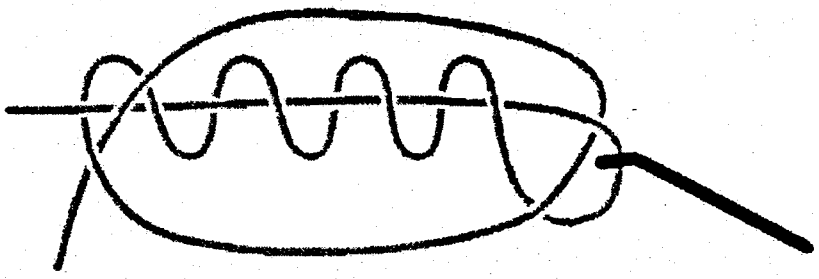
Surgeons knot
This knot is normally used to tie two monofilaments together, i.e. tippet to leader. The knot is fast and easy to tie and has a high breaking strength. The number of turns can be varied, but 3-4 turns work well on most lines.



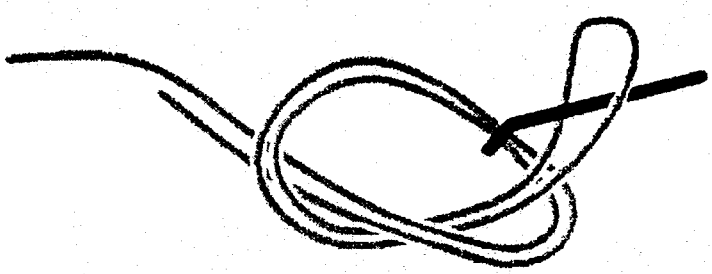
Trilene knot
The breaking strength i very high for this knot; very close to 100% for some lines and diameters and almost always above 90%.



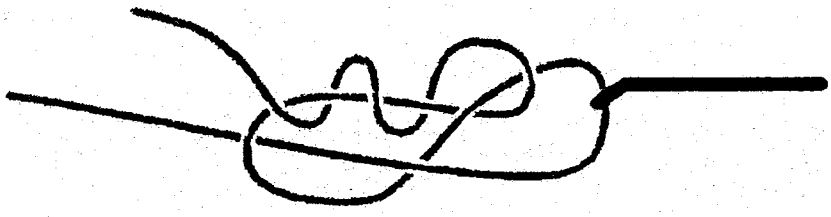
Improved clinch knot
This is a very common knot, but even though it seem much like the Trilene knot, it's weak in comparison. Down to 60% breaking strength in some cases.



Palomar knot
A knot that's easy to tie and has a good breaking strength of over 90%.



Orvis knot
Can form a loop that tightens when under strain. Its strength almost compares to the Trilene knot with a 95% avarage.



USEFULL KNOTS FOR TYING MONOFILAMENT TOWLINES

What do Thermals Look Like

by Wayne Angevine

Introduction

Model sailplane and free flight fliers are interested in the structure of thermals, which provide the energy for their flying. Here is my attempt to describe thermals. I'm an atmospheric physicist working in the boundary layer. This is not a scientific article, but my views based on extensive reading and observations.

The Boundary Layer

The short answer to the question is that thermals are columns of rising air. A longer answer requires what may seem like a digression into boundary layer physics. The boundary layer is the layer of air near the earth's surface that is affected by the surface on scales of an hour or so. The sort of boundary
layers we're interested in are ***convective*** boundary layers, which occur in the daytime over land in weak to moderate wind conditions. There are other sorts, but they don't produce thermals as such. I'll also assume relatively flat and uniform terrain, and at most fair-weather cumulus clouds.

Boundary layer physics is a subfield of atmospheric physics or meteorology, but the scales (and therefore the forces) of interest are different. It is easy to become confused if one tries to apply basic large-scale or storm-scale meteorological concepts to the boundary layer.

A convective boundary layer is a few hundred meters to 3 km thick, depending on the amount of incoming solar energy, the amount of moisture in the ground, the larger-scale weather (high or low pressure), the wind speed, and other factors. Call the boundary layer height zi. The bottom of the boundary layer is a *surface layer* about 0.1*zi thick, say 100-200 m. The surface layer is heated by contact with the surface. The top of the boundary layer is a temperature inversion (hence zi, inversion height).

