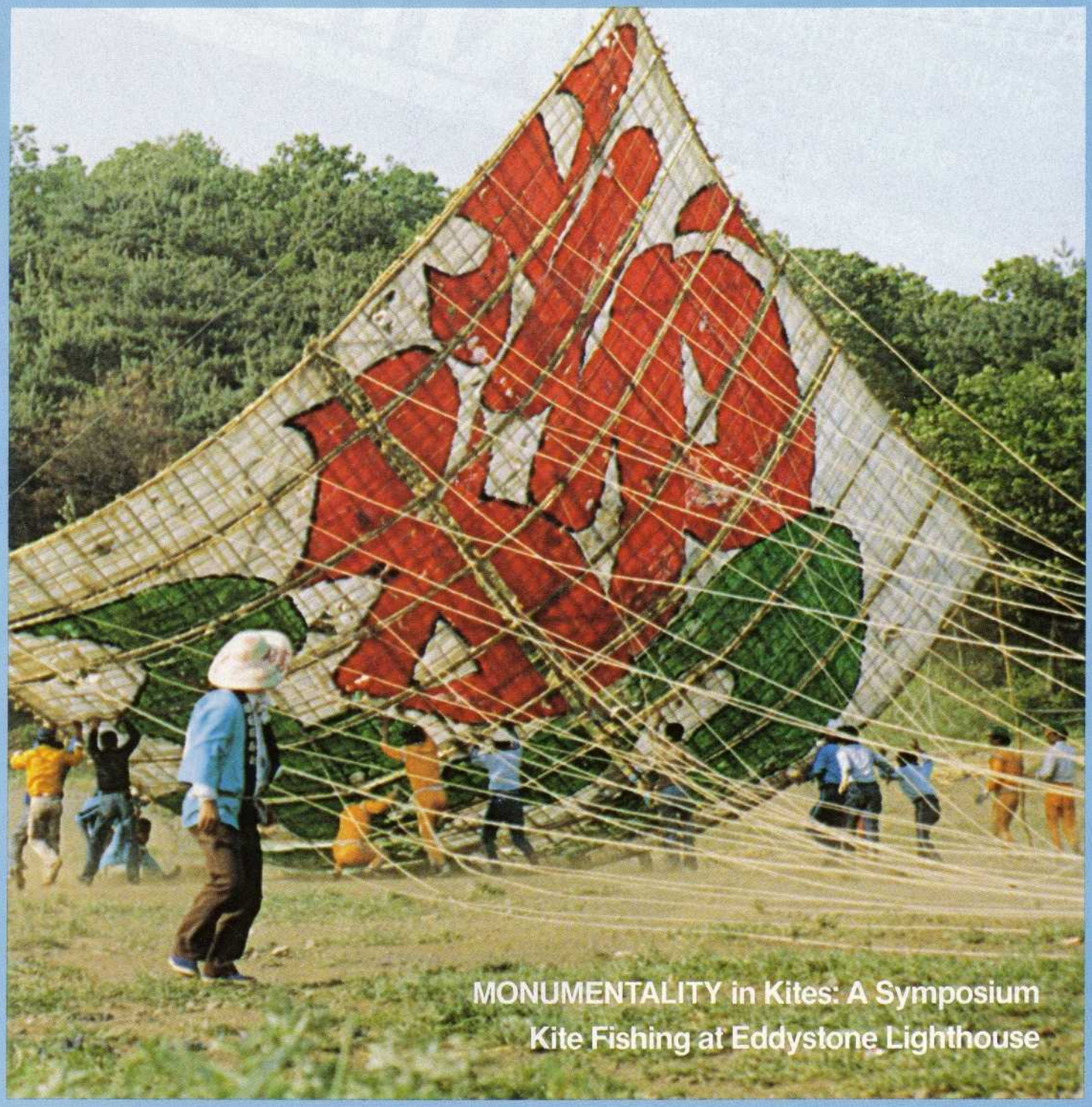
Kitelines

$2.50
FALL 1979

quarterly journal of the worldwide kite community



MONUMENTALITY in Kites: A Symposium
Kite Fishing at Eddystone Lighthouse

WE ARE PLEASED TO ANNOUNCE THAT

FLEXIFOIL SKYSAIL INC

IS NOW THE EXCLUSIVE MANUFACTURER & DISTRIBUTOR OF THE REVOLUTIONARY – FLEXIFOIL SKYSAIL – FOR THE UNITED STATES OF AMERICA & CANADA

- SPECTACULAR SIX FOOT AEROFOIL WING
- MADE OF TOUGH RIP-STOP NYLON FABRIC
- SPEEDS OF UP TO AN ESTIMATED 80 M.P.H.
- EXHILARATING POWER & SPEED FOR SKY-SPORT
- THE ULTIMATE DUAL CONTROL LINE KITE DESIGN
- AN EXCITING & REVOLUTIONARY CONCEPT IN KITES

FLEXIFOIL SKYSAIL INC.
9545 Katy Freeway, Suite 115, Houston, Texas. 77024.
Ph.(713) 464-0928 Telex 774375

Send for pricing details Quantity discounts

EXPERIENCE A SENSATION — GET A SKYSAIL

Distributorship inquiries for U.S.A. & Canada invited

Contents

Volume 2, Number 4, Fall 1979

Departments

Cover

Real greatness in kites: a giant at Sagamihara, Japan, at the moment of launch, a spectacle that few would believe if it were not for the camera of David Checkley. The scene was shot in May of this year on the kite tour of Japan led by Checkley. Perhaps the picture partially answers some of the questions raised in our symposium on monumentality in kites *(pages 19 to 34).* But such a kite somehow stands apart; it is an answer that does not need a question.

NEWS FLASH: *Kite Lines* has just learned that the American Kitefliers Association's October weekend in Manassas, VA, will appear on the ABC TV network PM show on December 14.

Kitelines (USPS 363-090) succeeding *Kite Tales*

Kite Lines is the comprehensive international journal of kiting and the only magazine of its kind in America. It is jointly published by Fishergate Publishing Co., Inc., of Annapolis, MD, and Verve Enterprises, Inc., with editorial offices at 7106 Campfield Road, Baltimore, MD 21207, USA, telephone: (301) 484-6287. *Kite Lines* is on file in the libraries of the National Air and Space Museum, Smithsonian; the National Oceanic and Atmospheric Sciences Administration; the National Geographic; and the University of Notre Dame's Sports and Games Research Collection.

Founder: Robert M. Ingraham
Publishers: Fishergate Publishing Co., Inc., and Verve Enterprises, Inc.
Editor: Valerie Govig
Business Consultant: Kalman Illyefalvi
Circulation/Reader Services: Judith Faecher
Design Consultant: Weston Phipps
Mechanicals: Cathy Pasquale
British Correspondents: Ron Moulton and Clive C. O. Rawlinson

Kite associations and clubs are located around the U.S. and the world. *Kite Lines* works for and with all of them and maintains an updated file on them. Write for information about your nearest group.

Subscriptions to *Kite Lines:* One year (4 issues), $9.00; two years (8 issues), $17.00. Single copies of current or back issues are available @ $2.50 ($3.00 overseas) from America's finest kite shops or the journal offices. Postage outside the U.S., its possessions and Canada is $1.00 per year additional. Air mail rates for foreign mailings are $3.00 per year additional for Latin America; $5.00 per year additional for Europe and Israel; and $7.00 per year additional for all other countries. All foreign drafts must be in U.S. dollars through a U.S. bank or the post office.

Change of Address: Attach or copy mailing label in letter, giving new address. If mailing label is wrong, please correct it.

Advertising rate sheet and information is available upon request.

Contributions and correspondence are always invited. Enthusiasts who contemplate sending substantial material should request our guidelines for writers and photographers. Return of unsolicited material cannot be guaranteed unless accompanied by ample stamps and envelope, self-addressed. Accuracy of contents of *Kite Lines* is the responsibility of individual contributors. Diverse views presented in *Kite Lines* are not necessarily those of the editor, publishers, staff or advisory panelists.

Closing Dates for advertising, articles and news are: Feb. 20 for Spring; May 20 for Summer; Aug. 20 for Fall; Nov. 20 for Winter.

Postmaster: Second class postage paid at Baltimore, Maryland. If undeliverable, please send address change Form 3579 to *Kite Lines,* 7106 Campfield Road, Baltimore, MD 21207.

Introducing the beautiful...

GRANDMASTER KITE

the ultimate state-of-the-art in single-line maneuverable and fighting kites.

One-of-a-kind works of art. Each Grandmaster Kite is individually hand-crafted and hand-painted by a master kitemaker and flight-tested by a master kiteflier. The color combinations of each design vary, and new designs are constantly being added to the collection. To maintain quality control, our present production is limited to 3000 kites per year.

But the real joy of a Grandmaster Kite is in the flying. When you get it up and are its master, you will exult in its power—its gentleness—its instant response to your will and artistry—its glorious colors and design enhanced by its beauty of motion. Indian Champion kitefliers have already pronounced the Grandmaster to be the most responsive kite ever made, superior to the fine-tuned fighter kites made in India. But because each kite is made of Mylar™, with a bow of fiberglass rod and a spine of graded cedar, Grandmaster Kites are as nearly indestructible as technology permits.

The Grandmaster is produced in two models: the Competition and the Fast. For the experienced flier, the Competition or the Fast will cover all wind conditions. For the novice flier we suggest beginning with the Fast, then stepping up to the Competition when his or her skills are developed. The two models are the same in size (24x29") and appearance. Only the speed of response varies.

The price: $18.00, plus $3.50 per kite for shipping via UPS, insured (Air Freight east of the Miss.). Draw crowds—create excitement—order your Grandmaster Kite today!

Shipment guaranteed within eight days after receipt of order.

To order, fill out form and send today to:

GRANDMASTER™ KITES
P.O. Box 12377 Holladay Park Station
Portland, Oregon 97212
(Telephone: 503-233-9158)

Dealer inquires invited.

Note: Shipping charges apply to USA and Canada only. For foreign orders, please remitt in US dollars and add $12.00 for Parcel Post Air Freight.

Dear Sirs: Please send me the following GRANDMASTER™ KITE(s): (Please Print)

Quantity	Fast or Competition	Symmetrical or asymmetrical design preference	*Regular price each $18.00	**Custom order price each $28.00	Total price
$3.50 shipping, handling and insurance, per kite					
☐ **Grandmaster recommended line, 3-ply waxed linen, 1000 feet, $5.00 + 75¢ shipping.**			☐ **Grandmaster recommended reel, $2.75 + 75¢ shipping.**		
				Total	

Enclosed is my ☐ check or ☐ money order made payable to Grandmaster Kites.

NAME _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

*Regular orders will receive one of the illustrated designs or a new design.
**To custom order a specific design or specific colors, include $10.00 each in addition to the regular charge and expect a delay in shipping time.

GRANDMASTER™ KITES

Grandmaster Kites are sold with an unconditional guarantee (providing the kite has not been mistreated). If your Grandmaster does not come up to all of your expectations, just return the kite to us within 30 days for a total refund of your $18.00.

Letter from the Editor

What a weekend! We've just come back from the American Kitefliers Association's second annual meeting and kite festival, held in Manassas, VA. It was as memorable and successful an occasion as anyone could want and of course *Kite Lines* will cover it in a forthcoming issue. For now we have only the space this letter provides to explain the relationship of AKA and *Kite Lines* as it developed at the gathering.

The chief outcome of the meeting was a general sense of harmony, brought about by the passing of a resolution, as follows: "The assembled members of AKA at the second annual convention and festival endorse and support *Kite Lines* magazine."

The resolution does not bind either AKA or *Kite Lines* to any specific actions, but it serves to reflect the spirit of the members present. That and the changes which were adopted in the bylaws give both parties a great deal of freedom. The journal's relationship to AKA will be much as it is to any kite club, that of friendly reporter, in a spirit of cooperative independence. We would very much like to have your views as a reader regarding the directions your journal should take.

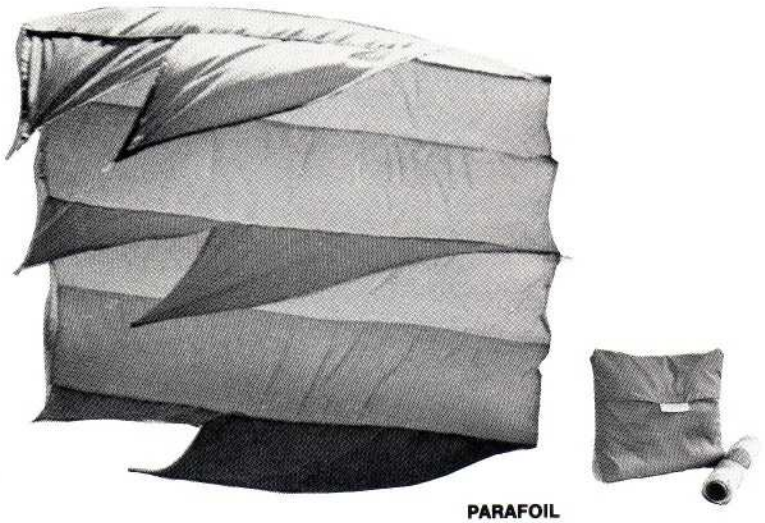
Though *Kite Lines* is no longer the official journal of the AKA, we carry a public trust as the research and information center of the worldwide kite community. We are at least as committed to being responsive to that community as if we were a volunteer organization. As authors of the original AKA bylaws, we of *Kite Lines* subscribe to those stated purposes. The future of kiting is our joy. As Wyatt Brummitt said, "The sky is big enough for all of us."

With a fresh spirit of cooperation in the air, we feel more optimistic than we have in a long time. The meeting brought about these good feelings. For that we kiters owe the meeting's organizers and participants our thanks.

For those of you who have stood by in various degrees of anguish, feel free, as you may, to love or hate *all of us.* Your comments—by mail, by phone, by kite—are valuable to us, whatever you have to say. Your ideas guide us and demonstrate that you care. The vitality of kiting and its warm bonds of friendship cut across all boundaries of politics, creed, nation, age, sex and factionalism. It is that vision which guides this journal.

Windily yours,

Valerie

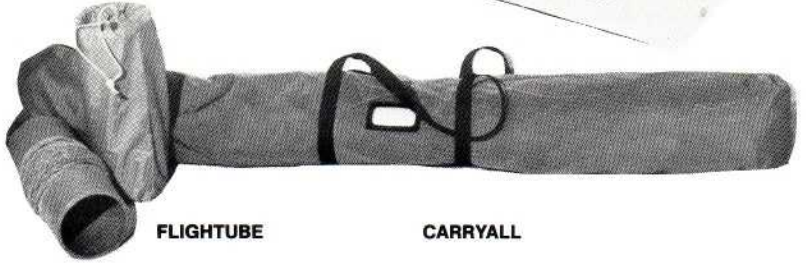


PARAFOIL

MINIFOIL

STRIPED OKD

SPORTSKITE



FLIGHTUBE CARRYALL

JALBERT PARAFOIL, America's favorite high-performance kite. Completely "soft," no sticks, stiffened by the wind itself. Spectacular 7.5 square feet, stows compactly in pocket-size 8″ × 10″ nylon pouch, the ideal kite for travellers, boaters. Weighs less than a pound with 500′ of 100 lb. test braided nylon kiteline. Multi-color ripstop nylon construction for lifetime enjoyment **40.00**

PARAFOIL only (no line or pouch) **35.00**

Optional drogue for Jalbert Parafoil **4.00**

DISTRESS SIGNAL KITE for boaters and hikers, special parafoil in solid-color international orange ripstop nylon, with matching pouch and kiteline **40.00**

Optional drogue for Distress Signal Kite **4.00**

MINIFOIL, vest pocket version of the "soft" kite, packed with line in its own drogue/pouch. Ideal for back-packers and sailors. Kite itself weighs less than an ounce, folds to 7″ × 2″, made of orange spinnaker cloth, line included **17.50**

OPEN KEEL DELTA. A new type of delta kite with a pressurized open keel to provide ramjet effect and to prevent stalling, extraordinarily stable. Carefully tailored in colorful ripstop nylon, 60″ wingspan **19.50**

Smaller model of **OKD** kite, 38″ wingspan **16.00**

HUMMERKITE, our smaller **OKD** equipped with a fiberglass spreader bar with a Mylar hummer to buzz like a bee or purr like a kitten in the wind. Made of red ripstop nylon with tapered open keel **18.00**

STRIPED OPEN KEEL DELTA. Our ramjet keel kite in brilliant multi-color stripes, exclusively ours, in predominately red, orange, hot pink, royal blue and bright green, 60″ wingspan **24.00**

with 500 feet of twisted nylon kiteline **25.50**

SPORTSKITE, the latest in our line of "soft" kites, a self-stiffened sled with no sticks to break. Like the Minifoil it folds up into it's own tiny drogue/pouch to fit in pocket, purse or backpack. As supporting cells are open at both ends, it is easy to recover in water, ideal for boaters or as fishing kite. Tailored in attention-getting orange and yellow ripstop nylon spinnaker cloth, for emergency use as distress signal. Packed with line **17.50**

BEN FRANKLIN sled kite, with reproduction of a fine engraving of America's most famous kiteflier. Tailored in **TYVEK** spunbonded Olefin, the new DuPont non-woven fabric **5.00**

Kiteline **SKEINER,** the ideal system for flying light and medium size kites. Imported Finnish birch plywood contoured to let out or bring in a yard at a time with a twist of the wrist **3.00**

FLIGHTUBE kit, preferred by many for controlling medium to large kites. Special fiber tube 4½ inches in diameter by 12 inches long, with nylon tote bag **3.00**

KITE CARRYALL, new design with the best features of the old Carrier and Carryall, increased capacity and convenience. Zippered red nylon pack-cloth, 6″ diameter by 50″ long with black nylon webbing shoulder straps **17.00**

Braided nylon **KITELINE,** 100 lb. test for parafoils and other heavy kites, 500 foot roll **5.00**

Twisted nylon **KITELINE,** 35 lb. test, 500 foot roll **1.60**

MINI-INSTRUCTIONAL PACKET of 40 easy-to-assemble, easy-to-fly kites with 5 page teacher's guide, for school classes, Cub Scouts, Brownies, etc. All you need are scissors, tape and string. **5.95** plus **.30** postage/handling in Continental U.S.

We also make America's most unique **ADVERTISING PREMIUM KITES** in biodegradable paper and plastic, with your own design or imprinted with your logo. Write on your business letterhead for samples and prices.

Available at fine department and specialty stores and in kite shops from coast to coast, or direct from THE KITE FACTORY. Add $1.50 per order packing, shipping and insurance for U.S. and Canada. Washington State residents add sales tax.

THE KITE FACTORY

Post Office Box 9081, Seattle, Washington 98109

Letters

COFFEE STIRRERS TO THE RESCUE

I have left for a while Israel and my good kite friend Alex Cohen and his family to take up a post in the cardiac surgery department of Montefiore Hospital where I work as a biomedical engineer.

On arrival in New York we stayed at a hotel on 44th Street, close to Benihana of Tokyo. Walking past that famous restaurant, we saw an advertisement for New York's Benihana/Go Fly a Kite Festival. Not having brought my kite collection from Israel, I raced up to the hotel room armed with coffee stirrer sticks and some paper napkins lifted from a nearby pizza place where we ate, and glue and thread from the local 69-cent store. I quickly put together a white Conyne about three inches tall.

Came the big day and we were off uptown to Sheep's Meadow in Central Park. The skies were full of beautifully colored kites of varied shapes, sizes and types.

The whole family was really excited when we received first prize in the smallest kite class—dinner for two at Benihana's and 10,000 yen. It was a great experience and welcome to the Big Apple for all of us.

Eliezer Astrinsky, Ph.D.
Bronx, NY

AT THE STAGE BEFORE NOVICE

My son recently gave me a subscription to your journal. I was so fascinated by the first issue of *Kite Lines* I received that I sent for all the previous issues and have been patiently reading them cover to cover at every spare moment. I soon discovered that I was at the stage before novice. As in the practice of medicine, I learned that for every fact I knew there were thousands I didn't know.

Eugene L. Lozner, M.D.
Tampa, FL

TALES FROM THE TAILLESS

My interest in kiting lies mainly in the single-line high flying category. Nothing pleases me more than to have my kite up in the clouds, invisible, and my line looking like the Indian rope trick.

Now to do this it is necessary to have a thoroughly reliable kite, and my efforts to make this seemingly simple article have been many and varied.

I have made quite a few box kites, mostly winged ones, both triangular and square, and they have usually flown quite beautifully. Their main drawback is in the number of spars required; these have to be kept as light as possible, being so many, and in strong winds some may break. If you are flying in an airfield or on an open moorland, that is not too bad, but in semi-restricted places it could be a disaster.

So I turned my attention to single surface kites, such as the Eddy, Malay, Parakite or whatever you like to call them. I have spent a considerable amount of time and money on trying to construct one of these which will fulfill the statements made in many books that they are tailless. They are not. Possibly flown in steady seaside breezes or in a light wind on an airfield, they may be, but flown in varying conditions and particularly for high flying expeditions they are totally unreliable.

Flown with a drogue attached they are more steady. A drogue needs to be as small and light as possible to retain high angle flying, so I devised a kite which I hoped would enable me to use a light drogue, which would be more compensating for different wind conditions. I did this by giving the drogue more leverage on which to operate its drag by fixing a very light spar rigidly across the bottom of the kite at the end of the spine. The tail is then composed of two lines which connect to the drogue itself by means of a swivel link, to prevent twisting. This has the effect that immediately the kite turns from the vertical it has to lift the drogue much more than when the latter is simply attached to the spine by a single line. I normally use a six-foot kite and find that a ¼-inch dowel 18 inches long works well and adds very little weight.

When making these kites I abandoned very early on the usual pocket arrangement for housing the ends of the spars. They simply do not stand up to the strain upon them and eventually wear through however well they are reinforced. Also they put too much strain on a small area of the fabric and tend to pull the kite out of shape eventually. I use rings now, and the spars are attached by means of tapes, which are readily renewable when required. In making these kites, therefore, I cut off the corners and fold back the material so that a small piece of dowel can be inserted to take the strain of attaching the ring. The base of the kite is cut back even more so that when hemmed it will accommodate the 18-inch dowel.

There are various ways of designing these kites—rigid with bowed cross spar, nonrigid with floating cross spar, rigid with straight cross spar held back by a spacer, etc. I use the nonrigid arrangement in mine. One of the troubles I found was that the kite made with a straight spine would frequently dive forward towards me, in the manner of a delta. I corrected this by making the spine angle back from a point about 18 inches from the top. The total deflection is fairly small—about three inches in a six-foot kite—and it means splicing the spine, but it is effective.

This is the kite I use for real high flying, and it works. For normal recreational flying I use box kites. They are tailless, predictable and above all strikingly interesting to watch.

F. W. Coles
Bingley, Lancastershire, England

A PUZZLE AND A THEORY

Can you or any of your staff help me solve a vexing problem?

I have lost at least five good kites the same way. It's this.

In trying to fly a kite over water off a dock with an offshore breeze, as soon as the kite gets about 30 feet up in the air it turns over and comes smashing down into the water. Can you tell me the reason?

