



## KAPing in old gaul

by ULRICH MONSEES, Stade, Germany

I've got it!

History has got to be rewritten. I've just found the Gaulish village of Asterix and his friends. It's situated in Northern Germany. The nearest village is Balje-Hörne northwest of Hamburg near Cuxhaven.

On the last of May they opened their tiny little village to the public guided by 10 to 12-year-old pupils, their teachers and some inhabitants of Balje.

It was a nice, warm sunny day with just enough wind to keep the camera in the air for most of the time.

A lot of people took the chance to watch Getafix (Miraculix) brewing his

magic potions. Listening to Cacophonix (Troubadix) and his harp was a bit nerve-racking but other guest bards gave us a fine impression of the ancient music.

You could eat bread, drink "met" (meade, i.e., honey wine) or taste smoked fish. Some young Gauls—or Teutonic?—were weaving or making spoons and bowls. Others were producing long ropes and lines. Did they use them for kites, too?!

After a long day, Gateafix closed the village for the public again. Maybe we can have another look at their way of life in a few months or during the EXPO 2000 where they hope to take part.

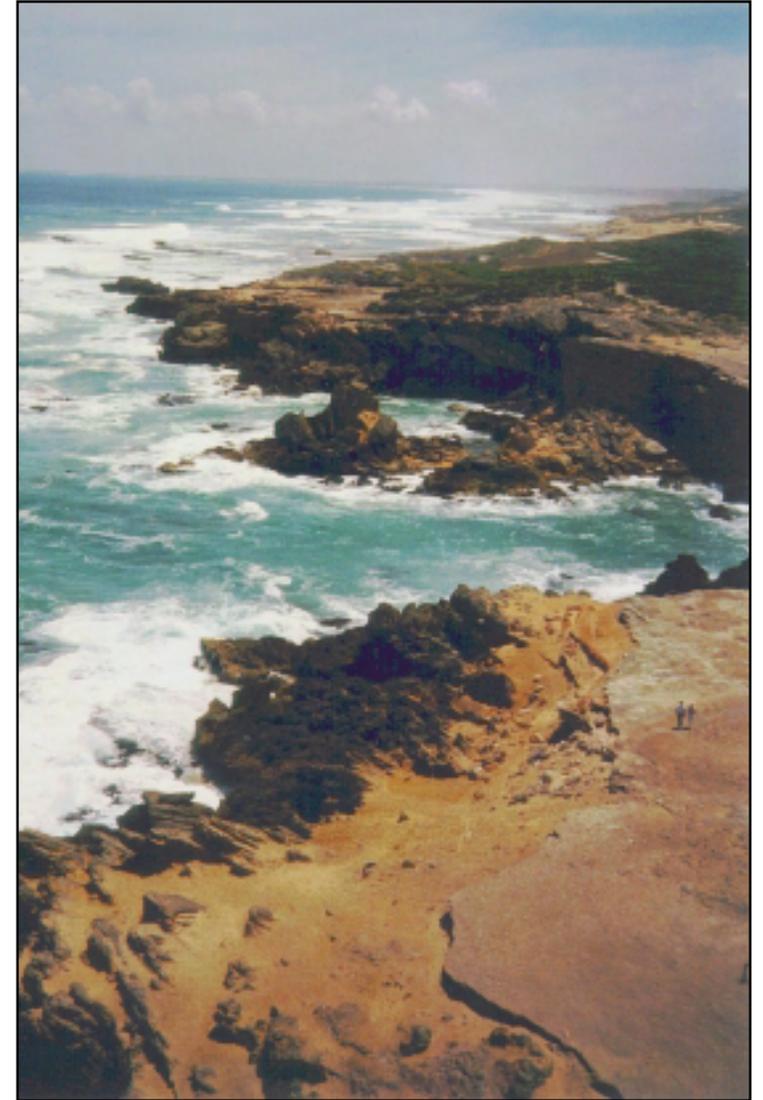


# the aerial eye

a quarterly publication of the aerial photography committee  
of the American Kitefliers Association  
volume 3 / number 4 / fall 1997

US\$4.00  
USA & CANADA

US\$5.50  
overseas



*Thunderpoint,  
Warnambool,  
Australia*

by

*Arthur &  
Adele Coombs*

## GADGETS & GIMMICKS

## the aerial eye

This newsletter is produced by the Aerial Photography Committee of the American Kitefliers Association. It is our goal to publish quarterly, in August, November, February, and May.

Single copies and subscriptions (including back issues) are available to AKA members and non-members alike, under the following fee schedule:

	single	4 issues
AKA	\$3.00	\$10.00
overseas	\$4.50	\$16.00
Non-AKA	\$4.00	\$15.00
overseas	\$5.50	\$21.00

Domestic subscriptions will be mailed by first class mail; overseas subscriptions (i.e., outside North America) will be mailed by air.

Advertising is available in modules of 2.25 inches wide by 1.25 inches high, at \$20.00 per module, payable in advance. Advertising in which aggressively competitive pricing is featured will not be accepted; call if you have questions or need more info. Camera-ready copy is not necessary, but is acceptable if it meets the above criteria. Copy deadline is the first of the month of publication. Contact Brooks Leffler.

### american kitefliers association aerial photography committee

Steve Eisenhauer, Chair  
229 Lake Ave, Pitman, NJ 08071  
(609) 589-2049 Fax (609) 785-1766  
ELXG19A@prodigy.com

Wolfgang Bieck  
Am Britzenberg 23  
29549 Bad Bevensen, Germany  
(+49) 5821 24 43  
WBieck@t-online.de

## y'all come back

This issue is being mailed to over 230 subscribers in 19 countries—two new KAPers in Indonesia are among the latest to come on board. But the subscriptions of no less than 80 of you will expire with this issue, and we hope you'll renew as most other readers have done, especially now that we've finally transcended desktop print quality. Renew & contribute!

Text via Email or on 3.5" (9cm) high-density disk (Mac or IBM in ASCII text format) is preferred, but typed text or handwritten letters are welcome too. Likewise, diagrams in PICT, GIF, or TIFF formats are best, but pen drawings, preferably on white paper, will work as well.

Photos may be sent as negatives, prints or slides, or by email attachments in JPEG, TIFF, or GIF formats. We can also read Kodak PhotoCD, or 3.5" high-density disks in the formats listed above. We'll keep the prints unless you direct otherwise, but return all negatives, disks, CDs, and slides—eventually.

Send everything to Brooks Leffler at the address below.

Brooks Leffler, Editor  
PO Box 34, Pacific Grove, CA 93950  
(408) 647-8363 Fax (408) 647-8483  
kyteman@aol.com

Craig Wilson  
7210 Harvest Hill Road  
Madison, WI 53717  
(608) 831-6770  
kitecam@juno.com

## say "cheese," please

by STEVE EISENHAUER

For years I avoided KAP self portraits. My goal was to get technically-correct, well-composed photographs. In my collection of thousands of slides, only a small percentage include me, and most of these are accidents.

In retrospect, I've taken everything too seriously. Self portraits (defined as any photograph that includes the kite aerial photographer) are fun. Even if the photographer is only a barely-visible figure at the corner of a photograph, this qualifies as a self portrait; although arguably the tiny figure is more a signature than a portrait.

In the past year, I've tried to get a couple self portraits with each roll of film. From an elevation or distance of 100 to 500 feet, I even look quite handsome; my

self portraits are invariably signature-size.

I hesitate to admit how many photographs show me flying from a canoe: my favorite launching platform, or from the back of my pickup truck: my second favorite platform. I'm hoping no one tries to psychoanalyze why I feel so comfortable flying from these tidy but confining spaces.

If you have an aerial self portrait that you really like, I challenge you to enter it in the FIRST ANNUAL **aerial eye** SELF PORTRAIT CONTEST.

The top three photographs will become part of **the aerial eye's** travelling display, which has been to Europe twice and to several locations in the U.S. and

*Continued on page 31*

## about the cover

Thunderpoint, Warnambool, Australia, by Arthur & Adele Coombs. Arthur describes the scene:

Warnambool is situated in the state of Victoria, on the southern coast. It's a very rocky coastline which has claimed many shipwrecks from the mid-1800s. This view looks west towards Port Fairy and Portland.

On this particular day (9 January 1997) there was a very large swell running. Various beaches were closed due to the

dangerous seas. The wind was a relatively gentle southerly which kept the 4.7m (15ft) delta plus drogue flying very smoothly.

This was my first attempt at vertical format. My wife Adele operated the 2-channel radio control unit to rotate the rig, suspended on a Picavet mounting, and to fire the shutter. The angle of inclination was manually set at 10° before launching. Height approximately 200 ft (60m) above the cliffs.