So to first order, thermals are columns of warm and therefore buoyant air that rise from the surface layer to the inversion. The spacing between thermals is about 1.5*zi, say 1-2 km. The thermals themselves are somewhat less than half that, say 500-1000 m in diameter. Most thermals span the boundary layer vertically. There is, of course, a distribution of sizes. Between thermals are broad areas of sink. The sink is weaker than the lift because it covers a larger area. The opposite is true at the top of the boundary layer, but we rarely fly that high.

There are, as always, complications. Sometimes we fly in the surface layer and sometimes in the lower part of the boundary layer. Rising air in the surface layer (the lowest 100-200 m) is in the form of small plumes, themselves a few tens of meters in diameter. These plumes converge near the top of the surface layer to form thermals. The surface layer to boundary layer transition is not sharp, so we often find ourselves flying in either well-organized thermals or disorganized plumes, or some of both.

Dynamics

Thermals evolve over time, are influenced by terrain, and are shaped by and move with the wind. Boundary layer thermals form and dissipate with time scales of 10-30 minutes, surface layer plumes faster. This can lead to the apparent phenomenon of "bubbles" or detached thermals or plumes. Plumes and thermals respond to irregularities in the surface (different amounts of vegetation, houses, and so on) by forming more often in some places than others. Dark ground (if it's not wet!) and sheet-metal roofs are well- known thermal concentrators. If the wind is light, thermals may stay attached to the hot spot. If not, thermals may form repeatedly over the hot spot and drift downwind. Thermals drift with the average wind over their height, so they may travel at a higher speed and in a somewhat different direction than the surface wind. Thermals also tilt if the wind is stronger at higher altitude, th usual case.

Thermals are not uniform, nor do they have sharp edges. The edges interact with the surrounding air, so thermals have a warm, usually fairly smooth core surrounded by turbulent edges. The air around the edges may be in the form of blobs and may be either rising or sinking. This leads to the common idea that thermals are toroidal (donut-shaped). It's probably more accurate to think of thermals as vertical cylinders. Roland Stull (see reference at end) writes, "...the best model might be the 'wurst' model...",
that is, that thermals look like vertical sausages. Air detrained from the thermal edges is cooled, and cannot be recirculated into the thermal except at the ground. Vortex rings of the size of thermals are not observed. Stull also writes, "Real thermals are not perfect columns of rising air, but twist and meander horizontally and bifurcate and merge as they rise."

The strength of thermals is controlled by the amount of sunlight and the surface conditions. If the surface is wet or moisture is being emitted by healthy plants, a larger fraction of the incoming heat from the sun will be used to evaporate water than to heat the air. Water vapor does contribute to buoyancy, but less than heat does. These factors probably account for most of the difference between soaring conditions in the western and eastern U.S.

Variations on the theme

So far I've described the situation in the middle of a day with light wind and high pressure. I wish all contest days were like that! If the wind is stronger, turbulence driven by wind shear (the difference between the winds at one height and another) may interfere with the formation of thermals and the lift will be light and spotty. If the barometric pressure is low, there will likely not be an inversion to define the boundary layer top. This will tend to produce larger thermals that are farther apart, at least until the rain starts!

Do thermals rotate?

They do, but not predictably. Even dust devils don't have a preferred direction of rotation (see Stull, p.449). Thermals are too small and too short-lived to be affected by the earth's rotation (Coriolis force) or by the equator/pole thermal gradient. Their rotation is determined by local terrain. Rotational velocity in the core of a typical thermal is small compared to the vertical velocity.

Bibiliography

Those who are interested in following up the topic further can consult the following references.
An **Introduction to Boundary Layer Meteorology**

Roland Stull (Kluwer)

should be in any good University library. The chapter on convective boundary layers is quite readable. A recent paper on imaging of the boundary layer is

Calculations of Area-Averaged Vertical Profiles of the Horizontal Wind Velocity from Volume-Imaging Lidar Data, in the Journal of Geophysical Research, vol. 97, pp.18,395-18,407, 1992.
Schols and Eloranta
