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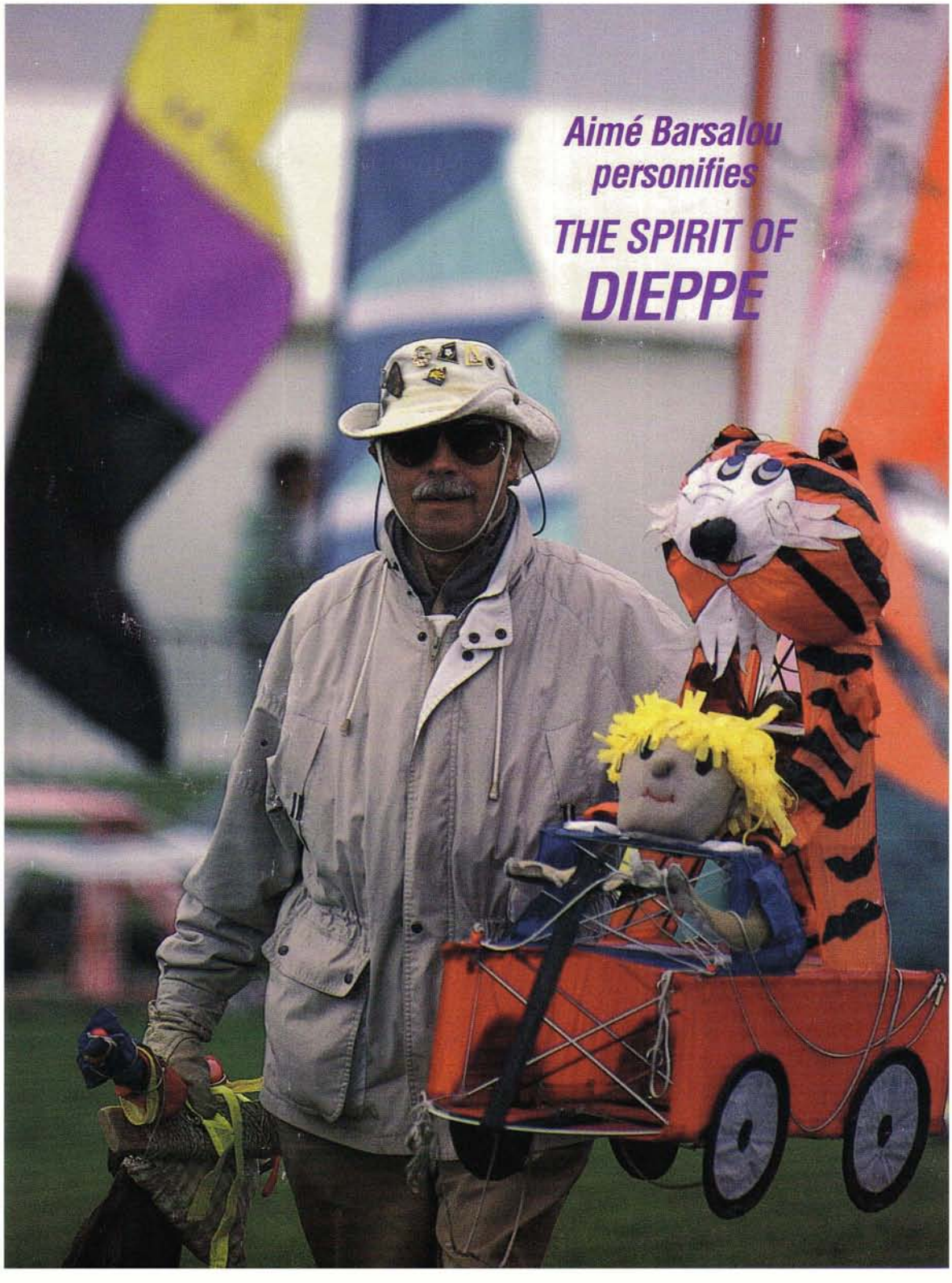
WINTER-SPRING 1995, VOL. 11 NO. 2



Aimé Barsalou personifies THE SPIRIT OF DIEPPE

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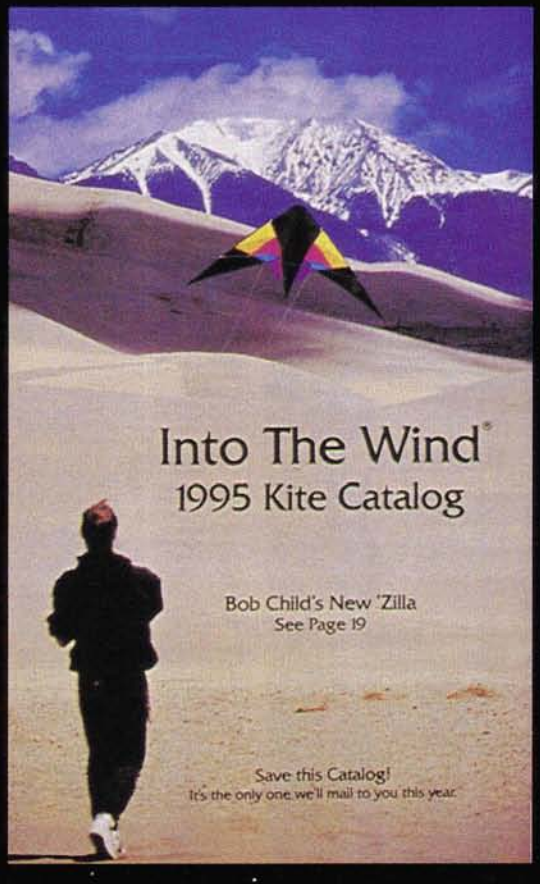
BUGGIES TAKE A SPIN IN FRANCE

SPARS! MAKING YOUR BEST PICK

HONORING HARGRAVE: THE CENTENARY FLY IN AUSTRALIA

SKYGALLERY: SKINNER'S ALCHEMY

15 YEARS



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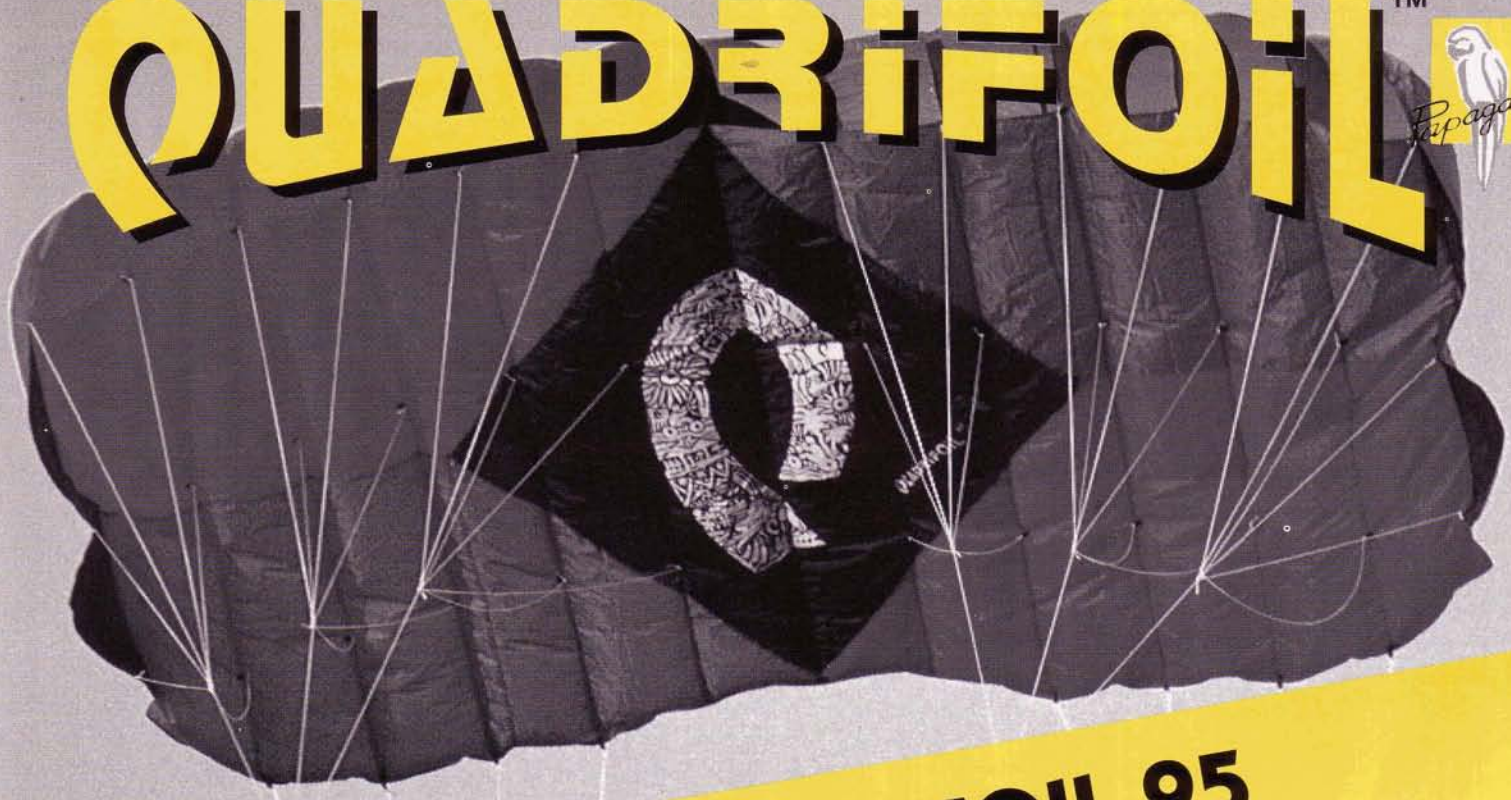

News

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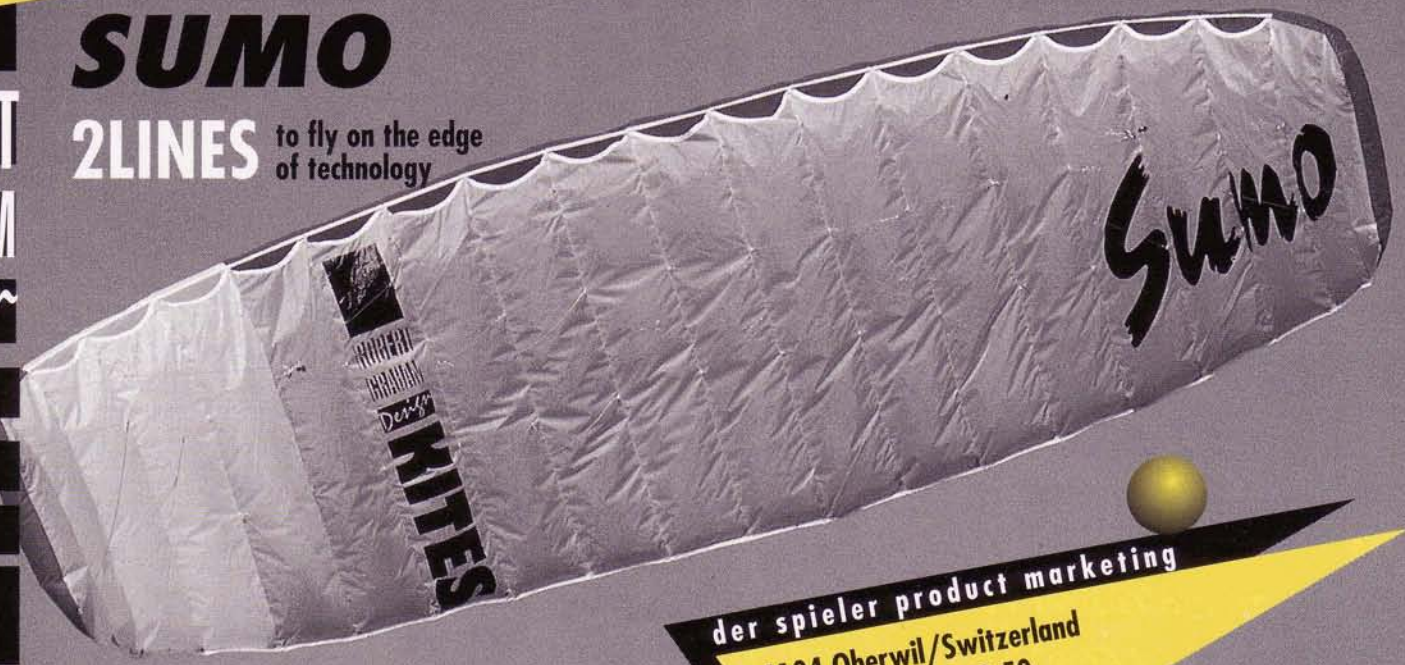
ROBERT GRAHAM Design KITES

SUMO

2LINES to fly on the edge of technology



Material: Porchet Skytex
Wingspan: 250 cm
adjustable bridle

der spieler product marketing
4104 Oberwil/Switzerland
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Fax 41 61 401 53 52

KiteLines

ISSN 0192-3439 Printed in U.S.A.

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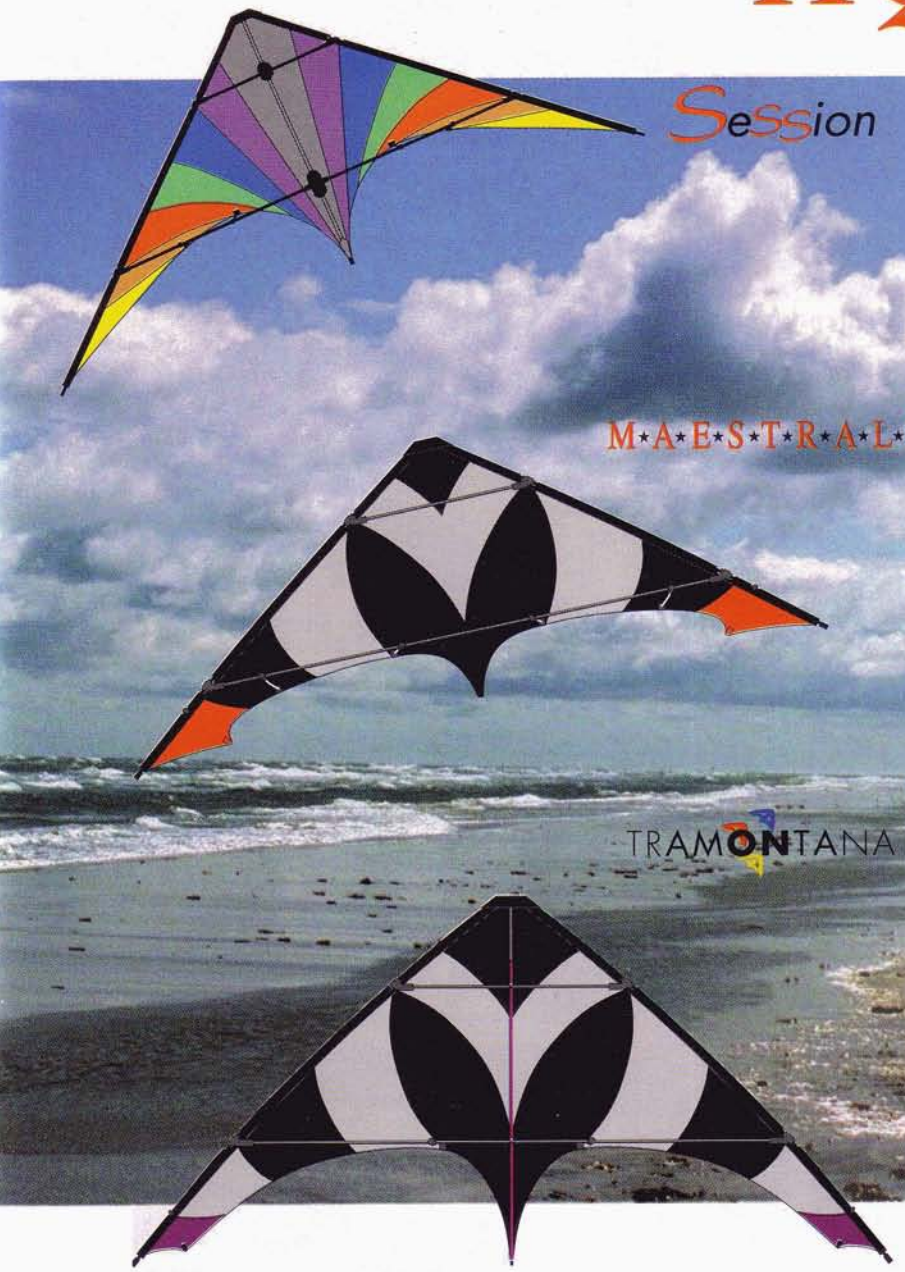

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The "Session" is a good natured sport kite which handles best in light wind conditions. It is very easy to fly and shows excellent manoeuvrability at the edge of the wind window. An innovative air pocket system at the wing tips ensures silent flight up to 5 Bft.

Wingspan: 195 cm
Height: 84 cm
Wind range: 1 - 5 Bft.
Frame: 5,5 mm ø CFK
Rec. line strenght: 40 - 70 KP / 90 - 150 lbs.

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The stretched 3/4 version of the "Tramontana". Although the "Maestrale" is build the same way as the "Tramontana". More care is taken to make the kite stronger. It´s a trick kite with unmatched performance. ***ANYTHING*** *is possible - even in higher wind speeds. The ultimate for Freestylers .*

Wingspan: 220 cm
Height: 85 cm
Toray 42 gr.
Frame: 6 mm ø carbon
Wind range: 1,5 - 5 Bft.
Rec. line strenght: 25 - 70 kp / 50 - 150 lbs.

TRAMONTANA

A top class ballet kite. This model can handle all manoeuvres required at modern competitions. Special features are a different bridle, a sail (which is profiled by the keel) and the air pockets in the wingtips. Excellent turnrate, silent and slow flight are it´s flying characteristics. A competition, fun and ballet kite for experienced and master pilots.

Wingspan: 240 cm
Height: 120 cm
Toray 42 gr.
Frame: 6 mm ø carbon
Wind range: 0,5 - 4,5 Bft.
Rec. Line: 25 - 70 kp / 50 - 140 lbs.

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Volume 11, Number 2, Winter-Spring 1995

Kite Lines

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Cover

Aimé Barsalou of St. Boniface, Manitoba, Canada carries his inventive three-dimensional creations to the field at the Dieppe International Kite Festival, France *(see story on page 36)*. Longtime enthusiast Barsalou typifies the commitment and good humor of this grand event. Photograph by Simon Freidin.

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LETTER FROM THE PUBLISHER

Write a Letter for Kites!

There are some fine historic kites in the collection of the National Air & Space Museum, Smithsonian, in Washington, DC—but have you seen them?

Hardly anyone has! Some were on display there for one year, in 1978. Blink—they were gone. The first form of aircraft is nowhere to be seen in the huge museum on the Mall, the most popular museum in the world.

The collection itself was built by Paul E. Garber, deceased Historian Emeritus and champion of kites at the Smithsonian. Since his death, the kites continue to be held in storage, under reasonable care. Original Alexander Graham Bell tetrahedral cells are under humidity control. An original Eddy stands in an acrylic case. However, no real efforts seem to be under way to acquire additional important kites for the collection. Nor, apparently, is much interest being shown in displaying the kites.

Although at some time in 1996 an educational exhibit titled "How Things Fly" will be mounted in the Museum, the latest news we have indicates that the percentage of kites to be displayed will be small. Balloons, gliders and other forms of aircraft will dominate.

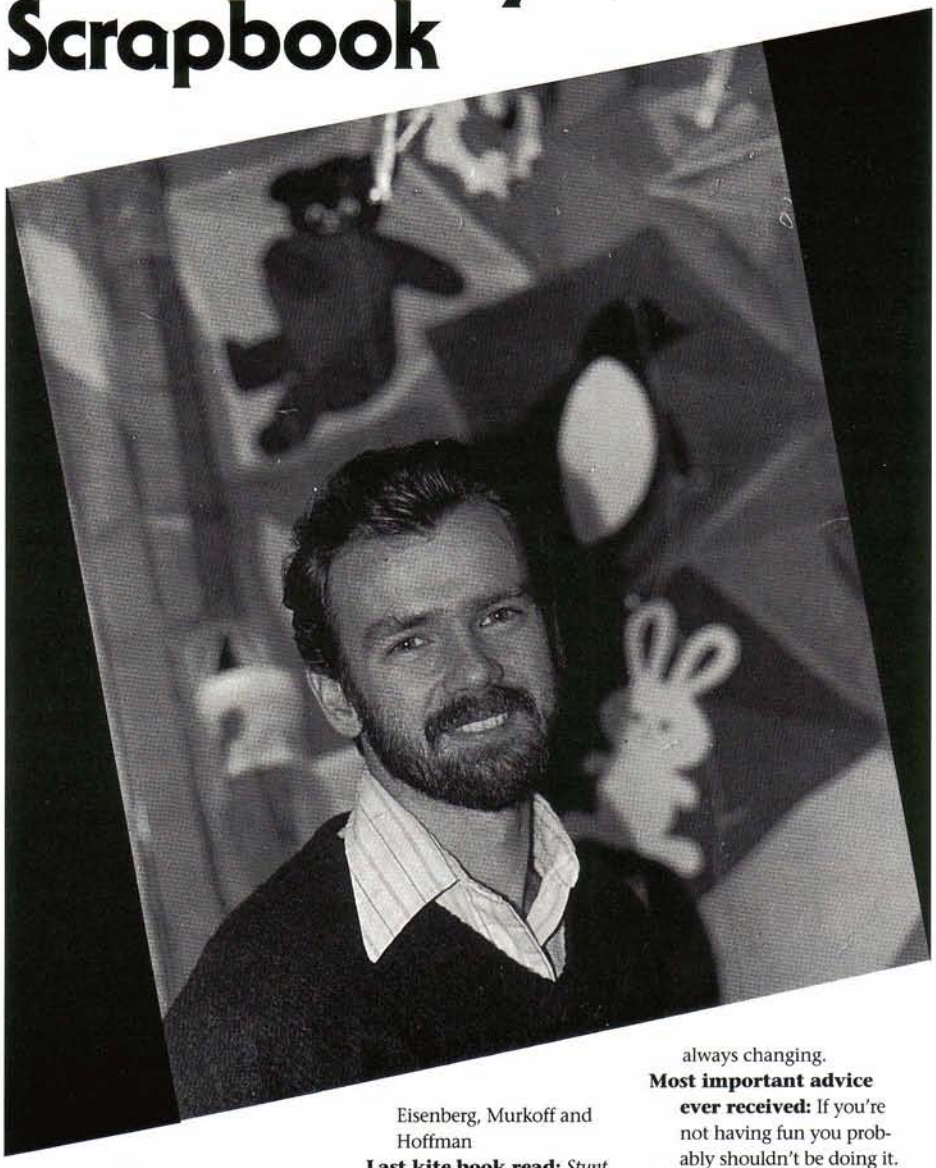
We understand that the Smithsonian reacts to public demand. Let's make our wishes known! *Kite Lines* does not have to tell you, a devoted kite enthusiast, about the illustrious history of kites in the development of aviation. You know this. You know that the clock is ticking on the availability of fine and rare kites. And you know the loss to kiting as millions of visitors come to the National Air & Space Museum annually and fail to be exposed to a single kite.

Do something! Write a letter! Even one letter is powerful. Even a few letters are tremendously powerful. We at *Kite Lines* can't spare the time to circulate a petition. We have to ask you to care enough to write an individual letter, your own letter, in your own words. This is a chore to be sure. You are busy, yes. But in this case your personal effort could really, really matter. Write *today* and ask the Smithsonian to keep collecting important kites and to show more of them to its visitors. Address to :

Martin Harwit, Director
National Air & Space Museum
Smithsonian Institution
Washington, DC 20560
Fax: 202-357-2426

Valerie

Our Retail Family Scrapbook



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Fax: 508-226-0463
Floor space: 370 square feet
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Years in business: 8
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Owner: Don McCasland
Age: 35
Favorite food: Crustaceans
Last book read: *What to Expect the First Year* by Eisenberg, Murkoff and Hoffman
Last kite book read: *Stunt Kite Basics* by Richard Synergy
Favorite flying spot: Gallups Island in Boston Harbor
Latest promotional effort: Widespread press releases about the kiteflying done for the movie *Blown Away* and the kite signed by the stars of the movie.
Specialty of the store: The largest selection in New England and it's always changing.
Most important advice ever received: If you're not having fun you probably shouldn't be doing it.
Nicest sale ever made: The movie *Pacific Heights* bought kites here and I worked with Alice Mackey to provide props from David Checkley's Kite Factory for the movie.
Best fringe benefit of the store: Meeting great people from all over the world.
Favorite issue of *Kite Lines*: Summer-Fall 1983, the first issue I got, which I still have.

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Poring over...

Sleeping Beauty

I was surprised to see you list my husband, David Gomberg, as a high-ranked contender in your "Snoring Olympics" (*Kite Lines*, Fall 1994). This is important because David travels a lot and quiet sleepers don't like to share rooms with people who are rumored to be a bit noisy. Your "heavy honkers and shrill tweeters" quickly tend to get lumped together. David does a lot of things in his sleep, but snoring isn't one of them.

—Susan Gomberg
Neotsu, Oregon, USA

If *Kite Lines* intends to surreptitiously attempt to refurbish the dubious reputation of David Gomberg, perhaps it should do so in a fashion which does not so seriously strain the credulity of its readers! Snoring champion? HA! Even I can out-vibrate his walls any night.

There is a story that a shrieking madman, cleverly disguised as Wolfgang Schimmelpfennig, once bolted in the dead of night from an English boudoir we shared, never to return. Being deep in "snore-nambulance," I cannot personally verify such a wild tale, but let's just see Gomberg top that one!

He may attend all those fancy festivals that *Kite Lines* covers, but that should not mean that you publicize his more trivial skills. Let's give credit where credit is due.

—Jon E. Burkhardt
Potomac, Maryland, USA

Is Bamboo Better?

I have some data regarding the common assertion that bamboo has properties superior to other materials *for its weight.*

Material	*Density*	*Tensile Strength*	*Column Sustained*
Bamboo	20 lb/ft^3	40,000–60,000 lb/in^2	432,000 ft
Steel Wire	490 lb/ft^3	246,000–313,000 lb/in^2	92,000 ft
Silk	101 lb/ft^3	35,000–62,000 lb/in^2	88,000 ft
Spruce	31 lb/ft^3	5,000–10,000 lb/in^2	46,000 ft

Although steel is 5.22 times as strong as bamboo, it is also 24.5 times as heavy. Compare strength to weight by calculating the length of a column that doesn't break under its own weight. Bamboo has 4.70 times the strength for weight of steel, in tension. I found no data on the compressive, shear or bending strength of bamboo. In most kite construction, bamboo resists bend-

Snorers and Rotors and Barn Doors

ing and compressive forces.

The major advantage of bamboo in the Far East is its ready availability. Its disadvantage in Europe and North America is its rarity. It doesn't come in a variety of standard structural shapes. It must be worked by hand, it splits apart when bent and it becomes brittle with age. Bamboo is used in kites where it is readily available and where labor is cheap.

The paper is most of the weight of most oriental kites. I wonder whether bamboo paper would be stronger for its weight than papers made from bark or wood.

—Gary Hinze
San Jose, California, USA

Unidentified Flying Rotors

I read your review of rotors (Fall 1994 *Kite Lines*). I made a rotor seven years ago from half-inch metallic-coated foam insulation and trimmed the edges with foil tape.

It looks like a solid block of flying aluminum. It's still flashing in the sky, like a real UFO, and takes enormous abuse. I doubt if it will ever see a landfill. Conversely, its recycling is environmentally responsible.

Encourage your readers to save more scrap pieces like this. Parts can be obtained easily from new construction, and fabrication is easy and straightforward.

—Jim Skryja
Owings Mills, Maryland, USA

I read with great interest Mel Govig's review of the expanded polystyrene (Styrofoam) rotor kite. I have a question: If kites that rotate about a more or less horizontal axis may be called "rotors," what do we call kites that that have lifting surfaces that rotate about a vertical axis, like gyrocopters?

Shouldn't kites with vertical rotation axes be called "rotors" (as in a Rotary rating for helicopter pilots) and horizontals be called "turbos" as in turbines? Do we need different terms for kites with different axes?

—Gary Engvall
Cranston, Rhode Island, USA

Mel replies: Blame it on Jesse Donaldson and Guy Aydlette. The accepted term for a vertically spinning kite has been "auto-gyro." What we call "rotor" should probably be called "Magnus effect," but who would say that? "Turbo" is a good term. Thanks!

Speechless in Virginia

Our family of three generations puts on kitemaking workshops for children at various events sponsored by Chesterfield County, Virginia. Our kites are always free. Each event leaves us with memorable experiences. Two really stand out, which I'd like to share.

A beautiful Latin Mom, dressed in a peasant skirt, took off her shoes, took her son's sled kite and danced a beautiful ballet with the kite. Boy, did she know how to fly the kite, pumping it up in the light wind!

It was a dance of soul and kite—a real kite ballet—and just left us speechless.

Even more unforgettable was another encounter. Crowds at the event were light, so we had three or four minutes to show each child how to tell the direction of the wind and launch kites. As I was returning from launching a kite, a single parent and child stopped to visit. The mother said she had just moved to Richmond and had only been here four weeks. Her son asked, "How much are the kites? My mom doesn't have any money."

