Many Happy Returns

No. 29 $2.50 An International Newsletter of the U.S. Boomerang Association Winter 1987

UNITED STATES BOOMERANG ASSOCIATION

WHAT'S HAPPENING?

ATTENTION

The USBA needs a publisher. Contact Ted Bailey for further information.

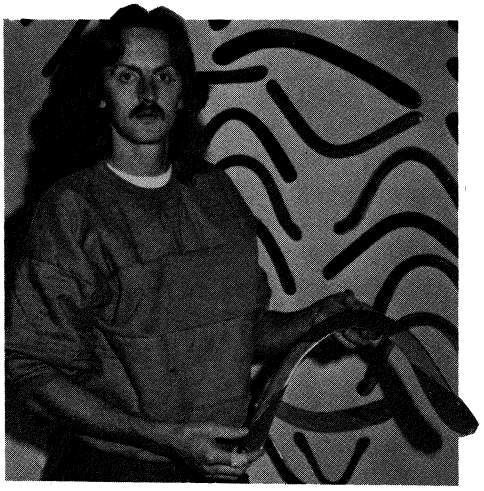
How to Make a Really Good MTA Boomerang

by Ted Bailey

No boomerang event has undergone the technological revolution as has the maximum time aloft (MTA) event during the past several years. Wilhelm Bretfeld was the first to capitalize on the hockey stick approach with his large, weighted models. The roots of his design efforts spread into England and the rest of Europe at a rapid pace. It was not long before the modern MTA concept jumped the Atlantic Ocean into the hands of American boomerang technologists. The remainder of this article is dedicated to my personal design experiences and to the results of my technological contribution to the science of MTA.

My introduction to MTA was a large tracing of a Bretfeld design that Ben Ruhe sent to me in November 1983. I did nothing with the planform until October 1984 when Ray Rieser sent me two technical articles on Samara Aerodynamics with two beautifully scaled up models of maple seed samaras that worked. With some encouragement, I dragged out the planform tracings and made some large, flimsy MTA boomerangs that were difficult to throw but occasionally produced flights of 20-25 seconds. A cold windy winter set in, and MTA was put away until Spring, 1985.

(Continued on page 4)



Volker Behrens of West Germany, shows off one of his record-breaking long distance 'rangs.

The Challenge of Long Distance Throwing

by Volker Behrens

NEWS FLASH

On Saturday, March 21, 1987, with several witnesses and an official measuring system, Volker Behrens recorded two throws of at least 145 meters with return.

My ideas on long distance throwing are mainly the result of what I learned from Herb Smith from England last summer and ever since (thanks again, Herb, for so freely sharing your experience!) and of

(Continued on page 3)

President's Column

by Ted Bailey

Dedication

This issue starts the new year with an emphasis on the technological aspects of boomerang science. The issue is dedicated to Wilhelm Bretfeld who revolutionized the MTA event by unselfishly sharing his unsymetrical arm concept with the world boomerang community. The optimization of the concept by several key experimentalists has resulted in new records and achievements that would have sounded like fairy tales just a few years ago.

In the spirit of an international newsletter, this issue has included a number of articles from our friends overseas. A summary of the 1986 USBA player rating system is also presented. The USBA eagerly solicits contributions from it's readers. Photos and articles should be sent to the MHR editor well in advance of the expected publication date.

Tournament Circuit

The 1987 throwing season started early with a 4-test-match intercollegiate tournament between Reed College and Evergreen State College in February. Michael Girvin and Alex Ruhe organized the West coast event.

The South Georgia Boomerang Club will host a spring tournament on Saturday, April 25, 1987 on the Emanual County Junior College campus in Swainsboro, Georgia. Contact John Derden for further information.

Larry Ruhf is organizing an invitational test match that will span two weekends and at three sites. The international format will not include a U.S. team. Instead, regional US teams will compete on an equal basis with teams from overseas locations. A German and a French team are already committed to attending this major event. See the article on page 16 for further information.

The USBA nationals are tentatively scheduled for the weekend of August 14, 15, 16 at the Cuyahoga Valley National Recreational area near Cleveland, Ohio. The United States Park Service and the Cleveland Boomerang School will host the biggest boomerang festival of the year. Look for a fresh new format with lots of fun throwing for all. David Boehm and Gayle Hazlewood are the prime movers for this affair.

The USBA has a new tournament notification service spearheaded by Dan Russel of San Diego, California. Look for the application form on page 10 for further information. Now there can be no excuse for missing a tournament with the new informanton service. Tournament directors should notify both Dan Russell and the Editor of Many Happy Returns as soon as an event is scheduled.

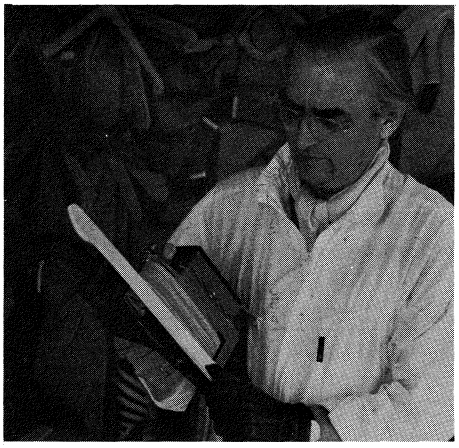
Overseas Affairs

Many Happy Returns jumps the Atlantic with the scheduled reprinting of this newsletter in both the United Kingdom and Germany. This international subsciption service will greatly reduce the delivery cost of MHR to our European friends.

An offer to license the reprinting of MHR in Austrailia was extended to the BAA. Although no reply has yet been received, it is hoped that our friends down under will accept our offer with a reciprical agreement so that both the USBA and the BAA can benefit with a cost effective information exchange.

European readers who wish to subsribe to MHR at a reduced rate should contact:

Gordon Shuttleworth
35 Royal Park Avenue
Leeds LSG 1EZ
United Kingdom or
Volker Behrens
Kronsforder Hauptstrasse 59
2400 Lubeck West Germany



Wilhelm Bretfeld is shown here using a hand-held sander on one of his many boomerangs.

Two new German language newsletters were introduced in 1987. Both newsletters contained nearly 20 pages of information on book reviews, boomerang plans, local club news, boomerang science, and other topics. The Swiss boomerang club and a group of northern West Germans spearheaded these efforts. Behrens asks that action photos and articles be sent to him for inclusion in the German newsletter.

Hats off to the BAA Bulletin No. 50. It is the nicest issue yet from our friends down under. We can't forget all the other fine newsletters put out by other organizations. For a complete listing , contact USBA Headquarters in Delaware, Ohio.

Support USBA

The USBA needs your support through increased membership and purchases through USBA Store, Mail Auction, etc. Revenues generated through these channels keep your rates low. So turn on a friend to USBA, and support your store and Auction Column. Now is the time to start making that special rang for entry into the design contest at the 1987 Nationals. Donations of quality collector series boomerangs are needed for the Auction at the 1987 Nationals. Here's a great way to show off your best stuff and help the USBA. Plan NOW!

USBA Videotapes

Ted Bailey, USBA President is collecting videotapes of documentaries, movies, etc. on boomerang related topics for the USBA archives. Ben Ruhe has generously donated two hours of videotapes to the USBA. Donations from others include an additional hour or more of boomerang videos. If you have anything of interest contact Ted Bailey immediately. Copies of these tapes are available to USBA members through the USBA STORE. See page 19. A sincere USBA videoarchievist with quality equipment for copying/editing both VHS and Beta formats is needed. Until the position is filled, Ted Bailey will retain custody of USBA Video archives.

A tape on international boomerang films and newsclips from Europe, Japan, Australia and the U.S. is offered in the USBA store column on page 18.

(Continued from page 1)

more than a year's work on the variation of one distance-model, the original "Challenger I", which is finally broken into pieces and getting its well deserved rest. . .

The basic conditions for successive distant throwing are:

1. A specialized distance boomerang
2. Lots of power and technique in the throw

What makes a boomerang a distance-boomerang?

a. the material
b. size/shape
c. airfoil
d. tuning/ballasting

a. The material to choose for making these rangs should be heavier than plywood, thin to cut through the air easier (and to develop less lift) and tough enough to persist torsion in the moment of release. I find specific weight in the range of 1.6-2.0 suited, which comes down to some hard woods, aluminum and resin fibre, which I use.

