



Perkins Park, Pacific Grove, by Brooks Leffler. Agfacolor 400, Yashica T-4, FF 30.

sources

If you can't find what you're looking for locally, try these:

Hobby Lobby International, Inc.
5614 Franklin Pike Circle
Brentwood, TN 37027
Phone (615) 373-1444
Fax (615) 377-6948

Geardrive motors & other hobby supplies. Catalog.

Wolfgang Bieck (Europe)
or
Brooks Leffler (USA & Canada)
For contact info see page 2.

PeKaBe miniature
ball-bearing blocks.

Weber
9, rue de Poitou
BP 3121
F-75124 Paris Cedex 03, France
Export: attn: Yannick Leclercq
Phone (+33) 1-46 72 34 00
Fax (+33) 1-42 71 69 32

Carbon/epoxy laminates (called "stratifié aux fibres de carbone") in thicknesses of .5 - 4mm; cost FF 3,000 /kg (2mm thick weighs 3kg/m²). Other items of interest.

Kite Studio
5555 Hamilton Boulevard
Wescosville, PA 18106
Phone (800) 548-3991 (orders)
(610) 395-3960
Fax: (610) 395-3960
email: kbiferrl@fast.net

Kitemaking supplies. Catalog.

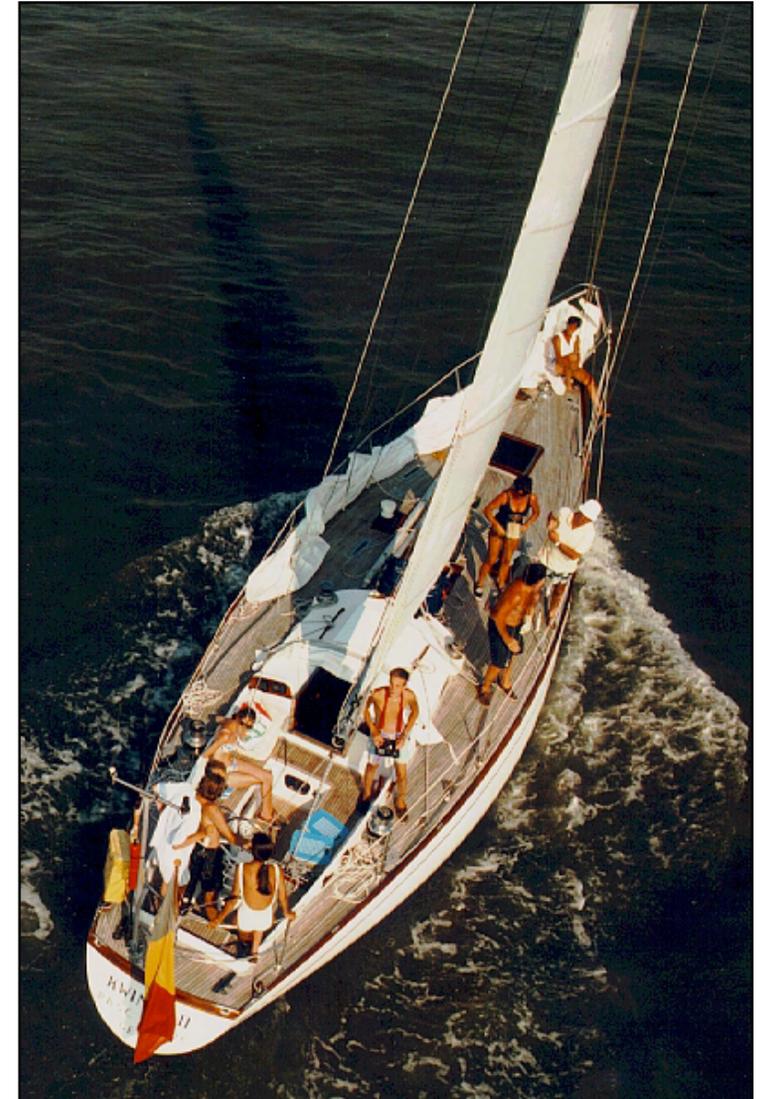


the aerial eye

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

US\$4.00
USA & CANADA

US\$5.50
overseas



Kwinte II
on the
North Sea
by
Frank Louwers

CRADLES & KITES

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.

it runneth over

Since January, we've received more articles than we have had room for. We've enlarged this issue to alleviate the backlog, but still have some goodies we're holding for next time. Your articles and especially aerial photos are always welcome, however.

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 electronic transfer 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.

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

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

our feature this issue: camera cradles & kites

by STEVE EISENHAUER

Two unrelated welcome developments: the number of KAPers using the "swingless pendulum" cradle system has doubled in the past few months; and this issue of **the aerial eye** is the first without a lengthy article by me.

The first development indicates there is a movement away from the "Picavet" cradle suspension system. Until recently, to my knowledge, I was the only "swingless pendulum" user.

For years I have withstood much criticism, particularly from Brooks Leffler and Wolfgang Bieck, because of my reluctance to switch to the supposedly-superior "Picavet" system. But last month I was contacted by a highly-intelligent individual who is happily using the "swingless pendulum". Who knows

how many other closet users of this system are out there? There might be two or three more, and that would represent a 200 to 300 percent increase!

The second development is even more welcome. The current **æ** issue is the longest—32 pages—that we have yet published. Some of that is overflow from the last two issues, but there is lots of new material as well.

The range of experiences and opinions, and the quality of the writing, is impressive. I assure you that I'm still taking a lot of kite aerial photographs. But I also assure you that I'm learning more now about KAP by reading **æ** than I ever did before. Keep those comments, articles and photos coming.

•æ

about the cover

Kwinte II on the North Sea, by Frank Louwers. Frank describes the outing:

"The picture was taken with my second carbon rig [see page 22]. It was from this same yacht, a Swan 43, that I lost my first carbon rig almost one year earlier. So I was a little bit nervous.

"There was very little wind, and to increase apparent wind we had a little bit of engine on. I assembled the Carlisle Rokkaku on the deck and sent

it up. I remember it flew very smoothly.

"So I hung the pendulum rod & camera onto the line—without forgetting to attach *both* ends of the safety line—and let go. It rose quite nicely and we took the self-portrait of the boat, and also some views of the surroundings.

"We didn't venture too high or too long given the very soft wind, and gathered quickly the line and hauled the kite in. Everything went very well, and all were happy, the more so after we saw this particular picture!"

•æ

easter island revisited

text by DON DVORAK, Santa Clara, California. photos by Don & Elaine Dvorak.

In September 1995 I was on a ham radio and SCUBA diving expedition to Easter Island. My job was to help photograph the subtidal marine life of the east side of the island.

On the expedition I brought an electric-powered, radio-controlled model airplane equipped with a still camera. Due to almost constant wind and rocky ground, flying and landing conditions were less than ideal. Even so, I did manage to take some very interesting photographs.

Easter Island lies approximately 2300 miles west of Santiago, Chile, and its closest human neighbors are on Pitcairn Island 1260 miles further west. Easter Island, New Zealand and the Hawaiian Islands form the Polynesian triangle with Easter Island being the most

easterly outpost of the migrating Polynesian wayfarers.

Easter Island was discovered by the Dutch explorer Jacob Roggeveen on Easter Sunday, 1722, hence the name. In ancient times the island was known as "Te Pito o Te Henua", navel at the center of the world. Today the islanders prefer Rapanui.

Shortly after returning from Easter Island I learned about Kite Aerial Photography. I decided if ever I returned to Easter Island it would be with camera, cradle, and kites. Fortunately my fiancée agreed that Easter Island would be a wonderful place for a honeymoon, and KAP would be a fun and unique project. We decided to go in October 1996, early spring in the southern hemisphere, and a pleasant time of year for Easter Island.

For our trip I built two rigs with remote pan, tilt, and shutter capabilities. One of the rigs was made for the Yashica T4 camera that I used on my model airplane, and the other rig was made for a Canon Rebel XS with a 28 mm lens.