Fuji 400 ISO film was used in a Ricoh FF7 Shotmaster camera.

# stereo kiteflying

by DAVID SCHENKEN, 8606 Ardelia Ave, St. Louis, Missouri 63114

I have been involved with stereo photography for over three years. My mainstay has been a pair of Pentax K1000 cameras. These cameras have made several thousand exposures with only operator error as the source of trouble.

The synchronization of the shutters was accomplished by building an adapter that held two cable releases in such close proximity that near simultaneous tripping was easily accomplished. The ordinary flash synch speed dropped from 1/60th to 1/15th. Flash synch is done using relays to prevent the electrocution of the user.

Of late the camera of choice is the Pentax ZX-5. I use relays to trip the electronic releases, but because the bodies are electrically insulated, flash adapters are wired in series. The synch speed drops from 1/100th to 1/60th, however.

## KITES & CAMERAS?

The combination had not really occurred to me. The annual Great Forest Park Kite Festival had re-sparked my



interest in kite flying, but when I went to my first meeting of the Gateway Kite Club and met Randy Bollinger, I had the chance to see the aerial kite photos he had made and was hooked.

This past winter Randy and I went to the Jefferson Expansion Memorial—the St. Louis Arch—for some evening and sunset shots. I got to see how Randy's rig performed and was favorably impressed. He uses a Canon SLR on a radio-controlled pan and tilt rig.

What will I fly? As I am new to this I have obtained a camera set that does not worry me so much. It is a pair of Canon LX cameras. These are point-&-shoot with fixed focus—5 feet to infinity—plenty of range for kite photos. They are linked by relays and fired with a two-stage signal controlled, in turn, by a Ram X TRA control [Ram R/C Models, Inc., 229 E. Rollins Rd, Round Lake Beach, IL 60073. (847) 740-8726].

Apparently the Canon uses some sort of strobe on the various buttons and so the reed relays are needed to electrically isolate the cameras. The picture at left shows the control wires attached to a camera. I'll wire aileron extension connections to the cameras so that extending the baseline is much simpler. I'll probably wire the flash over-ride into the "on" position so that I have visual confirmation of shutter operation.

## THE STEREO WINDOW

The platform I've planned will fix the elevation angle and azimuth of the cameras. I think a wind-stabilized device will be necessary to provide azimuth control when a radio control is used. The moment of inertia of two cameras is much higher than one on-axis camera, and reacting against a pendulum may require too much of a servo. The only decent test will be to fly one.

The kite is a 9-foot delta. In a stiff breeze it should have little trouble lifting the cameras and control.

## FILM CHOICE

Normally I use Elite 100 transparency film from Kodak. It was originally chosen because a print viewer for 4x6 prints was unavailable. I built a simple viewer using drugstore magnifiers held in a matte board holder. Later, I found a product that allows viewing of 4x6 prints; from Dimension Press, PO Flex 83, Harvard, MA 01451-0083. Cost is about \$30.00.

## STEREO BASELINE

It is the separation of the points of view that leads to differing perspectives, that in turn creates the appearance of 3-D. Some argue that duplicating eye separation is the only acceptable spacing. This is in line with those who believe that slides must be viewed using lenses of identical focal length to the taking lens. This seems a bit limiting.

My most-often-used separation is based on the closest horizontal practical spacing of the cameras, and my preference is 28mm focal length lenses.

Actually, only one camera is needed for many subjects, if the temporal shift

that inevitably follows the location shift is acceptable. In fact, for very long stereo base and very short stereo base photography, the use of only one camera is practical. The long base is sometimes made by waiting six months between photos of the stars to produce stellar stereo photos. 186,000,000 miles is pretty far!

## AERIAL IMAGE BASELINE

For the purposes of kite aerial photography the stereo base will be much shorter. For distances of 100 ft or less [30m], about 8-12 inches [20-30cm] will be appropriate. For distances up to 1000 ft [300m], 1-4 feet [40-120 cm] will be more likely.

The only truly important thing is that the views of the cameras not be divergent, particularly in elevation. Parallel is usually OK, and slight toe-in is sometimes a bit better, but only for a particular distance—not easily controlled in kite aerial photography.

In "traditional" stereo aerial photography, the baseline is up to 1/3 of the distance to the object, but this is used for photogrammetry where the exaggerated stereo effect is an aid in making precision height measurements. For personal use, the less exaggerated spacing is sufficient. Making quantitative measurements based on stereophotographs requires the use of rather precise equipment, but qualitative observations are easier made from stereo than non-stereo views.

*Continued on page 26*

## the rebel X—light & very tough

by STEVE EISENHAUER

SPLASH!

For what seemed like forever, but was actually only a second or two, my Canon camera and KAP cradle were submerged in the lake. The wind had suddenly died; my rig dropped quickly and, even though I was cranking in line like a madman, only ten feet in front of me occurred the splashdown.

Since I was standing on a narrow dock (see photo) I could not move forward and could only watch in disbelief as my wet rig rose from the water to my spinning reel.

Quickly drying off the camera and radio-control equipment, I disassembled everything that came apart and repeated the drying process. On opening up the camera back, only a little water dripped out and the exposed film roll was dry. The camera's LCD readout started to short-circuit, but after taking out the batteries, drying them off and reinstalling them, the readout again functioned properly.

The final damage assessment included the r/c receiver (no problem, I have spares) and my Canon 35mm f/2 lens (\$300.00), which filled with water.

The Canon Rebel camera body is still functioning perfectly more than one year

after the mishap. After six years of KAP, I've now lost one Minolta SLR camera body to water damage (THAT lens survived), and one Canon lens. Not bad, considering how much I fly over water (from canoes, power boats, docks, beaches, etc.).

I've taken steps to minimize the chance this mishap can happen again. The bridle on my 14' delta-Conyne kite has been readjusted so it is less likely to fly directly overhead (and plummet when the wind dies). I fly the kite a bit higher before attaching the cradle, and I have plans to sew myself a 50 to 100 foot tube tail. Since I fly more frequently now than I ever did, and often with an audience looking on, even one camera and body lost every six years is too high a price to pay.

But then: CRASH!



Less than two months after my splash-down came my Rebel's first hard landing. From 500 feet in the air, my 10' D-C kite (with two streamer tails and a drogue attached) had drifted overhead and, in a gusty wind with nearby buildings and trees creating turbulence, had suddenly reversed its direction and poweredived downwind to the ground. In the five to ten seconds it took the kite to hit the roof of a nearby motel, I cursed, then released about a hundred feet of line, hoping the slack would allow the kite to reverse its direction. Nevertheless, it hit the roof, and my camera and cradle (200 feet below the kite) landed on a paved parking lot.

What have I learned in six years? Has my luck run out? Should I find another avocation? I rarely feel embarrassed but . . . a 44-year-old man crashing his kite on a motel roof can't help but feel a little embarrassed.

Well, lady luck is still with me. Somehow, the camera found a two-foot wide strip of dirt and grass that divides the parking lot. And, since the kite landed on a roof, the camera had not really crashed but had simply settled down. The lens was a little dusty but, other than some minor epoxy repair needed on the cradle, the camera and cradle were still functional.

Ten minutes after crashdown, I again sent the camera aloft, this time with my 14' D-C (which has not reversed direction on me in the four years I have owned it).

In short, the Canon Rebel X camera is crash- and water-resistant. I've tested it, so you don't have to.

In two years I have put more than 300 rolls of film through my two Canon Rebel X cameras attached to separate KAP cradles (one horizontal, one vertical). With three Canon lenses (28, 35 & 50mm focal lengths) in my camera case, I've found the best KAP camera system for me. Here are the qualities I enjoy:

### 1. Portrait exposure mode

This mode selects the highest shutter speed possible depending on lighting conditions and the lens characteristics. On sunny days, this is the mode I use most frequently, unless there's snow on the ground or other difficult lighting conditions develop. The portrait mode doesn't allow the exposure compensation system to work (e.g., to adjust for under or overexposure) so I have to switch to another mode to utilize exposure compensation.

### 2. Light weight

The Rebel X is the lightest high-quality interchangeable lens SLR camera available. It is made almost entirely of plastic, yet is capable of producing professional results.

### 3. Lens quality

Canon lenses are of professional quality, with one exception: their 50mm, f/1.8 is junk. I've owned two of them, and both stopped focusing properly after less than 10 rolls of film. This is the cheapest lens Canon sells, and you get what you pay for. The other lenses have given me no problems, just great results.