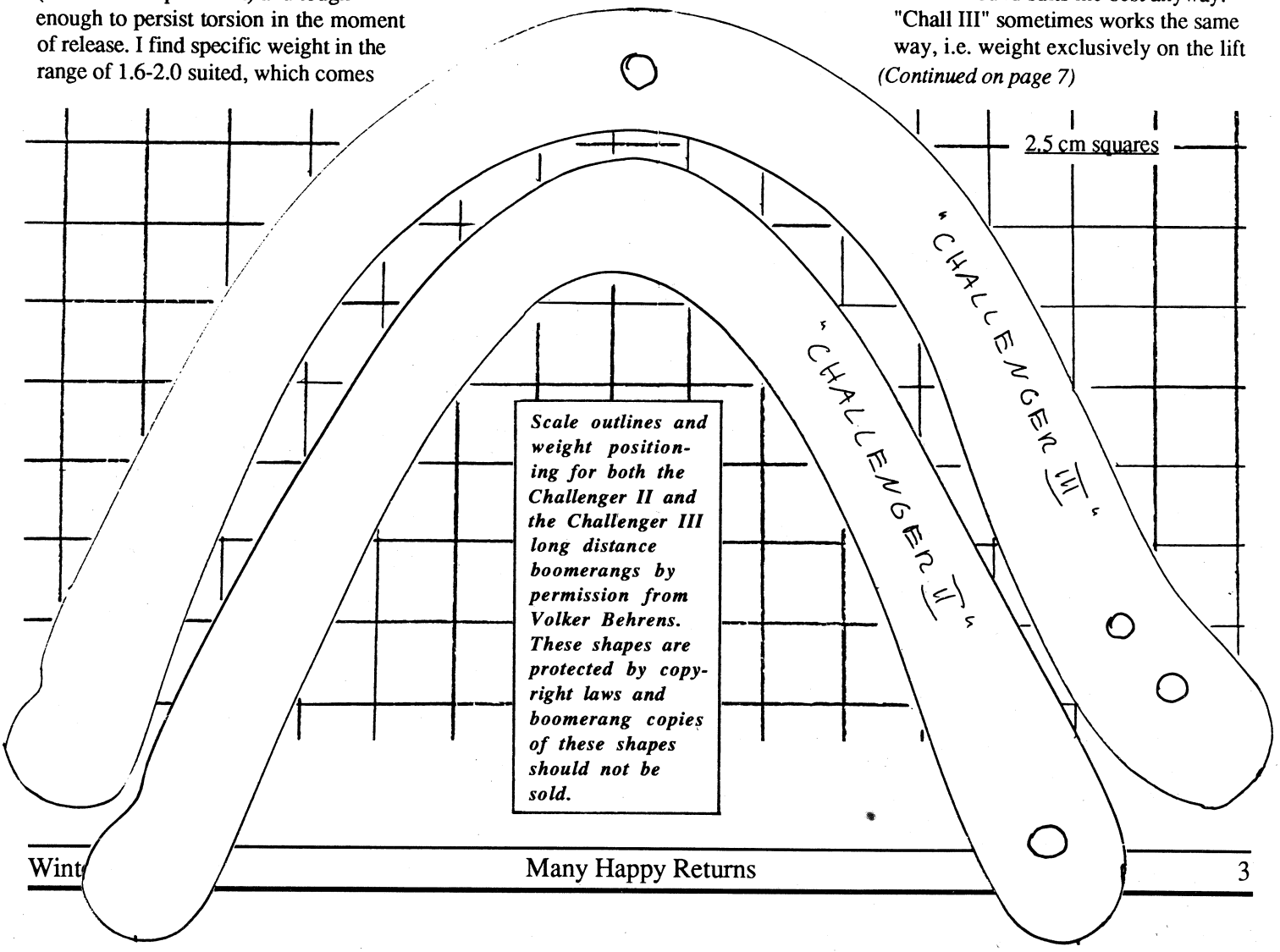
b. I am quite impressed by Herb's minirangs, but for my style of throwing I found bigger rangs more effective. As everybody knows, Herb is the master of this particular whipping motion - one of his rangs in my kit I never managed to get to return. The original "Challenger I" was the same size as "Challenger III", only it was made from 6.5mm ply (13 plies!) and the wings were a bit narrower. I got 103 meters from it, until it broke. "Challenger III" is much heavier and 1mm thicker than its predecessor and much wider also. The trailing arm is narrower than the lifting arm, which does produce critical flyers, but when they work, they DO work.

The shape is a rounded hook, almost circular, which makes it a bit harder to put into fast rotation than B's with narrower or sharper elbows.

c. When it comes to the airfoil, there are several methods of reducing lift and therefore creating distance: broader wings, thinner material, undercut on the trailing edges and a more gentle slope on the leading edge. I try to find a compromise in between without stressing one of the factors too much - since undercutting for example can have a rather deadly effect and produces lots of rangs that never fly. So the airfoil is somewhat like the sketch below, nothing new or exciting about it.

d. The "Challenger II" is ballasted on the lifting arm exclusively (a method I also learned from Herb) and can take about 10 grams total of extra weight. Consequently, the tilt angle varies with each weight you add - the more weight on the lift arm, the more tilt you have to give on the throw. One of my own "Chall II" is heavily weighted and released almost horizontally! This method, of course only works when you throw dingle arm, which I found suits me best anyway. "Chall III" sometimes works the same way, i.e. weight exclusively on the lift

(Continued on page 7)



Scale outlines and weight positioning for both the Challenger II and the Challenger III long distance boomerangs by permission from Volker Behrens. These shapes are protected by copyright laws and boomerang copies of these shapes should not be sold.

(continued from page 1)

Preliminary design work began in April, 1985. Feeling rather uncomfortable with the large flimsy models, I made a replica of my best floater, a Bob Burwell rippah, with a"tail" or extension on the lift arm tip. On my first throwing session, I was rewarded with a flight and catch of 1 minute 12 seconds. Elated with the performance of this reduced size design, I started scaling down to the size of what I now refer to as my mini MTA. My first throwing session with a mini MTA produced a flight of 1 minute 20 seconds.

Since this period of initial development, my MTA boomerangs have excelled in performance culminating with the setting of a new world record mark of 2 minutes 31 seconds by Larry Ruhf and the achievement of the first perfect round of Supercatch by the author. The remainder of this essay is dedicated to portraying all my design secrets to you, the reader, with hopes that all may benefit by experiencing the ecstasy of a one minute plus MTA flight. The author is willing to discuss any design problems with other MTA theoreticians and experimentalists.

Planform Shape

The most distinguishing feature of the classical MTA boomerang is the extension of the lift arm, often called the "tail". Boomerangs with symmetrical arms can be tuned as a MTA boomerang, but they can rarely out perform the hermit crab proportioned MTA sticks. The lift (leading) arm should always be longer than the dingle (trailing) arm. Mother nature always puts the blade before the seed on the samara and the seed is analogous to the dingle arm during hovering flight.

My planforms for windy and calm days are necessarily different. For calm weather floaters, the arms should be proportioned so that the distance from the center of mass to the tips of both arms is nearly the same (Rusty's Rule). When this kind of boomerang is descending with a hover, there are two "apparent" solid circles of rotation (Figure 2) when viewed from the underside. MTA boomerangs for windy conditions should have a greater length ratio between the lift arm and the dingle arm, like a hockey stick, so that the lift arm tip balances further from center of mass than does the dingle arm tip.

When viewed from the underside during hovering descent, these sticks look like a swastika (Figure 2). MTA sticks for windy conditions should have a narrower chord than MTA boomerangs designed for calm conditions.

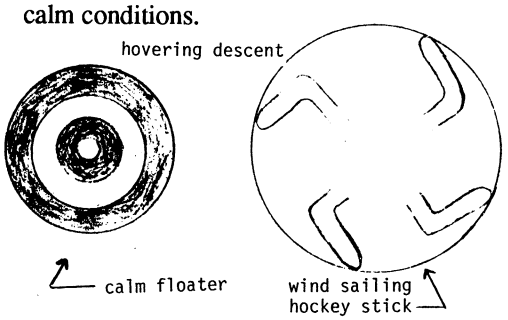


Figure 2- Visual pattern of MTA during hovering descent.

My personal experiences indicate that planforms with straight arms and an abrupt angle change at the elbow are preferential to curved elbow and blade sections. The angle between the two arms should be close to 90 degrees, but always slightly more than 90 degrees for best performance. The MTA should not have more than two blades.. The lift arm should always be longer than the dingle arm.

Tip Shape is very important to the design of any boomerang. It is important to the stability of a MTA boomerang during hovering descent. The science of aerodynamics tells us that an airfoil of constant chord, with the tip abruptly cut off, will not be parasitized by crippling vortex formations at the blade tip. The air foil will behave as if it dead ends into a wall. The cutoff (Figure 4) must be perpendicular to a line running through the center of mass.

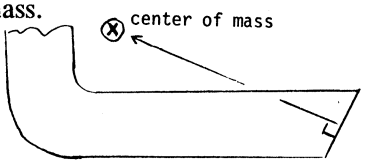


Figure 4- Cut off airfoil tip.

Another important tip shape is the ellipse. An ellipse can be generated by hammering two nails into a board, placing a loose inelastic band over the nails, putting a pencil just inside the band and tracing the perimeter (Figure 5). If the tip shape is elliptical, then the pressure loading will be equally distributed over that portion of the span (Figure 6). The tip shape can be distorted from the true ellipse provided the chord length at each span section remains the same as an elliptical tip. I combine both of these features on my MTA boomerangs. The dingle arm is straight and cutoff with a small ellipse at the tip. The lift arm has a very pronounced elliptical shape over a significant portion of the blade end.

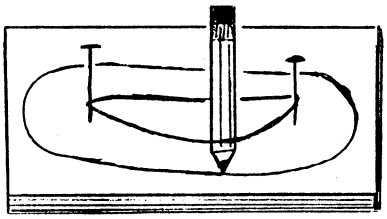


Figure 5- Generating an ellipse

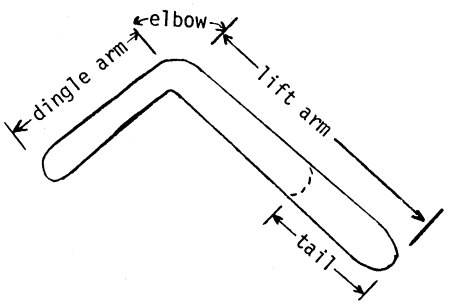


Figure 1- Distinguishing features of MTA boomerang.