The cradles were fashioned after a design by Brooks Leffler (æ 1.1) except I used aircraft-grade plywood in place of aluminum. The T4 rig (1 lb 3 oz) used 3/32-inch plywood while the Canon Rebel rig (2 lb 7 oz) used 3/16-inch plywood. All the corners were

joined with triangular wood stock and carpenter's glue.

Futaba S133 and S3101 micro servos were used on all rigs except a larger S148 servo was used for tilt on the Canon rig (per Steve Eisenhauer, æ 1.4). Pan was accomplished using 32-pitch gears, providing nearly 360 degrees of pan.

Originally all cradles were outfitted with NiCd batteries. Later, on the Canon rig, I found it more convenient to use four AAA alkaline batteries and Radio Shack battery holders (per Rodney Thomsen, æ 1.1). The Yashica T4 rig was completed early and we had ample time to test and practice with this rig. The Canon rig was completed two weeks before departure, and we made only one test flight.

At the last minute, I was asked by the 1995 expedition leader to shoot aerial photos using infrared film. I planned to use the Canon Rebel, but Elaine discovered that the camera uses an infrared emitter and detector, presumably to count sprocket holes for auto film advance, making infrared film unusable. With less than two weeks to go, I needed to find a used SLR that would work with infrared, and build a cradle for it.

I found an older Minolta 7000 Maxxum with a 35-70mm zoom lens. I built a dual camera rig for the Minolta and the Yashica T4 [below]. Both camera shutters are triggered simultaneously, providing direct comparison of the same subject on both infrared and standard color film. To simplify and reduce construction time I built it with preset pan,

but tilt and shutter are remotely controlled. I used two Futaba S133 micro-servos for shutter release and a Futaba S148 standard servo for tilt. Complete with both cameras (3 lb 6 oz) it functioned perfectly on the bench. It went aloft for the first time on Easter Island.

Since we were going to the most

remote inhabited place on earth with the closest hobby shop or kite shop more than 2000 miles away, we had to be prepared for any problems that might occur. We needed to bring spares of just about everything. We had three kites, a 9-ft Delta Conyne, a 13-ft Delta Conyne and a FlowForm 16. We also had two four channel Futaba transmitters and three receivers.

Camera rigs included the three previously mentioned plus a spare unassembled



digikAP from the frozen north

by DOUG DAVLIN, Anchorage, Alaska

With many thanks to Brooks, the world has gained a new and enthusiastic KAPer and the national economy has flourished. [*Doug came for a visit in January.* -bgf]

The Apple QuickTake™ 150 digital camera (\$785) will take to the sky and record our wonderful Alaskan scenery. Images will be downloaded to an Apple PowerBook™ 5300cs (\$2,750), and stored on Zip™ disks (\$18) for later enhancement and printing.

The radio used is the Futaba Skysport 4 (\$145) with three servos. The first servo operates the camera switch; the second servo operates the tilt; and the third servo was modified with gears to operate the pan. The gears (\$13) were found in a hobby shop and were intended for a model car.

Construction of this rig was more expensive than anticipated. My grinder needed new wheels (\$25); the belt sander was not adequate and a new one was purchased (\$110); the drill press was a joke and it too



was replaced (\$135), and they had some nifty sets of little screwdrivers on sale...so \$15 later...!

Did I mention that a new pop rivet tool (\$20) and a nibbler (\$15) were needed? Various nylon and steel bolts with nuts and washers and an antenna rod + legs cost about (\$25).

Can you explain why I used six feet of channel aluminum (\$8) when all that was needed was 26 inches?

It was a great day for me and Visa when I discovered the joy of kiting and kite aerial photography. Now all I need is a new kite (\$BIG)...big enough to lift this 2.5 lb. rig. Thanks again, Brooks!

Now where did I place that little set screw for the gears? •æ

Right side view; antenna boom points forward.

nylon 101: making a fuzzy tail

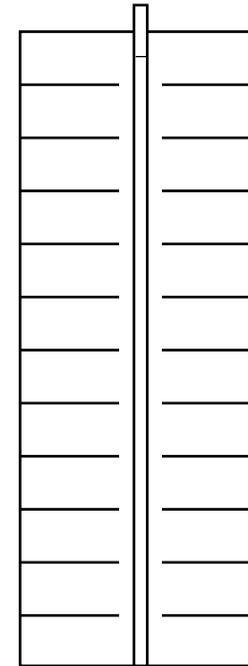
by BROOKS LEFFLER

It isn't really fuzzy; it's simply a reinforced length of ripstop nylon fringe, which is very light but provides plenty of drag. Many KAPers use it in preference to a drogue, windsock, or tube to stabilize kite designs such as the MultiFlare or the FlowForm, which benefit from a tail in all but the lightest breezes; and deltas and delta-Conynes which tend to overfly (i.e. glide towards you when the wind dies, dropping the camera like a rock).

If you're new to kitemaking, making a fuzzy tail is a good way to learn about working with ripstop. It's a very easy project, which will reveal most of the characteristics of nylon while you discover that a sewing machine is much less scary to use than you thought.

Nylon is best cut with a hot knife—a pencil-point soldering iron of 25-30 watts—because the heat seals the edge of the fabric, making it less likely to fray. Your cutting surface should be smooth and heat-resistant; I use Formica® plastic laminate, but plywood, masonite, or plate glass, or even a thick pad of newspaper will work in a pinch.

CAUTION! Nylon and other synthetics give off noxious fumes when heated, so it is essential that you buy and wear a respirator designed to keep out paint fumes and the like. See your local paint or hardware store.



To make your fuzzy tail, first cut a strip of nylon five feet long by 8 - 10" wide (1.5m x 20cm). Cut a piece of 1/2" (1cm) twill tape or grosgrain nylon ribbon about 4" (10cm) longer than the nylon strip, and using the largest zigzag stitch, sew the tape down the center of the strip. Sew a loop in the long end of the ribbon with plenty of overlap and lots of stitches.

Lay the strip on your cutting surface, and with the hot knife, slit the cloth from the tape to the edge every 3 - 4 inches, as shown in the illustration.

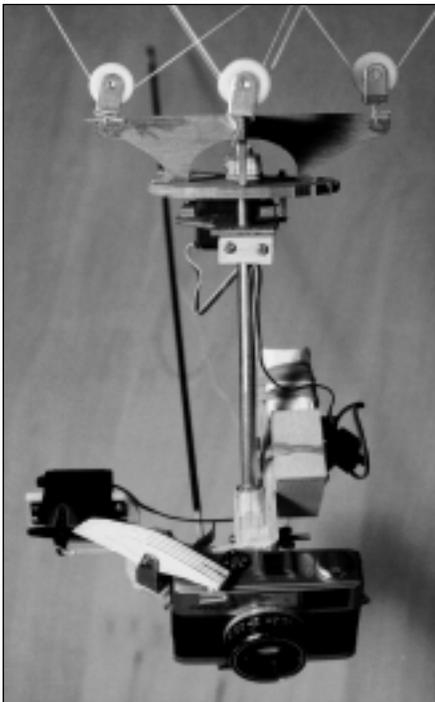
Just like that, your fuzzy tail is complete. Connect the loop to your kite directly, or with a 2-leg V-bridle and snap swivels if necessary. If you want a tail of adjustable length, make two or three of the above and join them with Velcro®. I use about ten feet of fuzzy tail with a FlowForm 16, more with a FF30. •æ

r/c and the manual camera

by PHIL MARINO, Rochester, New York

My first attempt at KAP was with an inexpensive P&S autowinding camera. The poor picture quality (image smear combined with a poor lens) convinced me I needed higher shutter speeds and better optics.

I had a good small rangefinder camera: an Olympus 35RC, but it had manual film advance (the usual thumb lever often found on older SLRs). This is a well made camera, about 20 years old, with a good lens: 42 mm f/2.8, 1/500 fastest shutter speed, and both manual and automatic (shutter priority) modes.



To use this camera for KAP, I built a two channel rig with one servo used to wind the camera and trigger the shutter, and the second servo to pan the camera.