*Continued on page 27*

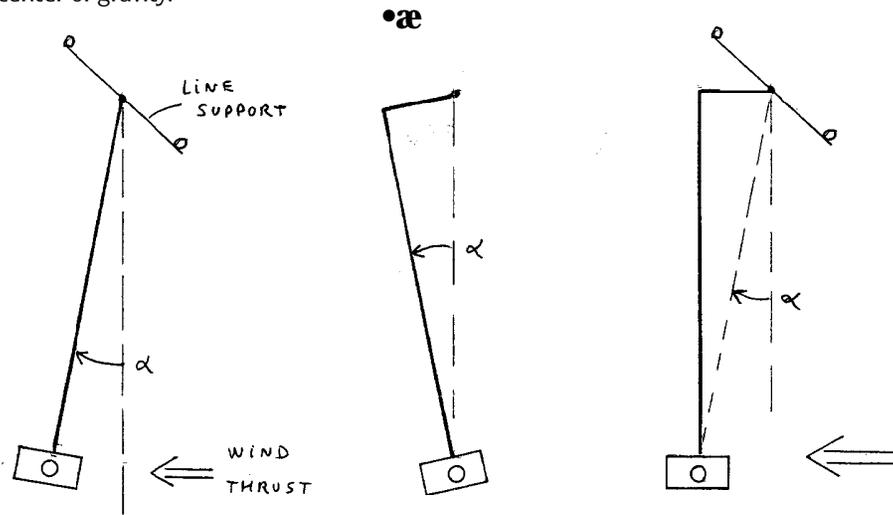
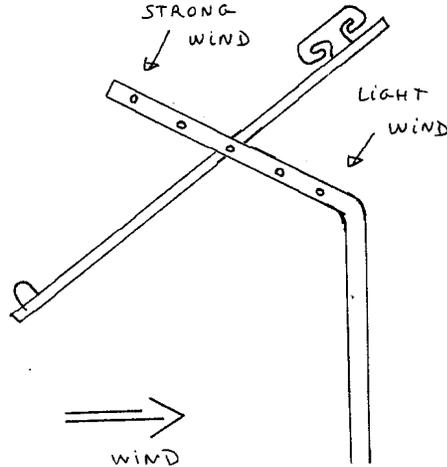
# swinging in the wind

by CHRISTIAN BÉCOT, Tournlaville, France

Those using a pendulum know that the wind thrusts the pendulum. Everybody knows that you get pictures with the horizon slanting on one side or another depending if you shoot to the right or to the left of the wind direction.

Thanks to video, I have observed that sometimes the wind is strong enough to shift the pendulum constantly. It never comes back to the vertical position. To avoid this, I am now using the anti-thrust pendulum as described here.

On the Picavet suspension, we can observe the same phenomenon, although it is less obvious. To put it right, we just have to apply the same idea: shift the center of gravity.



EVALUATION OF VERTICAL OFFSET.

COMPENSATING PENDULUM WHEN NO WIND

WITH EXPECTED WIND.

# count those pictures—cheap!

by SIMON HARBORD, Broadbog, Tullynessle, Alford, Aberdeenshire, Scotland AB33 8DD

However hard I try, I always forget exactly how many frames I have shot during a KAP flight. The frustrations of not seeing the frame counter in flight centre around two opposite issues: Not getting those final shots when conditions were just right, as the film had already run out; or bringing the rig down too soon with ten shots left. Both frustrating.

The answer of course is to affix a simple frame counting device to the transmitter control. In reality though, this is not totally straightforward as counters come designed for slightly different uses other than KAP. The mechanical counters that are used for counting microbiological colonies or people going into night clubs could be adapted or linked through levers with your shutter release, but they produce a less than elegant solution.

Here in the UK, electronic counters are not easily obtainable, except through specialist stores or mail order.

I have a gizmo I bought for my car which includes a digital clock. It was while playing with the thing that I remembered that setting the time and date on a digital clock involves pushing buttons to advance the time/date to the correct settings. Pushing a button is nothing more than making a contact in the

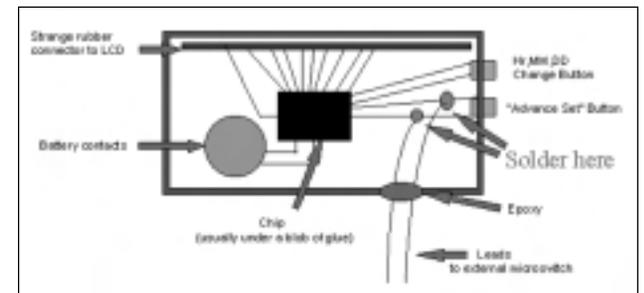
clock, so logically the clock-set mode can be used as a counter.

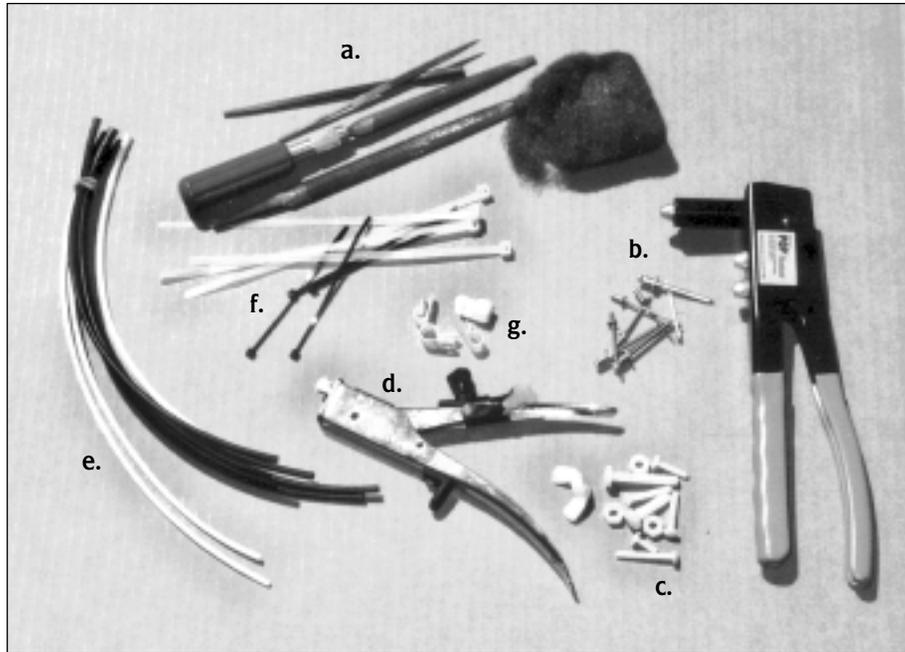
Without further ado I ripped apart the clock and soldered tag leads off the circuit board from the button contacts and out to the real world. This was a job that was delicate to say the least, and took all my soldering skills. I epoxied the leads where they entered the case, connected a microswitch to the leads, and mounted it on my transmitter to make contact each time I triggered the shutter.

The only problem with this Mark I version was that in set-minute mode the clock continued to run, thus advancing the numbers every minute, meaning that after 15 minutes in the air your frame count would be out by 15. This meant that using clock-set mode was out, so the set-date mode was used, (which counts up to 31)—an OK but less than optimal solution for 36-exposure film.

A few days later I was browsing a market stall when I came across some cheap

*Continued on page 11*





## a few of my favorite things

by **BROOKS LEFFLER**

Some of them are well-known, others not, but these are some of the tools and materials I use in every rig I build (pictured clockwise from top):

**a. FILES & STEEL WOOL.** Lots of people have commented about the smooth edges on my aluminum rigs, and the key is simply that I shape them with a coarse file, then a smooth file, and finish with 0000 steel wool. If you want smooth metal, never use a power wire brush on aluminum; the metal is too soft, and it will look pitted. If you want it to look great, do it by hand.

**b. ALUMINUM POP® RIVETS & TOOL.** Pop rivets are so-named because of the noise they make during installation. They are light, strong, and install quickly. In the US at least, they're readily available at any hardware or building supply, in several diameters and lengths, along with the required plier-like tool to install them. If I don't need to remove a sheet-metal component, I fasten it with a Pop Rivet rather than a machine screw and nut.

**c. NYLON FASTENERS & SPACERS.** They're much lighter than steel or brass, and nearly as strong, at least for our pur-

poses. The spacers can be used for bushings too, and some of them are even threaded. Harald Prinzler pointed out that the only worldwide standard thread is the 1/4 x 20 tripod screw mount; I always use a nylon machine screw 1/4 or 3/8-inch long (available from Small Parts, Inc.) to attach the camera to the cradle.

**d. NIBBLER TOOL.** Designed for forming sheet-metal electronic chassis, this device works well for making square holes in aluminum cradle parts and rough-shaping edges—when a hacksaw is too clumsy. Available at Tandy Radio Shack and most electronic suppliers. Will cut up to 1/16" thick aluminum.

