



East Aquhorthies Neolithic-era Stone Circle, near Inverurie, Scotland, by Simon Harbord

Sources

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

Supercircuits

One Supercircuits Plaza

Leander, TX 78641

Phone (800) 335-9777

(512) 260-0333

Fax (512) 260-0444

Extensive selection of microvideo equipment. Catalog.

Servo Systems Co.

115 Main Road

Montville, NJ 07045-0097

Phone (800) 922-1103

(201) 335-1007

Fax: (201) 335-1661

Miniature gearmotors. Catalog.

Markertek Video Supply

4 High Street, Box 397

Saugerties, NY 12477

Phone (800) 522-2025

(914) 246-3036

Fax (914) 246-1757

LCD camcorder monitors; sunshades. Catalog.

Ramsey Electronics

793 Canning Parkway

Victor, NY 14564

Phone (800) 446-2295

(716) 924-4560

Fax (716) 924-4555

Amateur microvideo equipment; complete systems on 439 & 900 MHz. Catalog.



the aerial eye

a quarterly publication of the aerial photography committee
of the American Kitefliers Association
volume 3 / number 2 / spring 1997

US\$4.00

USA & CANADA

US\$5.50

overseas



Cap Blanc Nez,
France

by

Ralf Beutnagel

KAP ON THE EDGE

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.

Committee names go here,
but didn't reproduce right for some reason.
Ignore, plz.

blind majority?

The old subscription list, which took quite a hit with the end of our second year, has recovered nicely, and we're now up to almost 200 again, many of them late renewals. Your interest is what keeps us going—thanks!

Most of you have stayed in the closet, though, as far as doing it is concerned—KAP, that is. Some of our best pix have been from first-time KAPers, so share the contents of that shoebox! Or write us your thoughts or reactions or ideas.

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.

I'm not sure it will be apparent now that it's in print, but here's the idea behind the title for this issue's feature:

Most of us pursue our craft under relatively controlled conditions. We fly our rigs for pleasure, close to home on nice days with moderate winds, and avoid risky situations because we don't want to damage our equipment.

A few hardy souls among us will venture out in very cold weather; still fewer of us are brave enough to do as Henry Jebe has done in Alaska, taking single-handed aerial pictures from a canoe—in the ice.

Henry's work exemplifies what I mean by KAP on the edge: he takes chances and flies in extreme conditions most of us are not exposed to and wouldn't seek out. His work has appeared regularly in past issues (see especially 1.4 and 2.3) and more is upcoming, but we aren't going to show you any of Henry's stuff this time.

What we haven't discussed very often is the work of those who have used kite aerial photography to solve a professional problem that can't economically be solved any other way. This is another kind of KAP on the

our feature this issue: KAP on the edge

by BROOKS LEFFLER, editor

edge: working under adverse circumstances of weather or accessibility or both, at the outer edges of human existence, for non-photographic professional purposes.

In this issue we have three articles that describe this kind of KAP. In each case, kite-borne cameras were used to provide documentation for research rather than solely to bring back pretty pictures.

Carl Bigras and Peter Bults each report on projects in the far north, on opposite sides of the world but above the Arctic Circle. And from the bottom of the globe, John Carlson gives us a first glimpse at his work with penguin colonies in the Antarctic. John has promised a full article with pictures for the next issue.

At last fall's workshop in Bad Bevensen, Germany, Wolfgang Bieck told of Andreas Bürkert's botanical studies using KAP in Africa, which would fall under our title for this issue, but we didn't have room for a complete article on that subject this time.

We would welcome further articles describing your work or that of others in applied or extreme KAP.

• æ

about the cover

Cap Blanc Nez, France, April 1996, by Ralf Beutnagel. Ralf's comments:

"Cap Blanc Nez is the nearest point from Europe to Great Britain, with very high limestone cliffs similar to [those] on the other side of the channel. This special landscape works like a nozzle, and of course there is more than enough wind for kiting. We

launched Wolfgang Bieck's MultiFlare with mountaineering equipment because of the strong pull, and lifted both of our cradles on the same line. The kite was flying over the water so that we could get pictures of the cliff only seagulls had seen before. When we told our story to José Wallois, who lives nearby, he said, 'KAPing at Cap Blanc Nez? Unbelievable! There is always too much wind.' "

• æ

fossil forests of the far north

by CARL BIGRAS, Carlsbad Springs, Ontario, Canada • <http://www.pch.gc.ca/cci-icc>

Last summer I made my third trip to the Canadian Arctic accompanying scientists studying the erosion of a 40-million-year-old warm temperate forest on Axel Heiberg Island (79° 55' N, 89° 02' W).

The site is approximately .5 by 1 km, with almost a thousand perfectly preserved or fossilized tree stumps in their original growing position. They sit in about 20 layers of leaf mat and forest floor litter from different time spans.

We mapped the tree stump locations with a Global Positioning System (GPS). I had shot every corner of this place with every technique from macrophotography to landscapes and stereo photography to shooting out of a helicopter without a door. We had contracted for proper aerial photos in 1989 at 1:2000, 1:5000 and 1:10000 scales, but we still needed close-up details from the air of particular areas.

