THE BRITISH BOOMERANG SOCIETY NEWSLETTER

NUMBER 4 APRIL 1981

NOTES AND NEWS

I have now moved, so please send anything connected with the B.B.S. to:-

John Jordan,
British Boomerang Society,
Plot 9,
Bowood Drive,
Wolverhampton. WV6 9AW.

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This fourth newsletter completes the first year of life of the B.B.S and I've been told the first year is easy. Is that so?! Anyway, please continue to help by sending in articles, news items, designs, even poems if you like. Many have helped over the past year and I thank them ALL. In particular I must mention Rena and Bill Souten of the Midlands Kite Fliers. Together they have typed and printed the B.B.S newsletters. They are painfully aware that the printing quality hasn't always been of the best, but please don't blame them. The trouble has been due to equipment and we hope for improvement. Remember, we do issue a newsletter and it does contain much useful, even unique, information.
Thanks also to John Barker for the drawings and making the badges. Mick Hanson has played a big part too..... thankyou Mick, Mich or Michael!
Ben Ruhe deserves special thanks as well. He kindly allows us to use any of his material and the inclusion of his newsletters greatly enhances the value of the B.B.S publication.

THANK YOU EVERYONE!

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Memberships.
Boomerang throwing isn't a major sport so maybe it's only to be expected that our membership is rather low. Apart from the fact that more members would help to keep down and spread the costs, I'd like to feel that many more boomerang enthusiasts were aware of the B.B.S and its newsletter. By the way- if you know of anyone who has not yet renewed his subscription for 1981, how about dropping a gentle reminder? Not sure we can afford to!

The subscription rates are:- Juniors, up to and including 15 years of age, £2 (U.K. only.)
Seniors, age 16 and over, £4

For an additional £2 members can receive the Midlands Kite Fliers Newsletters.

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Overseas members.
Boomerang enthusiasts everywhere are very welcome to join the B.B.S and to contribute to the newsletters if they wish. The subscription for 1981 is £4 and this includes postage by surface mail to anywhere in the world. However, because of the high cost of changing money, we do require the subscription in sterling and not just the equivalent in another currency.

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F.T.B.S..... Free Throwers Boomerang Society.
340 Troy Road.
Delaware,
Ohio 43015.
U.S.A.
Chet Snouffer runs this and turns out a newsletter every month. It's a good newsletter too. Naturally a proportion of the contents describe "local" events, but as with Ben Ruhe's newsletter, the whole thing makes fascinating

reading for boomerang fans everywhere. Overseas subscription rates are 8 U.S Dollars, and just as the B.B.S asks for subs in sterling so Chet requests the F.T.B.S subs in dollars.

In the F.T.B.S newsletter Number 10 Chet touches on the question of an International Newsletter - 'THE News.' Although he tends not to favour the idea perhaps, there's a lot to be said for it. The big problem is who would run it? For some time I've thought I'd like to see 'Boomerang International' or whatever, similar to 'Kite Lines', but I guess that's a long way off.

In the meantime of course, boomerang clubs do reprint pieces from the newsletters of other clubs. We've all agreed to allow this requiring only that due acknowledgement is given. I certainly thank Chet for "Kiss the Mundane Good-bye" .....who else could have written it ?!

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BOOMERANG FESTIVAL IN AMSTELVEEN

Elsewhere we have printed details of this festival kindly sent by Max Hoeben. Tonnie and Max organise this meeting and the four B.B.S members who participated last year thoroughly enjoyed the event. My guess is that this year it will be Europe's premier event and I think it ought to be regarded as the European Championships. Not too sure I want to get involved with E.B.F politics though!

Joking aside,I strongly recommend B.B.S members in Britain to try to make the trip to Holland this Easter. Who knows,Al Gerhards may set a new World Record there.

Amstelveenis really a suburb of Amsterdam, but the city centre is a little too far away to be convenient and it's better to stay in Amstelveen itself.

Even if you decide to attend only just before the event you should easily get fixed up I think. But if you'd like Max to help, please let us know exactly what you want as soon as possible.

This year I hope a largish group can attend. Last time we British were greatly outnumbered by the Dutch, French and Germans.

In general, the event will be held according to European Boomerang Federation Rules. The competitions will be accuracy, shortest time for 5 catches, most catches in 20 throws, most catches in 5(?) minutes and "General Championship". In the latter the competitor is awarded points for each throw. Points are gained for distance, accuracy and whether the boomerang is caught.

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THE SMITHSONIAN TOURNAMENT WASHINGTON D.C., U.S.A.

This is to be held on Saturday 13th June. Washington is quite a long way for us of course, but Europeans have attended in the past and Ben says it's now a tradition that any bona fide European throwers going over for the event will be put up by him or one of his friends. Thanks Ben, for that very generous offer. Ben adds that accommodations are not luxurious but pleasant. The occasion is a time for lots of good conversation, exchange of ideas, swopping boomerangs etc.

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Boomerang Exhibition at the Horniman Museum and Library, London Road, London SE23 3PQ.

Dr. Goodhew would still like to hear from anyone who can help with this proposed exhibition. Please refer to the B.B.S newsletter Number 3 for more details.

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ADVERTISEMENT.

A selection of top quality boomerangs (returning) can be had from;
Michael Hanson,
P.O.Box 1,
Cumnock.
Ayrshire.
Send for list. Please enclose s.a.e.

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Boomerang Calendar 1981.

11th April.	Boomerang workshop at Horniman Museum, London.
12th April.	Throw-in at Dulwich Park. 11.00 a.m.
19/20th April.	Boomerang Festival, Amstelveen, Holland.
13th June.	Smithsonian Tournament, Washington D.C. U.S.A.
21st June.	Weston Park Kite and Boomerang Festival, Weston Park, Shifnal, Shropshire.
4th or 11th July.	German Championships, Heidelberg.
9th August.	Carnival of Air, Dunbar, East Lothian, Scotland. (Boomerangs, Kites etc.)
24th October.	Boomerang workshop at Horniman Museum, London.
25th October.	Throw-in at Dulwich Park. 11.00 a.m.

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TUNING & COMPETITIONS

There's more on tuning in this issue and you know how I love the topic. While any boomerang has to be thrown correctly, it's a fact (at least, I say it is!) that some boomerangs need tuning. So any information is of interest. I'm convinced that some throwers do better in competitions because they have better boomerangs. No? Well, any excuse is better than none!

In Australia, some 'one boomerang' competitions have been held. In these, all throwers use the same boomerang. A new boomerang is used and competitors are allowed say 5 trial throws to get the feel of it. Another version of a one boomerang event is for each entrant to be allotted a number. The winning number is drawn from a hat and the competitor with that number uses his own boomerang - so does everyone else. Left-handers cause problems!

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BOOMERANG WORKSHOP

Starting at 10.00 hrs on 17th MAY a boomerang workshop will be held at Holyhead School, Handsworth, Birmingham. Those attending will be able to make a "genuine returning boomerang". A charge of £1 per person will be made to cover the cost of materials. Participants need not be B.B.S. members. Adults and children are equally welcome so if you know of anyone who is interested please ask them to contact J.J.

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****** STOP PRESS ******** It's Michael from now on! **********

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UNUSUAL BOOMERANGS
NUMBER 3 BY MICHAEL HANSON

5½ odd boomerangs this time.

The U-merang was designed by no less than big Al Gerhards. He says that he came upon this design by accident about six years ago. It flies far and for a long time. Every thing is pretty straight forward - no +ve incidence on the underside. Friend Paul Freireich painted his like a horse shoe magnet and regularly got 15 sec. out of it.

The next thing I call a Katjarang. I was carefully drawing out boomerang plans once when my youngest daughter attacked my drawings with a felt tip pen when I wasn't looking. She doodled this strange design. It works well but looks obnoxious in flight.

The Laird 3 - legger inspired me to add one more arm, alter the angles a bit and come up with a left-handed or anti-clockwise swastikarang. The outermost section of each arm has a section like Donald Laird's boomerang (Newsletter 3). The only part with a normal wing section is the innermost part of the arms. I have to throw this with a lot of layover - nearly flat in fact.