**e. HEAT-SHRINK TUBING.** Quick & easy insulation for all things electrical, in a huge range of diameters and colors.

**f. PLASTIC WIRE TIES.** I use these in several sizes to mount receivers, battery packs and even cameras to my cradles, but they can also be used as intended: to keep wires tidy. Buy 'em in bulk if you can, so you won't fret if you have to cut one off to move something.

**g. PLASTIC WIRE LOOPS.** These work well to mount antenna booms and such, or to attach anything round and spar-like to a flat surface. There's nothing better to attach a light wooden cradle to a dowel pendulum.

**MOLESKIN.** [not pictured] A soft adhesive cloth resembling chamois, this material is designed to protect human feet from chafing. It's available from any drugstore. Works great as a soft, lightly-padded surface for camera mountings.

*Continued from page 9*

LCD dashboard clocks with really big display numerals. On inspection I found that these cheapo clocks stop when in "set-minute" mode. So I bought half a dozen and took them home for modification. After a fiddly job I had my Mark II frame counter made and mounted.

Modification of this second version is illustrated in the diagram on page 9.

It works a treat. The other day I used it, took 36 shots, and brought down the camera. Sure enough, the film was used up and wound back into the cartridge. When I got the film back I realised that it was a 24-exposure film—my last 12 shots had been taken with no film behind the lens.... My new frame counter clearly does not mitigate for stupidity!

Just thinking around this approach there are other ways:

If you can't find a suitable digital clock then consider a small pocket calculator. Most calculators will increment by 1 each time you press the = key after you initially key in 1 + = . A counter! Soldered tag leads out from the calculator circuit board from the = key should work. (Watch out for auto shut-off though)

For the sum of £10 UK including Post and Packing, I will happily supply any KAPer with a ready-made counter with the leads already soldered in, based on the dashboard clock design, complete with microswitch for mounting. My address is at the top of this article, or you may contact me via email at:

simon.harbord@conoco.dupont.com

## tailless triumph at verdun

by CRAIG WILSON

The site was the Rendez-Vous Mondial Du Cerf-Volant, Verdun, Canada. This is Canada's largest annual kite event, held June 19-22 of this year. Five KAPers were there including myself, [see pic] although I never saw any camera in the air except for my own.

I am sure that the other KAPers present were aghast that a tailless delta flying for most of the afternoon in light wind was able to lift my bodacious, non-Picavet-suspended camera rig when few other kites could keep themselves in the air. I am certain that they thought at any moment that my big delta would "overfly" its tether and that they would soon witness a camera disaster. [Naw—I had faith. When your delta is as big as a hang-glider, it should hold up most anything less than 200 lb, even while overflying! —bg!]

Happy to report, that didn't happen.

The delta appeared, to me at least, to be very much at ease lifting that load above a field of big shots such as George Peters, Michael Alvarres, Ron and Sandy Gibian, Robert Trepanier, Ton Oost-



The Verdun KAPers: Craig Wilson, Carl Bigras, Lucien Gibeault, Richard Cloutier, Brooks Leffler

veen, Helmut Schiefer, Wolfgang Grimsel, Anne Harris, Richard Dermer, Masaaki Modegi and many others.

That is, all was well until Peter Lynn bugged in and snagged my cradle with one of the flying lines of his big Peel. Peter is a very good pilot though, and we were able to bring our kites down together to remove his Kevlar® from around my camera and then all was well again.

Neither the delta nor Peter seemed to be overly troubled by the encounter, but it left me wondering what kevlar might do in an encounter with the light line of a Picavet. I don't know, but there isn't a mark on my trusty pendulum. [Craig makes light of this scary collision, but it was very irresponsible of Peter. I agree that Craig's husky pendulum probably saved an expensive camera. —bg!]

Anyway, as I was saying, I didn't see any other rigs in the air but I know that they were there and that they were in use. Brooks emptied a set of batteries on his rig without ever getting any air time. The juice was

used up just showing people on the ground what we do and how we do it.

In the few festivals that I have been to I am amazed at the interest that KAP

draws. Brooks set up the AKA/WKM photo exhibition in one of the tents and there were always people there viewing the photos and inquiring about technique. I think people are amazed at

the cleverness and the inventiveness of the builder/photographers and the idea of putting a kite to work captivates the imagination.

Because I don't often get to fly with other people I found myself not caring so much about doing KAP and more interested in the kites and socializing with the fliers. Sure I made a few aerials—kites in the air from the perspective of a kite, like Wolfgang Bieck would do. But KAP on a kite field really doesn't fit into my photographic style.

Not that I object to those shots or that I don't want to bother, but it is tough to fly a camera around so many other kites, especially in such a small enclosure. When you are fenced in with 100 fliers there is nowhere to go to get out of the way when some crazy guy with kevlar won't leave you alone.

Most of the time I spent just trying to find something to fly in the squirrely

wind and staying ready to avoid the next rain shower or thunderstorm, and I enjoyed the opportunity to have a kite in the sky alongside the beautiful stuff that was there.

The highlight for me was waiting out a rain shower in a tent with my wife and two children accompanied by two Dutch, two French, two English, four Canadians, a

Californian, and a German, each sharing whatever cheese, wine, soda, snacks, fruit and stories they had to make it an international picnic.

How else other than with a kite could I ever be so blessed? What a great experience for me and my family. My son Casey is so proud to have helped fly the worlds largest kite. My daughter Madeleine taught her new French friend Leslie how to play Cat's Cradle with a piece of string. Betsy, my wife, is beginning to understand what the big deal is with kites.

And me—oh ya, I now know the value of buying nice furniture. Not only do you get something to sit on, your wife is much happier and you get to go to a kite festival too.

No matter what else happens in my life, I will always fly kites. Kites have shown me a new and better way to view the world.



Ton Oostveen's wonderful Circoflex at Verdun

## modified servos & plastic boxes

by HENRY JEBE, Douglas, Alaska

The following is a description of my success with converting a servo into a dual-function device: one-directional rotation and closure of a switching circuit. This will allow me to achieve three functions with my two-channel Futaba system. This conversion follows my having completed the continuous rotation servo conversion as taught by Harald Prinzler & Ralph Beutnagel at FLiBB 96 and described in **the aerial eye** [3.1, winter 1997].

In my conversion to continuous rotation, I removed the potentiometer and installed two resistors in its place (this also allows more room in the servo case for wiring). I used a Futaba FP-S148 standard servo; other brands of servos should be able to be converted similarly.

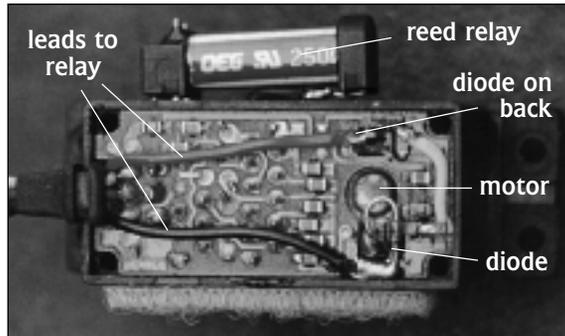
### PARTS NEEDED:

- 2 zener diodes
- 1 switching relay (about 5 volts)
- A few inches of single conductor wire
- A few inches of 2-conductor wire
- Small rubber grommet

### TOOLS NEEDED:

- Soldering iron
- A de-soldering bulb
- Volt/ohm meter
- Clip type test leads are helpful
- 2 clip type jumper leads are helpful.

A non-conductive test vise for holding the circuit board while working and testing is also helpful.



All tests will be done with the servo disassembled and the circuit board clamped securely; it is necessary for the system to be on during testing.

First de-solder one lead of the motor from the circuit board. Clean the area thoroughly so there is no possibility of contact.

The first test is to determine the desired direction of rotation of the servo versus joystick direction. Just bend the leads of a diode and hold it so one contact is made with the circuit board where the motor lead was detached and the other contact with the motor lead itself. The motor should run in only one direction when power is applied and the joystick deflected.

If it is desired that the servo motor operate with the stick thrown in the op-

posite direction, just reverse the leads of the diode. Once the direction is determined, the diode can be soldered in place (if it is small enough, it will fit on the bottom of the circuit board when the cover is secured).

Now that the direction of rotation has been fixed it is possible to convert the opposite throw of the joystick to an on/off switch (or any other function for that matter). Solder a short piece of wire to the point where the previous connection was made on the circuit board. Solder another short piece of wire to the other motor connection (not yet disturbed). Bare a bit of both wire ends.

Using a jumper lead, hook one of the coil connections on the relay to one of the wires. Hook the other coil lead to one end of a diode and the other end of the diode to the other wire. Connect the ohm tester to each of the switch leads on the relay. Turn the system on again and check to see what direction of stick travel actuates the relay. If it is actuated along with the servo motor, just reverse the direction of the diode.