Given our limited budget, I suggested we use my kite aerial photography equipment. Inspired by William Warner's article *Kiteography on stereo 3D imaging* (æ 2.2), I designed a stereo KAP rig. It was T-shaped, 20 inches x 48 inches, with crossmember reinforcement.

Time was short before we embarked, so I consulted two furniture conservators on building this camera platform with the lightest material at hand: two big boxes of balsa wood. I purchased two Kodak Cameo cameras with 34mm fixed-focus lenses and auto film advance. The cameras were installed 44 inches apart which gave me more than 60% overlap, a disadvantage for mapping purposes but great for stereo projection.

Having built R/C aircraft in my teens, I used the same techniques to trigger the cameras as I had used for controlling ailerons. We didn't require the cameras to pan

or swing; one servo was used to control two flexible cables with adjustable linkages. The linkages were soldered to control wires and bent over the extra-high shutter button by sticking a cabinet door bumper pad over the manufacturer's shutter button.

The outer plastic casing was epoxied to each end of the frame. A depression was cut slightly forward in the 1/2" x 3" balsa board for the batteries which were held in place with Velcro® straps. The receiver was fastened on with a large Velcro pad.

The idea was to hang the rig from a central point of the kite line using three 25-ft-long lines attached to each end of the frame, resembling a pivoting camera system. We had the cameras mounted and triggering at the same time, but there was no time left for a flight test. In theory it should fly (...on a wing and a prayer).

We packed up 2,000 pounds of food for three people for four weeks; solar panels; 12-gauge shotguns; camping, surveying, scientific, electronic, & photographic equipment; spare parts; two KAP rigs (single and stereo); four 1000-ft lines; and lots of spare everything. Five crates and fifteen pails were shipped two weeks ahead of time to Resolute Bay.

The only thing left was to think through my shooting strategies and to check if I had forgotten something. The closest store to Axel Heiberg Island is two days' travel time by Twin Otter airplane south to Resolute Bay. My two Tyvek® delta kites (11 ft & 20 ft) traveled with me as baggage in a ski bag with an 8-inch Sonotube insert.



With 24 hours of daylight, we set up camp the morning of June 29, 1996, and I did a test flight the next day while my colleagues installed GPS repeater radios on the work site. Two problems arose. First, the rig swayed left to right without any sign of stabilizing. Second, the rig was being pushed back by the wind like a wind gauge resulting in the camera lens axis being no longer perpendicular to the ground. Yes, Murphy has left his mark in the high Arctic!

I disassembled my Picavet system from my regular camera, located the centre of balance on the stereo rig, and mounted the Picavet with cable ties and duct tape. I had brought a small Canadian flag wind sock, which I tied at the back with 6 ft. of line to keep the rig a bit steadier [above]. I put a dozen overhand loops (0.25 inch diameter) in the drogue line and fed the receiver antenna through the loops loosely. Perfect! All we had to do was wait for good conditions.

The land surface has poor contrast for photography and no recognizable features for proper scaling and identification. Instead I used 12" x 12" white corrugated plastic



kiteflying in the freezer

by JOHN CARLSON, on location at Palmer Station, Antarctica

[John Carlson is a graduate student at Montana State University, using KAP in his research on the behavior of penguins in Antarctica. I equipped him with a stealth-blue kite and 2-channel gearmotor rig (see [æ 3.1](#), page 18) to work with, and he offered to send me progress reports via email — ah, technology. Here are some excerpts. —bg]

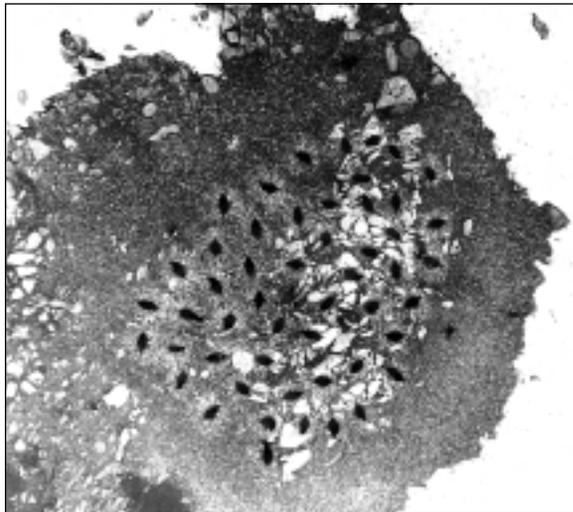
October 13

Even though we have been weathered in on station (too icy and windy to get out in the Zodiacs) for the last week, I did manage to get some good flights in and some film exposed and developed before we were grounded.

It was nice to finally get an idea of the area covered by the camera. Now when the penguins return to the island I will be set.

