

PINEY MOUNTAIN AIR FORCE

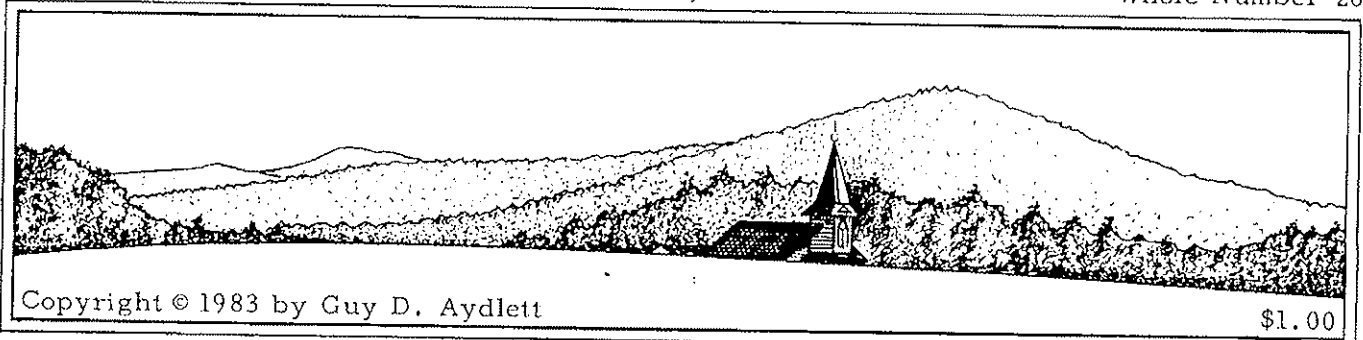
Box 7304 * Charlottesville * Virginia * 22906-7304

DATA ☆ LETTER

VOLUME III, No. 1

January 1983

Whole Number 26



LITHO IN U.S.A.

JANUARY, The First Month, introduces the New Year; reminds Beauforce Stringfellow, The Most Curmudgeonly Troll of Hornbeam Hall, that *Methuselah*, the 4th day, confronts him with a 68th birthday and an unprideful sense that 61 years squandered on designing, making, and flying kites have produced more slippery questions than abiding answers. The Sin of Pride abides, though. . . .

Decades of sinning, sinning that even included the making of graven images, wilt in Beau's memory when he pridefully recalls the rare case of childhood smarts that kept him from emulating the perilous act of the genius of history—another rash Capricornian—who flew his kite in a muscular electrical storm whilst messing about with a Leyden jar under an iron key murderously dangling from a wet kiteline eagerly bristling with fat electrons.

January 17 is Kiteflier Benjamin Franklin's birthday and the second anniversary of the spawning of G*D*V*K*S and *Tight Lines*. We are willing to forgive Ben his folly if our fellow fliers will join us in holding good thoughts for That New Jersey Troll and his Minions.

FULL MOON on the 28th—use its light with decorum. [N.B.: there will be no full moon in any month of 1983 earlier than the 19th day.]

THE WINDPLAY CATALOG, by Grant Syllas Raddon, transcends mere price lists of items for sale: it contains a store of philosophy and valuable kite hints. Send \$2.00 (refundable): Windplay, 232 SW Ankeny, Portland, OR 97204.

ULTRALIGHT AIRPLANES, real mass-haulers, can put you up where the kites can't go—if the wind gives out—but they are not everybody's dish of tea. Each flier must decide for himself; learn all he can dredge up about the fascinating low-speed, high-performance bits of tubing, cloth, and engine tenuously hovering over a bucket seat—usually little more than a lawn chair—in which the adventurous pilot-occupant is belted.

If you think you'd enjoy temporarily leaving grounded kites for a sky adventure of your own, you might care to seek wisdom and ultralight lore from *Glider Rider*, a monthly tabloid newspaper of about 90 pages; \$9.00 a year from: *Glider Rider*, Box 6009, Chattanooga, TN 37401. (Tell 'em PMAF sent you.)

ULTRALIGHT PILOT, published by Aircraft Owners & Pilots Association (AOPA), is a new, bi-monthly magazine especially published for the AOPA Ultralight Division. You must be an airplane owner or solo pilot to qualify for a one-year membership and magazine subscription. Send \$29.00 to: AOPA, 7315 Wisconsin Avenue, Bethesda, Maryland 20814.