Harold Smith
Portland, Ontario, Canada

Pete Ianuzzi has experienced the phenomenon you describe and has this theory to explain it. In the warmer months the normal tendency is for the breeze to be toward the ocean in the morning and toward the land in the afternoon. This is because the land changes temperature faster than the water; in the morning it is cooler than the water but by afternoon it is warmer. Warm morning air over the ocean rises and is replaced by cooler offshore breezes. This reverses in the afternoon, when the warmer air rises on the land and cooler breezes come onshore (creating that summer relief that has attracted vacationers since the days before air conditioning). There is a time, for about an hour in the late morning (from Pete's experience), when the airflow is changing from sea to land. At this time, at the edge of the ocean, a kite will go up over the land where the air is starting to

for those who are high on your list

a great gift idea... put KITE LINES in their hands!

A Once-A-Year Opportunity to Save on KITE LINES! Subscribe or give KITE LINES at our regular $9.00 rate. Each additional subscription is only $7.00—$2.00 off regular price, $3.00 off newsstand cost!

Offer expires December 31, 1979.

KITE LINES ORDER FORM

Please send *Kite Lines* to each of the people I have listed at the special holiday rates:

My Name_____

Address_____

City_____

State, Zip_____

Please ☐ enter ☐ extend my own subscription at the same special rates. Each new subscription starts with the Bonus *Annotated Kite Bibliography* followed by issues of *Kite Lines* as published, unless order specifies to start with current issue.

(1) Send Gift to_____

Address_____

City_____

State, Zip_____

Sign Gift Card from "_____"

(2) Send Gift to_____

Address_____

City_____

State, Zip

Sign Gift Card from "_____"

(Use a separate sheet to list additional names.)

I enclose check or money order to *Kite Lines* for:

Gift subscriptions $_____

My subscription _____

Foreign postage* _____

Back issues:_____issue _____

☐ all 4 back issues

(Send back issues to ☐ me to ☐ recipient number___.)

TOTAL _____

*Surface postage outside USA, its possessions & Canada: add $1.00 per one-year subscription. (Air mail rates are given on page 4.)

Charge to ☐ Master Charge ☐ VISA

Account Number_____

Expiration Date_____

Signature_____

Send order to *Kite Lines*, 7106 Campfield Road, Baltimore, Maryland 21207, USA.

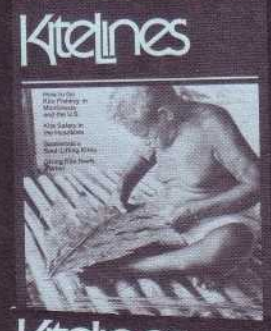
for those who are high on your list

a great gift idea... put KITE LINES in their hands!

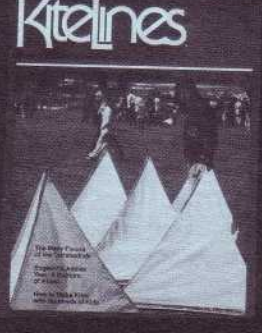
BACK ISSUES $2.50 each or $9 postpaid* for all the four available

SPRING 1977: Paul Garber—Man About Kites at the Smithsonian, Tal Streeter on Heart-Stopping Kite Festivals of Japan, Making It with Marconi, Talking Tails, Wyatt Brummitt on Kite Categories

SUMMER 1977: Special Issue: Kite Trains—the End Is Not in Sight, with background on the world record, how-to by Jack Van Gilder and the Van Sant Trampoline, plus Reviewing the Stunters



FALL 1977: Kite Fishing in Micronesia and the U.S., Kite Safety in the Headlines, Guatemala's Soul-Lifting Kites, Kite Reels Anatomized, Gull Delta and Vietnamese Kite Plans



WINTER 1977-78: The Many Facets of the Tetrahedrals—a Symposium, England's Jubilee Year—A Rapture of Kites!, How to Make Kites with Hundreds of Kids, Stacked Deltas Plans

TO ORDER: Use the form on the other side.

NOTE: Sorry, the more recent issues of *Kite Lines* are SOLD OUT and presently unavailable through us. (Some copies may be obtainable through kite shops.)

*For foreign air mail, add estimated postage.

Letters . . . *Continued from page 8*

come onshore, but as soon as the air is over the land it will rise and circulate, coming down to the ocean, back to the land, up and down and in again—right at the meeting of the land and the ocean. A kite up 50 feet will experience this. It is best to pull in fast and get the kite quite high over the land again. If you want to see what is happening, pull the kite in quickly, making it rise, and then it will go up into the offshore part of the air and as you let line out it will go out to sea and descend again. This can be repeated several times if it's your idea of fun.

MINISLEDS IN THE NURSERY

I enjoyed Mel Govig's article on kite making with children (*Kite Lines* Winter 1977-78). I am especially grateful for his methods of cutting many kites at once and attaching the bridle with a piece of tape—they have saved me a lot of time this spring!

I would appreciate clarification of the sled proportions given on page 65. Are the sticks angled as one would infer from the dimensions or parallel as pictured? If parallel, what are the correct dimensions?

My own experience with classroom kites has been mostly with nursery school children, 3 to 5 years old. Until this year I used the Minisled published in Margaret Greger's new book, *More Simple Kites.* I bring in the almost-completed kite (sometimes leaving the straws to be attached at school) for the children to decorate. Fifteen to 20 feet of string seems to be plenty for this age group. The whole project, including flying, can be completed in about two hours. (Preparation time is another story—but it's a labor of love.)

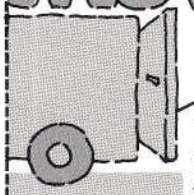
Carol Master
Jamaica Plain, MA

We blush. The dimension on the sled's trailing edge should have been 13 inches; the kite sides are parallel. Angled versions (a la Allison, Weathers, et al) work well, however, and the kite is forgiving enough in that size to work with a 12-inch span. In our experience, the sled in the article is as small as a child can make without its needing a tail to fly.

Readers are encouraged to reply to letters, and we will route them to appropriate parties whenever possible. Address letters to Kite Lines, *"Letters," 7106 Campfield Road, Baltimore, MD 21207. All letters become the property of* Kite Lines. *The editor may edit letters for publication.*

PLEASE HELP US...IF YOU'RE

MOVING



Send us a line!

Old address here. Use mailing label or write it in.

The cost to Kite Lines for each address change that comes back from the postal service is 25 cents. We could go broke! And YOU lose that issue, too! Please send your new address as early as you know it to Judy Faecher, our one-person circulation department, at Kite Lines, 7106 Campfield Road, Baltimore, MD 21207, USA. Use this form if you like.

New address here:

*Name*_____
*Address*_____
*City*_____
*State*_____ *Zip*_____

Be sure to give us also effective date:
_____

What's New: Kites, Books, Sundries

Kites

By Mel Govig, assisted by A. Pete Ianuzzi

CRAFTSMANSHIP FROM SRI LANKA From Great Winds kite shop in Seattle comes a seven-kite collection of hangable, flyable handcrafted kites from Sri Lanka (Ceylon by former name). Common to all these kites is a glassine paper cover of brilliant colors, light weight and remarkable toughness. However, in their flight behavior, they are three distinctly different types of kite.

First is the cobra, further subdivided into two cobra kites. One is the Dancing Cobra, a 15-foot version of the active "dragon" we have come to love in its U.S.-made Mylar versions, with the characteristic 35- to 40-degree angle. The second is called the Serendib Serpent, a 65-foot streak of color that flies on a 10-knot breeze at angles over 70 degrees with *un*-characteristic lift and little activity except the progression of riffles that make it look like the snake it's named for. The head on the Serendib Serpent is unusual, an elongated hexagon based on the fighter crossbow but with a rigid head stick and a foot stick that restricts the range of bow (and I presume the range of maneuvering) of the flat bowed spar. The result is a design I plan to copy in making my next Bermuda-type kite.

The Peacock and Flying Fish kites are basically oriental fighter kites with apron tails—a large frilly tail on the Peacock, a smaller forked "fish" tail on the Flying Fish. Each is fitted with a foot-long back-bowed tassel at its head. These kites gain all their lateral stability from the head tassel, without which they would be similar to Indian fighters. They are absolutely rock stable in winds up to 25 knots and down to 5 knots. They float on a light line at about 40 to 45 degrees at 5 knots, settled to about 35 degrees in 25 knot winds. They cannot be made to dive, although at high wind speeds they will sometimes go into one of those frustrating slow power arcs that seem to defy correction. But in a mild wind, launching these kites is like tossing a bouquet into the air and having it stay there like a movie stop frame.

The third type, the Ceylonese Bird and Raven kites, differ only in their colors. They are bird kites with hinged tails and abundant fringes both on the tails and the trailing edges of the wings. They fly nearly flat on the wind and would probably glide into the wind if it weren't for all the fringe. The hinged tail flap, spilling air and ruffling its fringes, causes the whole kite to flap with dramatic realism. Our friend Curtis Marshall would call these *kinetic* kites. They achieve an angle of 35 degrees on occasion, but mostly about 25 to 30 degrees—not kites to fly on long lines.

The last kite in the collection is a small, flat eight-pointed star with tassel tail. It flies as you would expect a small flat kite with a long tail to fly, taking its charm from the stained-glass-window effect of the brilliant glassine paper. I suggest that you remove the tail and save it for hanging on the wall with the kite and fly with a crepe paper or surveyor's tape streamer that won't tangle like tassels always do.

All of these kites fly easily, most of them right from the hand; a novice could fly them. But an added element in appreciating them is their origin.

Ken Conrad of Great Winds tells us that since 1939, the kite maker has been crafting and selling his kites at one spot on the beaches of Ceylon. British troops living there before World War II are the source of the Union Jack motif which sometimes appears on these kites. Kite sales to the USA have helped this man feed and clothe his family, which includes his wife, mother and 10 children, who live very simply in a small house. All the family members help in making the kites. The father does all the precision carving of the bamboo and the hand-painting of the designs. His wife ties the knots and the children cut and paste the appliqued papers. Then the kites go off to the beach for individual testing.

After 40 years of kite making, the craftsman knows many subtleties. Convex curvatures add to lateral and pitch stabili-

Kite making in Ceylon: from top, the craftsman splits and shapes the bamboo frames while his wife ties them; the family group.

DATA CHART

	Dimensions	Weight	Materials	P	AT	ED	EWV	AF	SL
Dancing Cobra	15x12"x15'	1 oz.	paper, bamboo	F	none	F	5-15	30-40°	N
Serendib Serpent	18x24"x65'	4 oz.	paper, bamboo	F	none	F	5-15	50-70°	N
Flying Peacock	16x21"	1.4 oz.	paper, bamboo	F	none	F	5-25	35-40°	N
Flying Fish	16x21"	.8 oz.	paper, bamboo	F	none	F	5-25	35-40°	N
Ceylonese Bird, Ceylonese Raven	22x26"	1.1 oz.	paper, bamboo	F	none	F	5-15	25°	N
Mandala Star	13x13"	.9 oz.	paper, bamboo	F	none	F	5-15	50°	N
Soaring Wing	18x72"	5 oz.	rip-stop nylon, dowels	E	1 min.	E	5-10	70-80°	S

Code: P=Portability; AT=Assembly Time (on field); ED=Est. Durability; EWV=Est. Wind Velocity (min.-max. mph); AF=Angle of Flight; SL=Skill Level: N=Novice, I=Intermediate, S=Skilled
Ratings: P=Poor, F=Fair, G=Good, VG=Very Good, E=Excellent

What's New

. . .Continued from page 13

ty. Bowed cross spars, as in fighter kites, add dihedral as needed. Tasseling is just enough to create necessary drag. The centuries-old techniques and designs of Ceylon live on, modified and improved by the care and knowledge the craftsman contributes from his own mind and hands. Whether or not you know all this, you benefit from it when you fly one of these kites. There is no question that you are flying the work of a master.

THE SOARING WING IN FABRIC

Wind Mill Kites is now turning out a cloth version of its Soaring Wing kite. The original model in Mylar® was reviewed in this space before, where the kite was noted for its exceptionally high aspect ratio: six feet wide by only one foot deep at the widest part of the wing. The current model is made of rip-stop nylon stunningly sectioned and sewn. Like its predecessor, it is a bit tricky to launch and recover, but the flight is worth the effort for a skilled, adventurous flier. Under good conditions, the Soaring Wing can fly at a high angle and its best performance will be when the wind is between 5 and 10 miles per hour. The cloth version is more permanent than the plastic one and is quite a good buy at $33. It's an interesting and novel addition for the delta* collector. Wind Mill Kites, like many kite producers now, is adding variety to its line and acknowledging the excitement of kiting as a spectator sport.

*The testers are divided on whether this kite is a delta. In basic structure, the design seems an improbable delta (as a bat seems an improbable mammal).

Books

By Mel Govig

BASIC AND BELIEVABLE

Kites, Kites, Kites: The Ups and Downs of Making and Flying Them, by Bruce H. Mitton (Drake line: Sterling Publishing Co., 1978), 128 pages, pap. $5.95.

You have to like a guy who suggests as the first step to building kites that you take a dollar to the dime store (sorry it's no use taking a dime anymore) and buy a kite and fly it. The premise is that if you can fly a kite you can build one. Bruce Mitton writes as one who can and does.

What you get in his book is a practical, unpretentious recitation of kiteflying experience and tips plus basic plans to build 16 kites. Mitton's choice of materials (tissue, plastic bags, dowels, matchstick bamboo, crepe paper) is geared to the budget kite maker. Refreshingly, almost everything he's written comes, obviously, out of his own experience rather than from "research." Other assets of the book are: good coverage of kite safety (including some very illustrative pictures), plenty of fine black-and-white photographs and a readable layout. The writing is fresh and personal, especially in the amusing catalog of "kite types" (the Runner, the Demolitionist, etc.), as well as the list of "reasons to fly a kite." Appendixes include checklists for the kiteflier and kite builder, a bibliography and an index.

Only one fault I found with the book: the bridling instructions are poor.

This book adds hardly anything new to the literature. There are better books to build by, and writers with more depth on the history and aerodynamics of kites. Occasionally, though, a book comes along that just breathes the author's love of kites. I found Bruce Mitton in all the pages of his book, and I liked him. ▽

The Kite Site

3101 M Street, N.W.
Georgetown, DC 20007
(202) 965-4230

About Our Materials

We decided that good long-range interest in kiteflying would be helped by more people getting involved in making their own kites. But although the new interest in kites has been greatly aided by new materials and new applications of old materials, there has not been a convenient single source for obtaining them.

We hope to remedy this by carrying the largest and best possible stock of materials geared solely to kitemaking. We think the types and brands we have selected are of the highest quality available. If you have any suggestions about what we should carry, please let us know.

A note about our prices: A few of these materials you may be able to obtain more cheaply from various places. However, it will probably take a good bit of research, ordering (and paying shipping) from many different sources, talking to people who don't understand kitemakers' needs, and trying to convince wholesalers to sell in small quantities. We have tried to establish our prices to be fair to the customer while respecting good business practices. As our volume of sales of kite materials grows, we will pass our savings along to you.

Since our last catalog, some prices have changed. We found a cheaper supplier of high quality fiberglass, but jumps in petroleum costs have pushed rip-stop nylon prices the other way. However, making your own kites is still the cheapest way to go. Have fun.

Materials List

Rip-stop Nylon
Rip-stop nylon is probably the lightest and most durable fabric made. It generally weighs anywhere from .50 to 2.3 ounces per square yard. Our rip-stop is from Howe and Bainbridge, the noted sailcloth makers. It comes in two weights, 1.5 oz. and .75 oz. (Stabilkote III). The 1.5 oz. has minimal porosity. The .75 oz. is urethane coated and has zero porosity. Both have less stretch and work much better than the garment types of rip-stop. We feel it is the best rip-stop for kites that you can buy. It is best fastened by sewing; 41" wide:
.75 oz. in red, orange, yellow, green, royal blue, aqua, purple, black or white .. **$4.95/yd.**
1.5 oz. in red, orange, yellow, green, royal blue, aqua, purple, white or black .. **$3.95/yd.**

Tyvek®
Tyvek is the trade name for a DuPont product. Technically, it is a spunbonded olefin. Nontechnically, it seems like a stiff somewhat slippery paper (Type 10) or a kind of extra-strong paper napkin (Type 14). Type 10 is very strong and, in its heavier grades, almost impossible to tear unless "started" with a cut. Type 14 is softer and not as strong (though still very strong for its weight and softness) and also much more drapable (*i.e.*, it conforms to the wind more easily). Both kinds are white and can be colored, painted and printed. Tyvek resists the elements well and can be sewn, glued or taped.
Type 10 (1073D), 51" wide, ... **$1.25/yd.**
Type 14 (1422R), 56" wide, ... **$1.00/yd.**

Mylar®
Mylar is the trade name for a polyester film made by DuPont. It is transparent (semi-transparent if colored), extremely lightweight, and has a very high tensile strength. If it punctures, the tear will "run" unless mended with tape. It cannot be sewn and is somewhat tricky to heat-seal or glue, though contact cement does OK. Tape (Mylar, cellophane or fiberglass) is the best means of fastening it. We carry ½-mil thickness (what you usually find dragon kites made of) in a fluctuating stock of colors, including red, dark purple, fuchsia, yellow, green, blue or a beautiful rainbow stripe; 48" wide. ..... **$1.50/yd.**

Tissue Paper
Our tissue paper is made by Crystal Tissue Co., the largest specialty tissue company in the U.S. and a leader in quality products. The tissue we carry is a No. 1 Standard colored Fourdrinier MF tissue. It is nonbleeding and quite strong (for tissue paper). Each sheet is 20x30" and we stock the following colors: red, pink, orange, yellow, gold, lime, emerald, turquoise, dark blue and purple ..... **$.12/sheet, $1.00/10 sheets**

Silkspan®
Silkspan is an old model airplane paper that came into heavy use around World War II when silk became very scarce. It is heavier than tissue paper but also stronger. The well-known Stratton airplane kite kits include covering of Silkspan (medium thickness). We carry three thicknesses, all white:
Size OO (thin), 19½ x 24½" ..... **$.31/sheet**
Size GM (medium), 24 x 36" ..... **$.53/sheet**
Size SGM (thick), 26½ x 33½" ..... **$.62/sheet**

Hardwood Dowels
The "old familiar" of kitemaking. You can get them in any lumber yard or hardware store—*but* can you get them in 4-ft. lengths? All of ours are 4 feet long; diameters are:
⅛", each ..... **$.13**
3/16", each ..... **$.20**
¼", each ..... **$.22**
5/16", each ..... **$.27**

Aluminum Tubing
This stuff is either Reynolds or Kaiser aluminum in a grade of 6061 T6. For the non-technical, that's a good compromise between strength and price. We carry 4' and 6' lengths. Dimensions given are outside diameters by length; wall thickness 035":
¼" x 4', each **$1.30**
¼" x 6', each **$1.90**
5/16" x 4', each **$1.40**
5/16" x 6', each **$2.10**
⅜" x 4', each **$1.60**
⅜" x 6', each **$2.35**
½" x 4', each **$2.20**
½" x 6', each **$3.40**
¾" x 4', each **$3.00**
¾" x 6', each **$4.50**
Wall thickness .058":
¾" x 4', each **$6.40**
¾" x 6', each **$9.60**

Fiberglass Rod
This is high-quality fiberglass made by Glassforms, one of the largest suppliers of kite fiberglass in the country. It is heavier than aluminum, more durable and more flexible. Sizes are:
⅛" x 3', each ..... **$ .75**
3/16" x 4', each ..... **$ .90**
¼" x 4', each ..... **$ .95**
¼" x 6', each **$1.40**
.300" x 4', each **$1.25**
.300" x 6', each **$1.90**

Tubular Graphlex
We now have tubular graphite-fiberglass struts. These things aren't cheap, but if you want a light, sturdy, collapsible frame, especially for larger kites, it's the way to go. The material is a filament-wound fiberglass, with graphite reinforcements running lengthwise. It's strong, springy and light. The ferrules are short fiberglass fittings that slip snugly inside the tube. A ferrule can be secured with a drop of cyanoacrylate glue (the 10-second stuff) in a moment. When a ferrule is glued halfway into one end of a tube, that end will slip into any other open tube. The tubes

can be cut with a hacksaw, sanded or filed smooth, and drilled. All tubes are 5/16" OD x 32¼". Need something stronger for a breakdown spreader bar? We now have 3" polished aluminum exterior ferrules to fit our new .300" fiberglass rod.
Graphlex tubes, each ... **$1.40**
Fiberglass ferrules, each . **$.20**
Aluminum ferrules, each . **$.55**

Polycarbonate Tubing
For all those who have been asking about rigid fittings for struts, this may help. Polycarbonate will bend when heated and regain its rigidity when cool. It can be sawed, drilled and sanded. The main problem is that the smallest size it comes in is ¼" ID. However, by wrapping the end of a 3/16" strut with tape you can achieve a pretty good fit. ..... **$.50/ft.**

"Surgical" Tubing
Clear plastic tubing is handy for connecting various round struts. There are many types and different grades of this tubing and although many are often called "surgical" tubing, *actual* surgical grade tends to be super expensive. What we have is plain old tubing, but of a very good quality.
3/16" ID x 5/16" OD ..... **$.30/ft.**
¼" ID x 7/16" OD..... **$.40/ft.**
5/16" ID x 9/16" OD ..... **$.50/ft.**

Bamboo
Outside bark. Light, flexible and strong. Interesting to work with. Good for fighter kite bows. It comes in strips (*i.e.*, already split) of 4' length:
1/16", each ..... **$.12**
⅛", each ..... **$.14**
¼", each ..... **$.16**
½", each ..... **$.20**

Rattan
Looks like a dowel rod but is actually a round reed. *Very* light and *very* flexible. Good for dragon kite heads:
¼" x 4½', each ..... **$.95**

Basswood Strips
Light, strong, evenly cut. Great for miniature kites; 22" long:
1/32 x 1/32", each..... **$.13**
1/16 x 1/16", each..... **$.13**

Spruce
Spruce is a straight-grain, lightweight strong wood. It is heavier than balsa but much sturdier. It has been used for aircraft (people-carrying type) for about as many years as aircraft have been around (*e.g.*, Howard Hughes's "Spruce Goose"). It works well for a variety of kites.
3' long:
1/16 x ¼", each ..... **$.31**
The following are all 4' long:
3/32 x 3/32", each..... **$.33**
3/32 x 3/16", each..... **$.42**
⅛ x ⅛", each ..... **$.36**
⅛ x ¼", each ..... **$.51**
⅛ x 3/8", each ..... **$.62**
3/16 x ½", each ..... **$.84**
¼ x ¼", each ..... **$.78**
3/8 x 3/8", each **$1.13**

Mylar Tape
Mylar tape is great stuff. The shear strength is nothing special but the tear strength is unbelievable. So you can cut it but you can't rip it. If you need tape that can take a shock, this is it. We figured that not too many people would need to buy the standard-sized rolls, so we had special put-ups made for us. It's more expensive per yard than the standard roll, but you don't have to wonder what to do with all that extra tape.
Clear, 1" wide, single-sided or double-sided adhesive.
3 yd. roll (single)..... **$ 1.50**
55 yd. roll (single) **$11.00**
36 yd. roll (double).... **$15.00**

Rip-stop Nylon Tape
A 1.5 oz. rip-stop with an adhesive backing (covered by waxed paper). Great for fast repairs, reinforcing connecting points and designs or lettering.
2" wide, **$.25/ft., $3.75/25 ft. roll**

Vinyl Ribbon
For tails, both decorative and functional. In red, orange, yellow, green, blue or white, approx. 1" wide..... **$.10/yd.**
..... **$1.95/100 yd. roll**

Books

#101 *Kites,* Brummitt, 1971, 120 pp. Excellent all-around introduction; 16 kite plans, **$1.95**
#102 *Kites!,* Mouvier, 1974, 95 pp. 16 interesting plans... **$1.50**
#103 *Kite Craft,* Newman, 1974, 214 pp. Substantial background, photos, 20 kite plans **$4.95**
#104 *Kites,* Pelham, 1976, 227 pp. Comprehensive; 85 kite plans (given with scale instead of dimensions), lots of photos, **$4.95**
#105 *Blown Sky-High,* Greger, 1977, 81 pp. For teaching, 14 simple kites..... **$4.95**
#106 *More Simple Kites,* 1979, 21 pp..... **$1.75**
#107 *The Art of the Japanese Kite,* Streeter, 1974, 181 pp. A richly colorful classic ... **$17.95**

3101 M Street, N.W.
Georgetown, DC 20007
(202) 965-4230

NOTE
Fabrics sold in ½ yd. increments only.
Struts sold in listed sizes only.
Tubing sold in 1 ft. increments only.
Ribbon sold in 1 yd. increments only.