Then follows Freireich's Flying A (Truncated). Shortage of plywood was the sponsor. Being quite tiny it's easily caught.

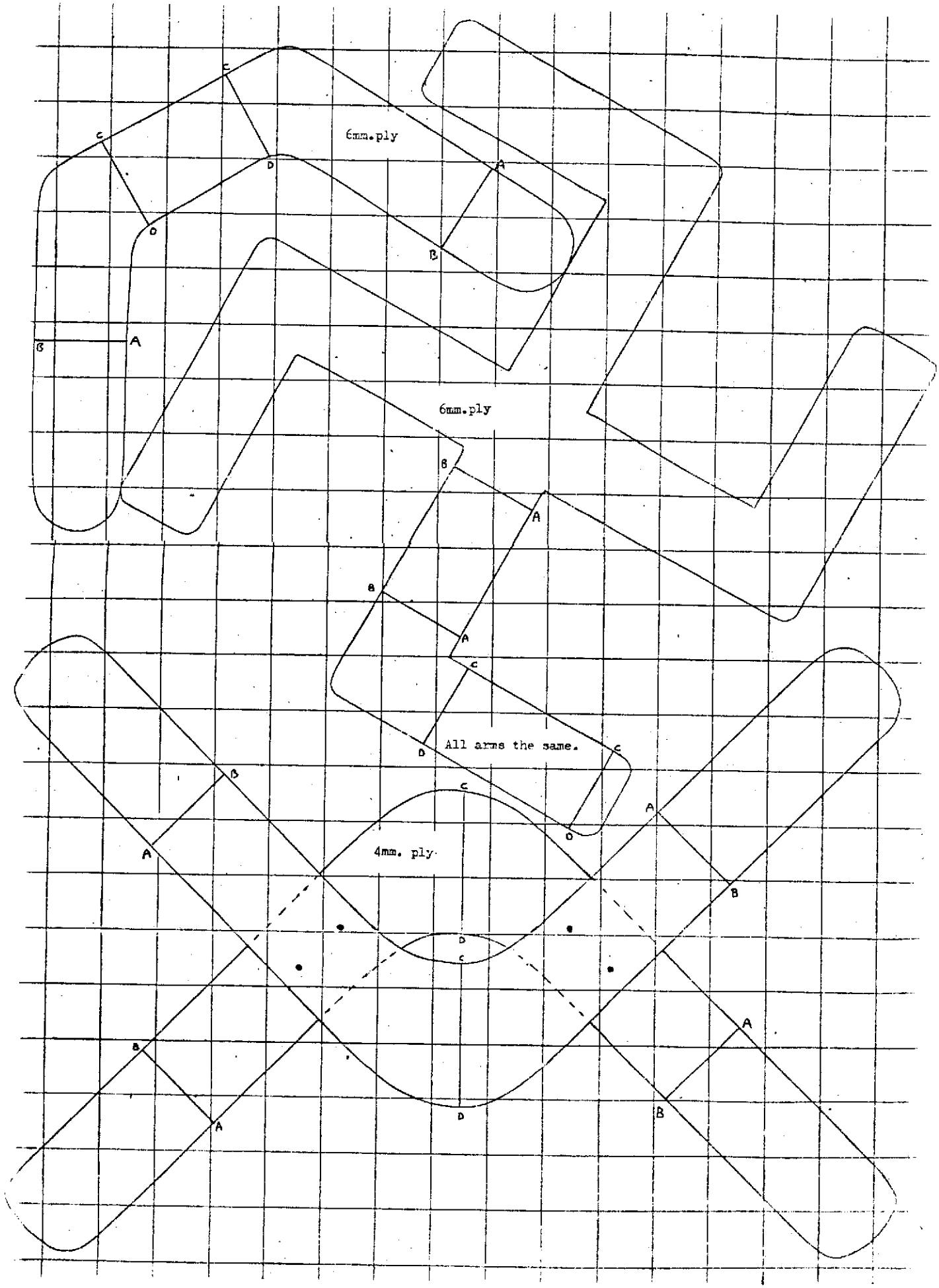
In the last article I described a biplanerang. Here's another. The big difference is that one of the wings is rotated horizontally by 180°. So you make two identical boomerangs and put one on top of the other as in the plan and drill four holes for the struts to hold the boomerangs apart. I used steel knitting needles for the struts Araldited into the holes. The two wings were separated by 1" (2½ cm.). When you are doing the glueing make sure that the plane of both boomerangs is parallel. Oh, I used some old 3/16" ply but I expect 4 mm. will do.

The last one (the windblown 8) is rather a nice shape I think. Trouble is I can't get it to work. It makes a fine non-returner. I've included it so perhaps someone somewhere might get it to work. I'd like to know if they do. (I wanted to enter it in the next unusual boomerangs competition at the Horniman -- never mind). I've not shown surface shaping as I've obviously got it wrong.

All the boomerangs shown here work O.K. for me with flat undersides. If they don't go right, read John Jordan's words on trimming in Newsletter 3.

There were a few others I was going to include but I havn't had the designer's O.K. so I won't because I'm worried that he'll say "may the fleas from a hundred wombats live forever in the armpits of any dingo who copies the boomerang of another bloke" may have something in it.

Concluding, may I say thanks to all those designers who have given me the O.K.. It's a good thing to spread the word.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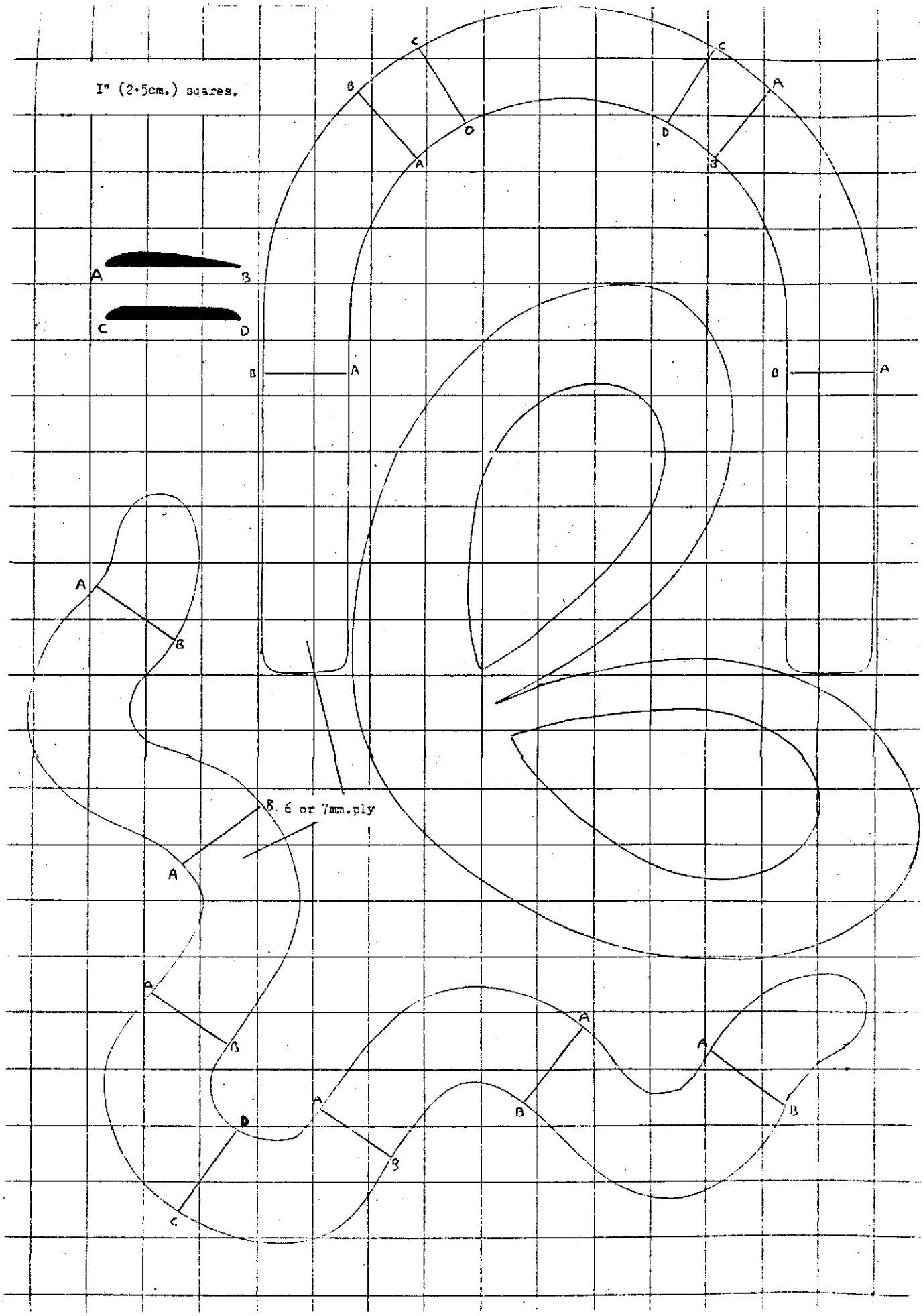
6mm.ply
All arms the same.
4mm. ply


