



Many Happy Returns

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Summer 1985

Two World Records Set

Competing in the annual Amherst Open at the University of Massachusetts, John Flynn put on a one-man boomerang show. He cracked two world tournament records — both by large margins.

In 5-Minute Fast Catch (Endurance), a European favorite picked up by the Americans competing in the World Master's Cup in Paris in June, Flynn scored 59 catches on his first try. That was an astounding 17 above the world record (42) held by Eric Darnell, who in Paris had topped the previous mark of 36. It was a quantum leap for the event and testimony to what happens when favorable weather and really fast boomerangs are combined with great expertise in throwing and catching. Flynn even had two drops on the way to his mark. His 12 throws a minute is a really hot pace, as anyone who tries this event finds out; the event is not called Endurance for nothing.

In another wonderful display of his bullet throws, great accuracy, and ability to catch a high-speed, vertical-flying boomerang, Flynn lowered his Fast-Catch record from 21.8 seconds to 21.01 in a preliminary round. (In this event, the boomerang must go outward a minimum of 20 meters.) Then in the finals, the young New Hampshire engineer really cut loose, clocking 18.74 seconds for five grabs. There were four timers on him, with only a 15-hundredth of a second difference between them, which was averaged out. Five linesmen made sure his boomerang went the necessary distance. Three of his throws were absolutely perfect chest-high bullseyes and the other two were just a fraction off, permitting John to make the catch and throw in one motion. "The boomerang went around five times — he just pushed it through each time," said George Reitbauer. "Fluid dynamics," said Eric Darnell. "He was smokin'," said Mike Forrester.

Two tips of the hat to John Flynn!

Smashing Nationals

The Nationals at California State University at Northridge, outside L.A. Fine, sunny, dry July weather (a trifle hot for some). Mild winds and occasional thermals. Excellent turnout from across the country, particularly appreciated because the early signup was low. Significant contingents from Cleveland, Newport News, Atlanta, San Francisco and San Diego, among other places. Lots of new, young faces and strong arms. Excellent university fields and fine dorm

accommodations, including pool, at the right price. Pleasant university staff. The best organization by far of any Nationals yet, thanks to tournament organizer Jerry Caplan, abetted by locals such as Les Weiser, and with overall guidance from president Ali Fujino. Ali's taking the Nationals off the East Coast to Ohio last summer, to L.A. in '85, and Atlanta next year, can now be seen as one of the best things ever for the USBA, making it national in fact in addition to name.

Friday — Talk on the history of boomeranging in the U.S. by Ben Ruhe — the guy who accidentally got it started. How the sport began, grew, where it's headed, with anecdotes and highlights (such as Richard Harrison's epic duel with Larry Ruhf in the 1977 Smithsonian tournament and Bob Burwell's epic juggling sequence of 69 in the '82 Nationals). Then an auction of donated boomerangs and memorabilia for the benefit of the association, with almost \$1,000 flowing into the coffers, an entertaining, painless way to raise funds. Some of the elegant hand-crafted boomerangs commanded prices approaching \$100. Meanwhile, a design competition drew dozens of entries. First-place winners were Neil Kalmanson for most original design (a pair of interlocked yin-yang, male-female boomerangs), Larry Ruhf for best-decorated (he has spent more than one hundred hours painting aboriginal designs on his stick, destined for the Smithsonian), John Flynn and Ray Rieser for best natural wood elbow boomerangs, and George Reitbauer, Charles Springer, and Ted Bailey for best crafted sticks (their lamination work was skilled almost beyond belief). Collecting was rife all weekend and a fair number of these award winners and their siblings exchanged hands. Really serious collecting is the new phenomenon of the sport. Films on the boomerang, both anthropological and of the TV news variety, were screened to end a convivial evening. What many East Coast veterans heard from West Coast newcomers was a variation on this: "It is so great to finally meet the person I've been reading about!" With two days of throwing ahead, the air was electric with anticipation.

Saturday — New officers are elected at the annual meeting (story on these pages) and issues aired. Then it was on to team competitions organized by Jerry Caplan with crucial brainstorming help from Larry Ruhf. This throw was the highlight of the weekend for many. The field was split up into 14 four-person teams, most of them with some geographic basis, and five competitions run off: 1-Minute Count 'Em, Relay, Position, Accuracy, and Consecutive Catch (not "Suicide" any more, says new president John

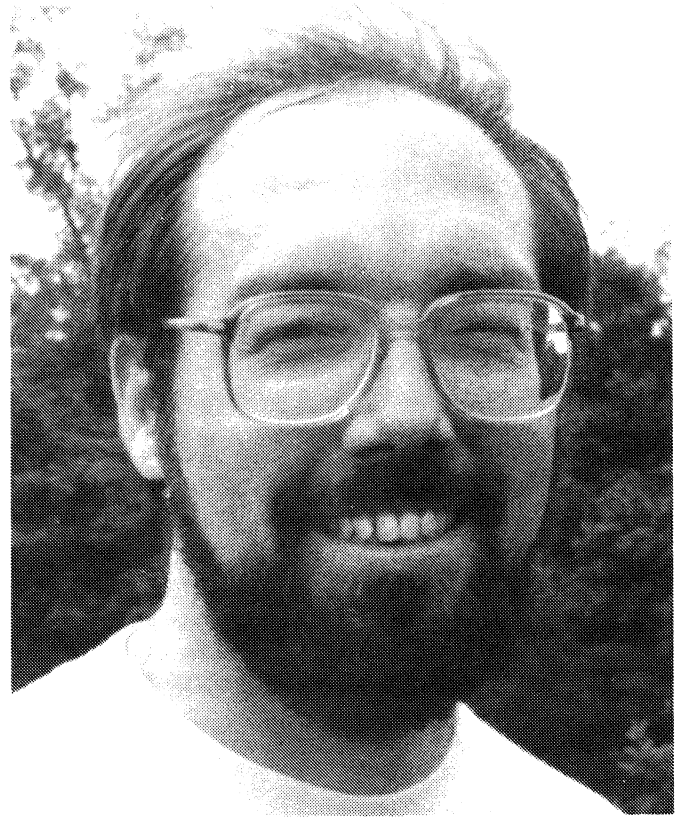


Mauro). Sun Strokes (Mike Forrester, Ron Tamblyn, Leigh Barry, and George Reitbauer) from the Mason-Dixon area took the championship with two firsts and a second, Cleveland School (Dave Boehm, Sam Gottlieb, Gary Brodbent, and Tom Tuckerman) was runnerup with three seconds, and Paris 3 plus 1 (Barney and Ben Ruhe, Peter Ruhf, and Jerry Caplan) got third with a first and two thirds. Everyone seemed to agree that Position was about as much fun as you could have on a boomerang field. And Consecutive Catch, with all 14 teams throwing simultaneously as referee Doug DeFresne gave strict instructions on the P.A. system, was fun to play and nice for the spectators to watch — organized chaos. (Callie Laurent of Newport News wowed everyone in Consecutive Catch by pulling off the hat trick — five straight catches: first sandwich, then one-handed, then behind the back, then under the leg, then with her feet. After she scored 70 meters in Long Range and 17 seconds in MTA in the individual competitions, she was acclaimed champ woman thrower of the weekend.) With the success of team events, a significant number of members commented they thought this was the direction the sport should take. Local clubs are urged to pick up on this thinking.

With time permitting and the weather conditions right, the day's competition throwing concluded with Long Range for individuals, won by Ray Laurent, Callie's husband, who winged one out 105.5 meters with pinpoint return, not far off the world standard. Larry Ruhf took second with 103 and Gary Brodbent third with 99.7. It was, as it turned out, a portent of the way overall individual scoring was to go. Along with George Reitbauer, these were the three obviously fired up throwers. (Gary had gone all the way to Toledo to have Ted Bailey, aerodynamics whiz, help him tune his long range and MTA 'rangs, then had wrapped them in cotton for the trip West so they wouldn't lose their warp. He also ended up the weekend with a chest full of minor lacerations — tribute to his enthusiastic catching.

The day ended as dozens went out after dark to whiz night boomerangs lit by cold light cyalume capsules, and in some cases fireworks sparklers, around the sky. It was a visual extravaganza.

Sunday — The big day for the individualists! The national championship is to be contested. Seven events are run off over the long hours: Consecutive Catch, Doubling, Accuracy, Fast-Catch, Juggling, Australian Round, and MTA, with MTA easily the highlight event. Ted Bailey in practice scores a timed 1 minute 22 seconds with catch only 40 feet away from launch point with one of his new minis. It's nothing that special for him. He and his Toledo group have been scoring one minute flights fairly often this summer; remarkable, however, when one recalls that a time of 20 to 25 seconds was considered superb only two years ago. Then Larry Ruhf shares his MTA 'rangs, built to specs printed in the last issue of this newsletter by Bailey, with Ray Laurent and Doug DuFresne and they beat him out with his own equipment; Ray getting 35.33 seconds for first, Doug 28.58 for second, and Larry 28.30 for third. But it is a throw that gets away that is the highlight of the weekend. One of DuFresne's tosses hits a thermal and goes into autorotation. It spins, spins, spins. And drifts, drifts, drifts. As the seconds mount up, Doug faces a horrible dilemma: whether to climb a fence the boomerang threatens to fly over. It does and he tries the ascent but doesn't make it, nicking his hands on the chain link barbs rather badly in his scramble. Meanwhile, the 'rang drifts to a baseball field



*Dr. Larry Ruhf
1985 National Champion*

and lands — uncaught — at first base. The time is 1 minute 12 seconds. If caught, it would have given Doug the world tournament record, topping Mike Forrester's 50.8 seconds. DuFresne, however, is all smiles for hours. Next time!

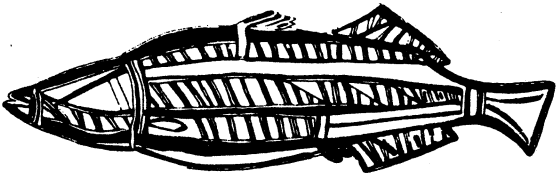
As the sun disappears over the horizon, the last event, Juggling, is contested. And two fiercely determined players, Larry Ruhf and Gary Brodbent, tie for first with 11 successive catches. This is the decisive moment, as it turns out. Larry wins the grand championship with two firsts (Juggling and Fast-Catch, despite a drop in tricky winds), seconds in Long Distance and Doubling, and third in MTA. Brodbent, enthusiastic and energetic, gets third place overall with his first, and three thirds (Distance, Aussie Round, and Consecutive Catch). Meanwhile, another relative newcomer to the big-time, Ray Laurent, comes in runnerup with firsts in the muscle events (Distance and MTA), second in Doubling, and third in Aussie Round. For Dr. Larry, a psychologist from Belchertown, MA, it is the culmination of a whole season of hard practice, in combination with wizardry in boomerang-making. As genial as he is competitive, Larry makes a highly popular national champ. "I'm the old master now," he says. Other first place winners are Glenn Frantz in Accuracy, Brian Stay in Aussie Round, and George Reitbauer, the early leader, in Consecutive Catch and Doubling.

The marvelous day ends with drinks, food, and a rowdy awards ceremony in the student union. San Francisco's enthusiastic Team Gel gang led by Michael Girvin and Cleveland's thunderous group led by Dave Boehm and the irrepressible Gary Brodbent help make the rafters ring. "On to Atlanta in '86!" is the final word for the celebratory weekend.