FILM ADVANCE & SHUTTER RELEASE

For film advance/shutter release, a plywood bracket positions the servo to one side of the camera body. An X-shaped servo arm was used, with the downward-pointing arm of the X linked to the camera's thumb lever with a short length of dacron line and a bent wire hooked to a small hole drilled in the thumb lever.

The thumb lever is ratcheted (like most SLR's) so that the film can be advanced by repeated small motions as well as a single full stroke. For this rig, it takes 4 or 5 servo activations to complete the advance. I use 6 strokes to be sure; extra strokes do no harm.

To release the shutter, the servo arm facing the camera pushes upward on one end of a lever (a piece of plywood pivoting on brass tubing secured in an aluminum bracket). The other end of the plywood lever presses the shutter button.

So, six quick upward pushes of the joystick, followed by one downward push, advances the film and takes the picture.

PANNING CONTROL

The second servo pans the rig with a pawl which engages the notches in a 10 cm plywood disk. The disk is attached directly to the Picavet suspension and the entire rig (including the panning servo) is mounted to an aluminum tube which fits through a bushing in the disk. The clamping collar at the top of the tube has a single cloth pad which bears on the top surface of the disk and provides friction to prevent the rig from rotating on its own due to wind.

The pawl is a piece of thin (0.5 mm) aluminum sheet bent into a U-shaped channel. One end has a small hole drilled through both sides of the channel, and a pin fits through these holes and a hole in the servo arm. A rubber band keeps the pawl lightly pressed against the disk and the sides of the channel fit above and below the disk to keep it in place.

There are 24 notches in the disk, so each servo stroke (one transmitter lever motion) rotates the rig 15 degrees. By counting the steps, the direction of the rig is always known.

MANUAL TILT & BALANCE

Tilt is manually set with a screw and wing nut between a plywood fitting glued to the lower end of the aluminum tube and the lower plywood frame. The pivot hole in the wood fitting is offset from the tube axis by 3 mm to compensate for the off-center weight of the panning servo. The tilt pivot is at the CG of the lower assembly (which includes the batteries, the receiver, and

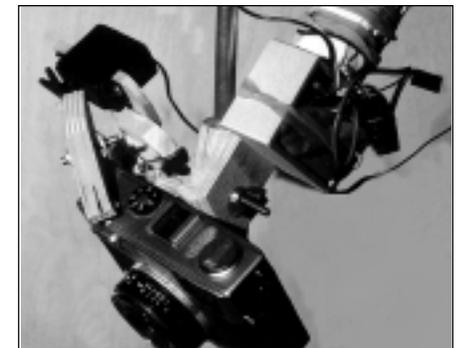


the film advance servo) so the rig is well balanced at all tilt and pan angles.

I've only used this rig once since I've added the panning control (we've had a wintery "spring" in northern New York) but so far it has been reliable and easy to use. Both servos are "at rest" except when actually panning or shooting, so battery drain is minimized.

The construction is almost completely of plywood (4 and 6 mm thick), which I find easy to work with, and the entire rig (including one pound for the camera) weighs 2.0 lbs. I was happy to be able to "recycle" a good, older camera and at the same time keep the cost down. If only my old Minolta SLR's weren't so heavy!

•æ



pyramid dreams—lost & found

by KATSUTAKA MUROOKA, *President, JKAPA, Tokyo, Japan*

Among the famous pyramids in Egypt, the three great pyramids in Giza of Khufu, Khefre, and Menkaure are the most magnificent of all. For over ten years, I was longing to visit Egypt for taking pictures of them with my kite. On March 1, 1997, finally the dream came true.

On the day the sky was crystal clear. I took a taxi to Giza; it took me ten minutes, but it looked like more than that. As I bought a ticket and entered the reserve of the pyramid, I was on the plateau of Giza which was nothing but a small part of Sahara Desert. Pointed peaks of pyramid scraped the blue sky.

As I approached them, rocks piled up one after the other came into my view. Millions of square rocks. How magnificent! The one for Khufu towers up to 147 meters high.

The wind was just right for kite—the Nile was sending it for me. The gap between the Pyramid of Khufu and Khefre was the way for the wind to go through. This is the place.

The taxi driver was curious as to what I was trying to do; I asked him to give me a hand. I got a FlowForm kite out of my bag. It went up without an effort. Camel riders looking on us came close and began talking about the kite.

The line on the kite went out for about 30 meters. A camera rig with Picavet was hooked on it, Nikon Mini with 28mm lens is on the rig. Thin lines on Picavet ab-

sorb vibration. The pictures must be crisp.

Off goes the line. The camera looks at the Khefre's pyramid. After 20 minutes, I took the camera down. This is it. The dream I kept in my mind for 10 years has ended—

“Oh, my God!”

The timer attached to the camera was not working! How come? The battery was down. It's not possible. What did I come here for?

I took the film out of the camera. No second film went in to the camera. I had to go back to my hotel feeling I like I was a very small boy. My schedule did not allow me to go back there. I am on an educational tour for the students I teach architecture in Tokyo. How depressing.

Back in Japan, I got all of the films sent out to the photo shop for developing and printing. The film I used for pyramid was supposed to be transparent when it came back, but no—it was not! I got the pictures of the pyramid! How fantastic! It is impossible!

I was dancing like a five year old boy in my room! Nothing but joy went through my body. I knew I could not go back to Egypt very easily when I left there, but here it was in front of me—the pictures of the pyramid taken from the air.

These pictures are some of my most memorable and valuable.



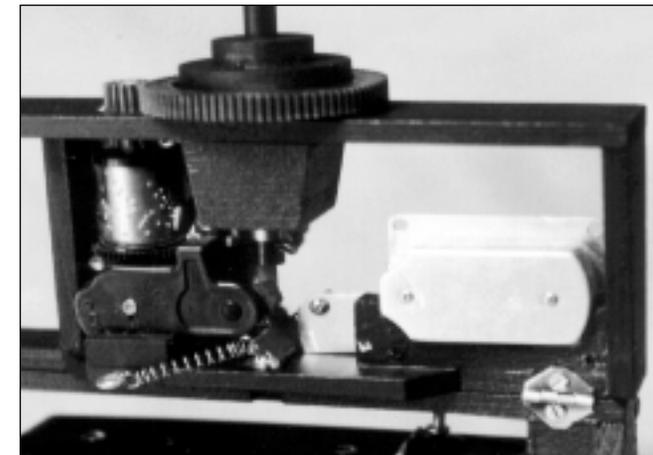
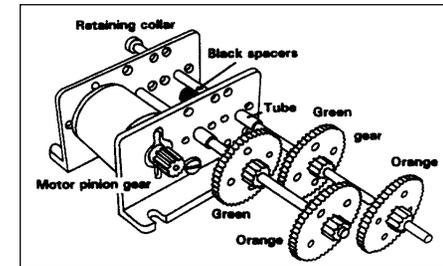
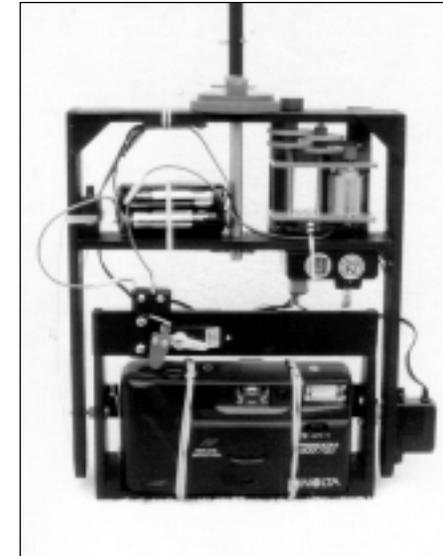
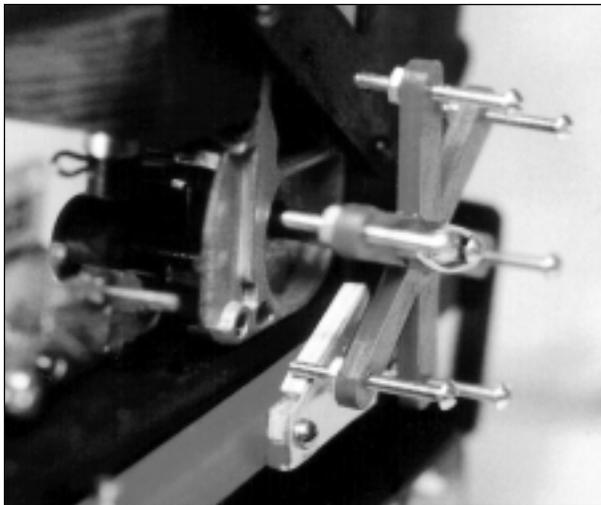
two new rigs from rodney

by **RODNEY THOMSEN**, Eureka, California

Thanks to the experimental work of Henry Jebe (æ 2.1) in the use of music box movements in KAP rigs I was able to develop this unit [right] providing automatic exposure and rotation by mechanical means with a stripped down Sanyo music box movement providing the power.