1" (2·5cm.) squares.
A
B
C
D
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Tyne Tees Television Limited

CALLING ALL BOOMERANG ENTHUSIASTS.

Tyne Tees Television is producing a children's series called MADABOUT, to be presented by Michael Bentine, on the subject of hobbies.
We want to feature as many exciting, exotic or unusual hobbies as possible and hope to cover boomerangs in one of our programmes.
We are interested in hearing from any young people around the 8-15 age goup who are mad about boomerangs (or any other hobby, for that matter).
So if you throw 'em, collect 'em, decorate'em or make sculptures out of 'em(!!!) contact us as soon as possible.
Write to: Nigel Sheldrick,
Madabout,
Tyne Tees Television,
City Road,
Newcastle Upon Tyne,
NE1 2AL.

MORE BACK-FLIPS BY CHET

(Please refer to "Notes and News" section for details of the F.T.B.S.)

* FREESTYLING...KISS THE MUNDANE GOOD-BYE!

Last month I covered some tips for catching boomerangs. Now some tips for bringing out the Baryshnikov in the boomeranger...

Omega- designs or other wide-windowed, slow rotating B's are best for that nonchalant, "Clint Eastwood"-cool type snag. Once you've the proper B, the rest is pure hand-eye coordination and kinesthetic awareness (say WHAT?). Here are some principles and some specifics.

1."Go with the flow": Certain returns lend themselves to specific catches, and the "absence of deliberation", or ability to wait calmly until the last second and go with the most natural catch at the time is a key to freestyling. Pre-planned catches are more likely to fail than not, as your mind gets your body all tensed and set for a specific return which may or may not materialize. I like this bit of Eastern philosophy which states that the only way for mind and body unity in action, is for the mind to be absent of thought...totally clear and responsive, not actively seeking to impose a response upon the body.

Here is a great drill to develop this quality. Toss your stick and then place both hands loosely in your pockets. Relax! Go ahead and move toward the spot you expect the B to return (try and "go with the flow"of the flight...move with the B) and then at the last moment, pull one hand out and snatch it. Whichever hand it is nearest at the time. Waiting late is the key to developing good natural responses,or reflex reactions.

2. The catch you make will be dependent upon the return you get. A boom coming in waist high is a nice behind the back move. It is a thumbs-up catch with fingers outstretched parallel to the ground. Remember that you shouldn't decide to"throw this catch" ("throwing a move" is gymnastics slang for doing it) until the last moment. Throwing the B and then running around after it with your hand behind your back looks foolish and seldom works! Watch the return, stay loose and if the toss is right, reach quickly and smoothly behind the back, thumbs up and let the B rotate into the hand. Adding a twist is simple enough. The set up is the same, and then as you make the reach behind your back, initiate a twist into the boomerang. In other words, right handed throwers, though often catch best left handed, usually find best results catching behind the back with the same hand you toss with (due the rotation of the B). So a right hander would initiate a twist to the right, in the direction of their reach behind the back, and therefore "into" the boomerang, snagging it, and then rotating full circle in the air, or on a pivot foot on the ground.

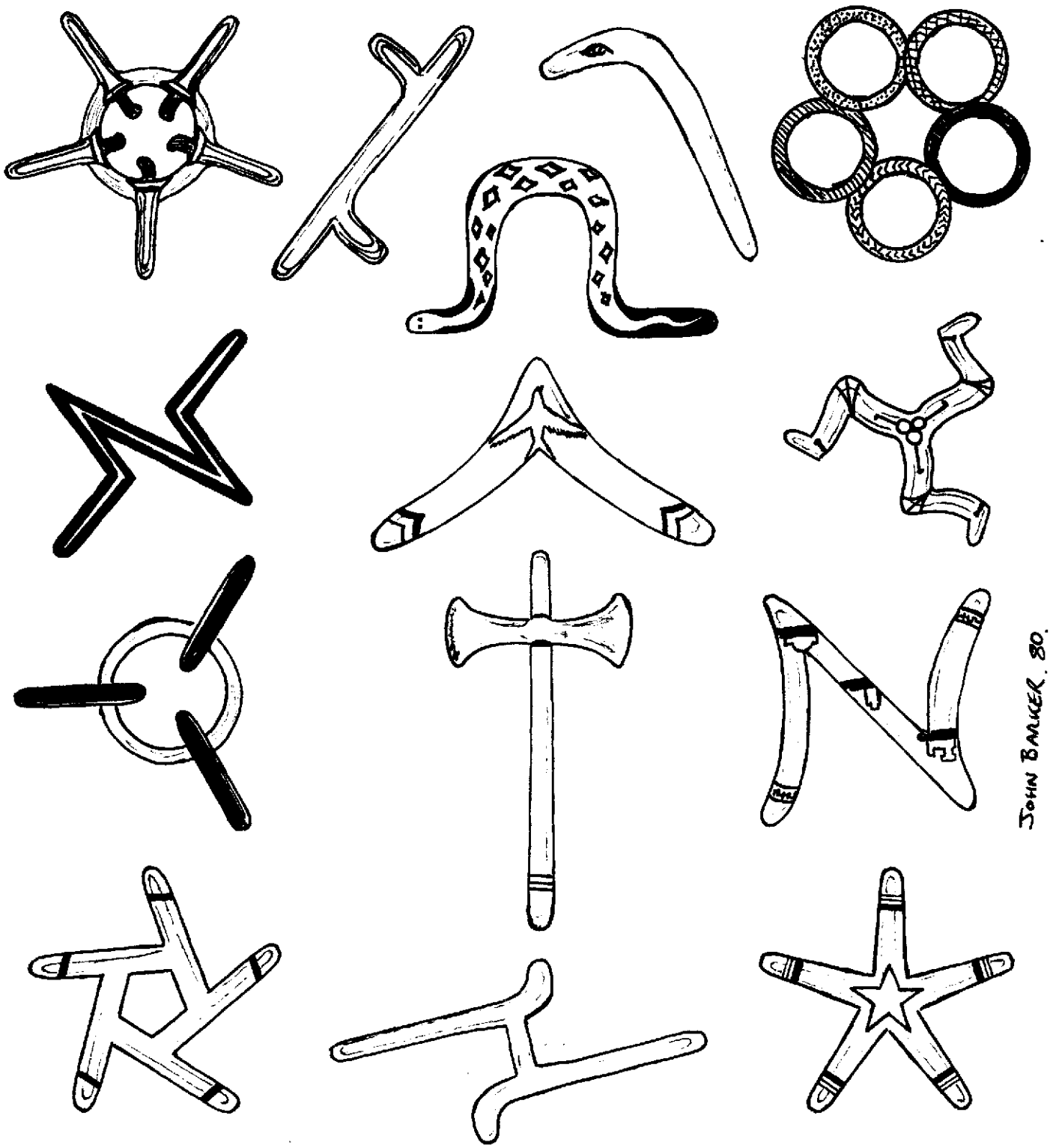
One more point on the behind the back catch, is to consistently lay your hand across the same point on your lower back, each time you try it. This develops a keen awareness of that spot and you then raise or lower your body (leaping or bending down) accordingly. This works much better at the outset than waving your hand around furiously trying to judge where it is in relation to the B.