I replied, "These kites are always free. This is what we are all about." His mom grabbed my arm and said, "God bless you!" When I returned to the assembly table where my spouse was, he said in a choked up voice, "I see you have a new friend."

We thank Chesterfield Parks and Recreation for helping us to put free kites in needy hands.

With the help of Girl Scouts we hope to expand our kite outreach to retirement and nursing homes in the coming year. We'll make airless "baby" kites on silk strings, attach them to pencils and fly to music. After all, you're never too old to fly a kite!

—Linda Jensen
Chesterfield, Virginia, USA

Knot Again

It finally happened to me. I had tied the brand new 130-pound test line with a knot I've used for 15 years to my big delta with a 100-foot tube tail. After a while, the kite climbed almost straight over me and was pulling like a horse. In a heartbeat I felt that sickening snap. The line wrinkled up in slow motion and free-fell towards me, piling up on the ground at my feet. I rolled up my

Continued on page 14...

Randy Shannon's Baby Cicada

By Mel Govig & Michael J. Graves

The excellent fighter flier Randall S. (Randy) Shannon of Zealous Kites and Banners, Flagstaff, Arizona gave me this Baby Cicada last year. He willingly exchanged it for two Korean kites.

I immediately fell in love with Randy's Cicada. Since then it has flown on three continents, in the hands of a dozen or more fliers. They all loved it, almost as much as I did. In flight, the Cicada is an active fighter, but not to the point of frenzy. It tracks well and takes right-angle turns.

The unusual sequence of Randy's construction took us a bit of time to figure out, but now that we've done it we appreciate the care and thought that went into designing what appears to be a very simple kite. It is deceptively simple. We think you'll enjoy Randy's Baby Cicada. —*M.G.*

The instructions given here are for a plain, four-panel version of Randy's Cicada. The midsection of the version shown has 1¼" stripes appliquéd and cut away. For simplicity, we've left out the stripes.

Materials

- ¼ yard or more 0.75-oz. ripstop nylon
- 3" x 2" adhesive-backed ripstop tape
- 4" x ⅝" grosgrain ribbon
- 3" x ⅜" grosgrain ribbon
- 23" fiberglass rod 2mm (0.063") diameter
- 41" fiberglass rod 1mm (0.049") diameter
- 16" of finished spruce, ¼" x ⅛", for spine
- a small amount of Plasti-Dip, epoxy or nail polish
- 1½" x ⅛"-diameter heat-shrink tubing or wraps of adhesive tape
- 1" x 1½" of thin vinyl for pocket lining
- 42" of 20-lb-test bridle line, Dacron polyester or linen

This is Randy's materials list, but you may replace some items with materials more available to you, such as pine or bamboo for spruce. The things you cannot readily substitute are the fiberglass rods. (These are stocked by a few suppliers, e.g. Goodwinds Kites, Seattle, Washington.)

Cutting & Preparation

1. Following the diagram and the grain direction indicated (so that each panel is created as a mirror image to its counterpart) cut out two of each wing and center panels. Leave seam allowances as follows: ¼" for seams and ½" for hems. One way to ensure symmetry is to fold the fabric and cut two panels at once.

2. Cut the 1mm fiberglass into two 14½" pieces and one 12" piece. To reduce wear on the fabric pockets, sand fiberglass ends smooth, dip in Plasti-Dip, epoxy or nail polish and let dry.

3. From grosgrain ribbon, cut the pockets for the spars and the sleeve that will hold down the upper bow.

4. Cut two pieces of adhesive ripstop tape ½" x 3" to reinforce sleeves for spreader.

5. Attach the tape strips to the wing hems at the outer tips before burning holes and hemming for the spreader.

Sewing

Following Randy's sewing order:

1. Press and sew doubled hems in this order: **a.** bottom center panels; **b.** bottom wing panels; **c.** upper wing panels. After pressing hem, burn a ⅛"-diameter hole through one folded hem thickness only (not through the face of the kite).

2. Sew each wing panel to the corresponding center panel.

3. Sew the two completed sides together at the center.

4. Sew down the center seam and the seams between the center and wing panels. Inside seams fold to the outside, to maintain symmetry. The center seam must be folded and double-stitched to one side, but this doesn't seem to cause imbalance.

5. Double hem the leading edge.

6. Sew on four pockets from folded-in-half pieces of grosgrain ribbon. For extra durability you can add a thin piece of vinyl inside each pocket.

7. Insert the two 14½" fiberglass battens up into the seams between the center and wing panels. Lock-stitch the bottom shut, then the top, closing the sleeves permanently. (Randy uses a straight stitch with a zipper foot on his sewing machine.)

Assembly

1. Using boiling water or a candle, heat the spine and bend it to 10–15 degrees of fore/aft bow from what will be the nose end to 3" down. Or do it Randy's way: bow the spine gradually from the nose to a full 8" down.

2. Insert spine and bow spars. The spine is a tight fit: carefully wedge it into place. Most ripstop fighters are cut with the grain on a bias to the spine. This certainly allows easier insertion of the spine, but Randy's layout provides a more stable overall sail.

3. Mark the exact center of the 23" spreader. The upper two legs of the three-point bridle are held in position by a 1½"-long piece of shrink tubing centered on the rod. Use a lighter or hair dryer to shrink it into place. (Be advised that this technique is subject to a jealously guarded U.S. patent in commercial kitemaking.) An alternative is to use vinyl friction tape or adhesive tape, two wraps, outer edges 1½" apart.

4. Reinforce the sail at the bridle points with adhesive ripstop tape or strapping tape: center a 1" x ½" piece of tape 3½" up from the base of the spine; and center a 2½" x ½" piece directly under the spreader.

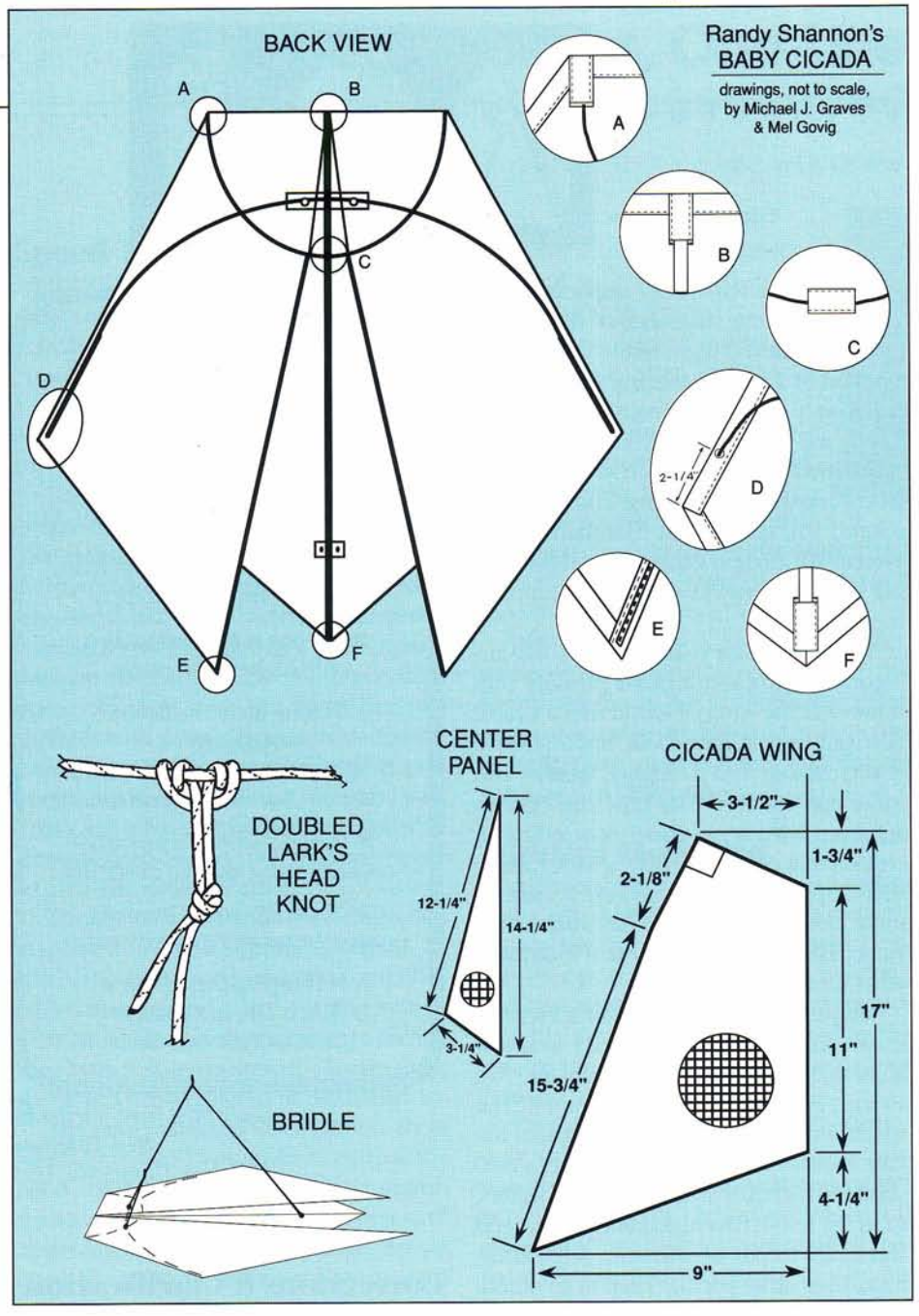
Bridling

1. Burn a small hole immediately on each side of the spine in the middle of the lower reinforcing patch. Also burn a small hole directly under each end of the heat-shrink tubing or the tape on the spreader.

2. For the upper two legs of the bridle, prepare a line of 7" completed length including a ¾" loop at each end. Mark the exact center with a pen or marker.

3. Prepare the main bridle line of 19" completed length including a 1½" loop at the bottom end and a ¾" loop at the top end. Using a doubled larks head knot, connect the main line to the middle of the shorter bridle line. Thread the bottom end of the main line through the lower pair of holes, making a larks head knot around the spine.

4. Remove the spreader rod from the kite. Pass one end of the short line through each of the holes near the nose of the kite. Reinsert the spreader using larks head knots to secure both ends of the short line around



the spreader rod. The two ends should come to rest firmly against the ends of the heat-shrink tubing or tape.

5. Finally, make a towing loop from a 4" piece of line. Tie it around the main bridle line with a doubled larks head knot.

Adjusting the Bridle

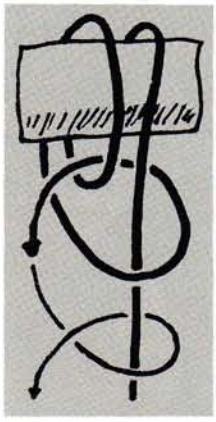
The flight attitude of the Baby Cicada is set by the position of its towing point. Hang the kite over the ground or floor from its towing point. Check to be sure the kite hangs level left to right. Adjust as needed to bring it into level. The kite's nose should be about 15 degrees higher than its tail. Again adjust as necessary. Remember to cinch the tow loop securely in place.

This type of three-leg bridle allows you to precisely balance the kite. You accomplish this by sliding the point where the main line connects to the shorter yoke line. While this is a convenient way to balance the kite, the range of adjustment is small, perhaps less than ⅛" left or right.

If in flight the kite favors one side or doesn't maintain a good angle, you can make further adjustments easily.

Good flying! ◇

RANDY SHANNON is a 32-year-old kite builder who makes his living as team leader for an outdoor-based residential program for at-risk teenagers. Randy also bikes and keeps a vegetable garden for his wife Beth and baby son.



Fisherman's Bend

line and noticed it had broken at the knot. The kite? Held nose into wind by its long tail, it majestically backed up... and backed up... and backed up. I chased it in my car, but was never able to spot it again. I had lost it.

I searched the public library for a better knot that wouldn't break and settled on the Fisherman's Bend (or Anchor Hitch). It doesn't reduce the line's breaking strength as much as the knot I used all those years. It's very secure, but tough to untie in thin line.

—Craig Wilson
Madison, Wisconsin, USA

See de ROM?

While shopping through the pages of the Kite Lines Bookstore, I noticed an advertisement for back issues of *Kite Lines* and *Kite Tales*. It said, "NOW YOU CAN HAVE IT ALL—ON MICROFILM!" What about CD-ROM for those of us who have replaced our home microfiche readers (or never owned one)?

—Bill Flynn
Warren, Ohio, USA

Kite Lines replies: We have investigated the possibility of offering the magazines on CD-ROM and found that the costs would not be recoverable. Maybe, in time, the low-demand-to-high-cost ratio will change. We'll watch for it.

Bowing Barn Doors

I enjoyed reading "In Praise of Low Tech" ("Letter from the Publisher," Fall 1994 *Kite Lines*). I have made kites out of natural materials for years. But recently I became curious and embarked on a different course.

In 1992 I decided to experiment with my favorite kite, the American Three-Stick, also known as the Barn Door. I always seemed to have good luck in making this kite—it usually flew well. I wondered how it would behave if it wasn't flat. Also, I was concerned about its flimsy cover material—paper.

Edgar Dameron's Barn Doors

I found the Barn Door responded very favorably to some changes and adjustments I made. I built and flight-tested 12 kites over a period of a year, beginning with butcher paper as a cover and finally ending with Tyvek, my present choice. The white cedar sticks, medium gauge cotton string and Dap glue worked fine in framing. The result was a light, strong kite that flies damage-free even in 20–25 mph winds. I sewed the trailing edge with nylon thread for reinforcement.

I have heard for years that kites, like airplanes, fly as a result of air pressure that flows over the wings. I found that a sizable bow put on the Barn Door has a positive effect, causing it to fly higher, steadier and more controllably. The bow can best be achieved with a pre-cured, specially processed cedar cross stick. Also, a wide trailing edge appears advisable because it exposes more kite to the wind and has some lifting value. The kite is no longer flat. It acquires what is called dihedral.

Wayne Hosking, in his recent book *Kites*, stated that three-stickers "...fly at a low angle and require long tails for stability." Not so with this kite! A tail is still required, but much less is needed than the original flat kite. In reasonable winds it becomes a fast-climbing high flier after it passes 45 degrees. In all my tests it flew higher and steadier and was easier to put up than the delta, Eddy, rokkaku or other popular kites. In an official test it flew at an average angle of 72 degrees. At the Carolina Kite Fest held at Atlantic Beach, North Carolina in October, 1993, it flew far above all the other kites.

I also read with interest the review of the book, *Kiting to Record Altitudes*. The reviewer says that competition in high flying among single-line kites would be missing the point. Apparently he has not yet enjoyed the thrill of having his kite fly overhead at superior heights. Many single-liners enjoy high flying, the higher the better. The proof of a kite is its ability to fly. Also, I believe that the adage that "a kite without a tail will fly higher than a kite with a tail" is disproved by my own high flier.

—Edgar Dameron
Burlington, North Carolina, USA

The Seven Kite Commandments of Neil Thorburn

➤ The only vehicle whose performance is improved by weight is a steamroller.

➤ If a kite costs more than five dollars, I am afraid to fly it.

➤ No one is allowed to fly a kite higher than mine.

➤ Kites are to be flown, not preserved. (I never heard of finding a kite at an archaeological site.)

➤ I am not one of those who consider stunt kites an obscenity.

➤ Stunt kites may, however, price the sport out of existence.

➤ Hanging pretties on a kite is OK, but a kite is not a Christmas tree.

—excerpted from a letter by Neil Thorburn
San Jose, California, USA

Corrections & Clarifications

In the Fall 1994 *Kite Lines*, the pointillistic banners seen with the article on the Thailand International Kite Festival were incorrectly credited to the team from Italy. The banners were created by Frank Schwiemann of Germany.

In the Fall 1994 *Kite Lines* Special Guest Department, the phone number for Bobby Stanfield should have been 209-636-9350. The errors are regretted.

Write us a letter! Anything you write to *Kite Lines* may be considered for publication, so please mark it "not for publication" if you want no doubt to be left about it. Address to: *Kite Lines*, P.O. Box 466, Randallstown, MD 21133-0466, USA. Or fax us at 410-922-4262.

Speedy Stunters, One-Line Wonders

By Dave Arnold, Mel & Valerie Govig, Michael J. Graves and Bert Tanaka

Speed Limit

After seeing a most impressive Speed Limit megateam performance at the last AKA convention, we were eager to try this new kite ourselves. Aerodrone Sport Kites targets this kite to fliers who are blessed with strong winds but prefer framed delta stunt kites. It succeeds—and with innovation too.

The new feature is an adjustable venting system that allows the kite to fly at a steady pace throughout a wide range of wind speeds.

Here's how the system works. Each wing has a small triangle of mesh that serves as a vent. Each vent is covered by a pair of ripstop flaps on the back of the sail. These flaps open and close over the vents like two spring-loaded doors. As pressure on the sail varies, these doors open and close in proportion, moderating forward speed and pull. That's just what we experienced: moderate forward speed, and less pull than we expected for a kite with this much sail.

The Speed Limit features a pultruded graphite frame and ripstop nylon sail. Its mechanical design is somewhat complicated, combining the active venting system with six standoffs, two battens and a trailing edge leech line. Its construction is very good, showing a strong interest in durability.

The maker rates the Speed Limit to fly in winds from 5 to 25 mph. At 15 ounces, the kite's weight limited its low-wind performance. We found the kite did its best stuff in the higher end of its wind range. But we liked its ability to hold a steady forward speed because this made complex figures and precise pacing for ballet much easier.

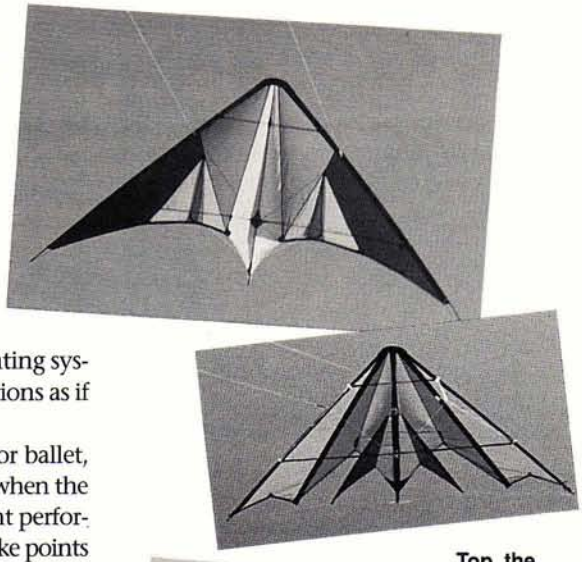
Tracking is the Speed Limit's strongest suit. Flying consistently throughout the window, it flew a straight line exceptionally well. Although it spins within its wing tip, the kite will exit a spin with a minimum of wandering. And it exits a 90-degree turn with a snap.

We put the Speed Limit through our usual favorite maneuvers. It was always agile, easily performing a variety of axels (flat spinning maneuvers). In 12–15 mph winds, we were able to snap-stall in the center of the window, and hold the stall in place. Side slides were another specialty of this kite.

In ground work, the Speed Limit felt nice and solid. Through tip stands, tumbles and rolls, it proved itself a husky performer. We didn't see any of the extreme spar bending that ground work often induces in kites.

The Speed Limit did not accelerate quickly. Pumping the lines forcefully had less effect than usual. We figured this was caused by the kite's weight and by the venting system's reacting to the pumping motions as if they were minor gusts of wind.

Well suited to either precision or ballet, the Speed Limit should be popular when the wind really blows. But its consistent performance in variable winds should make points in competition, or just for fun, with novices and advanced fliers alike . —*M.J.G./B.T.*



Top, the Speed Limit tracks straight. Center, the Tandem Mosquito moves wide in its window. Bottom, the ProSpeed 6+ zips about as a single kite.

Tandem Mosquito

Since its introduction in 1992, the Tandem from Cerfs-Volants Azur has been considered among the finest of team precision kites. However prized, its slow, precise handling and laser-straight tracking have commanded a high price. We were intrigued by the idea of the more affordable new six-foot Tandem Mosquito.

This kite looks exactly like a Tandem—only shrunken. It features the same "airflow regulator" system and battened wings as its larger brother. The airflow regulator is a smaller wing structure inset into the center of the kite, and is designed to slow the kite's forward speed.

The Mosquito's design is very complex for a kite that sells for only $80, yet only minor compromises have been made to keep the price low. We were pleased that the kite still features Azur's high quality construction.

The Mosquito is framed in pultruded carbon spars except for the center winglets and standoffs, which use fiberglass. When first assembled, the sail of our sample kite was uncomfortably tight. This was the result of standoffs that were slightly too long. We simply trimmed them by ¼" to ease the tension.

Azur recommends the Tandem Mosquito for use in winds from 7–30 mph, and also suggests using 75-foot lines of 80-lb Spectra. Using their suggested lines, we found the kite did fly in a 6–7 mph breeze, but it was a struggle. Then, as the wind reached 10 mph, the struggle changed to fun, and the kite started to show its true character.

The Mosquito retains many of the qualities of the larger original. Its forward speed was relatively constant, even in dives. It tracked well for its size, centering tight turns inside its wingtip. The kite was reliable throughout its wind window, which was very large.

At the same time, this is a new kite. For example, the Mosquito is fast. It was also much more sensitive to control than we had expected. In some kites, such sensitivity results in a bit of oversteer, but the Mosquito didn't show that. It only asked for small hand movements when we flew precision figures. And it performed those figures admirably in 10–12 mph winds.

The kite's sensitivity opened up unexpected possibilities in advanced moves. We could do stalls, slides and axels easily, even in strong wind. The kite's rotational mass

DATA CHART

Stunters				*One-Liners*			
Mosquito	**ProSpeed**	**Speed Limit**	**Name of Kite**	**Tie-dyed Rok.**	**Bat**	**Genki**	**Eddy**
Azur	Flexifoil	Aerodrone	**Manufacturer**	High as a Kite	Schwiemann	Carlisle	Stanfield
$ 80	$120	$ 350	**Retail Price**	$120	$40	$250	$165
RN	RP	RN	**Sail Material**	RN	RN	RN	RN
RN	n/a	DT	**Leading Edge Material**	Dacron	n/a	n/a	RN
CFt	CF	CFt	**Framing Materials**	CFt	FGr	CFt	CFt
V	n/a	MP	**Fittings**	MP	MP	MP	MP
60 x 29	75 x 24	101 x 43	**Dimensions (in.)**	50 x 60	26 x 20	142 x 35	60 x 60
6.0	n/a	6.0	**Sail Depth at stand-offs (in.)**	n/a	n/a	n/a	n/a
634	1800	1170	**Sail Area (sq.in.)**	2750	260	4860	1800
7.87	6.75	16.0	**Weight (oz.)**	11.0	0.9	15.2	6.0
1.79	.54	1.25	**Sail Loading (oz./sq.ft.)**	0.5	0.5	0.45	0.03
10-30	2–15	5–25	**Suggested Wind Range**	4–20	2–10	4–20	4–15
80	50–150	80–150	**Suggested Line (lbs.)**	100	8	150–200	100
I–SK	I	I	**Skill Level Required**	N	I	N	N
2	1–2	<1	**Assembly Time (minutes)**	1	<1	1–2	1
VG	G	VG	**Ease of Launch/Re-launch**	VG	VG	VG	E
G	G	G	**Ease of Landing/Ground Work**	n/a	n/a	n/a	n/a
F	F	SI	**Straight Speed**	n/a	n/a	n/a	n/a
F	M–F	SI	**Speed in Turns**	n/a	n/a	n/a	n/a
G	G	E	**Precision/Tracking**	n/a	n/a	n/a	n/a
L	M	M	**Amount of Pull**	n/a	n/a	n/a	n/a
M	SI	SI	**Amount of Noise**	n/a	n/a	n/a	n/a
G	VG	G	**Visual Appeal/Graphics**	VG	VG	G	E
G	E	VG	**Workmanship**	E	E	E	E
VG	E	VG	**Portability**	VG	E	VG	VG
G	G	VG	**Durability**	E	E	E	E

NOTES: Retail price (US dollars) is "advertised" or "suggested." **Wind range** (mph) covers minimum and maximum speeds deemed suitable by our evaluators. **Dimensions** are in the following order: width x height. **Measurements** and (usually) drawings are made with the kite standing on the floor facing the viewer. **Materials:** RN–Ripstop Nylon, RP–Ripstop Polyester, DT–Dacron Tape, WD–Wooden Dowels, B–Bamboo, FG–Fiberglass, GR–Graphite, EP–Epoxy, CF–Carbon Fiber, r–Rods, t–Tubes, MP–Molded Plastic, V–Vinyl. **Speed:** SL–Slow, M–Medium, F–Fast. **Skill levels:** N–Novice, I–Intermediate, SK–Skilled. **Pull:** L–Low, M–Medium, H–High. **Noise:** SI–Silent, L–Low, M–Medium, H–High. **Other ratings:** P–Poor, A–Acceptable, G–Good, VG–Very Good, E–Excellent, n/a–not applicable.

and sensitivity combined to make double axels easier than usual.

We like to relaunch from face down on the ground. The Mosquito made this and most of our favorite tumbling moves and ground play easy. Even when the wind reached 25 mph, the kite showed no signs of stress, either in the air or on the ground.

While inexpensive, the Tandem Mosquito is clearly not for beginners. It demands steady hands and quick reflexes. Advanced fliers seeking high-wind fun at a minimum investment will find the Tandem Mosquito in a class by itself. —*M.J.G.*

ProSpeed 6+

The configuration of the basic Flexi 6-foot stacker has remained essentially unchanged for years, but Flexifoil has recently introduced a new variant, the Pro Speed 6+, with light-wind performance and traction (buggy and boat) applications in mind.

The new sail pattern is attractive, with two-thirds of it white and bars of black and a neon color on one end. The designers made structural changes too. They enclosed the spar to prevent tangling of stack train lines (though the pocket material tends to pull on the outer cells and keep them from fully inflating). They installed a more open grid of mesh in the leading edge; used ½-oz. ripstop polyester for the sail; and added an ultralight or ultraflex spar instead of the heavier fiberglass. These physical changes are targeted at making the Pro Speed 6+ better for both traction and single-kite flying, so we looked at both applications.

For traction, you need a stack of at least three, and for buggying as many as six or more kites. I flew a stack of six on 100 feet of 300 or 500 lb Spectra in winds ranging from 8–14 mph using 54-inch spacing between kites. (I weigh around 230 pounds; your mileage may vary.) Tests were on grassy soccer fields that were level and hard.

Launching the stack was a bit easier with the more flexible, lighter spar and the stiffer, lighter fabric. The new stack was unstable at first, but calmed down after the fabric broke in, as the instructions warned.

The pack had plenty of power, but a keen eye needs to be kept on the kites in lower winds because they don't seem to stay locked in position in quick maneuvers. If you are not used to 100 feet of line and 4½ feet between each kite, be sure to pay attention to light poles, trees, signs, etc. Landing is not difficult, but remember to invert the stack to prevent accidental relaunch.

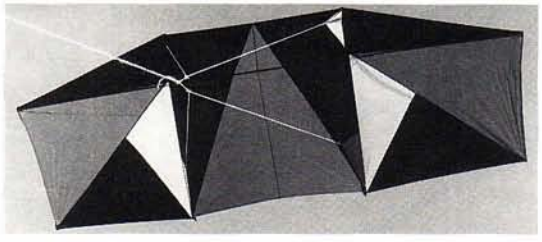
The upper limit of the kite using the lightweight spar was around 15–18 mph. Lower this range if the winds are gusty because the pockets that enclose the rod keep it under tension. You can interchange your spars, and I recommend using the fiberglass spar for heavier or gusty winds. This interchangeability of spars is beneficial for varying conditions (e.g., wind, surface, tandem, etc.). I had no reservations about the upper limits of the ½-oz polyester sail.

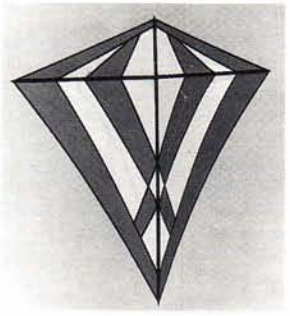
Some of the differences between the Pro Speed 6+ and the original Stacker are apparent, others are more subtle. The kites' flight characteristics are not as smooth at first, but time and technique eventually bring you the much-loved Flexi feel.

The single kite launched easily in light winds. Flying it on 80-lb. Spectra line in lengths from 40–100 feet was a pleasure, but a bit tricky with the ultraflex spar in higher winds. Turns were tight, stalls and floats were well executed, flips were smooth and straight-line speed was good.

The advantages of this kite as a buggy engine are its smooth, solid pull and its adaptability to a wide range of windspeeds. You get that adaptability by varying the number of kites in your stack and the

Right, Frank Schwiemann's fighter bat takes a spin.
Left, tie-dyed rokkaku by High as a Kite catches the sun.
Bottom left, Carlisle Kiteworks Genki speaks boldly.
Bottom right, Stanfield Eddy rises like a feather.





types of spars in your Flexifoils.

The kite's disadvantages include: length of stack; unsteadiness in lighter winds; need for a ground crew in certain wind and field situations; and need for multiple spar sets.