Now comes the fun part—trying to cram it all in the servo case. It was no problem for me to get the diodes in the case, but the relay was another matter. I used a reed relay, less noisy than the PC-type. The smallest one I could obtain

was too long to go into the servo case. So I had to mount it on the side, with its leads entering the case side and soldered inside. The 2-conductor leads are for the switch side of the relay as is the grommet (which is to protect the wires as they exit the case).



This installation allows me to control tilt with an up-stick movement, using a crankshaft [left] to convert the endless rotation to 90 degrees of tilt, and down-stick to close the switch and click the electric shutter.

It occurs to me that it is possible to put a mini-jack on the side of the servo case with the diode inside and have the relay anywhere in the line between the servo and the camera (or other device).

### PLASTIC BOXES

I am still experimenting with plastics as you can see. These plastic boxes are quite cheap, but I would have liked to find the right adhesive for the plastic. I welded the plastic with a heat gun; this caused some deforming and the results were marginally acceptable for a prototype assembly. It looks like hell, but it does work.

I believe I will have to break down and use aluminum for the camera mounting; the plastic flexes just a little too much for exclusive use on the mounting platform.



# aerial gallery

<< *Sunset Bikers*,  
by Brooks Leffler

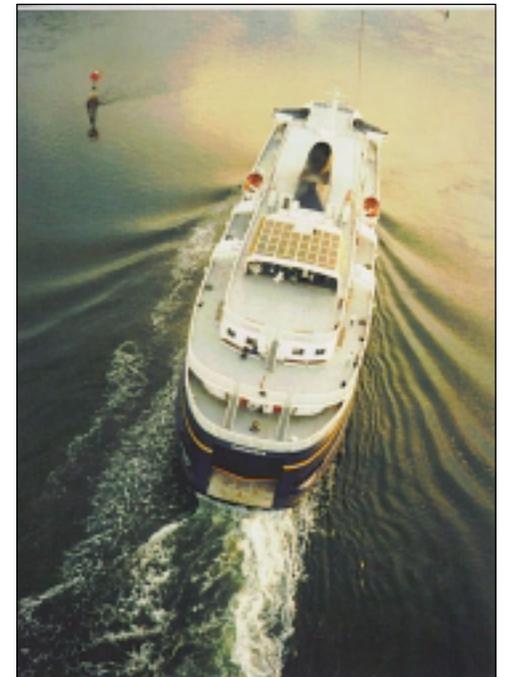
< *Gögglingen, near Ulm*, by  
Bernhard Malle

*Citadelle, Québec*,  
by Craig Wilson >

< *A Camping Holiday*, by  
Rob Green.

*Matanuska at Dusk*, by Henry Jebe >

below: *Fanø Skyline*, by Peter van Erkel



## a compact of epic proportions

by **BROOKS LEFFLER**

Just when I was getting used to my fast, sharp, and light Yashica T-4, along comes a new compact camera that seems to have been designed just for KAPers: the Olympus ∞Stylus Epic.

This latest descendant of the very successful Stylus (called Mu in Europe) is smaller than its predecessor, weighs just 5.25 oz (152g) with battery, and boasts a top shutter speed of 1/1000 second! Moreover, street price of this little lovely is less than \$150.00!

Only a handful of compact cameras have a faster shutter, and they all are much heavier and/or cost a lot more.

Well, I just had to try it, but couldn't find the standard black model. So I bought the deluxe version, about \$10.00 more, which has a databack and comes

in silver. It looks just like a tiny Honda Prelude on its side!

My camera store says the Epic is a very hot item, understandable in that good compact 35s without a zoom are getting increasingly hard to find.

At this writing, I've shot about five rolls—three on the ground and two in the air—and I'm quite impressed. The pictures are sharp, and the shutter seems capable of stopping KAPer's Blur. In fact, I tried shooting through a chain-link fence at a speeding race car, panning at about 100 mph (160 kph) with the car, and the Epic almost stopped the fence as well as the car!

Below are some vital statistics for comparison. I like, have used, and recommend all three cameras for KAP.



	STYLUS EPIC	ORIGINAL STYLUS	YASHICA T-4 SUPER
wt/grams	152	184	222
ounces	5.25	6.38	7.75
size/mm	109 x 58 x 38	116 x 64 x 38	118 x 65 x 40
inches	4.3 x 2.3 x 1.5	4.6 x 2.5 x 1.5	4.7 x 2.5 x 1.6
shutter	1/1000	1/500	1/700
lens	f2.8	f3.5	f3.5 Tessar
street price	\$140.00	\$99.00	\$170.00

## the powerspool

by **FRED & EARL GALLEY, Portage, Wisconsin**

We have found a easy way to make an inexpensive spool system that we would like to share.

We call it the "POWER SPOOL".

The system uses a power drill/driver coupled to a kite string spool.

The first spool we found was in a pile of refuse at a building site, we later found a great supply at our local hardware store. They use them for chain and wire. The owner had been saving them for years. We then found a wooden dowel to fit the core, an old broom handle worked for us.

The key to connecting the drill to the spool is a 5/16" Socket Cap Screw, 1 1/2" in length. This has a 1/4" hex socket which is the same size as your driver bits. You'll find them in the specialty hardware section of a good hardware store.

Fasten the dowel to the spool with screws or a bolt and drill a 1/4"+ hole in

the end of the dowel and screw in the Socket Cap Screw. Try and get this as straight as possible.

Take a common driver bit and insert the tool end into the drill, so that the blunt end connects to the cap screw socket on the spool.

Total cost is less than \$1.00.

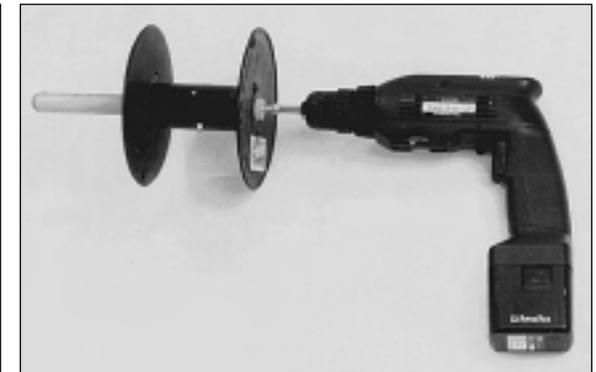
Use two spools on one dowel for your two-line controllables.

As Earl always says: There are so few days when the conditions are right and we both have the time, but that's what makes each time we fly so special.

Till that time.

•æ

[Ed. note: Unless any spool has a solid metal or wooden core, it's best to pull a powerful kite down by hand to relieve the line tension before winding it onto the spool. The Ace Bandage effect has crushed many an unreinforced core.]



# sumipis, ekapas, and 1-2-3

by PETER BULTS, Holthees, The Netherlands

## I. SUPER SUMIPI

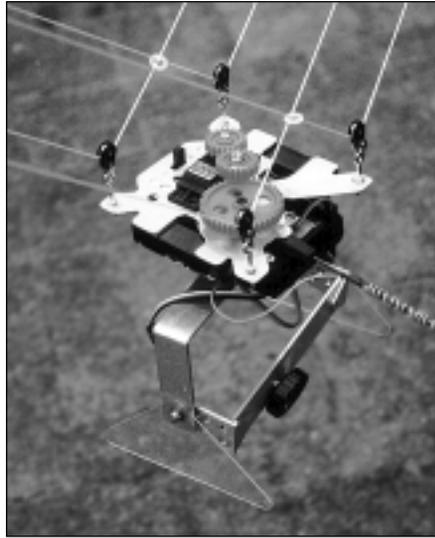
What do you do when you use two or more R/C rigs? Do you have two receivers or two R/C sets altogether? Or...

I've built an expanded subminiature Picavet suspension [once dubbed SUMIPI by acronym-meister Wolfgang Bieck] that doesn't only keep my rig level, but also pans it, powers it and triggers it.

The frame of the Super SUMIPI [right] carries the pan servo with its gears and external pot (æ 3.1, p. 19). It holds two penlight batteries, the on/off switch and a "step-up" converter (æ 3.2, p. 25), and it supports the receiver, antenna and shutter release electronics. All that are left on the cradle itself are the camera, tilt servo and eventually a HoVer servo for format control.

This Super SUMIPI can be used with any cradle, whether it carries a point-&-shoot or an SLR or video camera. It allows you to build simple cradles for each type of camera. You can easily change the camera system while working in the field. And, in theory at least, it saves power because the amount of weight that has to be turned by the pan servo is much lower.

One remark. Don't use a pan servo that is modified to endless rotation. It will jam and destroy the wiring which is necessary to connect the cradle to the SUMIPI.