— Ben Ruhe

What They Had to Say

"Last weekend was a very special occasion for me. To meet so many people I've heard about and seen on videos at Dan Russell's house was like being in some kind of unreal movie. But the best part was the feeling of being a member of a family — like a large family reunion. It was very heart-warming." — Bob Letson, San Diego . . . "The Nationals were a great success but very exhausting. I slept for 12 hours when I got home." — Leigh Barry, Columbia, MD . . . "I don't know about my 'hero' status for doing so well in the Australian Round, but I do know I love the boomerang I used — a Rusty Harding Concept 70. It's the boomerang I'd take to a desert island." — Les Weiser, Sherman Oaks, CA . . . "The Nationals is kind of an unusual event. The sport has a way of attracting people and making them fanatics overnight. There's something about a boomerang that sets it apart from everything else in the world. It's a natural fascination with something that appears to be magic." — Jerry Caplan, Thousand Oaks, CA . . . "You'd be surprised about the amount of craziness about this sport. They call it boomerang fever. In some instances they talk about the Zen of boomerang. It can be a spiritual experience. You can do it by yourself and meditate. You can always tell a hard-core boomeranger — he'll always tell his wife he wants to have just one more throw." . . . Doris Caplan, wife of Jerry . . . "A tip of the hat to Marj Gerrish at the L.A. Nationals and her brave and gutsy efforts to mount an attempt to get boomeranging into the Olympics. She recruited me, changed my attitude, and has me under her spell. She surely did the same to others. If she maintains her desire and enthusiasm for this cause, I'm predicting she'll pull it off." — H. L. Mayhew, Columbus, OH.



'Winning Big' on the Way Home

by H. L. Mayhew

Who were big winners who attended the USBA Nationals in Los Angeles?

Thanks to a nugget of Ben Ruhe advice, I won big.

On my way back to Columbus, my connecting flight at Chicago was overbooked. I became a "switch-in-time" volunteer. The reward for taking a later flight: Free dinner at a fine restaurant, and a bonus travel ticket — roundtrip to anywhere in the continental U.S.

The nugget of advice: If you ever get the opportunity to become a switch-in-time volunteer, go for it!

So . . . I thank Ben Ruhe; I thank United Airlines; and, I thank my lucky stars because I had a confirmed airline reservation that qualified me for the bonus travel reward.

Did anyone else get home from the '85 USBA nationals with a free airline ticket to the '86 USBA nationals?

Mauro Elected USBA President

At the annual meeting of the USBA held in conjunction with the Nationals at Northridge, John Mauro of Richmond was elected president, succeeding Ali Fujino of Seattle. Mauro, a communications company executive, moves up from the post of treasurer which he filled for two terms.

Dr. Larry Ruhf, a psychologist from Belchertown, MA was chosen vice president, Ray Rieser of Lower Burrell, PA treasurer, and Leni Barker of Sonora, CA secretary. Rieser is an engineer, Barker a woodworker.

Ben Ruhe of Washington, D.C., was reelected to the board of directors. He is a writer and boomerang seller. David Philpott of Alpharetta, GA became a new member of the board. He is a federal hydro technician. As the outgoing president who could not succeed herself after two terms, Ali Fujino became an ex officio member of the board.

Because of a misunderstanding over the bylaws, which had been updated, a third board member was not selected at the meeting. When the oversight became known later, the new president, with the concurrence of the majority of the board, chose Ted Bailey of Toledo, outgoing secretary, to fill the post.

The election gave the USBA excellent geographic representation: Two selectees are from the South (Mauro and Philpott), two from the East (Ruhf and Ruhe), two from the Midwest (Bailey and Rieser) and two from the West (Fujino and Barker).

Mauro, the new president, is director of research for Media General, a Richmond-based communications corporation with affiliates across the country. An avid boomerang thrower, collector, maker and theoretician, he is a well respected lecturer on communications subjects and has published extensively on that and other subjects. His newest work is a substantial rewrite and update of *Introduction to Boomerangs*, a small volume originally issued to benefit the USBA. Mauro's outlook for 1986 for the USBA is contained in his President's Column to be found on these pages.

At the meeting, Fujino was acclaimed for her effective stewardship of the USBA over two years during which she did all the vital groundwork the association so badly needed, as well as leading the USBA in an imaginative direction. Mauro, who served as her right hand during this time, pledged to take the work many steps forward.



President's Column: Goals for '86

by John Mauro

I am delighted to be serving as president of the United States Boomerang Association for the next year and I think the association could not have a better governing board than was elected at the annual meeting at Northridge.

Following are the goals I've set, in conjunction with the board, for the coming year:

- *Fund-raising.* The USBA needs to make a concerted effort to raise money, other than memberships, to support its needs. No-strings-attached foundation grants would be most helpful. I, personally, will take on this fund-raising effort, but of course, would appreciate ideas, contacts, and other aid.

- *Membership.* The USBA needs to double its membership this year. Dr. Larry Ruhf, vice president, will direct this campaign.

- *Return to Australia.* The U.S.-Aussie international series stands at one-all. I will forthrightly contact Dennis Maxwell, president of the Boomerang Association of Australia, to make arrangements for an American team to mount a challenge Down Under.

- *Team size.* With team events becoming more popular in American tournaments and a U.S. challenge tour of Australia in the offing, we need to decide on the best sizes for teams. Four players for tournaments seems to be favored at this point. The 1984 U.S.-Aussie matches were contested by six-man (person) teams, and that seemed an appropriate number for an international event.

- *Newsletter.* The USBA quarterly, the most important activity of the association since it is the one benefit all members receive, needs to be made self-supporting. In addition to the advertisements of boomerang makers and sellers that have been carried in the past, future editions of the quarterly might well carry ads associated with sports in general, such as are found in national magazines. I will appoint solicitors for such ad sales.

- *Rankings.* As a professional statistician, I am in the process of establishing formal records of players' scores and achievements. Once having completed a system of record-keeping, I expect to turn over these records for continuous update to the secretary, Leni Barker. These records will be kept not by placements in tournaments but by actual scores so that each player can be rated according to his performance and the number of competitors in each event.

- *Rules.* We need to establish definitive rules for the major individual and team events. Juggling, Fast-Catch, Distance, Australian Round, Consecutive Catch, Maximum Time Aloft, and Doubling are obvious choices. First, I will have the board concentrate on juggling until agreement has been reached, then the other events can be worked on. In some of the competitions such as Australian Round and Distance, I strongly oppose giving additional rounds to the top five or 10 scorers. This procedure gives an unfair advantage to those who scored well the first time around, it seems to me. If you look at the second round of many top scorers of the first round, you will see that some did quite badly and would not even have qualified. Additionally, if we are going to a rating system for each player, then we cannot have some players having more opportunities to score than others. The opportunity should be the same. If, for example, one player enters more tournaments than

another, we can use an average system to get at a rate, always, of course, considering the number of tournaments that are reported by each player. I should like to point out that we need to agree on a system of calculating the overall champion, so this, too, will be done the same way in all USBA-sponsored tournaments.

So, those are USBA goals for 1986. In a future column, I will discuss the whole important question of ratings and how I expect establishment of a uniform ranking system will spur on the sport, both nationally and internationally. Meanwhile, happy throwing to all of you.



Dues Raised, '86 Nationals Awarded

The USBA board made two important decisions in the course of the annual gathering at Northridge:

- Dues were raised to \$10 per year for new members and renewals were pegged at \$7.50. A 30-day grace period only was granted for the renewals. Foreign memberships were pegged at \$20 (with the newsletter sent by air mail) and lifetime memberships at \$150. Details on any of this from Ray Rieser, the treasurer.

- The USBA Nationals for next year were awarded to the Atlanta Boomerang Club, represented at Northridge by Dave Philpott and others. Philpott expects to obtain the plush Atlanta Falcons training camp as the site.

In an unofficial action, the USBA board looked with disfavor on the use of aluminum boomerangs as not in the best interests of the sport. Members are asked to reconsider their use.

'Tour du Boomerang' a Great Success

by Ben Ruhe

Australia and the U.S. move over. Europe, represented by France, in one fortnight last June and July showed what promoting the boomerang as sport and spectacle was all about. Boomeranging will never be the same. The sport's dimensions have expanded enormously.

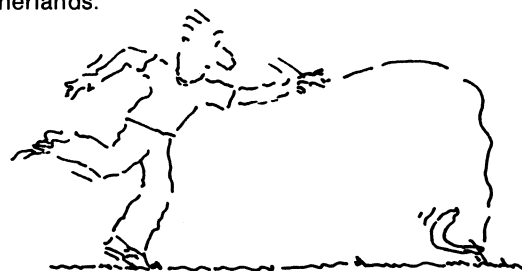
The event that achieved all this was "Tour du Boomerang," a two-part extravaganza. First there was a World Master's Cup tournament in Paris contested by four Americans, two Australians, and six Europeans. Then a lightning tour followed of nine resort beaches by the Yankees for demonstrations and teaching. Despite trifling hitches here and there, things worked out memorably. But, mainly, it was the scale of the Tour that impressed everyone. Where Australia and the U.S. have slaved to raise money to put teams on the road, Vitesse, the sponsor of the Tour, raised \$130,000 in its first try. Vitesse ("Swift") — an apt name — is the brainchild of two young Frenchmen, Jerome Reynes and Stephane Robert, ex-French navy officers and graduates of a select Paris business school, who wanted to set up a world sports event they could call their own. Expert boomerang throwers themselves, they seized on this trendy sport as the perfect vehicle, for the benefit of both the sport and Vitesse. The list of sponsors they obtained is so impressive

it is worth detailing: Hollywood Chewing Gum (General Foods) put up the Hollywood Chewing Gum trophy. Mitsubishi furnished four vehicles. Canada Dry had a tasting tent at each site, staffed by two young models. Ackerman wine of Saumur had a champagne tasting tent at each location. Apple computers was represented by an outdoor computing classroom. Levi's dressed the tour team in sports clothes. The Ibis Hotel chain furnished accommodations. Radio 7 provided a professional announcer. The tennis company, Jean Becker, was the source of tennis mats used as platforms for boomerang-throwing.

The Master's Cup was contested on a polo field along the Seine River, adjacent to Suresne. The day was warm but not hot, overcast, with mild winds. Almost perfect. Portable fencing sporting sponsors' banners lined the playing field. There was a portable grandstand for spectators, two large striped tents, a big sound system, and at the center of the field two plastic tennis court mats as stations for throwing, a wonderful innovation. The crowd of several thousand was clearly bemused. Boomerang-throwing as a sport was completely new to Paris. Since U.S., Australian, and European rules are sometimes in conflict, Vitesse and its tournament director, Jacques Beslot, probably the best thrower in Europe but sidelined for the day by his duties, chose three events as common to the three continents — Consecutive Catch, Fast Catch, and Long Range. Then, for fairness, it added an event representing each continent: Australian Round (Australia), Doubling (U.S.) and Endurance or 5-Minute Fast Catch (Europe). Having Doubling contested was a breakthrough for the U.S., since neither Europe nor Australia normally has contests involving two boomerangs. To make things as fair as possible, it was decided each player would drop the event in which he had his lowest score.

At the top of his form, Eric Darnell, the Vermont aerodynamacist, jumped into a commanding lead by winning two of the first four events and taking a second in a third. Even he was surprised! Winning Endurance, he broke the European record of 36 catches in five minutes with a resounding 42 — eight-plus catches a minute. (Try this out yourself and see what a test of stamina and pacing Endurance is.) Barney Ruhe of New York, his Yankee teammate, also broke the mark, with a 40. Eric's other first place was in Aussie Round, and his second place came in Fast-Catch, his specialty, behind David Schummy, the cannon-armed teenager from London representing England. It looked like a shoo-in for the Vermonter. But a third American, Chet Snouffer, was biding his time. The young, fit Ohio gymnast scored a second and two thirds in the early going and was just getting warmed up. Peter Ruhf, the fourth Yankee, took Long Distance — the fourth competition — and that brought up Doubling and Consecutive Catch as the final events of the day. After Chet Snouffer took Doubling, the next-to-last competition, for his initial first place finish, Consecutive Catch loomed as the decisive event. As the catches required became progressively more difficult, he hung in there with two Frenchmen, Christophe Bertrand and brawny Jacques Sotty. Sotty is a windsurfing professional and once windsurfed all the way across the English Channel from France to England. When it got down to the foot catch, all three made successful grabs. Surprising to have three players achieve this. Ben Ruhe, the American team captain serving as referee, then ordered something new — a no-hands body catch (no

elbows, knees or chin, either; the boomerang must be caught on the chest). Australia has introduced this catch and Dennis Maxwell, who was one of the two Aussie representatives in Paris, gave assurances it was possible. In the playoff, though, all three men failed, so it was back to a foot catch. On this climactic throw, Snouffer picked his boomerang cleanly out of the air with his feet as the other two failed and he became not only the winner of the event, his second first in a row, but grand champion, coming from far behind to overtake Eric Darnell. Chet was "champion du monde," as the announcer boomed over the P.A. system. Eric got runnerup spot, Dave Schummy third, and Christophe Bertrand fourth. Peter Ruhf, third overall before each player had a low score dropped from his total tally, dropped down to fifth place. Also-rans were Barney Ruhe, Dennis Maxwell (not up to his usual excellent form because of a family tragedy) and his Aussie teammate, Peter Byham, the boomerang-making whiz, Walter Siems of Germany, and Wouter Wessels and an injured Robby Overdyk of the Netherlands.