Quantity	Name of Item	Size	Color Choices: First	Second	Price Per Item	Extended Price

Deliver to: _____ Sub-total _____

Street Address: _____ Shipping **$2.50**

City, State, Zip: _____ Total enclosed _____

Credit card number (VISA, Master Charge, Amex): _____

Expiration Date: _____ Signature: _____

Make check or money order payable to The Kite Site. Personal checks must clear the bank before shipping. Money orders, cashier's checks and charges insure fastest shipping. Alaska and Hawaii please add $2.00 extra for shipping. Sorry, no overseas orders.

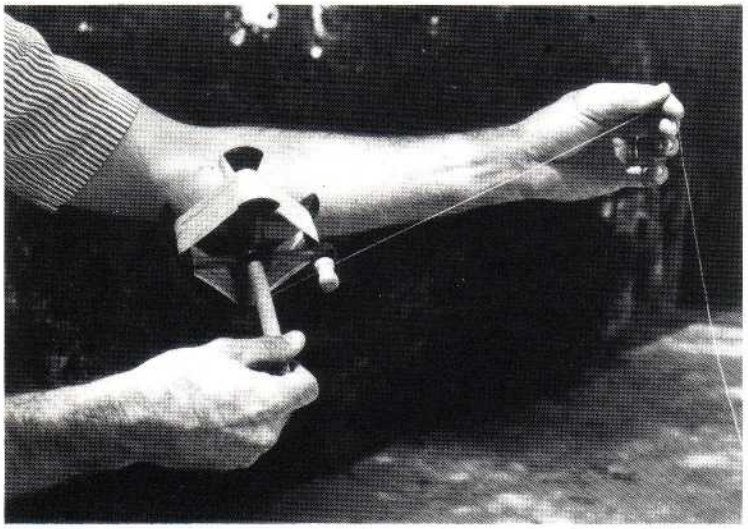
Note: In case we are temporarily out of an *item*, should we (check one)
☐back order ☐return payment ☐substitute (describe below)
Note: In case we are temporarily out of your *color selection,* should we (check one)
☐back order ☐return payment ☐substitute (describe below)

Damage claims must be made within 7 days of receipt of merchandise. Prices subject to change without notice.

Now Available to Kite Fliers:

The convenience of a fishing reel and the simplicity of a spool.

SPREEL™

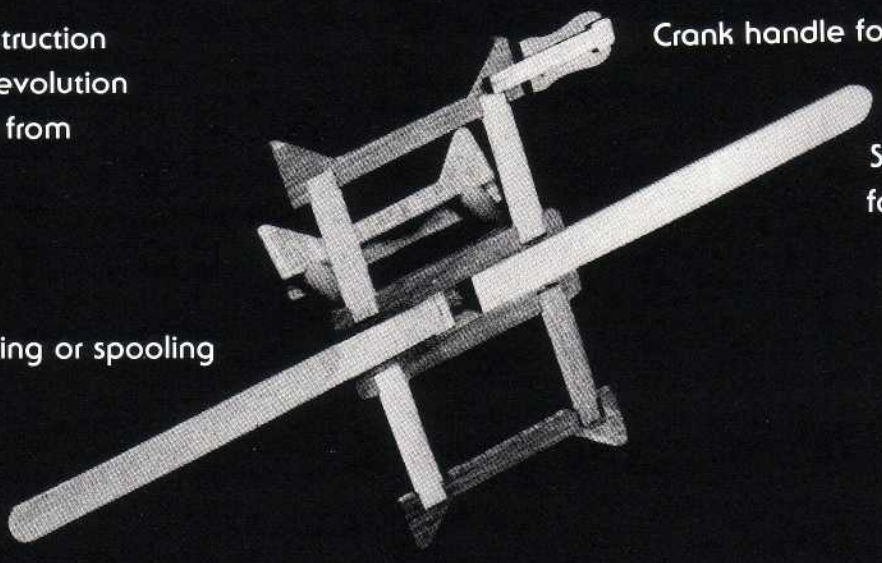


SPOOL
Friction fit
spooling handle.

REEL
Spooling handle
removes for reeling.

Cut Away View

- All hardwood construction
- 14" recovery per revolution
- 4 colors to choose from



Crank handle for reeling

Spooling handle removes for reeling

Spin fit handle for reeling or spooling

Includes 480 feet #30 twisted Dacron line, treated to remove virtually all stretch and kink.

MADE IN U.S.A. BY
FLYING TIGER ASSOCIATES™

Patent applied for.

Dealers inquires invited
Exclusively distributed by:
Stratton Air Engineering
10859 Portal Drive • Los Alamitos, CA 90720
(714) 761-1911

Jim's Camera House, Kill Devil Hills, NC

MONUMENTALITY in kites: a symposium

WHY IS BIGGER BETTER? OR IS IT? KITE LINES ASKS SOME LEADING KITERS—AND GENERATES A FLURRY OF OPINION AND THEORY, AS WELL AS SOME CAUTIONARY STORIES AND SOLID PRACTICAL ADVICE. IN UNCOVERING THE CONTROVERSIES, WE FOUND SOME ANSWERS TO OLD PUZZLES—ALONG WITH A WHOLE NEW BATCH OF QUESTIONS!

G. WILLIAM TYRRELL, JR.
Huntingdon Valley, PA. Winner of Strongest Puller with his Parafoil at Ocean City, MD, 1978. (Above, John Stubbings assists him in NC.)

It's the only way to fly!

I have a 20 x 20 foot Jalbert, the biggest he's made, the same as the kites sold to NASA—the biggest in the world at this point. It's anchored with three-inch rope and chain. At Ocean City, I had it tied to a 6000-lb. truck parked sideways, and it dragged the truck! It bottomed out the measuring scale. Guys were climbing the rope the better part of the day. I used to charge $200 a day to fly it with banners at supermarket openings and such. But now it's a hobby. I'm a bit of an eccentric, so it helps. I wouldn't have it any other way.

WYATT BRUMMITT
Rochester, NY. Author of the Golden Guide: Kites.

"Monumentality" is a disease, a tacit admission that excellence is not enough.

I grant, and defend, the right of anyone to make a good, beeeeg kite—if it's not done merely as a crowd titillator. Ed Grauel's Killer Whale, for example, is a remarkable spectacle, simply because it flies. Even Ed will agree that it doesn't fly as well as his more conventional-size kites; it is, almost by definition, a "sport," a case of giantism.

And this, of course, brings us back to Mr. Einstein and relativity. How big is BIG? I think of a seven-footer as medium and manageable; others might regard it as much too small or much too big.

JOHN SPENDLOVE
Preston, Lancs., England. Kite designer and author of the celebrated Kite Lines *article, "Towards a Taxonomy of Kites."*

Have you ever been flying a kite of, say, four-foot span and some kid comes up and says how BIG it is? Maybe that happens less with you in the U.S. than in these kite-forsaken parts in northern England, but still—just what is big? Pelham in his *Penguin Book of Kites* says that below three feet is small, but doesn't give ideas for other sizes. So how about a scale?

John submitted some suggested kite size classes, six discrete categories in all, with analysis for metric. We hope John will forgive our liberties, but we found his idea too good to leave alone. After

much debate among the Kite Lines *staff, and an imaginary debate with John Spendlove, we decided to print a version that incorporates his concept but allows for more categories and also a bit more leeway between them. For example, different types of kites, though the same in their longest dimension, can vary decidedly in their impression of size. We hope publication of this chart will stimulate discussion and possible future refinement.*

SUGGESTED KITE SIZE CLASSES
By *Kite Lines*
via John Spendlove

Class	Imperial
MICRO	up to 3"
MINI	2½ to 12"
SMALL	10 to 36"
MEDIUM	30" to 6'
LARGE	5 to 12'
EXTRA LARGE	10 to 25'
GIANT	over 20'

ROBERT S. PRICE

Burtonsville, MD. Physicist, leader of the Maryland Kite Society and builder of large box kites.

One system of classifying kites is by manageability, and in this system there are two sizes of kite: one that a single person can manage in most circumstances and one that requires more than one person. To manage a kite I mean to launch it, fly it and recover it. If the kite is sufficiently powerful, it can lift or drag the flier and thus become unmanageable. My feeling is that an 8-foot long box kite is a comfortable size for one person to manage. A 16- or 18-foot wing-spread delta is probably also in this class.

Another system of classifying kite size is by structure. One category of kites would include those kites made with simple, solid sticks of common wood. Another category would include those with hollow wooden or bamboo spars. There are kites with exotic material spars—aluminum tubing, fiberglass, etc. Of course, there are sparless kites, too, such as the Parafoil.

The main reasons for building kites larger than one person can handle are to make the flying operation a cooperative, team affair, to develop lift for a special operation (such as a man-lift), or to make the kite visible at a great distance.

The lift goes up as the square of a linear scale factor while the required section modulus of the compressive members goes up as the cube of the scale factor. This is why hollow spars become desirable in larger rigid kites.

I don't see why there is any particular limit to the size of a kite that could be made to fly—it is just that landing and launching would become very difficult. It is more reasonable to fly en-train using smaller kites.

Bill Kocher

Bob Price showing off one of his elegant hollow-spar box kites.

RICHARD S. ROBERTSON

Austin, TX. Leading Texas kiter and the father in a family of seven active kiters.

I would really have missed an enjoyable phase of kiting if I hadn't made large kites. Making a large kite that will fly just as well as a small one is a real challenge. I remember some years ago when I made an 18-foot turkey vulture according to Hod Taylor's plans. I entered it in the Largest Kite event in our contest and it wasn't as large as some that were entered, but it flew as no other kite around could fly. The wings flapped and the kite found its flying position and stayed there. The spectators enjoyed watching the vulture fly much more than the kite that won.

Flying a large kite is like catching a big fish. The pull of the line is both thrilling and challenging. I generally tie the line to a car, tree or backstop, but if the wind is not too strong, I just "hang on."

One of the thrills of a large kite like my 100-foot centipede is the overwhelming spectator interest and desire to participate. Ask for eight volunteers to help you launch it and you end up with 25.

Richard Robertson's well-made eagle and centipede kites.

ALBERT F. RIEDERER

Cornwells Heights, PA. Winner of Largest Kite award at the Grand National Kite Festival, Ocean City, MD, September 23, 1978.

What really got me into large kites was one year at the Ben Franklin fly in Philadelphia. Some students from Drexel University had a Bermuda kite made with half-inch pine bolted with $^3/_8$" bolts and with 60 to 80 feet of tail. It took up the entire quadrangle. I couldn't believe something like this would fly. I decided next year I had to fly a large kite. I had flown Eddys since I was six years old. A buddy and I got the Dan Lirot plans for a 30-foot delta and built it and flew it—and it really got into our blood. Every time I flew it it was as if it were for the first time. It drew a crowd and it totally involved the children. You get a million kids around you. I only spent $20 to $25 on it at the time.

It's awe-inspiring. It does draw attention, it draws interest to the *total love* of kites. Also bigger kites are easier to fly once you get it together. But just the look on their faces is something to behold. *You* don't even look at the kite! You look at the spectators. That's the reward.

EDWIN L. GRAUEL

Rochester, NY. Kite designer and experimenter.

While I have always felt that giant kites made more sense than very tiny ones, I have never felt a compelling urge to spend much time on making or flying the monsters. The four big ones I have built were made purely to determine how large these kites could go and still be handled satisfactorily by one person.

But the interesting thing is that once these big fellows are in the air, they invariably attract more attention and more discussion than similar kites in smaller sizes.

It has been my observation, both as a judge and as a competitor, that large kites almost invariably win the prizes in most kiting competitions (except for the smallest kite classification). It's pretty tough to let the big kites, representing many hours of work, go away without a prize, even when things aren't exactly equal. So, if a purpose of kite flying is to win awards, the larger the kite the better.

There are at least two other advantages in making and flying giant kites. First, the larger the kite the more forgiving it is in over-

coming construction errors and poor workmanship; and, secondly, big kites make a fine group project for planning, construction and flying.

In summary, in my opinion there is a time and place for giant kites for a limited group of kite enthusiasts who are willing to put up with all the disadvantages in order to achieve the unusual.

RICK KINNAIRD

Laurel, MD. Local kite personality and Captain of Kinnaird's Cody Kite Crew.

If you expect to win a contest with a big kite—you will not. I believe that most judges are prejudiced against large kites because they don't understand them. But you win in the hearts and minds of the spectators. You do it for the glory—you can't be ignored!

The problem is the judges score large kites the same as they do much smaller kites and your error rate may be the same or less—in proportion. For example, a wavy seam isn't such bad workmanship in a really large kite.

When you're building a large kite, you spend a lot of time conceptualizing final details, the trim of the edges, etc. Once you set it up you find ways that work a lot easier. In some larger scales (my Cody, for example) the kite fights against itself. The problems are magnified in relation to size. You have to solve the relation between volume and surface area. If you try to maintain the strength of the wood, the diameter increases too much.

You've got to be in shape to fly it. I pulled a nerve (got "kite elbow"), putting strain on my shoulder and chest muscles. Use a pulley and a strong, coordinated crew. One man alone is good, but there's a chance you'll hurt yourself.

CURTIS MARSHALL

Baltimore, MD. Well-known physician and designer of large kites.

Monumental kites are not "better" than small kites, they are merely different. Just as one person may prefer a kite which is so stable that it appears to be nailed to the sky, another decries such performance and wants an "active" kite. The best kite size, then, is that which pleases the builder and flier, but why does that relatively small minority prefer kites of monumental dimensions?

The sky is a big place. It usually encompasses slightly less than half of all one can see. When a kite is flown at sufficient height to be above ground turbulence, it is apparent that, at 200 feet, a four-foot kite appears almost lost in this immensity. A large kite flying at such an altitude offers more to the appreciative eye.

In addition, observers seem to be impressed by sheer size alone.

Theodore L. Manekin

Rick Kinnaird and Carolyn Staples trim their Cody in a hotel room.

Often heard is an exclamation that it is "bigger than I am." For most of us who build kites, knowledge that others appreciate our effort constitutes a large portion of whatever rewards are realized.

The builder of large kites also feels the "bigger than I am" awe for his own creation. An additional reward is his appreciation that the kite is a worthy adversary whose strength is pitted against his own. Although the pull of the kite may well be such that it could drag him along as the wind speed rises, one hopes his intelligence will exceed that of a nonsentient kite so that he will remain in control. The effort one expends in the fatiguing operation of landing a large kite may easily satisfy or even exceed his daily requirements for exercise. It can also satisfy all members of a team in that all their physical efforts are needed to withstand the pull on the line.

A large kite is to be distinguished from a kite train; even though the aggregate area and generated pull of the train may be great, a train is still not a monumental kite. However, there can be a fine line of distinction when one considers certain articulated kites.

I like to look upon kite size, not in terms of actual sail area, but in terms of whether it can be flown by a child, a single adult or a team. The latter category, of course, could also be one person, aided by a power winch or even a car and pulleys.

With the increasing interest in the use of kites to lift payloads, including cameras, thermometers and wind-speed measuring devices, as well as wind-powered lamps, there has been an associated move toward increasingly larger kites.

A large kite, when simply scaled up from a small kite, flies in an altered manner. The greater the size, the more obvious the difference. This alteration in flight characteristics results from two predominant but interrelated factors. First, the inertia of the mass of the frame and the sail cause a slowing of the movement of the kite and create a kind of majestic serenity. This slowing is perhaps most apparent in kites which entrap a mass of air which then adds to the effective mass of the kite, such as the Parafoil. Second, a large area of sail behaves in a different manner than does the small area in any given turbulence situation. The large kite reacts more slowly and demonstrates an "averaging effect" with regard to small areas of turbulence within the air mass. This difference is not readily seen when a large kite and a small kite are flying together high in the sky, but becomes apparent when they are brought down into the ground turbulence. At this time, the sail of the large kite would be seen to ripple in response to the air currents, whereas these same air currents will toss the small kite hither and thither.

Curtis Marshall, aided by Rick Kinnaird, readies one of his giants.

Bill Kocher

As to disadvantages, a large kite can be exceedingly dangerous. It can injure the flier's hands, not only with rope burns but also by simple crushing action. It is usually wise to use large diameter line in addition to leather gloves for protection.

One must remember that the kite can easily rise from a low speed ground wind into a high speed wind at a few hundred feet. The accompanying sudden increase in drag on a large kite can reverse the roles of "flier" and "flyee," and the person who, a moment before, thought he was in control, can find himself dragged into brush, off a dock or into traffic, to mention but a few unsavory possibilities. It is always wise to have a safety limit line attached to a car or a tree. However, a line under heavy tension is very easily cut and a sharp edge on car trim, a fence pole corner or even a string from a small kite can part a 1200-lb. test line in a fraction of a second. The resulting "whip" of the suddenly freed heavy line can be quite injurious.

The crash of a large kite is potentially dangerous as frame pieces can fly off even if an observer is sufficiently alert and agile to escape a direct hit. From this point of view, a large Parafoil is harmless, but any large kite can injure a bystander if a crosswind catches it when the line is still at a low angle and sweeps it across an area. To guard against this unpleasant occurrence, it is wise to allow the kite to rise to a high angle with a short line, and then to pay out the line far above the heads of the onlookers.

Another dangerous aspect of flying large kites derives from the possibility of a frame member breaking loose and falling like a javelin. This is not an uncommon occurrence with experimental designs but relatively rare when one flies a proven kite design.

With small kites, one tends to ignore the specific patterns of stress in the frame and in the sail. This is justifiable in that the stresses

are of low force, so that dowel strength and tape reinforcement exceed by many times the forces which will be encountered. However, with large kites and their much greater forces, one cannot afford the extra weight necessary if one is to use a safety factor as tremendous as those used in small kites. Thus, one must calculate much more closely and try to stay not only within a relatively modest safety factor, but also to employ the heavy reinforcement only at those exact places where stresses dictate their need.

A somewhat different aspect of design enlargement is the importance of flexibility. Whereas small frames can often be glued to rigidity, large frames in most configurations must have flexibility designed in. When a large frame encounters excessive forces, it must be able to flex. A rigid frame could, under the same circumstances, simply crack. Heavy machined aluminum joints in a frame should be planned whenever possible to give with the stress, not to withstand the stress through brute force.

Carrying this approach somewhat further, one must even plot the areas of stress within the sail. The required strength of both the frame and sail, however, can be materially reduced by multiple shrouding. Whereas a two- or three-leg bridle would have to withstand perhaps 200 pounds pull at each attachment point, a 40-leg bridle would divide the load so that each attachment would have to withstand but 10 pounds or so. In addition, the use of a great number of carefully planned bridle points can be used to actually create the desired form of the sail by judicious trimming of the length of each line. This is clearly demonstrated in the bridling of the Jalbert Parafoil.

Certainly, the larger the kite, the greater the cost, not only of material but also of time. While one might well be willing to construct a small inexpensive kite on a throw-away basis, one takes a different attitude toward an endeavor which occupies months of work and an expenditure of a hundred dollars or more. Paper and dowels are fine for small kites, but the same design, when all items are multiplied by a factor of 10 or 20, would demand and justify the use of more durable materials such as nylon, aluminum and fiberglass. The cost obviously is not increased by a mere 10 or 20 times but would well escalate by a hundred times.

For those who enjoy monumental kites with all their problems, costs, dangers and joys, may their difficulties be overcome and their hopes satisfied. On the other hand, for those who do not wish to become involved with these monsters —don't!

Bill Kocher

Bill Bigge at work amid his compact clutter on the kite field.

ROBERT M. INGRAHAM

Silver City, NM. Founder, American Kitefliers Association.

Many kitefliers, espcially in the beginning, think in terms of "big." They want to build and fly a kite that will simply overwhelm spectators with its awesome size.

Big kites are not all that impressive once they are in the air. With no standard of comparison, they appear far from their actual size when in the broad expanse of the sky. The effect is lost.

Kites in the monster category are difficult to build, difficult to transport, difficult and dangerous to fly.

Flying monster kites should only be done in tightly controlled circumstances, in remote areas far away from buildings, crowds, power lines, etc., and by a competent crew.

WILLIAM R. BIGGE

Germantown, MD. Physicist at the National Bureau of Standards and authority on measures in kiting.

A very large kite is visible for a long distance. It is more impressive than a smaller one. It provides in many cases a focus for a group effort. A very large kite that flies is an achievement.

A large kite is more capable of lifting a payload, such as a camera, than a smaller kite. A *very* large kite may perhaps be defined as one so large that the payload decreases with increasing size. In the same vein, one may define a very small kite as one so small that the building time (or total cost) increases with decreasing size.

A large kite is more likely to be structurally critical. For geometrically similar kites, the stress in each part is directly proportional to the size. The wind force required for flight (proportional to the square of the stalling speed) is proportional to the size. The maximum allowable wind force without structural overload is independent of the size. Thus for a given detailed design there is a fairly definite limit to how much it can be scaled up and be strong enough to fly.

For structural reasons, large kites may have such refinements as hollow spars, materials with better specific strength or stiffness, bracing, trusswork or multipoint bridles.

A very large bowed rectangular (or circular?) kite with multiple vertical and horizontal sticks and multiple bridle lines can for structural purposes be scaled as follows:

Suppose the kite is four feet high and has sticks one foot apart. (It has more than three bridle points—say about 10 or 12.) A kite 32 feet high and weighing about 512 (!) times as much would be aerodynamically similar. That is, it would have the same stability characteristics. To have the same structural characteristics it would have sticks four times the diameter and two feet apart, that is about four times as many sticks. Stick cross-section 16 times as large, 4 times as many sticks, 8 times as long, means stick weight is 512 times as large.

If the limiting factor is bending load on a section of a stick between bridle points (at stick crossings), then:

Wind force/square foot	x 8
Area/panel	x 4
Stick section length	x 2
Product=bending moment	64
Stick diameter	x 4
Bending strength, as $(\text{diameter})^3$	64

The above is just an illustration in whole numbers of the suggestion that stick spacing vary with the cube root of the size and that the stick diameter vary with the two-thirds power of the size.

It turns out that the stiffness of a stick section increases more than the strength as the size goes up. This seems to mean that the bridle lines must be relatively better matched. On the other hand, bridle lines on a very large kite should perhaps be even longer than proportional to the size of the kite. The long bridle lines may have appreciable sag and stretch. It seems likely that the amount of work involved in properly adjusting the bridle lines increases faster than the number of lines.