This is only one catch, but these principles can help set you free to all manner of behind the head, under the legs, between the legs, etc. Try reading the description of the catch through, and then stand up and go through the motions while reading it again (this is the only way my brother could decipher this dissertation!) Good luck and more catches next month...

BOOMERANG SHAPES BY GORDON FAIRBAIRN

Gordon likes to specialise in the unusual doesn't he? Although it may be hard to believe all of these shapes have been translated into good returning boomerangs, and Gordon is very unhappy about calling anything a boomerang if it doesn't return.

Some boomerang fans may have seen the snake design in the Smithsonian in Washington. On the question of size and exactly how they're made, we'll let these details remain a puzzle for the time being.



THINGS TO DO AT NIGHT!
BY MICHAEL HANSON

First you need a good photographer with a good camera, a good tripod and a good nature. Details of the clever bits are:-

Ilford HP5, uprated to 800A.S.A
f 1.8 for about 8sec. (50mm lens)
Developed in ID 11, diluted 1+1, 12min, 20 degrees C
Boomerang used, a modified Bill McGovern one.

My good friend Christian Taylor worked the shutter and I worked the boomerangs. We practised first in daytime so he could see that the flight path was all in the frame.

There are lots of techniques for after dark throwing. Luminous paint - JOY it's called which can be'zapped' with a photoflash. It lasts about ten min, and then it needs re-zapping. Then there's Mr Men Glow Putty. I drilled a 1" diameter hole in one arm, glued some acetate sheet over the bottom, filled the hole with Glow Putty and glued some more acetate sheet over the top. Glow Putty, like the paint needs zapping. Both these techniques only work well in perfect dark.

Sparklers were next. I drilled a thin hole in the middle of the boomerang then bent the tip of the sparkler and pushed it in the hole. If the bend is right it sits in tight. I then bent the sparkler so it was parallel to the trailing edge of the lifting arm about 1" from it. Surprisingly it flies just about as normal. We lit the sparkler and hurled immediately. We tried lighting the sparkler in the middle, waiting a few seconds and then hurling. The photo, however, didn't show two clear traces. You could - I expect use two sparklers. Sparklers unfortunately, are very seasonal both as regards availability and pyrotechnic quality. After a month or two they go off. When we were out taking the photographs three times the sparkler fizzled out. Luckily we found the boomerang. If you try it, don't forget a torch. I've experimented with magnesium ribbon but it easily blows out. Now if I knew a chemist.....?!

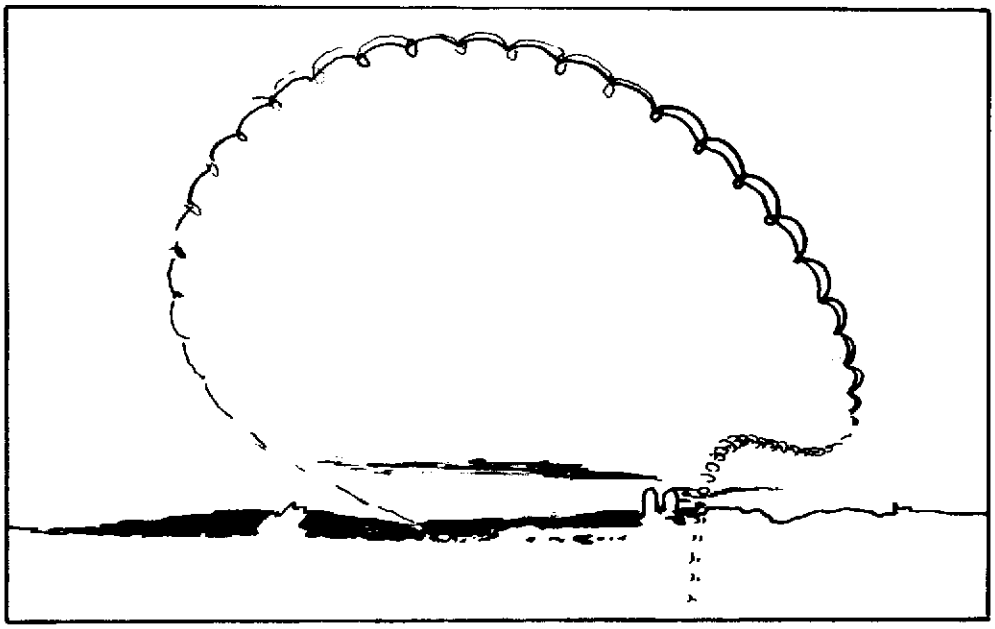
The simplest idea is a little light bulb (1.25V, 0.25A) and a tiny pen cell. The little cell doesn't last long however, so unscrew the bulb between throws. If the light gets dim leave it off for five minutes, to give the cell a chance to recover. When the cell is dead it can be pushed out and a replacement added. I've just made another with the bulbs wired in parallel and a bigger cell (HP7). That should be quite pretty. If you have the light near a tip then it will travel a lot further in the same time than if it were near the C.G. Hence you have to increase the speed of the film (1600 A.S.A.) Unfortunately the background lights (if any) will be alot brighter.

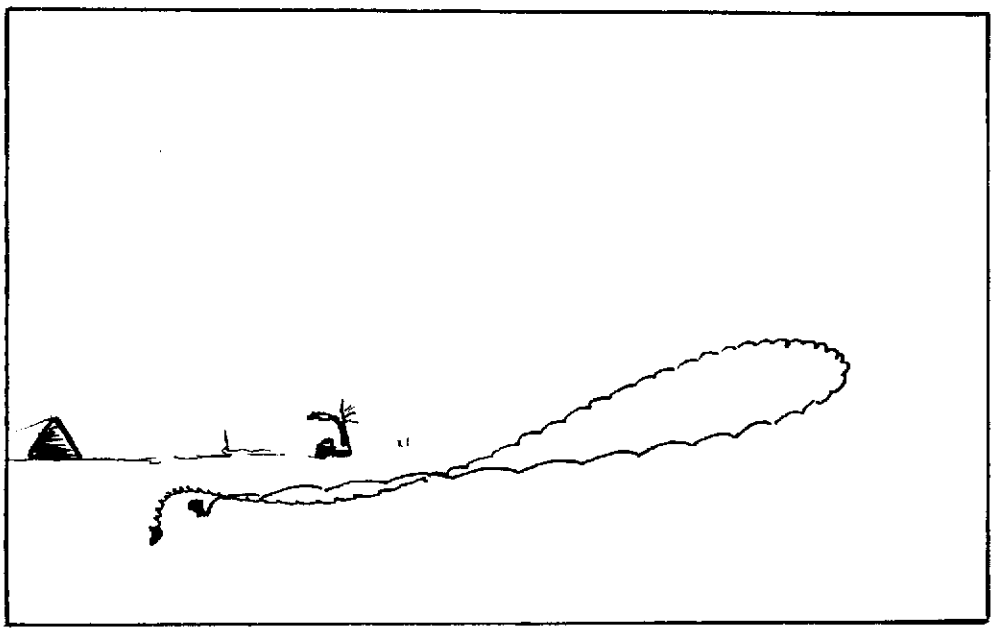
Another approach is to use chemicals from new fangled light tubes. I'm still waiting to get some. Gosh, if I only knew a chemist.....?! They are used by campers but are only available in the U.S.A I think. They are white plastic tubes which when bent break an enclosed tube and mix two chemicals. It gives a bright eerie green light for about 20 minutes. With a hypodermic syringe and needle you can extract the two chemicals and squirt into seperate bottles. You can then make a perspex or similar boomerang with a clear tube along one arm. Squirt in the chemicals, put a cork in and you're flying UFO's for a time.