Christophe Bertrand, the French national champion, shows off his style as he readies a catch. A tenacious competitor, Bertrand can be expected to be a force in coming international competitions.

As the biggest boomeranging event ever to occur in Europe, the spectator turnout was aptly international. On hand to inspect the phenomenon and meet old friends (or make new ones) were Jacques Thomas of Lyon, the father of French boomeranging; Yves Simonson of Brussels; John Jordan and Ronnie and Dave Jones of England; and a contingent from Switzerland. Max Hoeben, and wife Tonny of Holland were there to serve as a referee and scorer, respectively. Max is president of the European Boomerang Federation.

That night, in the big tent, Vitesse threw a gala party for invited guests and amid the cornucopia of food and champagne it showed off the day's videotaped highlights on a giant outdoor screen. The Yanks afterward demonstrated night boomerangs lit by glowing cyalume in a throw praised for its visual poetry. When speeches were made, Chet Snouffer accepted his championship award with a thank you in correct French learned in nine years of study and then Barney Ruhe got a roar of appreciative laughter from the hip crowd when he did an imitation in his fractured, fluent French of French actor Jean Gabin. All in all, a most memorable day.

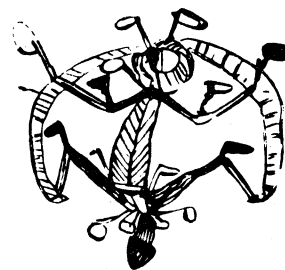
On the Road — Next day, Vitesse took the five Americans on tour to nine beach resorts starting on the Riviera. Driving speed between points was routinely 100 mph, just one of the cultural shocks encountered. Topless beaches, communal W.C.s, and the mercurial but always charming Gallic temperament were others. Stops were Hyeres and La Grande Motte on the Mediterranean, Biarritz (where a night throw drew a crowd of 15,000 enthusiastic spectators), Arcachon, Royan, Les Sables d'Olonne, and Le Baule ("the most beautiful beach in Europe") on the Atlantic Coast and vast Cobourg and Le Touquet on the Channel Coast. At each city, Vitesse staked off a section of centrally located beach with its portable fencing, by prior arrangement with the town council, erected Ackerman wine and Canada Dry tasting tents and an Apple computer outdoor classroom, hung advertising banners, and proceeded to draw a crowd — sometimes massive — with its immense seductive sound system. Shows by the Yankees were typically given at 11 a.m., 3 p.m. and 7 p.m., with the last being performed for invited guests from the area. Because they were on beaches, the Yanks regularly faced winds of 15 to 20 mph, and sometimes higher (the Ackerman tent blew down at Biarritz, cancelling the afternoon show). By using weighted boomerangs and new throwing techniques, such as Chet Snouffer's upward lob throw, they coped nicely, though. Teaching sessions followed the demonstrations. In the Americans' wake, thousands of French had been introduced to the sport in the most favorable possible way. Because of the hectic schedule — a new town everyday — the visitors got little tourism, but they did have one memorable excursion. Outside Royan, an enormous sand dune with a crumbling German fortress commands the sea. After toiling to its top, the Yankees threw boomerangs from the peak, aiming downward and letting the breeze effortlessly blow the 'rangs back up.

At tour's end, Vitesse declared the whole promotion a great success. Immense publicity had been generated, the sponsors were happy. "We're going to do it again next year — bigger," Vitesse vowed. They predict a budget of \$400,000 and sponsorship by a French television channel. Instead of a tour around just France, they project a tour around Europe.

World Federation — As an important outgrowth of the World Master's Cup competition, Max Hoeben, president of the European Boomerang Federation; Dennis Maxwell, president of the Boomerang Association of Australia; Ben Ruhe, representing the United States Boomerang Association, and other interested parties on hand in Paris created a long overdue ad hoc international boomerang federation. The codification of rules was begun and is seen as a first important step to be taken. Ratings for players, now under way in the U.S., could be a second step. It was hoped by the ad hoc group that the national federations of the three continents will in the next year move to formalize the world federation, elect a ruling board, and set a framework for the organization. It was expected that Asia, represented by the Japan Boomerang Society, will join such a world federation, and that Africa and South America, where there is interest in the boomerang, would become members in due course.



Celebration — The four "marvelous" Americans, as they were billed, pose with the Saumur Boomerang Club team they beat in a rough game of Shambles, 5-3, on a beach in France. Champagne right out of the victory cup was drunk by all hands. The Yankees are Eric Darnell (second from left, top row), Chet Snouffer and Barney Ruhe (fourth and fifth from left, top row), and Peter Ruhf (center, bottom row). Tour technical director was Jacques Beslot (Levi's shirt) of Saumur, Europe's premier thrower.



The Tournament Circuit

So many boomerang tournaments are going on around the country now, big and little ones, well organized throws and rather casual tosses, that it is impossible, even if desired, to give detailed reports on them. What follows are highlights from selected tournaments, with the amount of detail provided often reflecting directly whether the editor of this publication attended or whether his correspondents across the nation were faithful:

Cuyahoga

Afflicted by stiff winds at times, this tournament was dominated by Chet Snouffer, fresh from his tour of French beaches where he used his lob throw to great advantage when the breezes blew. Chet got more than double the points of his dual runnerups, brother Greg and Gary Brodbent. In doing so, he set a tournament world record for doubles catches — 27 straight. Another highlight was a great MTA throw by Barney Ruhe, using a Ted Bailey 'rang. The mini stick rode the wind so well it vanished over some trees never to be seen again. When it disappeared, it had been flying more than 2 minutes! This estimate was by several throwers experienced in timing. The other big news at Cuyahoga was the great organization of the tournament by the National Park Service, which has dedicated a field in the Cuyahoga Valley National Recreation Area, near Cleveland, to boomeranging, thanks to Dave Boehm's good work. Entry sheets were computerized by Paul Squires and park personnel gave complete, no-nonsense briefings on the proceedings. When the tourney was over, each player was promptly given sheets with complete scores for each event — a first in the sport. "A class act," says Ray Rieser. "There were lessons to be learned by the USBA."

Vermont Open

Eric Darnell's annual throw, at Duechee polo field this year, drew the usual entry of pros on a perfect day and produced the usual excellent competition, dominated by Dr. Larry Ruhf, readying himself for the Nationals ahead he was to win. Larry's 38 second MTA and Shelley Mack's victory in Position were highlights, as was Barney Ruhe's 25.8 Fast-Catch clocking. To make Accuracy more interesting, Eric permitted players to attempt to tip the incoming boomerang into a washtub serving as bullseye; he was the only one able to pull off this feat. Afterward, everyone relaxed at his self-built octagonal showplace home at South Strafford, lounging on the deck dubbed "Heaven."

New Haven

Yale's annual fling started with a lecture by Ben Ruhe that drew a standing room crowd and then flowered out onto the great field the Peabody Museum uses well below Yale Bowl. Using the bank and its trees as a wind shield, the East Coast whizzes who attended gave a smashing demo for hundreds of spectators, who then became students as lessons were given to all comers. With the wind having abated almost completely, an instant tournament was held for these novices, many of whom acquitted themselves nobly. Everyone had fun. And there was oohing and aahing just at dusk as Bob Foresi showed off long distance throwing with killer-sticks. It was the best day yet at Yale.

Sewickley Boomerang Jam

This first annual Western Pennsylvania tournament run by Dean Helfer and group had its brightest moments when

Kippy Rieser, 10, the son of Ray, wiped up the big boys in Accuracy with a bullseye toss, a near bullseye, and then a second bullseye. "It earned him an interview," writes H. L. Mayhew, "on television station KDKA. The TV reporter, glum when he arrived, caught the fun spirit before leaving. He and his cameraman decided to sign off with a bit of boomerang humbuggery — a fake throw and a fake bonk on the head with a boomerang. Not funny, his cameraman suggested, so how about a fake catch? Much better for boomeranging, I chimed in — so they did it. The reporter gave a puny throw. Behind the cameraman, I caught it, waited until the reporter scanned the skies as though watching the flight, and threw the 'rang back. He made a catch (actual flight, maybe 6 feet), and signed off with a satisfied smile. Back at the studio, they spliced in a magnificent boomerang flight between the puny throw and the catch. Deception? Yes, but anyone who has ever thrown a boomerang wouldn't be fooled by the final result on TV and the reporter's grin."

Buffalo

The annual Science Museum fling, a great favorite for the original and intelligent way anthropologist Mike Gramly runs it and for the great party Professor Duayne Hatchette throws afterward, drew its most skillful contingent of throwers to date and trickiest weather: high winds and driving rain, then calm and sunshine. Through it all Ted Bailey, one of the Ohio gang, showed everyone what throwing was about under changing conditions and dominated scoring. His mini boomerangs made of masonite were the talk of the field. "Great prizes, great hospitality," adds Eric Darnell, one of the converts to Buffalo.

San Francisco

Perhaps in keeping with the spirit of this wonderful, free-spirited city, the winner of the first annual University of California at San Francisco throw is reported only as "Rock." Cindy Easton, tournament organizer, says: "He wouldn't tell us his last name!" Runnerup was Peter Kemplor, 3rd Leni Barker, 4th Michael Girvin, 5th Jim Skalaby, 6th Cindy Easton, herself. It was windy but sunny and Cindy and Leni report everyone had fun and won a prize. "We were able to give boomerangs to some people who came in closer to last, so they can learn to throw better," said Cindy. Good thinking! Leni adds: "The meet was declared a rousing success by all in attendance. It was the first meeting of a growing nucleus of determined throwers in northern California. Look for future events from this group."

Eugene, Oregon

Stu Wilson organized his city's first boomerang throw ever and drew an enthusiastic field, who happily learned about the sport as they participated. "Only two had ever caught a boomerang before," he reports. "I ended up having to downplay a lot of the official USBA rules during the tournament. Thus, I don't think it's worthwhile to post results. I do think, though, there is a growing contingent of boomerangers in the area, thanks to workshops, the tournament, and support from a local kite store, so that next year our tournament will have serious competition. Anyway, we did get excellent local media coverage."

Hampton Roads

Ray and Callie Laurent and group — the self-described "Virginia crew" — had a first annual throw that drew an

all-star field and some great tossing. Dennis Joyce, the man who can juggle backward-thrown boomerangs, showed he's a whiz at regular tournament throwing by taking first overall, followed by George Reitbauer and Mike Forrester. "We had a fine awards dinner and party afterward," says Ray, "and a nice prize table. Everybody won something. Don't miss us next year!"