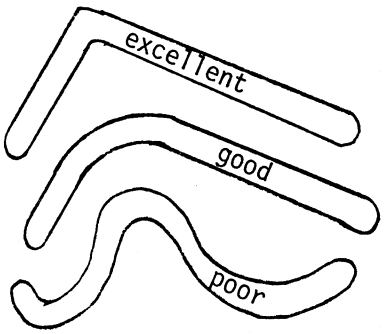


Figure 3- Planform is important to MTA performance

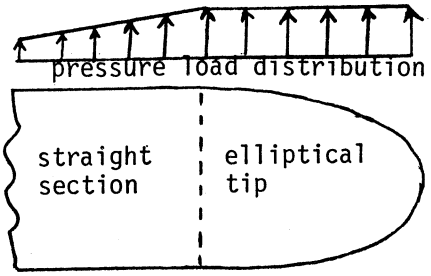


Figure 6- An elliptical tip

Airfoil Shape

A distinguishing feature of a good MTA airfoil is sharp leading and trailing edges. The angle of the leading edge should be 30 degrees to 50 degrees and always about 20 degrees more than the trailing edge. Figure 7 approximates the rough cut dimensions before final sanding. The Fall, 1986 issue of MHR illustrates the fine sanded airfoil profile. Sharp airfoils can cut if you are not careful when catching. Sharp airfoil edges are easy to break off. To strengthen the airfoil, break the edges during sanding. Be careful not to remove too much material from the tip. Keep the transition around the tip as the leading edge.

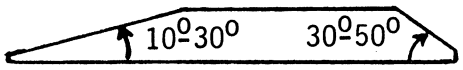


Figure 7- Rough cut MTA airfoil section, before finish sanding

Be careful to insure that the airfoil contours are smooth around the entire perimeter. Rotating airfoils pump air radially outward toward the tips. Discontinuities will distort airflow in the chord direction.

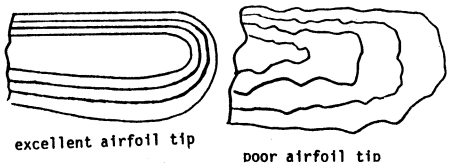


Figure 8- Plywood contour lines for MTA airfoils

Undercutting

I generally undercut the leading tip of my boomerangs. I no longer do this to my MTA boomerangs because the twist during tuning compensates for undercutting automatically. Some MTA craftsmen undercut the tip much like Sam Blight's models to improve stability. I avoid this because bending to add dihedral, and making an elliptical tip shape have the same effect. Remember that cutting is permanent and not required for thin and wide airfoils, which can easily be bent. The only possible advantage to undercutting MTA boomerangs is the removal of material from the underside of the trailing edge to increase the spin rate on calm weather MTA boomerangs . Do not do this to high wind MTA's which fly better with low spin rates.

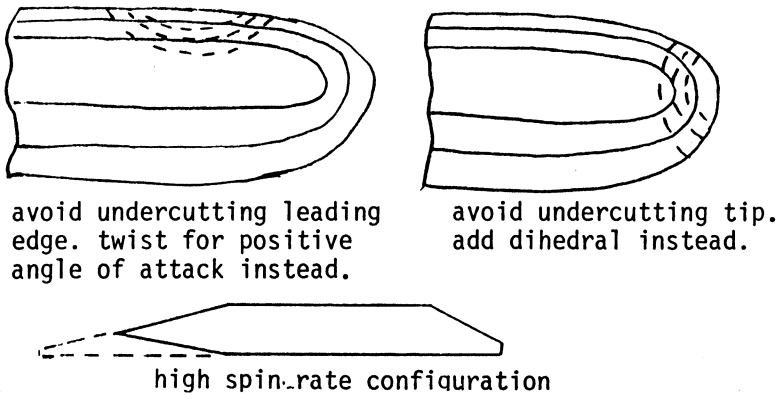


Figure 9- Undercutting MTA boomerangs

Adding Weight

There is an advantage to carrying both weighted and unweighted MTA models in your throwing kit. The weighted MTA can be thrown higher to catch the "bounce" on a nice day. The weighted model stores more energy and is inherently more stable. The unweighted model has more potential for longer flights on windy days and has a slower sink rate on calm days. It is better to add more weight to the dingle arm tip than to the lift arm tip. After weight is added to both tips, suspend the MTA from the lift arm tip and mark where a vertical line crosses the dingle arm. At this location, add at least as much weight as on the dingle arm tip.

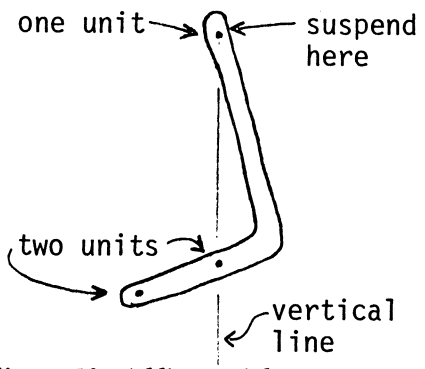


Figure 10- Adding weight to your MTA boomerang

I recommend using lead tape on the flat undersurface, or embedding rod weights with the surfaces flushed off. Avoid using coins with tape because of airflow disturbances that are introduced. The boomerang man sells excellent lead tape for this purpose. See his ad in this issue.

Construction Material and Size

My MTA boomerangs are almost always made with quality 5 ply Baltic birch plywood from Finland. My personal source is Trimcraft Aero. I use wood thicknesses from 2 mm to 4 mm. Figure 11 can be used as a rough guide to choosing wood thickness. I occasionally make horizontal lap joint MTA boomerangs. Eric Darnell has made some great flying natural elbow MTA sticks.

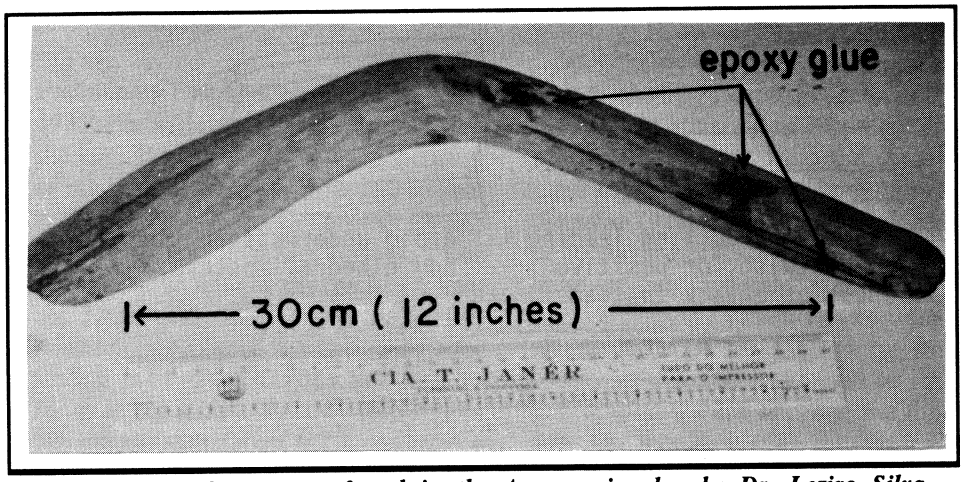
BALTIC BIRCH THICKNESS	TIP to TIP SPAN (in.)
2 mm	10 - 15
2½ mm	12 - 17
3 mm	14 - 21
4 mm	18 - 28

Table 1- Plywood selection guide

Finishing

After the boomerang is rough machined, it should be test thrown and tuned before painting. Test throwing and tuning should be done between each coat of paint. The underside should be moistened with a wet sponge to raise the grain. Do not sand the underside after wetting. It is beneficial to have a rough undersurface. Following the wetting of the undersurface and the first test flight, the boomerang can be baked at about 140 degrees for 30 minutes to drive out the moisture in the outer plys. This will result in a stiffer boomerang. Coat the underside with a

(continued on page 15)



Native Brazilian boomerang found in the Amazon jungle by Dr. Leziro Silva. It was made of wild cashew tree wood and was hand carved.

South American Boomerang Found

Throwsticks are indigenous to almost every primitive culture and have been used on every continent in times past. Reports of throwing sticks capable of returning outside of Australia are rare. Felix Hess, in his famous Ph.D. thesis, refers to a few examples which include an oak boomerang from the Netherlands, manufactured around 300 b.c. Felix Hess made a near perfect copy of the Dutch prehistoric boomerang from which he was able to obtain an elliptical return flight. Figures 11.2 and 11.3 are copied from page 79 of his text.