As a single kite, this new model offers a wider wind range and easier launching than previous 6-foot models. But even as a single kite, both spars are needed at times.

In general, the Pro Speed 6+ is an improvement on the 6-foot Stacker. The kite is a better light-wind flier than before. In traction applications, a stack can work; it has inherent drawbacks but it does allow you to tune the power. The expense of a 6–10-kite stack with ultraflex and standard spars mounts up pretty quickly. On the other hand, so does having two or three or four quad-line power kites for the same purpose. You do the math!

Does this new Flexi meet its stated goals? As a stacking kite or buggy engine, it performed fairly well. As a single kite, the changes were pleasing. Only time will tell if the enclosed spar is an improvement. I keep a Flexifoil in my bag at all times. Its design offers a different set of flight dynamics, and with the Pro Speed 6+, the old dog may have learned a few new tricks. —*D.A.*

Tie-Dyed Rokkaku

It's the fabric that catches your eye. Those of us who know the ordeals of trying to dye ripstop gaze at it in awe. Ty Billings of High as a Kite in California has not only dipped his fabrics in color, but—migosh—he's *tie*-dyed them! (Or is that Ty-dyed?—this guy's parents named him with foresight.)

Now if this were all, it would be plenty but there's more. Somehow Ty's colors are distinct. They don't mix together into a mudbath in the sky, the way your t-shirt-from-the-'60s would. There is a subtle patterning and artistry going on. The cloth is striking on the ground but also holds its own in the sky.

Again if this were all it would be plenty but again there is more. Although Ty keeps his trade secrets to himself, he sells his fabric to other manufacturers, such as Prism Designs, so we get to see this brilliant ripstop in a variety of configurations. Some of the kites are entirely tie-dyed fabric, others use pieces of it within white borders or backgrounds. The pieced designs seem to set off the beauty of the fabrics all the more.

And still this is not all and still there is more because Ty's kites also fly, and very well. Two years ago we saw his first kites, rather lackluster Eddys. Now he manufactures good Edos and rokkakus. We chose to review a five-foot rokkaku made entirely of tie-dyed ripstop.

The kite's flight was completely pleasing (as most rokkakus are for us). It rose to the wind and responded to shifts with that combination of grace and vitality that marks this timeless design.

Our sample was edge-bound with black grosgrain ribbon and framed with graphite spars—in all respects well made. The knots used to secure the bridle lines showed us this kite was built by a studious and dedicated flier. Here's a kitemaker who will outlast the trendy revival of tie-dying. —*V.G./M.G.*

Bat Fighter

We borrowed several fighter kites by the prolific designer/maker Frank Schwiemann of Germany from the importer, Carlisle Kiteworks. All the kites were charmers in our tests, but we chose to review the Bat because it is the most representative and, in our opinion, the most predictable flier.

The Bat's form is reminiscent of kites from avid fighter-kiters Ludo Petit of France and Tony Slater of England, but it is executed in ripstop rather than paper or plastic.

As is frequently the case, the fabric skin slows the fighter somewhat. However, its high aspect ratio and light weight make up for that. If the Bat is somewhat slow across the sky in straight runs, it is very responsive in maneuvers. It is a good choice for someone just getting acquainted with one-line dirigible kites.

Construction details include hemmed leading edges, fiberglass spars, sleeves for the cross spar and spine and a brass ferrule at the bend in the spine. Here's a lot of finesse for the money, nicely conceived, nicely done, nice to fly. —*M.G.*

Carlisle Genki

This is not a kite for replacement players. Major leaguers only need apply. This kite has authority.

Nine feet across and three feet high, the Genki by Kevin Shannon of Carlisle Kiteworks has the pulling power of a 50-square-foot rokkaku. It is a worthy presentation of the design originally created by Nop Velthuizen of The Netherlands.

We're seeing Genkis everywhere these days, maybe because they make a top-notch platform for graphics. The works of Australia's Tony Wolfenden are a case in point. But this is a design that can be kept simple with great effect. The graphics on our Carlisle Kiteworks model were simple geometrics in red, white and black: formal dress.

Details are well-executed throughout, with double-stitched seams and straight-grain nylon ribbons as tie-downs.

The model tested originally had a tendency to become unstable in light winds. We discovered the problem and the maker corrected it in production models.

We have drawn some criticism from time

to time for testing kites and then reporting on the alterations made to fit our problems. In those cases where the alterations work and the builder listens, we can only say we are happy to have helped. —*M.G.*

Stanfield Eddy

Classic proportions, unclassic design: Bobby Stanfield's Eddy kite weighs in at a mere half-ounce per square foot.

Where Eddy had slack, Bobby has taut. Where Eddy had pine, Bobby has linear graphite tubing. Where Eddy had cotton, Bobby has ¾-oz ripstop polyester.

This kite might appear to embody today's revolution in kitemaking at its apex. But wait! Eddy probably did not expect his kite to be flown in winds below 8 mph. The Stanfield version doesn't expect winds *above* 8 mph. This Eddy will soar, overfly and require attention above 8–10 mph winds. It will fly, but you'll want to slacken the sail and maybe tape a lead sinker to its spine at a point about one-third up from the tail point. With adjustments, the kite will more nearly emulate the original Eddy creation.

The fittings on this kite give you tensioning options of every conceivable kind—Bobby's trademark. Theoretically, you can adjust this kite to any wind. For example, loosening the tip fittings will give the sail an Eddy-esque billow for more lift forward. But Bobby's kites are really made for flying in a zephyr, not a gale.

Bobby's graphics usually emphasize the kite's shape, and this one does so especially well. It sparkles diamond-like as it flies.

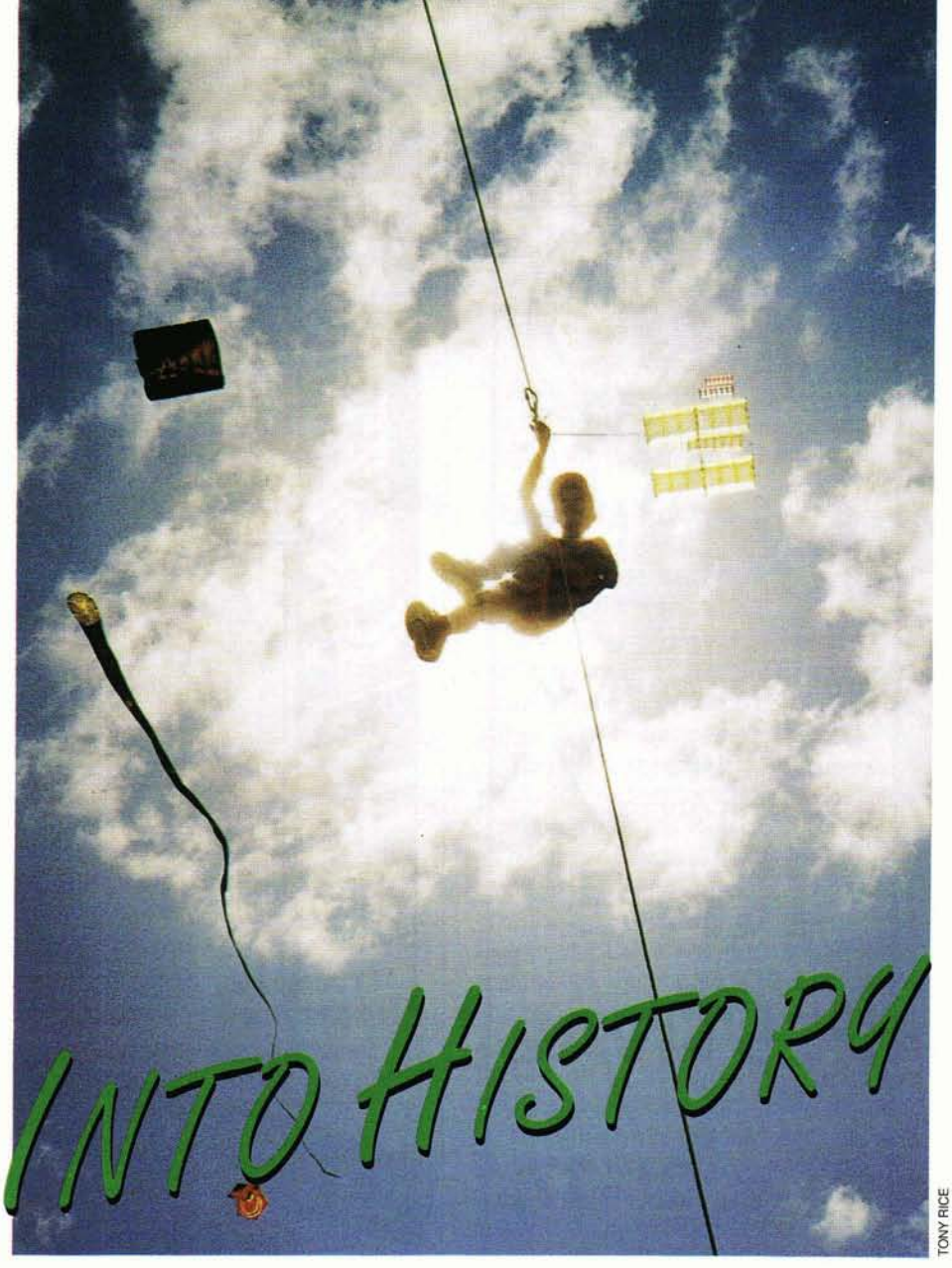
Last but not least is the celebrated Stanfield craftsmanship. Every seam is so accurate it seems that the maker has been emulating Adrian Conn's unreal standard: any stitch that's off by 1/100th of an inch gets ripped out.

All this refinement generally comes at a good price. The Eddy is a less expensive way to enjoy both Bobby's design sense and his applied technology.

If you're one of those who suffer from low-wind days, you'll be grateful to have Bobby's Eddy along. —*M.G./V.G.*

Thanks to Dan Rubesh (Wind Wizard, California) for assistance and consultation in obtaining some of the kites for these reviews.

Right, the week after the commemorative flight, young Jai Rice takes a ride in the sky in Mooloolaba, Queensland. Below, the crew walks Simon's set of Hargrave boxes to Stanwell Park beach.



TONY RICE

The Lawrence Hargrave Centenary Festival Stanwell Park Beach, New South Wales, Australia November 12 &13 1994

A LIFT INTO HISTORY

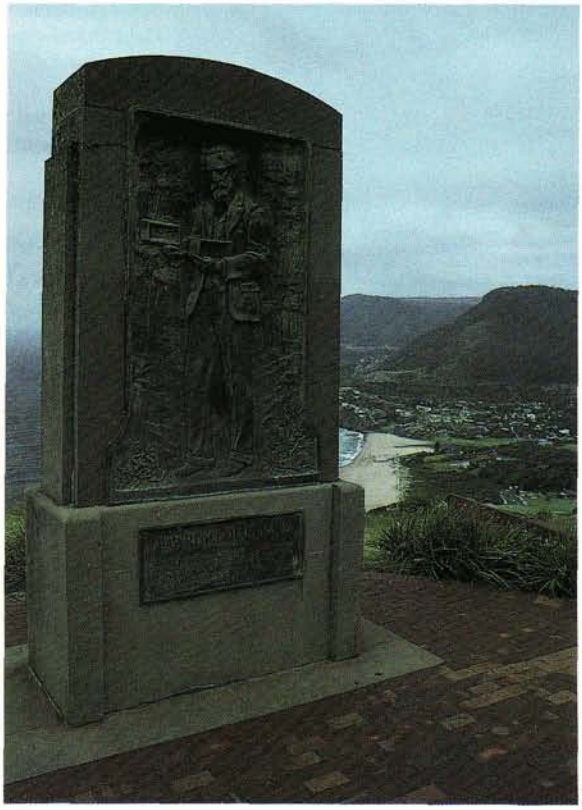
Article by Simon Freidin
Photographs by Simon Freidin & Helen Bushell

H.B.

Standing in my workshop a week before the Lawrence Hargrave Centenary fly, I suddenly realized what a fantastic opportunity this was—I was attempting to recreate a piece of history.

I'm sure Lawrence Hargrave had no idea that 100 years after his sky-breaking feat of lifting himself 16 feet off the ground with four box kites, Australians would spend a weekend celebrating his achievement. But that event is now written into aeronautical and kiting history, and the Centenary Fly was an occasion that I could not miss.

The organization of the Centenary wasn't actually in the hands of the kitefliers. Locals living in the Stanwell Park area had organized a centenary committee and had invited the Australian Kite Society to organize kitefliers for the event. The organizing committee also arranged for fly-bys of historic aircraft, hang-gliding demonstrations and aeronautical displays. (As a word of expla-



S.F.

H.B.

Left, the Hargrave Memorial stands proudly on Bald Hill. The plaque reads: "Lawrence Hargrave, 1850–1915. Whose pioneering research in aeronautics with engines, monoplanes and box kites, much of which was carried out at Stanwell Park, played a vital role in the development of the aeroplane." Above, Hargrave reproduction kites show that finely carved wood can be an excellent form of framing.

nation, for historical reasons kitefliers in New South Wales formed the Australian Kite Society, and kitefliers in Victoria formed the Australian Kite Association. There have been attempts to integrate the two state bodies into a national body, but the attempt has never made it to fruition.)

Helen Bushell, past secretary of the Australian Kite Association, kindly aided me in my quest to recreate Hargrave's manlift by being my seamstress for a week. I told Helen if we failed to complete the kites we could always wait another 100 years and try again!

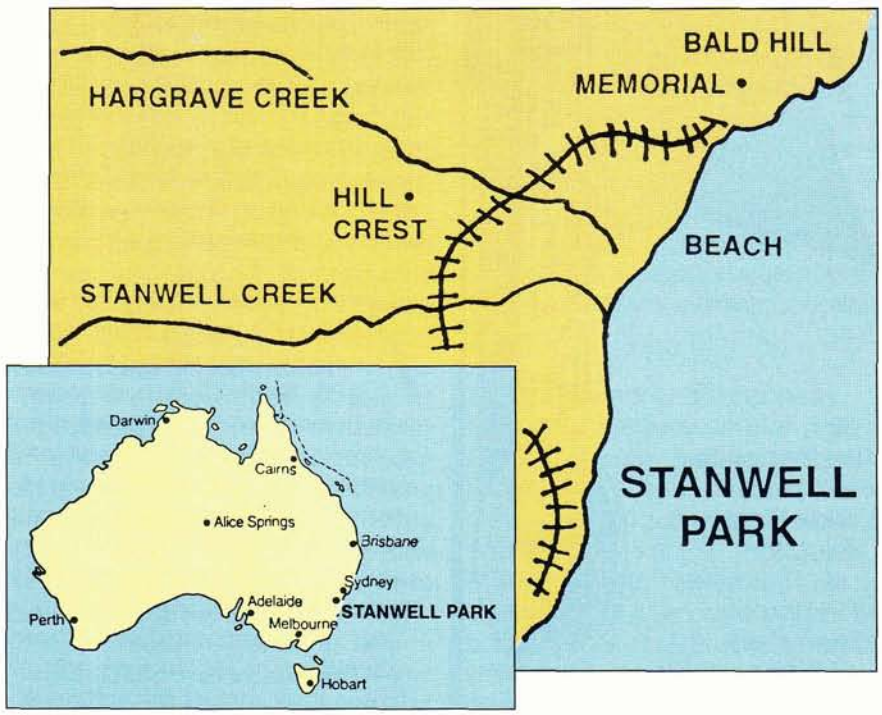
But we did finish the kites, although they didn't get their inaugural assembly until I was actually on Stanwell Park beach. Stanwell Park is approximately 30 miles south of Sydney. The beach and surrounding hillsides and cliffs had been owned by the Hargrave family in the late 1800s. Now, holiday houses surround the original family homesteads.

Ted Coles, the president of the Australian Kite Society, pointed out that the narrow angle of the bay made an attempt possible only if the winds came across the sea from the southeast through the northeast. Any other wind direction meant the wind would come over land or cliffs and be too turbulent.

Much to everyone's surprise, we had two days of steady southeast winds and bright sunshine. This was surprising because the two trial flys held in November 1993 and 1992 had been windless or washed out.

On our drive to Stanwell Park beach, we stopped at the lookout which contains a memorial to Lawrence Hargrave and his efforts in attempting manned flight. A mile or two from the hilltop, we could see his recently restored family home. The memorial site is also a hang glider and paraglider launching site. The local hang gliding fraternity was firmly behind the organization of the festival, to acknowledge Hargrave's contributions to their sport.

Only two Hargrave trains were to be launched on the weekend: my fiberglass and ripstop creations, and a more traditional wood and cotton train built some years ago by engineering students from nearby University of Wollongong. I assembled my four kites by noon and at 2 p.m. we were ready for a launch attempt. Even though I was aided by most of the directors of the Australian Kite Society—Peter Dettrick,



S.F.

The view from Bald Hill shows Hargrave's home, Hill Crest, now set in a retirement village.

Ted Coles, Godfrey Gamble, Hans Bleeker—light winds made the launch of the train difficult. But once up, the train flew steadily for two and a half hours. We moored the kites to a vehicle we parked on the beach.

Just after launch, I grabbed hold of the flying line (the bottom line was 0.3" Kevlar) and lifted my legs onto it. The train held my weight quite comfortably a foot above the ground. Unfortunately the wind, at 10–12 mph, was just at the threshold of supporting my weight (160 lbs.), and that one foot I was lifted was as high as I raised myself all weekend. We had all thought replicating Hargrave's feat was going to be easy!

On the other hand, Hargrave had wind speeds of 21 mph! A few more knots and we would have exceeded Hargrave's success.

Wind conditions on Sunday were slightly lighter, and I couldn't even replicate my low-altitude dangling. Since the cotton and wood train was heavier and more porous, it too failed. However, the reproduction kites showed what an adaptable material wood is for framing. The wood's hand-carved, tapered bracing gave strength just where it was required. And the wood minimized weight, a solution difficult to achieve with carbon or fiberglass rod.

Though the festival was small, it attracted a varied group who were impressed and affected by Hargrave's work. Besides kitefliers, there were aviators, historians, museum curators, members of the Royal Aeronautical Society (where Hargrave had presented some of his research), representatives of aeronautical research labs and engineers involved in the early development of the hang glider. Helen Bushell was particularly excited to meet Nancy Bird, one of Australia's most intrepid early pilots. She also met the wife of W. Hudson Shaw, one of the authors of the best-known book on Hargrave, *Lawrence Hargrave: Explorer, Inventor & Aviation Experimenter*. Many members of the Hargrave family also attended.

Even though my train did not lift me into the air, it did win a prize for the best Hargrave kite built of modern materials. The prize, donated by AeroSpace Technologies of Australia, was a handsome book of paintings of early aircraft.

The next weekend I took the kite train up to Mooloolaba, Queensland, for "Air Affair '94," the Queensland state titles and kite festival. Around midday on Sunday, Philip McConnachie, Tony Rice, Mark Warwick, Andrew Marnie and I launched five Hargrave box kites in train, and I was successfully lifted to 60 feet (Peter Lynn was a witness).

It was exhilarating and almost otherworldly to be lifted. What struck me most dramatically after the hurried activity of launching the train was the sudden silence and tranquility I felt as soon as I was a few feet off the ground. The sensation was similar to being lifted in a very smooth elevator. The green sports field below and all the other kitefliers shrank rapidly as I ascended. I gave a quick wave to the crowd as I considered releasing the dead-man handle to descend down the flying line. Then the wind dropped—and I descended as smoothly as I had risen.

The train's next flight will be at the New Zealand International Kite Festival, March 1995. I'm looking forward to it. ♢

Lawrence Hargrave and his kites are commemorated with an Australian postage stamp issued in 1994.

In Honor of Lawrence Hargrave

By Valerie Govig & Robert S. Price

Delightfully Technical

Ravensbourne to Airborne: Aspects of Lawrence Hargrave's Contribution to the Science of Aeronautics by David A. Craddock (Epping, Australia: David A. Craddock, 1994), paperback, 57 pages, $24.95.

Lawrence Hargrave is a legendary figure in the development of modern kites and aeronautics. It is fitting that during 1994 Hargrave Year in Australia, a researcher would publish material from Hargrave's notebooks.

David Craddock, aeronautical engineer, aviation historian and vice-president of the Lawrence Hargrave Commemorative Association 1994-95, has made this effort through two self-published books.

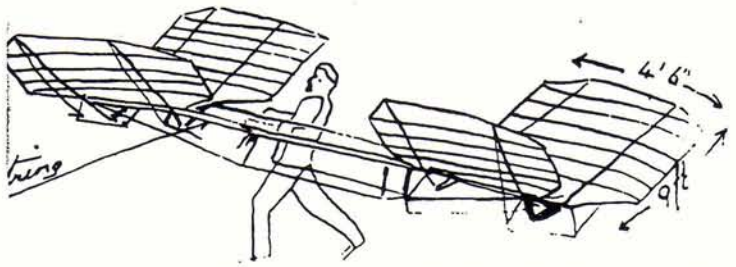
In evaluating this volume and Hargrave's work we must remember that he was working with limited resources in the late dawn of modern aviation before a reasonably complete, working understanding of aerodynamics had been developed. He was attacking the problems of flight almost blindfolded with little or no proven theory to guide him. As a result, as Craddock makes abundantly clear, many of his efforts were misdirected or terminated before substantial results could be achieved.

This book is a review of Hargrave's work on aerodynamics, gliders and kites up through his first successful manlift. He started by making measurements of aerodynamic drag and lift on simple surfaces, flat and cambered. He developed rotating arm machines for testing specimens on circular paths. Unfortunately his experimental program was limited and incomplete so the results were not as useful as they might have been if he had been more persistent.

Hargrave must be given great credit for building a prodigious variety and quantity of kites, from small to large, from simple to complex. Without a true understanding (if there is such a thing) of the aerodynamics, he built kites that flew, and flew well. His kites, like his person, are truly legendary.

Ravensbourne to Airborne covers the saga completely. It depends on illustrations (sketches) from Hargrave's notebooks showing his equipment, concepts and designs. They are not working drawings by any means; details of proportioning and construction are left to another book *(see following)*.

Much of this book is delightfully technical, exploring Hargrave's ideas, theories and beliefs in light of modern aerodynamics. At the end of the work there is a 15-item bibliography with listings on fluid dynamics.



Hargrave sketch of his 1894 glider as shown in *Ravensbourne to Airborne*. Note kite string: Craddock says there is no evidence the glider was tethered.

My main objection to the book concerns the mixing of text and figures without much separation. This problem is compounded by the nonsequential numbering of the figures. You may have to hunt through several pages to find the desired figure. The presentation is inelegant and sometimes low in legibility. The binding should be a bit more robust; a couple of staples could have fixed that. Finally, there are no photographs of Hargrave's creations, a lack explained probably by cost considerations or by ownership of the originals.

In spite of these quibbles, this book is a good, objective overview of the covered portion of Lawrence Hargrave's work. —*R.S.P.*

Construction Drawings for a Selection of Kites Designed by Lawrence Hargrave compiled and drawn by David A. Craddock (Epping, Australia: David A. Craddock, 1994), paperback, 25 pages, $16.95.

This book is exactly what its title states. There is almost no written material and no evaluation of the performance of any design. This is because the booklet is a supplement or companion to Craddock's *Ravensbourne to Airborne (see above)*. Its detailed construction drawings should enable you to build replicas of about a dozen Hargrave kites.

However, if you are interested in flying the kite after building it, you should certainly refer to *Ravensbourne*, since the only comment in *Construction Drawings* concerning flyability is what you might infer from a brief explanation of how the "soaring" kites were flown—that is, how they were flown to minimize damage from crashes.

If you choose to build and fly an authentic version of one of these kites, you would certainly have to go a long way back in construction techniques. Most of the parts could be made in a well-equipped home workshop, though some of the metal bending for airfoils might be difficult. It appears to me that Hargrave had access to a local hardware store (ironmongery) and used whatever material came to hand, just as occurs in a modern kite builder's workshop. In his introduction, Craddock suggests changes to allow for availability of materials and personal work preferences.

I scarcely feel qualified to comment on the drawings and kites described in this booklet. For one thing, I do not know all the kite designs that Hargrave built so I have no measure of how good the selection is. However, the choices are limited to kites of moderate or small size (with the exception of a hang glider) and do not appear to include any of Hargrave's more practical large box kites, such as those he used for his man-lifting flight. If larger plans are the ones you want, you will not find them here.

Again, this is a very plain production, casual in style and perhaps not meant to be seriously regarded as a book. There is some degree of order: the designs are arranged chronologically. For the kites he has selected, Craddock has done a satisfactory job of filling in the details and making replication possible. —*R.S.P.*

Book News & Forecasts

Bikes, Kites & Human Interest...

Pedalling Unknown Paths by Michèle Velthuizen-de Vries (Sussex, England: The Book Guild Ltd., 1995), softcover, 292 pages, £8.95 (approximately $14 US).

How to classify this book? It's not really a kite book, but it isn't quite a bicycle book, or a travel book, or an essay on American life either. It's all these—as well as a personal diary that will interest any friends of Michèle

and Nop Velthuizen, well-known and well-liked kiters from The Hague, Netherlands.

Kites appear in this book only in an appendix about kite aerial photography (a short, basic description of equipment and method) and in scattered mentions during the journey.

The real subject is the expedition itself, a remarkable 14 month tour of the U.S., covering 32 states and 16,000 miles, all on recumbent bicycles. Along the way the Velthuizens could be found pitching their homemade tent everywhere from well-appointed campsites to cemeteries; traveling with heavy traffic on expressways or on lonely paths; surviving frigid temperatures, tornadoes and roasting sunshine by turns; and enjoying incomparable scenery and hospitality along the way.

I found most interesting Michèle's comments on America—its smog and overpopulation, its automobile dependency, its excessive watching of the "vile device" television, its bad eating habits. Ouch!— truths as painful as those of the astute 19th century observer Alexis de Tocqueville.

Pedalling Unknown Paths reads like an honest friendly letter, with no opinions withheld. The words concentrate on vegetation and wildlife while passing over whole cities with a paragraph ("San Francisco wasn't at all bad for a city"). Niagara Falls was described entirely in terms of its tourists.

Sixteen high-quality color photographs add interest. Maps appear from time to time (though not all stops are shown on them). Appendixes are supplied for persons inspired to travel long distances by bicycle, and they make diverting reading in themselves. (However, the list of equipment does not include kites!—probably an oversight, because I know the couple took four.)

Rattling along with its many typographical errors, as a diary would, the writing can rise to an occasion when it needs to. I was moved by Michèle's encounter with the Sequoias and her sight of a rainbow after snow in Arizona. Pure human interest fills every page. I laughed out loud reading about Brother Piercy's breakfast offer in Manila, Arkansas.

This is not a book that will end up on anyone's list of Great Literature, but it is useful, charming and worth the read.

Kite Poetry...

Cuentos Poemas y Cometas (Stories, Poems & Kites) by Luis Reinaldo Escalante (Santafé de Bogotá, Colombia: Ediciones Novus Milenius, 1994), paperback, 79 pages, $16.

For our Spanish-speaking readers, here's an unusual find, a book of 15 poems and six brief stories, all about kites. While poems on kite themes are common, a whole book full of them by one writer is, to our knowledge, unique. Our Spanish-fluent friends tell us the writing is good. On top of that, the book is attractively laid out and embellished by Luis Ignazio Ortiz with appealing water-color paintings of typical Colombian kites.