Briefs From Around the World

Four Aussies, including Rob Croll, Chris Henzgen, and Andrew Travis, will demonstrate boomerang throwing at Vancouver's 1986 Expo next May . . . Patrick McCormick has added boomeranging to his three-dimensional art course at Western Washington University in Bellingham. He follows the precedent set at SUNY-Buffalo by Prof. Duwayne Hatchette and since copied at Brown University and elsewhere across the country . . . After years of marriage, ace throwers Cynthia and Peter Larson of Miami have added to the boomerang population — a son, Nicholas Lief, born May 15. "The world seems fresh and new," says Cynthia . . . Owl Boomerangs, a new company, is offering five-ply birch sheets, wind indicators, plans for boomerangs, and a line of hand-made 'rangs with such colorful names as Yellow Hawk and Sky Viper. Details from A. L. Allen, 1435 Burnley Square N., Columbus, OH 43229. Plywood suitable for making boomerangs is also available from Flagg Inc., 11326 Tamarco Dr., Cincinnati, OH 45242. A list of suppliers of boomerang-quality ply remains available from the USBA. Send \$1 and a self-addressed and stamped, legal-size (No. 10) envelope to Box 2146, Lower Burrell, PA 15068 . . . Bob Foresi of West Springfield, MA, the premier killer-stick maker and thrower in the U.S. and maybe the world, has upped his distance record to 218 yards. The distance was carefully measured; Bob's a surveyor. He accomplished the feat with a weighted, laminated boomerang of his own design and manufacturer. He had a helping wind of about 10 mph. Subsequently, Foresi threw the stick many times over three months but could never come within 30 yards of his titanic toss . . . Barney Ruhe of New York City, is the star of a 12-minute, color, avant garde film titled "Urban Boomerang" made on location in New York by Parisian filmmaker Nina Barbier. The movie was filmed in Fort Apache-style empty lots at Houston Street, aboard the aircraft carrier *Intrepid*, and in a skid-row West Side hotel. Long on local color and short on boomerang-throwing, the movie should become an underground classic and win obscure film awards, according to Barney . . . Charles Paiz Mercado has formed a boomerang club in Isabela, Puerto Rico, and promises a report on its activities when he gets things well organized . . . Something new, and even overdue in boomeranging: The apprenticeship. David Hewitt of Gould Academy in Maine has asked Eric Darnell whether he might come and study boomerang theory and making with him.

Japan Takes Up Boomeranging

Following the teaching tour of Japan by Australians Brian Thomas and Barrie Forsythe, a Japanese Boomerang Society (Nippon Boomerang No Kai) has been formed and a national coach, Yoshinobu Sakimitsu, of Yokohama, named. The association is under the aegis of the Japan Recreation Association.

To spread the word, Sakimitsu plans frequent workshops in throwing and reports that the first of them, held in Tokyo, despite little advance publicity and an out-of-the-way location, drew an enthusiastic group of participants, ranging from 8 years old to 60, along with the inevitable substantial press coverage. Sakimitsu wowed the novices with his own demonstration, catching a doughnut-hole triblader on a finger and making a whistler perform to good effect.

With the national publicity his activities are generating, he expects membership in the association to increase sharply. He plans a bulletin to keep members informed.

Sakimitsu solicits gifts of weird, wonderful boomerangs to help him in his demonstrations and for publicity purposes. Address him at 27-7-301 Otsukushigaoka, 5-Chome, Midoriku, Yokohama, Japan 227. It's a good cause. If Asia gets interested in boomeranging, look out! Already Sakimitsu is thinking big: "I look forward to Japan having competitions with international teams in the future."



Boomerangs and Diplomacy

"Mr. Hu's Boomerang Lesson Goes Astray" was the headline. *The Canberra Times* of April 17th then gave an account of one of the funny moments in boomerang history, as follows:

A public-spirited and spirited public performer — that's the diminutive Mr. Hu Yaobang, General Secretary of the Chinese Communist Party.

Were he not so nimble, a boomerang might have clipped him on the head at Regatta Point yesterday.

The near mishap with a boomerang came during a demonstration for Mr. Hu and other Chinese officials laid on by the Department of Aboriginal Affairs.

Mr. Doug Powell, originally from Condoblin, NSW, but now of Queanbeyan and working with the Aboriginal Development Commission, was doing the throwing.

Mr. Hu did his dodging as one shot swooped back low on the Chinese party. Another scattered the Chinese media entourage and cut an Australian journalist's thumb as Mr. Powell ploughed into them trying to field it.

Mr. Hu didn't try his hand with a boomerang, though another senior official did, but accepted gifts of boomerangs, a didgeridoo and Aboriginal artifacts presented by the Minister for Aboriginal Affairs, Mr. Holding.

Mr. Holding suggested boomerangs as a nice export line to China. "Advanced weapons . . .," retorted Mr. Hu.

From that point we were able to increase our design horizons by getting catalogs from boomerang manufacturers and dealers, copying some of what we saw, and finally coming up with designs of our own. By December, "boomerang fever" had struck to such a degree that several faculty and students were seen on the soccer field (which now could be more accurately described as the boomerang field) in the dead of winter throwing in subfreezing temperatures.

Winter quarter of 1985 saw the three-dimensional design course offered. Boomerang design was one segment of the course, which required students to design and build several projects. As far as the boomerang segment was concerned, students were judged on aesthetics, innovation, and performance. Dan Jones also incorporated boomerangs into his recreational sports class. By this time the three of us had decided to form a "troika" to build and sell boomerangs locally. We called ourselves "Rangwrights" and began to give demonstrations to any groups that would invite us. To date, we have given demonstrations at schools and arts and crafts shows locally.

Several of us also affiliated with other boomerang organizations such as the Atlanta Boomerang Society and the United States Boomerang Association. Naturally, the next step was to try to locate other throwers so that we could test our skills and assure ourselves that we were, in fact, sane. Therefore, on April 27 of this year we went to Atlanta to participate in the annual Atlanta Boomerang Society's spring fling and had a good time.

Since then, we have undertaken to form the South Georgia Boomerang Club ("Rangwrights" continues to be our production logo) to stimulate interest in this part of the state, and we plan a tournament in the fall to which all enthusiasts are invited.

As far as making boomerangs is concerned, we have experimented with several kinds of production plywood. We bought veneer and made our own plywood, made aluminum boomerangs, and put together composites of wood and aluminum. We have also built plexiglass 'rangs and have experimented endlessly with shapes, weighting, airfoils, etc. I am sure our experience mirrors that of a lot of people who have become fascinated with boomerangs. We do want members of the USBA to know that the sport is alive in southeast Georgia.

See you all at the 1986 Nationals in Atlanta!



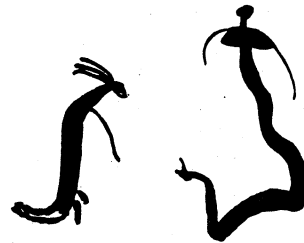
John Derden (left), Dan Jones and Neil Kalmanson of the Emanuel County Junior College Boomerang Club in Swainsboro, GA show off some of their equipment.

'Boomerang Fever' in South Georgia

How do boomerang clubs get going? Here's an account of the formation of one of them by an associate professor of history at Emanuel County Junior College in Swainsboro, GA. The club organized last June 1 as the South Georgia Boomerang Club.

by John K. Derden

In the fall of 1984, Neil Kalmanson, an art instructor at Emanuel began to investigate the possibility of incorporating the design, construction, and flight testing of boomerangs as part of his three-dimensional design course. Along with his colleagues, John Derden and Dan Jones (instructors in history and physical education, respectively), Kalmanson collected a bibliography relating to boomerangs. None of us had ever thrown one and, armed with some Baltic birch plywood and various magazine articles, we set about trying to see if boomerangs really "worked." You must understand that for many if not most people the idea that a boomerang returns is received with the same degree of acceptance that greets the assertion that professional wrestling is "real." Anyway, we made some rather crude traditional shapes that returned and, ye gods! that we were eventually able to catch more or less regularly.



More Wood Sources

by Ted Bailey

It can be advantageous to investigate the technology of various crafts to improve your own technology base. I have spent many hours reading magazines about model aircraft, wood working, and archery. I have inquired about dozens of products advertised in these publications and purchased products from some of the more promising of the price listings that arrived. I would like to share three more wood sources whose products have made me extremely happy. Please let these suppliers know that you read about them here so we can determine the effectiveness of these articles.

Hardwood Laminating Strips and Glue

THE OLD MASTER CRAFTERS CO.
130 LeBaron Street
Waukegan, Illinois 60085
(312) 623-2660

This hardwood supplier was found in an archery magazine. I highly recommend writing for a copy of its price list and general information sheet about working with glues and laminating strips. It is very informative and will give you clues on how to make beautiful and strong hardwood laminated boomerangs. Has anyone seen how beautiful and strong a homemade bow can be? This supplier has epoxy and Ureac 185 glue in addition to an assortment of various hardwood strips and other laminating materials at very reasonable prices. Hardwoods include walnut, bubinga, padouk, shedua, maple, etc. Strips generally come 35" long, but you can choose the width and thickness and even a taper custom made to your specs at a dynamite price. I was very impressed with the packing strips used to ship my wood, which consisted of laminated hardwood strips glued together much like the straight wood section of a Gerhards hook. These packing strips were sent without charge.

Micro Hardwood and Laminating Strips

SHAKER MINIATURES
2913 Huntington Road
Cleveland, Ohio 44120
(216) 751-5693

I got the idea for this supplier while examining doll houses in a toy shop. Shaker Miniatures carries an assortment of woodworking tools and about a dozen hardwoods in thicknesses of 1/32", 1/16", 3/32", 1/8", 3/16" and 1/4". Of special interest is precut flooring for doll houses. These strips of oak, walnut or cherry are precisely cut to 1/16" x 3/4" x 24", making them especially suitable for steam bending to make laminated boomerangs. If you do not have expensive precision woodworking equipment, then this is the wood for you to make the special boomerang you've always wanted to make.



Veneer and Inlay Banding

BOB MORGAN WOODWORKING SUPPLIES
1123 Bardstown Road
Louisville, Kentucky 40204
(502) 456-2545

This supplier has a huge assortment of fantastic veneers and assorted equipment and woodworking literature at excellent prices. When I placed my order for only \$16, he sent me 20 feet of assorted walnut veneers at no charge. I had a choice of walnut or cherry. I bought a book about working with veneer and made my own veneer press out of aircraft plywood and C clamps. Now I am making my own plywood. I combine walnut and maple veneers for a beautiful effect. I add expensive veneers such as rosewood to my top and bottom ply for added beauty. Mix the light and heavy veneers to control the number of plies, thickness, stiffness, and density. There is no limit as to what you can do with mixing veneers. It is somewhat time consuming to make your own plywood, but fantastic boomerangs can be made from this process!

Correspondence

"The Wishbone boomerang I tried as recommended with a vertical toss. The dingle arm blew up when it crashed on the way out. Since I'm an orthopedic surgeon, an arm's an arm. I got it back together. Had great flights with a throw that was a bit more horizontal, near 20 degrees off vertical." — *Dr. Martin Levy*, Tarrytown, NY ... "I have been reasonably busy in the past few months: a trip to Alice Springs resulted in some fairly huge boomerang sales; and just recently, I've bought some land for a new boomerang-based tourist park. I hope to finalize that in a month or so then start landscaping so that when I open up it will look nice and not rough. The new site is only about three miles from Runaway Bay and the throwing field will be in the middle of a pine grove — really nice windbreak effect. Unfortunately, it is not protected from the northerly winds that blow in November and December, so I'll be planting a lot of trees to cover that." — *Dr. Lorin Hawes*, Runaway Bay, Queensland ... "Dear Ben Ruhe — A much belated answer to your letter — yes I am indeed the poet who also throws boomerangs. We have a meadow here that is just big enough to get them around without hitting too many pine trees. I would love to trade a poem for a 'rang, and I'm thinking which one to send you. Wait till you get it, it will be a few more weeks, and then see which boomerang seems an appropriate return. I do love what you are doing, and the whipping sound — like certain birds in the air — of a 'rang coming back round is one of the hair-raising, archetypal sounds on Earth. That's the poem I would like to write — but don't know if I'm ready to, yet." — *Gary Snyder*, Nevada City, CA ... "These days I'm not doing anything at all about boomerangs, although they often go through my mind, like an old love. I've got a job as a physicist at the Groningen University again, which leaves me enough time to work on a project of my own which is half-way between science and art: Little machines which communicate with one another and produce a chorus the way frogs do." — *Dr. Felix Hess*, Emdaborg, Netherlands ... "Am keeping fit and still throwing well, particularly with some new distance models, which are most encouraging. Much lighter in weight than all my previous distance models, but still travel to extended distances and return most accurately." — *Herb Smith*, Sussex, England.