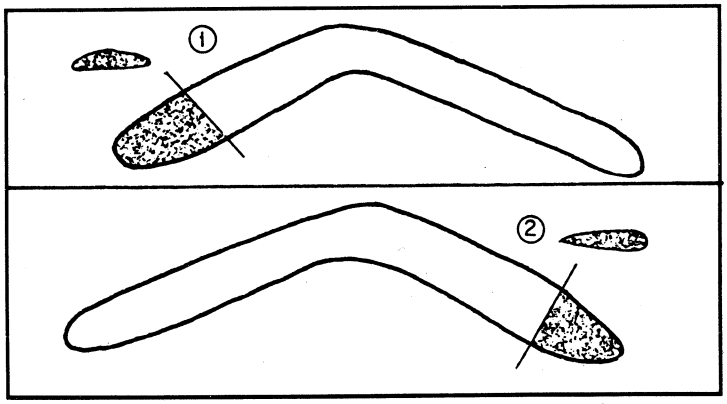
Dr. Leziro Silva from Sao Paulo, Brazil is a lucky man. He has a job most of us would envy. Instead of sitting behind a desk and shuffling papers, he surveys the primitive regions of Brazil for mineral deposits. On his last trip, he was almost not so lucky. His helicopter crashed in the jungle, leaving him to service on his own for 10 long days. In his wanderings, he came upon an old Indian cave settlement. He sifted through an old debris pile, containing ceramic scraps, ancient wastes, broken bones and silex artifacts, in search of arrow heads. To his surprise (and ours), he found a small wooden boomerang made out of cajueiro (cashew tree) wood. The boomerang is approximately the same size and shape as the Dutch boomerang and has similar airfoil sections. The reader can judge for himself whether or not the Brazilian boomerang is capable of a return flight. Because of its small (Hawes SL) size and weight, it was almost certainly used for birding or ceremonial purposes. Perhaps it was a toy. Was it discarded because it had a curved flight profile?

The "Silva" boomerang was made from a natural elbow section of a cajueiro tree using primitive tools of diabase or silex materials. The wood shows signs of relative oldness such as sections of natural decomposition and incipient carbonization. The boomerang would not have survived if it had not been abandoned in the cave. Decomposition is very rapid in a tropical rain forest.

Dr. Silva investigated the availability of other South American boomerangs/throw sticks and found that his discovery is relatively unique among South American throw sticks. An old Yanomani Indian related the following to Dr. Silva. His tribe fought battles with the fierce Willapitis tribe. Both sides used battle clubs/throw sticks as depicted in the adjacent figure. The throw sticks were made from heavy, hard native woods such as peroba, pau-brazil, cashew tree, and Brazil nut tree. The Yanomanis covered these throw sticks with latex (milklike fluid of native rubber trees) to improve the impact performance and durability, as with contemporary police sticks. The fluid latex is coagulated by smoking with special woods, in a slow manual process. The savages sometimes increased the power of their weapons over their enemies by incrusting alligator, piranha, or jaguar teeth into the latex before it was cured.

Dr. Silva hypothesizes that it is possible that early European travellers to the remote headwaters of the Amazon could have instructed the natives on the art of manufacturing boomerangs, but I'm sure these explorers had other things on their mind and were not gifted boomerang craftsmen. It is more likely that the "Silva" boomerang evolved from the throwing club or it was carried south with the initial settlers of the region.

With the discovery of prehistoric boomerangs from so many cultures and isolated regions, a theory must be entertained that the throw stick (and boomerang) originated long before the first aborigines populated Australia. The first inhabitants of Australia probably carried throw sticks and the spear thrower with them. They must have migrated to Australia before the bow and arrow was invented because the spear thrower and not the bow was used by the aborigines when Europeans first arrived there. The migration of Asiatics over the Aleutian Land Bridge during the Ice Age was at a later date. These settlers brought more advanced weapons with them, including the bow and arrow, blow gun, etc. A plethora of weapons ad-



This arms profile shows a cross-section of the boomerang at both tips. Notice the short dingle arm and it's similarity to early MTA's

vanced southward with each wave of migrants. The throw stick travelled with them. Documentation exists to show that eskimos used throw sticks until the recent past. The Hopi Indians of the southwest still hunt rabbits with throw sticks. A 10,000 year old "beak" boomerang was unearthed in Florida several years ago. Throw sticks in South America complete the migratory pattern. Did Noah carry a pair of throw sticks on the Ark?

We must thank Dr. Silva for sharing this interesting information with us. Let the USBA know if you enjoy essays of this kind. Perhaps members who are gifted in archaeological research could contribute special articles on throw sticks or boomerangs from special regions.

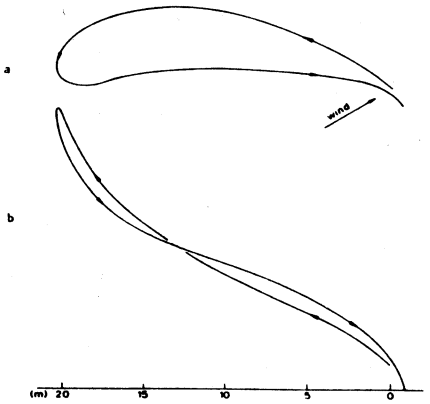


fig. 11.3 Typical return trajectory traversed by the plywood copy. a) Bird's eye view b) side view

Long Distance

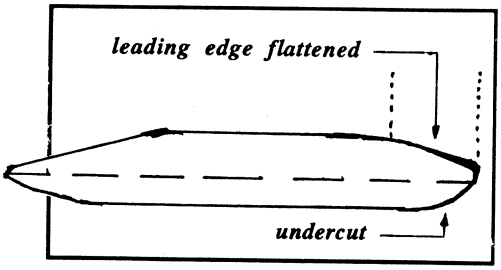
(continued from page 3)

arm. With most of the copies I made so far - and with the original - I had to add weight to the elbow to produce a more constant flight. By altering the relation between these weights you can determine the shape of the flight path the rang will make. Using two equal weights will produce a rather circular flight with hover at the end; the more weight you add to the lift arm, the more the flight path will turn into a figure 8, which is important to get valid throws crossing the baseline in competition.

Tuning is done as usual: if the B climbs too much, bending down the lift arm will mostly cure the problem. One of the reasons why I like this resin fibre material so much is because it is very easily tunable on the one hand, but doesn't warp like aluminum after a rough landing and adjustments can be made in gently steps. More distance can also be achieved by putting a bit washout to the dingle arm, but easy on this one.

The throwing technique

The more power and rotation you are able to put into your throw, the more stable the flight will be and the more distance you will get. Also, the more spin you can put into the B the more extra weight you can add. My B's are designed for dingle



Cross-section of the leading wing airfoils showing undercutting.

throw, because I found to be true what Eric Darnell and Herb Smith found for themselves: that pulling a heavy rang over your shoulder is much easier and gives cleaner releases than pushing it forward. Also I have a better feeling for slight alterations of the tilt angle this way. There are always two ways of throwing a distance B: using the correct tilt angle will produce a nice flight with hover at the end, while tilting a bit more will make the B cross the line on return, but makes it hard to catch for its high speed.

Anyhow, distance throwing, among other factors remains a matter of strength and velocity of the wrist. I've been power-practicing all last winter, inside and outside. A very effective exercise is to fix a bike tube to the wall at shoulder height, to grab it standing with your back to the wall and pull it over your shoulder in front of you. The same can be done with an expander of course.

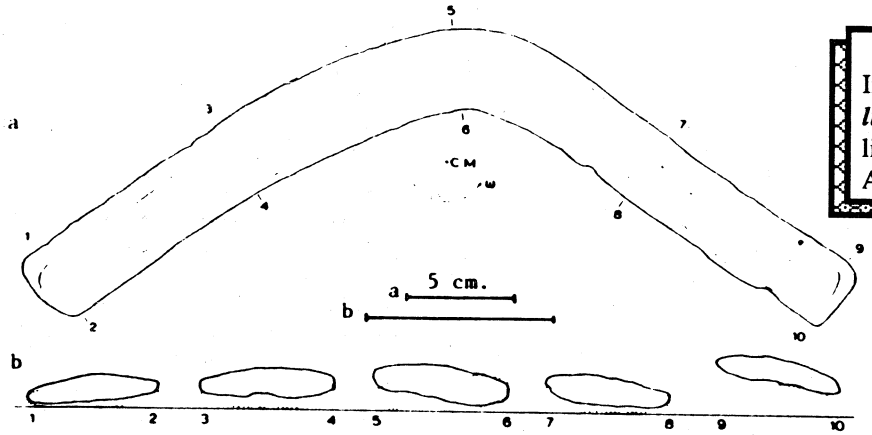


fig. 11.2 Boomerang from Velsen (~ 300 BC).
a) Thickness map of boomerang shown from the upper side.
Thin drawn line: thickness = 0.6 cm., dotted line: thickness = 0.8 cm.
CM: centre of mass. ω: direction of boomerang's spin.
b) Cross sections cut at places marked by nos. 1-10. Horizontal line: plane of support. Solid lines: present state of sections, dotted lines: sections obtained after correction for probable warp of original.

JUGGLING

by Bob Burwell

In the mid fifties and early sixties I became more and more involved in both teaching people the art of boomerang throwing, and doing exhibition throwing. Audiences become bored with the same old thing, and in my case so did the thrower. As a result my father and I were always looking for innovative exhibition presentations.

My father had a very inventive mind, coupled with an artistic flair and manual creativity. Numerous throwers were throwing two sticks simultaneously so C.W.B. decided we would expand on that ability. Four identical 1/4" sticks were made, and we successfully launched them. These sticks were so easy to throw, and so consistent and identical in their flight pattern, (in calm conditions) that we decided to try a juggle.

I found some difficulty at first, but found that by getting into a timed rhythm it was a little easier. I still had some trouble in reaction time and seemed to be rushing my catches. This lead me to thinking, "why not practice with three sticks and see if I can manage". This would surely make juggling two sticks a breeze. "Whacko", it worked.