## II. WITH A LITTLE HELP .....

Some month ago Cris Benton inaugurated the Discussion Page on his excellent Web-site [[www.ced.berkeley.edu/cris/kap/index.html](http://www.ced.berkeley.edu/cris/kap/index.html)].

One of the questions raised was by Simon Harbord:

[...] "When the rig is 200 feet out and maybe 250 feet up, getting accurately positioned verticals (or obliques for that matter), over a target is still for me a hit or miss affair. I've used video assist, and for many reasons don't feel the inclination to go back to it. The problem is not in knowing the camera direction, as my controls are calibrated, I know where the camera is pointing, the problem is in

spotting the camera exactly over a small target ...without someone out to the side giving direction...."

Cris Benton gave a scientific translation of this same question, [adding]

"I'm currently working on a technique that uses a fascinating IR pulse laser rangefinder, an optical clinometer, and a slide rule to compute downrange position. I will report more as I learn it. In the meantime, son Charlie Benton and I are getting a lot of use out of two borrowed walkie talkies. Charlie's position reporting from downrange helps a great deal."

My online answer to this problem was:

"I too have tried a video on my rig and disliked it [main reason: the addition of more than 300g to the rig, most of it in batteries] . So the system ended in the box labeled 'Might be of use someday.' In the same box was my 2-channel R/C that I used when I started KAP.

"Out of that stuff I made an Electronic KAP Assistant [right]. It is mainly a mini video camera mounted on two servos that I can control from where I stand.

"The whole system is mounted on a tripod and put in a place where it can give you the third dimension of the position of the rig. In other words I can see the target and the rig from two different angles. And that gives me all the information I need for an accurate position.

"I think this approach has a lot of advantages: it can be used with all your existing rigs; no addition to any rig; no new rig; it is cheap since it came out of that one box .....; no need to do calculations.



"Just an idea and the prototype is ready to be tested. But if lateral thinking does come up with a better plan I'll put everything back the 'might be useful' box."

Well, up to this day no one did come up with a better, practical approach. And I don't have a son named Charlie. So, when I want to be sure that I have the camera right over my target I'll set up my Electronic KAP Assistant.

Both the video/transmitter unit and the receiver/monitor unit are powered by 12v. I can choose either my car's cigarette-lighter plug, any other high capacity 12v battery or, via an adaptor a wall-

## tips from randy

by **RANDY BOLLINGER**, Ferguson, Missouri

As kite aerial photographers, many will associate our craft with only wide open space. It is the safest place to fly while honing your skills. But as confidence builds, so will your photographic imagination. Staying in open areas will only limit your KAP opportunities. If it's the extraordinary image you're after, you will have to move into areas that may seem impossible for kite flying.

The following are methods I have used for launching and retrieving kites in confined areas.

### LAUNCHING

The easiest way is to launch from an open area, mount the camera rig and walk into the confined space. Sometimes that may not be possible due to power lines, trees or buildings in your way. This will leave you with no choice—if you want the shot, you'll have to launch from within the area.

Launching in a confined space leaves little room and a lot of turbulence. One way is to use the method of Masami Nakajima (æ 2.3, p. 20). By pulling the line with a pulley you can send a kite fast breaking through the turbulence and into the main air stream.

Another method I have used is to tape a 10-foot crêpe-paper tail to a fighter kite the size of a Grandmaster™ and launch it into the main air stream. Small area, use a small kite! Once the fighter is flying

steady I would tie the flying line to the rear center of the upper spreader on a rokkaku and use it as a little tugger assistant.

The assistant launching method should work with most bowed kites, deltas and box kites. But not FlowForms.

I would recommend practicing this method in a open area first. Whatever two kites you use, be sure that the angle of flight is adjusted the same.

### RETRIEVING

When a hard pulling kite is flying from a confined area it can be a bear pulling in hand-over-hand without a powerful winder. One method is to use two safety rings with four-foot nylon webbing straps.

First wrap the flying line around the first ring and secure the strap to a post or tree. Next walk the line down with the second ring as far as possible. Wrap the line around the ring and walk the kite back to the first ring and exchange its place with the second. Then use the first as a walkdown and so on.

It may take 15-20 exchanges or more depending on the amount of flying line out and the amount of ground area you have to work with.

Or you can use three or more safety rings or as many as five anchored at different points around the area. First tie the flying line off at any point, then sim-

ply walk the kite down from ring to ring and clip in the line at each one as you go around. The key is leverage.

I have even used a merry-go-round in a playground as a kite winder. Use only one safety ring and strap secured nearby at the same level parallel to the center of the handles.

But I always look for the walk-in and walk-out method first.

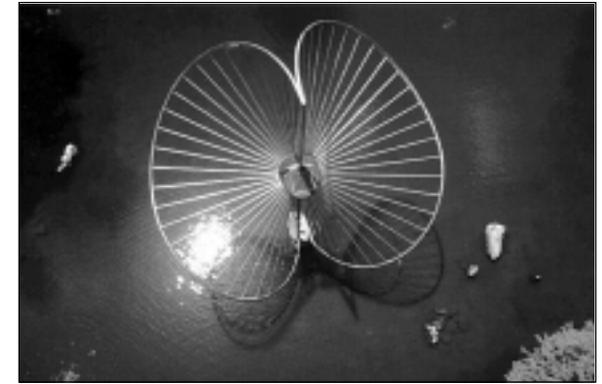
### POINT & PULL, PUSH & SHOOT

Bracketing exposures consists of setting the f-stop or shutter speed above or below the camera's normal determined exposure meter reading. In KAP bracketing can be very useful in gaining higher shutter speeds.

The drawback in bracketing is that the heavier SLR had to be used. With an SLR you can simply turn the knob to the desired setting. But with a point & shoot camera, there are no knobs.

Higher shutter speeds can also be accomplished by a method called Push-Pull processing—setting the camera's film speed above or below the manufacturer's recommended speed. In KAP we already have enough pull. So you'll be looking for a little push here.

The trick is to trick the camera's bar-code reading. This can be done by asking your processor for a variety of empty film cartridges of various film speeds.



**Iron Butterfly** by Randy Bollinger. Shot in confined space using pulley method & ring exchange method.

Try to get cartridges of 100 iso to push 50 and 64 iso, and 400 and 1000 cartridges to push 100 and 400 iso.

Once you have the cartridges, pop off the ends and cut out the bar code using sheet metal shears. With rubber cement or double-face tape, affix the bar code in uniform shape over the existing code on the film cartridge you're going to use, thus tricking the camera into using a higher shutter speed.

After shooting, remove the bar code and mark the cartridge case accordingly as to what speed was used. When turning the film in for processing be sure to tell your printer what speed you have used, so that a proper development time and chemical temperature can be made to compensate for the increase.

And remember that you cannot push only part of a roll, as it's impractical for more than one time & temperature change to a roll.

Continued from page 21

socket (there must be one in a light-house). But both units will work, for a short period, on a 12v NiCad set as well.

1,2,3...OR WAS IT 4?

As has been noted [see page 9 for Simon Harbord's article], counting exposures is a good way to avoid lost time, wasted film, and frustration.

[Simon has shown that] electronic counters are fairly cheap nowadays. Most of them can be made to count by a simple on/off switch.

If you use the joy-stick of your transmitter you can make a mechanical connection between the stick and the lever of the switch. Now every time you command the transmitter to take a picture, the counter will add a digit.

More and more KAPers, like myself (see [æ 3.1](#)), are modifying their transmitter and use a push button for shutter release. In this case it would be nice if you could find a dual pushbutton, one that operates two separate circuits at the same time. Such a switch that is also

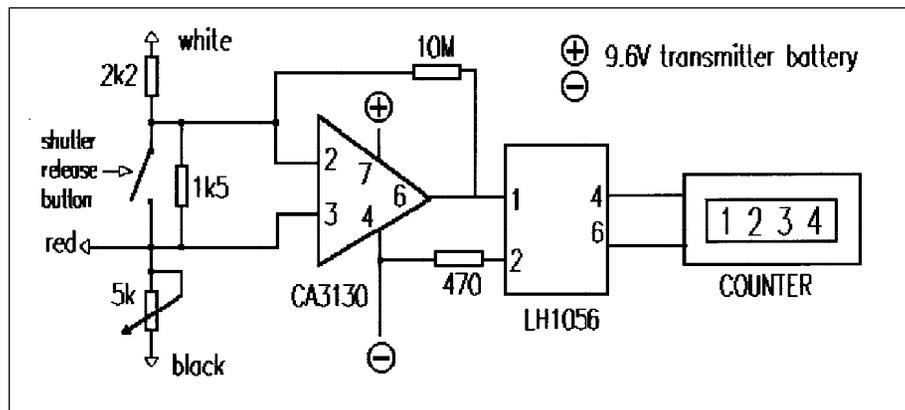
solid enough under KAP conditions is hard to find. So I added some electronics to the single contact button [below].