Dr. Steve Miller
 March 13, 1949 - April 6, 1985

Rome Meets Boomerangs

The Australian national coach, a member of a Catholic teaching order called the Christian Brothers, was posted to Rome earlier this year and herewith gives a delightful account of his doings there and elsewhere.

by Brother Brian Thomas

When Jesus brought the good news to his hometown of Nazareth, they tried to throw Him off the cliff. "A prophet is not recognized in his own town," He told the world. How true! Australian security x-ray machines can't recognize their own sporting implements. In Melbourne I place my small bag on the belt through the x-ray machine, and am greeted with the firm statement, "Excuse me, sir, but we shall have to look in that bag. There is an unusual shape in there!" A slight smile of triumph creeps over my face as I think: "Here's another chance to enlighten an ignorant fellow citizen!" Of course, Australia is very multi-cultural and this true-blue Aussie addresses me with a quaint Scottish accent. I slowly open the bag (I'm sure the security official has one hand on her gun) and triumphantly reveal the offending culprit — a bundle of 12 Rod Jones works of art painted with the Australian flag. Gasps, oohs, ahs. A brief "Gospel according to Br. Brian" is sprouted forth, and lo and behold, another convert made (no water was on hand for a baptism). I confidently stride toward

the waiting plane followed by a pair of admiring eyes which, only five minutes before, had seethed with deep suspicions. Both I and the guilty boomerangs take flight for an MTA of 23 hours, landing gently at Rome's airport amidst rain and wind. (Two months later I was bound for the Holy Land on the most security-conscious airline of all, El Al, Israel's own airline. Yet that same bag, with its concealed cargo of Aussie 'rangs, slid through the x-ray machine and the 'suspicious' shapes didn't even register a mild query from these ever-alert guardians of air-travel.)

Rome, city of the gods, home of the emperors, old, narrow and grotty, yet full of an ancient charm. Ancient churches and buildings abound like wildflowers, each with a long tale of joys and sorrows. Surely such an ancient setting is ideal for the most ancient sport of all. Alas, no. Rome suffers the same deficiency as Japan — no space. Sporting areas are rare indeed — the few there are small and well-used. Throwing sports seem to be non-existent.

However, the true enthusiast seeks out places not thought of by the elders of the city. On one of our days off, three of us ended up at the Circus Maximus, the scene of the mighty Roman chariot races, which is situated in front of the ancient emperors' palaces. It is 600 meters long and 100 meters wide and seated 300,000 spectators, who screamed their lungs out as whips flew, charioteers yelled and sweated, and wild horses pounded the track on their circuitous route to victory. 1985: Rod, Squi (a Canadi-

The Boomerang Man



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THE ORIGINAL LORIN HAWES M-17 BOOMERANG RETURNS!

Sometime in the early 70's, when Cokes were a dime, gas was 29¢ a gallon, and penny candy was 6 for a nickle, I purchased my first Hawes M-17 for \$3.50. This is the very boom that taught me and many Americans to believe in boomerangs. You had to be a real klutz not to get a return with Lorin's M-17. What a great boom!

Times change. Success of the M-17 bred many imitators; few could match the ease of throw, accurate return, beautiful hover, and joy of catch that the original M-17 gave its owner. Hawes retired from manufacturing (about 1980). While a new owner continues to make booms of the M-17 style, some throwers say that the magic of the original Hawes M-17 they remember, is gone. HAPPY DAY! Lorin Hawes is back to making ORIGINAL M-17's. He's handcrafting his famous design in the original hardwood veneer he first used, applies his special satin-rubbed finish, and flight-proves each M-17 before shipping to me. Cokes are 50¢, gas about a \$1.25, and a nickle hardly budges a parking meter these days. Yet, for just \$8.00 you can enjoy the Original Hawes OM-17. Truly a good boomerang. And if you wish to purchase only one wood boomerang, get this OM-17!

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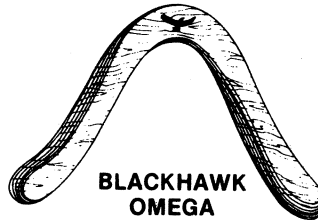
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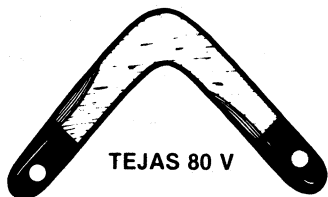
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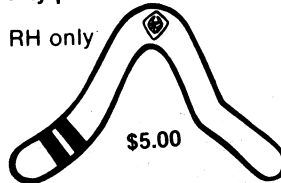


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an) and Brian calmly walk onto the hallowed arena and throw in varying directions (tricky Roman breezes). The surface is not kind to boomerangs not caught, so it is a short session. We then push on further up the road to the gigantic Baths of Caracalla (30 meters high), built between 212 and 217 A.D. by Christian slaves, who were then put to death (no doubt to overcome super-annuation problems!). They housed baths, gyms, libraries and parks. Inside the ruins I am able to throw inside several of the rooms, so huge are they.

Our establishment is 16 miles out of Rome and possesses a field ideal for throwing. So, many of the Brothers doing the course here have experienced the joys or frustrations of throwing. A number of Ethiopian refugees have also learned, including one by the name of Ben Hur! Another, Immanuel, has now taken his new skill, and boomerang, to his new country, Canada.

One day I popped out for a late throw in the afternoon. A dozen or so local teenagers were availing themselves of our field for some soccer practice (national sport). Practice soon stopped, and one headed for me muttering mumbo-jumbo that obviously meant he wanted a throw. Soon all were lined up, and despite a language problem, throwing with varying degrees of success. However, I was at a loss to convey fundamental safety rules to these new enthusiasts, as they ran happily and eagerly towards a screaming, returning boomerang. But their guardian angels weren't on strike, so all ended happily.

A few weeks ago I put on the first international boomerang competition in Rome using 15 Brothers from five nations. Represented were Canada, Ireland, Rome, Uruguay, and Australia. We had two comps: accuracy and catching. Br. Rod Shoebridge of Australia won the catching, while the catch of the day was taken by our 65-year-old Roman, Br. Austin Connolly. Accuracy was won by one point by Br. Aidan Squires of Canada, just ahead of Br. Dave Mitchell of Tasmania (a left-hander).

Rod Shoebridge and I went by rail to Vienna to un-earth the world's most devoted thrower. He met us at the station at 10:30 at night in minus 15°C, arranged accommodations for us, advised us on cold weather gear, and the following day drove us to some remote fields on the outskirts of Vienna, got out and walked us through the snow for several kilometers, suddenly stopped and said, "This is a good place to throw." Throw we did — for three hours in minus 6°C, and then adjourned for lunch to a warm restaurant in a nearby village. After lunch he calculated we could probably get another hour or two of throwing in before having to return to Vienna. So we did! Who is this abominable snowman of the boomerang world? Dr. Ernst Duda, a very, very fit 55-year-old veteran who works for the government and declines lucrative out-of-hours work so that he can be free to throw boomerangs. He's a quick learner, and a very accurate thrower, registering disgust if he has to move three steps for a catch!

We spent five days in Vienna, and four of them were spent tossing 'rangs in the snow. One day we joined a few of his converts, Frau Brutmann and her teenage son and daughter, plus a friend, for a throw. This was followed by a viewing of Aussie throwers in action (including 2-year-old Ben Loveland and 84-year-old Les Janetzki and 81-year Arthur) whom I had captured on Super 8 movie film.

Ernst is definitely a perfectionist. He has ordered boomerangs from wherever he hears of them, gets them,

tries them out, and if they don't suit his style of throwing, discards them. An expensive, but effective way to becoming an excellent thrower. (Maxim No. 1: Have a good boomerang.)

I haven't said anything yet about throwing in Israel. The south is hopeless for throwing. Rocks everywhere; never seen a place so rocky. No wonder David was good at throwing stones. I actually saw a shepherd throwing stones to move his flock. The north is beautiful soil, but all cultivated. I tried a throw at Shepherds' Field, Bethlehem, where the angels sang on Christmas night. I threw in the yard of the church. It came back, hit my hand and dropped over a barbwire fence, which was around the ancient archeological remains of the first church there (3rd century). I decided to leave it there for the baby Jesus as a gift from the 4th Wise Man (from the South) — a far more useful gift for a growing lad than gold, frankincense or myrrh!



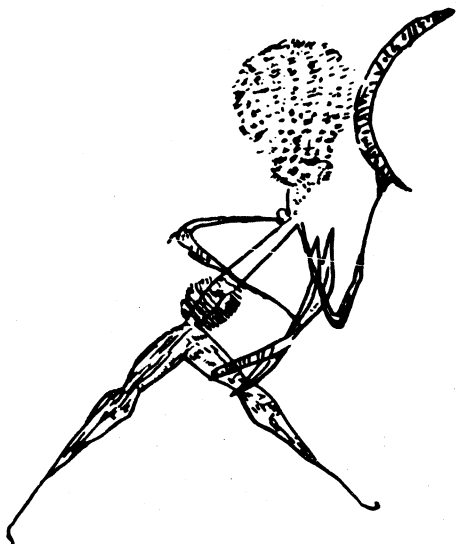
More Books

It had to happen — a volume on boomerangs with a boomerang right on the cover, ready to be taken off and thrown. Instant gratification. Throw now, read later. John Cassidy, master of the Klutz Press empire in Palo Alto, CA (*Juggling for the Complete Klutz*, etc.) has come out with *The Boomerang Book*, a 50-page, 10 x 15-inch paperback selling for \$13 that features a copy of a Dan Russell basic on the cover. The boomerang works well and combined with Cassidy's book, wryly and informatively written, should greatly advance the sport of boomeranging since Klutz Press, in case you hadn't noticed at your local bookstore, is excellent on merchandising and promotion. The book covers: history, how to make and throw, games and competitions, aerodynamics, and lots more. There are many interesting photographs and illustrations and the large format permits large-scale reproductions.

Meanwhile, John Mauro of Richmond has rewritten his booklet *An Introduction to Boomerangs* with proceeds used to benefit the United States Boomerang Association. The price is \$2.89 ppd for members and \$3.89 ppd for non-

members, a bargain just for the new illustrated section on weighting boomerangs. The volume gets into such related considerations as to how to increase spin retention. "Factors that should increase spin retention," he writes, "are shorter arms, wider arms with greater chord, less thickness, more weight at elbow and wing tips, more taper at wing tips." He qualifies by saying: "Note that it is difficult to isolate one dimension for change without affecting another." Thought-provoking stuff. Write Ray Rieser for a copy at P.O. Box 2146, Lower Burrell, PA 15068.

Klutz Press' idea of putting a 'rang on the cover of a book occurred to several people over the years, including Ben Ruhe and Eric Darnell, and the two have collaborated on a 96-page, \$10 paperback, *Boomerang*, due out this fall from Workman Press, a major New York publishing house. A new injection-molded 12-inch Darnell polypropylene boomerang in bright red will grace the cover and tests of the 'rang by many show it to be a first-rate performer along the lines of Eric's famous Windcheater — light, easy to throw, safe, soft, forgiving, tunable, good in a bit of breeze. The first printing will be 45,000 copies and distribution national. Darnell and Ruhe will do West and East Coast promotion tours, respectively, in the fall. Look for a review of the book by an impartial critic in the next issue of this newsletter. Also, if Workman grants permission, one or more of Eric's fine plans from the book for competition boomerangs, such as his MTA 'rang, will be reproduced here. . . . Yet another scholar has turned to the boomerang as a treatise topic. The newest academic is Verena Traeger of Vienna, Austria, who is doing a study under the tutelage of Dr. Hanns Peter, curator of ethnology at the Folk Museum in Vienna and author of the definitive study of Australian killer-sticks, the parent of the return boomerang. . . . Another publication on boomerangs has come to light, this one in French. As part of his academic requirement to obtain a license as a physical education teacher, Pierre-Etienne Colland did a lengthy study called *Le Boomerang de Retour*, published by the Catholic University of Louvaine, Belgium, in 1983. Bibliographers please note.



The Four-Legged Necessity

This is a third installment in the competition: What do you carry in your boomerang bag? The award for the best answer will be a prize boomerang. Contributions anyone? (Typewritten, please.) The competition continues through 1985.

by David A. Silver

Forget the stopwatch, the nylon wind sock. Forget the various items for detreeing boomerangs! There is only one truly essential item to carry along in one's boomerang bag — a Labrador Retriever. I think I better elaborate a bit. You may ask, how do I fit Archie, my 91-pound yellow Lab; in my boomerang bag? Easy. My 'rang bag happens to be my four-wheel drive Toyota. Why not? I use the car for the storage of nearly everything else and there are always 'rangs floating around in there somewhere anyway. Also, the car (alias bag) is handy to get to places as far away as possible from trees and windows and other hazards of 'rang throwing.

