

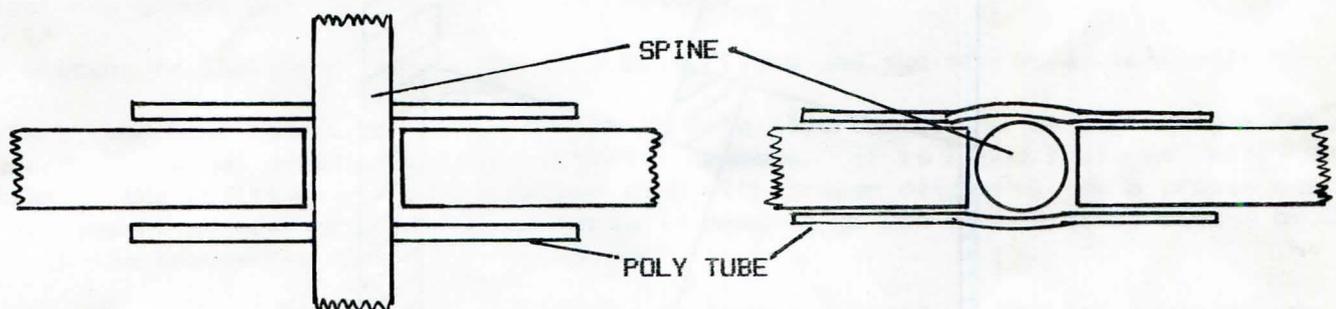
The Train now flying..... Not a new super form of advanced passenger transport but, of course, a train of kites. The blame for this rests squarely on the shoulders of Tony Cartwright and Gerard van der Loo. Tony for his article in April 84 KON and Gerard for taking his 250 kites to the Weifang Festival where Jane and I saw it and thought 'Hmmm..... now how can we do that?.....'

There follows a description, including various digressions and ramblings of a diseased (or is that deceased) mind, of how we built the train.

First materials: Tony suggested and used bamboo skewers but these a) limit the kite size to 10" x 10" or so and b) are too rigid to permit wind pressure created dihedrals which, if you can get it, allows the train to fly in higher wind speeds and makes the whole thing much more stable. I bought a bamboo roll blind which for £7.50 produced over 400 48" long bamboo slats - admittedly not of the best quality but good enough for this application.

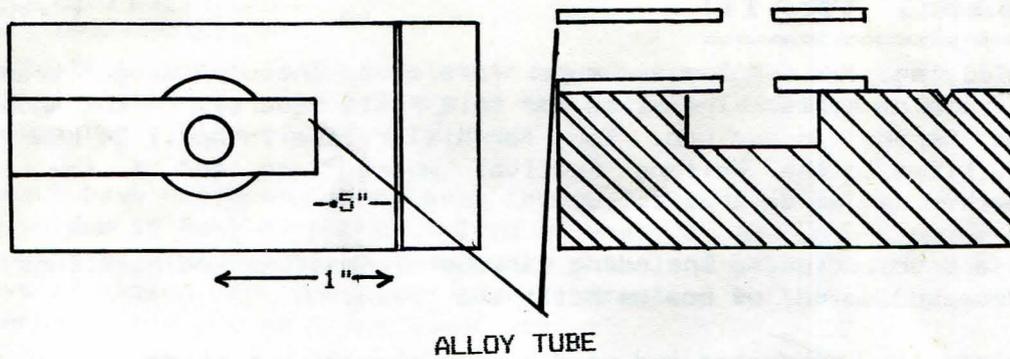
Plastic for the sails was easy. Lakeland Plastics of Windermere sell freezer batching bags 21" x 25" in dense colours (red, white, blue, yellow, green and black) in packs of 12 (2 of each) for £1.98. (Digression- I have since tried, without success, to obtain a supply of the 21" wide lay-flat tube from which the bags are made. I am still working on that and will let KON know if I manage to get a response from the manufacturers.)

Gerard used rather expensive looking plastic fittings to join spine and spars which allowed the kites to take up a variable dihedral. Much the same effect can be achieved using a 1" length of 1/8" bore polythene tube, drilled through, pushed onto the spine and the spars plugged into the ends (see sketch).

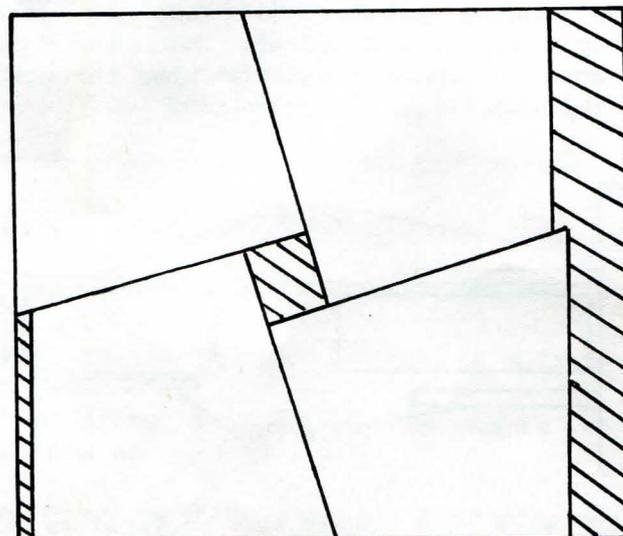


I found the easiest way to make the joints was to first of all make up a jig using a short length of alloy tube with a hole bored through 1/2" from one end. In a piece of scrap timber drill or cut a recess and fasten the alloy tube to it with the hole centred over the recess. Draw or cut an alignment mark 1" from the centre of the hole and the jig is ready to use.