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FRAME-WEIGHT ANALYSES OF SOME REGULAR POLYGON SHAPES OF EQUAL AREA

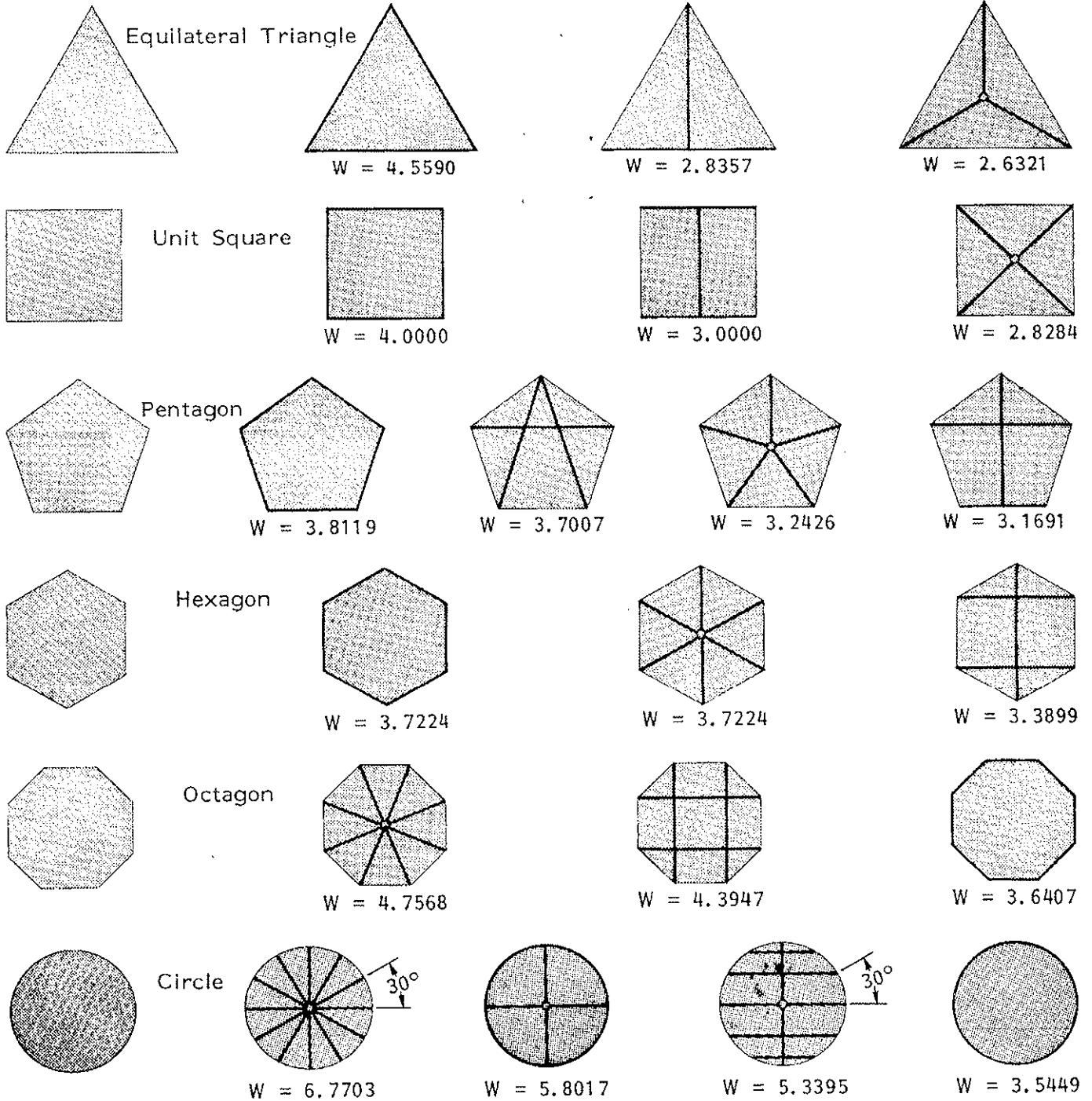
by G. Ompter and Cal Q. Layer

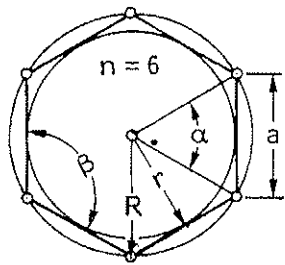
MINIMUM WEIGHT per unit of area is vital for any kite that is intended to be flown in low density, low velocity air.