By the way night flights are not new- some aborigines used to fix lighted coals to their boomerangs.

Additional note. Mick has taken some photographs of boomerangs with 2 and 3 lights on them. Also some shots show that the trailing arm is moving backwards for part of the flight, although I'm not sure if this will be apparent in the pictures selected for printing.

J.J.





RUSTY'S LETTER

RUSTY HARDING
BOOMERANGS
P.O. BOX 2884
VERO BEACH, FLA. 32960 U.S.A.

Returning Boomerangs
For the World's Oldest Sport

Feb. 3, 1981

Dear John,

Many thanks for your Jan. 23rd letter and the Dec. 1980 BBS newsletter. As always, I found both very enjoyable.

I'd love to have a BBS badge, but have no idea of what 70 pence is worth U.S. funds. How about a trade of boomerangs for one and membership in the BBS? I'd much rather trade than try to send money back and forth anyway. With the postal rates increasing both here and there, even that's becoming an expense for everyone. Rate here for overseas airmail increased 30% on Jan. 1st.

I will write Dr. Goodhew about the exhibit; ditto for the display for the Science Museum's display of boomerangs. I do, indeed, have some ideas on the subject.

Please extend any and all courtesies to Ali Fujino and Dr. Steve Miller while they are there. They're two of the best friends I have anywhere, fantastic people, and excellent boomerangers.

Re: Mich Hanson's article in BBSN#3. Though I cannot document it, earliest efforts in the E-Rang type here in the U.S. seem to come from the combined efforts of Barneby Ruhe, and Peter and Larry Ruhf. I've not heard of earlier efforts in this direction. Larry Ruhf made a *beautiful* bird Rang that he demonstrated last year at the Washington tournament. He's also making a few F-Rangs that are fantastic fliers. Those three are dedicated boomerangers that enjoy experimenting and excelling in all of their efforts. Should one ever compete with them, look out!!! Contrary to what Mich has found with my particular E-Rang design (The Rust-E-Rang, what else!), I'm a lifting arm thrower myself, but I've found that I get better control and better spin by throwing my E-Rang and Omega designs dingle arm! Also, I find the Biplane designs rather disappointing, and that the triplane designs fly better for me, even though the weight is higher. I usually extend the middle wing far enough to form a throwing handle. I feel that if one works with the natural center of mass when throwing, better launches always result. None fly as well as the more conventional B's do, though, so such boomerangs should still be considered to be in the novelty class!

Comments on Throwing and Tuning Boomerangs: Most of us that throw boomerangs regularly tend to take proper throwing procedures for granted. We get a new boomerang, take it out to the field, and within a few throws, seem to automatically pick up that boomerang's throwing requirements. The same thing, for a beginner, can be frightning! All he's learned suddenly seems to be out the window! I try to teach all of my students to get a fair amount of spin on the boomerang from the beginning. Spin seems to be the least critical item in the list of throwing parameters, *as long as it is enough!* Too little spin will not let the boomerang fly correctly, but, *after sufficient spin is achieved, the additional spin that may be added seems to have little effect on the end result!* This is, of course, a simplified statement, for, with a distance boomerang, large increases in spin will increase the available energy of the boomerang to resist turning, allowing the boomerang to achieve greater distances, though current theory says it shouldn't! *BUT, that's an exception, NOT the rule!!!* The paradox here is that there are a number of areas with boomerangs that do not seem to fit the accepted rules. But, that's

only because the rules are not complete! They do not consider ALL of the complex events that are taking place with a flying boomerang that differs a bit from the one we've come to accept as classic. Though many, *including myself*, feel that we have an understanding of how a boomerang works, we seem to ignore the fact that a boomerang that isn't working as it should *is really telling us that our analysis is incomplete!!!* WE SHOULD NOT WORRY, THOUGH! After all, for thousands of years, the peoples of the world that WERE making and using boomerangs, *COULD NOT HAVE KNOWN WHY THEY WORKED*, but only that if certain rules were followed, they had a good chance of doing so!!!! There's a moral here! If one wishes to make his own boomerangs, AND HAVE THE GREATEST CHANCE OF SUCCESS, he should stick to designs that are fairly close to someone else's proven designs. Should one wish to deviate radically, he should be prepared to accept possible problems that may result! There are those that will become upset with their efforts, and let them become a bother. DON'T!!!! Boomerangs are meant to be FUN!!! When that kind of situation gets to me, I drag out my own box of failures and humble myself back to the fun it's meant to be! It's very difficult to think you know it all while looking at a box of over 100 boomerangs that do not perform well!!! That's also why I'll never claim to be an expert. I'll leave that to those that think they are!

Personally, I do NOT recommend warping as a corrective measure. Such effort CAN correct boomerang flying faults, but, it's never permanent. Cutting isn't either, but it is a surer way to get more consistant results. Resort to warping only as a temporary measure to get better results for the moment. Correct the fault by CUTTING as soon as possible! After all, there are many products on the market that WILL allow you to add material back to an over zealous cutting session! Take advantage of them if you make a mistake!!!

I also do not recommend that lift on an arm be decreased by cutting the underside TRAILING edge of a boomerang! Better results can be obtained by thinning the wing, by cutting B in your article to intersect the upper surface further back from the leading edge, or by *increasing* the lift of the other arm!

If you've ever had a boomerang that dives into the ground about half way around, you know what a frustrating experience it can be. Thought is to add lift to the tip of the throwing (lifting, or arm 1) arm. Should you find that that corrective method does not work, or that it takes an abnormal amount of cutting for a little correction, consider the following. Many people, in making their boomerangs, cut the trailing edge of the boomerang around the elbow region for esthetic reasons. With some boomerangs, the wedge thus formed acts to KICK the boomerang sideways, each time the wedge is headed into the wind (typically, about 600 times per minute). That kicking action CAN make the boomerang wobble in flight (though imperceptible to the eye), changing ALL wind forces and directions across the boomerang arms at that particular moment. Result? Rules do NOT necessarily apply for this particular case! That's why I highly recommend that the elbow region of all boomerangs be kept as close to neutral (symmetrical about the chord center line, top and bottom of the same contour) as possible. While this will not insure a good boomerang, it WILL insure that any problems associated with flight are NOT modified by the elbow configuration! I'd had about 4% rejection with boomerangs when carrying the trailing edge around the elbow, 0% when I started keeping the elbow neutral!

Making a more efficient airfoil? Well, when one gets around to a complete analysis of the effects of wind velocity pulsations, and in many cases, wind reversal across an airfoil at about 600 times per minute, I'll begin to consider the effects of more efficient airfoils. That's why I consider the MBA-SC airfoil to be the most universally used, and best airfoil for the average boomerang. Modern Boomerang Airfoil-Semi-Crude, as you may remember from a previous letter (and reprint into the BBS newsletter, as I recall). It seems to offer good boomerang results, many others simply do not! Believe me, as an aerospace engineer and lifetime member of the

Experimental Aircraft Association, I've kept up with, and tried all of the latest airfoils, sailplane, model sailplane, and those developed by NASA and others. NONE WORK BETTER THAN THE MBA-SC IN 95% of the cases. The remaining 5% were special case boomerangs, designed for specific uses, with the differences taken into account. Need further proof? Look at all of the boomerang designs you can find. Compare the airfoil sections with the MBA-SC!!!!!