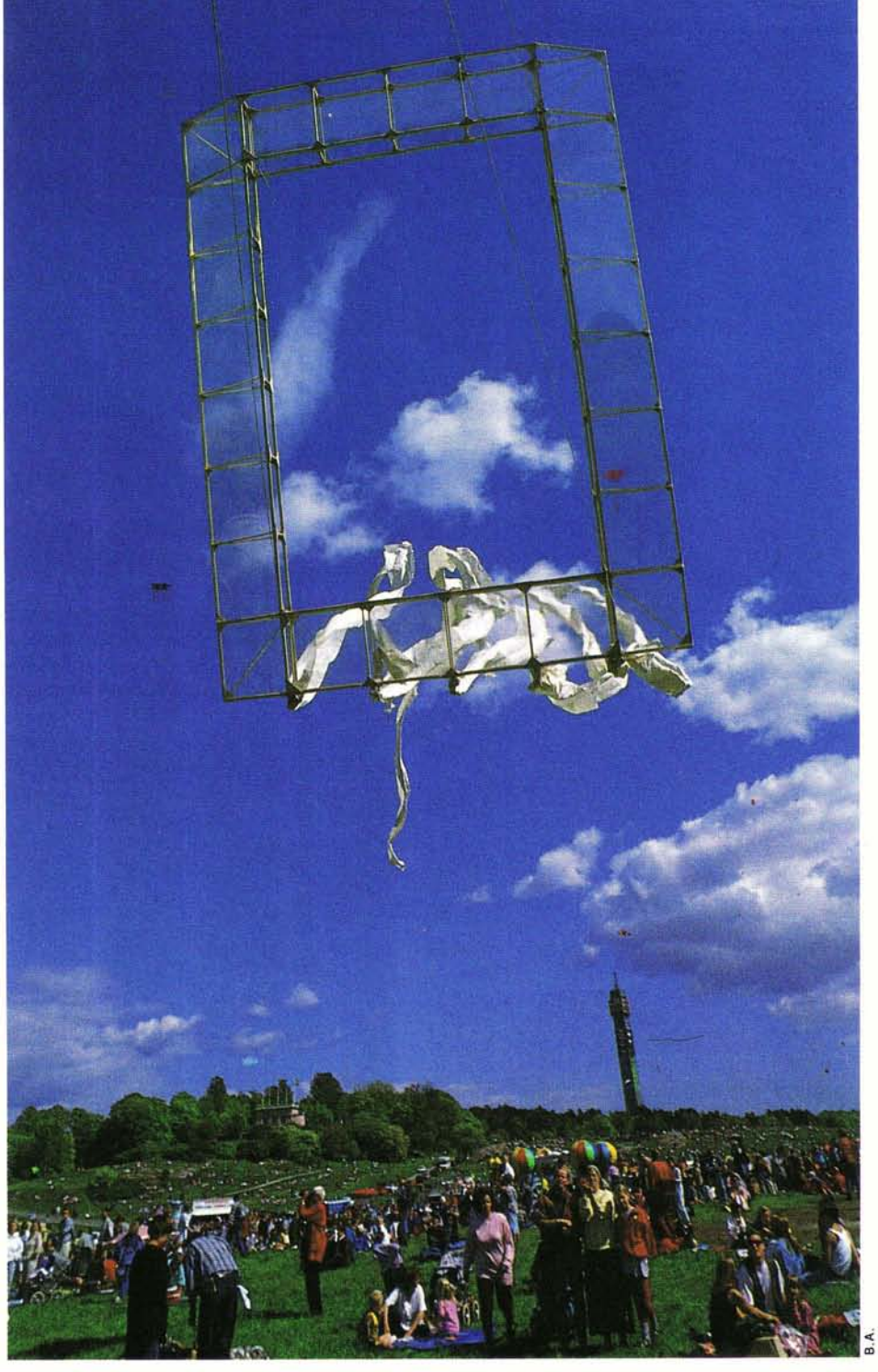
Note: The above books will not be carried in the Kite Lines Bookstore and may be hard to find elsewhere. However, you can order them from the publishers, as follows:

- *Pedalling Unknown Paths*
  The Book Guild, Temple House
  25-6 High Street, Lewes
  East Sussex, BN7 2LU, England
- *Cuentos Poemas y Cometas*
  Dr. Luis Reinaldo Escalante
  Calle 59, #10-20, Apto. 301
  Bogotá, Colombia

Just out and coming soon...

This just in from Switzerland, *Drachen: Spiele mit dem Wind (Kites: Games with the Wind)* by Swiss enthusiast Rainer Neuner. Too late for a full review this issue, but a quick look shows a lot of charm and color plus plans for eight kites and five wind toys...◆◆ If you have not yet seen *The Millennium Whole Earth Catalog*, try your local bookstore. This major work of collective wisdom, reincarnated every six years or so, has a kite section (under "Learning: Play Tools") written by our kitemaker friend Win Colwell, a Vermonter now living in California...◆◆ Tal Streeter's book, *A Kite Journey Through India*, which was to have been published last Christmas, will be out *next* Christmas (but we suggest you have an alternate holiday gift ready just in case) ...◆◆ We hear that David Gomberg's long-running book *Stunt Kites!* will next be translated into German...◆◆ Leland Toy's family was planning to republish the deceased kiter's book *Kite Patterns* in a slightly expanded form this January. We are still waiting hopefully... —*V.G.*

One of the prize-winning kites in the student category flies above the flying field at Konstfact School.



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THE NORDIC EXPERIENCE

Drakfesten '94
May 17–22, 1994
Stockholm, Sweden

Article by ISTVÁN BODÓCZKY
Photographs by BEPPE ARVIDSON & MÀRTON CSERNY

In the last 10 years I have been to many international kiting events, mainly in Europe, and afterwards I felt each one was a unique occasion. Yet my five days of kiting in Stockholm May 17–22 last year were different in many ways.

Since 1965 there has been a traditional, well-attended *Drakfesten* (kite festival) in Stockholm, always held in May. This year it was organized by Konstfact, Stockholm's Art and Design School, which was celebrating its 150th anniversary. →

M.C.

M.C.

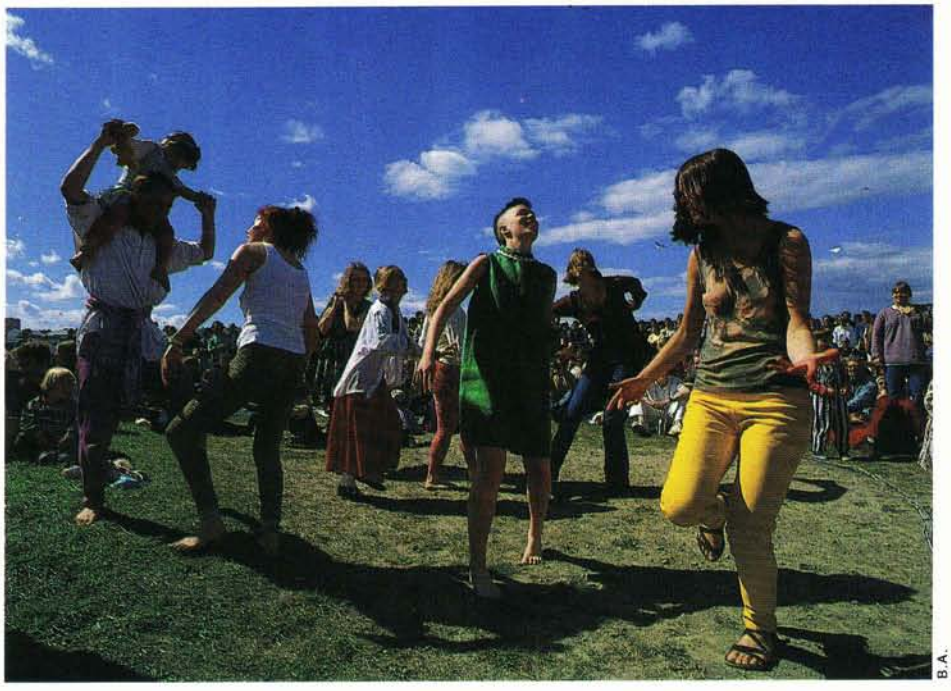
Above and right, students in the workshop show off their paper and bamboo kites. Below, dancing is a break from kitemaking.

THE WORKSHOP

A four-day kite workshop and festival provided an impressive celebration of students' work and made this celebration really memorable. I was one of the six teachers invited to conduct the workshop of "Sky Sculpture" for students of design, architecture and arts and crafts.

By lucky coincidence the school had the perfect flying field right next to it. We held the workshop in a big tent in the middle of the large grassy area. This way the school and the field were connected by activity, not merely by geography. The field became an integral part of the school through an act of "spiritual conquest."

The workshop students lived together on an old sailboat anchored in a bay in the center of Stockholm. They had come from different Nordic countries—Iceland, Denmark, Norway, Finland and of course Sweden—and this gave the workshop an extra dimension. The students had different levels of skill in kite building. Some had little experience and others brought their own kites with them. First we suggested they make a paper and bamboo copy of a well-known kite. Next they worked on their own designs. Some students chose to work with fragile ephemeral materials, such as paper and bamboo, while others were more interested in stronger, modern materials.



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WHEN THEY CAME BACK TO THE TENT & SAID "IT FLIES!" I KNEW THEY WERE HOOKED.

By the end of the four-day workshop, there was a great variety of kites. Some students had built three-dimensional constructions; others built interesting "outlines" (flat kites). Some went for the beauty of the forms; others went for the aerodynamics. Some focused on surface design; others focused on construction. In spite of the limiting factors of materials, techniques and time, nearly all the basic approaches to kite building were present: geometric and organic, small and large, simple and elaborate, aerodynamically considered and "just" fantastic, humorous or poetic.

Sometimes the students would come up with the most unlikely structures and ask me, "Do you think it will fly?" I tried not to be too discouraging. All I could say was "I don't think so, but try it!" When they came back to the tent after the test flight with a wide grin on their faces and said "It flies!" I knew they were hooked. "Beginners luck," they would modestly say and go on feverishly improving their designs.

The days were long, only interrupted by the occasional sauna in the nearby school building and of course, by the meals. A spe-

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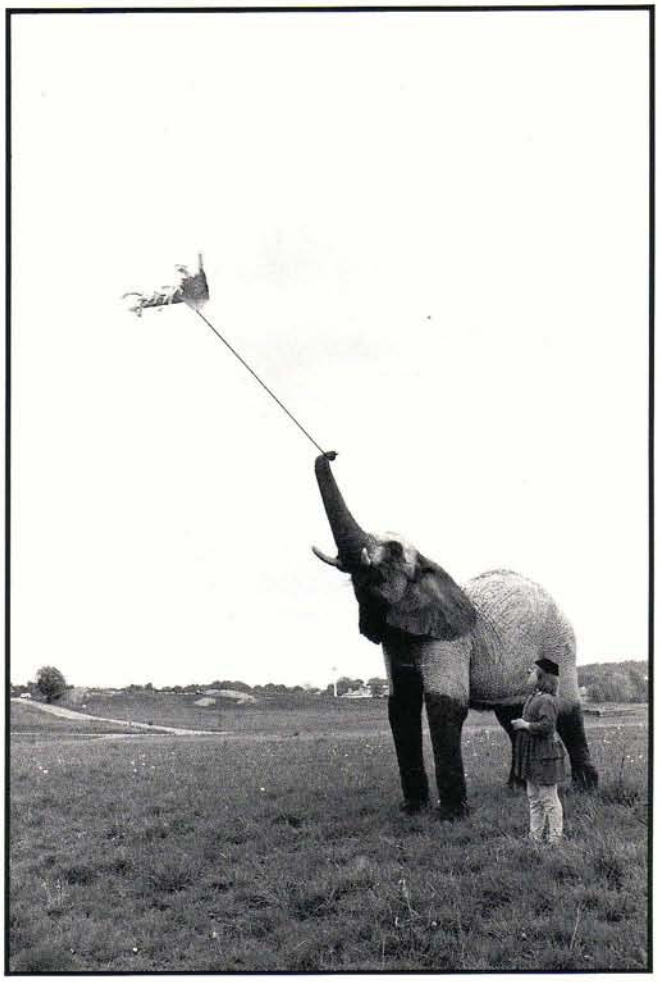

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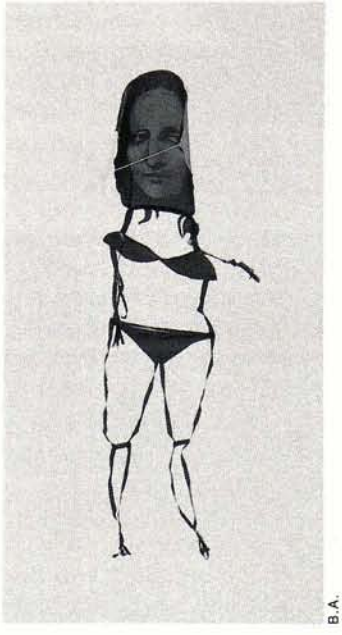
Above left, István Bodóczky (center) confers with a student and Bengt Carling (right). Above, the elephant takes over the field. Below, Olle Nessle flies Mona Lisa in a bikini.



B.A.

cial emphasis was placed on the food. We had the most sumptuous dinners, cooked by a student on the spot, right in the tent. I think everyone appreciated this combination of intellectual and sensual experience. Also, we enjoyed excellent live music and even a mechanical theater show in the tent. This music provided more than just background entertainment to the kite-building workshop and festival. The traditional Japanese drumming, the Hawaiian, African, Russian, pop and occasionally improvised music throughout the workshop made us feel that kiting was not something esoteric, but indeed an organic part of all human expression.

The Festival

The kite festival itself was simply amazing. I had never seen so many people attending and actively participating in a festival before. There must have been about 50,000 people on the fields around the tent. A big crowd like that often causes stress and frustration, especially for the kitefliers, yet here the atmosphere was very relaxed.

Most kite festivals set up restricted areas for the large kites and the stunt kites. Here there were no restrictions and no bars to keep the crowd out of the main flying field. The emphasis was not on dazzling the crowd with various kite wonders but ensuring that everyone could really participate rather than just watch. No one was made to feel uneasy or ashamed to fly their sometimes clumsy or commercial kites. And the serious kitefliers did not mind keeping their beautiful kites on the ground or flying them only later in the day, after the crowd had thinned out. The sight of so many people enjoying themselves was far better than getting applause for a performance.

Though many kite clubs and internationally known fliers (among them the Swedish kite author Olle Nessle and the Finnish kite author Mårten Bondestam) attended the festival, they were not spotlighted. The "professionals" mixed in with the crowd. Apart from a competition that gave prizes to the most original and humorous kites, there was no "organized" kiting.

The whole festival was so unpretentious yet so well thought-out and executed in such a seemingly effortless way that you felt things just happened all by themselves. The person responsible for all this was the "soul of the event," Bengt Carling, an artist, kiteflier and professor at Konstfact School. Carling had a team of enthusiastic, loyal assistants, but he still looked after everything himself, however insignificant (carrying benches, buying more materials, etc.) He was everywhere, did everything—he hardly slept—but his humor never failed him. He was always prepared for a bit of fun, for some kiting, dancing or chatting. He recharged everyone around him with his powerful, radiating personality.

So many of us are desperately seeking wholeness; this festival gave me the opportunity to experience it. Everything came together in such a natural way, there was such a beautiful balance between soul and body, nature and humans, kitefliers and the rest of the world, that I felt revitalized. It was like experiencing a great work of art that has real cathartic power, which is not only fun but is capable of changing your life. ◇

István Bodóczky is a noted artist, teacher and kitemaker from Budapest, Hungary. His art and his kites have come so close together that "they completely converge," he says,"I can't define which is which anymore."

WHO NEEDS A SEWING MACHINE?

Kitemaking with ADHESIVES

Article by Dick Curran Illustrations by Ron Petralito

You say you can't sew? You don't even own a sewing machine? And you want to build kites out of ripstop polyester or nylon?

You can! Bond 'em together.

You can't reliably sew some materials together anyway. Just look at Mylar polyester film. If you sew it, the stuff tears like bathroom tissue. The film separates at the needle holes because the load is concentrated along all those perforations and Mylar tears easily.

If you've had problems in the past with failures of adhesively bonded kite seams, now is the time to reconsider. In this article, I explain the pitfalls and ways to get around them. Adhesives vary greatly in quality. Using them incorrectly can cause disasters. If your experiences in bonding kites haven't been good, try again: Use my

3 GUIDELINES

1. **PICK THE RIGHT ADHESIVE.**
2. **DESIGN TO PREVENT PEEL.**
3. **USE HEAT TO BOND YOUR SEAMS.**

All we really need to do then is match up a modern high-tech adhesive to our kite material. We need an adhesive that will hold the loads involved without "creeping," i.e., slowly sliding apart.

The Big Advantages

While adhesive bonding generally isn't faster than sewing, it has other advantages. It withstands shock loading better, as when a gust hits your kite sail. It spreads the load evenly along the seam, preventing load concentrations at spars and bridle points. This is especially helpful with light materials, such as Mylar giftwrap or Orcon's AN-36 reinforced Mylar film (informally called "ripstop Mylar"). And of course adhesive bonding supplies are a lot less to buy than a sewing machine. A 15-yard roll of tape, enough for about five average-size kites, costs only about $4.

GUIDELINE 1
Pick the Right Adhesive

Adhesives come in many forms, such as liquids out of tubes or cans, but pressure-sensitive double-sided tapes are almost ideal for kites. This is because of their no-mess, no-fuss nature, and their ability to give you a sharp, clean joining line.

After much research into the hundreds of tapes available, I found 3M Company's VHB acrylic resin, in their A-10 family, to be the strongest and most durable. This is a *resin transfer adhesive*, which comes on a paper separator (called scrim) and differs from standard tapes (such as Scotch) because the backing comes off the adhesive in use. This adhesive comes in different widths (1", ¾", ½" and slit narrower on special order) and in different thicknesses defined by product number, such as 9460PC for .002". We have found that the 9460PC is the most useful for kitemaking.

With this tape, and Orcon's AN-36 reinforced Mylar, members of the Pierce County Kitefliers Association in Washington state have made ultralight stunt kites that fly in 1–2 mph winds, and box kites that withstand winds up to 25 mph. We've also adhesively bonded kites of woven cloth, such as ripstop polyester (e.g., Icarex).

This tape adheres best to Mylar film, and not so well to ripstop fabrics, but better to polyester than to nylon ripstop. On nylon the adhesive sticks better to the coated side.

The advantages of the 9460PC adhesive over other double-sided tapes are that it is clear, thin and lightweight, has low tack and, once bonded to the surface, will not slide or creep apart under load. Most double-sided tapes are made with high tack and they slowly flow (creep) over any roughness to cover all the surface area. This flow is what allows your kite seams to slide apart under load. The 9460PC has high internal strength, which is the reason it does not creep or gum up your needle if you sew through it.

However, to get the most holding power,

Comparing APPLES to APPLES

If all you have are manufacturer's claims, even though the company has never tested ripstop, and you want to know which tapes are really going to work best for kitemaking—what do you do?

You test! You load combinations of your material, joint design, application methods and conditions. You use loads higher than you think you will have when flying. And you do this consistently. Thoroughly. Repeatedly. For as long as necessary until the data agrees.

This little piece of apparatus (above) is one Dick Curran used to put adhesives through their paces. Failures of bonded fabrics occurred between two minutes and six days. Nearly 100 systematic comparisons produced the results behind his report.

you must put some energy into the 9460PC to make it flow over ripstop. Heat and pressure from ironing will do this. The heat also dries out the ripstop, driving off surface moisture that can lower bond strength. This is why you have to iron nylon longer; it holds more moisture and is harder to bond to.

Be aware: the 9460PC adhesive will not stick to ripstop the way the 3M data sheets advertise. Those ads say you'll get 75% of the strength in 20 minutes and 100% in three days, but their tests were done on aluminum, which is smooth and dry—the adhesive sticks to it aggressively (i.e., it has a higher surface energy than nylon or polyester). You will get some strength for ripstop just from initial tack and you can increase this somewhat by rubbing or rolling, but the real increase comes from raising the temperature and pressing firmly for two or three minutes with your iron. This gets you the chemical activity that makes a bond to the ripstop.

Do you need this maximum strength for your kite? If it's a small kite for light winds, probably not. We have flown kites using just initial tack and rolling pressure. The performance with this will be similar to what you get with the familiar older product called Seamstick and with a different 3M family, called A-25 (product number 9500 or 926). Our testing has shown that ¼" lap seams on all three of these adhesives will hold 10 pounds on a one-inch-wide specimen of ripstop for one to two minutes. But after ironing, Seamstick still fails in one to two minutes and 926 fails in 17 minutes. However, the ¼"-wide 9460PC adhesive held 10 pounds for 8,640 minutes (six days) and showed no signs of separation. David Lord of our club did some stress calculations on a standard stunt kite in 35 mph winds and found that seam loads are 5 lbs/inch or less, so 10 lbs is a good safety factor.

Why Use This Tape?

I chose this particular adhesive not only because it has the lowest creep (i.e., highest internal strength), but also because it has low initial tack. However, as a resin transfer adhesive it does require slightly different application techniques from the usually available double-stick tapes. With no scrim or internal carrier, it can't be removed from the paper separator and handled as a separate piece. You must first apply the 9460 PC adhesive to one side of the seam, then rub or roll on the paper backing to get the adhesive to stick better than it does to the paper (or it will come off with the paper). Before rubbing or rolling, you can still peel the adhesive and the paper back up and reposition it. After removing the paper, if you have pressed lightly on a seam, you can reopen it.

The high internal strength of this adhesive helps you put your kite together in various ways. For example, if you have a highly loaded area you need to reinforce, you can stitch right through it without gumming up your needle. If you need to, you can also slit the tape to whatever width you need. Just pull it past a sharp edge (razor blade or knife) stuck in a block of wood, keeping the paper side to the wood. Push pins can be used as guides.

GUIDELINE ❷
Design to Prevent Peel

It's important you understand the types of load on a kite's seam. Theoretically, a bonded joint can be loaded *flatwise* (perpendicular to the plane), *in shear* (in the same plane) or *in peel*. Think of it as removing an adhesive bandage stuck to the skin on your arm. If you could pull up on all the adhesive at once (imagine a block of wood stuck to your arm), you would be loading the adhesive in *flatwise* tension. If you pull the whole tape sidewise, in *shear*, it's hard to pull off. But if you pull the tape up (90 degrees to your skin), in *peel*, it peels right off. For a kite seam, you load in shear or flatwise but never in peel.

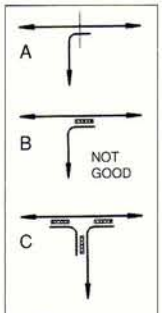


Fig. 1. seam loadings at 90 degrees

Sewing a piece of kite sail material to a second piece, and loading it at 90 degrees (i.e., like a delta's keel) is fairly common (*Fig. 1–A*). Normally, the load transfers to the middle of the second piece through the thread. But a bonded seam loaded this way peels apart (*Fig. 1–B*). All the load concentrates along a line at the very edge of the bonded seam. The seam could be a foot wide, but none of that width carries any load (just like that bandage removed from your skin).

A bonded seam best holds shear loads. This is where the load direction is in the same plane as the adhesive layer. Joining two pieces of material with an overlap (lap seam) loads the entire width of the adhesive.

Widths of 9460PC between ¼" and ½" give enough strength, and are also easy to handle. Strips of this adhesive narrower than ¼" are hard to slit, store and apply. On the other hand, normally you don't need the strength from strips wider than ½".

How to Design Joints for Bonding

Try to design all your bonded seams to load in shear, possibly in combination with flatwise loading, but never in peel. Change the 90-degree loading (e.g., a delta keel joint) from peel to shear by bonding sail material across the open side of the joint (*Fig. 1–C*).


Fig. 2. alternative loadings in three-angle seams

You can hem sails (*Fig. 3*) by simply applying the adhesive along the edge of the sail, then folding the edge over. You can get additional strength or resistance to flapping or flutter by applying a strip of adhesive, then a strip of sail material, then another strip of adhesive, then folding the edge over. You now have the equal to a double-sided adhesive with a scrim in the middle.

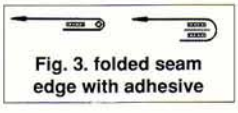


Fig. 3. folded seam edge with adhesive

An easier way to reinforce a hem is to use 3M's acrylic adhesive A-25 in the form of product number 9500. This adhesive has a higher tack than 9460PC and will creep more under high loads, but it has a Mylar scrim. I think you'll have more success for hems with 9500 than with the better-known product Seamstick because 9500 is stronger and its scrim doesn't stretch. Stretching Seamstick when applying it causes wrinkles or puckers in hems as the Seamstick scrim "relaxes."

In a fashion similar to hemming, you can make a sleeve for a small spar or cord. Leave space for the spar inside the fold. This only works for thin spars. Larger spars start to load the seam in peel because of their diameter. Fig. 4 shows how to sleeve larger spars.

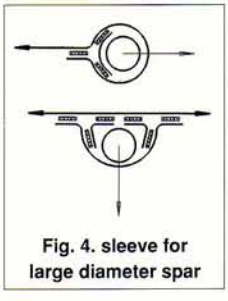


Fig. 4. sleeve for large diameter spar

Pockets for spar ends may also benefit from redesign for adhesive bonding. An example is the pocket at the base of the

spine in an Eddy kite. If the bonded pocket only contacts the back of the sail, it may be loaded in peel and eventually fail. You can reinforce it by bonding additional strips of material across the peel intersection as mentioned earlier.

You can further reinforce a spar-end pocket by wrapping the edges of the pocket around to the front of the sail. This way the pocket may open somewhat, but it won't peel away from the sail under load. Stitching through the pocket and the sail, along the edges, is an alternative technique that further reduces peel.

It may not always be best to design bonded seams that mimic traditional sewn construction. Kites designed with spar sleeves and pockets are harder to make with adhesives, but you can make them in other ways.

One good example is the corner of a rokkaku. This kite is often finished with pockets, but using a stop on the spar with a cable tie going through a reinforcement patch (what Bobby Stanfield calls the "bump" technique*) makes sail construction easier.

GUIDELINE ❸
Use Heat to Bond Your Seams

As mentioned previously, ironing your seams makes the adhesive "wet out" the ripstop mechanically and chemically and strengthens the bond. It's best to use a buffer material, such as stiff butcher paper or Mylar drafting film, between the iron and the fabric to smooth out the seams and keep the iron from forming wrinkles or puckers along the seam. Use a setting just below steam on your iron. As an alternative, you can use a heat lamp or hair dryer followed by a roller or burnishing tool for making the adhesive conform to the surface and wet the cloth.

Ironing sometimes puckers the edges of bonded seams as you dry out the ripstop. You can minimize this by ironing only the bonded area with a temperature-controlled soldering iron with a flat, smooth tip. The idea here is to heat only the cloth contacting the adhesive. If you don't need the maximum strength but just want to get a little more adhesion and less puckering, you can iron at a low temperature setting. For example, on a small or light-wind kite, you might use low-temperature ironing on sail seams and hems but high-temperature ironing on high-stress places, such as leading edges and line attachment points.

Ripstop nylon reacts to ironing more than polyester. This may cause more irregularities next to seams and hems. Nylon tends to wrinkle more than polyester because it holds more moisture than polyester. Ironing therefore drives off more moisture from nylon, making it change shape.

*See "My Family of Custom Kite Fittings" by Bobby Stanfield, Kite Lines, Fall 1994.

Dick Curran of Puyallup, Washington displays the Cubic Box kite he made without sewing. The Orcon AN-36 sail material was dyed in four colors by Georgean M. Curran, Dick's wife.

A Tip for Kiters Who Sew

Adhesives can augment your sewing when you're using woven cloth. By bonding seams before sewing, you fix dimensions and positions of pattern pieces as the material moves through the sewing machine. Given that the bonded seams are strong enough with adhesive alone, a single stitched line is all you'll need. You can do simple overlaps and they will fray less. Adhesives can be used to cut down your sewing time. And remember that 9460PC will not gum up your needle.

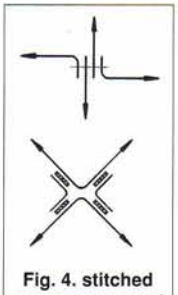


Fig. 4. stitched seam augmented with adhesive

Reinforcements

Of course you'll need to reinforce your bonded stress points just as with sewn kites. You can adhere pieces of heavy Dacron polyester to corners and other areas under stress with 9460PC tape. When bonding large reinforcement patches, it's a good idea to apply the adhesive to the whole underside of the reinforcement. This is one time when 1" or wider tape comes in handy. Always iron these reinforcements at higher temperature.

If a seam tends to open up under load, even after ironing at high temperature, look for peel loads and redesign the joint. You can also make a wider joint or go to a double overlap to get more area. You may have to stitch a single line to eliminate peel or creep and secure the seam.

Appliqué Techniques

Appliqué of straight-line pieces is not a problem. But at first glance curved appliqué with adhesives might seem a hassle. The paper backing is too stiff to steer around curves.

I have not discovered an ideal solution for this but I have developed three ways that work. Each involves secondary steps in the process and each has its advantages and disadvantages.

One way, you can replace the stiff paper with a silicone-treated flexible double-knit cloth backing. Another way, you can place the adhesive on each side of a thin spunbonded material, creating a new, flexible double-sided tape. (Both these methods let you handle the adhesive without the stiff paper backing.) A third way, for the 926 adhesive, you can apply it to the ripstop with 3M's 752 ATG applicator gun, using the adapter kit for ¼"-wide adhesive.

The first two methods are only practical for small areas or if you make only one or two kites a year because of the time required to prepare the adhesive. The third method is faster and somewhat less labor-intensive but involves a cash outlay of nearly $50. The how-to's for these methods are complicated for this article, but are available free to subscribers on request. (Please send us a self-addressed stamped envelope.)

Piecing Sails

In addition to appliqué, Sam Huston of the Pierce County Kitefliers has had great suc-

cess bonding ripstop polyester into yard goods. Sam pieced the material together, butt-joining shapes and colors under strips of black cloth. This creates a very pleasing stained-glass effect. He then cuts and sews the sail using traditional techniques.

A Challenge

This article is only a start. I don't imply bonding is new or that I've got all the answers. But I do say it offers good alternatives to the sewing machine.

I can't give you complete step-by-step cook-book methods yet because the recipes are still being worked out and it will be you, the kiting community who will do much of this. I hope to report the future news but meantime I trust this article will give you enough confidence to get started.

I'm willing to share information and discuss problems if need be. Contact me at 206-927-8779.

Author's note: I would like to thank Sam Huston and David Lord of the Pierce County Kitefliers Association, Washington state, for feedback on their experiences using adhesives in kitemaking. I also thank STAC Inc. of Auburn, Washington, for their time spent providing the 3M technical information.

Editors Note: In support of this article, *Kite Lines* has persuaded a few kite retailers to carry the 3M 9460PC tape and possibly the applicator gun. The retailers are:

- Gasworks Park Kite Shop, Seattle, Washington
- Hang-em High Fabrics, Richmond, Virginia
- The Kite Studio, Wescosville, Pennsylvania.