It seems very plausible to me that a kite can be made with a large number of sticks and bridle lines to a large fraction of the stick crossings, the kite weight to be more or less in proportion to the cube of the size, and that the size be much larger than is usual, the kite perhaps launched with the aid of a special stucture in a strong, steady wind. A kite that is not expected to be able to land undamaged can be much larger than one that is.

A further advantage of a large kite is that the drag of the line is proportionately less. This is probably insignificant for a very large kite—it is not likely to be flown on a long line anyway. More fundamentally, a smaller kite which is as sophisticated structurally as a larger kite can be reduced in weight as the fourth power of the size. Then the line diameter is reduced as the square of the size, so the line wetted surface is in the same proportion to the lifting surface of the kite for the same line length. The optimum wind is in direct proportion to the size. The expected wind speed seems to be the basic determinant of optimum size, subject to constraints such as space, materials and workmanship.

Reverting to an earlier question, one definition of optimum size of a kite of a given design is: that size, depending on materials or technique, at which accidental asymmetry becomes a threat at the same windspeed as structural overload.

GUY D. AYDLETT

Charlottesville, VA. A leading apostle of rotor kites.

A kite afloat in the blue—beautiful, mind-liberating. A BIG KITE on high—better? If so, to whom? The beholder? The creator?

The *biggest* and *highest* kite—a great fabrication flauntatiously aloft in the welkin—does this creation of ultimate upmanship, this extravagant ego-extender/expander, justify the painstaking time consumed, treasure expended and perils assumed by its daring creator?

Yes! And no!

In this limited space I list a few of the many positive and negative aspects of monumental kiting. Judge them as you will.

(1) As far as I know, no general solutions have been found for the Navier-Stokes Equations of fluid motion. For certain kinds of motion, special solutions become known most usually as the result of patient accumulation and correlation of empirical data—data acquired by direct experimentation and observation. As a fluid denizen, a kite is subject to the same laws of fluid motion as are crea-

1980 CATALOG

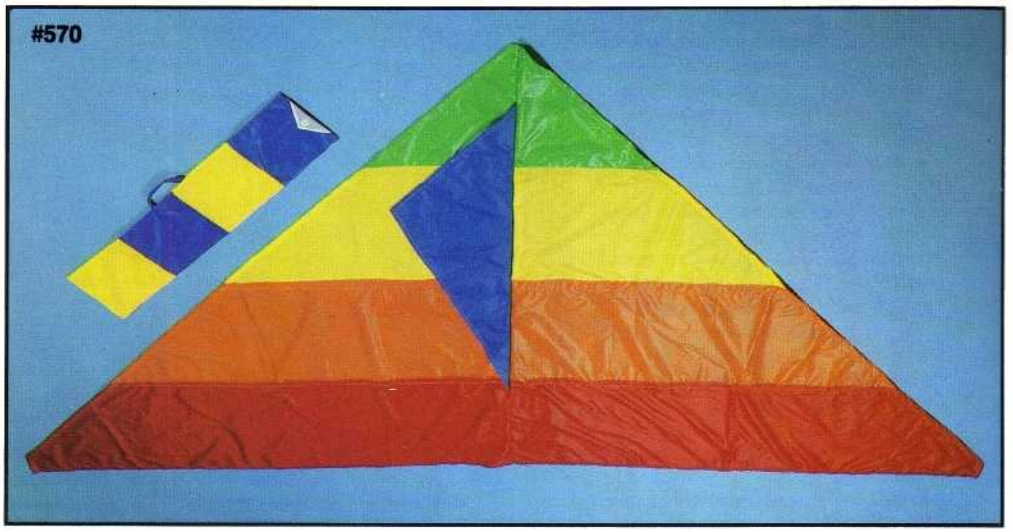
FLY WITH OUR FESTIVAL OF COLORS AND NEW DESIGNS FOR 1980

Formerly Llumar Star Kites

Made in America (U.S.A.)

NYLON KITE SERIES

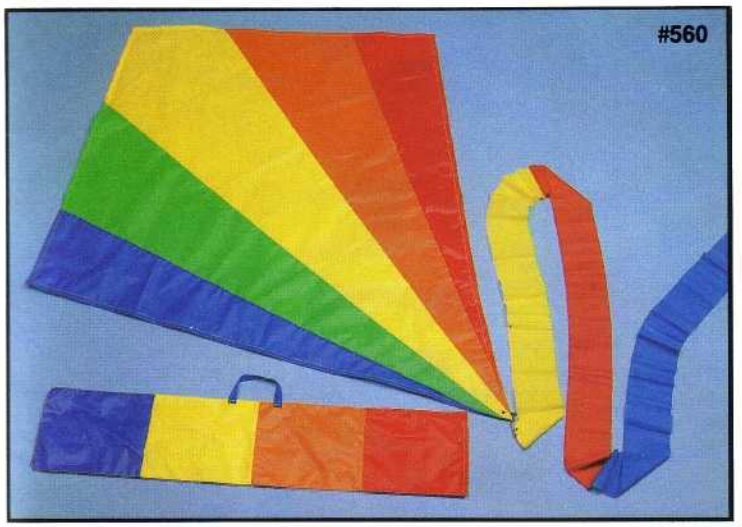
This series is unique for its splendid seven color printing of fine graphics. Constructed with the top quality durable-weatherable nylon taffata and spinaker sail cloth. Ready to fly and easy to fly from their portable carrying cases.

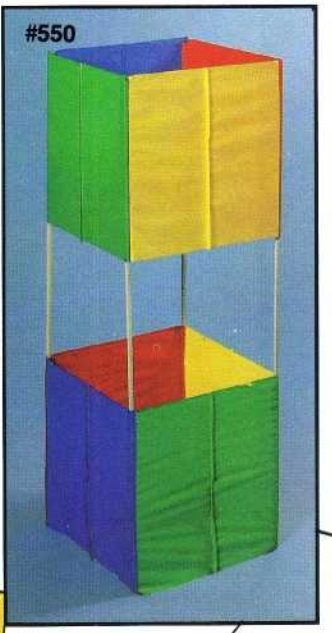


#525
25 Foot Nylon Rainbow Dragon
Graphics include Fantasy Balloon, Butterfly Woman, and Ghost Ship.

#545
Nylon Diamond with 10 foot tail
Graphics include Flying Pegasus, Doves, Lovers Butterfly, and Hot Air Balloons.

#570
Spinaker Delta
5 foot high with 10 foot wing span. Ripstop nylon construction and fiberglass frame. Collapses into 37″ x 4″ CARI-ALL case. Ready to fly and easy to fly.

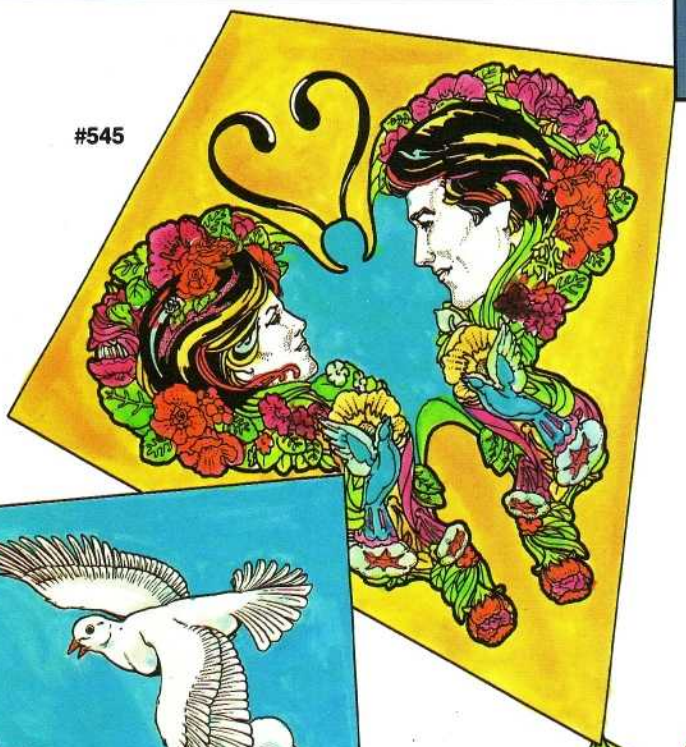


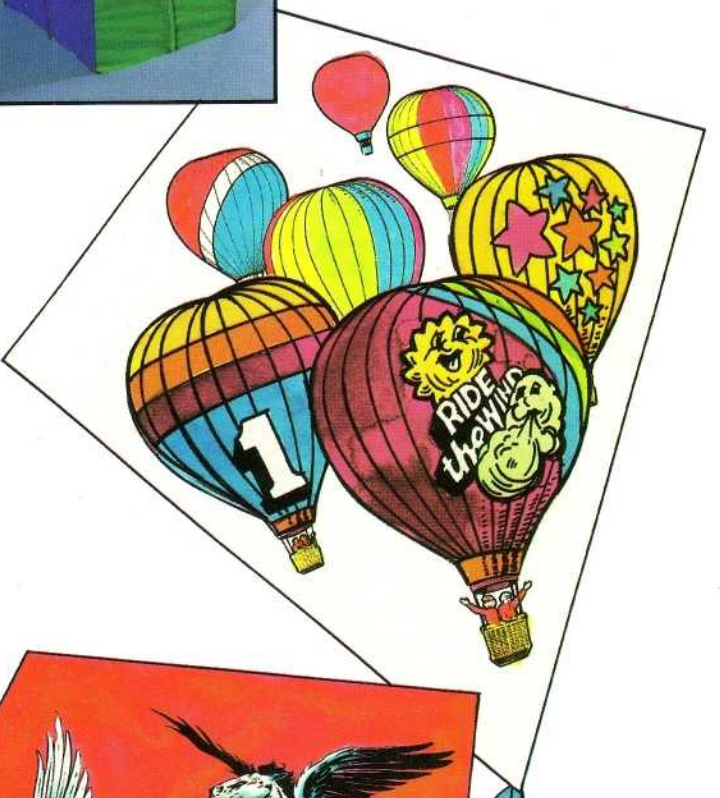


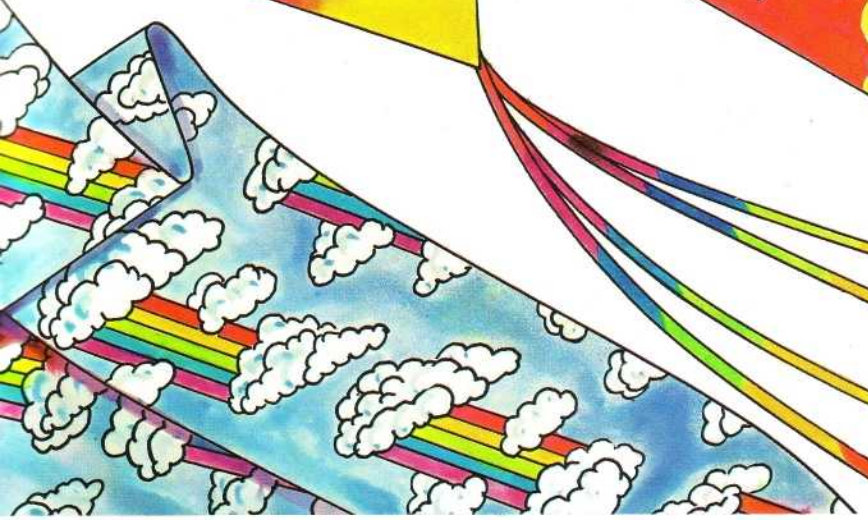
#560
Spinaker Diamond
6 foot high with 4 foot wing span. Ripstop nylon construction, fiberglass frame collapses into 37" x 4" CARI-ALL case. Ready to fly and easy to fly.

#550
Box Kite
Patterned after the original two cell box.

#545







MYLAR® KITE SERIES

These time proven designs are favorites for their beauty in flight and long lasting durability. Manufactured from the incredibly lightweight and tough Dupont film mylar.® Printed up to six shimmering colors they are pre-bridled, ready to fly and easy to fly in a wide variety of wind conditions.

#4510-R
45 Foot Over The Rainbow Dragon

#6500
Freestyler
The Single Flying Line "Stunt Kite" with 25 foot tail. The ultimate in quickness and response.

#3515-R
Shooting Star Kite
Star and Parafoil Rider graphics.

#6500

#4510-R


THE SINGLE STRING STUNT KITE WITH A 29 FOOT TAIL!!!
FREESTYLER
RIDE THE WIND
• SPECTACULAR DIVES, LOOPS AND SPINS
• READY TO FLY
• FLYING SPEED UP TO 30 MPH
• YEAR AROUND FLYING FUN
• TOUGH-DURABLE CONSTRUCTION
SHOOTING STAR
KITE

#3515-R

MYLAR® KITE SERIES

Packaged in our award winning (Hobby Industry of America Packaging Award) Functional, Portable, Reusable handle carrying case with illustrated flying instructions.

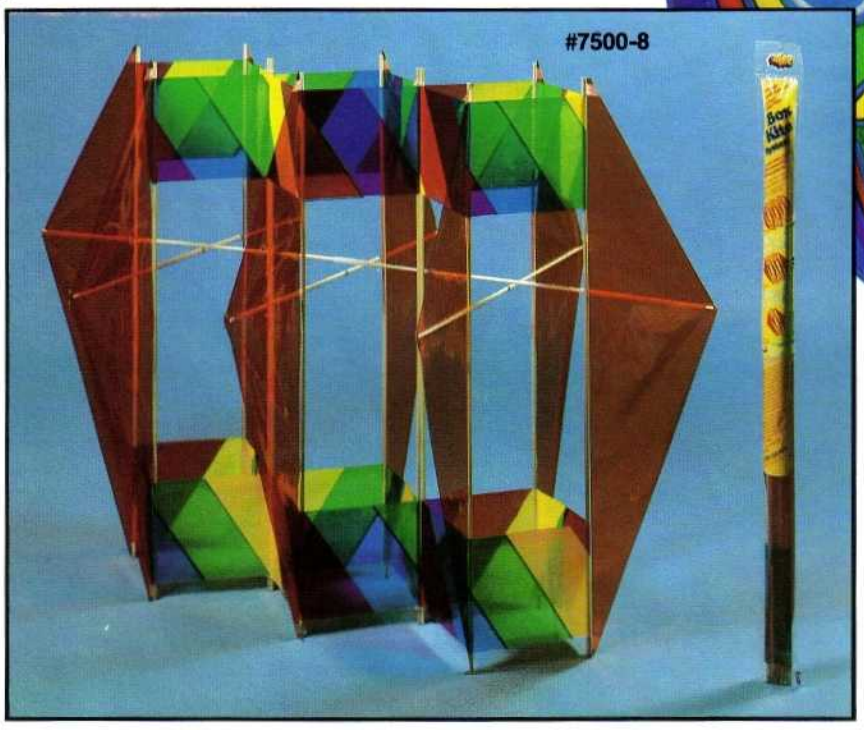
#7500-8
8 Wing Box Kite
36" x 51" x 28" also available in 6 and 4 wing versions.

#4510-S
45 Foot Spectra Dragon

#3515-S
Octar The Octopus Kite

#2510-S
25 Foot Spectra Star Dragon

#108
Silky, Woggie, Wigglet
Assortment of 10 foot long Dragons.



GREAT NEW ACCESSORIES

We have all you need to take to the skies from Flying Spools and Line, Demonstrational Films, Nylon and Canvas Carrying Cases, Gift and Mail Order Boxes, to all the string you need.

#TI
Tube-It
Carrying tube, made of tough weatherable spinaker sail cloth with handle, use for kites and things. Multi-colors available. Polybagged. Size: 38" x 7".

#CA
Cari-All
Carrying case, made of tough weatherable spinaker sail cloth with handle. Use for kites and things. Multi-colors available. Polybagged. Size: 25" x 22".

#CC
Can Vas Case
For kites and things. Heavy duty canvas case, portfolio style, with or without illustration. For kites and accessories, art materials, shopping and dozens of other uses. Size 30" x 24" with 5" gusset. *Custom imprinting available for all bags, tubes and kites.*

#2250
Spool Proof
Unique cylindrical plastic spool, 500 foot, 20 lb. test.

#465
Flying Line
Pocket size, 500 foot, 20 lb. test, shrink wrapped inside shelf merchandiser.

#1000
Flying Spool
High impact plastic, 500 foot, 20 lb. test flying line. Red, blue and yellow.

#1001
Fancy Indian Spool
Lacquered wooden type, 500 foot, 20 lb. test.


Silky
30 feet of flying fun.
#3515-S
#108
#2510-S
Ride the wind.
Octar Kite
Ride the wind.
45 Foot Spectra Dragon Kite
Ride the wind.
25 Foot Spectra Star Kite

"GOOD FEELIN'" SOFT SCULPTURES

"Good Feelin'" designs round out everyone's product mix in great shapes. Individually hand sculpted in satin, with polyester fiber fill, french ribbons, satin cords, and french bows to add finishing touches. They are terrific pillows, mobils, or wall hangings. Good Feelin' designs are made to bring color, and smiles to any room. A perfect gift. Custom one of a kind sculptures available.

#001
"Angels Delight"
Behind every rainbow lies a heavenly delight. Available in warm and cool satin rainbows arcing between thick, billowing clouds. Handle bag packaging. Size: 31" x 18" with hanging star.

#002
"Rainbow Flyer"
Diamond Kite hand sewn on white puffy clouds with french ribbon tail hemmed with bows chasing a rainbow. Assorted warm and cool rainbows. Handle bag packaging. Size: 24" x 18".

#003
"Ride The Wind"
Diamond Kite sculpture with colorful satin stars trailing on french ribbon tails. Assorted colors. Handle bag packaging. Size: 18" x 24" with 36" tail.

#004
"Sweet Dreams"
This starry night pillow is made to dream on. Contrasting stars on pillow and trailing stars on satin cord. Handle bag packaging. Size: 18" x 14".

#005
"Octar The Octopus"
This soft cuddly life size reproduction of the famous "Octar the Octopus Kite" is truly a marvel. Its eight long tentacles are perfect to prop him up in a corner, sit him on a sofa or bed, use as a wild throw pillow or simply hug and squish him, a real lovable guy. Polybagged. Size: 60" x 16". (not pictured)

Spectra Star Kites®

Formerly Llumar Star Kites

3519 Caribeth, Encino, CA 91436, (213) 988-6636

Spectra Star Kites formerly Llumar Star Kites announces a new company name. The change is in keeping with our Spectrum of Ideas, new materials and innovative designing. Our goal is genuine consumer satisfaction.

Merchandising the successful line of Spectra Star products adds color, form, and prestige to your store. Create a unique display by suspending Kites and Sculptures from your ceiling. Dealers report a 50% to 100% increase in sales when displaying our products while improving their quality image.

Join our team to promote the fun, clean and healthy sport of kite flying and get a "Good Feelin' ".

tures such as flying birds, swimming fishes or human-fabricated emulations of these living things. Altering a fluid's relative velocity with respect to an immersed body, its density, its viscosity, *or the physical size of the body contained therein* causes a subsequent change in a *dimensionless* similarity criterion that is well known to aerodynamaticks as *Reynolds number.* (For more on this, please ask your friendly scientific reference librarian for an elementary treatise on fluid mechanics.) Briefly described, a large Reynolds number indicates *inertial forces* tend to prevail in the fluid flow about a body; conversely, a small Reynolds number is indicative of the prevalence of *viscous forces.* Most kites perform at low Reynolds numbers. Since there is virtually no way an impecunious advanced experimenter can trifle with air density or viscosity, he must perforce hope for high air density, low viscosity and high wind velocity on any day he wishes his kite to perform at a relatively high Reynolds number—*or he can make a similar but larger kite.* Assuming constant atmospheric conditions, doubling all linear dimensions of the kite (*not* the angles!) will effectively double its Reynolds number, quadruple its area *and cause it to weigh eight times as much* if similar materials are distributed in similar locations. Unhappily, even though it contains eight times as much material-meat, the big kite will be less rigid and much more fragile than its half-size prototype—beware! Scientific investigation often commands a heavy price and high risk.

(2) Besides satisfying the curiosity of Science, the big kite may serve the minions of Mammon and the Military: big kites can be big advertising signs, can bring down or keep away formidable enemy aircraft, can be designed to loft ponderous loads—or scientific packages. (But a *train* of small kites can assume the duties or good works listed except for the crosswind display of a single large sign—but perhaps a *banner* sign from a kite train might suffice.)

(3) The "monu-mentality" virus often tempts the faded, jaded "kite champion" or self-anointed "expert" to embrace BIG-ness with the self-serving intention of merely commanding the unwashed multitude's naive awe and admiration—Brobdingnabian balm for the thinning pates of past panjandrums wearing wilted laurels. *(Please take notice: If this writer is caught in the act of launching a monstrously large kite—however furtively—be assured that the activity—overt or covert—is purely undertaken in the finest spirit of scientific enquiry.)* Remember: a five-foot kite flying at 500 feet looks just as impressive as a 50-foot kite at 5000 feet! And the larger kite may very likely contain sufficient material to fabricate one thousand of the smaller ones!

In conclusion:

Much can be learned from designing, constructing and flying very large kites. But BIG-ness may be extravagantly expensive, dangerous—and DUMB.

Theodore L. Manekin

Pete Ianuzzi and Rick Kinnaird handling o'dako multiple bridles.

A. PETE IANUZZI

Catonsville, MD. Diving engineer for the U.S. Navy and indefatigable kite maker and flier.

I wish that the people making up kite contests would stop giving awards for the "Largest Kite." They should, at least, be more specific; for instance, "The kite with the maximum wing spread" or "The kite with the maximum projected area." After having seen the sky wallowing that most of these monsters do, I would like to see the award go to the best flying kite with a width or length of over 10 feet, or something to that effect.

The prize for big kites should be given for the same qualities as the awards for normal size kites; that is, workmanship, originality of design, beauty in the air, etc., but maximum credit should be given for a kite that launches smoothly, climbs well, behaves in the air, flies at a high angle and is retrieved in a neat and orderly manner. The idea of rewarding just plain BIG-NESS, in my opinion, is a bad practice. I believe that kiteflying has reached a level of maturity where we can reward quality rather than just monstrosity.

ANDREA BAHADUR

East Haddam, CT. Owner of Go Fly a Kite, Inc.

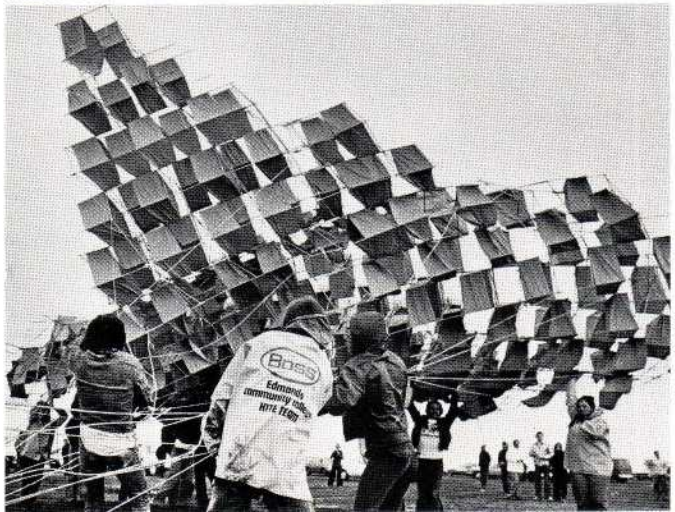
Large kites are very spectacular, of course, very showy. The disadvantages are getting them around and shipping them. They are usually specially handmade and have to be put together on the site. They are good for publicity, though. The news media people always circle in on the big kites—and they *are* exciting to fly.

