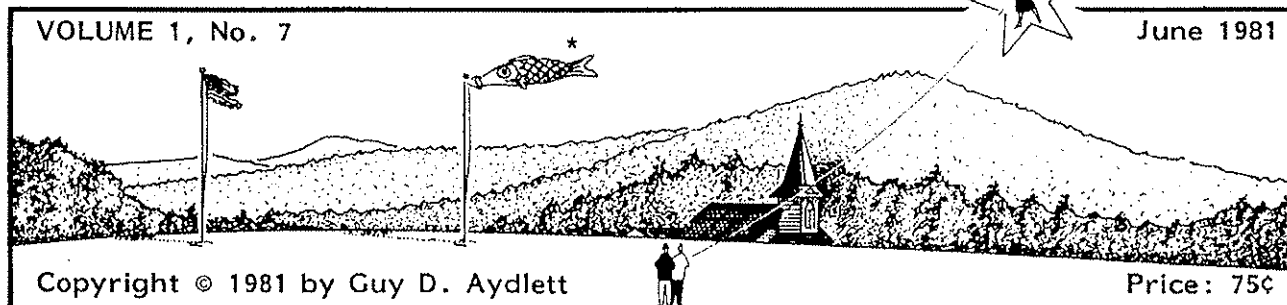


# PINEY MOUNTAIN AIR FORCE

## DATA © LETTER



Dear Kiteflier:

\*Giant carp from KITE KINGDOM, Kill Devil Hills, NC 27948

PRINTED IN U.S.A.

PMAF DATA-LETTER operates each month in two-digit deficit; we lack great numbers of subscribers, but those whom we do have are of prime quality. Our small case of file-cards reads like The Kitefliers Hall of Fame. It is a winery experience to receive letters and comments from persons whose accomplishments in kiterly are legion and nearly legendary. About the worst comment we have received is one from New Zealand that deplores our sponsorship of the Hornbeam Sled-Kite, Mark I. The writer damned Hornbeam with faint praise; then, he proceeded to petard—torpedo—his argument by admitting he had not yet tried the kite. . . . But we welcome all letters. OUR SPECIAL THANKS go to these friends: CHARLES A. SOTICH of Chicago, who sent us valuable information about ultra-light, man-carrying canard aircraft [*more material from others would be most welcome*]; Gunnery Sgt. DONALD E. AYDLETT, USMC (Ret.), who allowed us to borrow from his Portsmouth Virginia shelves of Experimental Aircraft Association (EAA) technical lore; ROBERT T. ESKRIDGE of Miami, who promises to spring forth with a compound-curved sled as his candidate Hornbeast-Beater; LELAND TOY, editor of *Kite Flyer*, San Francisco Bay Area Kite Flying News [*Lee sent us a postcard from Hawaii: a card*

*that flaunts titillating compound curves*]; MORGAN GATES YEATES, for the sundial and kite news that he clipped from Phoenix and Sun City papers; WILLIAM F. FOSHAG, who alerted us to *Horizontal-Axis Rotating Wing Aeronautical Systems (HARWAS)*, a voluminous Defense Technical Information Center publication authored by himself and GABRIEL D. BOEHLER; JOHN F. VAN GILDER, The Flying Dutchman of Seattle, who sent us the plans for CARL BREWER'S gem, *Pinky's Floater*, the airplane kite that set an indoor world-record for duration aloft; LEONARD CONOVER, for providing two intact ROTAPLANES for the PMAF archives; CLIVE RAWLINSON of the Essex Kite Group (England), who sent us the interesting publication, *KITE WINGS*. And we are grateful for the supportive letters we have received from: JOHN DOUGLAS FORBES, VALERIE GOVIG, MINNIE SOWERS, PAT HAMMOND, WAYNE BATTELLE, MARGARET GREGER, ARCHER M. NICKERSON JR., ALEX G. DUNTON JR., OSCAR BAILEY, PERRY FITZHUGH, HANK SZERLAG, WALTER M. LEUZINGER, C. HADLEY WHEELER, GARY J. HINZE, WAYNE J. BALDWIN, ROBERT H. NELSON, THOMAS D. GREEN, STEPHEN B. BLODGETT, WARREN O. WEATHERS, JESSE C. DONALDSON, and FRANK ZAIC --for good letters and for excellent advice.