We expect other kite suppliers to jump in as the word gets out. Check with your favorite kite shop or mail order source. Local 3M distributors, such as R. S. Hughes, also sell the adhesives and guns.

RICHARD NORMAN (DICK) CURRAN made bonded kites in the mid- to late 1940s, but the adhesive was flour and water, the sail was newspaper hemmed with cotton string and the spars were split bamboo. Forty-five years later, after some schooling, an army tour and 35 years of helping build airplanes (yes, bonding airplanes together), he applied his knowledge to kitemaking. And yes, he does not know how to sew.

In France Buggies on a SPIN!

NEW BUGGY MODELS... ACTIVE CLUBS... MORE EVENTS THAN EVER...

Founded May 1994, the Association Française de Char à Cerf-Volant (AF2C) is the first and only association dedicated solely to kite buggying in France.

And now its stature is confirmed: in February 1995 the AF2C entered into an agreement with the French Land Yachting Federation that gives Class 8 affiliation to kite-powered carts. This is major recognition for kite buggies and brings them access and insurance on all designated land yacht sites. With this federal license, the AF2C should draw many new members.

At least seven important buggy gatherings were held in France in 1994, including the second Quend-Plage meeting organized last November by Michel Gressier. Fifty-three buggiers and 64 buggies showed up.

XAVIER LIFFRAN

THE AIR TRAK

At least five new buggy prototypes were recently unveiled and marketed by various French manufacturers. Although one of them was so badly designed that it will surely never find a buyer, the others are much better. They share a common quality: well-finished, sturdy and innovative construction.

Contrary to many other buggies inspired by the Peter Lynn original design, all these models have rigid molded seats—as opposed to net seats. These buggies are not designed for freestyle exercises such as the "wheelies" and spins performed by acrobats on lighter models. Yet they may offer better comfort for long rides and good protection against water spills when riding on wet sand beaches.

The Air Trak

This buggy designed and distributed by Michel Gressier introduces a new structural concept: the frame consists of a single stainless steel square beam. The rear axle, a special fiberglass and carbon tubing, is purposely made flexible enough to act as a shock-absorber.

The seat is fully adjustable but is not specially designed for sideways sitting and offers only little lateral support. But side straps are proposed as options and will prevent the pilot from being pulled off on the side. The standard Air Trak is fitted with elegant molded aluminum wheels and fiberglass front wheel mudguard.

This buggy is entirely dismountable, the main parts being securely held by safety connectors, like those on hang gliders. Prices range from 3,200 francs (basic version) to 6,500 francs.

The New Zeph 1

One of the problems with rigid seats is that they may not suit wide bottoms. Eric Nicolas, who successfully launched his Zeph 1 buggy two years ago, now offers a second version with a wider seat that is padded on the sides.

The originality of the Zeph is its molded fiberglass and resin body frame, made as a single piece incorporating both the front wheel mudguard and the driver's seat. It makes a very strong, impact-resistant structure while still allowing enough twist to react on bumpy grounds. Yet, because only the width-adjustable rear axle is collapsible, bulk and shape will be a major drawback for city dwellers lacking storage space at home and a roof rack for transport. The Zeph 1 sells for 3,680 francs.

THE KITE BUG

The Dunny Ouragan

The great originality of this buggy by Midi Bleu is that its modular frame can very easily be lengthened with additional seat kits to accommodate up to three passengers in line (a five-seater, with reinforced frame is also marketed). Each passenger may of course pilot his or her own kite provided everybody agrees to go in the same direction!

The frame is all welded aluminum (sea water resistant) except for the front wheel fork, with adjustable footrests, which is stainless steel. The molded polyester seat has recently been made wider to allow the rider to sit slightly sideways. Comfort, safety, speed and compactibility for transport are its assets. In its bag it measures 24" x 28" x 12". Slanted rear wheels and a mudguard that fits to the front end are available. Prices, depending on wheels, are 3,400 to 4,500 francs.

THE DUNNY OURAGAN

THE ZEPH 1 GOES RIDING ON THE BEACH AT HOULGATE, FRANCE.

THE ZEPH 1

The Kite Bug

This most interesting prototype, designed by Jean-Philippe Krischer, a famous land yacht designer and racer, excited all the buggy experts after it was shown for the first time at the Paris "Salon Nautique" last December.

With its striking "bio-design" style and a glossy red finish, it looks as classy in its realm as a Ferrari or a Porsche.

The molded polyester seat, though deep and comfortable, still allows the pilot to pivot sideways, providing an excellent rest for the back in any position. The bottom of the seat—with a small opening to drain water—is only four inches above the ground to keep a very low center of gravity.

Another innovation is the front offset direction system, derived from land yacht design, which keeps the wheel very slanted when turning. This provides better grip and stability without loss of maneuverability.

For transport, the 45-pound Kite Bug can be dismantled in a matter of seconds thanks to the clip system that also allows immediate adjusting of the rear axle width and of the telescopic front tube.

When Krischer saw his first kite buggy he was confused by its "homemade" appearance. As a designer of three-wheeled machines powered by wind, and after seeing the growing enthusiasm for kite buggying in France, he thought he should have a try at designing such a kite cart. Although he has no experience in kiteflying and didn't test the buggy himself, this first splendid prototype confirms his talents as an innovative designer. The experience and modern facilities of his firm, Seagull, assure reliable manufacture. The Kite Bug sells for 3,900 francs.

—Article & Photographs by Pierre Fabre

XAVIER LIFFRAN

PKA NEWS & EVENTS

Leaders in the U.K.

- *Dominic Early* is the 1994 United Kingdom National Champion. Dominic was the most consistent buggier all year. He flies a standard Modulus kite and rides a G-Force Buggy.
- *Chris Lamb* is possibly the U.K.'s best freestyle driver. He flew Flexifoil and Peel kites at the Pembrey Cup and then switched to Modulus. He rides a Lynn Buggy.
- *Jonathan Harris* is a 14-year-old comer—nicknamed "Honking Harris."

Locations

The PKA uses over 20 inland sites in the U.K., but for racing and meets, the beaches have the best conditions.

1995 Events

- *January:* Icicles Cup Enduro Race
- *February 25–26:* Wind and Wheels, New Romney, Kent.
- *March 18–19:* 2nd Pembrey Cup and the first heat of the U.K. Nationals
- *July 15–16:* 2nd Weston Challenge Cup and second heat of the U.K. Nationals
- *August 19–20:* 2nd Flyde Coast Cup and final heat of U.K. Nationals
- *October 21–29:* The Pembrey Classic International Buggy Trials, for those who want to buggy their hearts out

Class 8 in Progress

The success of the French group AF2C gives new hope to buggiers elsewhere, such as:

- *Germany:* Kite 'n' Trike has been working for two years to get Class 8 recognition.
- *Netherlands:* The Dutch Land Yacht Federation is currently negotiating with F.I.S.L.Y. and local buggiers to gain Class 8 recognition.
- *USA:* Robbi Sugarman has formed the American PKA to gain access to sites in his area and Scott Dyer is working closely with the North American Land Sailing Association to form a Class 8 racing schedule.

—Mick Parsons & Mike Johnston, ParaKart Association, U.K.

& MORE BUGGY NEWS

Events

ITALY Roberto Magi of Urbino has announced an ambitious 1995 schedule of buggy gatherings for Monte Petrano, Cagli:

- *April 29–May 1:* World Buggy Meeting
- *July 7–9:* Buggy Cross
- *August 29–31:* First Italian Buggy Cup
- *October 13–15:* First Buggy Meeting of Tartufo

USA Expected buggy events are:

- *Midsummer:* Bonneville Buggy Enduro, Bonneville Salt Flats, Utah, USA. Unconfirmed at press time. Contact: Bob Childs, tel: 303-440-6303.
- *September 25–27:* AKA Pre-AKA-convention buggy bash, Tulsa, Oklahoma, USA. Contact: BPI*.
- *January 14–19, 1996:* Buggy Boogie Thang II, Ivanpah Dry Lake, California, USA. Contact BPI*.

*BPI: Buggy Pilots International, Corey Jensen, c/o Windborne Kites, 585 Cannery Row #105, Monterey, CA 93940, USA. Prints bimonthly "Buggy Newz," a connection point for buggy buffs.

Still on the Market

The bubble of new buggies in France is encouraging because some companies have folded lately. But the following makers are very much alive and well:

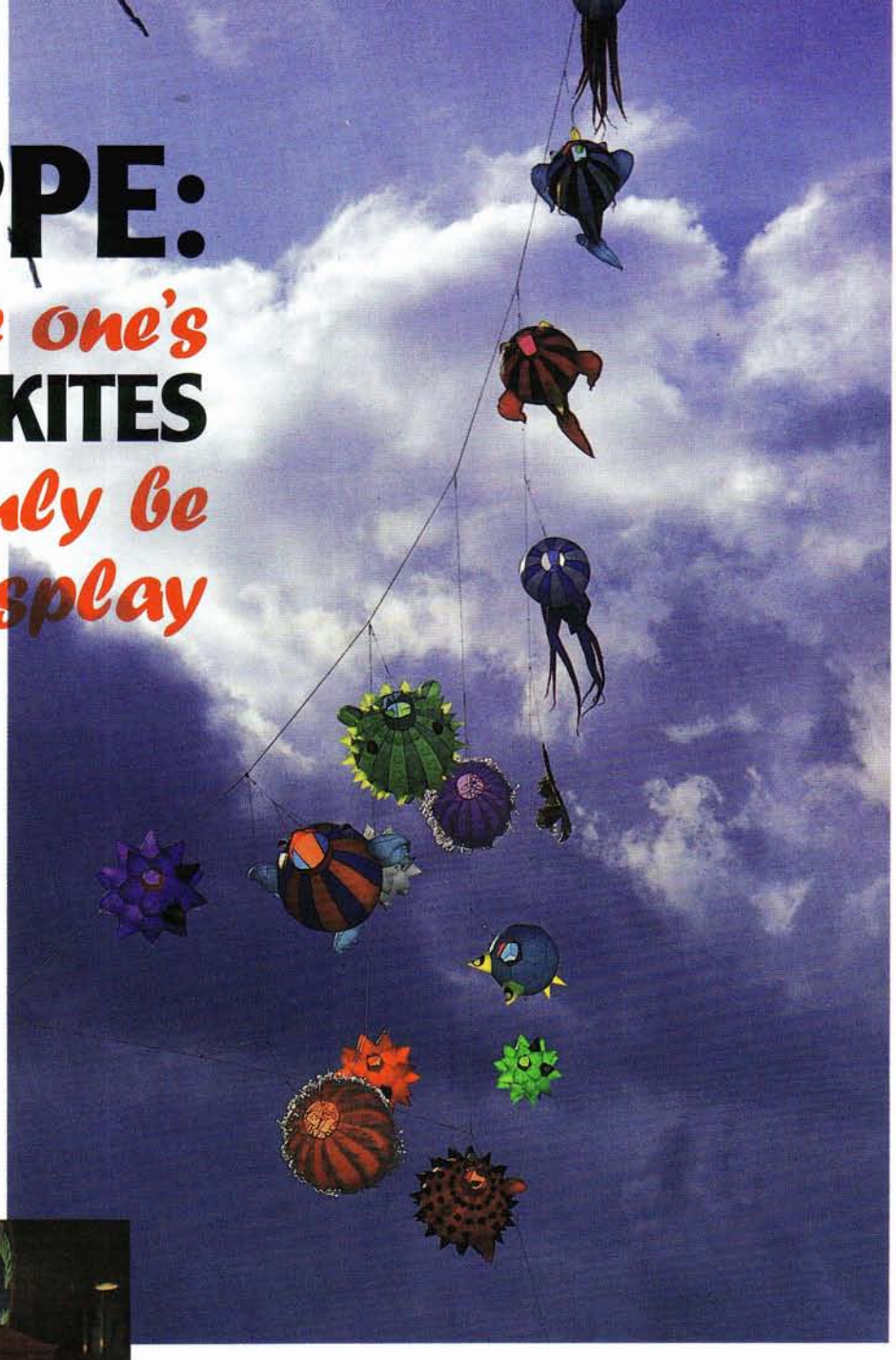
- Peter Lynn Ltd., New Zealand, clearly leads in buggy manufacturing. Makes a classic, a competition and a new folding buggy introduced at the January kite trade show.
- Phoenix Manufacturing, Aachen, Germany makes the Pha'eton Trike.
- Cobra Kites, Island Heights, New Jersey, USA makes the Flexifoil Kite Buggy (by Peter Lynn).
- BO's Kites, Wichita Falls, Texas, USA makes the Wind Rover.

New manufacturers still keep popping up, such as:

- Roberto Magi, Urbino, Italy, makes the Æolus Buggy; just starting distribution.

THE LYNN FOLDING BUGGY

DIEPPE:
where one's passion for KITES can truly be put on display



The 8th Biennial International Kite Festival Dieppe, France Sept. 10-18, 1994

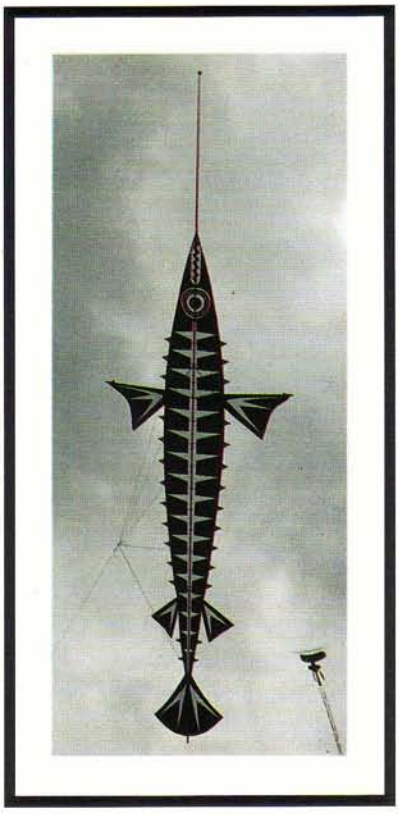
Above right, a sky full of ocean creatures: anemones, urchins and octopuses by Willi Koch of Germany.
Above, miniature Codys displayed in a street window in Dieppe.

Article and Photographs by Simon Freidin

The theme for the *prix de concours* at the 8th biennial Dieppe festival was "the sea, the ocean,"—but a more appropriate theme might have been "the tidal wave, the tempest." A huge weather depression, appearing on satellite photos as a whirlpool of solid cloud, slowly moved in from the English Channel and across the European coast during the first seven days of the festival.

Yet, Dieppe weathered the storm and emerged the grand festival it has always been. Dieppe stands alone as a professionally organized, art-oriented kite festival, where one's passion for kites can truly be put on display. It retained its unique features: two weekends with an intervening week devoted to kite activities; a unique mix of representatives from all over the world (26 countries this year); and a town which wholeheartedly supports the festival.

I last attended Dieppe four years ago, and I had been fascinated to discover a whole new world of European kitemakers. This time I felt I was with a family of friends, many of whom are now regulars at major kite festivals around the world.

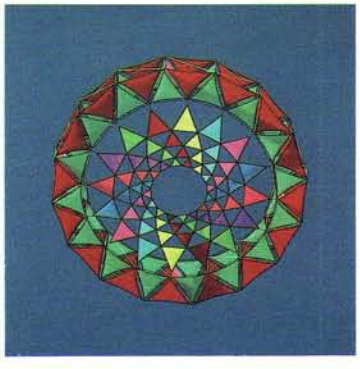


Above, a bird of prey with swordfish in its claws, from Thailand. Right, Pierre Fabre's large Nuclear Mackerel, the top prize winner.

The Trying Weather

When I asked Max Gaillard, the festival convener, what he considered the highlight of the event, he jokingly replied that it had been Thursday, when gale force winds had forced the closure of the festival village. This led to a convoy of buses being brought in to act as a windbreak, to prevent the tent village from being blown away. But he tempered his humor by observing that the real highlight had been on the Saturday of the final weekend. The storm had broken and the sky was suddenly alight with kites.

In spite of the high winds and frequent showers, the kitefliers accomplished a thorough show. Not surprisingly, the professional kitemakers had kites most adaptable to the gales. Pierre Fabre, André Cassagnes, Michel Gressier with his *Art pour mon Ciel* artists group (France), George Peters (US), Michael Alvares (Australia) and Peter Lynn (New Zealand) were notable performers during the festival. Their kites created a central focus to the display.



André Cassagnes' ring kite with a suspended interior surface.

But for some kiters, the winds were too much. As Chantel Barret of Paris commented to me in typically French fashion, "One flies kites to make love with the wind—not to fight it!"

Surprisingly, the poor weather did not dampen the spectators' enthusiasm. Even in the cold and wet, an appreciable crowd surrounded the demonstration fields and wandered through the "kite village." This tent city, complete with bars and kite shops, houses each country in its own tent. The tents display kites representative of the invited kitemakers and many run workshops, sell badges or publications, display photographs and demonstrate the kitemaking typical of their countries.

Among the stranger things on sale were the "Peter Lynn" green canvas hats going well at the New Zealand tent. The hats are Peter's trademark, when he is not wearing a helmet for buggying or kite-sailing. This led to the disconcerting phenomenon of looking across the crowds milling through the village and seeing multiple "Peter Lynns."

"One flies kites to make LOVE with the wind—not to FIGHT it!"

—Chantel Barret

A New Kite Village

I noticed that the layout of the kite village this year allowed for a better flow of pedestrian traffic. Four years ago it was laid out as a square, which led to a crush of people and made it difficult for kitefliers to get to their kites and carry them to the display fields. This year, the flow of public and kitefliers did not clash. The village was set up on either side of the roadway that leads from the hotels to the sea front. The village was flanked on either side by the wide fields used for kiteflying, fields saved from development by Napoleon Bonaparte's wife in the 18th century. And there were heated(!) containers for kite storage and drying.

The roadway was transformed into a mall, easily serving the large crowds purchasing from the kite shops on one side of the roadway, or wandering down alleyways of tents which led off to the other side of the roadway. The road was blocked on the city

KITES FROM THE FAR EAST

Left, Sari Madjid aids in the launch of a Balinese janggan kite. Above left, Vietnamese jet fighter kite is carried out to launch. Above right, traditional Cambodian kite with an impressive hummer.

end by a large kite-inspired sculpture by Pierre Fabre which was commissioned by the city of Dieppe. Fabre designed a wind-driven centerpiece surrounded by a semicircle of 30 banners, and containing the distinctive design elements he uses in his kites. Other sculptures also added to the festivities: Veronique and Michel Gressier designed a set of skulls and hummers which throbbed electrically in the strong winds, and a handcrafted aeolian harp was installed adjacent to the stand overlooking the fields.

The festival had four main fields: a demonstration field for national exhibitions, rokkaku battles, fighter kite demonstrations and the like; a field for kites entering the *prix de concours*; a stunter field; and a field for *tres gros cerfs-volants* and for buggying. Peter Lynn, Dominique Scholtes, Clyde Cook and James White had this field to themselves for much of the festival. Among their menagerie: two *fugu* puffer fish; an octopus; a platypus; a gecko; a dolphin; and a new kite still under development called a trilobite, unique because it has no internal ribs.

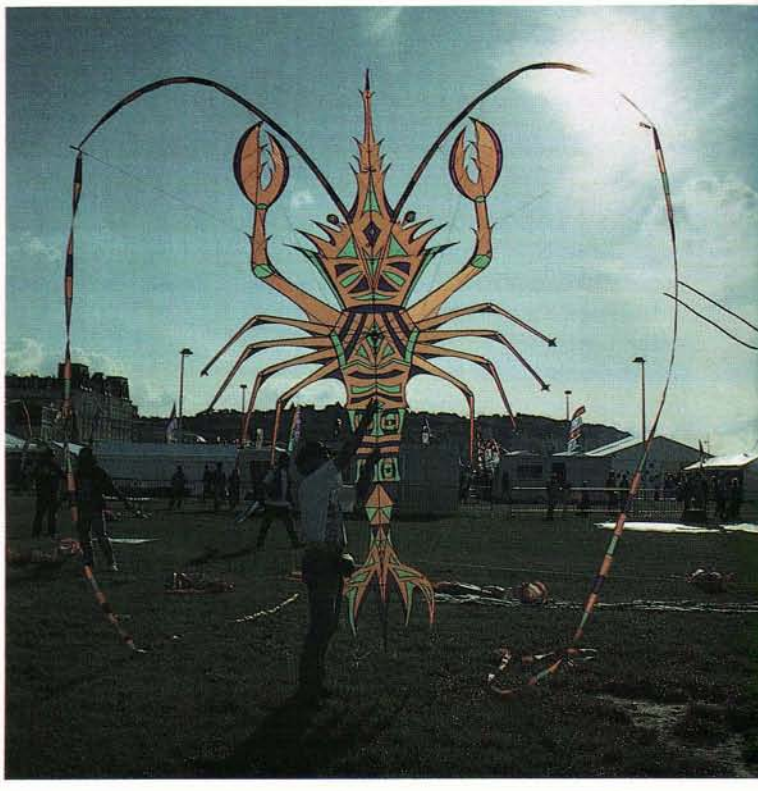
During the weekdays of the festival, workshops were held in the kite village and at schools in the surrounding area. For the benefit of the attending fliers, workshops in kitemaking often followed the evening meals. Kitefliers made two excursions to demonstrate for the employees of two of the sponsors: EDF (Electricité de France) and Nescafé, which brought fliers from the coffee-growing countries of Colombia, Brazil and Guatemala.

First-Time Countries

At this year's Dieppe, several countries were represented for the first time, in particular Martinique, Vietnam and Guatemala.

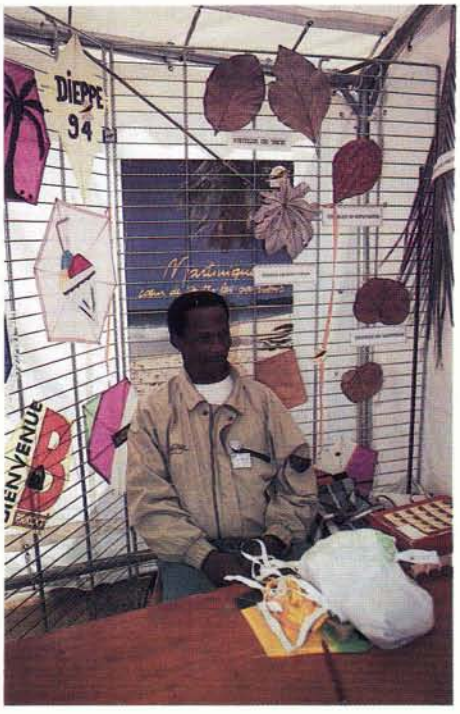
Martinique's small paper and bamboo hexagonal kites are flown all over the island on Ascension Day. A number of kites on display in the Martinique tent were made from single leaves, described by Desirée Chapin, the Martinique representative, as a "poor man's kite." Martinique has had a revival of kite-flying in the last four years. Previously, kite-flying in Martinique had been a rarity.

From Cambodia came paper and bamboo kites which appeared to be part *wau* (kite in Malaysian) and part *Hong Song* (Northern Thailand) but without the intricate paper carving for which the current-day Malaysian *wau* is well known. Four 200-foot papyrus tails gave the kites stable performance in strong winds, and once launched they stayed at high altitude all day, barely shifting position. A rotating



Above, Pierre Marzin holds aloft his award-winning crayfish kite.

Left, a delta showers the crowd with fireworks at the night fly. Above, the Red Baron by Thijo van Beek of Holland. Below, Martinique's display tent with leaf, paper and bamboo kites.



hummer made of four-foot of *aurotaen* reed had wax balls at each end, and about a foot of string. Suspended on the strings, the hummer spun rapidly, resonating in a range of tones. The kite had a two-leg bridle.

From Vietnam came kites of silk and bamboo in the Chinese tradition. One kite represented two doves holding aloft the Eiffel Tower, which the Vietnamese explained was a symbol of peace between France and Vietnam. In marked contrast, a realistic three-dimensional jet plane kite was launched. Like its Cambodian counterpart, it sat stably at high altitude.

In Full Fight

Kite fighting was a major feature of the festival, given impetus by the hard work of the Manjha Club International, the brainchild of Frenchmen Ludovic Petit and Philippe Gallot. They organized demonstrations of Indian, Korean and Thai kite fighting, followed by a rokkaku battle of 60 individuals flying kites less than six feet tall (most were about three feet). It was remarkable to see so many small rokkakus launched simultaneously and in full fight.

A regular of Dieppe, the energetic Shakib Gunn of Singapore with friend.

For me the low point of the festival occurred during the team rokkaku battle on the final Sunday afternoon. After fighting my way to being one of the last kites in the sky, I was cut down by a kiteflier who violated the strict rules by flying on Kevlar. As soon as the organizers realized it, they swiftly halted the battle. For a few minutes there was confusion, then silence. In the meantime my Simon's Samurai kite disappeared over the Dieppe skyline. It was later returned, though with serious rips in its skin.

One of the poignant moments at the festival was during the closing ceremony when Max Gaillard asked for a moment's silence for Peter Malinski, a kiteflier he believed epitomized the Dieppe spirit. We all mourned Peter's passing.

The Famous Night Fly

The night fly at Dieppe has long been renowned for its innovative and spectacular display. This year's was no exception.

Work started early on the final Saturday, with the construction of a stage (for a live vocal and percussion band) and the rigging of floodlights and spotlights around the whole periphery of the kiteflying field. Before the fly was a dinner for all the kitefliers at a nearby gymnasium. The surprise at dinner this year was that Morihiro Takeda of Japan was celebrating his 50th birthday. He received one of the largest toasts probably ever made to any kiteflier by kitefliers.

At the night fly, I spent much of the time lying on my back looking skyward. The image of ghostly kites rising from the darkened field to be brilliantly illuminated by the multitude of lights cutting into the blackness was totally exhilarating. This is one situation where all-white kites have dramatic impact; many multicolored works which are so much a part of contemporary kitemaking have too much detail to come alive to the same extent. From the side of the field, the image was truly surreal—white lines and white kites glowing spectacularly in the moonlit sky. Stunter-mounted fireworks added vitality to the image and a final fireworks frenzy brought the fly to a dramatic close.

Dieppe's Largess

Dieppe provides generous prizes for its *prix de concours*: trips to kite festivals in Canada, Thailand, Indonesia and Italy. This year the prizes went exclusively to French kitefliers,

which most of the foreign guests considered a fitting way to promote French kiteflying. Then again, most of the foreign guests travel as often as they want. The organizers expressed some disappointment that none of the prizes were won by the foreign guests.

Aimé Barsalou of Canada commented that for him, the communal mealtimes were a highlight. They gave him the opportunity to spend time with other kitefliers. He said that at many other festivals the kitefliers only meet on the flying field, and then are usually too busy with their kites to have more than a short conversation. But at night, in the meal hall, there was plenty of time to share ideas and experiences. This sense of community, as much as anything, is the great hallmark and attraction of Dieppe. ♢

From Germany, a ring kite of neon colors is launched by a group of European fliers.

COUNTRIES REPRESENTED AT DIEPPE 1994

AUSTRALIA • AUSTRIA
BELGIUM • BRAZIL
CAMBODIA • CANADA • CHINA
COLOMBIA • KOREA • FRANCE
GERMANY • GREAT BRITAIN
GUATEMALA • INDONESIA • INDIA
ISRAEL • ITALY • JAPAN
MALAYSIA • MARTINIQUE
NEW ZEALAND • SINGAPORE
SPAIN • THAILAND
USA • VIETNAM

The Kitemaker of Hiroshima

Treasure Tales by Tal Streeter

Through the years since the publication of my book, *The Art of the Japanese Kite*, I have traveled with my collection of Asian kites, lecturing and installing exhibitions in galleries and museums around the world. Wherever I and the show went, interesting people always turned up. Everyone who chose to talk with me invariably gave me, the so-called Asian kite authority, some facet of information completely new to me about Eastern kites.

"I made these kites as a small girl."

The attractive Japanese woman offered this information looking up at me on a ladder where I perched hanging an exhibition of *The Art of the Japanese Kite*. I had noticed her standing off to the side of the gallery next to a young boy, her son, I surmised. They stood there silently for several moments, looking carefully at the kites.

"What?" I said, wondering if I had heard her correctly, for it was almost unheard of for traditional Japanese to make their own kites. Unlike in the United States where it is common for children to make their own kites, in Japan kitemaking is the work of a professional artist, someone following in the footsteps of a father—perhaps a grandfather or two.

"Which kite did you make?" I asked.

"The yakko dako," she replied. "My brother and I made them."

"Is that so?" I said, coming down off the ladder.

"Yes, we used a candle to bend the bamboo. And rice paper for the body which we painted. But the legs are too short on these you are exhibiting. We made them longer and out of old newspaper. The longer legs made them fly better."

"That would be so," I said. The Matsutaro Yanase yakko she pointed to—depicting a stubby-legged footman or servant—gives up some of its ability to withstand heavy winds in order to bow deeply at the waist like a properly respectful Japanese. We were sitting on a bench in the middle of the gallery now, talking quietly.

It was time for me to learn more about Japanese kites.

"How old were you and your brother when you made these kites?" I asked.

"I was nine, he was ten," she replied. "It was common then for children around the age of 10 years and older to make their own kites where I grew up."

"And where was that?" I inquired.

"Hiroshima," she said.