HARRY N. OSBORNE

Lynnwood, WA. Director, Needle Trades Department, Edmonds Community College.

The Edmonds Community College Kite Team was originally formed at the end of 1976 as a recreational outlet for students and faculty. Our attempt at the world's record for large kites was in response to a challenge from a local radio station. Countless man hours went into the kite's construction. As it turned out, we did not establish a world's record because of drunken spectators. Security was very poor. We will try again, probably during the spring of 1980. This time we would like to work in advance with knowledgeable people. One of the problems we encountered when we began our attempt was a total absence of information or guidelines. How do you measure square footage? What type of kite is acceptable? How do you go about certifying the attempt?

The ill-fated Edmonds Community College kite of 1977.



Michael O'Leary

Since so many people worked so hard for so long, and since the kite did fly, in our opinion, I allowed the students to claim the record, locally.

TAL STREETER

Millbrook, NY. Sculptor, creator of kites and author of the book, The Art of the Japanese Kite.

Larger kites are generally more expensive and time-consuming to build and inconvenient to store and transport and they require a larger number of skilled fliers working together as a team. These disadvantages add up surprisingly to their specialness—that is, their rarity. The time, labor and uncertainty heightens that moment when, almost to a person in my experience, everyone says it will never fly—but it does. It goes up slowly and majestically and momentarily blocks out the sun and invariably everyone is a little bit awestruck by the improbability of this behemoth actually flying overhead. There is an intake of breath and, coupled with the *kite smile,* which accompanies all kite activities, there is just nothing quite like it.

DINESH BAHADUR

San Francisco, CA. Kite entrepreneur and fighter champion in India.

I have about 10 very large kites, the newest a 350-foot-long dragon in silk by White Bird Kites.

The large kites look fantastic; smaller kites are harder to photograph. But I personally don't care much for them. They tie in with the American concept of power, to draw attention and to drag people across the ground. The big kites in the kite festivals make news every year. But I like kites to be delicate, peaceful, romantic. Some people seem to need the big kites for power, but there's no style left.

MELVIN E. GOVIG

Baltimore, MD. Ardent and versatile kite man.

Size alone seems to attract some fliers, especially youthful ones. For myself, I believe *display* is important and adds to the level of spectator appeal at any kite outing. However, I dislike the large kites that either don't fly well or are simply grotesque. How many times have we seen an otherwise fine kite day spoiled by a kite- and life-threatening monster made of khaki plastic and brown tape? Gallumphing across the sky, it clears away the smaller kites and annoys fliers and spectators with threatening sweeps, and usually finally crashes in a tangled mess. Ugh!

However, I have been thrilled by super size (six-foot or larger) Bermuda kites, large *well-built* deltas and large box kites. Love them! But more than size is involved.

I cannot remember a more spec-

Bill Kocher

We've all seen kites like this—huge, crude and dangerous craft that can give our sport a black eye (literally).

Theodore L. Manekin

Mel Govig assembling his multihued Guatemalan-style kite.

A stack of three birds by Hod Taylor. The lead kite is a 20-footer and the other two are 18-foot span.

tacular (monumental) sight than Jack Van Gilder's train of 100 kites flashing in the sun and clouds at Ocean City, Maryland, last year. Also I hold in memory a picture of an India fighter kite with a silver ribbon tail at the Smithsonian Kite Carnival in the early 70s. This tiny kite with its 100 feet or so of tail drew pictures in the sky and held the crowd spellbound.

Finally, two-line control displays can be breathtaking, such as Steve Edeiken's Rainbow Stunters and Andrew Jones's Flexifoils—very big displays I've been privileged to see—with kites of moderate size.

I love to be thrilled by a spectacular kite display. I rarely have felt that thrill at size alone.

RAY HOLLAND

Roswell, NM. Kite manufacturer and experimenter.

Large size demands respect. The kiteflier has to know what he is doing or he can get in trouble.

A large kite may be capable of picking up a person—and that can be serious. Even kites that are not this large can cause trouble. They require special know-how for launching. They can start up and catch a gust and turn right back down, with enough speed and weight to cause personal injury. I have been there. It was a large experimental kite, and I dodged it, but I tore a muscle in the calf of my leg getting out of the way.

Also on a large kite you can get a bad string burn or you can have the line wrapped around your hand or a few fingers, to keep it from sliding, and you will wish you hadn't!

But if you respect them, large kites can be impressive. The drag of the line becomes relatively small, the sag from the ground to the kite is reduced and high flights can be made. But if the kite becomes too large it is an aircraft in the eyes of the law. For years the dividing line has been five pounds. Any kite weighing this much or more comes under Federal Aviation Administration regulations. That should be looked into by anyone flying large kites.

In testing some large kites which we made for the Lawrence Radiation Laboratory (for lifting instruments), we anchored the kite to a section of telephone pole, over which were piled other sections of pole. The kite was flying normally until a dry tornado (dust devil) happened along, perhaps doubling the wind speed at the kite. We were not aware of it until we saw the telephone pole section hopping across the field, dragged and lifted in a series of rough bounces, heading right for a highway with heavy traffic. Our anchor had been pulled apart spreading the overlying poles like jackstraws, and the pull of the kite picked up the pole section to which it was tied. Fortunately, it was not tied very well. After about a 100-yard dash, the loop of anchor line slipped off the end of the pole and the kite relaxed and settled harmlessly to the ground.

These experiences taught me to respect large kites.

KAREN SCHLESINGER

New York, NY. Manager of Go Fly a Kite store.

The trend in our store is to large kites. I have a 22-foot delta by Maxwell Eden, custom-made and very expensive. My 11-foot and 12-foot kites can't keep up with the demand. Jalbert's J-15 and J-25 do well, too. They are a teamwork thing, really, and it's a struggle, a thrill. People want a challenge with kites now.

KEN CONRAD

Seattle, WA. Owner of the Great Winds kite shop in Pioneer Square.

For business reasons, I've stayed away from big kites. Customers burn their hands on them, and so on. However, in Hamamatsu, I really enjoyed the big kites and ages old traditions. Spectators had a sense of when the kites were going up and coming down and would stay clear of the kites. I don't see that kind of awareness over here.

H. J. (HOD) TAYLOR

Austin, MN. Current President of the Essex Kite Group, England, and noted maker of giant kites.

I have made a large number of kites over the last 10 years, spending all of my time during our four months' stay in Florida each winter either working at the bench making them or flying them.

I became interested in kiting observing the enjoyment Scotty (Walter Scott) was getting out of his kiting activity. I started out making five- and seven-foot kites of every kite that I saw pictured in the kite books that I could get my hands on at that time. I did receive a lot of help from Scotty at that time and Mrs. Scott of late years with material.

It was soon evident that I had to make them larger if I was to see what the kites looked like in flight above the 50-foot height that I was flying them at that time, so just naturally made them larger. I now fly the larger kites up to 200 feet but very seldom above that.

I will not say that bigger is better but I must say I have noted that it is the large kites that interest the spectators and draw the crowds. With the large kites, the flier must assume the responsibility for the safety of the spectators. We have a standing rule that we will not put a kite up or keep it up unless everyone stays behind the kiteflier.

While my eyesight is not the best, I do get around very well, can make kites in a simple way by using tapes and glues and do really enjoy my kiting, making between 70 and 100 small kites for the children each year. It bothers me to have the newspapers harp on my blindness in connection with my kiting activities. I actually have seven percent vision in the one eye that I can use.

JOHN F. VAN GILDER

Seattle, WA. Insurance agent and stalwart of the Washington Kitefliers Association.

In my opinion, flying a very large kite is a lot of trouble. The Bad News: (a) they tend to give you rope burns; (b) they present transport problems. The Good News: (a) the sense of accomplishment is vast (if successfully flown); (b) they usually draw a crowd—good for the ego.

The Question: "Is the trouble equal to the return?" We have a family joke about the city cousin visiting my wife's farm as a child who was warned that he'd be spanked if he rode the horse while wearing his good trousers. He did, they did and he stated, through tears, "Yeah, Ma, but it was worth it."

I think every collection should have one.

Theodore L. Manekin

An example of very successful scaling up: a larger-than-normal Rogallo Corner Kite constructed as a single cell by "Rog" himself.

Weight Watching Japan's Giants

A. PETE IANUZZI, POCKET CALCULATOR IN HAND, QUESTIONS THE WEIGHT CLAIMED FOR JAPAN'S LEGENDARY MAMMOTH KITES.

There is a story that has been handed down from book to book about a giant kite which was built in Japan some time ago. The date varies depending on which book you read, some putting the date as early as 1909, others as late as 1936. Apparently the kite was flown for several years in succession and may have been the same kite rebuilt each year. A good guess is that it was a new kite each year built using some of the parts from the previous year's kite. A kite that big would almost certainly be badly damaged on landing.

This great kite was known as the *wan-wan* or the *wan-wan-dako* and it was designed and built in the city of Naruto on Shikoku island, probably by the master kite maker Nagajima Gempei. There is some agreement from the various sources that this monster was an oval-shaped kite, 60 to 65 feet in diameter. One source puts it at 90 feet in diameter, but that size seems highly unlikely.

I make this last statement on the basis of a photograph of another kite, the Hoshubana *o-dako*, which appears in several places. This picture shows a nearly unbelievable rectangular kite propped up on its side, with its flying team of 53 men and a Shinto priest standing in front of the kite. The caption states that the kite is 36 by 48 feet. If the kite is that size, the men are 7'10" tall—a possibility for Watusis but a bit tall for Orientals.

Assuming the men are 5'10" tall, the size of the kite scales out as 24 by 35 feet. A kite 90 feet in diameter would have about seven times the area of the monster in the picture! Even if we accept the figure of 65 feet in diameter, the wan-wan would still be about four times the size of the kite in the photograph.

The size of this kite is very interesting, but I am puzzled by the fact that so many sources report the *weight* of the wan-wan without giving any thought to the implied results. The weight is given as a minimum of 1700 pounds and a maximum of eight tons, with several reports at about 8000 pounds. The Guinness Book of World Records goes further, to nine and a half tons. I just don't believe it.

I have built a large, heavy kite. It is rectangular and 6x8 ft. in size, giving an area of 48 square feet. A wind of about eight miles per hour is required to fly it and it weighs 5.24 pounds, which is about 1.7 ounces per square foot of area. Also for comparison, most kitefliers know the Peter Powell stunter kite. It is a heavy plastic kite which flies best in strong winds, as at the seashore. It weighs about 1.9 ounces per square foot.

Now let us consider the wan-wan. If it is 65 feet in diameter, it will have an area of 3318 square feet. (I am not quibbling about the loss of area for the oval.) If this kite weighs 8000 pounds, it will weigh 38.6 ounces per square foot, which is ridiculous. If we take the lowest figure quoted, 1700 pounds, the weight works out at 8.2 ounces per square foot, still not very reasonable.

To get some idea of what one of these kites might actually weigh, let us assume a monster-type weight of 3.0 ounces per square foot. Then the wan-wan would weigh about 622 pounds. That, as far as I am concerned, is an absolute upper limit. My educated guess for the actual weight of a 65-foot wan-wan would be 250 to 350 pounds, or a surface load of 1.2 to 1.7 ounces per square foot. Anything from 800 pounds up is sheer nonsense.

That photographed big rectangular kite mentioned with its 53-man flying team would be 16.3 ounces per square foot if it weighed 800 kilograms. At a reasonable loading of three ounces per square foot, it would weigh 324 pounds. However, if it were 35 by 24 feet, which seems more likely, it would probably weigh about 160 pounds. That is still a pretty husky kite.

I have prepared the accompanying chart of large kite sizes and weights from two sources: (1) available published information, from which I have taken average values for the sizes and weights of these large kites, since there is considerable variation from book to book (the exact values are not very important; after all, what is 1000 pounds more or less when you are discussing a kite that weighs 8000 pounds?), and (2) actual measurements and weights of large kites which I have flown or know have been flown recently. As you can see, none of the kites in the second group goes above two ounces per square foot and these are not low-wind kites.

TAL STREETER REPLIES

I cannot believe that the Japanese are mistaken or exaggerating the weight of their giant kites. This seems improbable as many of us have raised the question to the Japanese on many occasions and have been reassured that the weights are correct. No doubt Pete Ianuzzi's question will serve to urge the Japanese kite experts to settle the matter to everyone's satisfaction.

The improbability of the giant kite's flight is in itself a keystone of its appeal over the centuries. As long as we don't quite believe it, it's a heck of a lot more interesting—don't you think?

LARGE KITES: THEIR DIMENSIONS AND WEIGHTS

By A. Pete Ianuzzi

	Dimensions		Area		Weight		Weight Per Unit Area				Projected
Kite Identification	Feet	Meters	$Ft.^2$	M^2	Pounds	Kilos	$Lb./Ft.^2$	K/M^2	$Oz./Ft.^2$	$Gm./M^2$	Weight at 3 oz./$Ft.^2$
Wan-Wan-Dako of Naruto (oval shape)	65 ft. dia.	19.8 dia.	3318	308	5500	2500	1.66	8.12	26.5	8120	622 lbs.
Shirone of Niigata (rectangle)	23.8 x 17.9	7.25 x 5.45	425	39.5	441	200	1.03	5.1	16.6	5100	80 lbs.
Hoshubana of Saitama (rectangle)	48 x 36	14.6 x 11	1728	160.6	1764	800	1.02	4.98	16.3	4980	324 lbs.
3/6" thick Douglas fir plywood	8 x 4	2.4 x 1.2	32	2.97	35.2	15.9	1.10	5.35	17.6	5370	6 lbs.
Hamamatsu of Shizuoka	10.8 square	3.3 square	117	10.9	22.5	10	.19	.92	3.1	920	22 lbs.
Peter Powell stunter (diamond)	3.8 x 4	1.2 x 2.2	7.6	.71	.913	.414	.12	.58	1.9	583	22.8 oz.
W. Tyrrell's Jalbert Parafoil	19 x 20	5.8 x 6.1	380	35.3	45	20.4	.12	.58	1.9	578	71 lbs.
Bedsheet O'dako	8.7 x 8.4	2.6 x 2.6	73.1	6.76	9.16	4.15	.13	.61	2.0	613	13.6 oz.
Ianuzzi's O'dako	6 x 8	1.83 x 2.44	48	4.46	5.24	2.38	.11	.53	1.7	532	9 lbs.
5/20 Kite Group delta	50 x 25	15.2 x 7.6	625	58.1	60	27.2	.09	.47	1.54	468	117 lbs.
Cloud Pleasers delta	10.5 x 5.2	3.2 x 1.6	29.3	2.71	1.34	.607	.05	.22	.73	220	5.5 lbs.

Notes from Ianuzzi: Wherever possible, I have included the weight of the tail and bridle lines in the weight of the kite. For the Wan-Wan, I have used 5500 lbs. as an average from several sources. Also please note that throughout this article I have made some very precise calculations based on very rough estimates.

The Bedsheet O'dako

"A BREEZE OF SIX KNOTS WILL RUN IT UP LIKE AN ELEVATOR."

By A. Pete Ianuzzi

In an effort to make a big display without lavish investment of time or cash, six Maryland Kite Society members each made one or more large kites in the Japanese style using U.S.-available materials—king size sheets and pine sticks. We soon called this kite the Bedsheet O'dako.

The original plan was to join the kites in train for a man-lift, but we found that these kites, with all their bridles, were difficult to link together. All the same, they made a great show flown individually.

I worked out the plans and ripped all the sticks from pine for the big endeavor. The sheets, on sale, were in the garish mode, but made fairly striking kite covers.

VARIATIONS

The Bedsheet O'dako allows for considerable variation in dimensions and materials. For example, any size of sheet may be used. Also, an artist might favor use of solid color cloth sewn in sections or simply white sheets, canvas-like, to paint.

MATERIALS

- Sheet for cover and extra fabric for the two tails—about 4 to 6 inches wide and about 30 to 40 feet long. Tails take about a quarter of a sheet.
- Sticks of clear straight-grain pine or spruce: 5 longerons, $\frac{7}{32}$ x $\frac{3}{4}$" section and of a length to fit your cover (about 10 feet); 5 ribs, $\frac{3}{16}$ x $\frac{3}{4}$" section, length to fit cover; and 2 diagonals, $\frac{1}{4}$ x $\frac{3}{4}$". Note that the shape of the kite is determined by the bridling and not by the sticks, which are flexible, serving mainly to tauten the cover.
- Line for bridles: about 20-lb. test is adequate because there are so many of them. Cotton or polyester is recommended, *not* monofilament or anything elastic.
- Flying line: at least 100-lb. test. Clothesline is not a bad idea—it's stronger than you need but it's good to hold onto.

INSTRUCTIONS

1. Start by drawing the design on the back of the sheet (pencil works fine). Find the center by folding. Measure in 6¼" from the selvage edges and 5" up from the bottom. Then divide into four equal spaces.

2. Hem the edges of the sheet, using two rows of stitches for strength. On the top and bottom, leave the original hem stitching and add one extra row.

3. Remove stitches in pocket areas, then stitch 22 pockets (as shown in sketches). Use a stick (about ¾ x ¼ x 6") to check pocket size. It should fit easy.

4. At the intersections of all ribs and longerons, mark the cover for four bridle holes, as shown in detail drawing C.

5. Attach 21 bridles, each about 16' long, at all marked intersections, without sticks in place. A large, upholstery-type needle is good for this. Use a bowline knot if you know it. Any knot that will not slip will do. The loop should be about 3" from kite cover to knot. For the five locations at the top of the kite, tie bridles in the criss-cross format shown in the sketch.

6. Transport the kite in stickless and tailless form and assemble it at the flying site, passing the sticks through the cord loops.

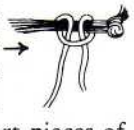
7. Bow the kite on the back, using 20-lb. test or stronger line, to curve *at least* 6" deep at the top and about 8" deep at the bottom, but the rib *one up from the bottom* should be 10" deep (or deeper for stronger winds).

8. Adjust the bridles in a wind-sheltered area. It is easiest to place the kite upside down at an angle that corresponds with the normal flying angle (about 30 degrees). With the kite in this position, leaning backward, it's convenient to adjust the bridles. Adjust them to a uniform tension, to pull evenly on the kite when it is in its proper, bowed shape.

I like to handle the lines in horizontal layers, getting each row uniform, tying those lines together, then doing the next row. After all layers are tied, I bunch them together and trim them so they are about the same length. Then I tie all of them together in one big slip knot.

FLYING

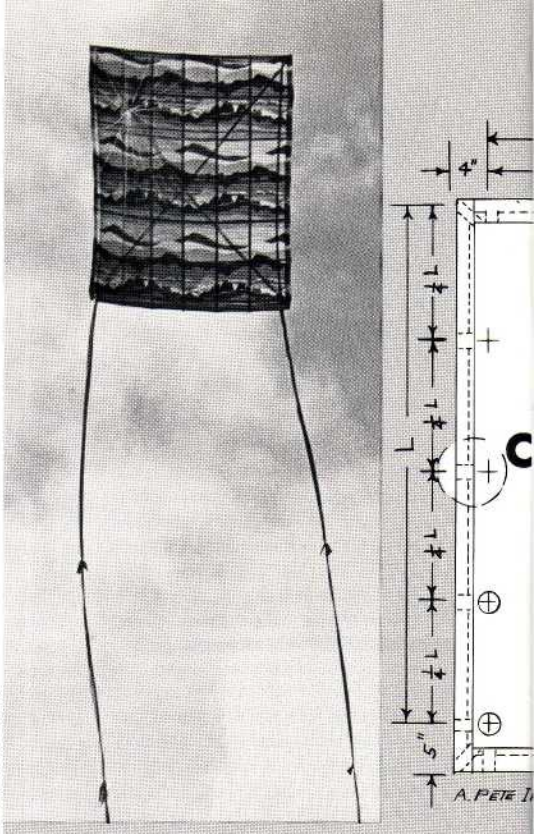
Take your flying line and tie a big loop on the end, then a lark's head knot around all the bridles just above the slip knot.



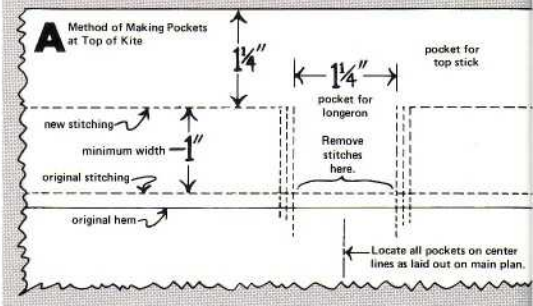
Attach two tails, using short pieces of string, to each side of the kite. By now, if you didn't bring any, assistants should have materialized like magic. Have them hold the kite up for launch. Walk out plenty of line (at least 150 feet). Put on your gloves and fly!

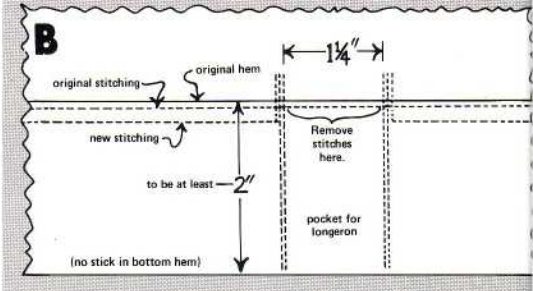
For transport, leave only the five ribs in the kite and roll it up in a neat package. To keep the bridle lines from tangling after flight, they can be braided together with a chain knot (see sketch) before you take the kite apart.

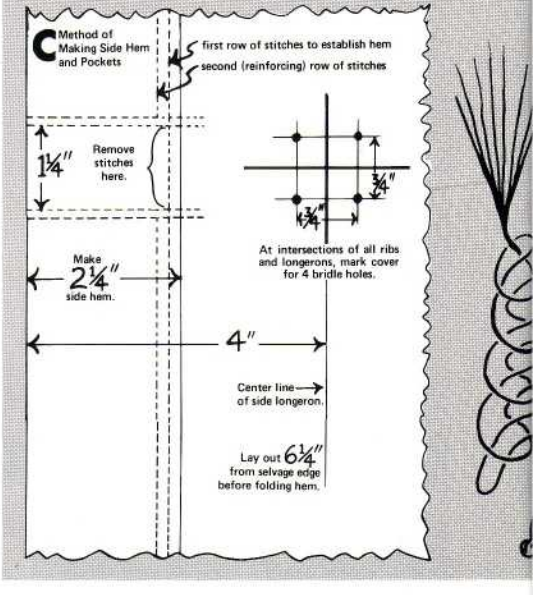
A.P.I./V.G.