\*

GOOD KITE PLANS—If you earnestly want a stack of good ones, be sure to subscribe to: Henry E. Szerlag's *5/20 KITE GROUP NEWS*, 1961 Hunt Club Drive, Grosse Pointe Woods, MI 48236; and to: John F. Van Gilder's *WKA NEWSLETTER*, c/o the Pacific Science Center, 200 Second Avenue North, Seattle, WA 98109. Both well-edited newsletters appear about six times a year for \$5.00. And do not forget Valerie Govig's classic *KITE LINES*, the unsurpassed kite quarterly: \$9.00 per year; 7106 Campfield Road, Baltimore, MD 21207.

## ANOTHER STAR IN THE WELKIN

WARREN O. "STORMY" WEATHERS has sent us a 48" sample of his *STAR VICTORY*<sup>TM</sup>, an excellent flyer that is said to be a derivation of the Allison Flexible Kite (often mis-named "sled"). Beauforce Stringfellow is of the opinion that the kite was spawned in a woodpile (it has seven sticks; eight, if both halves of the main spar are added), but Beau graciously concedes that hazardous the firewood supply is justified when a good kite design emerges from the chips.

Regarding his patented designs (or patents applied for), Stormy writes: ". . . I have no objection to individuals copying the

designs for their own use. They will copy anyway, so I might as well make the plans and instructions available so they wind up with a good kite instead of something that brings discredit to my kites." An interesting philosophy, that. . . Among other things, a holder of a valid invention-patent is granted the right to ". . . exclude others from making. . . his invention." Heed this caveat: If you want to produce any of Stormy's kites for sale, you'd best consult with W.O. Weathers & Sons, 17707 S.E. Howard Street, Milwaukie, OR 97222. Some patent-drawing views are displayed below:

PATENT APPLIED FOR  
(Continuation-In-Part of:  
No. 4,282,866; 11 April 1981)

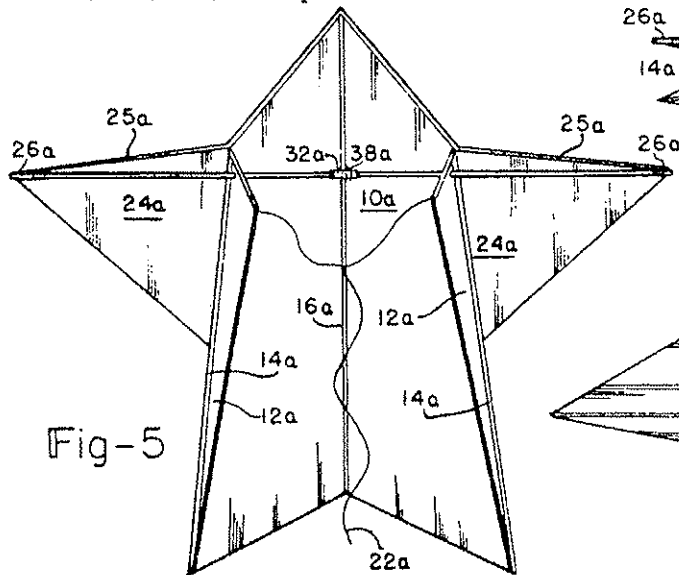


Fig-4

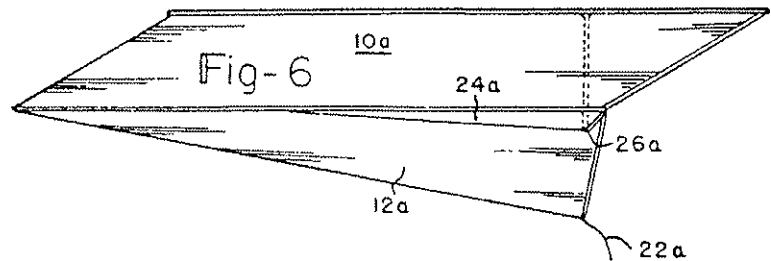
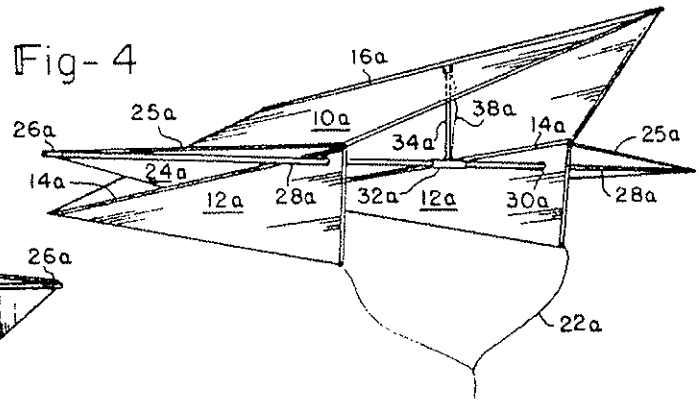