We took pictures of the breeding islands but they are so covered with snow now that trying to pick out reference landmarks in the photos is tough. When the penguins return within the next couple of weeks they will congregate on the traditional colonies and referencing the photos will be much easier.

We even flew the [FlowForm 16] by itself through a pretty good snow squall. Its flight characteristics changed quite a bit as it filled up with snow. Once it filled up with enough snow it would go into a spin until it kicked all the snow out the back in a large plume, then it would resume flying normally. Quite

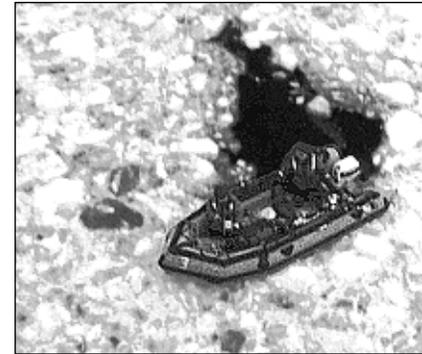


a surprise when it happened the first time.

November 9

The photos are turning out GREAT. I will have an envelope out for you on the next ship which leaves here on the 16th of December or so. We have had pretty good luck with the wind and the rig is working great. The penguins are back in force [below] and the photos will help out my work here tremendously.

I don't have any insight on kite flying here this time but we did try a new technique for us the other day. We had a problem with positioning the kite over a number of colonies on one particular island because of the wind direction and the position of the colonies on the islands. I had my coworkers fly the kite from the Zodiac and positioned the kite over the colonies by directing the boat with hand signals. It worked great. [see pic opposite]



[In another incident, we set] our record for wind speed. We managed to fly and get good photos in a 25-30 knot wind but it was hard to move the [FlowForm] around and even harder to bring it back down. It really wanted to stay up. It is a good thing we got it down when we did because the wind soon jumped up to around 40 knots.

I have yet to put some color slide film in because we have been limited with our ability to get out to the islands because of the weather, and when we do we wind up getting all the work done that we can before the next bout of crappy weather blows in. One of these days I will have some spare time to fly with color slide film in.

November 15

The [fuzzy] tail length must be right on [about 5m]. Most of the time the kite just sits in the sky like a rock and only moves around when the wind is gusting or I send it up with an unnoticed kink in the tail.

The servos and motors are working fine although slow sometimes; we are working in about -6 to 0 degrees Celsius most of the time....

The only problem I have had so far is trying to point the camera straight back down the line. The wind tends to blow it over to the camera's right—in the direction of the motor rotation....

We have had one collision with a bird (a giant petrel—a large gull-like bird) but he recovered immediately and seemed little the worse for wear and the kite stayed in the air. It was a somewhat overcast day and the line was hard to see. The [birds] don't seem to have problems on sunny days though.

January 10

Everyone (especially my major advisor) has been impressed with the photos and I must confess they have turned out better than I expected. I am really happy with the rig and kite. I have decided that I would like to try a kite for lighter winds next year to increase our flying time and I would also like to put a bit more line out too....

We are finally getting some better kite conditions now. It seemed like the whole month of December was crappy for flying. I have also discovered a hidden talent for calming winds. There have been two instances now where the wind was blowing 15 to 20 knots only to calm down to nothing the instant I set foot on an island to attempt some shots. It is quite frustrating.

January 15

I do have a few more photos and I was even able to get some color slides taken the other day. The rig is still working fine. As far as getting an article out Feb. 1, that may not be too doable. I would like to get some photos to you to go along with the story but our next mail out is Feb. 15th—the ship I leave on. ...I am excited about getting back home. Only a month left here and then a few weeks to detox in Chile and then home.

[Last minute pressures overwhelmed John, so his article (and color photos) will appear in the next issue. —bg]

the walls of KAP

by STEVE EISENHAUER

Serious KAPers encounter two walls: becoming proficient in flying kites while carrying an expensive payload, and learning photographic techniques and equipment. My own experience with kites was nonexistent until 1991 when, at age 38, I became possessed with the idea of taking photographs with a kite-lifted camera.

I was already a serious amateur photographer, so only one of the two walls loomed before me. In attempting to scale the kiting wall I checked out kite books from libraries, purchased books and ordered catalogs from kitemagazines, talked to kitefliers, researched every possible source for information about KAP, and tried innumerable types of kites.

Today I'm still learning about kiting, but believe I'm over the wall. I'm now plodding up the mountain behind the wall; every kiting day teaches me something new about the wind, kiteflight, my reel, line, winder, and KAP rig. Looking up, it seems the mountain rises into the clouds but, looking around, the view sure is inspiring.

Experienced kitefliers invariably hit a wall soon after learning the basics of KAP. Their kiteflying skills enable them to capture fascinating snapshots, but if they aren't capable of producing professional-quality photographs with a hand-held camera they won't miraculously produce such photographs with a camera elevated by a kite. As much time is required to learn serious photography as was required to become an experienced kiteflier.