I had once returned to Japan to visit the Nagasaki kitemaker in his home city, but I had never possessed the courage for a trip to Hiroshima.

For the Japanese, I knew that it was certainly not polite to ask direct questions. One would not speak in this manner to either a stranger or a close friend who was Japanese, but I determined at that moment to be an American and to be very direct.

"I have traveled all over Japan, but I have purposely avoided visiting Hiroshima," I said. "I felt too ashamed to go there."

She smiled at this, but did not comment. "How old are you?" I asked.

"Forty-six," she replied.

"You would have been one or two years old then, when the atomic bomb was dropped," I said.

"One," she replied.

I looked at her closely, thinking how very pretty she was and marveling at how youthful the Japanese often look. I hesitated a moment before I asked, "Were you hurt by the bomb? Or your family?"

"I was protected by a wall which fell over me." She continued with a further bit of my impolite prodding, "Our home was two kilometers from the blast." And finally, "My father was outside. He was burned on his shoulder and his back."

She gestured with her hand, rubbing, unconsciously it seemed, her son's back. I wondered if those ministrations weren't seared on her memory, the patient hands of someone in her family rubbing a healing ointment on the father's wounds. For a second I saw the vivid scene of her family in the years following the first atomic bomb explosion. It was the vision which had kept me from going to Hiroshima when I lived in Japan.

"We went to a hot springs," she hurried on in her account, "and he overcame his wounds."

At this point, I began to feel very awkward with my brashness, but I asked some more questions about her life in America. I learned that she had two children, one boy nine and another 17—and had recently been divorced by her husband who had returned to Japan. With that information, I felt even more uncomfortable in my inquisition. As I felt myself losing control of my emotions, my questions trailed off.

She turned to look at the yakko dako kite swaying gently in the gallery air currents, then turned back to ask me a question. It wasn't hard for me to appreciate that this particular kite with its good natured simplicity and humor was a symbol of the innocence which she had not enjoyed as a child in Hiroshima.

"I have never been able to locate bamboo in America. Could you help me to find bamboo here?"

"I am sure we could get some bamboo for you. How would you use it?" I asked, knowing, I thought, how she would respond.

"I would teach my son how to make the yakko dako." She said this with a certainty that gave me hope that it would certainly happen. Her name, she wrote carefully for me on a scrap of paper, with my promise that I would help her to acquire bamboo, was Masako Odani.

A hundred questions came to my mind about Hiroshima that afternoon. Were there traditional kitemakers there in Hiroshima when she was growing up? Were there kites and kitemakers before the fateful A-bomb blast? I did not have the courage to continue exercising my prerogatives as an American kite enthusiast. Someone with a need or curiosity grander than mine, would have to extend this area of Japanese kite scholarship.

For me, in my mind at least, Masako Odani was then and is now:

The Kitemaker of Hiroshima

From a forthcoming book by Tal Streeter, Sky Dreams

Hand Warmers & Sled Bridles

1 Custom Quad-Line Hand Warmers

From Steve Polansky, Mississauga, Ontario:
I like to fly my quad kites for hours at a time, but in the middle of our cold Canadian winters my hands used to get very cold. Wearing gloves or mittens kept me warm, but always induced some loss of control.

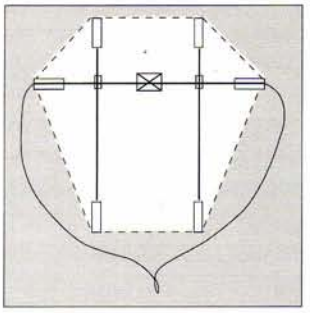
The solution was to modify a pair of down-filled slippers to accomodate my quad handles. Now I can hold the handles directly in my bare hands, and stay warm without losing any control, no matter how long I stay outside in winter.

Steve Polansky shows off his booties.

2 A Better Bridle For Your Sled Kite

From John Clarke, London, England:
After all these years, I find the weak point in those easy-to-make sled kites is the attachment of the bridle.

The small sled has been made for years with tape attaching the bridle string to the cover corners ("Hundreds of Sleds Hundreds of Smiles," Winter 1977-78 *Kite Lines*). Instead, a stronger bridle attachment can be made by tying on a single string loop, long enough to form the bridle and pass around the entire sail. Attach the knot in this loop to the sail at center back and tape at the shoulders of the sail. Tie the usual center overhand loop for attaching the flying line.



John Clarke's better bridle.

This arrangement will not pull loose when the weather is either too hot or too cold. Perfect and safe!

It Works for Me is your place to share your favorite kite hint or trick. Each published item earns your choice of (1) any book(s) from the Kite Lines Bookstore to a value of $16 or (2) a one-year subscription or extension to *Kite Lines*. Send details, drawings and/or photographs to *Kite Lines*, P. O. Box 466, Randallstown, MD 21133-0466, USA, or fax us at 410-922-4262.

"He's just got the TOUCH"

Article by Steve McKerrow
Photographs by Debbie Rosen McKerrow

It's Saturday morning in Wildwood, New Jersey and the wind is screeching down the beach, spitting sand. A fierce northeaster has blown away scheduled flying events of the final day of the American Kitefliers Association annual gathering, and only a few kites are up—a couple power parafoils towing irrepressible buggy riders on the hardpack above the surf wash and a triple stack of Flexifoils, rapidly pulling their pilot in a series of leaps over the sand. He looks like an astronaut negotiating the light gravity of the moon.

A few hundred yards upwind, a fast, custom stunter made by Frenchman André Cassagnes roars through a series of loops and ground passes.

"Look, they're going to let Alex try it," says Tom Mason, watching from the boardwalk with his wife, Susan.

Down on the beach, an improbably small figure takes the flying handles and leans back against the kite's pull. For the next few minutes, Alex Mason, of Savannah, Georgia carves the kite across the wind.

Alex

Barely four feet tall, with freckles and a Beaver Cleaver grin, Alex holds the handles with confidence. At each acceleration pass, his feet leave the sand, and a family friend, Mike Simmons, firmly clutches the back of the boy's jacket to hold him in place.

Later, at the evening awards dinner in the Wildwood Convention Hall, Alex will discover he placed eighth among 15 competitors in the Intermediate Individual Ballet event flown earlier this week. His parents will also celebrate their second place finish in the Masters Pairs Ballet.

The following week, the Masons will be home to celebrate Alex's birthday—just his seventh birthday!

"People just introduce us as Alex's parents now," jokes Tom Mason, 47, a printing photographer in the Navy Department of the U.S. Department of Defense in Savannah. "He's just got the touch. He can fly any of 'em that he touches, seems like."

"When we're driving, he even practices in the car, sitting in the back and holding his handles. Once, we even suspended his Rev in the living room so he could practice," adds Susan Mason, 38, a data transcriber for the U.S. Army Corps of Engineers.

Above, Alex plays with a toy. Left, a Mason family portrait, with kites. From left: Susan, Hillary, Tom and Alex.

The Mason Family

Together, the Masons also run Savannah Feathers, a banner company that supplies colorful wind-blown signatures to such retail outlets as The Kite Loft in Maryland and Kitty Hawk Kites in North Carolina. They are also founding members of the Kite Association of Savannah (KAOS), direct the Golden Isles (Georgia) Stunt Kite Championships and have been competing in pairs events for four years on the Eastern League circuit.

To round the family out, 10-year-old daughter Hillary also flies stunt kites. In fact, in the week before last October's AKA event in Wildwood, she flew in her first competition at the Outer Banks Stunt Kite Championships in Kitty Hawk, North Carolina.

"I learned right after Alex learned, because Alex said, 'Hillary, I can beat you.' He's younger than me, so I said, 'I can do that too,'" explains Hillary, with big sister defiance.

The Masons say they have pushed neither child into competition, although kites

Far right, Alex shows his stuff in light breezes. Right, Alex needs an anchor (friend Mike Simmons) when he's flying in heavy winds.

clearly dominate the family's life. Indeed, at the Outer Banks and AKA events, Tom's sister, Kate Bourbonais, traveled from her home in El Cajon, California to help support the Masons' flying passion.

"I think our attachment to kiting now is that it's such a family-oriented sport," says Susan, a Savannah native. To illustrate, she recounts a day earlier in the busy AKA week when Tom became concerned that Alex had wandered away, out of sight.

"I said, 'Don't worry, Alex has 480 parents here,'" Susan recalls with a laugh, adding, "I attribute his ability to fly to all the other kite-fliers. They don't treat Alex like a little kid who's bothering them."

Natural Talent

Tom says that kiters who have not seen Alex before don't really believe he can fly.

Oh, but can Alex fly. Posing for pictures in a wind-sheltered courtyard of Wildwood's Rio Motel, the 4-foot-1, 54-pound kid attaches 9-foot lines to his pink and blue Revolution II quad-liner and maneuvers it deftly between trees. An hour later, he joins several adult fliers to soar the kite—it's bigger than he is tall—from floor to ceiling inside the convention hall.

Some who have seen him fly hesitate to try to tell him much—such as Ron Reich. The author of the stunt kite primer *Kite Precision* and captain of the legendary Flight Squadron that began as the Top of the Line kite team, he choreographs flying patterns for Alex's parents. But not for Alex.

"He has a gift for interpretation on his own, and I would not want to taint that with anything of my own. He's able to improvise, and have the kite do what he interprets from the music...to capture the feeling of it," says Ron. "I think he was five years old when I first saw him fly, and he had a mastery of the kite I had never seen before."

Alex's parents say he was four when he picked up his father's Quadrifoil and flew for the first time.

"I just thought I could fly to music," Alex recalls. He now has sponsorships from Revolution, Skynasaur and Dyna-Kites, which supply kites and some support for his flying. (Tom and Susan are also sponsored by Skynasaur and Dyna-Kites.)

But he's also every inch a young boy, talking shyly, bantering with Hillary and asserting that, when he grows up, he really wants to be a pilot for the Blue Angels, the U.S. Navy precision flying squadron.

Family Ties

Tom says he was not particularly enamored of kites as a child himself. He fell for the sport a short time after falling for Susan, whom he met when they both worked for the Corps of Engineers in Savannah.

In fact, the newlyweds were on their honeymoon 13 years ago in Tom's hometown of San Diego when they saw kiters flying stacks of two-line stunters. Intrigued, Tom bought a triple Trlby array when they returned home.

"I actually took 'em to the beach and tried to fly, and I literally crashed them onto a person walking along," recalls Tom. Disturbed by the experience (fortunately, the surprised pedestrian was unhurt), he put the kites away until some kids making a family visit discovered them in a closet and urged him to demonstrate.

Tom's initial enthusiasm lay in flying large trains working up to five Flexifoils, to see how many he could hold. No problem—Tom is a large man.

Throughout his early kiting, however, and as their children arrived, Susan did not fly at all. But a visit to the first World Cup Stunt Kite Championships in 1990 changed that.

On behalf of the fledgling Kite Association of Savannah, the Masons traveled to Seaside, Oregon to see how the inaugural stunt kite Worlds were being organized.

"I watched and thought, I can fly as good as they can fly," recalls Susan.

Thus, Windswept was born, Tom and Susan's competitive duo that last fall completed their fourth season in Pairs Ballet. They were Eastern League Champions in Experienced Pairs in 1991, second in Masters Pairs in 1992, first in that category in 1993 and second in 1994.

The Masons express strong gratitude for their development to Ron Reich.

"When we got started, he choreographed our first routine to the theme from *Terms of Endearment*," recalls Tom. "He sent us 20 pages of instructions and graphs...and since has choreographed two more routines to the song "Hernando's Hideaway" and the theme from *Exodus*."

Tom and Susan say they do not plan to push Alex farther than he wants to go. And Susan notes both children are honor students, and that Alex takes piano lessons, wants a guitar (Hillary plays the flute) and loves trains—as in locomotives and rolling stock, not kites.

But right now, Alex flies.

Tom says, "He stays out there all day and we have to bring him in at night." ◇

SPARS

Making your best picks ... By Michael Graves

Driven largely by the explosive growth of stunt kiting, spar manufacturers continue to refine their products so that we can make lighter, stronger kites. In fact, the increasing variety of spars has become bewildering. It is difficult to know which spar is best suited to a particular project. I examined the available spars on the market to help you make your selections.

With very few exceptions, kitemakers don't design new kites on a completely blank page. They bring to the task their experience, especially how they've used their sail and frame materials before. Learning how a range of spars will work takes time and involves making many kites. To speed this process, I measured spars to help evaluate those we're thinking of using.

You should consider several factors when selecting a spar for a particular kite design, but the three most important factors are: *weight, strength* and *stiffness* (uniform radial stiffness).

For *weight*, any kite benefits from having the lightest frame possible, as long as it withstands flying stresses.

Strength is a measure of how much stress a spar can withstand before it fails outright.

Stiffness is how the spar behaves under load. To be technically accurate, the concept I am addressing as "stiffness" is actually flexibility, but thinking about a spar in terms of its stiffness makes things easier to understand for us kitemakers.

We can easily measure weight and strength with ordinary tools. However, precisely measuring strength involves breaking many sample spars under highly controlled conditions. Like others who have made prior efforts of this sort, I did not take on that aspect of the project. (Maybe this article will inspire a *Kite Lines* reader to carry out that part of the research.)

How I Measured Spars

I approached as many manufacturers of spars as I could find and asked them to provide a small quantity of samples for testing. Most manufacturers responded enthusiastically. Whenever possible, I later gathered missing spars from shops or individuals. I also included a few spars that are no longer available, so you can find spars with similar properties if you need to repair or refit an older kite.

I asked each spar manufacturer to provide ten samples per type so I'd have an adequate sample. I weighed each batch of samples on an electronic scale and measured for length.

I measured each spar's static deflection with standard loads on a custom-built test bench. The test bench supported each spar at two points 24" apart, and had an adjustable rule for measuring deflection in the middle of the span. I then hung a weight in the middle of this 24" span to get a deflection reading, and recorded the spar's deflection in millimeters.

Because of the wide variety of spars tested, I couldn't use a single test load. To be valid, each spar had to bend an amount that seemed likely for a real kite design. I figured each spar should be deflected at least 15mm to get an idea of its stiffness. To meet this criteria, I used a set of test loads varying between 1000g and 2000g. I chose which standard weight to apply and then measured the different deflections.

I recorded all measurements on a computer spreadsheet. The spreadsheet averaged the deflection measurements for each type of spar. I then calculated deflection per 100g of load, relative to a K-75 fiberglass spar. Thus the stiffness numbers presented are directly comparable for all spars listed.

Picking A Reference

You might say a K-75 fiberglass spar isn't an appropriate standard because fiberglass-framed kites no longer dominate the mar-

ketplace. This may be true, but remember that the numbers given for stiffness are relative. You can choose whatever spar you like as a reference. The values in the RS column are directly comparable to each other.

This way, you can create several tables for comparing spars against a reference spar whose properties you know. For example, you can use Advantage 250/2 as your reference spar when considering spars for an ultralight kite design.

Tapered Spars: A Special Case

Several manufacturers now make tapered carbon spars for kites. Unlike parallel-walled spars, tapered spars aren't uniformly stiff along their length. To precisely measure stiffness, you must test at a number of points along the spar, then plot these as a curve on a graph. Similar measurements of parallel-walled spars generally give a near straight-line graph.

The sheer number of spars tested forced me to abandon the idea of plotting the stiffness of every spar, so I tested them all with the same simple deflection test. In the case of the tapered spars, this stiffness number doesn't comprehensively reflect the properties of the spar, but it's better than having no measurement at all.

Some kitemakers debate the virtues of tapered spars. The debate centers on precisely defining load patterns in kite frames, and determining if the current crop of tapered spars addresses these load patterns best. To date, there is no definitive answer to this question. When I look around at major stunt kite competitions, I see that both types of spars are popular in high-performance kites.

Other industries have shown that tapered rods can be precisely engineered to be strong where needed, with less material. This makes for low overall weight. Precisely winding tapered rods (like fishing rods) to fit special situations is costly; that's why custom fishing rods cost so much.

In practice, a tapered spar's small end, while much less rigid than the large end, resists impact and is durable, so you may want this for areas such as wingtips, as long as the reduced stiffness is acceptable.

All theory and debate aside, you can get state-of-the-art spars with both parallel and tapered spar geometry. This tells us that neither type is inherently superior to the other.

From a kitemaker's point of view, the best results will arise from carefully considering which spar is best for each application.

KITE SPAR COMPARISION CHART

Brand	Spar	RS	SF	Weight	ID	OD	Source
AFC	1580	0.23	0.69	0.1262	n/a	0.158	MG
AFC	1700	0.26	0.71	0.1282	n/a	0.170	DL
Clearwater	187-2	0.29	0.73	0.1000	0.187	0.217	DL
AFC	1800	0.32	0.75	0.1603	n/a	0.180	DL
Glasforms	A20	0.33	0.76	0.2344	0.219	0.261	MG
Clearwater	202-2	0.34	0.76	0.1100	0.202	0.232	DL
AVIA Sport	G-Force 2 Skinny	0.34	0.76	0.1112	0.245*	0.242–0.306	MG
Black Diamond	Slimline	0.36	0.78	0.1137	0.140–0.240	0.175–0.300	MG
Health Sports	IIp	0.37	0.78	0.1088	0.243–0.248	0.287	MG
Beman	Ultralight 13	0.38	0.79	0.1282	n/a	0.197	Mfr
AFC	1880	0.38	0.79	0.1603	n/a	0.188	DL
AVIA Sport	1800	0.42	0.80	0.1674	0.112	0.180	MG
Health Sports	4.9mm	0.43	0.81	0.1711	n/a	0.193	DL
AFC	1960	0.45	0.82	0.1709	n/a	0.196	DL
AVIA Sport	1880	0.47	0.83	0.1804	0.118	0.188	MG
Beman	Ultralight 14	0.47	0.83	0.1282	n/a	0.217	Mfr
Black Diamond	Slimline Spine	0.47	0.83	0.1312	0.138–0.256	0.175–0.320	MG
Vlieger Op Exel	RCF 5	0.48	0.83	0.1629	0.138	0.197	MG
Beman	Light 13	0.51	0.85	0.1745	n/a	0.197	MG
Glasforms	C30	0.53	0.85	0.2540	0.234	0.278	MG
AFC	2100	0.58	0.87	0.2137	n/a	0.210	DL
AVIA Sport	1960	0.58	0.87	0.2012	0.122	0.196	MG
Clearwater	250-2	0.60	0.88	0.1465	0.250	0.280	DL
Advantage	250/2	0.60	0.88	0.1760	0.250	0.287	DL
Glasforms	E40	0.61	0.88	0.2923	0.250	0.298	MG
Beman	Ultralight 15	0.64	0.89	0.1389	n/a	0.232	Mfr
Glasforms	ProSpar 15	0.65	0.90	0.2171	0.234	0.278	MG
Beman	Pro-Comp 14	0.69	0.91	0.1954	n/a	0.217	Mfr
Pacific Quest Int'l	FlexPro 3-Lite	0.69	0.91	0.1589	0.298	0.240	MG
Glasforms	G50M	0.74	0.93	0.3184	0.266	0.317	MG
Beman	Light 14	0.75	0.93	0.1928	n/a	0.217	MG
Avia Sport	2100	0.77	0.94	0.2212	0.135	0.210	MG
Avia Sport	G-Force 2 Ultralight 40"	0.77	0.94	0.1481	0.285*	0.252–0.345	MG
SkyShark	5.5mm	0.80	0.95	0.2185	n/a	0.217	MG
Vlieger Op Excel	RCF Strong 6	0.81	0.95	0.3493	0.138	0.236	MG
Avia Sport	G-Force 2 Skinny 40"	0.81	0.95	0.1481	0.245*	0.242–0.306	MG
Beman	Ultralight 16	0.82	0.95	0.1496	n/a	0.248	Mfr
AFC	2200	0.87	0.97	0.2419	n/a	0.220	MG
Beman	Strong 14	0.89	0.97	0.2084	n/a	0.217	MG
Beman	Light 15	0.91	0.98	0.2318	n/a	0.232	MG
SkyShark	5.7mm	0.92	0.98	0.2392	n/a	0.224	MG
Pacific Quest Int'l	FlexPro 5-Lite	0.94	0.99	0.1797	0.305	0.240	MG
AVIA Sport	2200	0.95	0.99	0.2553	0.139	0.220	MG
AVIA Sport	G-Force 2 Ultralight	0.96	0.99	0.1541	0.285*	0.252–0.345	MG
Health Sports	IIIp	0.98	0.99	0.1586	0.243–0.248	0.300	MG
AFC	2300	0.98	0.99	0.2566	n/a	0.320	MG
Vlieger Op Exel	RCF 6	0.98	1.00	0.2238	0.158	0.236	MG
Glasforms	ProSparComp 15	0.99	1.00	0.1954	0.234	0.278	MG
Pacific Quest Int'l	FlexPro 7-Lite	1.00	1.00	0.1967	0.308	0.240	MG
Glasforms	K75	1.00	1.00	0.3699	0.296	0.350	MG
Black Diamond	Lite	1.02	1.00	0.1745	0.195–0.286	0.225–0.340	MG
Clearwater	250-3	1.06	1.02	0.2054	0.250	0.272	DL
Advantage	250/3	1.06	1.02	0.2680	0.250	0.303	DL
Beman	Strong 15	1.07	1.02	0.2553	n/a	0.232	MG
Glasforms	J65	1.07	1.02	0.3777	0.281	0.337	MG
Black Diamond	Lite Spine	1.08	1.02	0.1778	0.188–0.286	0.215–0.350	MG
Health Sports	5.9mm	1.08	1.02	0.2577	n/a	0.232	MG
AVIA Sport	2300	1.12	1.03	0.2709	0.145	0.230	MG
Vlieger Op Exel	RCF Ultra 6	1.12	1.03	0.1779	0.177	0.236	MG
Glasforms	ProSpar 16	1.14	1.03	0.3061	0.250	0.309	MG
Clearwater	315-2	1.17	1.04	0.1822	0.315	0.346	DL
Health Sports	6.1mm	1.20	1.05	0.2745	n/a	0.240	MG
AFC	2540	1.26	1.06	0.3205	n/a	0.254	DL
AFC	2400	1.30	1.07	0.2917	n/a	0.240	MG
Health Sports	6.3mm	1.30	1.07	0.2902	n/a	0.248	MG
AVIA Sport	G-Force 2 Standard	1.32	1.07	0.2188	0.285*	0.252–0.345	MG
AVIA Sport	2400	1.32	1.07	0.2886	0.152	0.240	MG
Beman	Strong 16	1.32	1.07	0.2807	n/a	0.248	MG
Health Sports	Vp	1.35	1.08	0.2016	0.243–0.248	0.310	MG
Beman	Light 16	1.35	1.08	0.2839	n/a	0.248	MG
Clearwater	280-3	1.35	1.08	0.2504	0.280	0.327	DL
Beman	Pro-Comp 15	1.41	1.09	0.2457	n/a	0.232	Mfr
Clearwater	250-4	1.42	1.09	0.3072	0.250	0.311	DL
Advantage	250/4	1.42	1.09	0.3360	0.25	0.319	DL
Glasforms	ProSparComp 16	1.43	1.09	0.2722	0.250	0.309	DL
Black Diamond	Standard	1.58	1.12	0.2214	0.205–0.286	0.250–0.350	MG
Vlieger Op Exel	RCF 7	1.61	1.13	0.2765	0.197	0.276	Mfr
Black Diamond	Standard Spine	1.62	1.13	0.2969	0.188–0.286	0.235–0.360	MG
Beman	Pro-Comp 16	1.63	1.13	0.3022	n/a	0.248	MG
Clearwater	315-3	1.86	1.17	0.2740	0.315	0.358	DL
Glasforms	ProSparComp 19	2.00	1.19	0.3086	0.296	0.352	DL
Glasforms	ProSpar 19	2.00	1.19	0.3529	0.296	0.352	DL
Health Sports	VIIp	2.11	1.21	0.2885	0.243–0.248	0.325	DL
Vlieger Op Exel	RCF 8	2.17	1.21	0.3129	0.236	0.315	Mfr
Vlieger Op Exel	RCF Strong 8	2.56	1.26	0.3943	0.217	0.315	Mfr
Clearwater	385-3	3.25	1.34	0.2800	0.385	0.429	DL
Vlieger Op Exel	RCF Strong 9	3.79	1.40	0.4286	0.256	0.354	Mfr
Vlieger Op Exel	RCF 10	4.73	1.47	0.3965	0.315	0.394	Mfr

NOTES: **RS**–Relative Stiffness. **SF**–Scale Factor. **Weight** is oz/foot. **ID**–Inner Diameter (inches). **OD**–Outer Diameter (inches). **Source:** MG–Michael Graves, DL–David Lord, Mfr–Manufacturer. **n/a**–not available.

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SPARS SPARS

The Scale Factor

In the Spring 1992 issue of *Stunt Kite Quarterly*, David Lord introduced the "scale factor" in his article "Selecting Spars for a New Kite Design." The scale factor is a simple way to find the right spar when scaling up or down based on an existing kite's design. The following examples are David's own descriptions for using the scale factor.

EXAMPLE 1

To scale a kite while maintaining a proportionally stiff frame

...or to determine the scale of a larger or smaller kite that exactly maintains the same frame stiffness for any candidate spar:

It's crucial you have a reference. For your reference you'll have to rely on your experience with the kite's lower and upper wind range. For a light-wind-range kite (i.e., 3–12 mph) my reference is a 64" leading edge with Clearwater 250-2 spars. For this example let's see what size light-wind kite we can build with AFC 2300 spars.

We first look at the chart and find the relative stiffness value of the reference spar Clearwater 250-2 (0.600), then find the scale factor for the AFC 2300 (0.995). These two values give you the relationship between the known and proposed leading-edge lengths. That is, 0.995 / 0.6 = 1.658, so the leading edge of our new kite would be 1.65 x 64", or 106".

EXAMPLE 2

To select spars for a different wind range:

The relationship between wind speed change and spar stiffness is:

$$RS2 = (V2^2/V1^2)\ RS1$$

where

RS1 = relative stiffness of reference spar
RS2 = relative stiffness of spar for new wind speed
V1 = reference wind speed
V2 = new wind speed

Suppose you have a kite framed with AFC 1800 spars. You notice in flying this kite that the frame distorts at the upper limit of the wind speed you want to fly in.

First, measure this wind speed. Once you know the wind speed, you have a good reference, namely the AFC 1800 spar stiffness at the wind speed in which your kite was flying that day. For this example, let's give the kite a 64" leading edge, and let the wind speed you measured be 8mph. From this, let's figure the spar size we'll need to move the kite's upper-wind speed up to 15mph.

$RS2 = 15^2/8^2)\ 0.32,$
therefore RS2 = 1.125

We consult the chart for a spar with a relative stiffness near to this figure. We find several spars will do the job, including Avia Sport's 2300 and RCF Ultra 6. This way you can find which spars are suitable in terms of stiffness. You can then further refine your choice based on other factors, such as weight or price.

Connectors & Fittings

Many spar manufacturers now offer molded plastic or rubber fittings to fit their spars. Such custom fittings make it easy for the novice kitemaker to assemble a frame with a professional degree of fit and finish. In general, such custom fittings are quick to install, fit well, and increase the overall stiffness of the frame. Most custom fittings are also lighter than connectors you'd hand-cut from vinyl tubing.

When selecting custom fittings, look for good fit and durable material. Some manufacturers offering spars in various sizes try to make fittings for more than one size of spar. This works well if the fitting is somewhat elastic and fits both spar sizes snugly. If the fitting isn't snug on the smaller spar, the frame may come apart during minor crashes. If the material is too soft, frame tension or high winds may in time tear it.

And Still Sparring...

Just as this research was nearing completion, several manufacturers introduced new spars at the Kite Trade Association's annual trade show. Progress marches on unabated, presenting us with an increasingly wider selection of spars to consider.

I thank those manufacturers who provided samples. Without their cooperation this report would not have been possible. Big thanks also to David Lord (Sumner, Washington), Simo Salanne (Espoo, Finland), and Glen Haynes (New Tripoli, Pennsylvania) for their support and assistance. ♡

Source List

Note: Sometimes manufacturers cannot fill retail orders but they will refer you to your nearest dealer.