To achieve the rotation, the 1/8 in. auxiliary shaft of the movement was fitted with a Team Losi 16-tooth 48-pitch pinion driving a Team Losi 86-tooth 48-pitch spur gear. The winding key is fitted with a 6-spoke spider wheel set with 2/56 machine screws which depress the trigger arm as it unwinds [right]. After each exposure the trigger arm is forced up by the spring in the camera's finger button.

With the present gearing setup, the rig produces 12 exposures per revolution and on a test run with a full winding it activated the shutter 17 times.



The rig is set in motion by the KSB dethermalizing timer which when tripped releases the brake on the governor [bottom].

Suspension is a pendulum type with the swing dampened by adjusting the nylon lock nut. The down angle is set prior to flight and is limited to about 15 degrees. I have not had it aloft yet; that trial comes with the first break in the weather.

The other just-completed rig [left] uses two microservos to provide three functions with the shutter servo being used to start/stop a 1.5 volt gear-box motor providing rotation. A single AAA battery powers the gearmotor, with 4.5 volts from three more AAAs being used to power the receiver and servos. This rig weighs 20.4 oz (578g) ready to fly.

The motor/gearbox [left] is made in England by MFA/Como Drills [The Mill, Mill Lane, Worth, Deal, Kent CT14 OPA; phone (+44) 1304 612132]. It is supplied in the USA by Hobby Lobby as

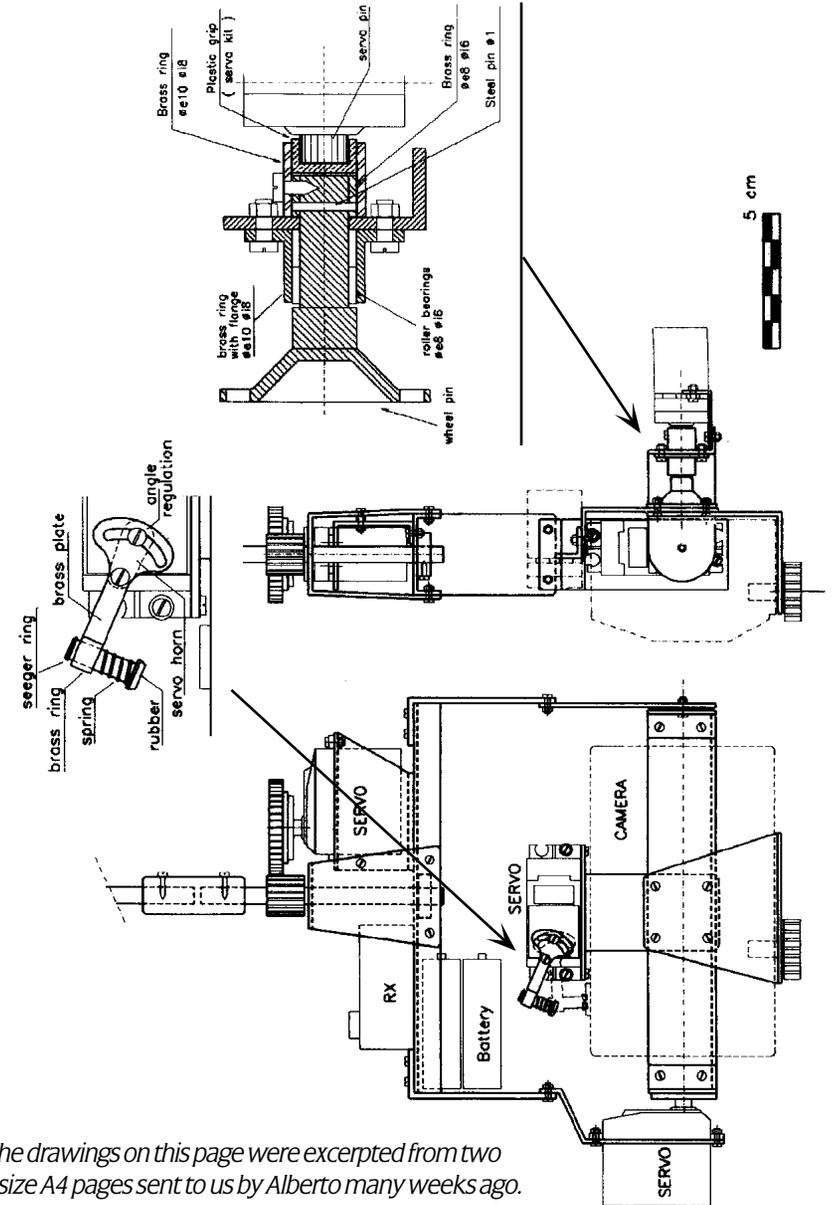
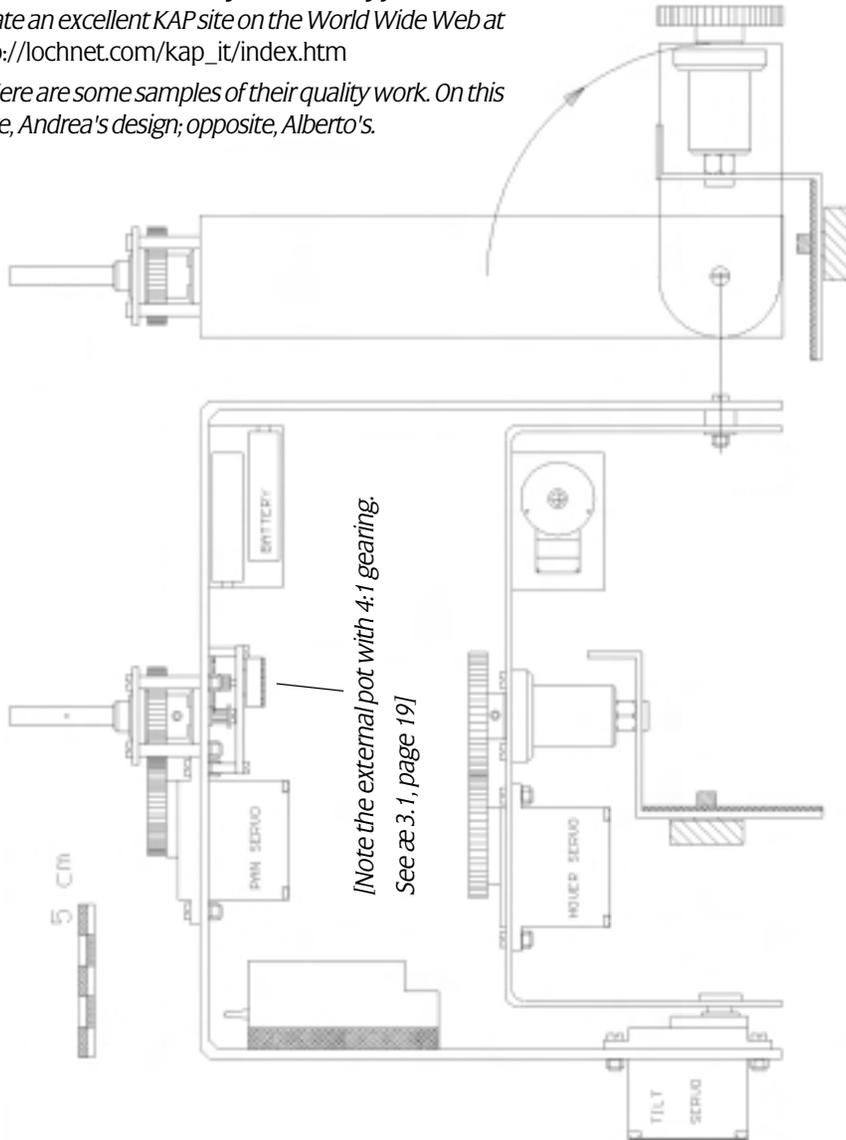
their #HLH7917 [See Sources, page 32]. It's a neat little unit that provides ratios from 4:1 up to 4000:1 by adding or removing gears. It seems to be a great option for KAPers trying to maximize the capabilities of 2-channel R/C gear by adding rotation, even if it is in one direction only.