Scaling the photography wall requires developing more than a snapshot level of knowledge about cameras, lenses, exposure, and film. Like kiting, there's a mountain behind the wall. Since I occasionally sell

and display my own photographs, I like to believe I'm over the wall and on my way up the photography mountain. At the very least I know how to initiate discussions, and perhaps a few good arguments. The following paragraphs are intended to do just this.

SELECTING THE RIGHT STUFF

To produce high quality KAP enlargements (e.g. 16" by 24") it helps to have a fast professional lens, an interchangeable-lens camera capable of high shutter speeds, and slow fine-grain film.

The lens is most important. I recently purchased a Canon 50mm f/1.4 lens. This lens is quite heavy (almost 10 oz.) and expensive (about \$400.00), but I was convinced to buy it by a favorable review in Popular Photography magazine's 96/97 Photo Buying Guide.

The rating system of the magazine's review is based on the judgment of selected professional photographers. A slide is enlarged to seven print sizes at all aperture settings, and each print is judged. After grading the photos at each combination of aperture and enlargement size, the magazine summarized their review as follows:

"Test slides were very crisp and contrasty except in the corners at f/1.4 and f/2. Picture quality between f/2.8 and f/16 was judged excellent, perhaps the highest of any lens in its class. Flare was well controlled throughout the aperture range, but strong ghosting was visible in slides shot with back-light from f/1.4 through f/2.8."

The lens test clearly shows significant quality problems at f/1.4 and f/2, so why buy this lens if you should avoid using the two fastest apertures? Because nearly every

lens test I've ever seen shows lower quality results at the widest apertures. If you buy a slower (e.g. f/2.8) lens, then your problem is often even more severe. Using the best aperture settings for that lens (e.g., f/5.6 or 8), you may have to shoot at shutter speeds too slow for KAP.

The point-and-shoot Yashica T4 camera, a KAP favorite, has a lens by Carl Zeiss, considered to be one of the best lens manufacturers in the world. But even Zeiss lenses usually show quality degradation at their widest apertures.

This brings us to the other major quality determiner for kite aerial photographs: shutter speed. The Yashica T4 has a reasonably-fast shutter speed (1/700th sec), but to get this top shutter speed on

cloudy days you might need films faster than ASA 100. And film quality generally drops significantly for films over ASA 100.

Even with vibration-absorbing rubber donuts on the kiteline above and below my camera cradle, I use a shutter speed of 1/1000th sec. or more for most photographs. If the wind is steady and mild, I can shoot at 1/500th sec. or perhaps slower, and still get quality photographs. But the wind is not often so cooperative. Having the ability to change shutter speeds is much preferred to changing film type.

Please don't insist that fast films, such as ASA 400, produce results as good as slow films, like ASA 50 to 100. Test results and

professional judgement consistently verify that quality reductions are inevitable, particularly for color accuracy, grain and latitude. Just try to convince Germany's Wolfgang Bieck that he should use a faster film than his ASA 25 Kodachrome, or Wisconsin's Craig Wilson that he should move up from his ASA 100 Fujichrome.

REALISM vs. ABSTRACTION

I like realistic photographs. Fujichrome Velvia film, used today by most professional photographers, disturbs me because of its

excessively vibrant colors; they're just not real. Lenses wider than 28mm (and even the 28mm most of the time) distort a scene too much for my own taste. I usually adhere to the now-dated photographic



Great Egg Harbor River, NJ, by Steve Eisenhauer

rule: "Only use a wide angle when you can't back up enough to get what you want in the picture." Unless I'm flying in a tight situation with a foreground target, I use a 35mm or 50mm lens.

I even have trouble with "straight-down" photographs, although the ones I have taken are some of my most popular. After taking 15 consecutive rolls of straight-down photographs about three years ago, I felt this interesting viewpoint would grow on me. However, I haven't taken a straight-down shot in more than a year, and neither of my cradles is currently capable of being pointed in that direction. Both cradles are permanently

• *continued on page 24*

northeast to cathay

by **PETER BULTS, Holthees, The Netherlands.** Photos copyright © **René Gerritsen**

THE WINTER OF 1596-1597

In the spring of 1596 two ships left Amsterdam on a voyage to discover the North-eastern passage to Cathay (China). In charge of the expedition and first navigating officer on the lead ship was pilot and cartographer Willem Barentsz. The other ship was under the command of Cornelisz Rijp.

The actual reason for the search for the passage was the expansion of Dutch trade beyond Europe, an endeavour that began in the middle of the 16th century. The trade in East Asia became especially important at that time. In those days Dutch merchants were highly interested in a sea passage to Asia, beyond the reach of the Portuguese and Spanish fleets.

It was Barentsz' third voyage to the Arctic. After two unsuccessful voyages in 1594 and 1595, the merchants of Amsterdam considered finding a passage so important that they decided to finance a third expedition.

At Bereneiland, the two captains decided to try different routes. Barentsz wanted to search a northeastern route; Rijp again chose the northern route.