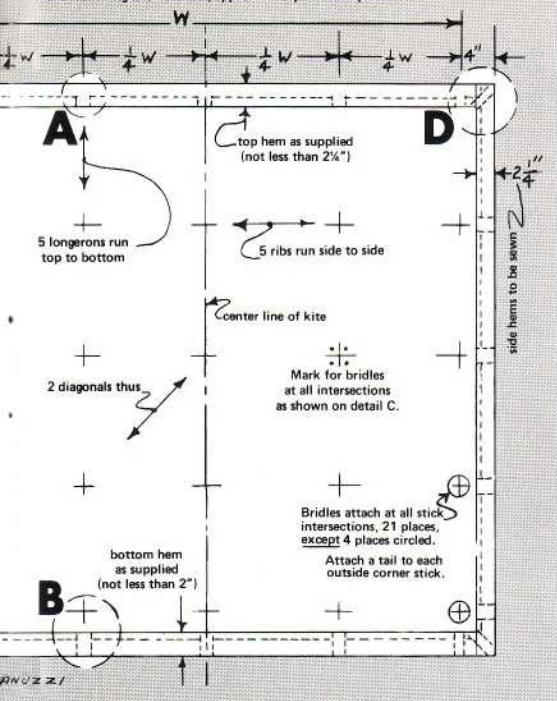
Anneke Davis



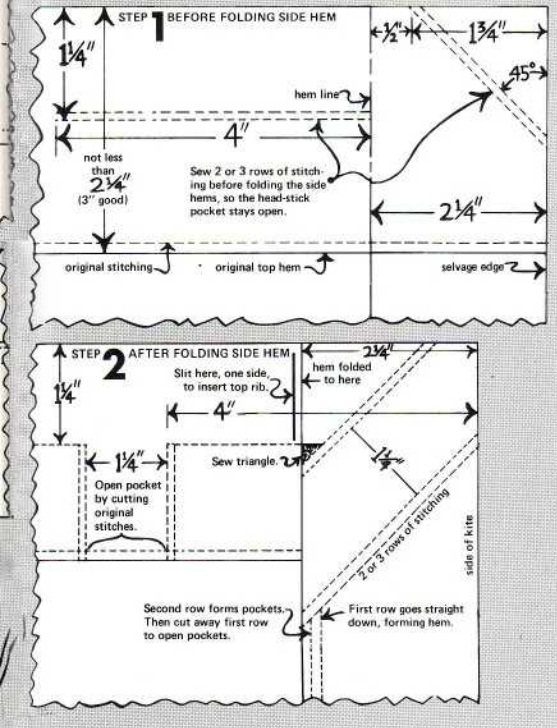


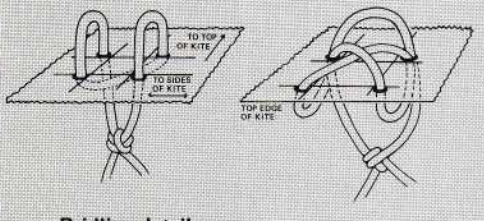


BEDSHEET O'DAKO—MAIN PLAN
Appearance of Finished Kite from Rear
made from king size bedsheet, approximately 10 feet square



D Method of Making Top Diagonal Pockets—in 2 Steps
(Bottom diagonal pockets are made the same way except that the pocket for the head-stick is omitted.)



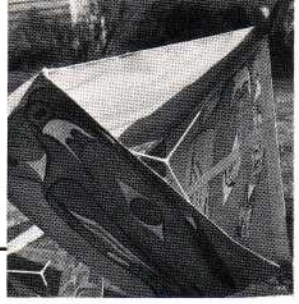


Bridling details:
Left, the chain knot (pigtail-like) used with all Japanese multibridle kites—Ianuzzi's, too. Above left, the tying method to use at 16 locations on the kite. Right, the tie for the five bridle points at the top of the kite.

Profiles...

Louise Crowley: Free Spirit

Story and Photographs by John F. Van Gilder



My first impression of Louise Crowley was "Free Spirit." She had it written all over her. She stood there, small, rumpled, about my age (middle), Conyne in hand. It was beautifully crafted and beautifully painted with an Alaskan Indian design.

We met in the Exhibition Hall of Seattle's Pacific Science Center. The Washington Kitefliers Association spring kite exhibition was in full swing, the room was full of people viewing kites, floor to ceiling, and making kites all over the tables and floor. There were a dozen important things needing doing but at the moment nothing was more important than to thoroughly examine this obviously well-constructed, well-designed kite.

Where did she get the design? "Well, a major in Anthropology should have taught me something," was her reply.

"Just wondered if you might want to hang it up somewhere in a corner," she continued, a little uncertainly, thumbs hooked in rear pockets of well-worn jeans, managing a slouch while her squinting blue eyes searched upward to the ceiling.

Of course we wanted to hang it up. In the middle.

Over the next few months it came out piecemeal that Louise had been flying kites since she was a kid. Things had interfered, of course, like raising a family. The children came all at once to Louise and George: Roger, now 29, Bruce, 28, and Kevin and Martin, 25. Not much time for kites for some years. Things calmed down enough for making some kites with the boys. Then came more interruptions, the protest meetings about this and that: the arboretum needed defending, the neighborhood shielded from high-density high-rise buildings, the shopping district kept within bounds—that sort of thing.

One day Louise came back to kites with a vengeance. She was in the local kite shop and mentioned wistfully that two bucks was a lot of money just to see a kite show (the one at the Pacific Science Center). The shop suggested she use one of her kites to get in. "Take one in hand, act as if you belong there and just barge in." She did—it worked—and Louise has been busy ever since making kites.

A Crowley principle is that her kites should be stable. Not everyone follows this, and Louise admits, "Different strokes for different folks." Her preference is for Conynes, double Conynes, deltas—kites that sit up there, kites that bring out the patterns in the sky. She seeks the dance and play of the clouds, the good tug on the line, the restful relaxation of floating designs.

"I'm lazy," she'll have you believe, "and fighter kites are too much work. They abuse the eye. Get tangled and bash the earth. Bother others' kites." Still, she likes challenge.

Louise reports on the phone that she has finished a Russell Hall kite. Typical. She's not afraid to tackle anything—and it's a stable flier. Recently she made a fine-flying Professor Waldof box kite—with nothing to guide her but a picture.

Another part of the Crowley style is that she names her kites, in the manner of Pat Hammond, San Antonio's Kite Lady, who was probably the first to claim that naming kites makes them fly better. Louise likes to "personalize the relationship" this way, using names like Pete (as in Peg-Leg) for her seagull, because it reminds her of a Seattle pet by that name.

Characteristic was her approach to construction of her seagull kite. The pattern just didn't seem right to her. She looked up the facts about gulls and found that the average female herring gull is 22 inches, beak to tail feathers. Scaling up the pattern in mathematical proportion, she wound up with a seagull kite some 65 inches from wing tip to wing tip. And its long wings slow the flapping motion so that the bird looks more natural—alive.

Here are some of her other kites: "Nazgul," a character from Tolkien, is a black plastic delta which found its way home after dangling its broken string for six miles before being hauled down by an honest man. A fiery colored Conyne is "Aries." Another, of every color in the rainbow, is "VIBGYOR" (an acronym for the colors in spectrum order). An octagonal flat kite had less-than-sufficient tail on its test flight, causing a sensational crash earthward, and came up dubbed "Venus," as mentioned in Velikovsky. Even the Great Dane papa-dog does well; it's named "Pycho," a great Danish astronomer. But his son is plain "Rowdy," because he is.

Part of the Crowley philosophy is that kiting need not be expensive. Her scrounging abilities are legend. She knows strategic dumpsters personally. "Unraveled plastic party leis make the neatest tails." And small swatches of rip-stop nylon just naturally look good when attached to each other with her machine-fine hand-sewing. Given the materials, she could make 'most anything fly.

Opposite page: Louise Crowley assembles her hand-sewn nylon double Conyne at Seattle's Gasworks Park. She's seen clipping a low-wind panel into the kite (the section is removable for high winds). Top, Crowley lifts her Alaskan Indian motif Conyne. Detail to the left shows the engineering of the center strut, which is wrapped at the joint. Above, Crowley's seagull kite, "Pete," scaled up and refined. Right, "Venus," her many-tailed star.

"Line is a problem, though," she mourns. "There is just no substitute for good kite line."

You can see that here in Seattle we have learned a lot from Louise Crowley and we're glad to have her—our beautiful person, a Free Spirit of the skies. ♡

200 Years of Kite Fishing Success

For 23 years, Bill Trebilcock, Principal Keeper of the Eddystone Lighthouse, 17 miles off Plymouth, England, has been kite fishing. Within minutes of launch, he has his fish—usually a bass, sometimes a pollack, like the four-pounder in the picture here. Trebilcock believes that Eddystone is Britain's last lighthouse stronghold of kite fishing. The other towers now have "chopper pads"—platforms around the top for helicopters. As all good kiters know, helicopters and kites don't mix. Kite Lines *is pleased to document the system, as described by Trebilcock himself.*

Here round the coast of England we have several lighthouses which are just tall towers set on the largest rock of extensive reefs. These reef areas are by and large very good fishing areas; but, as the first keepers some 200 years ago found, most of the time one cannot even get a line in the water and over the rocks.

Looking down from 133 feet from the gallery and seeing one's supper swimming past is a great spur to inventiveness. The early keepers went through many ideas before settling on a kite. Their kites and line were a bit on the rough side, but they caught fish. Over the years the kites and gear have been improved, but basically the method and kite I use do not differ very much from theirs.

Before I describe the set-up and method, I must point out that the problem we have to overcome is not flying a kite *up* but *down*. We want our kite to fly down from 133 feet to 20 feet above the sea and there be very stable but maneuverable.

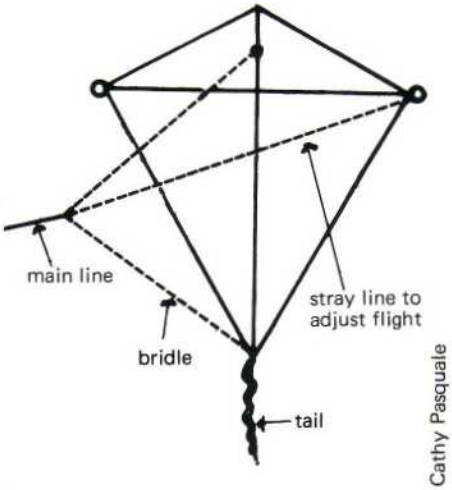
One big advantage we have, of course, is that whatever the wind we can always keep it behind us and have no other buildings or power lines to worry about.

The kite I mainly use for fishing I also use to pass both mail and small spare parts when it's too rough for the relief boat to come near. The largest package I've lifted was 25 pounds of weight hoisted off the boat's deck and carried about 400 yards back to the lighthouse. So you can see that kites are to us on this station not only a means of getting our supper but for use as a communications medium.

However, back to our fishing kite. I have several of various sizes but all scaled up or down from the same standard kite which has been found to be the best in performing what we require.

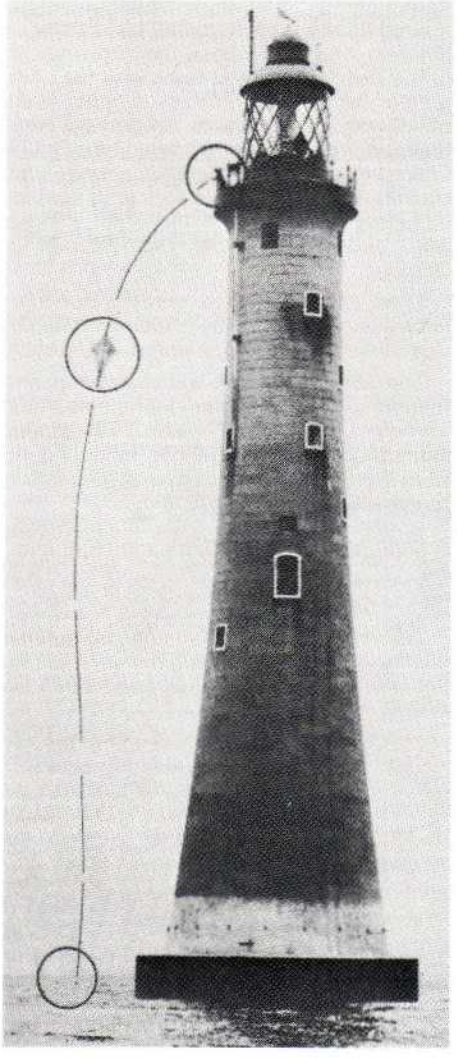
The kite I use in breezes from force 3 to 6 is four feet in length, a diamond shape, but with the two wings just over two-thirds of the way from tail to top. It's made flat and two bamboo sticks about $^{3}/_{8}$-inch thick are lashed together to form a cross. Then a light line is led round the edge, and the cover, in this case light duck canvas, is sewn to it. A bridle is fixed to the face (opposite side to the sticks) and sewn so it is made fast through the canvas and round the sticks. This bridle starts about four inches from the top and ends at the tail. The main line fixes to this, at which point a piece of line is also fixed about two foot odd. On each wing of the kite is a ring or loop of cord which this stray line fixes, when we set things up.

It will from here be clearer if I rig up



TREBILCOCK'S RIGGING METHOD

Drawings by Cathy Pasquale



as if I were going to fly. Standing on the gallery or walkway round the lantern, back to the wind, you will appreciate we can launch and fly in the wind to our right or left as the wind comes past. We will decide to fly to the right. To start, our bait goes on a 20-foot length of 30-pound test nylon line. This goes to a swivel, then 90 feet of ¼-inch rocket line is fixed to the tail end of the kite. The main line fixes to the bridle and the short length of line is tied to the right wing and is adjusted so the kite flies level, not rising or falling, and in fact acts much as a sailboat's mainsail. If one were going to fly left, the stray line would have gone on the left wing.

To adjust the kite to fly steady, if over a 3 breeze, one needs to position a weight about 40 feet down the tail—about 8 ounces for a light breeze to about 7 pounds in a 6 to 7 breeze. When the kite is flying level and steady, I let out slowly. As the kite gets to about 300 yards from the tower, the weight of the main line and extra wind drag bring the kite down so at about 350 yards the kite is flying steady about 20 feet above the sea with the hook about 80 feet down. If I were using just a fish bait I would keep flying steady. A fish taking the bait upsets the trim and the kite flies up, usually bringing the fish out in the air. A quick retrieve and the kite goes higher and keeps the fish well clear of the rocks.

The favorite method is to use a feather lure or spoon when the kite is at 20 feet. A very slow retrieve makes the kite fly right, slow down to the left and quick retrieve up. So one is able to work the lure over about 50 yards. Again, a fish taking, up goes the kite, self-striking. It will be obvious that slight alterations in trim and one can fly higher or closer from the water. The thing to watch, of course, is any tide pull on the tail, which tends to upset the trim. Also, very gusty days it is better to fly, say, 40 feet from the sea so any upset can be corrected before the kite goes in. If the kite does go in, a long steady pull until it surfaces, then a quick retrieve, and it will fly off okay.

I would give a word of warning about using this method from a tower, cliff or bridge. Have a good heavy main line and watch that you don't get pulled over, as in a 5 to 6 breeze the pull is quite strong and a sudden gust or a big fish could pull you over. The main line, of course, needs to be heavy, as a kite in the water still sails like a sail boat and exerts quite some pull. I use a ¼-inch diameter cotton line and believe me for an hour's fishing in a stormy breeze you need to wear gloves and to be fit.

This story will start its journey to America by kite as at the moment the weather is too bad for a boat to get near.

An amusing story to end.

Some 18 years ago, serving on Wolf Rock, a tower like this further down the coast, we had been having a lot of trouble with some new engines, so the chief development engineer of the company himself came to stay for a few days to sort things out. He made it obvious when he saw me get the kite out that it proved his idea of keepers that they were all nuts. I said nothing, but prayed I'd get a bite, and Jackpot! I was fishing with a six hook feathered trace, and first bite, five nice plump mackerel—and one red-faced engineer. Could he have a go? So I taught him how, and couldn't get near the kite for the rest of his visit (darn him). He wrote me later and said that the therapeutic effect of his kiteflying had done him the world of good. I guess at least if you don't catch fish it's exercise and fun, but it's always a bonus with a nice fresh fish.

Bill Trebilcock
Principal Keeper
Eddystone Lighthouse
Plymouth, England

Kite Traction Record Established

It is difficult to break a Guinness world record in kiting. It may be even more difficult to establish an entirely new category of record, as for example was done when William R. Bigge flew the most kites from one line, 261, in 1974, creating a record that the Japanese have subsequently surpassed extravagantly.

One chap who has broached Fortress Guinness is Bernard Stewart, 28, of Victoria, B.C., Canada. He has reported to *Kite Lines* that on July 5, 1979, he and two crew members (Barry Hiebert and Shannon MacLeod) used a train of eight Flexifoil kites to pull a boat from Crescent Bay, WA (14 miles west of Port Angeles) across the Strait of Juan de Fuca to the Victoria inner harbor, a distance of "23 miles, not including tacking," according to Stewart, who took an indirect route (a crow-flies route would be closer to 20 miles). In any case an interesting feat, it took 5½ hours to accomplish in a 12-foot inflatable Zodiac boat and reportedly will appear in the next edition of Guinness as the new "long distance record" (properly the kite traction distance record).

It is probable that the best such effort ever made was that of George Pocock of England in 1827 with his consummate invention, the Charvolant. Harry Edward Neal in *The Story of the Kite* said:

> Probably the longest single journey made by Charvolants was a 113-mile trip across the British countryside. Three of the carriages made the trip, each carrying several passengers. They rolled over the high ground of Marshfield Downs, passed through Shippenham, Calne, and Marlborough Downs at 20 or 25 miles an hour, an amazing speed in that day. [1]

Pocock was not the first to employ kites for pulling; the Samoans sailed their canoes between islands by kite [2] and Benjamin Franklin as a boy took a cross-pond swim by kite power. Ben speculated in his autobiography, "I think it is not impossible to cross in this manner from Dover to Calais." Over 150 years later, Samuel Franklin Cody [3] proved him right by crossing the English Channel (in the opposite direction) from Calais to Dover on the

[1] Harry Edward Neal, *The Story of the Kite* (Vanguard: New York, 1954), p. 9.
[2] Morwood, J., *Sailing Aerodynamics* (Southampton, 1962), p. 87, cited in Clive Hart, *Kites: An Historical Survey* (Praeger: New York, 1967), p. 151.
[3] Arthur Gould Lee, *The Flying Cathedral* (Methuen: London, 1965), p. 114.

For the Record

This department is devoted to reports of record-setting achievements with kites. News will appear from time to time, as it arrives, in Kite Lines. *Publication of a report is not to be construed necessarily as official recognition by* Kite Lines *or any other party of any attempt at a record.*

evening of November 5, 1903. The American-born cowboy, sharpshooter, showman, kite inventor and pioneer British aviator used a collapsible 14-foot canoe pulled by a train of his kites.

Perhaps the very earliest known example of kite traction, though, was in the birthplace of kites, China, across the China plains, according to Gordon Gillett of South Carolina. Gillett could be called the contemporary dean of the tiny fraternity of kite sailors. Six 10-foot Gordon Gillett Tow Kites were purchased and used by Briton Keith Stewart in a reenactment of the Cody accomplishment, crossing the English Channel. Stewart (no relation to Bernard) in his Amphi-Kat (a 10-foot catamaran) traveled from Cap Gris Nez beach, France, to Folkestone, England.[4] He took 4 hours 20 minutes and six-in-train steerable Gillett deltas to traverse the distance of about 24 miles. The Amphikiting, Ltd., Co. has applied the system to its Amphi-Kart, a land vehicle with balloon wheels for rough terrain.

Gillett has been experimenting with kites as boat sails for about 14 years and became well known in 1977 from a *Popular Science* magazine article. Gillett uses trains of four to eight deltas and concentrates on management of kites as valid alternatives to conventional sails rather than on record-setting for distance. He is planning instead to set a speed record next spring, aiming for 40 miles per hour. He feels the potential is there—for perhaps 60 miles per hour. To him, this is more significant than distance, which he says is only a question of "how long you can go without being bored to death."

All of which is to take nothing from the proud efforts of Bernard Stewart. He is now planning to further establish his record by crossing from Victoria to Seattle, WA, "within the next three months—a straight-line distance of approximately 75 miles." And, evangelistically, he plans to hold a kite tow race in the Strait of Juan de Fuca on the first Saturday with suitable weather in May, 1980. All interested kiters are invited to enter and compete for a substantial prize. Participants will be required to bring their own kites, boat, safety equipment and extra kites; chase boats will be provided. For further information, contact Bernard Stewart, 1615 Belmont Avenue, Suite 207, Victoria, B.C., Canada V8R 3Y9; telephone (604) 595-1369.

[4] "Kites Across the Channel," *European Kiteflier*, I:1 (Dec., 1977), p. 8.

Angus White, age 6, pulling up John White's 24-foot delta, London, October 29, 1978.

John H. White

Junior Record Claimed

John H. White writes to Kite Lines *from London, England:*

I wish to claim a world junior kiteflying record on behalf of my son Angus White who, at the age of 6 years 8 months, between 12:05 and 13:00 hours GMT on Sunday, October 29, 1978, flew my 24-foot span delta wing for 55 minutes entirely on his own. The only help he had from me was to hold it up and launch it at the start and to wind up the line as he pulled it in hand-over-hand at the end of the flight. The wind was extremely light—about force zero to force one—so that constant tugging was required to keep the kite airborne. Altogether, he let out about 400 feet of 240-lb. nylon line and the kite rose to about 200 feet. This took place on Clapham Common, South London, in the view of several other kitefliers who were also having difficulty in keeping their kites aloft due to lack of wind.

I enclose a photo of Angus pulling the kite up during an earlier unsuccessful attempt to get it flying on the same day.

The kite, which I call my Autumn Tints Delta, is made from brown, yellow and red rip-stop nylon, obtainable in the U.K. in widths varying between 34 and 38 inches. Thus, it is about nine feet long in the center and the wing area is approximately 108 square feet.

I trust this letter will constitute a challenge to other young kitefliers to do even better. Maybe we shall eventually hear of a 5-year-old hauling up his or her parent's 30-footer and still managing to stay firmly on the ground!

Might I suggest a formula for comparing junior kiteflying achievements:

$$KQ = \frac{A \times T}{M}$$

where KQ = kite quotient
A = area of kite lifting surface in square feet
T = total flying time in minutes
M = age of child in months

This would give Angus a score of:

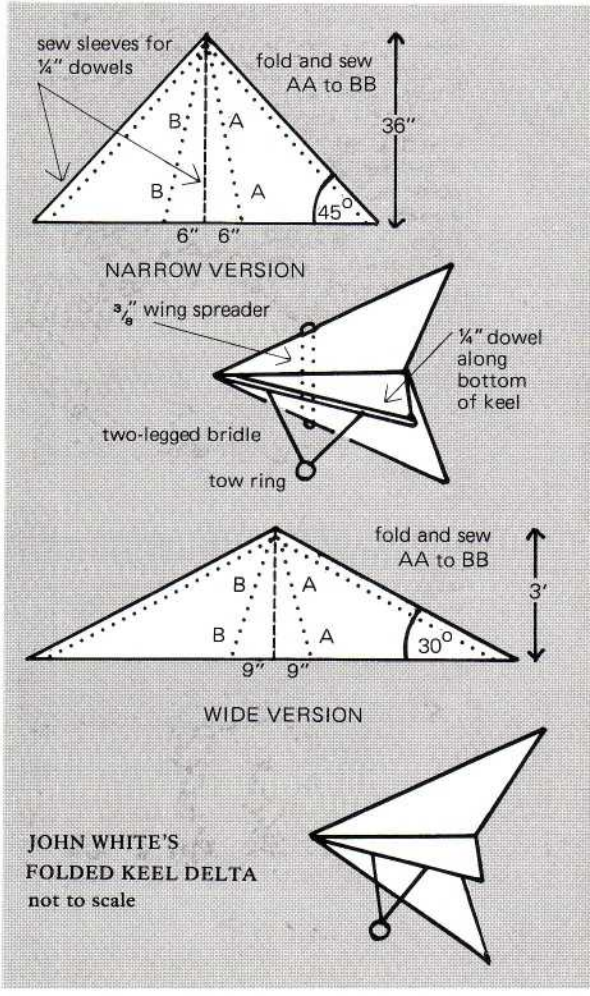
$$KQ = \frac{108 \times 55}{80} = 74 \text{ to the nearest whole number.}$$

In a later letter, John gives further details of the type of kite Angus was flying:

It is a scaled-up version of one of my standard Folded Keel Deltas. Instead of sewing a separate keel on the bottom, I make the kite from one piece of rip-stop, forming the keel by folding the material in the middle. This, of course, also produces a swept-back trailing edge. I make both narrow and wide versions as shown in my sketches below. *

The 24-foot kite flown by Angus is a three-times blow-up of the wide version of my FKD. ♢

**Editor's Note:* The design bears some similarity to others' deltas with folded keels and keel sticks, demonstrating that simultaneous development occurs in kite design.