Wind Eaters: I've got to agree with Herb Smith. Best wind eaters are not necessarily those with weights, nor the heaviest models. Though I own none of the boomerangs Herb mentioned in his article, I have made some similar to his Black Prince and VEEboo, and agree wholeheartedly! I also have found great wind results with my Napoleon Hat, made exclusively for, and only sold by Ben Ruhe! My Omega shape is also a good wind eater when modified slightly from its normal cross sectional shape. All this brings up a very interesting point. Many think that the best boomerang is one that returns dead accurate in no wind. Now, that's not entirely true, as the best boomerang is one that performs well *under all of the real conditions encountered!!!* If the real condition is 5 MPH (or KPH) wind, a boomerang that returns to the thrower under these conditions would return over 8 feet in front of the thrower in no wind! Obviously, then, one designs to the real conditions for best results! That's why most serious throwers have a selection of boomerangs in their working kit! Since the wind that a boomerang FEELS, is lower with a lower flight path, a wind resistant boomerang is also one that flies low to the ground, because ground friction reduces velocity. Wind resistant boomerangs should also have little float or hover; they should just go out and return accurately, and get down without hover!

Finishing Boomerangs: Two schools of thought here. Super smooth finishes to reduce drag, and a bit rough lets it fly longer (as with dimpled golf balls with their longer range). Both are correct! But, super finishes DO tend to allow the airflow to separate more readily from the surface (separation means that the lift only exists on the attached airflow portion) so super finishes should be used with airfoil sections that keep the airflow attached to the airfoil. As we're working with wind speeds across the airfoil of 100 MPH and lower (and that's assuming a launch speed of 50 MPH and a tip speed of 50 MPH, both a bit high for the average boomerang), induced drag, resulting from finish is not particularly high. The real secret seems to be in keeping the airflow *attached* to the airfoil from leading to trailing edge, to keep the results uniform. I've even added turbulators (small strips of .004 inch thick tape) on the surface (numbering from 1 to 5 strips at stragetic locations chordwise) to keep the airflow attached. That's the same technique that sailplanes have used with good results. All this really amounts to is that you pay your money, and take your choice!!! I once made an excellent flying boomerang; decided to make it look better, added 3 coats of polyurethene. Looks improved drastically!! Performance went to hell!!! Moral? Try it and see!!!

Keep up the good work, John, and keep throwing all the good ones,

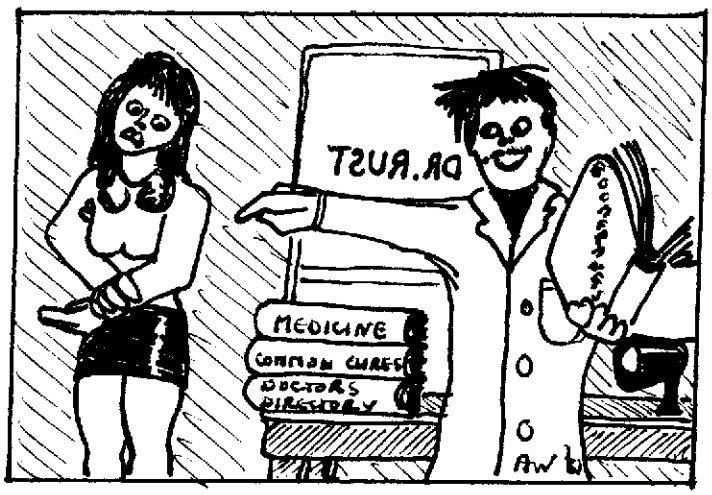
Rusty Harding

GIRLS AND BOOMERANGS

No, this isn't an article implying one should make a choice!

The puzzle is why don't more girls throw boomerangs? They take part in athletics, play golf, tennis, even cricket and football. There are a lot of girl kite fliers, so why do so few throw boomerangs?

My wife claims to have heard somewhere that "Girls' arms are fastened on differently!" Please Dr. Miller can this really be so, or what's the explanation?



More cases of non-neutral elbows?

MORE GIRLS !!!


I THINK ID DIVORCE MY RANG MANIAC IF IT WASN'T FOR THE FACT, THE DIVORCE SETTLEMENT WOULD BE 38 SHEETS OF PLY
J. BARKER.


BUT SURELY IF ONE ENDS THE DINGLE THEN THE OTHER END MUST BE THE DONGLE
FEMININE LOGIC.
J BARKER

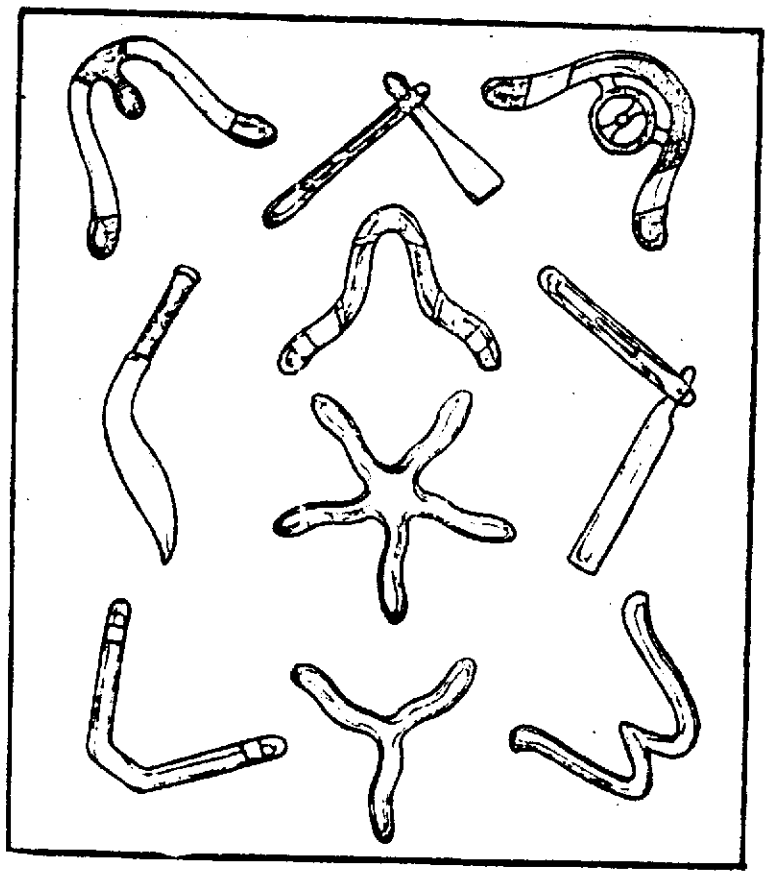

FUNNY HOW YOO FIND TIME TO FINISH RANGS BUT NEVER FIND TIME TO FINISH MY BUILT IN WARDROBE
BEST BIRCH PLY WOOD
J. BARKER

BOOMERANG NEWSLETTER

Volume I, Number 4 Winter 1980

TEST CASE. Two aboriginals whose defense against charges of stealing paintings from a commercial gallery was that the works were sacred to their people were found not guilty in an Australian criminal court. The two men had argued that since the paintings were sacred, they believed them to be the property of the aboriginal people. After the verdict November 3 in New South Wales, one of the men, Cecil Patten, 32, stood up in the dock and thanked the jury. "After 200 years, you have given the black people in this country hope," he said. The six seized paintings were by Yiriwala, a noted Arnhem Land artist. During the trial, it was claimed that sacred paintings were part of the aboriginal culture and were not for individual ownership, not even by the artist himself. Evidence was given that most of Yiriwala's paintings had ended up overseas, and that the accused had wanted to prevent this from happening. The implications of this verdict on the export of aboriginal objects, including boomerangs which in some cases may be sacred, remain unclear. The provenance of aboriginal objects is often difficult or impossible to determine. Thus a market which was developed by the Australian government to give aboriginals a way of earning money may well dry up now in official reaction--or over-reaction--to this court finding.