Fig-5

### NOTES FOR THE BUILDER / FLIER:

**THE CONSTRUCTION PLAN** on page 3 provides ample detail for a skilled kitemaker to make *STAR VICTORY*<sup>TM</sup>. Stormy's basic dimensions for a 48" kite were used to calculate missing values rather than to measure them on the sample kite. Rounding off the decimal dimensions to the nearest 1/8" should not significantly affect balance or performance, but maintain the decimal dimensions if they are to be multiplied in order to make a larger kite.

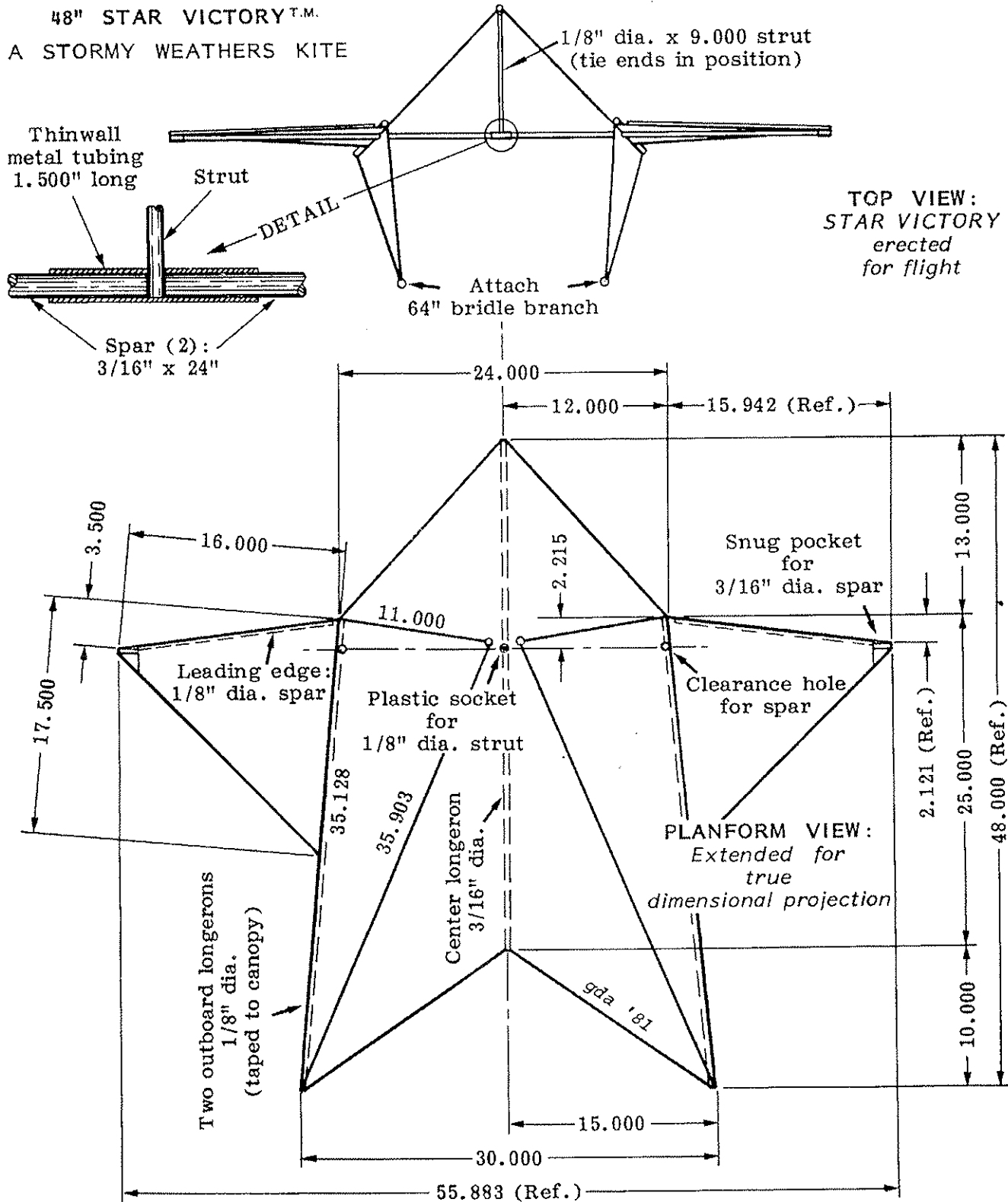
**WIND VELOCITY ADJUSTMENT** can be obtained by changing the bridle-branch lengths: short bridle = low bridle point; long bridle = high bridle point. (If you build a cranky kite, making the bridle branches slightly unequal in length will correct for lists to port or starboard; but the inequality will have to vary with changes in wind velocity.)