Now, on to the Lab. You will never, never, ever have to worry about a lost 'rang again. Archie will never quit until he finds a stray boomerang . . . no matter the tall weeds, poison ivy, mud, rain, sleet, snow. A retriever is a retriever and such is his nature to retrieve. Properly trained, the retriever will not go after a 'rang that is thrown, and, of course, properly thrown, the 'rang will come right back to you anyway, and hence it is already properly retrieved. Thus, Archie shows no interest in anything but a stray 'rang.

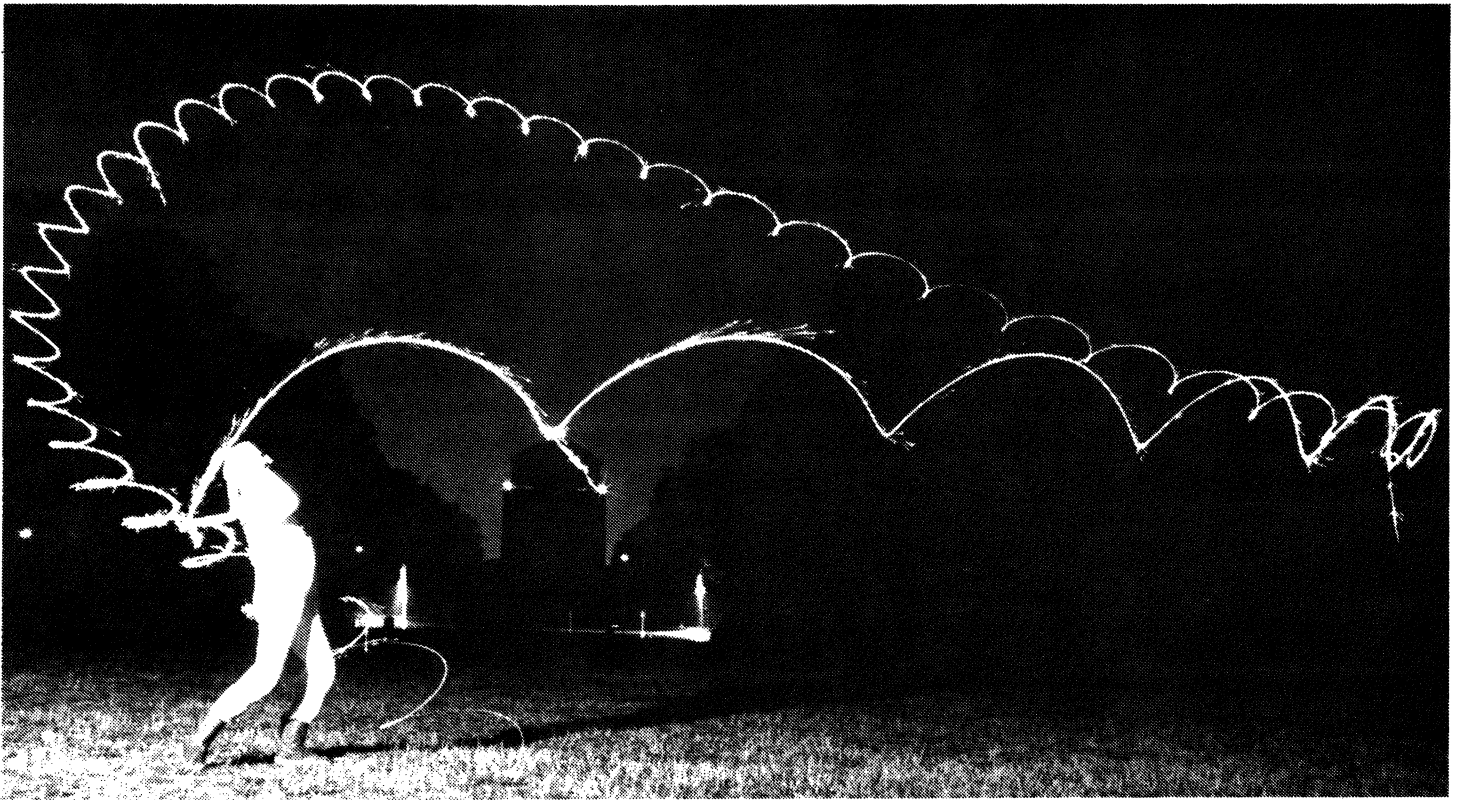
The real trick is to avoid toothmarks. From the time the Lab is two months old, teach the dog to carry a stiff bristle brush, with the bristles towards the roof of his mouth. Then, graduate to a feather duster. This will give the Lab a 'soft' mouth. After this, the Lab is ready for your 'rangs.

Surprise for a Flying Tern

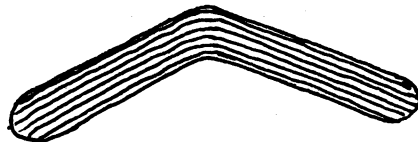
The interaction between birds and boomerangs has provided anecdotal material from several continents. Here's a story from Gulf Breeze, FL, on the continuing tilt. This time the boomerang wins, sort of.

by Steve Woodson

The dunes where I usually throw have been taken over by a goodly number of terns which lay their eggs in small depressions in the sand. My arrival at those dunes is greeted in a novel fashion: the birds' method of discouraging intruders is to dive down and void themselves on them. I have to wash my hat everytime I go there. Anyway, I resolved to see how close I could get to one of these birds with a throw . . . and knocked it right out of the sky! Fortunately, it was only stunned and got back into the air again. I threw to the left of the bird using an Ohio V Mini copy made of 1/8" styrene. The sudden break to the right the 'rang took in its normal flight path caught the tern completely by surprise. The bottom line of this story is that I believe returning 'rangs could be used (or could have been used) to down a few birds out of a large flock. I believe I could duplicate that throw again, but of course, have no wish to harm a parent bird. Anyhow, here's proof that a returning 'rang could be used for hunting. The tern can change flight patterns in a *heartbeat*, but was completely fooled by the 'rang's break in direction.



Lighting Up the Night Sky — Stop-action night photographs of boomerang throwing are a dime a dozen, but few approach the quality of this one by Sebastian Kusenberg. The study appeared in the German weekly Der Stern, No. 15, 1985. The thrower is Wilhelm Bretfeld, whose pioneering maximum time aloft boomerangs triggered great interest in this competition event. Bretfeld is publishing a book on 'rangs in October titled Das Bumerang-Buch, selling for 26 German marks. Information from him at Postf. 32 30, D-2000 Norderstedt, Germany.



Know the Rules? A Test

Australian Round rules are rather complex, as anyone who has ever tried to officiate the event discovers. Many people assume they know all the rules but in fact may not. If you want to put yourself to the test, here are some questions about the event. If you get all three right, you can call yourself Morris Maxwell.

1. Player throws boomerang outward 41 meters and has it return, but then a wind comes up and the boomerang floats away, to be caught by the thrower 57 meters away from the center point. What's the score? ___ points for range? ___ points for catch? ___ Total points?

2. Player's throw flies outward 52 meters, turns and touches the ground on its return flight but rebounds, and is caught in the center circle, or bullseye. ___ points for range? ___ points for distance? ___ points for accuracy? ___ Total points?

3. Player's throw goes 30 meters, returns and player, with feet straddling the 2- and 4-point circles, intentionally bats the boomerang so it lands in the 10-point center circle. ___ points for distance? ___ points for accuracy? ___ Total points?

The answers (source: 1985 Boomerang Association of Australia Rule Book):

ANSWERS:

- 1. Since catch occurred beyond 50 meters, it is disallowed. No points are given for distance either. Score is 0.
- 2. Catch is disallowed because boomerang hit ground. Player gets 6 points for range, 10 points for accuracy. Total is 16 points.
- 3. Player receives 6 points for distance, only 3 for accuracy (boomerang may not be intentionally batted in attempt to get higher score). Total is 9.



Attention Makers

Wood Products Ltd. is closing out 19"x19" sheets of 14-ply, 7mm (1/4"), aircraft grade birch plywood. It is \$9.00 per sheet, plus \$2.50 postage for the first sheet and \$1.00 postage for each additional sheet. Send to Wood Products Ltd., Box 84895, San Diego, CA 92138.

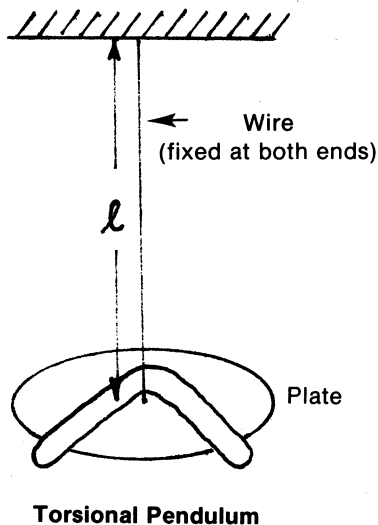
Determining Moment of Inertia

Greg Shaheen is a graduate student in physics at the University of Cincinnati doing a treatise on boomerangs as part of his academic requirements. Although his report remains unfinished, he here shares a description of a test fixture, a simple torsional pendulum, that he thinks some boomerang designers will find useful.

by Greg Shaheen

Using a torsional pendulum, it is possible to determine the actual moment of inertia of a particular boomerang. The moment of inertia of a body is of particular importance when the body is rotating, like a boomerang. Moment of inertia is to rotating motion what mass is to straight line motion. It is a characteristic of the mass of the object and how the mass is distributed around the center of mass, or center of rotation.

The moment of inertia is an important characteristic for two reasons. There is a direct relationship between it and range. By adding weight to the wing tips, range is increased. This is common knowledge. The second reason that the moment of inertia is important is that it is a measure of the energy that is stored by the boomerang at launch. I believe that by coupling the moment of inertia with the circular area formed by the radius from the center of rotation to each wing tip, a boomerang can be weighted just right to maximize or pinpoint range.



WIRE

Material — Steel

Shape — Round

Diameter — .0204 in. = .0518 cm

$G = 7.93 \times 10^{11}$ gm/cm - sec²

$l = 100$ cm

Moment of Inertia — J (gm-cm²)

$$J = \frac{d^4 G}{128 \pi^2 l} T^2$$

where:

d — cm

G — gm/cm-sec²

T — period in sec.

l — length in cm

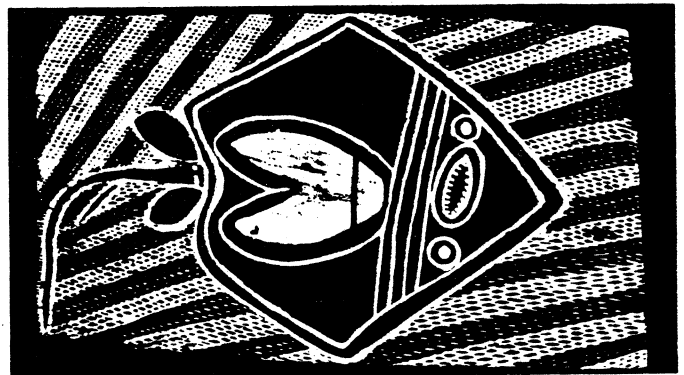
The actual torsional pendulum is very simple. The only parts needed are a thin, round, steel wire and a thin, circular plate. The wire is used as a spring. The plate is suspended by fixing the wire to the center of mass of the plate. The plate must balance. Based on the geometry of the wire (spring), the moment of inertia of the plate itself can be found. This is done by gently rotating the plate about one-half turn and releasing it. The plate should spin one way, stop, and spin the other way. The time it takes to spin, stop, and return is equal to one period. By plugging in this time, the moment of inertia of the plate is found. It will always be the same.

Now, a boomerang can be balanced on the plate. Once again, the period of rotation is turned and the moment of inertia can be calculated. The moment of the plate is then subtracted from the moment of the boomerang and the plate. This is the moment of inertia of the boomerang.