CORRESPONDENCE. Steve Robinson of Fresno is forming a boomerang-throwing club called the Deja Vu Aerodynamics Club. A friend wanted to add-for Undulating Mechanics Novitiates--so the acronym would be "D Vacuum," "because as we all know," says Steve, "it's De Vacuum that keeps them coming back (sorry about that)".... Yves Simonson, the delightful young Belgian scientist who graced the Smithsonian's 1980 tournament with his presence after a one-month exploration of the U.S., writes that he finished his military basic training and was re-assigned for the remainder of his mandatory service to the Science Policy Programming Services "where I am able to put some of my electrical engineering background to some use." Yves' address is Avenue Moliere, 500, Bte. 7, B-1060, Brussels, Belgium.... Paul Bigelow has founded the South Florida Boomerang Society, based in Coral Gables, and will issue a periodic bulletin. He's bringing his Miami Flying Blades team to Washington next June for the Smithsonian festival. Paul's address: 1307 Camp Sano Drive, Coral Gables, Florida 33146.... Chris Ruhe (another of my many nephews), who's almost as good a boomerang thrower as he is guitarist, reports that he successfully hurled 'rangs over breezy Lake Titicaca in Peru. That's at 12,600 feet altitude.



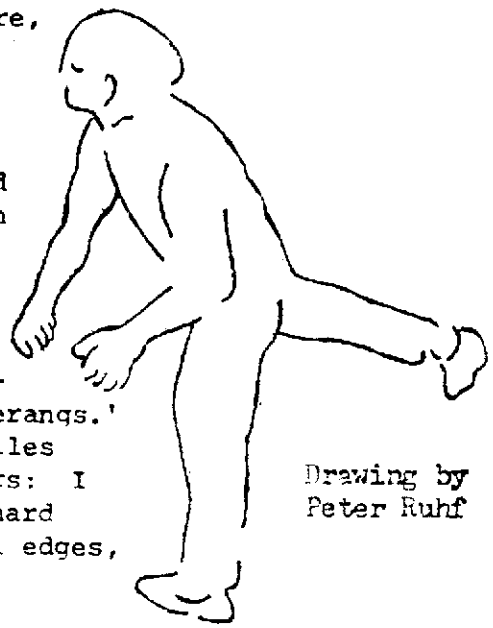
Boomerang shapes by Rusty Harding.
Courtesy of British Boomerang Society.

NEW COMPETITION. It has been suggested that the Smithsonian add a multi-blade event to its annual tournament next spring, and Jim Sprague, of Middletown, Connecticut, thoroughly approves. Sprague introduced pinwheel throwing to the competitions he runs in his hometown. A pinwheel has six arms and is beautiful to watch. Sprague suggests a consecutive catching event and feels there is no need for establishing either a minimum outward flight distance or minimum size of boomerang, since he feels there is no distinct advantage to having a very small pinwheel, or one that flies a small circle. Catches would have to be made spinning, viz., the bolt holding the boomerang together at the center point atop the player's hand. Since players get rather good at this maneuver (Sprague has caught 144 in a row spinning), he feels tie-breakers would have to be ordered, such as catching behind the back, catching and transferring the pinwheel behind the back to the other hand, catches on the head, and catches on the feet. A boomerang caught in this mode must remain spinning a minimum of two seconds--"plus or minus a few nanoseconds," says Sprague. He suggests the "one chimpanzee-two chimpanzee" method of counting. Everybody approve this new competition? Dissents?

TIME AND GEOGRAPHIC WARPS. Rusty Harding proposes these strange boomerang throws: "How about a toss in 1980 and a catch in 1981 on New Year's Eve?" he asks. Or for a throw today, catch yesterday, he proposes flinging a tiny cardboard boomerang inside a 747 headed from Australia to the U.S. as it approaches the international date line, with the catch seconds later but a day earlier.... During a recent visit to Poland, Jackie Byham, president of the Boomerang Association of Australia, came up with his own unique throw. Standing at the border, he winged a boomerang out over Russia and brought it back for the catch in Poland. Let's hear it for individualism.

LONG DISTANCE, WIND RESISTANCE, AND THE TWO PENNY BOOMERANG. "What do Herb Smith, Al Gerhards, and Abe Lincoln have in common? Why, each one weights a boomerang for distance, of course. Strapping a penny to each end of my Omega with electrical tape not only gives me 50 plus yards distance and deadly accuracy in a hurricane, but it allows me to convert right back to a mid-range boomerang to suit my fancy. It's possible to decide what type of 'rangs and wind resistance you need once you're in the field. We weighted everything but the cat this week and found excellent results with hooks and traditionals. The tape holds remarkably well and you can employ nickels for even better mileage (and they say money doesn't go as far as it used to)."--From the newsletter of the Free Throwers' Boomerang Society, 340 Troy Road, Delaware, Ohio.

BIRTH OF THE COMEBACK. A number of scientists, including Lorin Hawes, have wondered over the years how Willi Urban of Bavaria invented his remarkable nylon and fiberglass Comeback boomerang. In a letter to me, Urban discusses the feat, as follows: "How did I reach the Comeback design? Totally simple! More than ten years ago I become well known with a man who had interest in boomerangs and who was the boss of a factory which produced plastics. I did say to him: 'Place at my disposal 50 raw products which look a little bit like boomerangs.' He did so. I bought by this time a pipe vise and ten files (straw files and others). My work during about two years: I filed and polished the raw products. The material was hard like steel! My fingers had many wounds! I filed on all edges,

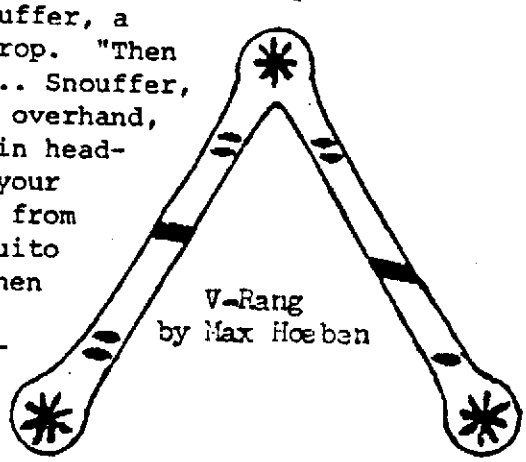


Drawing by Peter Ruhf

angles, sides by sides. Thereupon I went each week to a field and tested the new boomerangs, ten time or 100 time. Generally the results were disappointing. After all I made a boomerang with very sharp edges. At first time the result wasn't better till now. But one day I launched the newest boomerang (experiment number 40) horizontally, about two yards over the ground. At first seconds I thought, 'Now it will fall down,' but it flew and flew, on and on not more than two yards over the ground and it touched at last the skirt of my wife standing near myself. I thought I had done something wonderful and the Comeback was born!"

FUN AND GAMES. How do boomerang throwers amuse themselves when traveling by train? Why, by throwing boomerangs indoors. Didgeridoo virtuoso Chris Henzgen, an American teaching music in Melbourne, now claims a world's record of five catches in 32.41 seconds for a five-by-eight-foot space holding six other people. The not especially abstemious crew were en route home from the Australian championships in Albury and Chris made his miniature 'rang from, appropriately enough, a beer coaster.

SHORT TAKES. After setting an apparent world's record of 86 uninterrupted boomerang juggles, Chet Snouffer of Delaware, Ohio, decided to try and top this mark. Throwing with Rick Tilford and Mark Pansing, Snouffer, a professional gymnast, racked up 106 juggles without a drop. "Then I kicked over and died," he reports. Anyone top this?... Snouffer, by the way, has come up with a new boomerang catch--the overhand, behind-the-head snag. Let the boomerang come floating in head-height, he advises, and watch as it drifts just behind your head. Quickly snag it overhanded with the arm farthest from the boomerang, behind your head (like you'd swat a mosquito on your shoulder blade). "It's a super looking catch when it works, which is quite often," he says.... Dr. Steve Miller of Seattle has conceived a remarkably apt decoration for a boomerang. Calculating the point of rotation, he paints his boomerang so that when it flies it looks like a round rainbow.... Bob Coakly of Flandreau, South Dakota, points out that his town isn't lagging in boomerang enthusiasm. Three tournaments were held there within the space of three months last summer.... Dr. Hanns Peter's magnum opus on boomerangs (mostly nonreturners) is at the press while the author continues his anthropological studies in New Guinea and New Britain. ... Unlikely as it sounds, the Iowa Commission for the Blind has commissioned a taped transcription of the book Many Happy Returns: The Art and Sport of Boomeranging. Tapes by this group are circulated nationally to the blind. Betty Seemuller of Alexandria, Virginia, received the transcription commission and promptly enlisted the author of this newsletter (and author of the volume) to help out by reading into a tape recorder the illustrations in the book.