So if you are going to take up juggling here is a guide to the things that helped me:

1. The sticks to use should be as near as possible to having the same flight pattern.
2. They should be easy to throw.
3. They should be easy to catch.
4. You should be familiar with their flight pattern so as you can anticipate where they will land, in preparation for the catch.
5. For the three practice, I count to five between throws for the first three launches, then try to keep even timed spacing without counting. With two sticks, I wait til the airborned stick is almost back before throwing the next one. That is you must know where it is going to land.
6. You should give yourself enough time at the launch of each throw so as to throw as precise and controlled as possible, then go like greased lightning to position yourself for the catch.
7. Power throwing is not recommended.
8. Juggling in windy conditions is not recommended.

Throwing for pure pleasure of course you can throw any two sticks you like. I do!

For those that are curious, nine consecutive catches are the most catches I have done with three sticks. I never did that type of juggle throw for public exhibition, til I went to Washington, D.C. in 1982. At that time, as a result of unfavorable winds, that attempt was a total failure. For juggling three sticks you need Lorin Hawes preferred wind conditions (i.e. 3 mph).

Without doubt my most memorable throw, and my best ever juggle result was in 1982, using a newly acquired pair of "OMEGA" sticks made by Rod Jones. The sixty-nine catches wasn't the memorable bit, it was the look on Chet's face.

Retailer's take Notice

The USBA has a new service. Retailers mail a quantity of their catalogs to USBA, Box 182, Delaware, OH 43015. New members and other interested parties request a packet containing a collection of catalogs from the various retail outlets. The cost to the retail outlet is only the cost of the catalogs. The cost to domestic members is only $2.00 to cover shipping and envelope cost. The retailer has the advantage over other retailers who do not supply catalogs. The inquiring member can choose from a variety of retailers for cost/quality comparisons. The demand for this service has been high, but no retail catalogs have been sent in yet. Don't miss out. Mail your catalogs to USBA today!

Loren Hawes is opening a Boomerang Factory/Tourist Trap. The expected opening is May 1, 1987. The location is Hope Island Site, Queensland, Australia. Contact Loren Hawes at: PO Box 241 Runaway Bay 4216 Queensland Australia

MTA - Should it contain an accuracy restriction or not?

Editorial by Ted Bailey

No boomerang event has undergone the technology revolution as has the maximum time aloft (MTA) event. Five years ago the world record was only about 25 seconds. Today, a good thrower can average 35 seconds. Many throws have been reported in excess of one minute, a few throws in excess of two minutes, and there have even been reports of boomerangs with flights of several minutes with the boomerang continuing to climb until it is no longer visible to the thrower.

In the early days of MTA competition, there was no requirement for catch or accuracy. The flight was simply timed from the release until contact was made with the ground. In its simplest form, this is truly MTA. In 1980, the catch was added as a requirement. MTA with a catch (MTAC) and without an accuracy restriction is the format that American throwers have been using for the past 6 years. It is also the format that was used in both the 1981 and 1984 challenge matches between the USBA and BAA.

Over the past 2 years, the BAA has modified their MTA event further by adding the restriction of a 50 meter radius circle accuracy limit. At first, BAA rules required the thrower to launch from the 2 meter radius accuracy circle. Currently the thrower can launch from anywhere within the 50 meter radius circle. The 50 meter radius accuracy requirement is directly tied to BAA insurance restrictions. The USBA, without an insurance liability requirement to restrain the entire throwing field to a 50 meter radius circle boundary for all events, has retained the MTAC format without an accuracy clause.

There have been charges that the American style MTA boomerangs are not accurate and that perhaps they are not true boomerangs at all. These MTA boomerangs obey the physical laws of true boomerangs just like any other competition boomerang for the same duration of about 10-15 seconds. That is to say that they have a nearly circular flight path that is caused by aerodynamic lift and gyroscopic precession. The difference being that the added dihedral of the MTA stick superimposes height onto the circular flight path so that at the end of the precession it is flat and hovering at great height. I once sent one of my mini MTA boomerangs to Leni Barker. It was tuned without dihedral so that it made a very good fast catch flight profile. Leni took first place in a tournament with this boomerang with a fast catch score of 27 seconds. Yet, the same boomerang would have a good chance of achieving the same time for a single flight with a different tune. Accuracy can be defined in other ways than by whether or not it is caught within a 50 meter circle. In the distance event, the boomerang only has to pass over a 40 meter line upon it's return. The distance rang can then land 200 meters behind the thrower and still count. There are few MTA boomerangs that would not pass over this same line upon its return.

Most of the readers feel strongly about whether or not MTA should have a 50 meter accuracy circle. Competitors from European clubs feel undecided as to whether they will go with the Aussies or the Americans on this one. The best solution, by far, is to compromise. Why not do it both ways? Both methods require a totally different throwing style and the technology requirements can also be quite different. It would be exciting indeed if both options are adopted.

Last Tournament of the Year

The South Georgia boomerang Club held a tournament on December 6, 1986. the tournament attracted fifteen throwers, twelve trom the Atlanta boomerang Society and three from the South Georgia boomerang Club.

Frank Golder and Jimmy Hooker, veteran officials of last summer's nationals in Atlanta, ran the tourney in an able and expeditious manner. The throwing field was northeast of Atlanta at a public recreation complex along the Chattahoochee River, near Duluth. Conditions were calm with some light, variable winds. By mutual agreement the five mandatory events were contested- Accracy, Australian Round, Consecutive Catch, Fast Catch, and MTA. John Derden and Dave Higgins had a nip-and -tuck race all day for overall honors, with John Derden eventually prevailing. Among the highlights- Dave Higgins winning fast catch by .51 seconds over second place; Eleven year-old Mark Derden finishing fifth in fast catch with a 41 second clocking; John Derden making a juggling, circus catch while on a dead run to pull out the MTA win; Neil Kalmanson showing off his new asymetrical three bladder.

Tournament Announcement Service

Members and all tournament Directors. If you wish to have your Boomerang Tournament announced in the Spring Newsletter, the Deadline is April 30, 1987. Dan Russell has volunteered to be the USBA Tournament Anouncement Director. The sooner your Tournament Director notifies Dan of your planned tournament, the sooner he can notify interested members/competitors, and, if received prior to the deadline listed above, have it printed in the Spring issue of this newsletter. Tournament Directors should inform Dan with the following information (please print):

Tournament Date_____
Location (City and State)_____
Tournament Director _____
Phone Number___(_____)_____
Best Time to be reached_____
Tournament Director Address_____
_____

Send to Dan Russell:
3522 Union St. San Diego, CA 92103

Tournament Notification Announcement Service

USBA Members/Competitors. If you wish to be notified by mail or phone(collect), of boomerang Tournaments NOT listed in the newsletter but being held in your area or elsewhere, send Dan Russell at least 6 self addressed, stamped post cards to place in your file. In case of short notice, you may call the 24-hour Tournament Notification Hotline at (619) 298-4283.

Name _____
Address_____
_____

Send to Dan Russell:
3522 Union St. San Diego, CA 92103

List states or regions you wish to be notified about
_____
_____
_____

USBA TRAVELER'S GUIDE

Would you like to assist fellow Boomerang Enthuisists traveling through your area? If so, please fill in the form and send to Dan Russell. Information will be available to USBA members only.

State _____
City_____
Name_____
Phone___(_____)_____
Address_____
_____
Best Time to be reached_____

Send to Dan Russell:
3522 Union St. San Diego, CA 92103

Fairy Tales Come True

Volker Behrens 145 meter long distance throws.

Supercatch by Mike Forrester and John Koehler.

Ted Bailey is videotaped doing Supercatch.

Chet Snouffer breaks two minute barrier in MTA twice (2 min. even and 2 min. 16 sec) using booms he made himself based on plans given in the Fall issue of this newsletter.

Gary Broadbend makes an MTA throw of 2 mins. and 15 sec. with a Bailey mini-MTA

Flying Trees, ltd.

From easy beginners to advanced competition

Mike Forrester and Ron Tamblyn have been making boomerangs for over a decade now. This means you get 100% original designs and impeccable craftmanship in every boomerang you order from Flying Trees.

Everything from their incredibly easy-to- throw triples to their advanced, competition level, award winning boomerangs. Each one is a masterpiece of boomerang art and technology. You'll get beautiful flights everytime.

World record Holders

Mike held the world record in MTA until recently and Ron is a Distance champion. Ron finished 3rd and Mike 4th in overall US competition in 1986. What this means to you is assurance of boomerangs which are guaranteed to meet the strictest competitive standards.

Each boomerang you buy is individually carved, tuned, flight-tested and painted. Your boomerang from Flying Trees will be a combination of perfect airfoil technology and fine craftsmanship. Made by experts.

SPECIALS

Cathedral Arch Omega

Simply the finest competition 40-meter rang around. Made of highest quality 7-ply 1/4" aircraft grade birch.

Natural Finish.....$20.00
Brightly Colored.....$24.00

40-meter range

Night Standard

Absolutely the easiest returning night rang there is. Ron used this rang to win with 39 catches in Night Endurance at the DC tourney.

Natural Finish.....$15.00

Comes with 10 cyalume glow sticks. 7-ply aircraft. 20-meters.

Accuracy Omega

A must for every boomerang bag. Deadly accurate and easy to catch. Use for Accuracy or for Consecutive Catch.