On August 15, 1596, Barentsz' ship reached Ijskaap (Ice Cape) at Novaya Zemlya Island [800 km ENE of Murmansk—diametrically around the world from the research site described in Carl Bigras' article on p. 4]. From the cape they sailed to the south-east to Ijshaven (Ice Harbour), where the ship became trapped in the ice.

When the ship started to burst at the seams and was lifted up by the ice, it became clear that they would not get free before the next spring, meaning Barentsz and his crew had to stay in Ice Harbour for the

coming winter. They built a house out of driftwood and salvage which they called "Het Behouden Huys" (The Barentsz' House). Involuntarily, they became the first Europeans to winter that far north.

Finally, two small boats left Ijshaven on June 14, 1597. In the Behouden Huys a note was left for whomever would find it. The way back was difficult and they proceeded only slowly.

On June 20, both Willem Barentsz and a crew member died. About two weeks later another man perished. Two months after they had left Ijshaven, the survivors met other people for the first time. These were sailors of a Russian lodya, from whom they bought fish and biscuits. August 20 the men finally arrived at Kola, where they met Cornelisz Rijp, and November 20, the twelve survivors returned to Amsterdam.

This looks like the story of a complete failure, but it wasn't. The men proved that the northern passage was impossible—still the truth.

NOVAYA ZEMLYA EXPEDITION 1995

From August 15 to September 18 1995 the University of Amsterdam's Instituut voor Pre- en Protohistorische Archeologie (UvA/IPP) and the Stichting Olivier van Noort in collaboration with the Russian Research Institute for Cultural and Natural Heritage (RICNH) in Moscow sent an archeological expedition to the island of Novaya Zemlya. The main goal of the expedition was to gather as much information as possible to answer the questions that came up after previous expeditions. Furthermore an increasing number of tourists were leaving their traces on the spot.

One of the members of the expedition was René Gerritsen, a professional photographer. His task was to register all visual information. Since UvA/IPP had made use of B(alloon)AP on previous occasions, aerial photography had to be included.

A helicopter was considered but was rejected because it couldn't fly low enough to take detailed pictures without disturbing the site. And because of the weather conditions the balloons had to stay at home. After a brainstorming session with some friends, René came up with the idea to use KAP as an extra technology.

Kitebuilder Wouter Koster made him a Sanjo rokkaku while KAPer Peter van Erkel provided him a rig and the R/C equipment. The camera was a Nikon F501 with 24, 28 and 35 mm lenses.

The conditions for KAP were good as there was a steady 4 Bft wind blowing most of the time. The temperature reached +40 C in the summertime. More important was the position of the sun. Even in the middle of the summertime it just rises above the horizon. That means that even the smallest bump on the ground created a long shadow only visible on aerial photos. Being an inexperienced kiteflier René broke the rokkaku's

frame on the first outing. Since there is no kite shop within several hundred kilometers, improvisation was needed. A foldable fishing chair was sacrificed. Its frame had the right diameter to mend the kite. After this incident he took lots of aerial pictures with the system.

KAP'S CONTRIBUTION

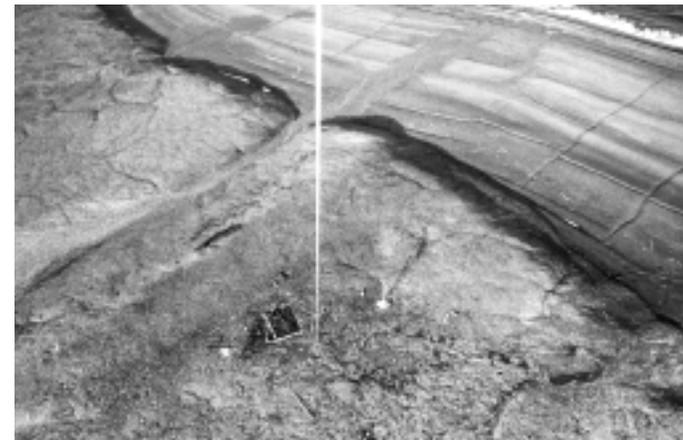
Jerzy Gawronski and Pieter Floore, both of UvA/IPP, were two of the scientists on the expedition. They explained to me how the expedition benefited from the use of KAP.

Thanks to the kite aerial pictures the scientists discovered that the position of "Het Behouden Huys" was carefully chosen. It was built on the highest spot in the area, although it was only a matter of centimeters. They also could trace the paths from the house to the shore and back. And they got an idea how the terrain around the house was used, where the toilet was located and where the garbage-dump was. All this information became available after carefully studying the different shades of gray and green visible on the aerial photographs.

As usual, maps were made of the complete site. The members of the expedition determined some fixed positions and measured everything from there using yardstick,

pencil and paper. This method is quite primitive and time-consuming but it works well. Thanks to the aerial pictures a detailed map could be made of a wider area. Back home Gerritsen's slides were projected on top of the measurement-maps.

continued on p.24



tune in, turn on, take off—video II

by **STEPHEN JOINER, KC6QFR, North Hollywood, California**

(1) CHANNEL SURFING WIPEOUT

When considering aerial video on the licensed ATV (amateur television) frequencies, keep in mind that the standard TV cannot tune to these bands. The popular 439.25 mhz frequency, for example, is located above channel 13 in the limbo between VHF and UHF. And when it comes to the aerial-friendly 915 mhz and 2.4 ghz microwave bands—forget it.