STATESIDE
News From Here and There

ILLINOIS

William E. Temple writes with good news:

As of July 4th, 1979, our group became airborne as a Chicagoland kite club. A number of us kitefliers have been kicking this around for a couple of years. We advertised and had our first publicized fly-in at Shiller Woods Forest Preserve, in the northwest suburbs of Chicago, and showed off for the public.

I flew a J-30 Parafoil that Dom Jalbert made for me some years ago. The wind was from 8 to 20 miles per hour so I had to stake it out. I also flew the stars and stripes on the line. We plan to fly once a month at Shiller Woods and we have hopes of holding our first competitive fly in 1980.

In May, the WIND Radio-sponsored kite contest at Grant Park drew a very large crowd and many experienced kitefliers. (There were also very many inexperienced kitefliers.) Charles Sotich won in the Most Unique category with a replica of Snoopy's dog house; it flew well. Kathy Temple and I flew 28 kites on one line and won an award.

Later in the spring we had the honor of meeting and flying with Professor Tsutomu Hiroi of Japan, here to participate in the Cherry Blossom Festival at Lincoln Park. It was a pleasure to watch this man fly his kites and to talk with him. We each received an autographed copy of the master's book from Japan Air Lines.

Bill Temple flying a kite in Comiskey Park on a snowy March 4, 1979. The Chun King company asked Bill to test to see if wind conditions were favorable there for a kite contest on Mothers Day. Bill discovered they weren't. "There were swirling winds that will make a reel of a kiteflier," Bill said. The game effort, however, was televised nationally.

MICHIGAN

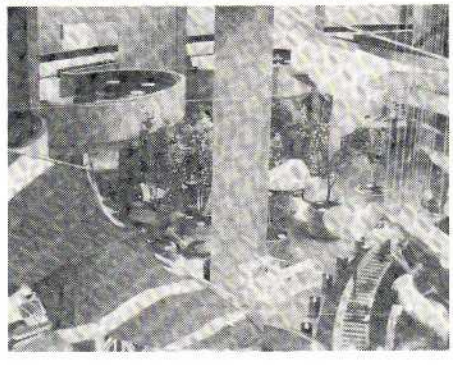
The 5/20 Kite Group's admirably active season was climaxed by its outstanding effort, the Detroit Kite Kaleidoscope, July 22 to 28. The group's newsletter followed up with pictures aplenty and breathless prose, from which we quote:

The Detroit Kite Kaleidoscope—a week-long parade of workshops, demonstrations and displays—culminated in a colorful kite festival on Saturday. Boy—did we have our hands full!

Co-sponsored by the Renaissance Center, the Detroit *Free Press* and the 5/20 Kite Group, Kaleidoscope proved to be *the* highlight of our summer activities. TV and radio appearances by Hank and Nancy [Szerlag] and great newspaper coverage all provided the kind of publicity an event like this demands. The display itself featured 30 kites of various types—including the Heggs' 50-foot delta and an historical Navy Target Kite (designed by Paul Garber). Both kite shops in the area, The Unique Place in Royal Oak and Sky Line Kite Shop in Detroit, donated kites as prizes. Also, from Nantucket came Al Hartig with his contribution of Valkyries. The kite building demonstrations as well as the sale of sled kite kits were very popular parts of the entire production. Don't ask how we managed to assemble and pack 1000 kits! That episode still conjures up overwhelming fatigue from all 14 participants.

Saturday's competition brought out 150 enthusiasts. Although morning showers undoubtedly reduced the field of entries, we felt it was more than adequate for a first time effort. All concerned were pleased with the entire affair and have committed themselves to a second annual.

Part of the 5/20 Kite Group's display inside the huge Detroit Renaissance Center. Plans for next year are already underway with a tentative date of middle or late June.



MONTANA

Art Foran sends word from Clancy, MT:

At the Clancy school in June I gave the first and second grades a kite fly. We had three bags of fun and Mary and I were run quite ragged for half a day.

Schoolkids fly in Clancy. Afterwards, they wrote Foran more letters than he could answer.

NEW YORK

Jim Linnen sends news from the Long Island Kitefliers Association:

We had a great time here helping set up a kite fly in April for the Brookhaven National Laboratory at Upton, L.I., NY, as part of their Energy Options Expo. The turnout was super (about 300 people).

I called the New York FAA for clearance as we had a high flier event. It was great! A large red delta took to the sky, climbing fast and furiously towards zenith. It was a certain winner. All of a sudden it broke free from its line and started to drift away trailing a line segment. The red delta continued to climb as we watched. The winner was announced: the red delta, much to its owner's surprise. We awarded the prize and expressed our sympathy to the owner (for the red delta was a beautiful kite)—when—a Parafoil owner who had also been flying high in hopes of first prize reported that he had the red delta's line segment fouled in his flying line and was reeling it in carefully. The kites gently came down from the sky and, wow, what cheering! It was so much fun to see these men so happy, and the crowd clapped and the judges all laughed and clapped.

The Largest Kite event was also funny. Two brothers built an enormous Conyne

Directory of Outlets

These retailers carry KITE LINES regularly. Their professionalism and dedication to kiting recommend them to you.

BEN FRANKLIN KITE SHOPPE, One-Half Pearl St., Mystic, CT 06355, (203) 536-0220.

BOLAY'S HOBBIES, 107 E. Main St., Decatur, IL 62523.

CATCH THE WIND, 955 N.W. Highway 101, Lincoln City, OR 97367, (503) 994-9500.

CATCH THE WIND, LTD., 329 8 Ave. S.W., Calgary, Alberta, Canada T2P 1C4.

CHERI'S, 5637 E. Speedway, Tucson, AZ 85712, (602) 296-2383.

CITY NEWS, 10116 N.E. 8th, Bellevue, WA 98004, (206) 455-9683.

THE CLOUD CROWD, 19 Bennington Dr., Dayton, OH 45405, (513) 274-9683.

COLORS OF THE WIND, 2900 Main St., Santa Monica, CA 90405, (213) 399-8044.

COME FLY A KITE, INC., 900 North Point, San Francisco, CA 94109, (415) 441-2965. Branch: Carmel Plaza, Carmel, CA 93921.

THE EMPORIUM, 606 Ship St., St. Joseph, MI 49085, (616) 983-0404.

FAMILY BICYCLES, 9183 Central Ave., Capitol Heights, MD 20027, (301) 350-0903.

FISH CREEK KITE CO., RR1, Box 205, Hwy. 42, Fish Creek, WI 54212, (414) 868-3769.

FLY A KITE, 3850 S. Plaza Dr., Santa Ana, CA 92704, (714) 545-2849. Branch: 19800 Hawthorne Blvd. Torrance, CA 90503.

GEORGETOWN KITE SHOP, 501 Rose St., Box 932, Georgetown, CO 80444, (303) 569-2809.

GO FLY A KITE, INC., 1434 Third Ave., New York, NY 10028, (212) 988-8885. Branch: 79 Job's Lane, Southampton, NY 11968.

GOIN' WITH THE WIND, 323 Atlantic Blvd., Atlantic Beach, FL 32233, (904) 249-7097.

GONE WITH THE WIND, 313 Clearwater Mall, Clearwater, FL 33516, (813) 796-1529.

GREAT WINDS, Pioneer Square, 166 S. Jackson St., Seattle, WA 98104, (206) 624-6886.

GULLIVER'S, 3526 Edwards Rd., Cincinnati, OH 45208, (513) 871-7766.

HEAVENLY BODY KITES, 409 Green St., Key West, FL 33040, (305) 296-2535.

HIGH AS A KITE, 201-131 Water St., Vancouver, B.C., Canada V6B 4M3, (604) 687-8041.

HIGH AS A KITE, 691 Bridgeway, Sausalito, CA 94965, (415) 332-6355. Branch: 703 Front St., Lahaina, Maui, HI 96761.

HIGH AS A KITE, International Marketplace, Kalakaua Ave., Honolulu, HI 96815, (808) 922-3446.

HOBBYTOWN, 62 Gore St. E., Perth, Ontario, Canada K7H 1H7, (613) 267-5063.

IDLE HOUR, 59 Greenwich Ave., New York, NY 10014, (212) 924-6517.

KITE CITY, 1201 Front St., Old Sacramento, CA 95814, (916) 443-3478.

THE KITE KOMPANY, INC., 33 W. Orange, Chagrin Falls, OH 44022, (216) 247-4223.

THE KITE SHOP, 222 Omni International, Atlanta, GA 30303, (404) 688-7874. Branch: 1601 Biscayne Blvd., Miami, FL 33132.

THE KITE SITE, 3101 M St., N.W., Georgetown, DC 20007, (202) 965-4230. Branch: 353-Q Faneuil Hall Marketplace, Boston, MA 02109.

THE KITE SITE, General Delivery, On the Island, Helen, GA 30545, (404) 878-2350.

THE KITE STORE, 973 Grand Ave., Pacific Beach, CA 92109, (714) 270-2692.

THE KITE STORE, 848-A Yonge St., Toronto, Ontario, Canada M4W 2H1, (416) 964-0434.

THE KITE STORE, LTD., 69 Neal St., London SW2H 9PJ, England, 09441-836-1666.

THE KITE STORE in Larimer Square, 1415 Larimer St., Denver, CO 80202, (303) 623-2353.

KITE WORKS, INC., 244 Commercial St., Provincetown, MA 02657, (617) 487-3376.

KITES & OTHER DELIGHTS, 99 W. 10th St., Suite 120, Eugene, OR 97401, (503) 345-4856.

KITES ARE UP, 116 23rd St., Near the Pier, Newport Beach, CA 92663, (714) 673-7202.

KITES AWEIGH, 36 Market Space, Annapolis, MD 21401, (301) 268-6065.

KITES-ON-A-STRING, 10341 82 Ave., Edmonton, Alberta, Canada T6E 1Z9, (403) 432-1340.

KITTY HAWK KITES, Bypass 158, P. O. Box 386, Nags Head, NC 27959, (919) 441-6247.

KRAZY KITES, 1353 Mill Dam Rd., Virginia Beach, VA 23454.

LET'S FLY A KITE, 13763 Fiji Way, Marina del Rey, CA 90291, (213) 822-2561.

OUTERMOST KITES, Commercial St., Box 1032, Provincetown, MA 02657, (617) 487-3766.

THE PENGUIN, INC., Box 386, N. Conway, NH 03860, (603) 356-2340.

PINE TREE STUDIO, 224 E. Aurora St., Ironwood, MI 49938.

PINOCCHIO'S FOLK TOY & KITE SHOP, 2413 Parkview, Kalamazoo, MI 49008, (616) 342-8817.

POSTCARD PALACE, 1220 N. State St., Box 2432, Bellingham, WA 98225, (206) 734-4425.

SAY HI KITES, 3 Wharf St., Portland, ME 04101, (207) 772-0277.

SKY SCRAPERS—Kites, 2563 15th St., Denver, CO 80211, (303) 433-9518.

THE SKY'S THE LIMIT, 2909 B Sale St., Dallas, TX 75219, (214) 522-8440.

SMITHSONIAN AIR & SPACE MUSEUM SHOP, Washington, DC 20560, (202) 381-5711.

SOFT AS A GRAPE, 36 Boylston St., Cambridge, MA 02138, (617) 491-1988.

STANTON HOBBY SHOP, 4734 N. Milwaukee Ave., Chicago, IL 60630, (312) 283-6446.

STARSHIPS & STRINGS, 75-5699-D Alii Dr., Kailua-Kona, HI 96740, (808) 329-2806.

SUNSHINE KITE CO., Redondo Beach Pier, 233-B Fisherman's Wharf, Redondo Beach, CA 90277, (213) 372-0308.

SUNSHINE KITES, 308 S. Hunter St., Aspen, CO 81611, (303) 925-4540.

UNFINISHED CREATIONS, 243 Xenia Ave., Yellow Springs, OH 45387, (513) 767-7173.

UNIQUE PLACE, 525 S. Washington at 6th, Royal Oak, MI 48067, (313) 398-5900.

WIND CHIMES BOOK EXCHANGE, 2402 Leamings Mill Rd., Millville, NJ 08332, (609) 327-2667.

WIND PLAY, 212 N.W. Couch, Portland, OR 97209, (503) 223-1760.

WIND, WAVE & WHEEL, 210 A Monterey, No. 3, Capitola, CA 95010, (408) 462-2026.

WINGS OF THE WIND KITE GALLERY, P. O. Box 8447, Wichita, KS 67208, (316) 267-2290.

JOHN A. SACCO, JR., INC., 30 Ingram Ave., Pittsburgh, PA 15205, (412) 921-1553.

a challenge from
William A. Rutiser and KITE LINES

announcing the INTERNATIONAL EXPOSITION OF ASYMMETRICAL KITES Burtonsville, Maryland, USA—JUNE 7, 1980

artist's sketch of the "half-Eddy" emblem

INT'L ORANGE BKGRD.
SUN YELLOW STRIPE
SKY BLUE LTRS. & EDGE

THE STORY
Two years ago Bill Rutiser, an avid kiting member of the Maryland Kite Society and Lifetime Subscriber to KITE LINES, offered an award for the Best Asymmetrical Kite at the annual Maryland Kite Festival. There were no responses the first year. There were no responses the second year! Bill surmised that the limited geographic spread of the publicity for the competition had kept it from realizing its potential. Bill was ready to drop the offer when he talked to KITE LINES about it and a new approach was conceived. It seemed obvious that KITE LINES could best reach kitefliers in every corner of the U.S. and around the globe. Bill agreed to let KITE LINES give it a try. Rules and information are as follows:

THE PURPOSE
(1) To explore, stimulate and enjoy asymmetry in kites; (2) To find and recognize the "Best Asymmetrical Kite," defined to be: that kite which is most asymmetrical that still flies well (as well as a conventional symmetrical kite). Craftsmanship, beauty, ingenuity and other usually-admired qualities of kites will not be considered except if two otherwise equally worthy asymmetrical kites are in contention for recognition.

THE REWARDS
Several specially designed asymmetrical plaques will be presented to kites in First, Second and more places and honorable mentions. For each asymmetrical kite entered, the maker will receive a framable asymmetrical certificate and will be eligible to purchase a distinctive embroidered cloth patch—asymmetrical, of course—a "half-Eddy" emblem which will be available only to entrants, judges and proxy fliers in this competition, this time only. An additional honor: some of the best asymmetrical kites will be featured in a future issue of KITE LINES.

THE DEADLINES
May 1, 1980, deadline for receipt of entry form.
June 6, 1980, deadline for receipt of shipped kites. June 7, 1980, is Exposition Day, in Burtonsville, Maryland, USA. (Rain dates: June 8, 14 and 15, 1980.)

THE JUDGES*
CHIEF JUDGE: WILLIAM A. RUTISER
Guy D. Aydlett
Charles Bernstein
William R. Bigge
W.D. (Red) Braswell
Bevan H. Brown
Mel and Valerie Govig
A. Pete Ianuzzi
Arthur Kurle
Theodore L. Manekin
Curtis Marshall
Robert S. Price
Tal Streeter
*Names are provisional; some may decide to enter kites instead.

THE RULES
1. A kite entered must be designed and made by the entrant or the entrant as captain of a team.
2. The Exposition is Open Class; that is, an entrant, whether "professional" or "novice," 8 years old or 80 years old, enters on an equal basis with all other entrants. Judges and KITE LINES employees may not enter kites.
3. Any size or design of kite may be entered.
4. An entry form (or facsimile) must be submitted in advance, deadline May 1, 1980.
5. You are invited to attend the Exposition in person and fly your kite yourself. Or you may ship a kite to a proxy flier (any willing local kiter) or to the judging committee, or include your kite in a club effort or shipment.
6. Kite clubs are encouraged to bring or ship kites in any quantity to represent their club. Clubs may wish to have an advance flying day to test and select their entries.
7. If you ship your kite to the Judging Committee, be sure it is well marked with your name and address. Ship to: I. E. A. K., c/o Robert S. Price, 3839 Dustin Road, Burtonsville, Maryland 20730, USA. Observe postal regulations regarding length, girth, weight, etc., and consider insurance for your kite. Be sure to include with the kite any special instructions for preparing and flying it. Also include, if the kite requires, any special line or apparatus.
8. For return shipment of your kite, please send funds as necessary to cover the expense (shipping plus insurance); otherwise, your kite will be retained by KITE LINES for archival uses or donation to a kite museum. Please ship your kite in a reusable container. Return shipment of your kite will be made within 20 days after the judging.
9. Entrants may ship more than one kite, as for different wind conditions, but the maximum is three kites per entrant. All kites received will be flown and judged, but only one per entrant will be accepted in competition.
10. KITE LINES reserves the right to photograph any kite entered and feature it in the journal, possibly with descriptions and measurements.
11. KITE LINES and all participants involved in the Exposition shall not be liable for any loss, injury or damage to any person or property arising from the Exposition or the shipping and handling related to it.
12. Decisions of the Judges will be final.

THE ENTRY FORM
(Please print.)

Name of kite maker (or captain of club):

Check appropriate boxes:
☐ I will attend the Exposition in person.
☐ I will send my kite to a proxy flier.
Proxy's name and address:

Our club will be ☐ bringing ☐ sending (quantity) kites to the Exposition.

Address
State Zip
City
Telephone (give area code)
Description of kite and statement of maker's intentions:

Reserve for me (quantity) I.E.A.K. patches @ $3.00.

Signature
Date

Send entry form to:
KITE LINES
7106 Campfield Road
Baltimore
Maryland 21207
USA

Bill Lee, Seattle, WA, flying his asymmetrical kite.

John Van Gilder photo

kite and had a flying line that could have pulled a building down. They went into an act, holding each other down as if the kite were taking them up. Great show! When we called for the kite and its owners to come to the judges' stand, they gently landed the giant kite while the crowd laughed so hard. It was a really funny scene. A great time was had by everyone.

OHIO

The Ohio Society for the Elevation of Kites enjoyed a full summer, according to its newsletter, "Shoot the Breeze." For example, on May 28 members attended "Come on Down," a downtown Cleveland celebration, where Mike Weletyk flew his kite train for the pleasure of all. He also attracted a photographer from the Cleveland Plain Dealer *and was subsequently featured on the paper's first page on Memorial Day.*

Also in the newsletter was the following OSEK story:

President Tom Rask received a call from the administrative staff of Franklin University (named after Ben, of course) in Columbus, OH. They were envisioning a huge kite for an unusual groundbreaking ceremony. Tom created an 8 x 8 foot Eddy kite with a Ben Franklin cartoon drawn on it.

On the eventful May day, "the winds rose to the occasion and so did the kite," said Tom. A large wooden key was suspended from the kite line along with a small charge of flash powder. When the key touched an antenna attached to a bulldozer on the ground, the powder flashed and the bulldozer was started by remote control. BAM!!! A key unlocks tradition. The silver shovel is replaced with a kite. Long live that kiting spirit.

TEXAS

Richard Robertson sends an update from his family in Austin:

In spite of the loss of a leg and a lung to cancer, John Robertson, 21, continues to fly kites with skills acquired through the last 14 years of participation in Austin's annual kite tournament. Shown here, he is flying a golden eagle with twin keels joined with a 13-foot wing span—created in the Robertson living room.

Struck by osteogenic sarcoma in the summer of 1975 and the amputation of his right leg, he went back to high school for his senior year between chemotherapy treatments and lung surgery and graduated valedictorian of his class. He adjusted his tennis game to one leg and a crutch and continued to play competitive doubles.

John Robertson shows a great spirit in Texas.

Further surgery on his right pelvic area last summer (1978) set him back again but he returned to the University of Texas in the fall and joined the wheelchair basketball team and sang with the Longhorn Singers.

John is one of the seven Robertson clan who have been active in Austin and kiteflying circles for a number of years.

George Craig reports:

The Southwest Modelers Show, Dallas, is one of the best-managed, most popular trade shows in the country. It draws together hobby manufacturers, suppliers, distributors, wholesalers and dealers for a weekend of exhibiting and demonstrations and is open to a very appreciative public. There are no sales.

This year on June 2-3, the show had 110 booths, displaying model airplanes, boats, gliders, cars, trains—and last but not least, for the very first time in the show, a magnificent display of kites. Encouraged by AKA and *Kite Lines,* sponsored by Earl Page Realtors, Inc., of Irving, TX, and organized by George Craig of Jason Aerokites, the 8 x 30 foot booth displayed a beautiful collection of kites, kite literature and kite accessories.

The kite booth proved to be a very popular event with other exhibitors and the public. The Show Committee has already expressed hope for a repeat at the 1980 trade show.

George Craig, Linda Ruth Holland (of Airplane Kite Co.) and her friend Max Brinson under kites displayed at the Southwest Modelers Show.

Thanks for operating the booth go mainly to George and his wife Orie Lee Craig and to The Sky's the Limit and Eureka—Paper Tiger kite shops in Dallas.

The 38 exhibitors included: Airplane Kite Co.; Eole, Inc.; Gayla Industries, Inc.; Kro Flies Kites; Precision Formed Plastics, Inc.; Quicksilver Kites; Rainbow Stunt Kite Co.; Rogallo Flexikites; Spectra Star Kites; Striegel Mfg. Co.; Ultra Kites; What's Up; and others.

WASHINGTON

The Washington Kitefliers Association continues its never-flagging pace of kite activities, including—for just one example—the Seafair Festival on July 28. Warren ("Stormy") Weathers of Oregon was there and wrote to Kite Lines:

Yesterday Joy Nagode, a local novice kiteflier, joined me on a visit to Seattle and the Seventh Annual Seafair Kite Flying Festival. What a thrill it was to meet John Dusenberry, J. C. Young, Bill Lee, Dave Checkley, Ken Conrad and the other famed members of WKA. What a gang! I feel a little guilty about running off with so many of their marbles, but they wrote the contest rules, and according to their rules, we won the marbles; which means that of the four events we entered with Winged Victory kites, we walked off with three firsts and a third.

Joy started it off with a first in the novice class. I acted as helper on the official long line (high start) launch and she brought in a first.

The next event, also a timed-altitude that Joy and I both entered, was a string-tangling mess. But Joy, bless her soul, broke free and managed to place third, keeping us in the running.

In the "Most Beautiful" event, having nothing better to do, I entered a rip-stop nylon Winged Victory with the military colors and markings of the 1930s. At the end of the required three minutes, Winged Victory was the most beautiful kite still flying.

In the "Biggest Kite" event, I entered a 9 x 16½ foot Winged Victory and again outflew the competition. As I recall, Winged Victory was the only big kite still flying at the end of three minutes. No way did I out-purty 'em or out-big 'em, I simply outflew them.