two tidy HoVers from italy

by **ANDREA CASALBONI**, Villanova di Bagnacavallo, & **ALBERTO BONATI**, Imola

Two of our readers in Italy have recently joined forces to create an excellent KAP site on the World Wide Web at http://lochnet.com/kap_it/index.htm

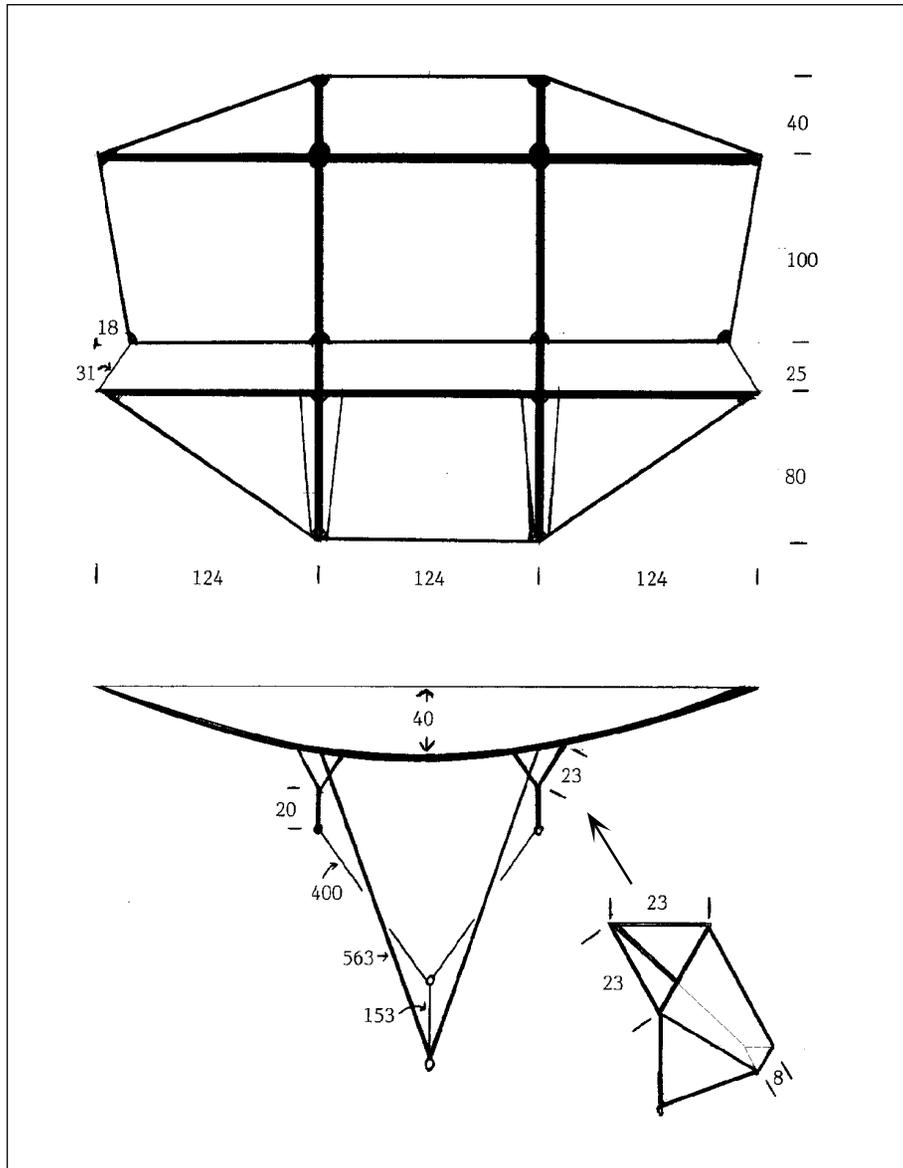
Here are some samples of their quality work. On this page, Andrea's design; opposite, Alberto's.



The drawings on this page were excerpted from two full-size A4 pages sent to us by Alberto many weeks ago. There's newer stuff from both KAPers on the Web, and we highly recommend that you check it out! —bgf

the maxi-dopero

by RALF BEUTNAGEL, Braunschweig, Germany



The Maxi-Dopero is simply an increased Dopero as shown in the *æ* volume 1/number 3/summer 1995/page 23. I changed the keels, however. I used a combination between normal and open keels. Ron Moulton called this design the "OVK" (Open-Vertical Keel) when describing the kites made by Tom Van Sant.

The Maxi-Dopero is flying just a little bit more motionless than my normal one because of the bigger size and the new keels. *[I can attest that the normal one flies very steadily indeed, and in quite light air. —bg]* I tested it up to 4 bft and it is flying tailless very well even in stronger winds. The practice, the use and the launch is very easy and similar to my earlier kites.

You can change the pull on the line by changing the bridle! Enough pull in lighter winds but not too much in stronger ones. But attention please: the Maxi-Dopero is no toy!

Because of the shape and the great wingspan it looks very big but it has only 6.5 m² area.

I used glassfiber-tubes for the frame. The longerons [verticals] and the upper horizontal are 14 mm GFK tube (the blue ones in Germany) and the lower horizontal is 12 mm GFK tube (the yellow one). 3 tubes of 125 cm each make up a horizontal strut; 2 tubes of 125 cm each are used for each longeron strut, so the kite is 2.5 m high (8 ft+) with a 3.75 m wingspan (12 ft+).

the penguin papers

by JOHN CARLSON, Bozeman, Montana

The last issue of **the aerial eye** included excerpts of my letters to Brooks Leffler describing my experiences flying kites for my research on penguins at Palmer Station, Antarctica. Palmer Station is a U.S. research facility located on the Antarctic Peninsula four days by ship south of Punta Arenas, Chile.

In this article I would like to explain why I am using KAP and how I plan to use the photos for my research.

I am investigating the reproductive success of Adelie penguins to determine why particular colonies of these penguins consistently produce more young birds per nest than other colonies. Adelie penguins are important indicators of how the whole Antarctic

ecosystem is functioning, so understanding the natural variation in their populations is essential to track changes to this dynamic environment. How penguin colonies are situated in the landscape and their shape and density may be a big reason for the differences

between colonies. Therefore I need to have good maps of the colonies and the topography around them, something that is quite difficult to come by on the Antarctic Peninsula, but essential to my research.

I was scratching my head trying to figure out how I was going to accomplish this project when KAP came to the rescue. My father knew of my predicament and he mentioned an article he

had seen [in *Bird Watchers Digest* by Steve Eisenhower] describing KAP for environmental monitoring. After reading the article, I contacted Brooks Leffler, who was mentioned as a source of information. Brooks listened to my problem and suggested a solution, and with

the approval of my advisor, proceeded to build me a KAP rig.

Brooks provided me with a blue FlowForm 16 with a 2-channel gearmotor rig on a Picavet suspension. Then it was off to Antarctica to take pictures of penguin colonies.