I have a so-called OpAmp (CA3130) checking the voltage over the pins of the button. If the button isn't pushed the 1.5k resistor will create a potential difference of about 1v. The OpAmp's reaction to this will be a low output level. As soon as I push the button the voltage difference will disappear and the OpAmp generates a "high" output. This high output illuminates the LED inside the OptoCoupler (LH1056) and thus triggers the counter.

The counter I use is a Conrad 7010. It has 4 digits and its own power supply; which means that it remembers the number of photos you thought you made even with the transmitter turned off. And what I also like about it is its size: 27x17.5x10.7 mm [1x3/4x1/2 in], including the 1.5v battery. Contact:

Conrad Electronic GmbH  
Klaus-Conrad-Straße 1  
92240 Hirschau, Germany  
(+49) 180/5 31 21 11

•æ



## gluing aluminum

by PETER van ERKEL, Amsterdam, The Netherlands

One of the things that always strikes me is the variety in rigs. I have seen wooden, plastic, carbon but mainly aluminum rigs. The alu rigs I have seen were mostly bolted; some were riveted.

Most of the joints I make with aluminum are glued [see pic]. The glue I use is a two-component epoxy adhesive. The secret of a good bond is to roughen the surface with sandpaper, then clean it with acetone and heat.

When I first used two-component epoxy adhesive, many years ago, it took 24 hours to set. The instruction sheet mentioned that heat would reduce the setting time, and improve the breaking strength. So whenever gluing alu, I put the subject on the stove or in the oven for say 10-20 minutes.

The company I work for used to make transformers. The cores of these transformers were glued with a industrial epoxy adhesive. To improve the bond they were put in an oven for 5 minutes at 160° C [320° F]. One day when they ran

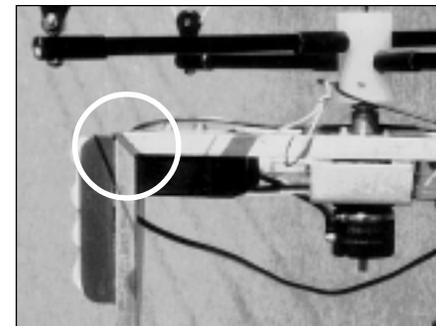
out of this industrial adhesive, my colleagues bought UHU plus in a hobby shop. Tests showed that UHU plus made a stronger bond than the industrial, so since then I also use only UHU plus.

From the instruction sheet of UHU plus comes the following important information:

Temperature	Time	Bond Strength
20C / 68F	20 hr	150Kg/cm <sup>2</sup>
40C / 104F	3 hr	
70C / 158F	45 min	
100C / 212F	10 min.	
180C / 356F	5 min.	300Kg/cm <sup>2</sup>

A very simple test on the effect of heat is to take two pieces of alu and your two-component epoxy. Mix some boulder and hardener in almost equal amounts. Always use a little less hardener than boulder. Apply the epoxy on the two pieces of alu. Put one in an oven; let the other settle for 24 hours. Now feel the two: the unheated one is dull and "tacky" and you can mark it with your nails. The heated one is shiny, and tough as nails.

But heat has also a reverse effect. If you heat a cured epoxy joint to 100°C [212°F] it only has 1/10 of its strength. This can be an advantage too. If you want to separate two epoxied items, put them in boiling water or an oven and break the joint. What remains of the epoxy may be removed with paint stripper.



•æ

Continued from page 5

In dedicated single-body stereo cameras, the lenses are of fixed focal length and shifted to be slightly cross-eyed relative to the film. This produces an effect called the "stereo window." Cropping is necessary when using conventional cameras to reproduce the effect.

You can see the window effect by holding a small rectangular frame at arm's length—8x10 inches [20x25 cm] is

perfect. The view through the left eye will be seen to include more of the view to the right edge of the frame while the right eye view will include more on the left.

A pair of ordinary cameras will not produce the effect outright—the right camera "sees" more to the right, and the left one, more to the left.

•æ

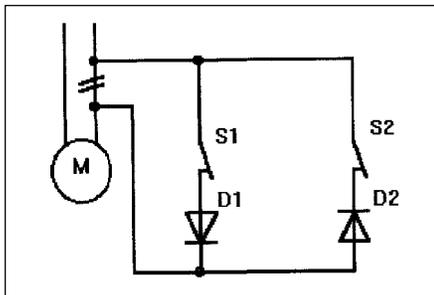
## precise stops for servo travel

by HARALD PRINZLER, Schlangen, Germany

Under some circumstances it is desirable to switch off the current to a servo-motor when a specific position is reached; i.e., elevation (tilt) of the camera, or switching between landscape (horizontal) and portrait (vertical) format.

The problem can be solved using microswitches at the end points and two diodes to check the direction of the motor current. This modification will work with a standard servo or one modified for endless turning.

A microswitch is placed at each end point so that the moving part activates it



when it reaches that position. The switch cuts the current for that direction and a diode allows the servo-motor to turn only in the opposite direction until the moving part presses the switch at the opposite end point.

The modification in the servo is easy to make. Open the housing to get a view of the motor and the circuit board. Cut one of the motor leads and connect enough wire to each cut end so they will reach the microswitches. Connect the switches and the diodes as shown in the diagram.

Each diode controls one direction of turning. The motor will turn in that direction until the switch is pressed. If the motor continues to turn, reverse the leads of the diode and check both directions again.

To avoid a reduction in motor power, the diodes should be Schottky-diodes (1N5817).

•æ

Continued from page 7

### 4. Exposure compensation

The Rebel allows you to adjust up to two stops over or under exposure, in half-stop increments. For snow scenes I often overexpose by one stop; for cloudy day photos that include the horizon I overexpose by a half stop. You can use exposure compensation only when the camera is set to specific exposure modes, but the two most important modes—shutter and aperture priority—have this capability.

The Rebel does not have auto-bracketing, which is a nice feature that allows you take three slightly different exposures with each shutter release. You can get this feature in more advanced Canon models (e.g., the Elan), but these models cost and weigh more. There's always a tradeoff.

### 5. Manual/auto focus switch

On each Canon lens is an autofocus switch. Under most conditions I set the lens to autofocus unless there's a chance of aiming straight back towards the line. In this case the kiteline throws off the autofocus; setting the lens to manual focus (usually infinity) prevents the lens from focusing on the line. Whenever you use the manual setting it's wise to tape the lens in place; vibration can cause it to shift from the desired setting.

### 6. Remote release

The Rebel's electrical remote release allows you to eliminate a potential source of camera movement: a servo arm pushing down on the shutter release button. This \$20 accessory is now

available only on more expensive cameras.

### 7. Various exposure modes

Besides the previously-discussed Portrait mode, the Rebel has Shutter-priority and Aperture-priority modes. With different film types and speeds, lighting conditions, lenses and targets (e.g., moving or stationary subjects), you'll find yourself shifting from one of these modes to another. My only gripe is that you can't use exposure compensation in the Portrait mode (although you can in the other three modes).

### 8. Infra-red film use

I've been told the Canon Rebel can't use infra-red film, but I recently shot a roll of Kodak Ektachrome infra-red slide film using a yellow filter on the lens and was satisfied with the results. Infra-red film is often used for aerial photography and, if my one roll test is valid, this capability of the Canon Rebel is worth mentioning.

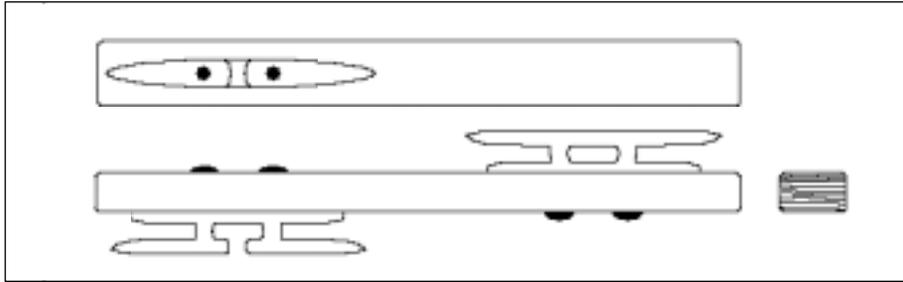
•æ

in the winter issue:  
**LINE, TAILS  
& TRAINS**

What do you use to fly high?  
To keep your kite stable?  
To lift your rig in light air?

**AD & COPY DEADLINE:  
November 1, 1997**

## miscellaneous tidbits



### SYNERGY'S HANGUP™

I wanted something lighter and kind-er-to-line than brooxes hangup™ appeared to be [æ 1.4, page 10].