So a small box called a downconverter is standard equipment. This device receives the 915 or 2.4 frequency and converts it to something the tuner in your everyday television can deal with, usually channel 3 or 4. Therein lies the rub for those using regular TV sets in conjunction with any radio-controlled activity such as aerial video from kites, planes or whatever.

Turn on most R/C transmitters and hold them up to a TV tuned to channel 3 or 4 and you'll see the problem: the picture gets zapped by radio interference. The degree to which the R/C steals the show, and what channels are most affected, depends upon a number of variables including the transmitter frequency, the shielding of transmitter and TV components, and the overall quality and selectivity of the TV receiver; i.e., large home models are more resistant while cheap portable ones really get blown away.

But as long as you're at the lower end of the VHF channels—such as 3 or 4—and are using the transmitter within a few feet of the TV, you generally can't get away from some form of R/C meddling. In the past, you had to "get away" literally: walk the transmitter a distance away where it can-

not quash the TV signal and operate from there, dealing as best you can with eye-strain from peering at the remote screen.

Fortunately, things have changed. Downconverters that change the incoming signal to composite video, allowing use of a monitor instead of a vulnerable TV, have appeared on the market. Composite video, like some people, is immune to spurious static from external sources, in this case, the rogue radiations of an R/C transmitter. You can put a monitor displaying comp video cheek-by-jowl with an R/C transmitter cranking out RF without so much as a blip spoiling your pristine picture. So, if you're in the market for a downconverter and plan to use it in the vicinity of R/C, it pays to anticipate this problem and go for one that feeds you Video Out rather than 3 or 4.

As a rule of thumb, downconverter kits from most ATV suppliers, unfortunately, still regurgitate channel 3 or 4, while factory-built "name brand" units tend to deliver composite Video Out. Of course, you'll need a composite monitor or a TV that also has video monitor capabilities. Luckily, many if not most new TV sets now feature a "monitor" mode and come standard with both composite video inputs as well as the standard antenna RF or cable connection.

O.K., now you've got the picture—but can you take it with you?

(2) FIELD & SCREEN: MONITORS

When I began thinking about aerial video, I assumed that one indispensable element would be the largest possible portable TV on the ground to appropriately display the

From my viewpoint as Kite-Aerial-Photographer it's sensible—but not essential—to control the moment of photographing.

In 1993 and 1995 I learned Morse code so that I could get a license as radio amateur. This would enable me to build a video-control-rig. In the meantime it became no problem to buy a video-set with transmitter and receiver, legal for use for everyone in Germany without license.

So I chose the easy way to realize my KAP Video-CONTROL-Rig (VICORI). [There he goes again! —bg]

My rig should be as compact as possible to preserve my self-sufficiency in KAPing. In my opinion self-sufficiency with video-control means OH-OH-OE-OE: One Hand for the kite, One Hand for the transmitter, One Eye for the kite, One Eye for the subject. [No! No! Noe! Noe! What have I done to deserve this?]

The main problem was not attaching the CCD-camera to the SLR-camera or adding the video-transmitter or batteries to the HOVER-rig [see *æ* 2.1, p. 16], but handling the aerial camera simultaneously to all kiteflying activities with full control of the subject.

A happy circumstance was the prize my daughter won at a bicycle contest—a helmet. This helmet was her second one, so I annexed it for reasons of KAP. (This may be part of the so-called "garage-syndrome!" Ask Craig Wilson!)

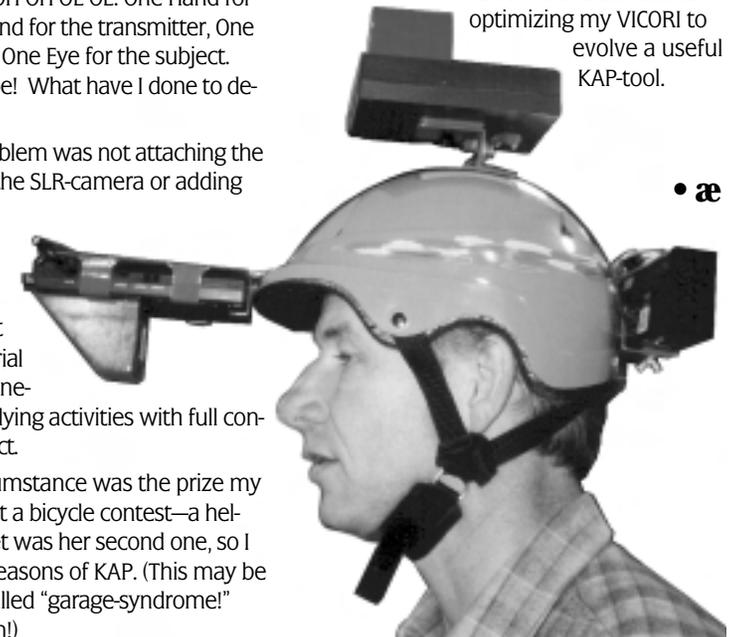
is VICORI victory?

by **WOLFGANG BIECK**

The result is shown in the photo. I mounted the video-receiver on top. The LCD-TV-monitor was fixed inside a boom in front of my head. The enclosure at the front of the boom is a darkroom against daylight and contains a mirror to reflect the screen to my right eye. To ensure good balance I mounted the 12v battery on the helmet's back.