Kite flying at Palmer Station proved to be an interesting experience. The penguin colonies are situated on small islands around the station and require a short trip in a Zodiac [inflatable boat] to reach each one. The penguins did not react to the kite once it was overhead but they were a bit nervous if we launched the kite near them, so we had to dodge the loafing elephant seals nearby to launch the kite.

The other scientists and support staff were a bit dubious of the whole adventure until I developed the photos. They were impressed but not as much as I was—the photos were all that I had hoped for and more. It was interesting to see the regular spacing of the birds through the colony.

The photos proved to be immediately useful. I was able to locate the individual nests that we were monitoring in each colony and map them on the photos for future reference. We were also able to count the number of penguins in some large colonies that are too big to count accurately from the ground. I was able to obtain a series of photos for a few colonies that tracked how snow surrounding the colonies influenced the colony shape.

One of the photos I took of the station was used to determine the loca-

tion of underwater rocks near the pier that were causing problems for a new ship planning to dock at Palmer.

Kite flying was not all fun and games though. It was quite frustrating to have good wind and not be able to fly because of other work commitments or even worse to have good wind go bad just as I got the kite in the air. I found that I had an uncanny ability to calm even 15-knot winds as soon as I landed on an island. These frustrations are not limited to Antarctica I am sure.

I plan to use the photos to develop computerized maps with the aid of Global Positioning System (GPS) data for each photograph. The maps will be part of a Geographical Information System (GIS) that will enable me to link information about the reproductive success of the penguins in a particular colony to physical and environmental attributes of the colony, such as slope, aspect, amount of

surrounding snow, number of predators near the colony, and number of tourists nearby. I plan to use the photos to follow the fate of every nest in one colony as well.

KAP has provided me with an inexpensive, efficient alternative for record-



my second carbon rig (...SeCaRi?)

text & photos by **FRANK LOUWERS**, *Sleidinge, Belgium*
72361.2161@compuserve.com

After having built 2 rigs—one a fully automatic (non R/C) rotating rig, and one a 4-channel R/C rig of aluminium—I wanted to make a very lightweight yet sturdy rig that I would use with my Minolta 7000 autofocus reflex camera.

I had just discovered Weber, a shop in Paris that sells carbon-reinforced epoxy laminates in varying thickness [see *Sources*, p. 32]. The material is extremely light, extremely strong, and extremely expensive. However I needed only a very small quantity and decided to go for it.

I built the rig and came out with a total weight (camera, rig, and pendulum suspension) of 1230 grams! That was not bad at all and I liked the rig and its functionality.

Then I took it with me on our family's sailboat on a trip to Scotland. I really wanted an aerial picture of us lost in the middle of a sun-drenched North Sea.

I checked all the gear & launched the kite. It flew perfectly! So I hooked the rig onto the line, attached my safetyline to the kiteline (I *always* fly with a safety line although I had never had a problem) and let it out.

I took some pictures of the ship reaching under sails, maybe even caught a glimpse of the porpoises that were playing near the bow!

Well, all of a sudden the rig and the camera just fell off, dropping in more than 100m of water... I then realised that in all the excitement of taking my first shots off a sailboat I had forgotten to hook the bottom end of my safety-line to the camera!

I lost my trusty camera, a beautiful lens, a nice carbon rig, and about ten of the best aerial pictures I ever took!

NEVER GIVE UP

But one shouldn't give up! So I starting thinking about a new rig, and I was wondering if I could get a rig weighing less than 1000 grams, including an SLR camera...

I wanted to remain with Minolta, as I was very pleased with the performance, I had a 28 mm/f2.8 lens, which I had bought second-hand but which gave excellent results, so that would be the new aerial lens.

I bought a 2xi body. It has the advantage of being good value for money, it is light, has also speed and aperture priority modes, and has a maximum shutter speed of 1/2000th. My experience is that aerial pictures are much better with speeds over 1/750th.

The disadvantage is there is no longer an electrical contact for remote shutter release. Instead, for that trigger I epoxied Futaba's smallest servo (S-143) on one end of a strip of 4mm thick car-

bon. On the other end I fixed a flash foot. The whole slides in the flash shoe on the camera. [see *closeup below*]

WEIGHT & BALANCE

Now I could start on the rig proper. If you determine very carefully the center of gravity of the part a servo has to move, and put the axis so that it goes through this center, you can take very light servos to do the job, as they won't have to exert any serious force.

For the bottom plate I took a strip of 2mm carbon, 200mm x 45mm.. It has an oblong cut-out for the camera retaining screw. This way the center of gravity of the camera plus lens can be made to coincide with the axis of the inclination servo. With a heavier lens, slide the whole a bit backwards before tightening the screw and vice versa. I also glued a bit of shock-absorbing foam on this ground plate, to eliminate the transmission of vibrations.

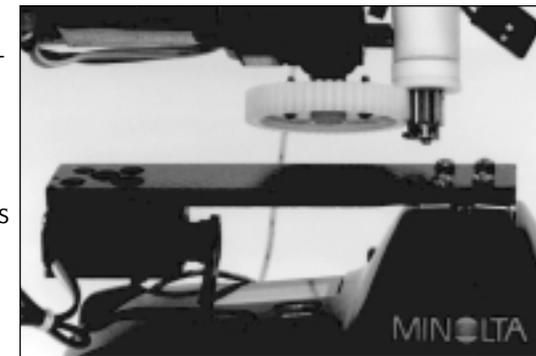
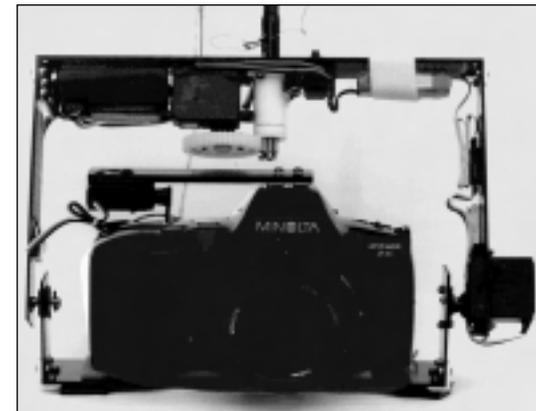
The two vertical brackets are made of 1.5mm carbon, and are fixed to the groundplate with 2 short lengths of a small aluminium corner profile. Those are screwed to the carbon strips. This makes for light yet stiff corner connections. I put a small drop of epoxy on all the nuts once assembly is final. I have never had a nut that came loose.

To this bottom U-frame I now fixed the camera with all its accoutrements and—with the lens slid out to its infinity focus point—I now determine the exact height of the center of gravity. This height is then transferred to the two side brackets, and that is where the holes are drilled for the axis.

I use a direct link for the inclination: the servo is at-

tached right onto the turning point, without any additional gearing.

In a similar manner I assembled the top U-frame. The inclination servo is a



Continued from page 23

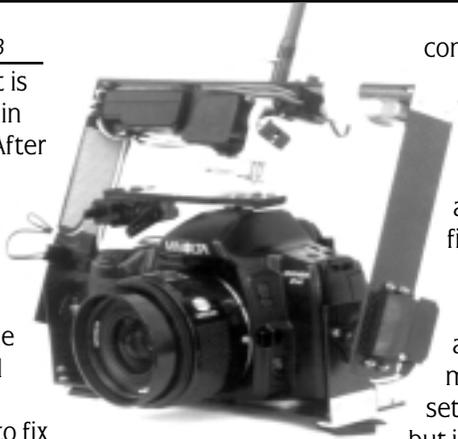
Futaba S3002 and it is lodged in a cut-out in the side bracket. After those two U-frames are assembled, I now determined the center of gravity of the whole to determine where the panning axis should come. This is a bit tricky, as you have to fix (temporarily) to the top plate also the receiver, the panning servo with its gear assembly, and the battery.

The better all this is done, the less the servo will have to work afterwards, and the smoother everything will work once in the air.

A hole is then drilled through the top plate where the panning axis will come. I mount everything under the top plate, as it looks neater and is also better protected. The 4mm stainless steel axis goes through a Teflon bushing about 35mm high, giving ample sideways (almost frictionless) support.