It is a little difficult to believe that we did so well; the only reason I can think of is that maybe Bill Lee, J. C. Young and a couple of the others either didn't enter or had an off day.

News from Here & There continues. . .

INTERNATIONAL

News From Here and There

AUSTRALIA

The Australian Kite Association continues to hold flies at Royal Park, Gatehouse Street, Melbourne, on the first Sunday afternoon of each month. The members also put out a newsletter. Recently noted were the use of kites in the Australia Council program of Artists in the Schools. The club often mounts workshops and displays. The big event of the year is the Moomba Kite Fly day, usually held on the first Sunday in March.

Helen Bushell, a prime mover in the Australian Kite Association, has prepared a second edition of the 13-page booklet, *Four Standard Australian Kites.* It is available for one Australian dollar plus shipping from the Association, c/o Helen Bushell, Secretary, 10 Elm Grove, East Kew 3102, Victoria, Australia.

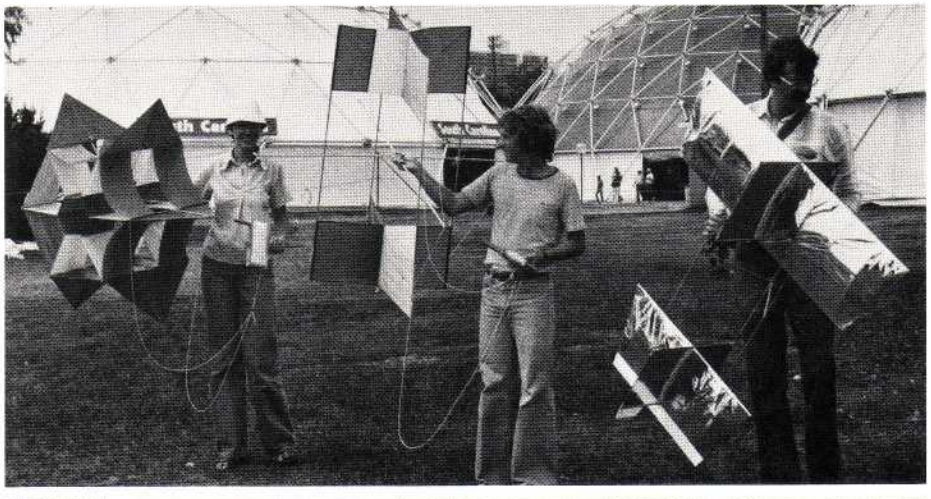
The Kite Fliers Association of South Australia (Adelaide area) held a general meeting with election of officers and a barbecue on June 24, as reported in its newsletter. Graeme Blakey is the new president. Regular informal monthly kite days have replaced advertised public kite days for the year. The new address of KFA-SA is 11 Linwood Avenue, Aldgate 5154, South Australia. A family membership is $6.00 per year, except when first joining, when it is $3.00 (in Australian dollars).

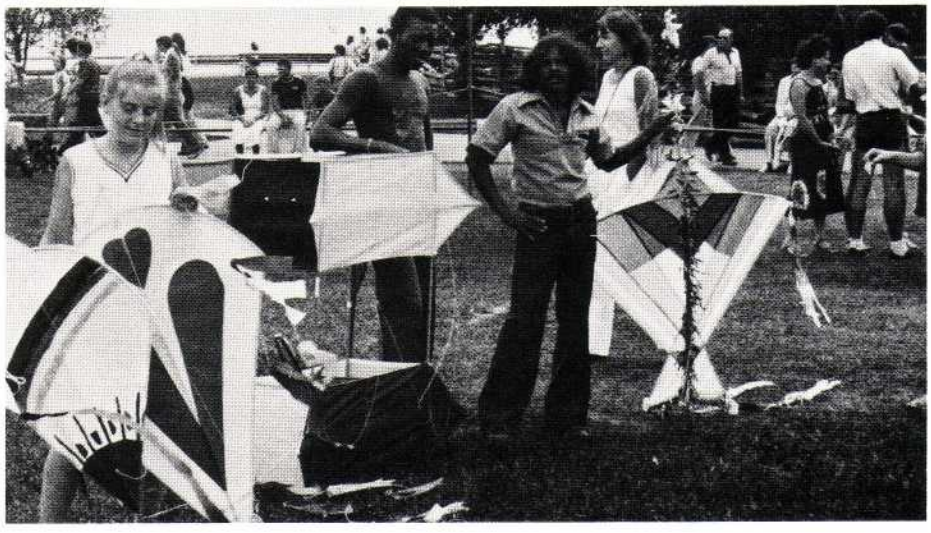
CANADA

Garry Woodcock reports on the Canadian National Exhibition Kite Festival of 1979, held on August 26:

Good weather and over a hundred entrants, including many new faces, made this year's annual event a great success.

Kites and their people at the Canadian National Exhibition Kite Festival: Top, two box kites made by William Pase (a Professor Waldof and an original inverted design) beside an airplane kite by Jim DeLaurier. Below, pear tops, a Cody box and a colorful tissue craft wait to compete.





Largest kite was Ross Smithrin's red nylon square kite (about 12 x 12 feet) with his hometown flag of Trenton, Ontario, sewn into the center. The Toronto Kitefliers' barrage kite took second and Terry Wedge was third with a combination Russell Hall/dragon, a great light-wind kite.

William Pase of Ottawa won Best Homemade with an impressive Professor Waldof facsimile. He also flew a unique longitudinal cruciform kite of deceptively simple design and excellent flying characteristics. Dr. James DeLaurier, longtime kite enthusiast, was second in this class with his aerodynamically sophisticated Mylar airplane kite.

Best in the 100-year-old kite design category was Ellen Kow's arch top, then Garry Woodcock's pear top, and third was Ranjit Savundranayagam's colorful tissue paper fighter.

Young kitemaker Mike Sues won the Smallest Kite trophy with his tiny 1 x ½-inch diamond. Garry Woodcock took second with a 24mm. Conyne, and Edna Kow was third, flying a teeny Malay.

Runaway (literally) winner in the Open and 100-year-old-category time-flight races was Mohammed Zaib's marvelous double-winged tissue paper fighter. Largest kite in timed flight was taken by Bunton Savundranayagam, second by master kite craftsman Dick Kow and third by Stephan Podrabinski.

The Kite Store's Ray Wismer and Jim Collins and Len Nieuport of the East Toronto Kite Club did a fine job of judging; Ken Lewis, as always, organized the event. Our new Toronto Kitefliers signed up quite a few new members on the spot, and Ken gave us promotional commentary.

In an earlier report, Garry announced the formation of the Toronto Kitefliers. Their first newsletter was published in May, and their home airfield is Humber Bay Park, where breezes always blow. The group held a kite making course in May for 60 playground supervisors of the Toronto Parks and Recreation Department. Club members have attended several kiting events in their area and Garry's kite Mountie (line climber) is a mascot for the club. Membership in the Toronto Kitefliers is $2.00 a year, $1.00 for new members (with The Kite Store in Toronto paying the other $1.00). Address is c/o Garry Woodcock, 1055 Shawnmarr Road, # 68, Mississauga, Ontario, Canada L5H 3V2.

ENGLAND

Another new kite club has emerged in England. In fact, it has been active for over a year. It's the Northern Kite Group and it counts on its roster such notable kiters as Martin Powell, John Spendlove and Richard Hewitt. Mike Ware is Chairman. The club's new newsletter reflects the members' year-round community-minded activity and varied kiting tastes. The N.K.G. may be reached c/o the Secretary, Martin Powell, 213, Manchester Road, Rochdale, Lancashire 0L11 3RB, England.

IRELAND

Tony Horan sends word of the Irish Kitefliers Association:

The Association grew out of two kite-flying championships organized by the four companies listed below [Aer Lingus, Irish Raleigh, Japan Air Lines, Jurys Hotel Group]. These championships were held in October 1977 and May 1978. Following the very good response to the second of these, a meeting was called by the four companies and the I.K.A. was formed as a result of this in July 1978.

We are extremely fortunate and thankful to have these companies as sponsors. They have backed us in many ways, including financially, with little return to themselves.

We have a small membership, 30-40 people; however, we find that a great number of "regular" nonmembers turn up at all our events, which is encouraging and demonstrates the real interest there is in kiting in Ireland.

I enclose a list of the association's [monthly] activities for this year up to August. Our Championships this year were particularly successful, with approximately 120 competitors and about 2000 spectators! Our sponsors donated four "weekend" holidays as prizes for this event. There were also numerous prizes of t-shirts, posters and hand-painted Japanese kites.

We have produced one newsletter, which was a bit amateurish, to say the least. However, we are at present preparing a second "very professional" one. We also print a hand-out which we give to kids at our fly-ins.

However "amateurish" the I.K.A. newsletter may be as print, it has good information and a fine writer, N. Corcoran, who describes the Dun Laoghaire Festival with the legendary Irish facility. The Irish Kitefliers Association may be reached c/o Tony Horan, 39 Herbert Park, Bray, County Wicklow, Ireland.

JAPAN

A sequel to the story on the death of Shingo Modegi (Spring 1979 Kite Lines*) came to us from his son, Masaki Modegi, via mutual friend Dave Checkley:*

Last Thursday (November 9, 1978), we held a memorial service for my father. One hundred fifty people came. Afterwards, we had a special memorial kite fly in honor of my father by Harumi pier (near the center of Tokyo, on Tokyo Bay). We were very moved when a certain Mr. Yoshida gracefully flew his kite to some funeral music being played.

We decided to award him the Modegi Cup until the next contest.

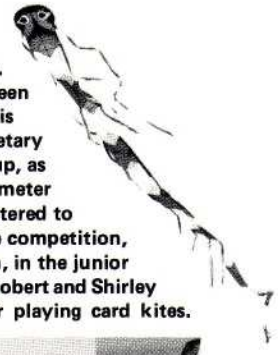
Dave Checkley added some words about Shingo Modegi's legacy, the Tokyo Kite Museum, now run by Masaki:

Tokyo's first kite shop dealing exclusively in kites and kite books is now an adjunct to the kite museum in an upper floor of the Taimeiken restaurant building. Masaki Modegi sells kites here year-round and carries a full assortment of fine Japanese kites, kite-making kits (including a new series developed by Professor Tsutomu Hiroi) and American kites, such as Jalbert Parafoils and models from The Kite Factory, Seattle.

The Taimeiken Kite Museum serves as the headquarters for the Japan Kite Association, the large club founded in 1969 by Shingo Modegi. Enthusiasts who wish to join JKA may do so by sending a money order for 2000 yen (about $10.50 U.S.) to the Japan Kite Association, c/o Restaurant Taimeiken, 1-12-10 Nihonbashi, Chuo-ku, Tokyo 103, Japan. Overseas membership includes subscription (by airmail) to JKA's biannual magazine, which, although printed entirely in Japanese, contains many pictures of kite events in Japan as well as drawings of kite designs.

MALTA

The Malta Kitefliers Group has maintained a regular schedule of four kite flies a year, often held at Ta' Qali airfield. Their annual national competition was held September 9 at Bahar ic-Caghaq, according to the newsletter prepared by Alfred Darmenia Gay, the group's secretary. Especially noted was George Attard's kite train, the first to fly in Malta, consisting of 78 diamond-shaped kites. Other kites mentioned included the group's own red and white delta with black Maltese cross, a "Charlie Chaplin" kite, a multicolored caterpillar and a tetrahedron which "flew well" and was made of drinking straws and paper and stiffened with ⅛-inch dia. hardwood dowels.

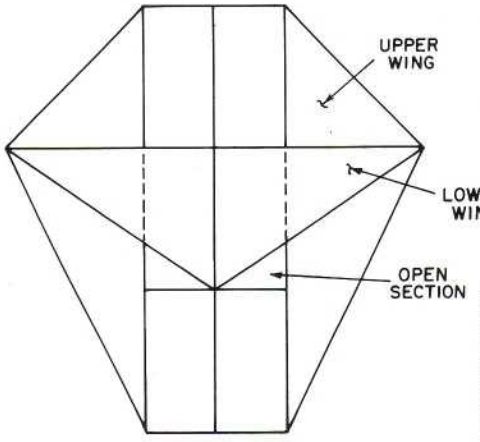


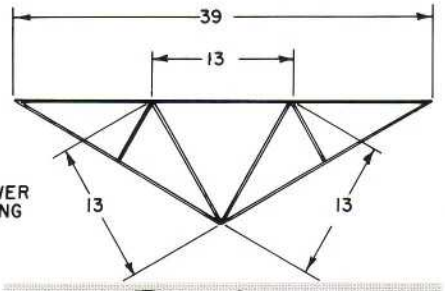
Kites in Malta compete at a national fly in September. Right, first place winning green caterpillar in flight. Below is Alfred Darmenia Gay, Secretary of the Malta Kitefliers Group, as he prepares to fly his eight-meter Thai snake bearing a tail lettered to advertise the sponsor of the competition, "Coolie Squashes." Bottom, in the junior division, brothers Patrick, Robert and Shirley Mifsud proudly show their playing card kites.

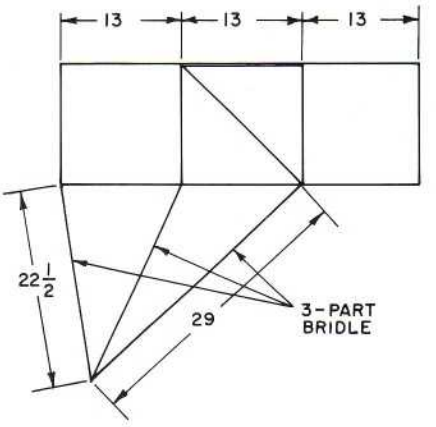
Alfred passes along an interesting construction technique in the newsletter:

"I experimented with plastic tubing and I found out that held over the flame of a candle the tubing could be 'welded' at any angle required. I then proceeded to cut pieces of tubing 2mm. long at a 60-degree angle and 'welded' them to form the multi-angle joints for the corners of a tetrahedron. At first I burnt one or two pieces as well as my fingers but progressively I got the plastic tubing hot enough to fuse without it getting too hot and losing shape or too cold and not bonding at all.

"I wonder if anyone else has tried this method of fixing spars together. Once the 'art' has been mastered there is no limit to the variety of joints that can be produced to suit different kites." *(Write to the Malta Kitefliers Group at 2, Princess Anne Flats, Ball Street, Paceville, Malta.)* ▽







Design Workshop

The Super Conyne

By Arthur Kurle

When I was a kid, the ultimate kite to build, after having progressed through the usual two- and three-stickers, was the French war kite. Although the complexity daunted many a young builder, those who persevered were always rewarded with a stable, reliable kite that could be launched from the hand and could be counted on to carry all the string the neighborhood could muster.

It wasn't until many years later that I realized that the war kite was a variation of a design patented by Silas Conyne around the turn of the century. Silas's kite differed from the war kite by being completely collapsible; the wing stick was removable and there was no rigid connection between the upper and lower longitudinal sticks. Both versions are still popular today, but I seldom run into the French war kite name anymore; it is usually "rigid Conyne" or "standard Conyne" and rightly so. Hence, Super Conyne.

I did some experimenting with the rigid version around 1970 with a view to maximizing performance. I found that adding a supplemental wing made this good kite a great kite. Stability was unaffected, but string angle and climbing speed were greatly improved.

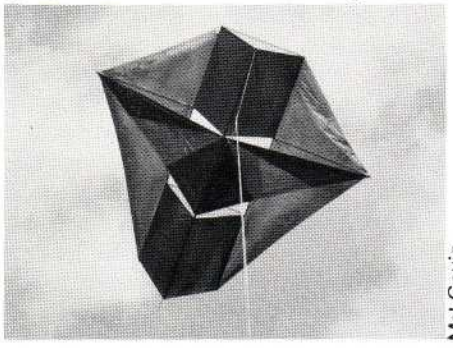
Although I still don't fully understand the aerodynamics involved, something like this happens: The lower wing causes a slot or Venturi effect between the two wings which gives the lower wing lift way out of proportion to its size. There is a pronounced low pressure region between the wings; the covering on the triangular cells bulges outward, rather than inward, as is usual in the standard Conyne. I suspect that air flow around the upper wing is augmented in some way; at least the upper wing seems never to stall. This latter characteristic (not stalling) gives the kite a phenomenal rate of climb. I have seen climbs so fast with this kite that it coasts through the zenith just from the momentum built up during the climb.

I built a contest version of this kite which won the "Best Use of Aerodynamic Principles" award in the Smithsonian Kite Carnival. I still have this kite; it's a bit seedy from about 25 hours in the air, but it still flies just as well as it did then.

I would like to propose this design as a fiducial or standard kite by which to judge two categories of kite performance: line angle and rate of climb. Both of these categories are a measure of aerodynamic efficiency. Any subjective judging factors can be cancelled out by two (or more) kites flown side by side in the same air. Complicated scoring systems and measurement techniques can be dispensed with; in a side-by-side contest, the winner is immediately obvious. This type of elimination competition would be interesting to spectators too, something like a tennis tournament. I am not suggesting that we do away with conventional scoring systems, but it seems that kite festivals have a tendency to degenerate into beauty contests, with minimal recognition being given to flight performance. Let's put the innovators, the tinkerers, the flight technicians back in the ball game.

Ken Akin

Right, Art Kurle under his Super Conyne—directly under it. Below, the kite itself, its paint job a bit flaked from hours of flight. Note that the triangular pattern of paint on the lower, supplemental plane gives it an eye-fooling three-dimensional photographed appearance. Spray painting or use of colored Mylar adds to visual appeal. Art says the kite's construction is conventional but a bit time-consuming.



Mel Govig

MATERIALS

- Sticks (20) are 5/32" square spruce, sugar pine or hard balsa. The small wing braces can be considerably smaller. Dowels or any sort of take-apart construction are not recommended.
- String for outlining the upper wing and the trailing edge of the lower wing should be 12- or 15-lb. braided nylon; do not use monofilament. I use a glue gun for assembly* but standard gluing and assembly techniques will work well. Exact symmetry is very important; use a square and tape to keep things straight and true as you work.
- Covering is ½-mil Mylar®. I do not recommend cloth or any porous material for covering; performance will be compromised. If you can't find ½-mil Mylar, heavy kitchen plastic (freezer wrap) may be used, but it may give you some shrinking and/or stretching problems.
- For adhesive to apply the covering, I use Goodyear Pliobond®. It's somewhat messy but very effective. When your fingers start sticking together, clean up with lacquer thinner.

*Arthur Kurle, "The Glue Gun," *Kite Lines*, Spring 1977, pg. 31.

CONSTRUCTION TIPS

When applying the wing covering, do not pull the outline string in more than half an inch. The upper wing covering should be loose enough that it hangs down about 1½ inches when the kite is inverted. The upper wing covering passes over the top of the cross stick and is not glued to it.

The bridle should be made of 30- or 40-lb. test braided nylon line; this weight will minimize tangling. Adjust the three-part bridle carefully so that each part carries its share of the load; otherwise, the frame will bend in flight. Do not use a two-leg bridle.

FLYING

This kite will not fly in light winds; it needs 4½ knots. With 8 to 10 knots, it will outfly anything in sight. You can get slightly better low-end performance by lengthening the cross stick to 42 inches. Lengths more than this may invite instability. The finished kite should weigh about 4½ ounces.

One last thing: this kite is a pain in the neck to fly—literally. It's because of the high line angle, but for kitefliers that's a nice kind of pain. ◇

Classifieds

Services and products are listed as a service and listing does not imply endorsement by KITE LINES. Publisher reserves the right to reject any ad not in keeping with publication's standards, and to abbreviate to save space. RATES: 20¢ per word, $2.00 minimum. Post office box numbers and telephone numbers count as two words, abbreviations and zip codes as one word. Wholesalers and manufacturers may advertise in Classifieds only at the special rate of $3.00 per line of running copy, $10.00 minimum (individual and mail order businesses not included). Classifieds cannot be billed; check or money order, payable to KITE LINES, must accompany copy and be received prior to closing date (as given on masthead, pg. 4). Send to KITE LINES, 7106 Campfield Rd., Baltimore, MD 21207, USA.

ANNOUNCEMENTS

LIFETIME SUBSCRIPTIONS to KITE LINES have been closed for an indefinite time period. We plan to publish the list of Lifetime Subscribers in KITE LINES occasionally (at least once a year), but we have decided that most of the time we will use that space for the kiting news which our readers crave.

WANTED

CLIPPINGS: News and articles of kite interest are actively sought by KITE LINES. First person to send an original with name and date of source will receive a small reward. Duplicates will be returned if sender supplies self-addressed stamped envelope. Mail to KITE LINES, 7106 Campfield Rd., Baltimore, MD 21207, USA.

FOR SALE—MISCELLANEOUS

Fourteen easy-to-build-and-fly kites in BLOWN SKY-HIGH, book by Margaret Greger, $5.50 by mail. Also, MORE SIMPLE KITES, $2.00. Both for $7.00. 1425 Marshall, Richland, WA 99352.

Flying cylinder, building plans $1.50. Rotating kite, building plans $1.50. Build with household materials. Send choice and check to: CEEJ INC., Box 283, Blackwood, NJ 08012. Manufacturers inquiries invited.

BACK ISSUES OF KITE TALES. All that are left—Five volumes last published. $2.50 ea. or 5 for $10.00, postpaid. Write Bob Ingraham Deltas, 315 N. Bayard St., Silver City, NM 88061.

WHOLESALERS, MANUFACTURERS AND MAIL ORDER BUSINESSES

NEW KITES—prize-winning, self-launching. Also reels. Write for catalog. W. O. Weathers & Sons, 17707 S.E. Howard St., Milwaukie, OR 97222.

8-COLOR RAINBOW ACETATE SATIN FISH windsocks with 15" silver Mylar® tails. E. Reagan, 116 Pennsylvania Ave., San Diego, CA 92103.

Swap Shop

A KITE LINES service to kiters. Space is free but subject to editing to save space and limited to a half-column overall. Items are accepted first-come-first-served.

Gotta dull kite on your hands? I'm an artist-illustrator and I'll decorate it! Send me 2 kites: I'll keep one and return the other to you, decorated to your specifications (as near's I can!) or—if you don't specify—I'll surprise you! Cathy Pasquale, 115 N. Beechwood Ave., Catonsville, MD 21228.

Will swap GIBSON GIRL hand-cranked radio transmitter for . . . ? Stormy Weathers, 17707 S.E. Howard St., Milwaukie, OR 97222.

I wish to exchange kites in the $1-$20 range with ANYONE ANYWHERE in the world. I will send you a $5 kite and get one back—or you may send me a $10 one and you will get one back. Logan Fow, P.O. Box 6042, Hamilton, New Zealand.

uicksilver™

We're quietly selling more Mylar® kites every day.

When you have an excellent product at a fair price, and dedicated people who make and market that product, you don't have to shout about it: the word gets around. And it has.

For years we've quietly been going about the business of serving kite dealers and enthusiasts in a manner they appreciate. We have a reputation for designing and producing kites of exceptional quality, and for giving our customers the respect, attention and service they deserve.

That's why we're quietly selling more Mylar® kites every day.

QUICKSILVER KITES

The Mylar® kite specialists.

701 Shrader Street
San Francisco, CA 94117
(415) 386-4820

Manufacturers, distributors and importers of the world's most desirable kites. Write or call for our free color catalogue.

go fly a kite,®
Box AA, E. Haddam, CT 06423
Call (800) 243-3370
In Conn. 873-8675