The diameter and the length of the wire suggested above can be altered. A thinner or longer wire will increase accuracy. The wire should be round. If a material is used other than steel, G can be found in any mechanical engineering handbook. I also suggest measuring the time for five periods, and dividing by five to get more accuracy.

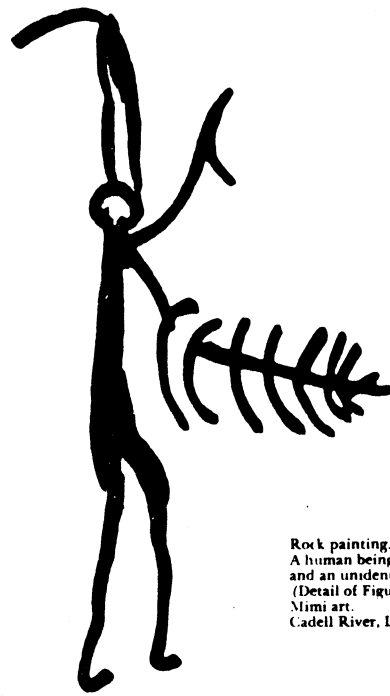
The accuracy of this simple pendulum is amazing. The change in the moment of inertia from just applying a finish is measurable.

I have measured several boomerangs and they have ranged from 25 to 55 gm cm². Hopefully, this additional information can help in designing new and better boomerangs.

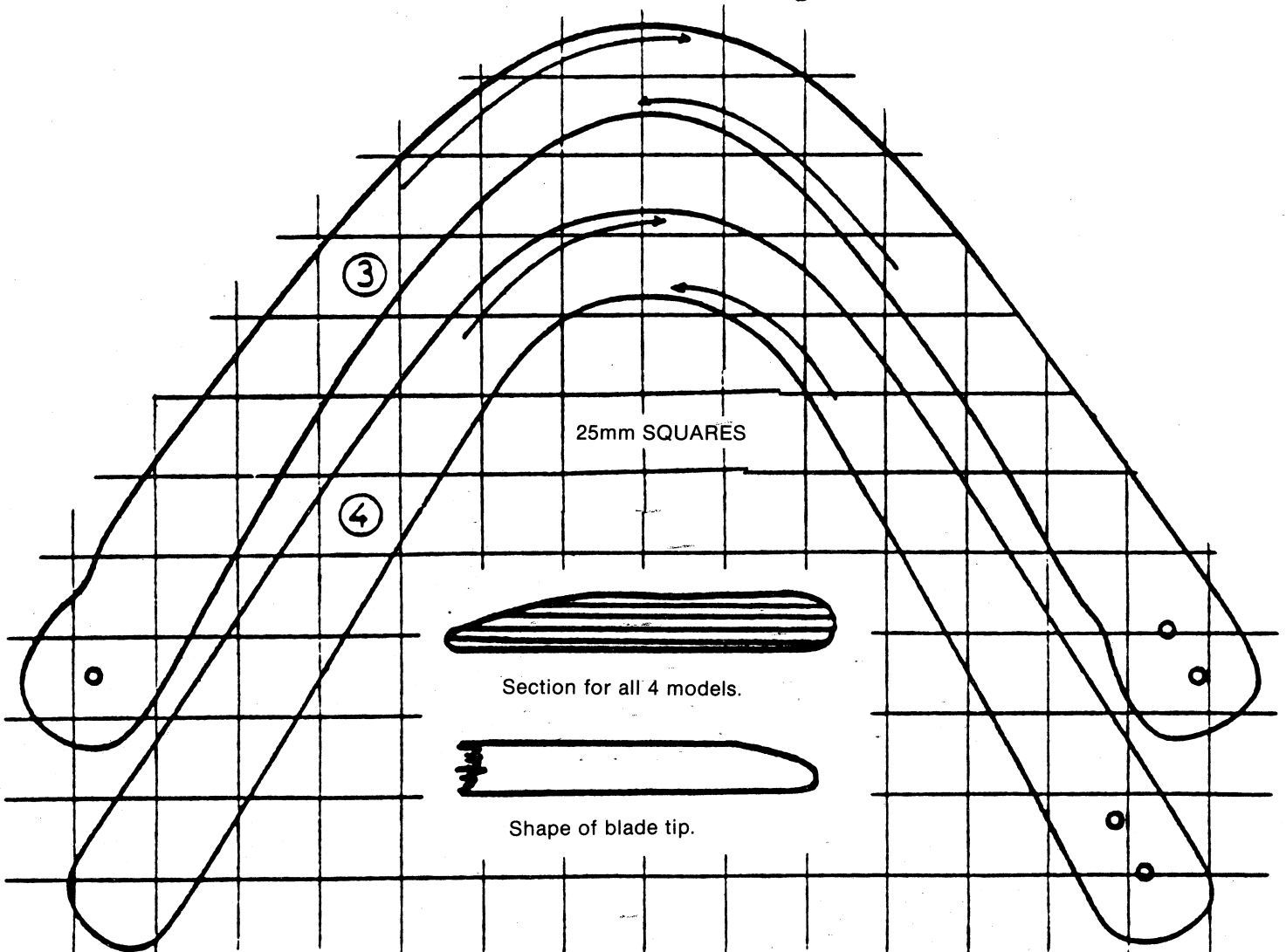


Muscle Boomerangs

Herb Smith of Sussex, England, is one of the premier long-range throwers in the world. Small but explosively powerful, he has achieved distances of 100 plus meters with these two boomerangs, Model 3, weighing 106 grams with weights, and Model 4, weighing 92 grams weighted. The small circles represent the positions of the weights (12-16 mm diameter). The 'rangs are made of 1/8-inch, five-ply birch bonded to a 1/16-inch sheet of fiberglass. Distances to be achieved depend on the strength and experience of the thrower and correct ballasting. Ideal weather conditions are a dry day with breeze in the 3-6 mph range. The arrows on the plans indicate how far around the elbow to shape the leading and trailing edges. (Adapted from Chet Snouffer's Leading Edge newsletter.)



Rock painting.
A human being holding two boomerangs.
and an unidentified design.
(Detail of Figure 20)
Mimi art.
Cadell River, Location 8.



(Herb Smith Designs)

How to Weight a Boomerang

by Ted Bailey

Previous articles from various newsletters have provided criteria for adding weights to a boomerang for the purpose of increasing the moment of inertia and shifting the center of mass to achieve such effects as increasing/decreasing flight distance, improving wind resistance, or balancing MTA boomerangs. The purpose of this article is not to instruct on where to add weight, but how to add weight. For experimentation, use lead tape or use a penny with electrical tape to determine how much weight and where to add it to your boomerang. As soon as these objectives are met, the following procedure can be used to place nice, circular, flush, and permanent weights in your boomerang. Instead of lead, I use a metal compound called Cerrobend with a melting temperature of 158°F.

Make a Mold

1. Use two large C clamps to tightly clamp two hardwood blocks together. $\frac{3}{4}$ " X 4" X 6" maple with a smooth, flat surface for each hardwood piece is an excellent choice of material.

2. Add arrow pencil marks on all sides of the clamped hardwood pieces so that realignment can be established after the hardwood blocks are unclamped and separated.

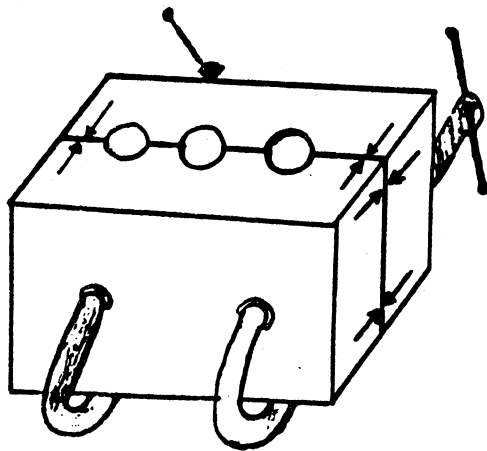
3. Choose a good quality wood bit or 'Forstner bit' that will be used to drill a hole in both your mold and boomerang. Carefully place the drill bit on the seam between the two mating hardwood blocks and drill vertically downward through the seam. A drillpress is better for this operation if you have one available because it will be difficult to remove the weight rod blank from the hole if the hole is biased toward one of the hardwood blocks. Half of each hole should be in each hardwood block. Drill several holes in the blocks leaving about $\frac{1}{2}$ " spacing between the holes. Be careful to not drill completely through the clamped hardwood blocks.

4. Remove the clamps.

5. Separate the hardwood blocks.

6. Clean out any drilling debris that may remain in the holes.

You now have a durable mold that will last many years. Save and mark the drill bit that you used to make the mold as you will need this same bit to drill a matching hole in your boomerang blank.



Making Weighting Rod Blanks

1. Heat a quantity of Cerrobend in a pan on your stove. Do not use a pan that will later be used for food preparation.

2. Carefully align the arrow pencil marks together, then clamp the hardwood blocks together tightly.

3. Pour liquid Cerrobend into the holes.

4. Allow the Cerrobend to cool for several minutes or the rod blanks will be soft and will bend when removed from the mold.

5. Remove the clamps and separate the two hardwood blocks. Carefully remove the Cerrobend rod blanks from the mold.

Putting Weights in Your Boomerang Blank

(Practice on a scrap board before using a boomerang.)

1. Mark on your blank where you want to add a weight. Do not drill a hole too close to the edge, as a thin wood section may crack upon impact with the ground. This applies to aircraft plywood as well as hardwood blanks.

2. Place your boomerang blank over a clean and flat scrap piece of plywood. Be sure to remove any debris from between the two boards. Press firmly down on the boomerang blank with your hand while you drill the hole. If the boards are not held tightly together while drilling, then the drill bit may tear the blank undersurface when it breaks through.

3. Insert a rod blank into and through the hole. If the rod blank is too large to insert into the hole, wrap a piece of 120 grit sandpaper around the rod blank and rotate the blank until the diameter is decreased slightly to fit into the hole. Do not remove too much Cerrobend as a loose rod does not work well.

4. Use a hacksaw or bandsaw to trim the rod blank on both sides of the hole. Do not cut the rod blank too close to the boomerang blank, leave a small amount of the rod protruding from both the upper and lower surfaces.

5. Use a belt sander, disc sander, or a sanding block to flush the rod with both the upper and lower surfaces.

You now have a clean and flush permanent weight in your boomerang.

I do not know if this method can be used with lead as lead melts at 621°F and may scorch the hardwood mold surfaces.

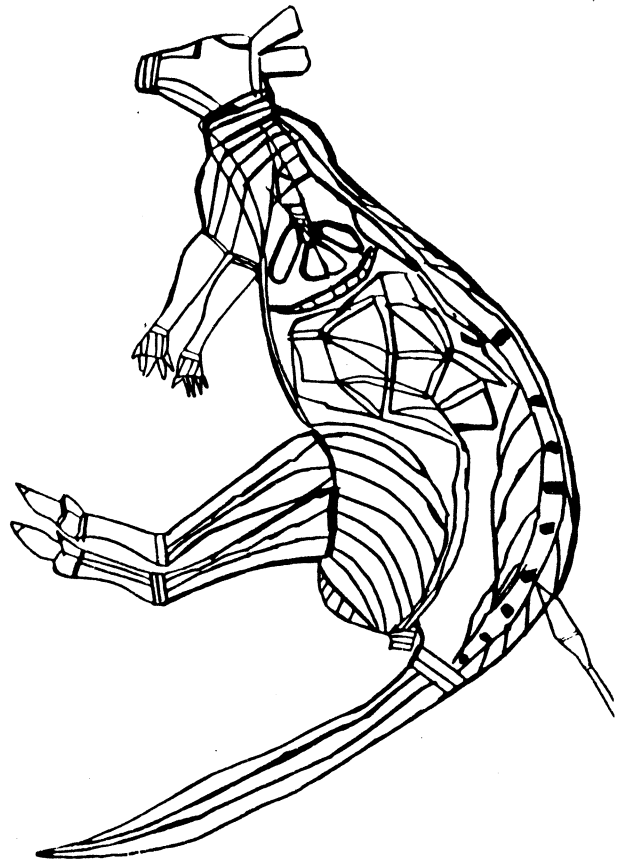
What is Cerrobend and Where Do I Get It?