The bottom end of the axis receives a 10-tooth gear wheel. Just above it are 2 Teflon spacers, that together with the bottom of the bushing take care of the upward thrust with almost no friction. The servo (again a small Futaba S3002) hangs under the top plate and on its disk a 48-tooth gear wheel is fixed. You need this almost 1:5 ratio in order to get a full 360 on the panning axis.

The rig is now almost complete: I placed an on/off switch (with a charging



connector) in a cut-out in the top plate.

The small receiver gets squeezed next to the panning servo and the small NiCads find their place on the opposite side.

The NiCads I use are very small. Normally I use a 110 mAh set that weighs 32 g, but in very light weather I

can also use a tiny pack that gives 55 mAh and weighs just 17 g! It lasts without a problem through a 36-exposure roll of film (provided you shoot that in less than an hour of flight).

As a pendulum I use 2 lengths of Easton rod, carbon over aluminium, outer diameter 6.5 mm, total length 1800 mm. I like long pendulums so that the swinging amplitude is real slow.

About two years ago I experimented with a Picavet suspension and built one for this rig, convinced by an article written by Wolfgang Bieck. It really is super, but weighs almost double of the rod suspension: 120 grams versus 66 grams (including everything, even the safety line, which I now attach religiously on *both* ends!)

I have flown now with this rig for almost 3 years, and it performs very well. I usually fly it from an excellent 7.5-foot Rokkaku specially built for me by Kevin Shannon of Carlisle Kiteworks, or from a 35 sqft or 22 sqft parafoil built for me by the late Doug Hagaman, two of the last ones he so superbly built.

Ah, and were my objectives met? Well, with the larger battery pack and the rod suspension the whole (absolutely everything included) tips the scale at— 998 grams!! and with the Picavet suspension that is 1052 grams.

Well, having attended the FLiBB '96 meeting in Bad Bevensen [see *æ* 3. 1], I know I can knock 50 grams off a new Picavet suspension, maybe even 52 grams... Wolfgang has those really lightweight blocks! [see *Sources*, p. 32]

So what is next? Maybe I will build a compact rig, with the choice of landscape/portrait, and a SUMIPI [see *æ* 3. 1, p. 9] and this nice german compact camera, all under 750 grams? Maybe, maybe not. Anyhow, I hope that you could find something interesting, an idea perhaps for a next rig. Experimenting is a great part of the fun and sharing it with others gives me great satisfaction, so if you have any questions, just let me know!

•æ

Continued from page 21

ing information about Adelie penguin colonies that would have otherwise been logistically and financially difficult, if not impossible.

My research is sponsored by a National Science Foundation grant to my major advisor, Dr. William R. Fraser. I would like to thank my field help Eric Holm, Sharron Delsack, and Pete Dooley for their assistance with my KAP experiment at Palmer and especially Brooks Leffler for all of his help getting me going and answering lots of questions.

•æ

berck, briefly

The annual Easter-week kite festival at Berck-sur-mer, France, attracts KAPers from all over Europe. This year's turnout included eye-fliers José Wallois, Wolfgang Bieck, and Andrea Casalboni, among others.

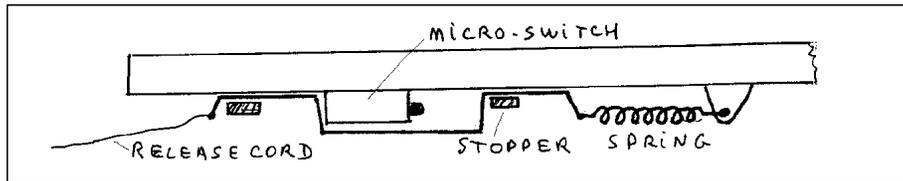
Wolfgang sent the photo below, with these comments:

Andrea Casalboni came with the Italian team "Il Forno" to show replicas of historic kites and cameras used for kite aerial photography...by Eddy, Hargrave, Chardon and Lecornu. As we know, a kite shows its character only in flight. Andrea and I cooperated harmoniously; he handled the kite to the right height, and I took aerial photos. The result of our cooperation documents a Lecornu



pulling strings

by CHRISTIAN BECOT, Tournlaville, France



It happens sometimes that wind is very light, so light that the kite cannot lift heavy KAP equipment. For these occasions, I use a very light cradle [with a camera modified for electric shutter release], and remote control of the camera is done with a release cord.

The photo of the Dieppe festival [below] was taken last September with this rig. As you will see, there was not much wind and only a few kites were flying at that time.

On the pendulum's supporting bar attached to the kite line, there is a small switch which is activated when pulling the cord, triggering the electric shutter release [see diagram].

For a while, I used fishing line which was 0.2 mm diameter. It is very light, but the inconvenience is that on the field you can hardly see it. Also it is quite elastic, and with 50 meters of length you have to pull 2 or 3 meters to be sure you have activated the shutter.

Now I use colored sewing thread, which is easier to see and has little stretch.

When you let the kite fly away and the cradle is ascending, you have to take care to keep the release cord free.

For safety, a short cord is attached at the top end of the release cord, with a breaking strength less than the release cord. In case of emergency, a strong pull will break it and it is then possible to bring back the equipment as usual.

Never attach the release cord directly to the pendulum or on a Picavet cross bar, as you would shake the camera at each shot.

For reference, the total weight of the cradle with stabilizing bow, pendulum, and M1 Olympus [Stylus] camera is 340g. What could be better with efficient remote control?

•æ



rig number four: ultra-small

by HARALD PRINZLER, Schlangen, Germany

This rig with radio-controlled functions was built as small as possible for the Ricoh FF10. It can also be used for the Ricoh FF9.

My earlier rig with remote control (number 2) was too big, because of the universal design to accommodate a compact camera, SLR, or video-camera. To realize this small rig (overall: 15cm x 17cm x 4cm) the camera is mounted upside down [see rear view, below].

For all rigs with radio-control I use my system Graupner 314. For fast changing the receiver all needed signals

are wired to a Sub-D9-connector (seen from Peter Bults in *æ* 3.1).

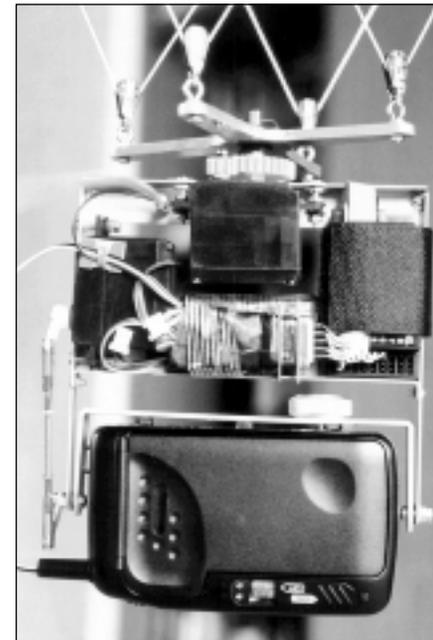
The horizontal direction is set by a modified servo (standard size) with endless turning. The vertical direction is set by an unmodified standard servo with a push rod. So the camera can look from straight down (-90 degrees) to nearly +10 degrees to the horizon.

The shutter release is activated by an electronic switch in SMD-technology. The size of the circuit with the Sub-D9 connector for the receiver and the connectors for the two servos has the size 4cm x 2cm x 1cm. Power-on is done by connecting the battery (4.8V, 300mAh).

For the first time, I took the weight of my rig. This rig with suspension and camera weighs about 640g.

The maiden flight of this rig was successfully done in the beginning of March.

•æ



in the fall issue:
GADGETS & GIMMICKS

*We'll look again at
all those little inventions & devices
that solve your KAP problems.*

AD & COPY DEADLINE:
August 1, 1997

Continued from page 5

bled T4 rig. We used two different-sized Rendsburg Picavet suspension systems (æ 1.4) and Brooxes Hangups™ (æ 1.4). Both systems used screw eyelets in place of pulleys. For the larger system the hangups were scaled up 25%.