To save money I would like to give some advice: Most important to having acceptable subject-control via video is a clear, contrasty screen. Test it before you buy it! If the system works well, it's a good tool for efficient subject-control and will help to save money.

It may disappoint you, but I have taken 99 percent of my KAP photos without VICO-RI! Nevertheless I'm still optimizing my VICORI to evolve a useful KAP-tool.



• continued on page 22

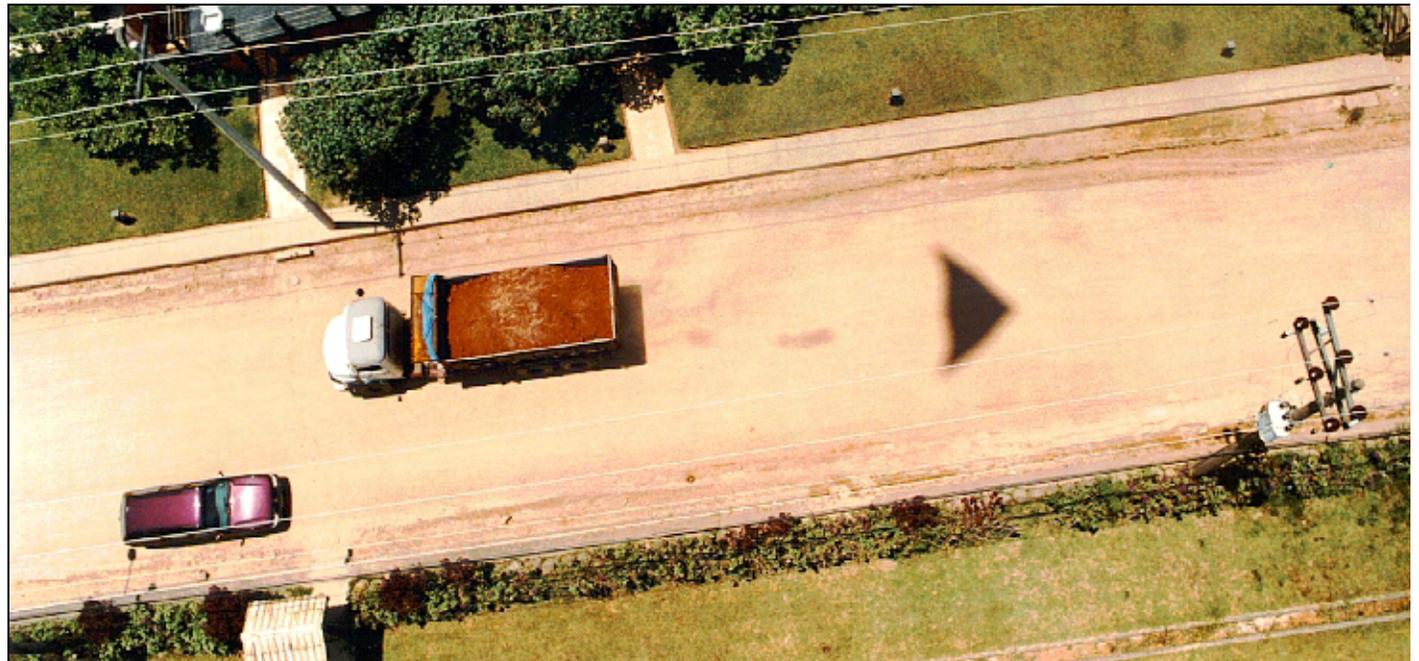
• æ



aerial gallery



UL: Castelluccio di Norcia, Italy, by Ivan Cardelli UC: Boulogne Cathedral, by Craig Wilson UR: Caldera Lake, Victoria, Australia, by Arthur Coombs
 L: WagonWheel Gap, Colorado, by Doug Davlin LL: LPG Tanker, by Andrea Casalboni LR: Coming & Going, Baia Balcia, Brazil, by Patrick Morin



multi-frame panorama-pictures

by HARALD PRINZLER, Schlangen, Germany

Since 1993 I have taken aerial photos with radio-controlled cameras. If you want to create panorama pictures by joining several photos together, it is difficult to set the horizontal movement correctly. Either the camera is turned too much between exposures and the photos do not fit together, or the camera is turned too little and the overlap of the photos is too much.