Mahogany.....$16.00
Maple..... $20.00
Brightly Colored.....$24.00
25-32 meter range

Buy all three specials and save $5.00

DONUT TRIPLES- Fantastic Fun to throw and catch. Catch 'em on your finger. 6" or 9". Great for kids.

Name _____

Address _____

City _____ State _____ Zip Code _____

Fill out this coupon completely and send with check to:
Flying Trees, Ltd.
4513 Randolph Road
Wheaton, MD. 20906
Or call (301) 933-6211

1. Cathedral Arch Omega- Natural- $20.00
   Colored- $24.00
2. Standard Night-.....$15.00
3. Accuracy Omega- Mohagany.....$16.00
   Maple.....$20.00
   Color.....$24.00

Less 5% for all three above

4. Triples- Full Size (9").....$20.00
   Mini (6.5").....$11.00

Shipping and Handling.....$3.00
TOTAL.....

QTY.	COST
	3.00

Make check payable to *FLYING TREES, LTD.*

USBA Rating System for the 1986 Tournament Season

The present USBA Rating System is based on the square of the score achived in a tournament adjusted to a range from 0 to 100 points.

The actual formulas are:

Accuracy $R=100 \times (score/30)^2$

Australian Round $R=100 \times (score/60)^2$

Consecutive Catch $R= 100 \times (score/6)^2$

MTA $R=100 \times (score/90)^2$

Fast Catch $R \approx 100 \times \frac{((1/score)-(1/90))^2}{((1/18)-(1/90))^2}$

The Fast Catch rating is only approximate because the original equation was lost and we were unable to recreate it. The actual scores were interpolated from John Mauro's table of example scores.

In all the equations if the formula gives a number less than zero it is considered zero. Also if the number is larger than one hundred it is considered to be one hundred(100). For this system the only events considered are Accuracy, Australian Round, Consecutive Catch, Fast Catch, and Maximum Time Aloft.

Once the scores have been changed into rating points, they are summed for each tournament. This number is used to get the best three tournaments (three is the minumum number of tournments to be ranked) and all are added together. This is the number then used to rank the throwers. Of the 177 throwers that entered USBA ·tounaments last year, 41 entered three or more tournaments and were ranked. The top ten in the rating, the top ten personal best scores in each event, and the top ten average for all tournaments are displayed in the table.

Those who wish more detailed breakdown of their standing for the 1986 Tournament season may send a Self Addressed Stamped Envelope to :

Tom Tuckerman
55 Barrett Rd. Apt #333
Berea, OH 44017

USBA Ratings
1986 System
Best 3 Tournaments
(by Tournament)

Place	Name	Accuracy	Consecutive Catch	Australian Round	Fast Catch	MTA	Total Ratings Points
1	Barnaby Ruhe	133.4	269.4	144.8	36.6	34.4	618.6
2	Peter Ruhf	125.5	269.4	89.9	85.8	39.7	610.3
3	Ron Tamblyn	91.3	238.8	125.3	43.4	60.7	559.5
4	Mike Forrester	156.6	202.8	89.2	34.4	74.2	557.2
5	Larry Ruhf	139.5	158.2	62.3	63.9	100.0	523.9
6	Chet Snouffer	94.2	269.4	114.1	22.9	18.5	519.1
7	Dennis Joyce	62.4	269.4	127.5	5.9	24.0	489.2
8	John Koelher	89.9	244.4	57.9	28.4	16.1	436.6
9	Gary Broadbent	47.6	183.2	107.0	45.7	31.2	414.7
10	Eric Darnell	82.2	211.1	34.7	14.9	10.5	353.4
11	James Jordan	92.1	127.8	90.8	26.9	10.7	348.3
12	Ray Laurent	54.0	138.8	73.6	45.2	11.7	323.3
13	John Flynn	75.7	55.5	76.4	84.5	8.1	300.2
14	Ted Bailey	71.8	36.1	80.3	44.5	20.6	253.3
15	Michael Girvin	118.9	50.0	58.1	11.5	12.1	250.6
16	Leni Barker	60.6	72.2	108.8	0.0	7.4	249.0
17	Ken Reed	74.8	88.8	50.7	27.1	5.2	246.6
18	Gary Lamothe	59.3	88.8	86.2	0.0	11.8	246.1
19	Nathan Holland	35.2	127.8	20.1	16.7	23.7	223.5
20	Adam Lewis	27.5	102.8	75.0	12.0	5.3	222.6
21	Brain Stay	58.9	94.4	38.1	8.8	13.2	213.4
22	Gregg Snouffer	9.0	116.6	51.8	7.0	22.3	206.7
23	Doug DuFresne	98.2	0.0	61.8	9.7	21.0	190.7
24	Jerry Caplan	18.4	47.2	71.5	12.0	23.8	172.9
25	Mole Man	37.9	69.4	26.9	17.5	9.5	161.2
26	Jim McConnell	98.3	13.9	20.0	25.3	0.0	157.5
27	David Philpot	9.4	25.0	95.2	12.3	6.1	148.0
28	Callie Laurent	13.5	52.8	50.6	3.5	2.2	122.6
29	Carmen Snouffer	83.8	0.0	29.5	0.0	0.0	113.3
30	Tom Tuckerman	58.8	13.9	13.1	4.1	21.8	111.7
31	Lukyn Phipps	61.8	13.9	26.4	4.2	2.7	109.0

32	Mike Darnell	27.2	2.8	32.9	8.1	27.0	98.0
33	Dave Boehm	34.3	13.9	12.6	3.5	11.5	75.8
34	H. L. Mayhew	39.2	11.1	19.5	0.0	0.0	69.8
35	Trent Augenstein	26.8	0.0	42.7	0.0	0.0	69.5
36	Red Whittington	0.8	0.0	34.2	2.5	26.3	63.8
37	Mark Muzila	25.4	0.0	35.5	0.0	2.0	62.9
38	Ben Ruhe	51.1	0.0	1.1	0.0	3.0	55.2
39	Craig Bourne	16.1	0.0	24.7	0.0	0.6	41.4
40	Mark Legg	30.2	0.0	8.4	0.0	0.0	38.6
41	Dwayne Hatchett	15.2	0.0	9.4	0.0	0.0	24.6

Top Ten Place Points of Best Three Tournaments (By Event)

Tournament Overall

Place	Name	Place Points
1	Barnaby Ruhe	30.00
2	Mike Forrester	28.00
3	Peter Ruhf	27.50
4	Chet Snouffer	25.00
5	Larry Ruhf	25.00
6	Dennis Joyce	23.00
7	Ron Tamblyn	21.00
8	Ray Laurent	20.00
9	Michael Girvin	20.00
10	Ted Bailey	19.0

Accuracy

Place	Name	Place Points
1	Barnaby Ruhe	28.0
2	Peter Ruhf	28.0
3	Mike Forrester	24.5
4	Larry Ruhf	24.0
5	Ray Laurent	18.5
5	Ted Bailey	18.5
7	James Jordan	18.0
7	Chet Snouffer	14.5
9	Eric Darnell	12.0
10	Doug DuFresne	11.0

Fast Catch

Place	Name	Place Points
1	Dennis Joyce	29.00
2	Peter Ruhf	28.00
3	Larry Ruhf	27.00
4	John Flynn	25.00
5	Ted Bailey	24.00
6	Barnaby Ruhe	23.00
7	Ron Tamblyn	21.00
8	Gary Broadbent	20.00
9	Mike Forrester	18.00
10	John Koehler	15.00

Consecutive Catch

Place	Name	Place Points
1	Mike Forrester	28.50
2	Chet Snouffer	27.00
2	Denis Joyce	27.00
4	John Koehler	26.50
4	Barnaby Ruhe	26.50
6	Ron Tamblyn	24.50
7	Ray Laurent	24.00
8	Peter Ruhf	21.00
9	Eric Darnell	20.00
10	Gary Broadbent	19.00

Australian Round

Place	Name	Place Points
1	Barnaby Ruhe	27.50
1	Dennis Joyce	27.50
3	Peter Ruhf	25.00
4	Ron Tamblyn	22.00
5	Mike Forrester	21.50
6	Ray Laurent	21.00
6	Jerry Caplan	21.00
8	Larry Ruhf	19.50
9	John Koehler	19.00
10	Leni Barker	18.50

MTA

Place	Name	Place Points
1	Ted Bailey	28.00
1	Mike Forrester	28.00
3	Peter Ruhf	25.50
4	Barnaby Ruhe	24.00
5	Ron Tamblyn	23.00
6	Gary Broadbent	22.00
7	Dennis Joyce	21.00
8	Michael Girvin	17.00
9	Nathan Holland	16.00
10	Mike Darnell	15.50

Doubling

Place	Name	Place Points
1	Barnaby Ruhe	24.00
2	Mike Forrester	19.50
3	Michael Girvin	14.50
4	Ron Tamblyn	12.21
5	Adam Lewis	11.50
6	Ray Laurent	11.00
7	Larry Ruhf	7.00
8	Gary Broadbent	6.00
9	Ted Bailey	5.50
9	John Koehler	5.50
9	James Jordan	5.50

Juggling

Place	Name	Place Points
1	Barnaby Ruhe	28.00
2	Peter Ruhf	16.50
3	Leni Barker	13.50
4	Michael Girvin	13.00
5	Lukyn Phipps	12.00
5	John Flynn	12.00
7	Eric Darnell	11.17
7	Ron Tamblyn	11.17
9	Mike Forrester	11.00
10	John Koehler	9.50

Endurance

Place	Name	Place Points
1	Barnaby Ruhe	26.00
2	Larry Ruhf	24.50
3	John Koehler	22.00
4	Mike Forrester	19.50
5	Gary Broadbent	17.00
6	Michael Girvin	15.00
7	Ted Bailey	13.50
8	Eric Darnell	12.50
9	Peter Ruhf	11.00
10	Ron Tamblyn	7.00
10	Dennis Joyce	7.00
10	Mole Man	7.00

Top Ten
Individual Best
For 1986

These are the Best efforts in the year 1986 for the indivdual in each event.