**REINFORCE** the spar-clearance holes or other stress points with glass-fiber strapping tape.

**FLIGHT INSURANCE:** At the strut junction, tie one end of a length of line around the center longeron; tension the line parallel to the strut and tie its other end around the main spar. Tape the line to the center of the strut; then it won't be lost in transport.

**AREA**, to calculate; Multiply 0.40072 by the square of the kite height ( $S = 0.40072 \times H^2$ ).

48" STAR VICTORY™.  
A STORMY WEATHERS KITE



MATERIALS: 2-mil polyethylene, 1" masking tape, 1/2" glass-fiber tape, 1/8" & 3/16" birch dowels, 3/16" I.D. metal tubing, and 1/8" & 3/16" plastic soda straws

Weight = 3.76 ounces      Effective Area (S) = 6.41 ft.<sup>2</sup>      Area Load = 0.59 oz./ft.<sup>2</sup>  
Aspect Ratio (R) = 2.50

## REYNOLDS NUMBER

by Gama del Talfa

Did you ever make a miniature replica of a large, successful kite and discover that the little craft was an abominably evil performer? Aside from the obvious facts that one cannot always successfully scale down canopy thicknesses, textures, flexibilities, and the sizes of flying lines, what else could have been wrong with the replica? The hydraulics engineer or the aerodynamics scholar might tell you that the two craft behaved differently because they didn't have equal *Reynolds numbers*. What in Tophet is Reynolds number?

REYNOLDS NUMBER is not a nightmare created by mad aerodynamaticks bent on scaring kiteflying bums and philistines into humble slumps of ignorant jelly; learned folk of evil dispositions can evoke a vast, harbored store of far more exquisite tortures and mind= snares that they can afflict upon lay-fliers, newsletter editors, and kite-book compilers whose puffery overflies their honest knowledge. What in Tophet is Reynolds number?

REYNOLDS NUMBER is a convenience; a *similarity criterion* that makes it possible for an experimenter to make a small-size model and from it to determine very nearly the future aerodynamic qualities of a much larger, more expensive, geometrically similar aircraft. Reynolds number is a dimensionless number that is derived from the physical size of an object, the density and viscosity of its fluid environment, and the velocity of that fluid relative to that object:

$$Re = \frac{Vl\rho}{\mu}$$

where

- Re = Reynolds number
- V = Velocity of the fluid
- l = A linear dimension of the object  
(usually its mean chord,  $c_m$ )
- $\rho$  = Density of the fluid
- $\mu$  = Viscosity coefficient of the fluid

Because the engineer and the scholar mentioned above tell us that Reynolds numbers for the small and the large kite must be equal if they are to have similar airflow characteristics, we can say:

$$Re_s = Re_l$$

where

- $Re_s$  = Reynolds number for the small kite
- $Re_l$  = Reynolds number for the large kite

But since both kites are expected to fly in the same kind of air, we may drop out the the density and viscosity values for air, and all that is left to tamper with are linear dimensions and air velocity. Then, if a typical chord of the small kite is equal to one-fifth of a typical chord of the larger, similar kite, this equation must prevail:

$$5 V_s c_s = V_l c_l$$

where

- $V_s$  = Wind velocity against the small kite
- $V_l$  = Wind velocity against the large kite
- $c_s$  = A typical chord of the small kite
- $c_l$  = A typical chord of the large kite

Therefore, the small kite must have a wind velocity five times as great if it is to have the same kind of airflow as its big brother. Note that this similarity criterion deals with *airflow patterns only*; it does not define the wind velocity necessary for the kite to fly.

(To be continued in the July DATA-LETTER)

PINEY MOUNTAIN AIR FORCE DATA-LETTER  
By First Class Mail in the U.S.A.: \$7.50 per year, or 75¢ per copy  
Send check or money order (no cash) to:  
Guy D. Aydlett Post Office Box 7304 Charlottesville, VA 22908