I didn't have a table saw. Bought wood cut to size at lumber yard. (\$5.00)

The enclosed drawing is almost self-explanatory.

End view of wood shown only to establish direction of grain. (Ash, Hickory, Maple, Oak) The item is small. Wood weight matters not. Strength is the goal. Sand all edges round. Sharp wood can cut line.

Wood length 7.0 inches, width 0.75 inches, depth 0.5 inches [18 x 2 x 1.25cm]. Cleats, 3 inches [8cm] tip to tip, hard nylon. \$3.00 each in any yacht supply store. Hardware stores should have something similar.

There are bolt holes in each standing post of the cleat. Counter sunk 3/16" bolts fit the holes. Nuts and washers hold things tight. Bury nuts in a blob of epoxy to eliminate sharp edges. Cut a 1/4" [60mm] gap through the top of one cleat.

Cleats go on opposite sides and opposite ends of wood. For "no brainer" bolt holes: clamp cleats in place. Drill down through cleat holes right through wood.

How to use: Insert line through gap in cleat. Crank the assembly end over end 3-4 times to wind line around gapped cleat. Grab assembly in left hand and with the right hand wrap line around the second cleat a couple turns. Job done. Using a Larks-head knot, tie whatever you wish to carry aloft to one of the cleats.

Richard Synergy  
280 Augusta Ave #205  
Toronto, ON M5T 2L9

[Hey, Richard—the™ is on my hangup™ for a reason. Find another name for yours! As to lightness, I'll leave it to the reader to decide that. Mine weighs 6 grams. —bg!]

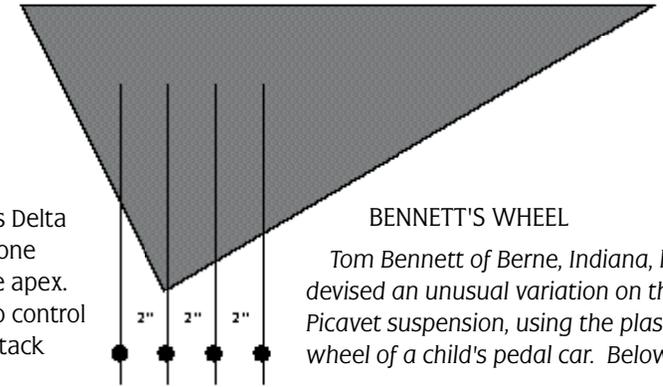
### SYNERGISTIC KEEL

Richard also had these observations about the keel on Craig Wilson's "Old Trustworthy" Delta, described in æ 2.4:

Craig Wilson's Delta [æ 2.4] had but one tow-point at the apex. This provides no control over angle of attack and line pull.

Alternative tow-points may be added as shown, made of sleeving, sewn into keel at 2" intervals. This extends wind range and limits line pull, giving very steady flight on all tow points.

Tow points dangle from keel by 6-10", terminate in big knots to accept larks-head on end of flyline.



### BENNETT'S WHEEL

Tom Bennett of Berne, Indiana, has devised an unusual variation on the Picavet suspension, using the plastic wheel of a child's pedal car. Below is a

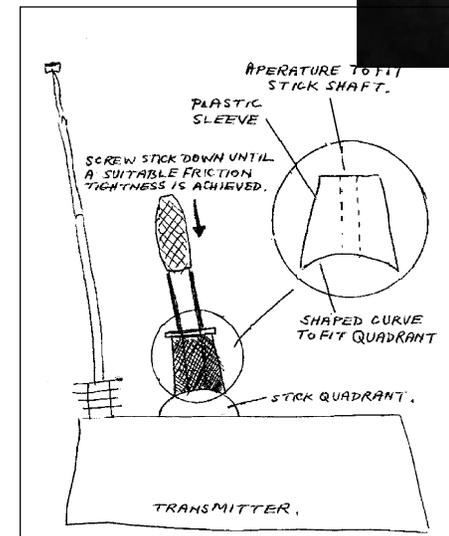
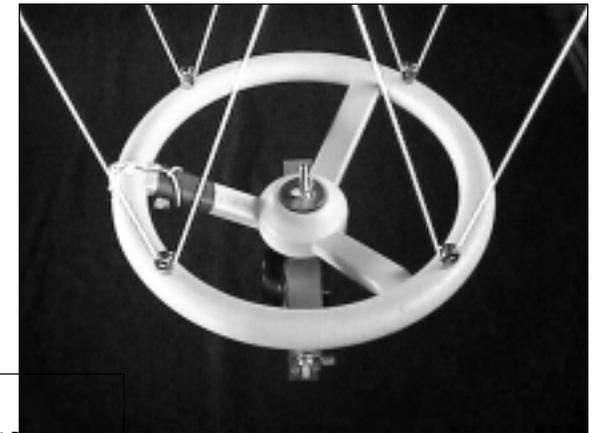


photo of Tom's creation [I wish everybody sent us rig photos of this quality].

### GREEN'S SLEEVE

Rob Green, of Newbury, Berks., England, has modified his R/C transmitter to improve the control sticks. With this conversion [left], the stick will not self-center, but hold in any position. Rob reports successful use of this system for about two years.

## aerialletters

### FANØ CHALLENGE CUP 1997

Some of you only know me as a friend because I'm not a kite photographer, but probably you know some of my kites.

I was very happy to meet Peter van Erkel and Barbara Bales and their family and friends on the beach at Fanø again. On Friday at the auction we sat in the hall together and were bidders as well.

The auction stopped for the announcement of the Challenge Cup, awarded each year to somebody special, who has flown kites for a long time, visited a lot of festivals, and has unusual ideas not perceived at first sight.

Without naming them, the organizers described this year's winners, mentioning some of their kite-varieties, like the carrot-kites and umbrella kites. In the same moment, Barbara and Peter got the message as well, and wanted to hide themselves.

I think both of them were totally surprised, even that they had to be convinced to come to the auction, too. Hopefully they are a little bit surprised to find this little article in **the aerial eye** as well, and if they are in the future still so innovative, they have to be prepared probably to get sooner or later another cup.

For that I will cross my fingers for you, Barbara and Peter.

Axel Kostros  
Braunschweig, Germany



Wolfgang Schimmelpfennig & Rainer Kregowski present the Fanø Challenge Cup to Barbara Bales & Peter van Erkel.

## æ—then, now, and next year

by BROOKS LEFFLER, editor

Not long ago, subscriber Jon Laqua asked me what hardware and software I used to produce **the aerial eye**. Since we've just taken a major step forward in the process with improved digital printing, I thought it was appropriate to tell you about it too.

I have used an Apple Macintosh since the first one was introduced in 1984; my current machine is a Performa 6400/200 with 90 mb of RAM and a 2.3 GB hard drive, using a ViewSonic 17GS monitor.

Up until the last issue, I've composed æ in *ReadySetGo*, but switched to *Page-maker 6.5* last spring. I use Adobe *Photoshop* for the photos and Deneba's *Canvas* for the drawings. My flatbed scanner is a Hewlett-Packard IIcx; a Microtek ScanMaker 35t does the slides.

Until this issue, æ has been published with my two printers. An Apple Laserwriter Select 360 (600 dpi, 12 ppm) has been used for the black & white pages, and a H-P 1200C-PS (300 dpi, 2.5 min per page) for the inkjet color.

I have done the whole thing at home—from layout to mailing—because that's the only way we could afford to produce æ in color. But the mechanical part has become pretty tedious now that we're printing 250-300 copies instead of 40, so with this issue we've gone pro.

This issue has been printed from my Zip disk by PrintNet, our local digital printing house, using the Agfa Chroma-

press, which laser-prints both sides of the page at once at 600 dpi. PrintNet collates and staples it too, to my great relief. I still do the mailing.

Doing it this way is much more expensive: \$3.00 per copy in 300 quantity, on top of which we must pay 55¢ to \$1.55 to mail each one. That's a bit more than a 100% increase in cost, and cuts deeply into AKA's small but needed profit.

The AKA Board of Directors has agreed to give this means of production a try, because **the aerial eye** is the most profitable publication currently produced by the association. If we decide to continue to print æ commercially, subscription rates will have to increase next year, so consider this an early warning.

Meanwhile, let us know how you like our new dress.

•æ

*Continued from page 3*

Canada. All other photographs will be returned, provided that you send a return-address-stamped-envelope. All submitted photographs should be 8x10 or 8x12 inches (20x25 or 20x30cm). Note that this contest is not open to members of the AE committee, whose mug shots have already appeared too many times in the pages of AE and elsewhere.

Send all entries to me directly at the address on page 2.

And say "cheese," please.

•æ