All figures shown below are equal in area to a reference square that has an arbitrary unit-area and arbitrary unit-sides that, if

perimeter-framed, weigh four weight-units.

The tint-forms in the left column represent frameless covers of negligible weight. The other forms, shown with framing represented by solid lines, are arranged in their orders of descending weights; may contain surprises.

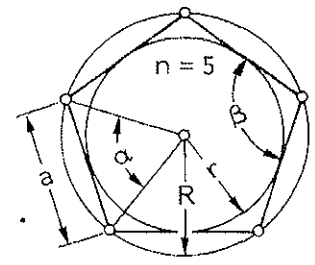




PLUMB THE VITALS OF REGULAR POLYGONS

—A Table of Constants by Leigh M. Aut —

THE KITE DESIGNER and builder whose kites perform consistently well in both light and heavy winds watches weights, areas, and the symmetry of his layouts. This table may help.



Regular Polygon	No. Sides	Angle α	Angle β	Side a	Radius r	Radius R	Area S
Triangle	3	120°	60°	$3.4641 \times r$ $1.7321 \times R$	$0.2887 \times a$	$0.5774 \times a$	$0.4330 \times a^2$ $5.1692 \times r^2$ $1.2990 \times R^2$
Square	4	90	90	$2.0000 \times r$ $1.4142 \times R$	$0.5000 \times a$	$0.7071 \times a$	$1.0000 \times a^2$ $4.0000 \times r^2$ $2.0000 \times R^2$
Pentagon	5	72	108	$1.4351 \times r$ $1.1756 \times R$	$0.6882 \times a$	$0.8507 \times a$	$1.7205 \times a^2$ $3.6327 \times r^2$ $2.3776 \times R^2$
Hexagon	6	60	120	$1.1547 \times r$ $1.0000 \times R$	$0.8660 \times a$	$1.0000 \times a$	$2.5981 \times a^2$ $3.4641 \times r^2$ $2.5981 \times R^2$
Heptagon	7	51.4286	128.5714	$0.9631 \times r$ $0.8678 \times R$	$1.0383 \times a$	$1.1524 \times a$	$3.6339 \times a^2$ $3.3710 \times r^2$ $2.7364 \times R^2$
Octagon	8	45	135	$0.8284 \times r$ $0.7654 \times R$	$1.2071 \times a$	$1.3066 \times a$	$4.8284 \times a^2$ $3.3137 \times r^2$ $2.8284 \times R^2$
Nonagon	9	40	140	$0.7219 \times r$ $0.6840 \times R$	$1.3737 \times a$	$1.4619 \times a$	$6.1818 \times a^2$ $3.2757 \times r^2$ $2.8925 \times R^2$
n-agon	n	$360^\circ/n$	$180^\circ \times (n-2)/n$	$2r \times \tan \frac{1}{2}\alpha$ $2R \times \sin \frac{1}{2}\alpha$	$\frac{1}{2}a \times \cot \frac{1}{2}\alpha$	$\frac{1}{2}a \times \csc \frac{1}{2}\alpha$	$\frac{1}{2}na^2 \times \cot \frac{1}{2}\alpha$ $nr^2 \times \tan \frac{1}{2}\alpha$ $\frac{1}{2}nR^2 \times \sin \alpha$

(Select a value for S (area), a, r, or R; then use the constants in your calculator)

*

JANUARY HOMEWORK: Put a keel on your Eddy; replace the bow-spar with a short spreader.

* HOW TO EXTEND YOUR DATA LETTER SUBSCRIPTION TWO MONTHS *

SPONSOR A NEW SUBSCRIBER during the month of January, and Piney Mountain Air Force will extend your present subscription by two full months; sponsor two, and guess what? (Limit: ten sponsorships per active subscriber—We're greedy, but don't care to wear out the lithograph presses.)

YOUR METHODS OF PERSUASION will have to vary according to the character and the physical strength of each kiteflier you plan to delight with an introduction to PMAF and DATA LETTER. Surely, you would not offer bodily harm to a belligerent kiteflier whose ample thews and cat-like grace exceed your own; but you could safely lay a gift subscription on him/her (the person) and enjoy a year's worth of gratitude from her/him.

If you are too poor or too tight to be a big time spender, just employ copious flattery, cajolery, or hypnotism to snare subscribers.

JUST ADD YOUR NAME and the word "sponsor" on the new-subscriber application form and mail it, or a reasonable facsimile of it, to: Piney Mountain Air Force, Box 7304, Charlottesville, Virginia 22906-7304. If you need extra subscription forms, just ask us.