Kite line included 500 feet of 200# dacron line, 500 feet of 250# dacron line on hoop winders and 500 feet of 500# dacron line on a Windbreaker™ winder. Elaine made three 10-ft sections of frilly rip-stop nylon tails that could be clipped together into one 30-ft tail.

Electricity on Easter Island is 220 volts, so I brought a transformer to charge my transmitter and receiver battery packs. Not leaving anything to chance, I carried an assortment of resistors, potentiometers and a digital multimeter in case I needed to charge batteries from a 12v car battery.

The 25 or so rolls of film we used included: ASA 200 and 400 color print, ASA 200 and 400 color slide, ASA 125 and 400 B/W and Kodak Ektachrome Infrared. Since there is no processing on Easter Island we brought a Kodak hobby pac™ Color Slide Kit to process E6 slide film and chemicals to process B/W film. This way we could determine if our cameras were operating and get a sneak preview.

Dr. Georgia Lee, an archaeologist who has been studying rock art of Easter Island for many years, asked us to take aerial photos for mapping purposes of a site known as “the petroglyph

panel”. It is a lava block 39 feet across, containing over 100 carvings (*below*).

Easter Island is literally covered with hundreds of archaeological sites. Many of the sites contain the large stone statues (moai) for which Easter Island is best known. The moai were erected on stone platforms called ahu. It is believed that the moai were toppled by warring clans until none was left standing. On the south coast are many examples of moai knocked from their platforms, lying face down [*see pic, p. 4*].

The largest moai ever erected is 33 feet tall and is located on the north coast at Ahu Te Peto Kura [*same pic*]. Two ahu stand on the beach of Anakena, one with seven moai, and one with just one, re-erected in 1960 during Thor Heyerdahl’s first visit to Easter Island. While we were at Anakena, an expedition had started construction of a 50-ft reed boat with the intent to sail it to Tahiti and beyond. When we left only the hull was complete [*see page 16*].

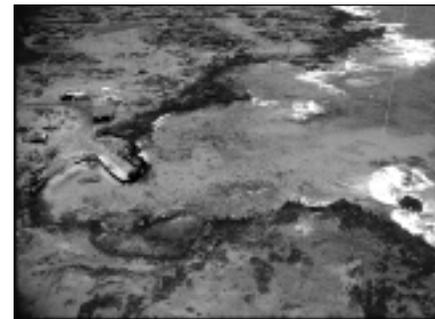


During the 1995 expedition the participants camped for three weeks at the picturesque La Perouse Bay [*below*]. This is one of only a few recreational places where one can safely enter the water. The Chilean government has proposed to convert this area to a shipping port and container storage site.

There are many archaeological sites around La Perouse which would be destroyed if the port is ever built. We feel that La Perouse is a very special place and it would be a great loss to the Rapa Nui people.

Feeling as we do, we decided to use KAP to document La Perouse and the archaeological sites that surround it.

One of the most impressive sites is Ahu Tongariki, with 15 giant moai, the largest being 27 feet tall including top-



knot and weighing over 25 tons. This site was perfect for KAP, with the ocean in the background [*bottom*].

Without a doubt Easter Island ranks very high among our all-time best adventures. Not only did we do KAP, which I believe is the first time it has been done there, we made friends with many of the locals. After we flew our kites a few times, especially the 13-ft rainbow DC, the whole island knew of our presence and what we were up to. Often, passing locals would give us “thumbs-up”.

On one occasion, we went KAPing at Ahu Tongariki. Shortly after launching the large DC and rig we were joined by two visiting videographers and a Rapa Nui man, then by a local rancher/fisherman on horseback. By the end of our third roll, the wind had increased, and the fellow on horseback offered to pull the kite in for us. We certainly didn’t refuse his offer. Tugging on the kite line he humorously exclaimed, “Como un grande atùn!”: this is one big tuna fish!

We would like to thank Brooks Leffler for publishing **the aerial eye**, and all of you who contribute to it, to whom we owe much of our KAP success on Easter Island. We will return again.

•æ

aerialletters

TICKLING THE KAPPETITE

I received all my issues of AE in good order. I'm afraid that 240 pages of KAP info all at once will spoil me. When the summer issue comes out it will seem to me meager fare, information anemia, a mere tickling of my "KAPpetite."

I must say that the pictures in the Spring issue have to be some of the best I've seen. In particular Patrick Morin's picture in the gallery is extremely thought provoking—Where is that kite going? Did that truck run over it when they passed? Did a spar break? Did the rip stop tear? Was there a tail before they passed? Maybe that truck has ten flat tires or a busted wind-shield. Is the flier of this kite inebriated? (he is flying down the middle of the road) And who is that following behind—better try to shake them!

David Hunt
Johnson City, Tennessee

HEAVY DUDE

Got the package of back issues last night and after much prodding from the wife put them down and went to bed. Man, what a store house of information! It will take me some time to get through all the articles but the ones I've picked out to read so far have been

nothing short of first class, and the pictures are flat outstanding...

I took a roll this weekend with my "heavy" rig. It is a Canon AE-1p with winder and 28mm lens that weighs in at 2 lbs 5.5 ozs, plus the cradle and servos another pound, so there is almost 3.5 lbs. I flew it on two 8' DC's separated by 100' and in the 15++ wind it all worked OK....

James Lofton
Clovis, New Mexico

KAP SHOWS BIG IN ST. LOUIS

I would like to thank all KAPers for their efforts in making it possible for us to have the [WKM/AKA Traveling KAP] Exhibit at the St. Louis Science Center April 5-6 [below]. In viewing the images, it has inspired me even more to keep shooting from above.

...I was a little disappointed with not having all the media coverage as promised, although the exhibit did get excellent viewing.

It was placed just outside the lobby area of the Omnimax Theater. The show at the Omnimax that weekend



was Special Effects, in the making of movies. Some 300+ that waited between shows every [90 min] ventured by for a look at KAP Special Effects with delighted amazement. Even the scientist and staff at the Center were amazed.

All the handouts went fast, as did the voice of repeated explanations. Special thanks goes to Ron & Charm Lindner and David Schenkan for helping in the exhibit.

Randy Bollinger
Ferguson, Missouri

KAPING WITH BLACK BATS

A few years ago on a hot summer's day in a very light breeze I flew my small black "bat" single-line kite on 60 metres of line. After about 10 minutes of vigorous audible wing-flapping, I noticed in the far distance three large unidentified birds similar to eagles in outline. They flew closer and one by one became more and more inquisitive until all three dived and hovered around the "bat" with great enthusiasm. I stood watching fascinated for quite a while, unaware of the small crowd of onlookers.

Since then I have attempted to repeat the event without success. It has since long been a dream that this technique of decoying bird shapes could be coupled with KAP equipment and a suitably-placed feeding table could be set up at a preset in-focus distance, the shutter being tripped as the bird takes food or by remote radio control whilst the bird is still in flight, or just about to touch down with wings full span.

Is this just a dream or have any other KAPers had similar experiences? If so I would like to hear of them. Does anyone think my theories are feasible? Surely KAPing is only limited by human imagination.

Rob Green
Newbury, Berks., England

MAX KOPFRAUM?

...Monday's mail brought the AE. The photo and story by Wolfgang [*is VICORI victory?*, *æ* 3.2] had me laughing so hard I thought I might wet my pants. Can you imagine the reaction to seeing him in action with that thing on his head? There was a [U.S.] comic character and TV series a few years back, *Max Headroom*, about a guy that transmitted all that he saw back to some computer to help him understand his world. On the edge, all right....

Craig Wilson
Madison, Wisconsin

NEW WEB ADDRESS

Thank you for listing mine and other KAP www sites in your spring issue. Late last year I changed servers and the new/current address is below:

<http://home.sprynet.com/sprynet/jmaxworthy/kap1.htm>

Please accept my congratulations on everyone's work on **the aerial eye**. It is one of the finest speciality journals published.

John Maxworthy
Long Island, New York