Advantage Composites / Revolution Enterprises, Inc.
6335 Nancy Ridge Drive
San Diego, CA 92121
Tel: 619-554-1106; Fax: 619-554-0866

AFC—Aligned Fiber Composites
1610 Highway 52 South
Chatfield, MN 55923-9799
Tel: 507-867-3479 or 800-654-2498; Fax: 507-867-4031

AVIA Sport Composites, Inc.
637 Main Avenue S.W.
Hickory, NC 28602
Tel: 704-345-6070; Fax: 704-345-6071

Beman Corporation
3682 Rennie School Road
Traverse City, MI 49684
Tel: 616-943-8864; Fax: 616-943-8990

Sky Burner Kites, Inc. / Black Diamond Rods
47600 Hanford
Canton, MI 48187
Tel: 313-454-3760; Fax: 313-454-0345

Clearwater Custom Kite Spars
10373 N.E. State Highway #104 / P.O. Box 672
Kingston, WA 98346
Tel: 206-297-4184; Fax: 206-297-3976

Easton Aluminum
No longer supplying the kite trade

Glasforms, Inc.
271 Barnard Avenue
San Jose, CA 95125
Tel: 408-297-9300; Fax: 408-297-0601

Health Sports Technology Group / SkyShark Competition AirFrames
330 West Grand Avenue
El Segundo, CA 90245
Tel: 310-414-0977; Fax: 310-414-0977

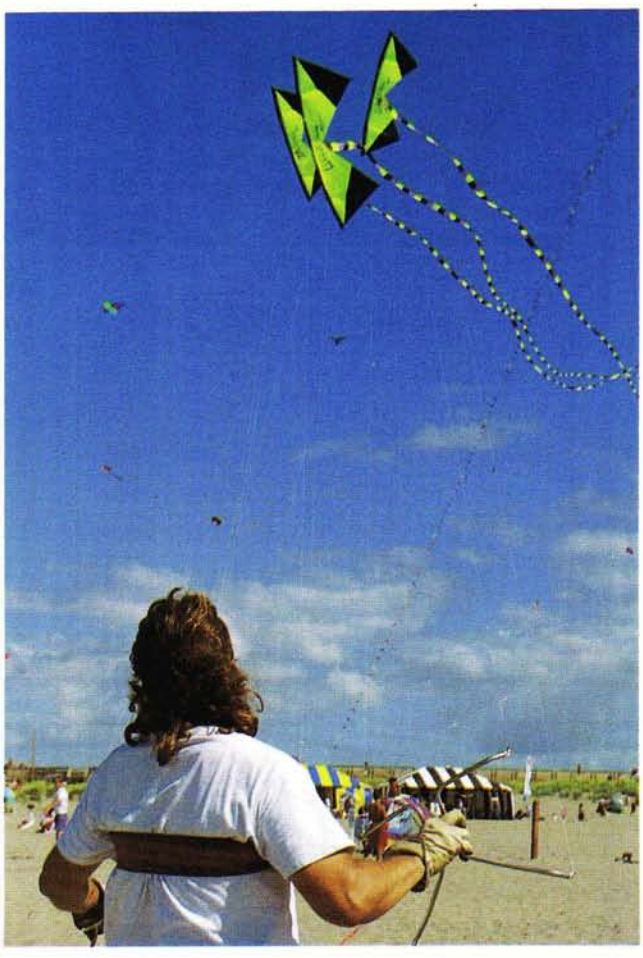
Pacific Quest International
9 Egret Lane
Aliso Viejo, CA 92656
Tel: 714-830-3064; Fax: 714-837-7452
No longer supplying the kite trade

Vlieger Op / Exel
Weteringkade 5a
2515 AK The Hague
The Netherlands
Tel: 31-70-385-8586; Fax: 31-70-383-8541

A One-Man Circus

Read about the unprecedented feat: Roger Maddy flies three quad-line kites at one time!

By Brian Clark
Photographs by Creda Axton



Roger Maddy is a showman...and something of a kite shaman. For years, the 40-year-old from Olympia, Washington traveled the United States playing bluegrass music for appreciative audiences.

He still does from time to time. But now he also dazzles kite festival crowds, performing unprecedented feats by flying *three* quad-line kites at the same time.

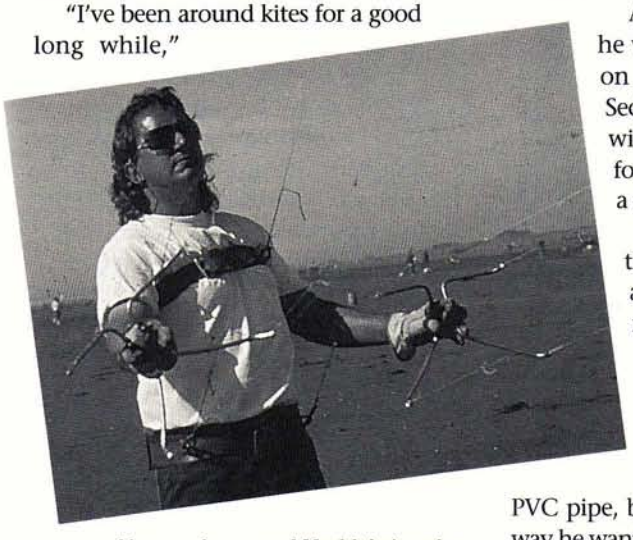
In his hands and from his body the three kites dance and twirl like puppets on the wind.

"There is, quite frankly, no one on this earth who is doing what he's doing," says Kathy Goodwind, who has run the Gasworks Park Kite Shop in Seattle for 15 years. Some kiters think no one else has managed to get two to fly well at the same time.

"I've been around kites for a good long while," Goodwind said. "Roger had what I thought was an impossible, harebrained idea. I thought he was nuts, but I watched it through the whole process and he made it work."

Maddy grew up flying one-line kites. He remembers always being intrigued with wind and weather.

But it wasn't until 1990 that he really got the kite bug. It happened at Long Beach, Washington, where he bought his first dual-line delta.



Above, closeup of Maddy's hands—total concentration is required with 12 control lines, 4 from each handle and 4 from the waist and chest. Above right, Maddy flies three kites—forming a stack of a Rev 2 on a Rev 1 on another Rev 2.

A month later, he was in Seattle at a seminar put on by innovative stunt flier Lee Sedgwick. Maddy was fascinated with Sedgwick's ability to fly a four-line kite with his fingers, like a puppet.

Maddy, who lays carpet to pay the bills and played with arts and crafts as a kid, figured, "There must be some way to come up with handles to control the kite."

So he set to work. He made the first handles from PVC pipe, but they didn't work quite the way he wanted. Then again, he didn't exactly know what he needed.

"I'd done a little juggling, but I'd never worked with puppets," he said.

It didn't hurt that his fingers could fly over the frets of the mandolin, guitar, banjo, fiddle and other instruments. "I guess that dexterity had to help some," he said.

Maddy soon became what many people might say was obsessed with kiting. He estimates he worked on his kites 30 hours a week for the past three years. In reality, it was his second job.

"Kiting is very addictive," he said. "My wife and I had some serious talks about it all. But I kept at it."

Maddy wasn't sure if he could fly three quad-line kites at the same time. But he was determined to try, and began by tackling two-at-a-time.

"It was frustrating," he said. "I almost gave up on those handles. Then I got it with the right hand and that was a major breakthrough."

He is right-handed though, and figuring out how to use the left handle was much more difficult. But with more hours he got that, too. →

"Doing the right and left kites at the same time, however, was a disaster," he said. "My brain just wouldn't cooperate. I sort of had to retrain my brain."

That took hundreds and hundreds of hours. He flew in the dark. He flew in the rain. He even flew on rainy nights.

"My wife, Janice, as well as other fliers, really thought I had lost it," he said. But again he persevered and figured it out.

Then he wanted to fly a third four-line kite. With both hands already busy flying two four-liners, how to get the third one up? He experimented by attaching lines to his knees, his feet and his chest in dozens of combinations, but had minimal success. For about six months, he gave up the chase and went to flying the third kite as a dual-liner from his hips, in combination with the two four-liners with his hands.

"I wasn't satisfied with that," he said. "With four lines, you can make the kite change pitch and slow down. You can make it act like a puppet." The two-liner didn't give him enough control, he said. So he returned to the idea of flying that third four-line kite off his body.

"I'd wake up at 3 a.m. with an idea, but it wouldn't work," he said. "It was tough. I kept coming back to having two lines coming off my chest and another two off my waist."

With lots of time, that finally worked.

"To do this, you have to have your legs free. You need to be able to move around," he said.

"Then I found that if you bend forward and the winds are right, all you have to do is stand up tall to launch the kite."

Maddy remembers the moment.

"I was in Magnuson Park in Seattle on Lake Washington. It was the summer of '92 and I let out a big victory yell. People in that park thought I was bonkers."

But Maddy's hell had just begun. "I found it impossible to control three kites up in the air at the same time. It was total chaos." The kites crashed, seemingly out of control. They collided and ripped big holes in each other.

But Maddy knew he was close.

Hundreds and hundreds of hours later, he had yet another breakthrough. He knew he was perhaps the only person on this

watery globe who had reached the level at which he was kiting.

In 1993 he went to kite festivals. But he didn't perform. And he certainly didn't boast. He wasn't ready.

"It's sort of like being a juggler," he mused. I didn't want to get out in front of

Maddy forms fast-moving circular patterns with Goodwinds Kites' stunters fitted with 70-foot-long quad lines.

an audience before I had all eight balls going and I was doing it well."

Last summer, however, Maddy was wowing crowds at festivals around Washington and in Lincoln City, Oregon. He was also picking up sponsors who wanted him to fly their kites.

"I don't really expect to make a dime off of what I do," said Maddy. "I just love performing. I've always been an entertainer.

"Maybe I'll make a video, though I don't know if I could teach others how to do this, even with the gear I've developed and 1,500 hours to train them."

But he hopes that his backers, which include Goodwinds Kites in Seattle and Revolution Enterprises in San Diego, California, will help send him to festivals in Europe, Asia and Oceania.

"My goal is to get my expenses paid. To be honest, I have no idea how this'll all play out," he said.

One last note: Maddy promised his wife that he'd slack off some when he got it all figured out. So now, in a show of good faith, he's cut flying his kites to just 20 hours a week. ◇

Photos taken at Long Beach and Westport, Washington 1994.

The Kite Lines Bookstore

serving the kiter's reading needs by mail

IF IT'S ABOUT KITES, the Kite Lines Bookstore probably has it—the common, the rare, the foreign, the domestic, the informative, the artistic, the good—and the bad. We carry nearly all the kite titles in print, even ones that give us a lot of trouble to obtain for you.

The Bookstore gives no endorsement to any title, but we do guarantee your satisfaction with our service. We want you to feel like you're in your local bookstore. Pick a book. Look it over. If it's wrong for you, you can put it back on our shelf. No problem.

Kite books often go out of print without warning. If you want any of these, we suggest you snap them up now!

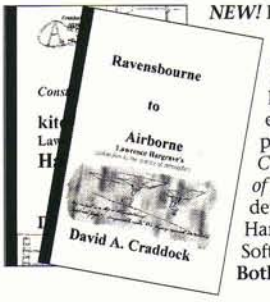
SPECIAL PURCHASE!

Pictures for the Sky, by Paul Eubel and Ikuko Matsumoto, in a new English edition, revised from *Bilder für den Himmel (Pictures for the Sky)*. Incredibly beautiful full-page color photos of kites made for the traveling exhibition. Includes the work of 100 international artists collaborating with 36 Japanese kitemakers. Softcover, 406 pp., **$78.95** (no airmail shipping)

From AUSTRALIA . . .

Make Mine Fly by Helen Bushell. This 1988 edition is an excellent collection of tips, techniques, and hints (gathered since 1977) for beginners, experts, groups or individuals. Includes plans for the famous patented Trefoil Delta, plus several paper kites. Softcover, 90 pp., **$22.95**

Kite-Folds by Beth Matthews. This improved edition has plans for 12 small kites, easily made from a single sheet of paper, plus the "Skyvelope." Clear instructions, lovely color photos, addendum on kites in teaching. Softcover, 36 pp., **$14.95**



NEW! Lawrence Hargrave research by David A. Craddock: *Ravensbourne to Airborne* reviews work on aerodynamics, gliders and kites, including notebook sketches of equipment, concepts and designs. No photos. Softcover, 57 pp., **$24.95**
Construction Drawings for a Selection of Kites, companion volume, contains detailed plan drawings for a dozen Hargrave kites of moderate size. Softcover, 25 pp., **$16.95**
Both books as package, $39.95.

From BERMUDA . . .

Bermuda Kites by Frank Watlington. Plans for five island kites, plus variations and hummers. Traditional methods and materials (flour and water paste: "a little cayenne pepper will keep away the roaches"). Flying tips, a little history. A charmer. Softcover, 24 pp., **$4.95**

From BRAZIL . . .

Arte de Fazer Pipas 2 (The Art of Kitemaking 2) by Silvio Voce, in Portuguese. How to make 10 non-Brazilian paper kites. Softcover, 56 pp., **$6.95**
Arte de Fazer Pipas 1 gives plans for 14 kites—half are Brazilian. Softcover, 50 pp., **$6.95**
Both books as package, $12.95

From CANADA . . .

Go Fly a Kite: The Kite Builder's Manual by John Boxtel. Novel plans; pleasing drawings, but lacking dimensions. Old-fashioned techniques. Softcover, 80 pp., **$12.95**

CANADA continued. . .

Kite Crazy (the book) by Carol Thomas. Accompanies the video. Plans for fighters, dual- and quad-liners. Sound writing, black-and-white drawings. Softcover, 176 pp., **$27.95**
Kite Crazy (the video) by SOMA Film & Video, Canada. Famous kiters teach how to make and fly 1-, 2- and 4-line kites. Good clear instructions and lovely footage, VHS format, 102 min., **$34.95**
Special book/video package $59.95

Richard P. Synergy's self-published books convey lots of information and enthusiasm:
NEW! *Kiting to Record Altitudes* tells everything that can go wrong with altitude efforts. Softcover, 72 pp., **$15.95**
Stunt Kite Basics covers safety, social aspects, equipment and maneuvers (32 in all). Emphasizes success in competitions. Softcover, 142 pp., **$15.95**

Fishing for Angels: The Magic of Kites by David Evans. A very pretty, colorful book. Great lore and tips (just avoid the three kite plans). Softcover, 63 pp., **$14.95**

From CHINA . . .

Chinese Artistic Kites by Ha Kuiming and Ha Yiqi. The celebrated kites of the Ha family of Beijing. History, structure, decoration, flight. Over 80 kites in richly printed color. Good English translation. *Limited supplies.* Softcover, 160 pp., **$16.95**

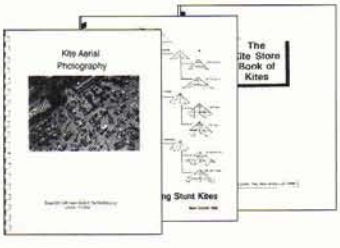
From ENGLAND . . .

Kites: A Practical Handbook by Ron Moulton and Pat Lloyd. Good information in slight disorder. Excellent drawings of 25-plus kites. Fine sections on sport kites and parachuting teddy bears. Outdated appendixes; some color photos. Softcover, 255 pp., **$27.95**

NEW! *A Beginner's Guide to Flying Indian Fighter Kites* by Shirley Turpin. A well-compressed compendium of good advice gleaned from Stafford Wallace, British flier of Indian fighters. Discusses basic principles of fighter flying, line selection and handling, tuning, bridling, launching, changing direction, care, repairs, problem-solving. Simple but adequate black-and-white drawings. Softcover, 18 pp., **$3.95**

ENGLAND continued . . .

Mark Cottrell's books are homely and self-published, with plans that may call for a magnifying glass—but they are also some of the most honest, entertaining and useful in print:
Kite Aerial Photography. Three kite plans and a system to compare trade-offs among features in a rig. Source lists. Softcover, 44 pp., **$10.95**
Swept Wing Stunt Kites. Analysis of stunt design elements; 4 plans. Softcover, 43 pp., **$11.95**
The Kite Store Book of Kites. 10 plans for original Cottrell kites plus philosophy and a 5.25" disk for computer design. Softcover, 48 pp., **$13.95**



Box Kites Making and Flying by Dr. Bill Cochrane. Plans for 17 types of box kites, from basic designs to Hargrave, Conyne and tetrahedral plus three Cody styles. A little history and aerodynamics but out-of-date building methods. Color photos in attractive layout. Scanty appendixes. Hardcover, 96 pp., **$34.95**

The Kite Lines Bookstore . . . *Continued*

ENGLAND continued

Kite Cookery by Don Dunford. Plans for four kites, with building methods. Includes Dunford's idiosyncratic aerodynamics. Softcover, 47 pp., **$4.95**

From FRANCE . . .

Cerfs-Volants: à la Recherche du Bleu by Gérard Clément, in French. A feast for the eyes (not the mind), this is a big, beautifully designed collection of underidentified color photographs. Some history, no plans. Dreadful bibliography. Hardcover, 117 pp., **$57.95** (no airmail shipping)

From GERMANY . . .

Leistungsstarke Lenkdrachen zum Nachbauen (High Performance Stunt Kites to Make) by Peter Rieleit, in German. Plans for 12 original dual-liners (six deltas, three foils and three figure kites, including Superfly, banana, pteranodon). A stimulating, motivating, creative work. Includes fine charts plus tips on materials, sewing, knots and flying. Softcover, 96 pp., plus full-size fold-out airfoil pattern, **$22.95**

GERMANY continued. . .

. . . und sie Fliegen Heute Noch — Geschichte und Geschichten um den Drachen (and They Still Fly Today—History and Tales about Kites) collected by Hans Snoek, in German. Poems, songs, tales, drawings, photos, plans from early days of Western kiting. Hardcover, 156 pp., **$34.95** *Band II (Vol. II)*, in German. Another fascinating scrapbook of kite lore. Hardcover, 156 pp., **$34.95**

Books by Werner Backes, in German, compact and reliable, have good ideas, instructions, color photographs and drawings: *Drachen aus aller Welt (Kites from Everywhere)*. A 40-kite international sampler, including the Cloud Seeker, Cody, tetrahedral, rhombus and multicell boxes, parafoil, Roloplan and rokkaku. Also directions for trains, reels, knots and aerial photography. Softcover, 128 pp., **$18.95** *Neue drachen zum Nachbauen (New Kites to Replicate)*. Plans for 20 kites from available materials plus accessories. Appropriate for workshops. Softcover, 128 pp., **$7.95**

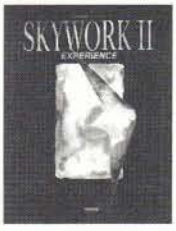
Asiastische Drachen (Asian Kites) by Franz Arz, in German. Lovely and colorful book containing 22 kite plans, including 5 fighters. Instructions call for mostly traditional materials. Excellent photos and drawings. Hardcover, 96 pp., **$24.95**

GERMANY continued. . .

Drachen mit Geschichte (Kites with History) by Walter Diem and Werner Schmidt, in German. Extensively researched, faithfully reproduced models from our rich kiting history. Brogden, Gomes, Grund, Hargrave, Kuznetzov, Lamson, Lecornu, Sauls, others. Detailed plan drawings and wonderful historic photos. Hardcover, 160 pp., **$29.95**

Kite books by Wolfgang Schimmelpfennig, in German, contain choice building plans, techniques and flying tips in a clear and colorful format:
Neue Lenkdrachen und Einleiner bauen und fliegen (New Stunt Kites and One-Liners to Make and Fly). Includes 6 stunters (one is a quad-liner) and 3 single-liners. Brief design theory. Softcover, 80 pp., **$19.95**
Lenkdrachen bauen und fliegen (Making and Flying Stunt Kites). Contains 8 dual-liners (4 diamonds, 3 deltas and a foil), good information on knots and materials. Softcover, 64 pp., **$19.95**
Phantastische Drachenwelt: Die Festivals, Die Drachenbauer, Die Modelle (Fantastic Kiteworld: The Festivals, The Kitemakers, The Models). A handsome coffee-table book of real substance. Insert has traceable plans for 4 kites. Hardcover, 128 pp., **$39.95** (no airmail shipping)

GERMANY continued...



Skywork II Experience by Christine Schertel, in German. New, different volume. Plans for 12 original, tested kite designs in good variety: nine stunters and three cellular kites, including a Hargrave, Cody and the "Revolver." Attractive paintings instead of photographs. Softcover, 52 pp., **$17.95**

From ITALY. . .

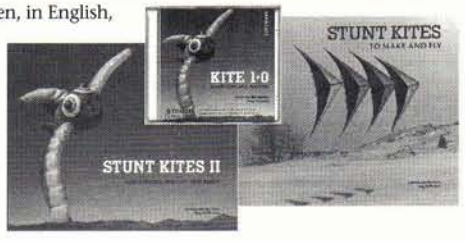
Aquiloni (Kites) by Guido Accascina, in Italian. A mini encyclopedia, with kites in "family" groupings. Includes theory, techniques, sources, history, plans. Good printing including some color. Latest edition in standard pocketbook format. Softcover, 256 pp., **now $16.95**

Aquiloni Acrobatici by Cristina Sanvito and Giancarlo Galli, in Italian. The first Italian stunt kite book covers the basics and more. Graphics and drawings are neat and clear. Gives a brief history, safety tips, basic-to-advanced techniques and maneuvers plus a book list and valuable *glossario*. Softcover, 141 pp., **$19.95**

From JAPAN . . .

Tezukuri Omoshiro Dako Nyumon (A Primer of Interesting Handmade Kites) by Eiji Ohashi, in Japanese. Both traditional Asian and modern kites are among these easy-to-make figure and box kites as well as Ohashi's famous arch train. Color photos, drawings, full details. Softcover, 100 pp., **$27.95**

From The NETHERLANDS . . .

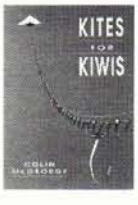


Two stunt kite books by Servaas van der Horst and Nop Velthuizen, in English, cover all aspects of the sport in up-to-date high-tech style. Well organized and printed, the books contain excellent drawings and photos, including some in color:
Stunt Kites to Make and Fly. The first book includes clear plans for 10 stunters, some with novel touches. Softcover, 96 pp., **$21.95.**
NEW! *Stunt Kites II: New Designs, Buggies and Boats*. Plans for 8 kites plus advice on how to design your own. Emphasizes "power" kites, has plans for a buggy. Softcover, 96 pp., **$22.95.**
NEW! Companion diskette for IBM-compatibles, prints out templates of *S.K.II* plans; also simulates stunt maneuvers, **$14.95**

NETHERLANDS continued . . .

Kleine Papieren Vliegers (Small Paper Kites) by Harm van Veen, in Dutch. A very original, colorful little book with clear and detailed plans for 10 artful miniatures plus a tiny reel. Complete techniques, even splitting bamboo. Softcover, 32 pp., **$7.95**

From NEW ZEALAND . . .



New edition! *Kites for Kiwis* by Colin McGeorge. Totally updated, contains 14 kite plans plus the *manu taratahi*, a native Maori design made from local vegetation. Fresh book design with color photographs. A good introduction to kites. Softcover, 62 pp., **$14.95**

From SWITZERLAND . . .

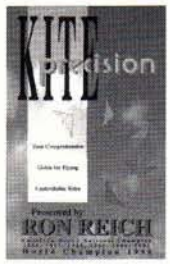
Drachenreise (Kite Journey) by Ruedi Epple-Gass, in German. Interesting black-and-white book. Countries explored (some visited and others researched) include Turkey, Vietnam, Dominican Republic, and spots in the South Pacific, Latin America and Europe. Political overtones. A few drawings of biodegradable kites flown in these countries, plus poems and flying tips. Softcover, 125 pp., **$42.95**

From The UNITED STATES . . .

The Penguin Book of Kites by David Pelham. Called "The Bible," first published in 1976 and still recommended for all kitefliers. Plans for more than 100 kites plus solid, well-researched and -written aerodynamics and history. Color in half the book. Index and bibliography. Softcover, 228 pp., **$14.95**

Kiteworks by Maxwell Eden. Revised edition. Fifty kite plans (such as Yakko Stakk, Kaleidakite, Tri-D Box, Pterosaur) with detailed drawings from respected designers. Sewing, aerodynamics, accessories and (un)related stories. Kite paintings, a few photos. Appendixes, index. Softcover, 287 pp., **$16.95**

Kite Precision by Ron Reich. A strong foundation in stunt flying from one of the most celebrated fliers in the country. Fully detailed explanations of maneuvers Reich started that are now basic. Excellent sections on flying the Revolution and Flexifoil. Good introduction to team flying and choreography. Self-published with low-resolution photos, but lots of them. Touches of humor. Softcover, 182 pp., **$14.95**

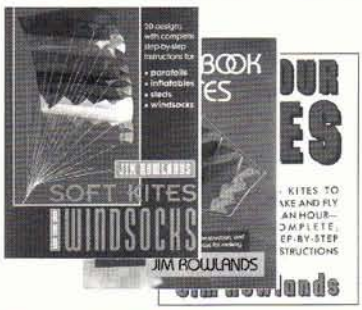


Art That Flies by Tal Streeter and Pamela Houk. Anthology of unusual kites from 1990 Dayton (Ohio) Art Institute exhibit, featuring works by three noted artists. Optical illusions, environmental works, interviews, interesting bibliography. No plans. Softcover, 139 pp., **$14.95**

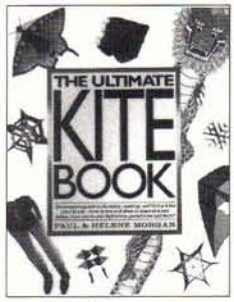
The Art of the Japanese Kite by Tal Streeter. Rare profiles of master kite artists of Japan sensitively interviewed in 1971-72, just before the waning of their traditional arts. Includes 130 photos (52 in color). No plans, but some background on Japanese-style kite building. A rich contemporary history and a true joy to read. Softcover, 181 pp., **$29.95**

Books by David Gomberg are "homemade," lacking polish and photographs, but are useful to read: ***New cover!*** *Stunt Kites!* The first book on the subject. Thorough coverage of the basics plus advanced techniques. Maneuvers, tips, information and proven advice from 20 well-known sport fliers; lots of safety pointers. No kite plans or brand names. Softcover, 88 pp., **$11.95**
The Fighter Kite Book! A goodly amount of information, mostly correct, about fighter flying. Though flat in tone, it's a useful starting source. Contains plans for a basic fighter. Beware drawings of bridles. Softcover, 74 pp., **$8.95**

Books by Jim Rowlands, though U.S.-published, contain British quirks; have a few color photos within otherwise black-and-white pages of line drawings; have a book list and index:
Soft Kites and Windsocks. Same as British *Kites and Windsocks*. The best and most popular work from Rowlands so far. Plans for 11 kites (including whale, frog, parafoil and Flow Form), 5 windsocks, 5 drogues and 2 bags. Softcover, 104 pp., **$14.95**
The Big Book of Kites. Same as British *Making and Flying Modern Kites*. Plans for 36 kites all on the simple side, plus materials, techniques, an "evolution" of kites. Softcover, 127 pp., **$14.95**
One-Hour Kites. Same as British *Kites to Make and Fly*. Plans for 25 basic beginner's kites, including oversimplified Facet and stunter kites. Somewhat overlaps with *The Big Book of Kites*. A reference (not a guide) for workshops. Softcover, 95 pp., **$14.95**

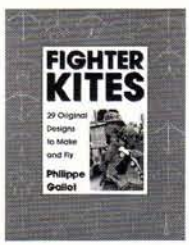


The Ultimate Kite Book by Paul and Helene Morgan. If it weren't for the exaggerated title, this book would be easier to recommend. Colorfully done with high quality illustration and printing. Brief history; incomplete identification of kitemakers. Extensive photographs showing flying techniques. About six good kite plans, including a simple stunter and a tumbling star. Hardcover, 88 pp., **$19.95**



Kite books by Wayne Hosking vary in appearance but suffer in the writing:
New softcover edition! *(new cover only) Kites*. Lavishly printed book of beautiful kite photos. Some good research on Asian kites. Kitemakers are unidentified. Absurd appendixes; 120 pp., **$15.95**
NEW! *Kites to Touch the Sky*. A homemade book containing plans for 32 plastic kites. Simple drawings, no photographs. Softcover, 96 pp., **$9.95**

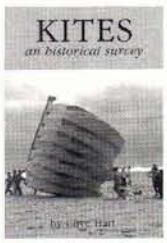
Kites: The Science and the Wonder by Toshio Ito and Hirotsugu Komura. One of the few efforts to be scientific about kites. Uneven translation from the Japanese. Softcover, 160 pp., **$12.95**



Fighter Kites by Philippe Gallot. Plans for 29 kites, tips on flying, tools, materials, games and accessories. Clear illustrations, adequate instructions, plentiful enthusiasm. Watch out for metric conversions. Softcover, 96 pp., **$12.95**

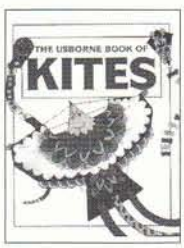
Super Kites III by Neil Thorburn. Many designs for delta-sled-box inventions of proven performance. Tested, creative techniques using mostly plastic bags and wooden dowels. Some color photos brighten this "completely handmade" book. Softcover, 123 pp., **$8.95**

Kites: An Historical Survey by Clive Hart. Revised, second edition (1982). Invaluable reference work with many black-and-white illustrations and photos. Fascinating, readable, in-depth research in early kiting. The most extensive kite bibliography in print. No plans. *Limited supply*. Softcover, 210 pp., **$15.95**



Kite books by Margaret Greger are clear, wise and reliable, ideal for beginner, expert or classroom:
Kites for Everyone. Many good kite plans, variations and accessories, plus tips and techniques. Second edition. Softcover, 136 pp., **$12.95**
More Kites for Everyone. Some old kites, some new kites, plus more tips. Plans for 17 kites, simple to complex. Softcover, 59 pp., **$9.95**

25 Kites that Fly by Leslie Hunt. Reprint of the 1929 original. Good old-fashioned kites (shield, elephant, yacht, etc.) using paper and wood. Has historical data and photos. Hunt was a kitemaker for the U.S. Weather Bureau. Softcover, 110 pp., **$2.95**

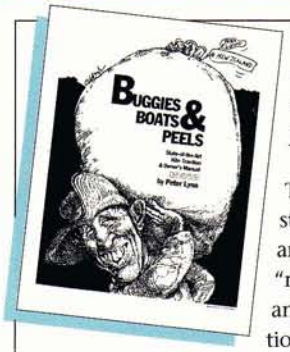


The Usborne Book of Kites by Susan Mayes. Cute, colorful collection for kids. Six easy kites, with clear and fully illustrated step-by-step instructions. All measurements given in both metric and U.S. equivalent. Good introduction to materials, wind and flying. Many tips included. Softcover, 32 pp., **$5.95**

Make Your Own Kite (new kites) by John W. Jordan. Plans for nine original kites (Flying Saucer, Space Station, Crazy Cobra, Computer Card Kite, others) using unusual but mostly-easy-to-find materials such as plastic foam. Clear instructions and amusing reading from a genuine enthusiast. Black-and-white photos. Softcover edition out of print. *Limited supply of the hardcover edition*, 90 pp., **$14.95**

Ski the Beach by Stan Rogers. All you need to know about sand skiing with kites. The only book on this topic. Safety concerns explained throughout. Necessary beach conditions thoroughly illustrated. Loads of charts, including "How Wind Energy is Affected by Temperature." Homemade layout and drawings. Scads of black-and-white photographs. Softcover, 100 pp., **$13.95**

Great extra kite stuff from Kite Lines!