Accuracy

Place	Name	Points
1	Doug DuFresne	28
2	Mike Forrester	27
2	Carmen Snouffer	27
4	Mike Girvin	26
4	Larry Ruhf	26
6	Jim McConnell	25
6	Barnaby Ruhe	25
6	Peter Ruhf	25
6	Brent Russell	25
10	John Derden	24
10	John Koehler	24
10	Chet Snouffer	24

Consecutive Catch

Place	Name	Catches
1	Barnaby Ruhe	10
2	Eric Darnell	9
3	Ron Tamblyn	8
3	Dennis Joyce	8
3	John Koehler	8
6	Mike Forrester	7
6	Nathan Holland	7
6	Peter Ruhf	7
6	Chet Snouffer	7
6	James Jordan	7
6	Jim Youngblood	7

Fast Catch

Place	Name	Sec.
1	John Flynn	25.66
2	Peter Ruhf	25.80
3	Larry Ruhf	28.05
4	John Koehler	28.23
5	Mike Forrester	28.53
6	Ron Tamblyn	28.69
7	Ted Bailey	29.60
8	Gary Broadbent	31.34
9	Chet Snouffer	32.44
10	James Jordan	32.50

Australian Round

Place	Name	Points
1	Barnaby Ruhe	55
2	Bob Letson	50
3	Ron Tamblyn	48
4	Mike Forrester	47
5	Ray Dicecco	46
5	Peter Ruhf	46
7	Gary Broadbent	45
7	Dennis Joyce	45
7	Gary Lamothe	45
7	Chet Snouffer	45

MTA

Place	Name	Sec.
1	Larry Ruhf	151.02
2	Mike Forrester	64.91
3	Ron Tamblyn	61.45
4	Peter Ruhf	46.03
5	Tom Tuckerman	37.50
6	Nathan Holland	37.45
7	Barnaby Ruhe	37.11
8	Ted Bailey	37.04
9	Mike Darnell	36.20
10	Jack Wittum	34.70

Doubling

Place	Name	Catches
1	Larry Ruhf	10
2	Ted Bailey	8
2	James Jordan	8
2	Barnaby Ruhe	8
5	Gregg Snouffer	6
6	Ken Reed	5
6	Mike Forrester	5
6	Chet Snouffer	5
9	Doug DuFresne	4
9	Ron Tamblyn	4
9	Jerry Caplan	4
9	Adam Lewis	4

Juggling

Place	Name	Catches
1	Chet Snouffer	30
2	Barnaby Ruhe	23
3	Peter Ruhf	22
4	Stuart Jones	16
5	Eric Darnell	13
6	Larry Ruhf	11
6	John Derr	11
8	Gregg Snouffer	9
8	Gary Broadbent	9
10	Jerry Caplan	8
10	Mike Forrester	8

Endurance

Place	Name	Catches
1	Ted Bailey	49
2	Gary Broadbent	46
3	Larry Ruhf	45
3	John Flynn	45
5	Peter Ruhf	40
5	Barnaby Ruhe	40
7	Mike Forrester	39
7	Eric Darnell	39
9	Chet Snouffer	37
10	John Koehler	36
10	Mole Man	36
10	Michael Girvin	36

(continued from page 5)

single layer of polyurethane to preserve the roughness and protect from the absorption of moisture. The upper surface should be fine sanded without smoothing out the sharp leading and trailing edges. Add a coat of polyurethane to the upper surface and retune with a second throwing session. Steel wool the upper surface and add another coat of polyurethane or colored enamel gloss paint. Repeat this procedure several times with a fine sanding and tuning between each coat. Be careful not to add too much paint, because of over weighting. Tuning between each coat of paint will help the MTA boomerang to "remember" it's optimal tune in an unstressed state.

Tuning

Tuning is the most critical factor in achieving optimal flight times. Begin by suspending the MTA boomerang by each tip. Mark a point where a vertical line crosses the opposite arm. The section between the two marks is called the "elbow". The arms extend outside the elbow section. The elbow should always remain perfectly flat. Both blades should be flexed upward to add dihedral. The ideal dihedral bend should approximate a parabola with the radius of curvature decreasing toward the tip. The equation for a parabola is Y = A + BX + CX2 where X is the blade span from the elbow and Y is the section height above the flat elbow datum plane. "B" and "C" should be small positive constants. "A" is usually zero. Adding angle of attack, or blade twist is critical to high performance. Both blades should have a neutral twist at the elbow intersection. The dingle arm should be twisted to produce an increasing negative angle of attack (washout) as the dingle arm tip is approached. The lift arm should be twisted to produce an increasing positive angle of attack toward the lift arm tip. A sharp reverse blade twist a couple inches from both blade tips will help to neutralize tip vortices and improve stability. A graphic representation of ideal twist follows:

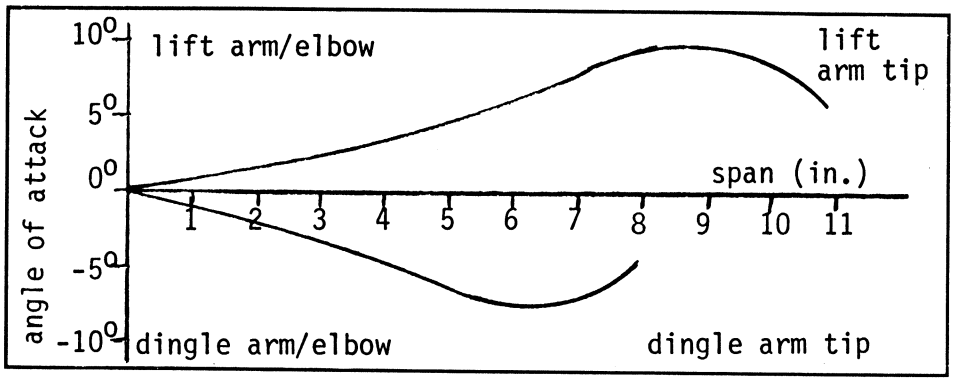


Figure 12- Ideal boomerang blade twist

The Throw

The throw can be made by holding either (boomerang) arm. I personally prefer to throw with the lift arm, but many prefer to hold the dingle arm, including Larry Ruhf who made his recent world record throw of 2 minutes 31 seconds. with a dingle arm throw. A pinch grip is preferred so that maximum spin can be delivered at launch. The boomerang must be launched without layover at release. The plane of the boomerang should be 90 degrees offset to the plane of the ground. The MTA should be thrown at an incline of 30 degrees - 60 degrees upward. Try throwing at various angles into the wind until you find the angle that is best suited to your throwing.

Advanced Tuning Tips

Fault - The boomerang makes several low circles and never gains sufficient altitude for long duration flights.

Remedy - Add dihedral to the lift arm halfway between the elbow mark and lift arm tip. Decreases the angle of attack on the lift arm tip. If this does not increase height, add positive angle of attack and dihedral to dingle arm tip.

Fault- the boomerang lays over to quickly and flies straight without turning.

Remedy - Increase the angle of attack on the dingle arm and increase the dihedral on both arms.

John Flynn has found a way to improve upon Ted Bailey's MTA finishing process with excellent results. The following method will preserve the rough finish on the flat side and protect the range from shape changes due to moisture absorption:

After fine sanding the entire MTA with #320 grit abrasive paper, spread a thin film of Gougeon boat epoxy using plastic gloves. Avoid excessive build up. The epoxy soaks in and raises the grain, as water does. When the boomerange dries, sand with #320 grit, then with #400 grit paper on the top only. The stiff glue freezes the tuning permanently. Adjustments can be made by gently heating the range over a stove and holding the desired shape until cool. Optionally, the rang can be cooled by holding under cold water. John also eliminates the whistle upon release because the glue dries to form less sharp leading and trailing edges.

International Team Cup

The International Team Boomerang Cup, is being planned for June 21 through June 27, 1987. Five U.S. regional teams and at least two European teams will compete for the cup. Teams from France and West Germany have accepted the invitation and will be sending teams of six players each. No response as of yet from Britain, Switzerland or Australia.

Each international player will pay their own airfare. The US team players will support the international players and meet all their needs for the week of the cup. This includes housing, food and transportation.

Each individual US team player will pay a $50.00 cup fee to help defray the costs of the cup and to help support our International brothers while they are here.