Cerrobend is a metallic compound consisting of 50% bismuth, 10% cadmium, 26.7% lead, and 13.3% tin. In this exact combination of materials, the melting point of the eutectic compound is 158°F. This is much below the melting point of the pure constituents: lead (621°F), cadmium (609°F), bismuth (521°F), tin (449°F). The low melting point of the compound allows you to easily melt it on a stove top on a medium-low setting using a scrap pan. The liquid metal will not scorch a wooden mold. Although Cerrobend is less toxic than pure lead, it is recommended that you use the same safety precautions that you would use when working with pure lead. This includes using a scrap pan that will not later be used for food preparation, avoiding breathing the vapors when heating on the stove top, and wearing a mask filter when sanding on the boomerang blank to avoid breathing the dust. Do not leave the compound where a young child can eat it.

Cerrobend can be purchased from: Wade Nemith, Cerro Metal Products, Box 388, Bellefonte, PA 16823, Telephone (814) 355-6357. The price is dependent upon the quantity purchased. Five pounds of Cerrobend will cost \$13.79 per pound.

Several other compounds with melting temperatures from 117°F to 500°F can also be purchased through Cerro Metal Products. If you need a compound with a melting temperature of 255°F, then you can purchase another material called Cerrobase which sells for \$11.75 per pound in five pound quantities. Contact Nemith for information on other compounds available. Other compounds may be less expensive and more suitable to your design requirements.

(The author is an aerospace engineer with Teledyne in Toledo.)



Rock painting.
A human being holding spear and tamed spearthrower.
'Late' Miami art.
Deaf Adder Creek, Kolondjorluk, Site 2.

By Design

The following article is by a civil engineer trained at Carnegie-Mellon University in Pittsburgh who is devoting a lot of time these days to collecting, making, and throwing boomerangs, as well as serving the USBA as treasurer. A resident of Lower Burrell, PA, Ray Rieser promises a future essay on his analysis of the maple seed pod as a way to achieve boomerangs with superior MTA auto-rotation qualities.

by Ray Rieser

Have you ever bought two identical boomerangs, taken them out and thrown them only to find that although you could detect no differences between them, they flew differently? Or have you ever tried copying your favorite plywood boomerang, paying close attention to the locations and contours of the glue lines between plys, and in testing found out that it doesn't quite fly like the original?

When this occurs we generally shrug our shoulders and fall back on the old axiom that no two boomerangs are alike.

I spend a good deal of time building and testing boomerangs, trying to isolate which design features produce which effects. In order to do this, I had to be able to make a series of nearly identical boomerangs and vary one factor in each, such as dihedral, and observe what effect this variation produced in the flight of the boomerang.

If I was a firm believer in the axiom that no two boomerangs are alike, all such investigations would be pointless.

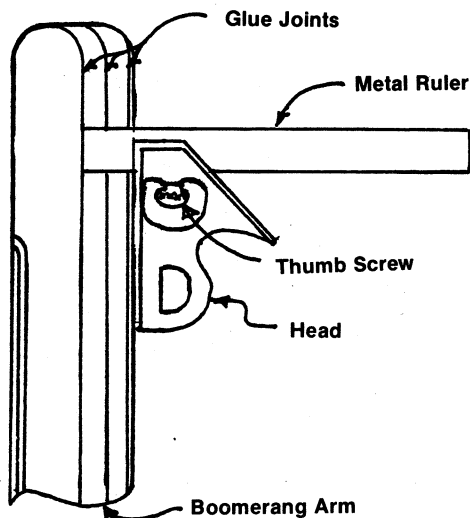
In trying to produce a series of 'rangs as described above, I have adopted a number of techniques which I feel minimize the variation in performance between boomerangs. I hope these may be of interest or use to you.

For the purposes of this article I will limit my discussions to plywood 'rangs, although many of the techniques can be applied to other materials as well. The first step is to obtain the proper material: a plywood of the same type, thickness and number of plies as the original.

The next step is to lay the 'rang you wish to copy on the plywood sheet and trace its outline as closely and carefully as possible. Be sure to align your plywood sheet so that the orientation of the wood grain on the top and bottom plies correspond to that of the boomerang you wish to copy.

I then cut the duplicate out on a band saw, slightly oversized. This helps to eliminate errors made while trying to cut too close to the lines and minimizes the effects of any splintering which may occur on the bottom ply. I use a belt-disc sander to bring the blank to exact size. Be sure to overlay the blank with the original to verify that the two are identical in size and shape. If not, mark the oversized areas and repeat the sanding process until they are a perfect match.

Figure 1



The next step is to accurately copy the airfoils of the original boomerang. A handy tool for this purpose is a combination square. It is found in all hardware stores and is generally priced between \$5 and \$15, depending on quality. This device consists of a triangular metal casting called the head, thru which a metal ruler slides. The ruler can be clamped by means of a thumb screw at any desired position along its length.

Simply place the head of the combination square against the outer edge of the original boomerang and adjust the ruler so that its tip coincides with a glue line between plies as shown in Figure #1 and clamp the ruler tight.

As you remove wood from the surface of the duplicate to form the airfoils, the glue lines will be exposed. The more wood you remove at a given location the more glue lines will be exposed, and the individual lines will move further and further away from the outer edge.

The combination square can be used as an aid in this removal process. By placing it against the duplicate at the point corresponding to the one set on the original (see above) you will know how much more wood needs to be removed and when to stop.

I use a rasp or power sander for rapid removal of wood but as I get closer to the desired contour I switch to finer and finer grades of files, eventually graduating to sandpaper.

Using the utmost care in reproducing boomerangs as I have outlined above, I still found that I had sizeable variations in their performance. I discussed this matter with Ted Bailey, and he suggested that I try using a contour gauge for making closer copies.

A contour gauge is generally used for fitting linoleum or carpeting around moldings. It is about 6" long and has a row of fine stainless steel wires sandwiched between two metal strips. To use it simply press the gauge against an irregular shape and the steel wires will slide back to exactly reproduce the contours of the shape.

A contour gauge is readily available at any hardware store and sells for under \$10. If you wish to purchase one, choose one in which the wires are held tightly so that contour will not easily be altered when you are using it.

When I used a contour gauge on my original boomerang and then placed it at the corresponding point on my duplicate, which I had so meticulously attempted to copy by the above method, I found large differences. The contour gauge showed that although the boomerangs were identical in shape and that the location of their glue lines corresponded, the wood between the glue lines was either higher or lower than the original. Since the air foils were not the same this accounted for much of the variation observed in the performance.

The process that I currently use is the same as I outlined above, but I stop short when I have the contours roughed to shape. This prevents accidentally removing too much wood between the glue lines.

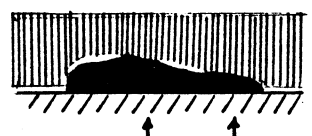
I start at either end of my original boomerang and place a piece of masking tape across the arm or chord approximately one-inch from the tip. I take the rough shaped blank and lay it over the original and mark the leading and trailing edges of it directly above the tape. I use a pencil for this because the ink from a pen will soak into the wood, permanently marking it. In marking your points choose one edge of the masking tape as the reference point; I generally use the edge of the tape nearest the tip.

Now place the original boomerang and the blank on a clean flat surface. Press the contour gauge down on the original at the edge of the tape you have chosen as a reference point to obtain the profile of the air foil. Now, lightly set the contour gauge on the blank at the points you have marked as described above. You will see that the steel wires will touch the surface at some points and will be above it at others. Placing a light source behind the contour gauge will make these areas very obvious.

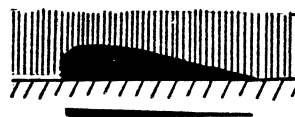
Take a pencil and mark only those areas where the wires are in contact with the surface. Use a fine file or sandpaper to remove the pencil lines that you have just made. Now, replace the contour gauge on the duplicate and you will observe that the profile more closely matches the original. Repeat this process until you obtain a perfect match.

Figure 2 shows several contour gauges observations and the appropriate steps to be taken. Be sure that the bottom side of your boomerang and duplicate are clean and sitting on a clean, flat surface when using the contour gauge.

Next, move the piece of masking tape one inch further down the arm, away from the tip, and repeat the above steps. Continue this at one-inch intervals along the entire length of the 'rang.



Remove Wood Where Indicated



Taper Amount of Removal as Indicated



Remove Evenly Blank Too Thick



Finished Profile

Figure 2

Now, sand or file the areas between the finished profiles until the surfaces are smooth and joined.

Turn the boomerang and duplicate over and repeat the process on any areas where the boomerang is undercut. Your duplicate will now be a very close copy of the original.

A contour gauge is a good device to carry with you when going to tournaments. If you wish to copy a boomerang, with the owner's permission, simply lay the boomerang down on a sheet of paper and trace its outline.

Next, you can superimpose the airfoils on your tracing by using the contour gauge. Press the gauge down on the boomerang at the desired locations and transfer the

profile created on to your tracing by running a pencil along the ends of the steel wires.

One word of caution in the use of the contour gauge — if the boomerang you wish to copy has a very elaborately painted finish, you may wish to put a piece of clear Scotch tape over the areas where the contour gauge will be used to protect the surface. I have used the contour gauge on both oiled surfaces and polyurethanes and have never seen any damage but it is best to be safe.

The next step is to reproduce dihedral and twist or angle of attack. If you lay your original boomerang on a smooth, flat surface, such as a formica countertop and it lays flat, it has no dihedral. If the arms are bent slightly upward, it has positive dihedral and if they bend downward, they have negative dihedral.

For a right-handed boomerang positive twist, or angle of attack, is a counterclockwise twist when viewed from the blade tip. A negative twist or angle of attack is clockwise.

The dihedral and angle of attack of the boomerang arms affect its flight diameter, lay over and hover, and must not be ignored when duplicating a boomerang.

Place your original boomerang on a formica countertop or other flat surface and observe the bends and twists in the boomerang arms. You must try to duplicate these

bends in your copy. This can be accomplished by steam bending as described in my previous column.

If you wish further refinement, you can weigh the two to make sure they are equal in weight. Remember that the surface finish, such as a polyurethane, will add weight to your duplicate.

Placing the boomerangs on a balance table such as developed by Al Gerhard's (see issue No. 15, *Many Happy Returns*) will show the mass distribution in both the original and copy. Adjustments can be made if necessary by using weights to obtain identical centers of rotation.

Many Happy Returns

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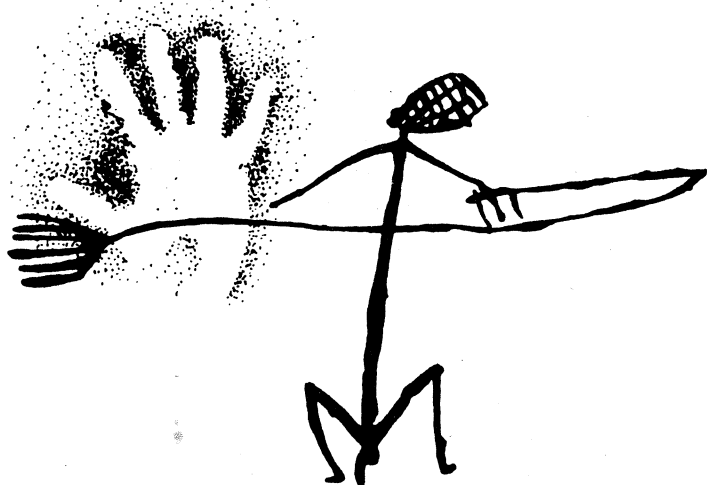
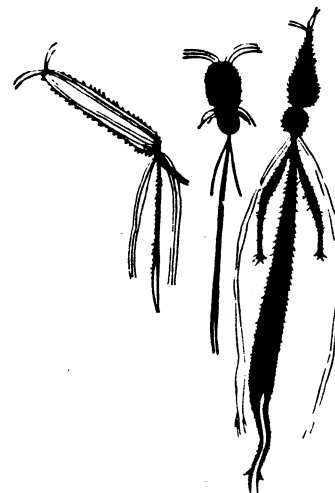
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