Push the poly tube through the alloy until the ends are flush and use a drill bit or small soldering iron to cut through both walls using the hole in the alloy as a guide. Slide the poly tube through the alloy until the hole you have just cut is on the alignment mark and cut the next hole. Repeat the operation until you have cut as many holes as you need joints, run out of poly tube, break all your drill bits or exhaust your vocabulary of swear words (it is rather tedious making these things). You now have a length of poly tube with holes cut through at 1" intervals. Thread the poly through the alloy again, place the first hole over the alignment mark, and cut the poly flush with the end of the alloy. Repeat, and again, and again. You now have hundreds of 1" lengths of poly tube with a hole cut through the middle - technically unknown as 'Waterhouses Unpatented Automatic Dihedral Joints for Miniature Kites'.



Rambling over - back to the kites. I opted for a kite size of 15" spine by 14" span with the cross point 1/3 down the spine. The proportions result in near enough a right angle at the wing tips which simplifies cutting and, to a certain extent, storage of the finished train. Using a template and careful positioning it is possible to cut 8 sails from each 21" x 25" (see sketch).



The spine is obviously a 15" length of bamboo. The cross spars are two pieces $6 \frac{7}{8}$ " (6.875") long. Spine and cross spars are taped onto the sail as shown. Tape the ends of the spine first, then the ends of the cross spars - this will help to centralise the spine although as I have discovered this isn't really essential. Tails were made from any old bits of plastic sheet including carrier bags, freezer bags etc, cut into 18" strips and taped to the bottom of the spine, 2 to each kite.

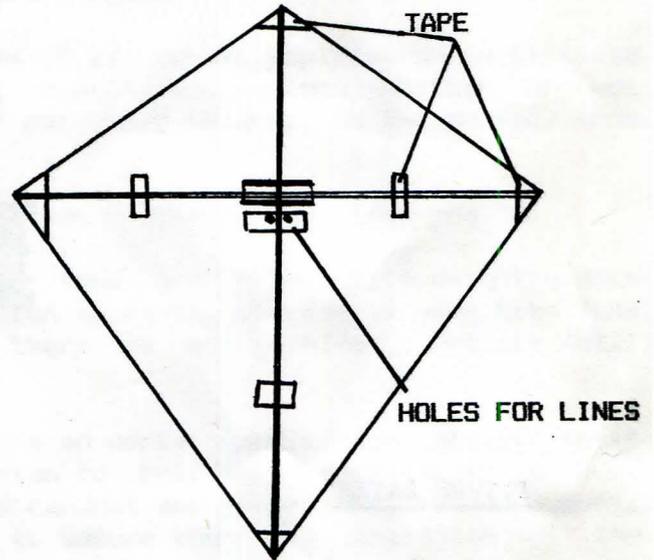
To simplify threading I used an electric soldering iron to melt a small hole either side of the spine, immediately below the plastic joint. The kites were threaded onto the lines and tied in place at 36" intervals with short lengths of button thread.

Line strength is a problem which you must consider with a train like this. Jane and I originally made 80 kites and used twin 50lb lines for the first 50 kites and 80lb lines for the remaining 30. The train flew perfectly first time out but, in a moderate breeze, the 80lb lines were bar taut and 'singing' - it must have been somewhere near its limit. When we extended the train to 100 we used twin 100lb lines for the additional 20 kites. The next extension was to 150, still on 100lb but when we pushed it up to 200 kites the

Those of you who went to the Malvern Weekend and managed to tear yourselves away from the shop (or pub) may have seen the train flying on the Saturday morning. Even in the very gusty and turbulent wind it managed to keep its end up.

Plans are already afoot, in fact work has already started, to restring the existing 200 kites and increase the length to 320 - a good job for the winter months. To give a reasonable safety margin I intend to allow for 1.5lb 'pull' per kite and progressively increase the line strength so that the line at the bottom can always cope with at least 1.5lb times the total number of kites it can 'see' above it. With a planned 320 kites, and allowing for further extension, we will be using twin 350lb lines at the bottom end.

Unfortunately, because of the line strength problems, Tony's idea of lots of people making trains and joining them all together isn't really practicable. It would mean some poor soul somewhere patiently threading his kites onto 1000lb or heavier lines with no hope of ever flying them until the great join-up happened.



FRED & JANE
WATERHOUSE



As all keen kitefliers know, there are very few times when it's not possible to fly a suitable kite. However, these days many more fliers are finding fun in throwing as well, especially when there isn't too much wind. Here are a couple of boomerangs which have proved very popular. They are made from aircraft grade 5mm 10-ply wood and are guaranteed to return if thrown according to the simple instructions supplied. Please state if left or right handed boomerangs are required.

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SP (Super Performer!).
Span: 37cm. Weight: about 80g. Range: 30m approx.
£5.95 including p&p.
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ETC (Easy-to-Catch).
Span: 35cm. Weight: about 75g. Range: 30m approx.
£5.95 including p&p.

Book: "BOOMERANG" by Ben Ruhe. Much interesting reading including why boomerangs return. £4.75 including p&p.

Please send SAE for complete list of 'rangs.
SPIN-BAK BOOMERANGS, 9 BOWOOD DRIVE, WOLVERHAMPTON, WV6 9AW.

The aims of the British Boomerang Society are as follows:-

Boomerang making and throwing as a leisure activity has become increasingly popular in recent years and the BBS was formed to promote the sport and provide up to date information for members.

The society issues 4 international Boomerang newsletters plus 2 BBS newsletters. These enable members to share the knowledge and experience and to receive a great deal of miscellaneous boomerang news from around the world. Details of new designs are frequently presented.

For further information write to the address below enclosing a stamped address envelope.

BBS, 9 Bowood Drive, Wolverhampton, WV6 9AM.