The format calls for 3 competition sites where a team Test meet will occur plus an individual open competition the day preceding the team meet. A total of six (6) competition days are scheduled. The tentative dates and schedule are as follows:

University of Mass.
Amherst, Mass.
Site Coordinator-Larry Ruhf
June 21 - Open Individual competition
June 22 - Team Cup Test 1

Lehigh University
Bethlehem, Pa.
Site Coordinator- Peter Ruhf

June 24 - Open Individual Competition
June 25 - team Cuap Test 2

Potomac Polo Field
Gaithersburg, Md.
Site Coordinator- John Koehler

June 26 - Open Individual Competition
June 27 - Team Cup Test 3

Regional U.S. Teams and team captains are as follows:
1. New England - Eric Darnell
Tel. (802) 765-4066
2. Atlantic - Peter Ruhf
(215) 967-3683
3. South - Mike Forrester
(301) 949-1576 or 933-6211
4. Midwest - Chet Snouffer
(614) 363-8332
5. West - Michael Girvin
TESC #B314A Olympia, WA 98505

The team captains from each region will select a team of between 4-6 players. Teams may be composed of some players not in that region while most will be from that region.

Those boomerangers who can caommit themselves to a full week of ranging, *can pay their own way* and see themselves as expert throwers should please contact a team captain to get on a team.

For those **USBA** boomerangers who want to be involved in this first ever team cup series but don't see themselves on a team, we need an official head judge, head scorekeeper, timers, spotters, etc. to help produce this series. Anyone can compete in the three individual comps during the tour. This cup promises to be a tremendous advancement in boomerang team play. Hopefully this will be the first of many such events. This will be the biggest , the best, the RADDEST!, the most unbelievable BOOMFEST seen on this planet or any other . Be there or be square.

Team cup cooridinator is Larry Ruhf. Contact a team captain or Larry at (413) 323-4340 to get involved. Don't miss it!

More on Tournaments

The University of Minnesota at Duluth will hold an open tournament under the lights at 6 pm, May 9, 1987 at GRIGG'S FIELD. Practice will occur wll day prior to the tournamnet. Contact Jill Jacobsen at (218) 726-7169 days and (218) 724-3944 evenings.

The 8th Annual workshop at Yale University, New Haven, CT is scheduled for May 30th, 1987. Contact Ben Ruhe (202) 234-9208 for further information.

Summer's Last Fling is scheduled for September 20, 1987 in Portland, Oregon. Contact Doug DuFresne at (503) 292-4316 for further information.

For further up to date information on all tournaments, contact Dan Russell at (a619) 296-4242.

The rules committee is finalizing the 1987 edition of player rules rating system and the tournament directors handbook. For further information on obtaining a preliminary copy, contact Ted Bailey at (419) 471-9989. More complete details on rules will follow in Spring issue of MHR.

Ben Ruhe Exclusives
Volker Behrens' 134-meter Challenger 3--"The Monster". For musclemen only. Ted Bailey's Mini MTA and V75 Fast-Catch. For "Supercatch". Phone (202) 234-9208

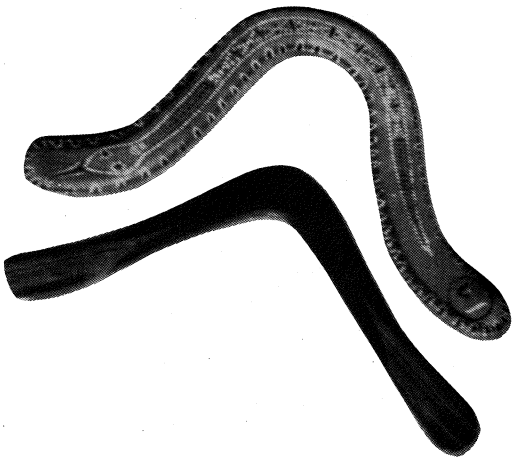
There will be a tourney at Evergreen State College, Oympia, WA on May 16, 1987. Contact Michael Girvin: TESC #B314A Olympia WA 98505

The Third Annual Hampton Roads Invitational will be held May 9th in Hampton VA. Contact Dennis Joyce at: (804) 595-8935 or Ray

Collector's Corner

Auction Results: Last issue we offered for auction a Mike 'Team Gel Girvin RAD T'shirt and boom , one by Doug Dufresne and one by Leni Barker. Due to late printing the deadline for biding came before the newsletter was sent out. So we received no bids on these great items. The deadline for bids on these items has been extended to April 30. See the last issue of this newletter for details.

New Auction: Item #1, A Bob Letson Boomaracket. Bob says this is a one of a kind boomerang, it is a different style than he usually makes. The boomaracket has a 60-meter range, returns nicely and is valued at $50.00. This is the strangest boomerang I've ever seen. A must for collectors of the unusual.



Item # 2, Volker Behrens has donated a beautiful 60-ply laminated hook. This boom begs to be thrown. The wokmanship is superb and the plys are incredibly thin. I don't know the range for this one , I haven't dared to throw it. Valued at $50.00

To bid on any or all of these items mail three bids-- low,, medium, high-- and item number to, Leni Barker P.O. Box 3037 Sonora, CA 95370 by April 30. The lowest of the three bids that beats out everyone else's high bid will be the winner.

Trade Column: Introducing free ads for members wishing to trade booamerangs and related items. Send ads to Leni Barker. 40-word limit.

Wanted: Hunting sticks, hardwood and natural elbow rangs. In exchange for solid wood, laminated, or distance models. Please send offers/pictures to Volker Behrens, Kronforder Haupstr. 59, 2400 Lubeck, West Germany.

I offer a limited supply of choice strip laminated Gerhards' boomerangs and misc. other collectible booms in exchange for good collectible offer. Send trade offers to Ted Bailey: 2967 Gracewood Rd. Toledo OH 43613

Many Happy Returns

Circulation
1,000 Worldwide
Published by the
United States
Boomerang
Association
P.O. Box 182
Delaware, OH 43015

Editor this issue
Ted Bailey

Art Director
John Koehler

Advertising
Bob Kley

Mechanical Measurements:
Image area: 9-1/2″ deep by 7-1/2″ wide; 3 columns to a page; width of column: 2-1/4″.

Advertising Rates:

Full page	$200
2 columns	150
1/2 page	115
1 column	80
Per col. inch	10

10% discount for 4 consecutive issues. Camera-ready copy preferred. Composition billed at $10 per hour. Publisher reserves the right to refuse any advertisement or cancel a contract without reason.

USBA Store

The USBA's fund-raising store is back in full operation, under the stewardship of Callie Laurent (P.O. Box 2996, Newport News, VA 23602). Some two dozen items are available, from which Callie has chosen the following highlights:

USBA sew-on patches, $3.50 ppd.

A beginner's packet made up of a USBA membership, with subscription to this quarterly newsletter included; an easy to throw Steve Glover "Rippa" boomerang from Queensland, Australia, with instructions; the 96-page book *Boomerang* by Ben Ruhe; USBA competition rules; and a selection of interesting literature. A great gift idea! $22.00 ppd.

A fascinating collection of selected U.S. boomerang patents from 1890 through 1942. Many interesting ideas here on both boomerangs and boomerang launchers. $11.00 ppd.

USBA competition rules. $1.50 ppd.

Also available are other books, back issues of this newsletter, scholarly articles, mylar stickers, and USBA T-shirts. Write Callie Laurent for list.

Two-hour Boomerang Videotape including news clips and films depicting the International Boomerang scene over the past several years. Specify BETA or VHS. $30.00 ppd.

Coupon—*Xerox me and send me in.*

UNITED STATES BOOMERANG ASSOCIATION

Please send me:

	QTY.	PRICE
USBA sew-on patches—$3.50 ppd.		
Beginner's packet—$22.00 ppd.		
Patents collection—$11.00 ppd.		
USBA rules—$1.50 ppd.		
USBA Videotape-$30.00.00 ppd.		
Total		

Mail coupon and check payable to USBA to:

USBA Store
P.O. Box 2996
Newport News, VA 23602

Name

Address

City State Zip

Many Happy Returns

Many Happy Returns is published periodically by the United States Boomerang Association and is sent to members as a membership benefit.

Annual dues are $10; $10 to renew. Foreign memberships are $20 and this includes airmail delivery of the newsletter. Address the USBA at P.O. Box 767933, Roswell, GA 30076-7933. Editorial submissions are welcomed by the editor, Ben Ruhe, and should be sent to him at 1882 Columbia Road N.W., Washington, D.C. 20009. Black and white photographs and art work such as cartoons are especially solicited. Material is returnable.

Coupon—*Xerox me and send me in.*

- ☐ *Yes, I want to join the USBA and receive* Many Happy Returns *quarterly.*
- ☐ *I am a beginner.*
- ☐ *I am an experienced thrower.*
- ☐ *I make my own boomerangs.*

Name Age

Address

City

State Zip

( )
Phone

- ☐ *I have enclosed payment:*
- ☐ *$10.00 Renewal*
- ☐ *$10.00 New Member*
- ☐ *$20.00 Foreign Member*

P.O. BOX 182
DELAWARE, OH. 43015
(614) 363-8332

PINE GROVE
APR
1987
PM
95665

Grenville Clark
USA
39

USBA MEMBERSHIP
P.O. BOX 767933
ROSWELL, GA. 30076-7933

USBA STORE
P.O. BOX 2996
NEWPORT NEWS, VA. 23602

EDITOR — BEN RUHE
1882 COLUMBIA RD, N.W. #37
WASHINGTON D.C. 20009

RIE 25 1S253831 04/25/87
NOTIFY SENDER OF NEW ADDRESS
RIENDEAU'DALE
PO BOX 484
JACKSON CA 95642-0484

Dale W Riendeau
11525 Clinton Bar Rd
Pinegrove, CA 95665