*

DATA LETTER DATA

12 issues by first class mail in North America: \$8.50; back issues, \$1.00 each, net. Overseas subscriptions by airmail are \$12.50; back issues, \$1.50 each, net. ALL DRAFTS MUST BE IN UNITED STATES DOLLARS.

HOD TAYLOR, Doyen of AKA kitefliers, says: "That red arrow tells me it is time for renewals. Can't take a chance of missing a single copy, so find enclosed my subscription and for a couple of my kiteflying friends.

"We all realize that it is rough on you to have to get out the *Data Letter* on the first of each month, but it means so much to so many of us that we hope that you can keep up the good work for many more years to come.

"I was glad to see Bruwer [van Graan] sharing his kite know-how with the rest of us. A very talented chap with a world of experience on so many different types of kites.

"Always good winds. . . .—Hod Taylor."

*

BRUWER VAN GRAAN, Pretoria, South Africa writes: ". . . I am glad you could use my letter in the November issue of D.L. Hod Taylor sent me some of Walter Scott's Tyvek®. This has been put to good use.

"Whilst visiting Hod Taylor in. . . Florida, we met Jane Scott. What a grand lady she is! Since then (1977) my wife has been corresponding with Jane.

"On Sunday [7 November] I made a Hornbeam Mark I with Scotty's Tyvek®. It turned out to be a good day for flying; lots of thermals around with a light variable wind. After 30 minutes of flying I pulled Hornbeam Mark I down, rolled up my sleeves, and did some serious digging in my kite archives.

"After lots of dust and repairs, I had a dozen Sled variations and I was ready to do some comparing. HB Mk I was let out on 500 ft. of line and tied to a fence. The others followed, and after a couple of hours of flying I must admit you have a real winner. A very steady flyer, it has very good recovery characteristics. Sudden gusts and changes in wind

direction can cause it to dive, but it does a very small circle only and is stable again. The [others] went into power dives, leaned left or right, or just flopped; but HB Mk I just kept on going. At one time, I let out 1,000 ft. of line and sometimes [Mark I] was just on overhead—riding a thermal.

"Seems the semi-circle on the nose plus larger keels have done the trick. Strangely, my next best performer was a small 18-inch unvented Sled made out of a very light plastic. Sleds seem to be picky when it comes to covering—my experience shows a very light thin plastic or Tyvek® to be best. The normal polythene sheet appears to be a no-no. I intend making some new versions of the old tatty sleds and doing some more comparisons. —Then on to Hornbeam Monospar. . . ."

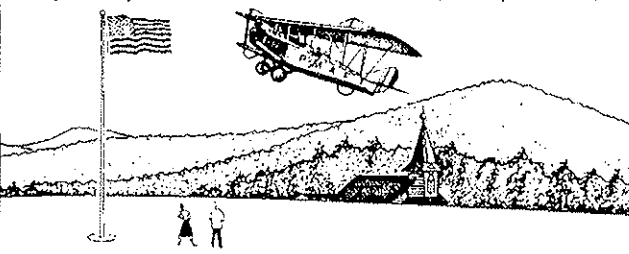
[Editorial Note: Bruwer's letter of the 9th of November, excerpted above, contains much more interesting material that will be quoted in DL #27. Hod is right: Bruwer is talented!]

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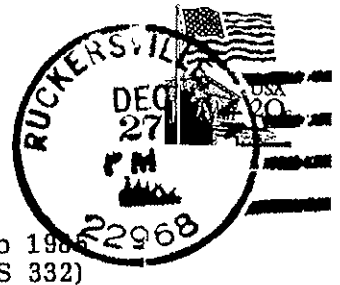
DERREY AIRRE, of Naugatuck, Connecticut says: ". . . I confess you have me scairt as you pay out money to test-fly ultralight contraptions and git kilt when you could stay in yer ain Haul and die peacefully unless an irate flier-subscriber ketches up with you.

"THE WINDANCE SOCIETY FLYER gave ol' PMAF (that's FAMP spelled backwards) a meritorious third of a page. You could see admiration for PMAF all-1-1 the way through several paragraphs—even including hornbeam clockwork. Perhaps Windancers have seen PMAF horo efforts—or know about them, at least. Says you make the effort only as an eleemosynary altruism and are good at spelling. So say we all. . . Lang may yer lum reek and yer heart beat. Fly along the ground. . . ."

PINEY * MOUNTAIN * AIR * FORCE DATA LETTER
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