V-Rang
by Max Hoeben

* * * * * * * *

(Editor's note: Following are two more in an occasional series of essays on boomerang aerodynamics. The first author is from San Diego, California, and wrote this study in connection with work toward a master's degree in engineering. The second contributor is an inventor from Palo Alto in the same state.)

TWISTING AND BENDING BOOMERANGS

By Gordon Rayner

A thrower should try variations of throwing force, spin, direction relative to the wind, and angle of inclination to the ground. If desired results do not

come, one can either reshape the boomerang or try twisting and bending. Manipulate the outer half or third of a blade. Most, if not all, woods are unsuitable for controlled room temperature warping, and must be reshaped. Try a piece of scrap before flexing a boomerang. I recommend ¼" thick polypropylene sheet as material. The shape changes discussed here as manipulations can also be achieved by removing material, but twisting and bending are much quicker. For best results, shaping and controlled warping should be complementary. Test frequently.

Twist Positive twist increases lift. For a right handed boomerang, positive twist is counterclockwise when viewed from the blade tip. Depending upon the airfoil section, up to about 15 degrees can be used. Increased lift prolongs hovering; it makes the turn radius smaller, decreasing range. Boomerangs sometimes slide sideways toward the ground, in their own plane. Increased lift corrects this slipping, resulting in constant altitude turns. Negative twisting is used in non-returning killer sticks to make the turn rate zero or even negative (toward the ground). Uncontrolled warping because of improper storage can convert what once returned into a killer stick, so caution is advised during testing of antiques.

Unequal twist The classical two-bladed crescent shape is eccentric, having a leading blade and a trailing blade. During the advancing portion of one spin revolution, the leading blade is ahead of the spin center. The trailing blade is behind the spin center during advance. Lift during advance is much greater than in retreat, so the average lift center of the leading blade is in front of the average lift center of the trailing blade. To increase the tilt rate, put most or all of any (positive) twist on the leading blade. To slow tilting, place any positive twist used for lift increase on the trailing blade.

Dihedral Upward or downward bending of blades' outer portions speeds or slows, respectively, the rate of tilt. Much greater corrections can be made than with unequal twist. For example, a boomerang with rapid tilt tends to climb high and travel in figure-8 patterns. If this behavior is not wanted, bend one or more tips downward to lower the flight. Upward bending of the tips increases the tilting rate. If very dense or heavily weighted boomerangs cannot be kept in constant altitude turns by twisting alone, upward tip bending is at least a partial remedy.

TESTING AND TUNING BOOMERANGS

By Alan Adler

My procedure for testing and tuning a boomerang is based mainly on experience with multi-blade versions. However, I believe that it is also applicable to two-bladers.

The two main adjustments to a boomerang are dihedral (bend) and twist.

If you lay a boomerang on a flat surface (table top) and it lies flat, it has no dihedral. If the blade tips curve slightly upward it has positive dihedral. If they curve downward it has negative dihedral. Positive dihedral encourages the boomerang to lie down level in flight. Negative dihedral causes the boomerang to sustain the launch angle throughout the flight. I prefer a boomerang which doesn't lie down until the very end of the flight. I adjust dihedral for this goal.

Twist controls the diameter of the flight path. Greater twist reduces the flight path diameter and makes the boomerang easier to throw. Less twist gives a larger diameter flight path but a stronger throw is required to sustain the boomerang over the longer flight. Less twist is handy when throwing in a breeze. The wind shortens the flight path and does part of the return work for you. I generally prefer to tune twist to give me the longest flight path which I can easily throw.

When tuning, I first adjust dihedral, then twist, then I sometimes fine-tune dihedral a second time.

BOOMERANG EXPERIMENTS

Bob Curtis, Boom-a-Trang man, has sent the following ideas for experiments with boomerangs.
Here they are:-

1. Hollow B partially filled with mercury.
2. Hollow B partially filled with water, then frozen to try out different weight configurations without a lot of effort.
3. Hollow B with clear plastic upper surface, black anodised bottom surface and air or clear liquid in center. Try to get extra lift from heat of sun.
4. Hand grenades (Mills Bombs/?) -----traditional shapes replaced by non-returningboomerangs for extra distance.

Bob also asks if anyone can send him the jawbone of an ass as he wants to see if he can make a B out of it like Sampson(?) he says.

Bob's address is :- 407 W. STAYTON
VICTORIA, TX 77901
U.S.A.

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Well Bob, you're not trying to pull our legs are you? I hope you won't think me too forthright if I say I can't go overboard on these ideas. You see, 1,2, and 3 involve <u>hollow</u> boomerangs. Are these easy to make? And why put mercury in a B? Weighting, or balance, or levelling?

In the case of No. 2 I'm sorry to say I think a <u>lot</u> of effort would be required to get the water to freeze in the right place.

Regarding No. 3 there was a kite design with the same basic idea. I don't know if it worked but would a boomerang be in the air long enough for much to happen? Anyway, say the air inside did get hot, how would this give extra lift unless the shape of the aerofoil changed or the arms were somehow set at greater angles of attack?

Number 4 is one I like better. Bombs could have folding arms perhaps to make them easy to carry. (Just thought.....how about an explosive SKYRO!)

Don't be too hard on me will you Bob, especially as I now have a question on Boom-a-Trangs! Both M.J.H. and I have Boom-a-Trangs which tend to fly almost straight out and straight back rather than flying <u>round</u> in a circular flight path. What's the trouble please?

J.J.

A L G M E N E B O E M E R A N G O R G A N I S A T I E

" H O L L A N D "

BOOMERANG

~FESTIVAL!

EASTER SUNDAY AND MONDAY 19/20 APRIL

I N V I T A T I O N

To all Boomerangfans,

This Festival is to be held in Amstelveen, Holland during Easter 1981.

Free throwers,clubs and Organizations are welcome to join in.

A full program of two days throwing in which you may partcipate in one event or more,show your special skill,try to set a new record.

Do you master a special effect,you can show it,a new type of boomerang,fly it!

Do you want to be in it?

If you are a member of a boomerang organization,inquire by the Board or President.

Do you want hotel accommodation or do you want private rooms reserved.Or a good camping spot?

WRITE TO;

TOURIST INFORMATION VVV

Plein 1960 Cultureel Centrum Phone Holland 020- 45 20 20

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Come,and meet Al Gerhards our special guest.See him throw his famous boomerangs far over 100 meters.

Meet boomerangfriends from different countries. Bring news,exchange views,swap,sell or buy boomerangs.

Saturday evening BOOMERANG-TRIPPEL INN"at 8 o'clock,the date of course the 18th April.

Make sure to be there! This is the evening to learn to know each other.To talk,show,swap and sell.Whatever you like.A social gathering in a relaxed friendly atmosphere to meet old and new friends or pen mates.

Have you made your mind up?

WRITE TO; Max Hoeben
ABO-"Holland"
Postbox 509,
1180AM Amstelveen
Holland.

Or phone; Holland 020 - 450983

Let us hear from you!

The sooner the better!

Have fun and travel.Don't throw your boomerang on gravel.

The British Boomerang Society Newsletter

This newsletter is published four times a year. The aim is to provide all members and readers with miscellaneous boomerang news from around the world in addition to presenting boomerang plans and discussing technical topics. Material for publication is always extremely welcome.

The British Boomerang Society subscription rates for 1981 are :-

Junior, up to and including 15 years of age, £2
Senior, age 16 and over, £4
Overseas, (surface mail), £4 . Please send £4 in Sterling and not just the equivalent in another currency.

The British Boomerang Society is associated with the Midlands Kite Fliers and B.B.S. members may subscribe to the kite newsletters for an additional £2 per year.

Please make all cheques etc. payable to British Boomerang Society and address correspondence to :-

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