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China by Tal Streeter and Skye Morrison; How to Dye Ripstop; Modifying a Parachute; Stunting a Flow Form.

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New Zealand, Berlin, Washington (England); Parachute Stunter plans; Peter Lynn's Future Tech; Bobby Stanfield.

WINTER 1990-91 (Vol. 8, No. 2)
Dieppe, Montpellier, Bristol and Berlin; Stunt Kite Survey; D'Alto's Whitehead kite; Largest Eddy record.

SPRING 1991 (Vol. 8, No. 3)
Whistling Kites of China by Tal Streeter; Gomberg on Kite Pins; Angle Estimating; Wind Shot stunter plans.

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Pierre Fabre in Japan; Kinnaird on Rokkakus; Kocher's Obtuse Tetra; Huntington Beach scandal; Peter Malinski.

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Stunting in Italy & Poland; Gubbio (Italy); Painless Parafoil plans; Painting Ripstop; Roberto Guidori.

SPRING-SUMMER 1992 (Vol. 9, No. 2)
André Cassagnes; Thailand and the Natural Fibers Festival; Christmas Island feats; Stunter Survey; George Peters.

FALL 1992 (Vol. 9, No. 3)
Castiglione, Le Touquet, Barcelona, Ostia; Arch Ribbon; Niagara Falls; Tangles; Ianuzzi's Featherlight; Kim Petersen.

WINTER 1992-93 (Vol. 9, No. 4)
Hamamatsu; Kite Power, with traction chronology; fighters survey; Dieppe; GX-3 plans; Ron & Sandra Gibian.

SPRING 1993 (Vol. 10, No. 1)
Guatemala; Java; Fighters by Ed Alden; Celebs Paint Rokkakus for AIDS; International Travel Tips; aerials of Ireland; quad-line Propeller; Jørgen Møller Hansen.

SUMMER-FALL 1993 (Vol. 10, No. 2)
Adrenaline tour of India; István Bodóczky's artistry; Carl Crowell's Cross Deck; Oldest U.S. Kite Festival (Iowa); Kites at the Pyramids; Tony Wolfenden.

WINTER 1993 (Vol. 10, No. 3)
North Sea events (Terschelling, Scheveningen, Fanø); Kite Camp Caravan; Rendez-Vous Mondial in Canada; Sheragy's Butterflies; Wolfgang Schimmelpfennig.

SPRING-SUMMER 1994 (Vol. 10, No. 4)
Kite Sailing; South America: Colombia & Brazil; Buggy events + Scoot Buggy & Wheels of Doom plans; Australia's Bondi Beach festival; Reza Ragheb.

FALL 1994 (Vol. 11, No. 1)
Shirone's New Museum; Korean Fighters; Art & Ideas of Joan Montcada; Thailand International; Aerial Photographer George Lawrence; Jimmy Sampson.

FOR THE RECORD

A Wall of Bears

By Duncan McEvoy

Not only did we do it, we did it twice!! On September 11, 1994 at the Festival of the Winds, Bondi Beach, Sydney, Australia we dropped 289 parabears. Then a week later, on September 18 at the Capital Kite Festival in Canberra, we dropped 487 parabears!—a new record for most fauna parchuted from a kite at one time.

The Canberra drop was by far the best. The conditions were much more difficult. The wind gusted to 27 knots with 50-degree shifts. We used a 50-square-foot Sutton Flow Form as the lifter—the wind was too severe for anything else. The load in the dropping rig was 10.5 kilograms (just over 23 pounds).

One of the nice things about this drop was how it became a group effort. We had people launching, flying at midpoint on the line, helping get the dropping rig in the air, flying at the stake and managing the messenger.

The rig was designed by Peter Coleman and was ethically sound if somewhat bizarre. The dropping rig was a fabric cylinder attached to plastic foam doors that were operated by a delightfully over-engineered series of levers that my two years of university physics could never explain.

A two-winged messenger was flown up the line. In front of it was a large red arrow with an inch of brass wire at the pointed end. Just in front of the dropping rig was a red balloon. The arrow burst the balloon. Attached to the balloon was a weighted static line which was released by the balloon's bursting. The weight then pulled the first of the levers on the dropping rig and the doors opened, allowing the bears to cascade out.

The technical side was insignificant compared to the sight of almost 500 bears all in the air at the same time. It was a wall of bears. I have started to think of it as a piece of performance art. The feeling among the fliers and all those brave bears probably can't be repeated.

The team was Peter and Rhonda Coleman, and Duncan McEvoy and Ann Herbert. Help on the day was given by members of the Australian Kiteflyers Society.

To quote from England's John Barker of the Bearly-Made-It Skydive Squad:

Up with kites! Down with bears! ♢

EMPTY SPACES IN THE SKY

Low Chin Nghee

They say he left us the day the Weifang, China festival began, in April 1994. No one gave me the exact date—that is the way we remember Low Chin Nghee's passing. No one is sure of his exact age. People born in China many years ago rarely know their birth dates. None of these things matter. He left his mark on time.

By popular standards, Low Chin Nghee of Singapore had no education. Therefore he knew a lot about things that mattered. He was a philosopher, a sailor, a weatherman, a butcher, a father of 10 and a kitemaker. He knew and understood many things, the lore of nature, the mechanisms of the human body. He had a response to and a special interpretation of events and circumstances. He was a pronouncer rather than a conversationalist. You needed to be close to him to understand, especially if you were young, noisy and brash.

Some said Low was exasperating, even cantankerous. In truth he was simply fastidious and sensible. At festivals he performed only when conditions were right; why indeed struggle against nature when the tenets of *feng shui* teach us to accommodate them?

I learned to listen to him. At meetings I was interested to know what he thought. And what did he say? The obvious, frequently the very thing we had overlooked. He was a simple man, a glass of warm water and a good friend were his simple joys.

Ask him about weather conditions and you'd get a ten-minute discourse on the opposing armies above your head about to do battle, how one would vanquish the other, leading to the domination of peaceful conditions. When I looked up, as I often did when he pointed heavenwards, I swear I saw warriors on horseback amidst dark clouds.

I met him in his life's last chapter, around 1980. He was sitting under a fig tree with a three-meter butterfly kite, the most complicated kite I had ever seen.

From what I can judge, he spent all his waking hours making kites. First he made butterflies, then centipedes and dragons. His materials of choice were bamboo and silk or rayon until 1985 when Steve Lamb introduced him to fiberglass and ripstop at Lincoln City, Oregon.

Low's butterflies and birds were complex in construction, requiring much time to assemble.

One was an eagle that looked so cumbersome we renamed it a chicken, soon to become "curry chicken" because of its brown color. Somehow this kite found its way into the Singapore television studios. Low had been given a fairly short time slot in an audience participation program. He struggled with tying knots and bows, unconcerned with time, ignoring the audience and MC—to this day, I wonder if he realized he was live on television. The telephone lines of every Singapore Kite

Low Chin Nghee in Singapore and on the cover of *Kite Lines* (Spring 1986), gripping his dragon with gloved hands. The kite comprised 145 units and flew about 330 feet high.

Association member burned as we screamed, "See, curry chicken on TV!" How funny it was and how cruel we were.

He was the only member of the Singapore Kite Association to appear on the cover of *Kite Lines* (Spring 1986). When he saw the picture, he just chuckled and handed the copy to someone else.

Dragon kites were his forte. On 17 January 1988, he flew one at Marina South, Singapore that was 735 feet (about 224 meters) long. On its maiden flight in poor wind, it stayed aloft for 4 minutes and 10 seconds, an event witnessed by a lawyer and Dr. Desmond Onn, head of Information and Research, Singapore Sports Council, who measured the kite and timed its flight, solemnly stating such in a statutory declaration. I was to submit this to *The Guinness Book of Records,* which I never did, but now, at this time, I declare it to the world.

Low Chin Nghee's dragons and centipedes usually ran from 110 to 130 cells, but by joining two sections together he often flew 220 or more. His longest ran to 325 cells, tall as a 70-story building. In the early days, each cell consisted of two pieces of bamboo, one for the disk and one for the balancer, but as the cells grew in area, he built them to break down.

Each cell now consisted of four pieces of bamboo, each perfectly cut, trimmed and balanced. To make 100 cells, he needed to craft the bamboo, hand-stitch the fabric, create the head (a work of art in itself) and then string the kite together with an accuracy of a few millimeters over its entire length.

His greatest achievement was the invention of the fourth, "magic" line, a thin, loose line that extended from the head about two-thirds along the length of the body. Low used this line, completely independent of the three flying lines, when the kite was ready for descent.

By holding this line and slowly releasing the flying line, the cells would ascend, thereby decreasing the kite's length and offering less surface to the wind. The visual effect was astonishing as the kite shortened and a rippling effect began as cells traveled up and down, while the kite sank to the ground, almost compressed and packed ready to take home. This retrieval method was much easier than pulling the kite in disk by disk and straining each of them in the process. To our knowledge, the "magic line" was never used in China. It was a Low Chin Nghee original.

If you were to become hopelessly lost in an underground cavern, Low Chin Nghee would have been the man to get you out. He may have driven you mad with his philosophies, but he would have gotten you out, probably with a piece of thread and a sliver of bamboo.

—Shakib Gunn
Singapore

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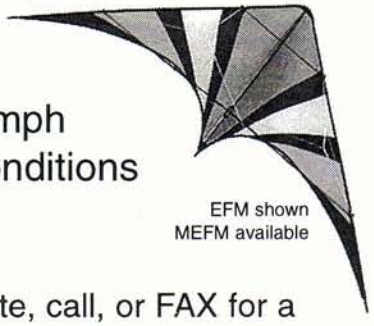

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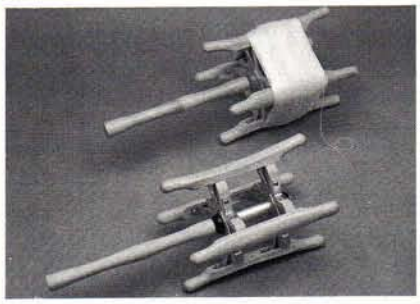

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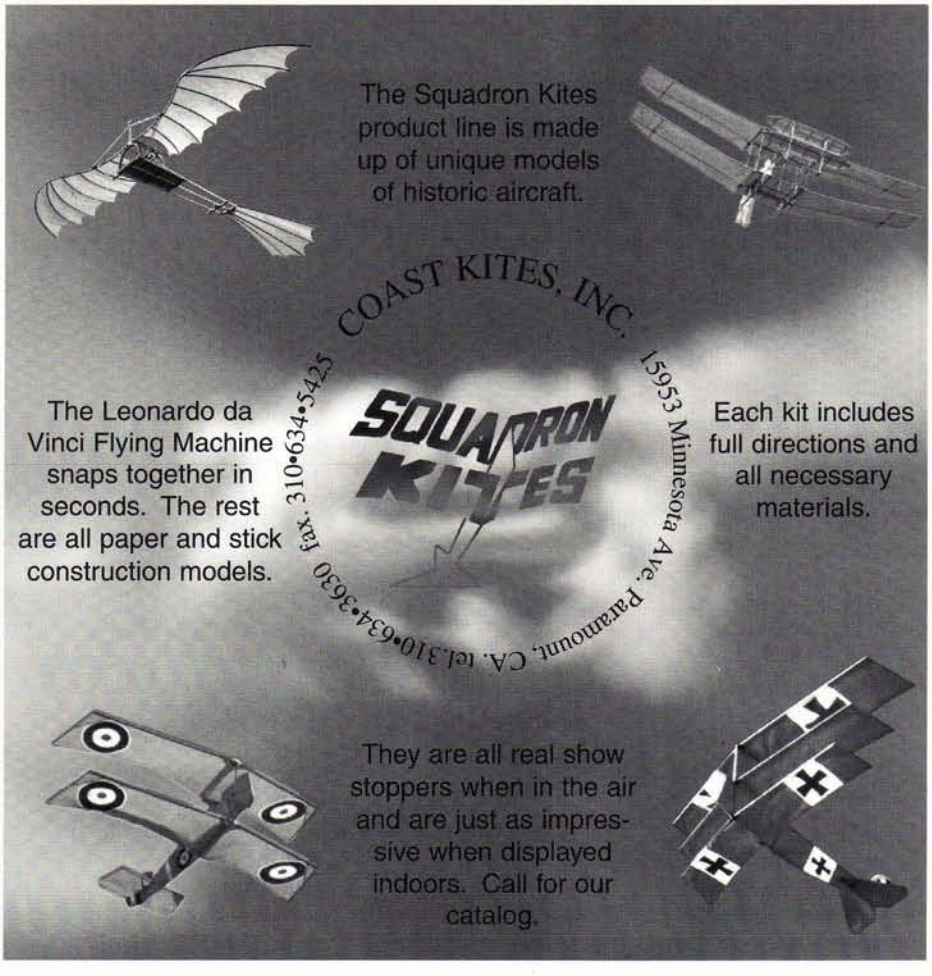

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News, Rumors & Miscellany

THE LARGEST JUDGMENT EVER rendered by a court in a kite claim? Possibly so—that's the award made to Peter Lynn International in February for copyright infringement on the part of Sieger's Vliegers in The Netherlands.

The Dutch court agreed to all 13 points claimed and allowed damages from the time of the claim many months earlier of approximately US $150,000. By now that sum will be much greater because more time has passed during which the infringer has continued to distribute copycat kites. Sieger's was further ordered to retrieve all infringing kites, destroy its inventory of them, give the claimant access to customer lists... and on and on. (Yet Sieger has been claiming he won!)

GET READY FOR A NEW CBS TV show called "Beyond Belief." One of its first segments, slated for the middle of April, features "power" kiting. The producers asked *Kite Lines* for information, which we (grudgingly) supplied. They are looking for "risk-taking, 'wow' stuff." Well, wow to you, too.

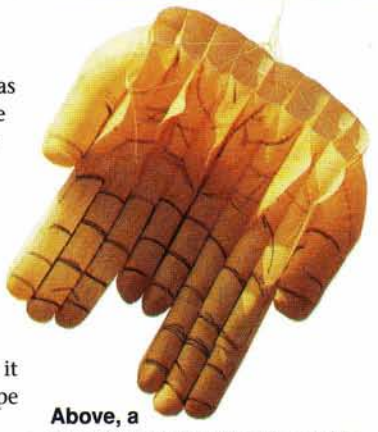
MURDER BY KITE STRING? Yep, you'll find it in one of those 20-bit Avon paperbacks, *Dune to Death,* by Mary Daheim. "Kite string! Now that's real ugly!" says Sheriff Eldritch on page 40.

ARE YOU A CONNOISSEUR OF the rare few movies that feature kites? (Remember that old black-and-white short *The Kite,* based on the Somerset Maugham story?)

If so, you'll applaud *The Blue Kite,* an award-winning film from China. A seemingly simple story, it eloquently conveys the effects of the Cultural Revolution on the family. Even today it is remarkable that a film of this honesty could have made it past the authorities: it has not been shown in China. (In the U.S., you will have to scout the art theaters for it.)

And what part is played by the kite? The central character, a little boy named Tietou, receives a kite his father made for him before going away to a labor camp. The kite is part of the story and at the tragic end it symbolizes a last vestige of hope for freedom.

In most stories, the kite is used preciously as a symbol of some spiritual attribute rather than as a real object of use and enjoyment in life. In this tale from the home of kites, the symbol and the reality come together in a satisfying, heartrending whole.



Above, a favorite kite New Year's card is from Herman & An van den Broek, The Netherlands. Echoes of Mahalia Jackson: "He's got the whole world in his hands." Below, imagination sings in Ferrara, Italy, where Vulandra Aquilonisti club flies kites representing musical instruments.

THREE YEARS OF PLANNING...

...and three gallery directors after he began, George Peters finally pulled it off: curating a superb international kite exhibit at the Arvada Center for the Arts & Humanities in Arvada, Colorado.

From August to November 1994, the exhibit showcased a world-class collection of kites, from traditional to contemporary. We had Japanese bees, Fabre needles, Murasako hatas, a Brockett angel, Tony Wolfenden's genkis and too much more to list!

The pièces de résistance were three Chinese mechanical kites from my collection: a crane, a bat and a peach boy. Visitors with good lungs and no inhibitions could be found blowing the three kites' wind fans throughout the exhibit's formal opening.

Right, rokkakus by Robert Kackebart of Germany. Below, a few of the many miniature kites on display, these from China.

A kite festival was held in conjunction with the exhibit on the field surrounding the Arvada Center Complex. George commented that here was a chance for the public to see some of the kites in their natural habitat—the sky.

—Scott Skinner

FLYING UNDERGROUND? YES, Jim Cosca and Dave and Sherri Arnold went spelunking in Franklin, West Virginia in January. Took their kites (of course, what did you expect?)—ultralights, for indoor flying. In a large "room," seeing by flashlights and with bats for an audience, they gave their kites a little airtime deep down.

It wasn't the first time kites were flown underground. In 1986, Roberto Guidori flew a kite in La Grotta Grande del Vento, Europe's biggest cave hall, in Frasassi Cave, Italy. He flew a 30cm (12") sled on a 10m (33') line for a few minutes, got no witness signatures, took no photos—but his word is good.

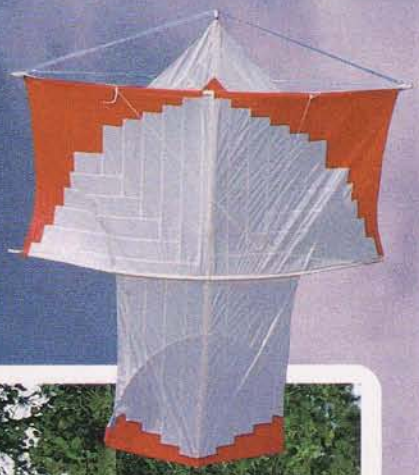
Dave Arnold in wild, windless West Virginia.

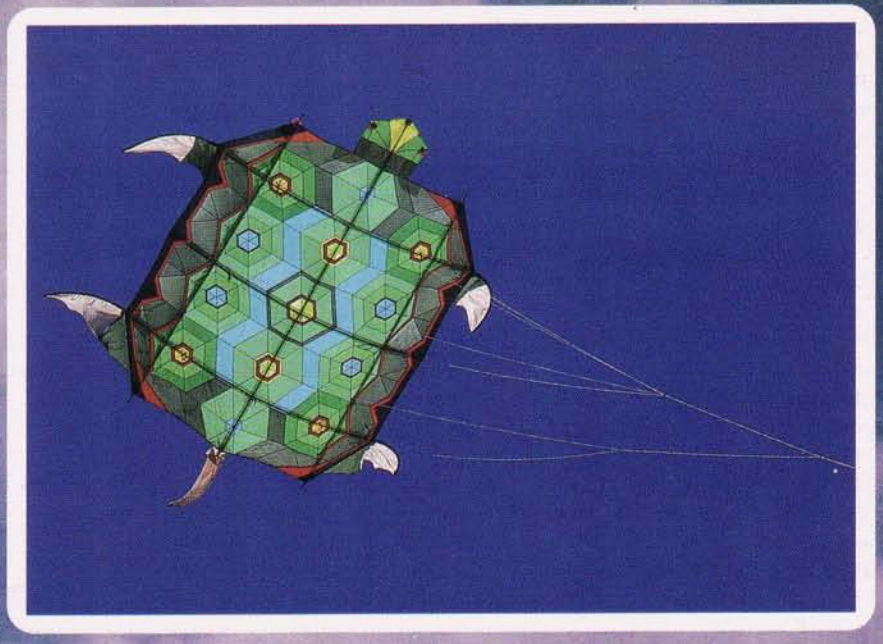
BILL BIGGE, BIG THINKER OF little kites from Germantown, Maryland, recently flew (indoors) his latest Mylar Eddy kite, just 1½" tall. Spars were monofilament line straightened over a light bulb. Having seen what heat can do, he says "I plan to cook some more in the oven and wrap it on a can to give the mono a nice curve for dihedral."

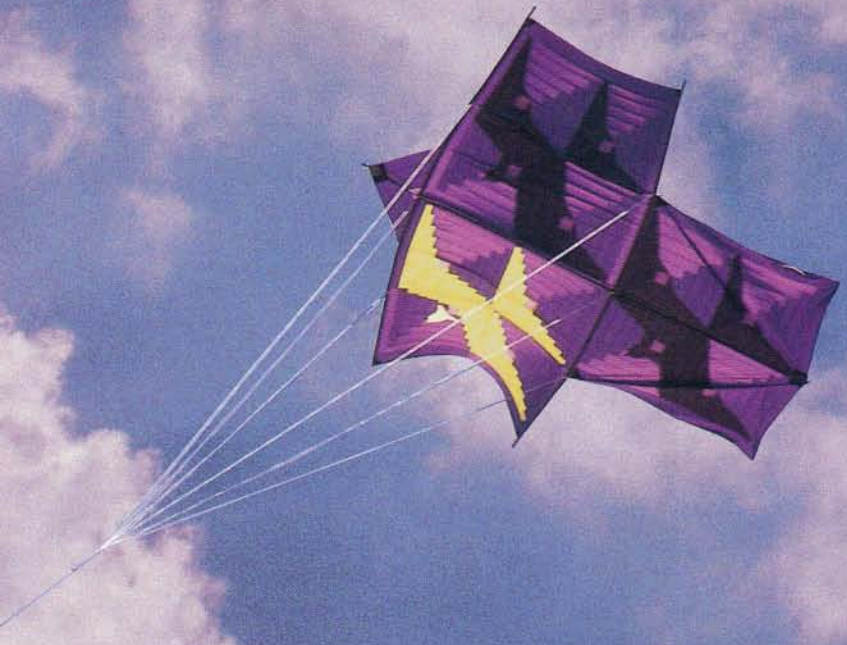
IF YOU READ THE KITE CLUB newsletters (we read 'em all), you'll find a lot of twaddle, occasional greatness and the rare outright shock. Take this little item from the "Lavender Winds Kite Club News" in California:

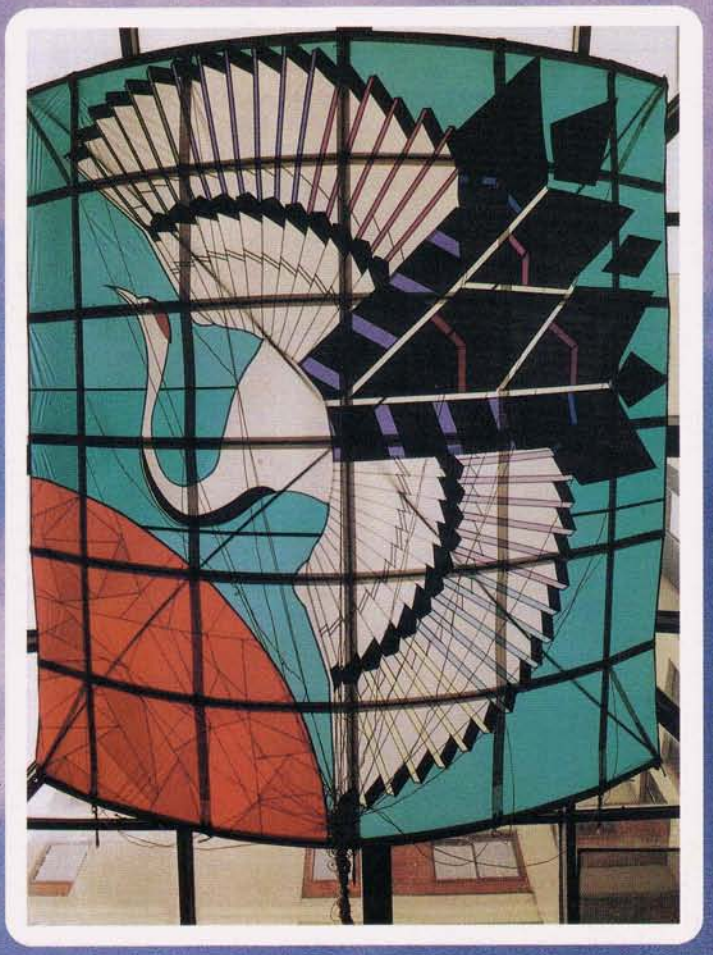
"The San Gregorio Clothing Optional Fun Fly...had good winds...(and) I finally made Elizabeth happy by flying a stunt kite from my nipple rings—for a short time!" ◇

Scott Skinner

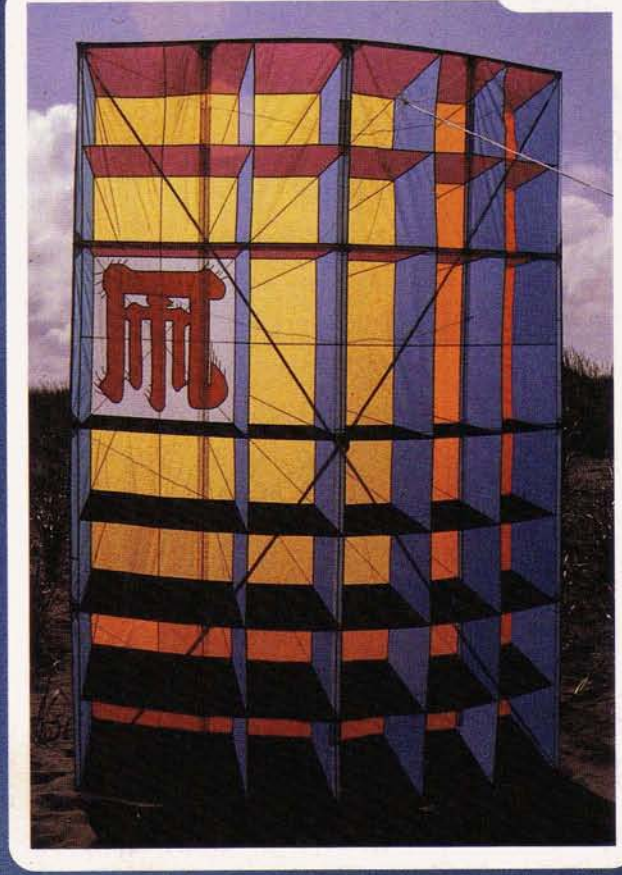


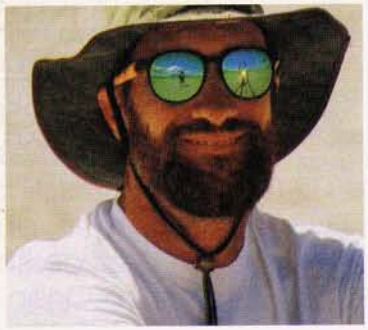






Scott Skinner





Kitemaker: Scott Skinner, Monument, Colorado, USA
Occupation: Private Investor; President of The Drachen Foundation.
Kite experience: Active kiteflier since 1975 and kitemaker since 1985. Inspired by Tal Streeter's *Art of the Japanese Kite*.
Honors: "Several AKA and other festival awards, but the greatest compliment came from Peter Malinski, who wanted to own one of my kites."
Favorite flying spots: Fanø, Denmark and Long Beach, Washington
Intent in kitemaking: "Explore patchwork as a motif for kites and marry this American craft with the traditional kite shapes and motifs of Japan."
Photographers: Scott Skinner, Joe Manfredini & John M. Roberts

SkyGallery features outstanding kites by one maker in each issue. You are invited to submit photographs of your finest kites. Write for details: *Kite Lines*, P.O. Box 466, Randallstown, MD 21133-0466, USA. Fax: 410-922-4262

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FOR SALE

KITE PATENTS: Every kite-related patent issued in the U.S. is available in capsule form to those sending $50 to Ed Grauel, 799 Elmwood Terrace, Rochester, NY 14620. Included are patent numbers, filing and issuance dates, inventors' names and a brief description for each of the 836 patents.

QUAD-LINING MANUAL: *Quad Lining the Delta Stunt Kite*, written & illustrated by Roger Maddy. Easy to follow instructions. Flying and winding tips. $4.95 + $1.00 shipping. Write Roger Maddy, 1332 5th Ave. SW, Olympia, WA 98502-5307.

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