At the first



Maiden Flight in Schlangen, June 21, 1996

international KAPWA-Meeting in Germany in 1993, I saw the camera system of Michel Dusariez, which he used to take panorama pictures. The camera turns without remote control and stops after one complete turn. Multiple photos are taken during the rotation of the rig.

In February 1996 I started with the development of the electronics of such a camera rig. After a start button is pressed, the electronic circuit waits for about one minute, giving time for lifting the rig to the proper altitude for taking pictures. Then the motor starts and turns the camera platform until the stop-position is reached, when it shuts off.

The electric shutter for the Ricoh FF9 (Shotmaster) is triggered by another microswitch pressed at intervals during the turning of the camera platform. The electronic circuit for turning the motor is made in SMD-technology.

The test of the electronic circuit was successful, and in April 1996 I made the mechanics of the camera sta-

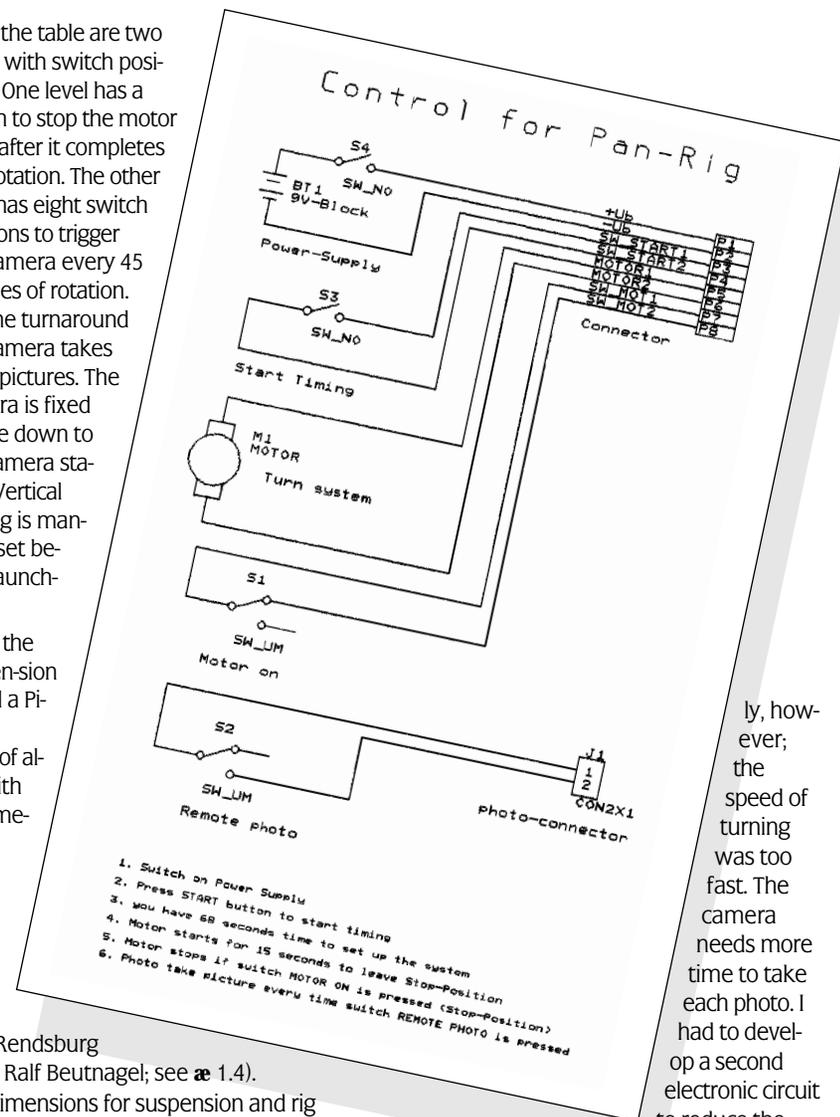
tion. For the turning of the system I used a modified servo which turns with no limits. I took out the servo's electronic control circuitry, because I needed only the motor with the gear. The motor was connected with the motor control circuit, which is placed with the power switch and the start button in the servo housing.

For the power supply I used a 9V battery and the voltage was internally reduced to 5V. To fit all parts together I wanted to use as little metal as possible. To fix the suspension I used a screw M4, which held the control table or platform too. The size of the control table depends on the size of the turning unit. My control table has a diameter of 100mm and is made of printed-circuit material.

On the table are two levels with switch positions. One level has a switch to stop the motor drive after it completes one rotation. The other level has eight switch positions to trigger the camera every 45 degrees of rotation. For one turnaround the camera takes eight pictures. The camera is fixed upside down to the camera station. Vertical aiming is manually set before launching.

For the suspension I used a Pivot cross of alloy with a diameter of 100 mm and the rigging type Rendsburg (from Ralf Beutnagel; see *ae* 1.4). The dimensions for suspension and rig without the camera is 100mm x 100mm x 100mm.

The test of the system was successful. After the waiting time the motor started to turn the camera platform one revolution until it arrived at the stop position again. The trigger for the FF9 did not work correct-



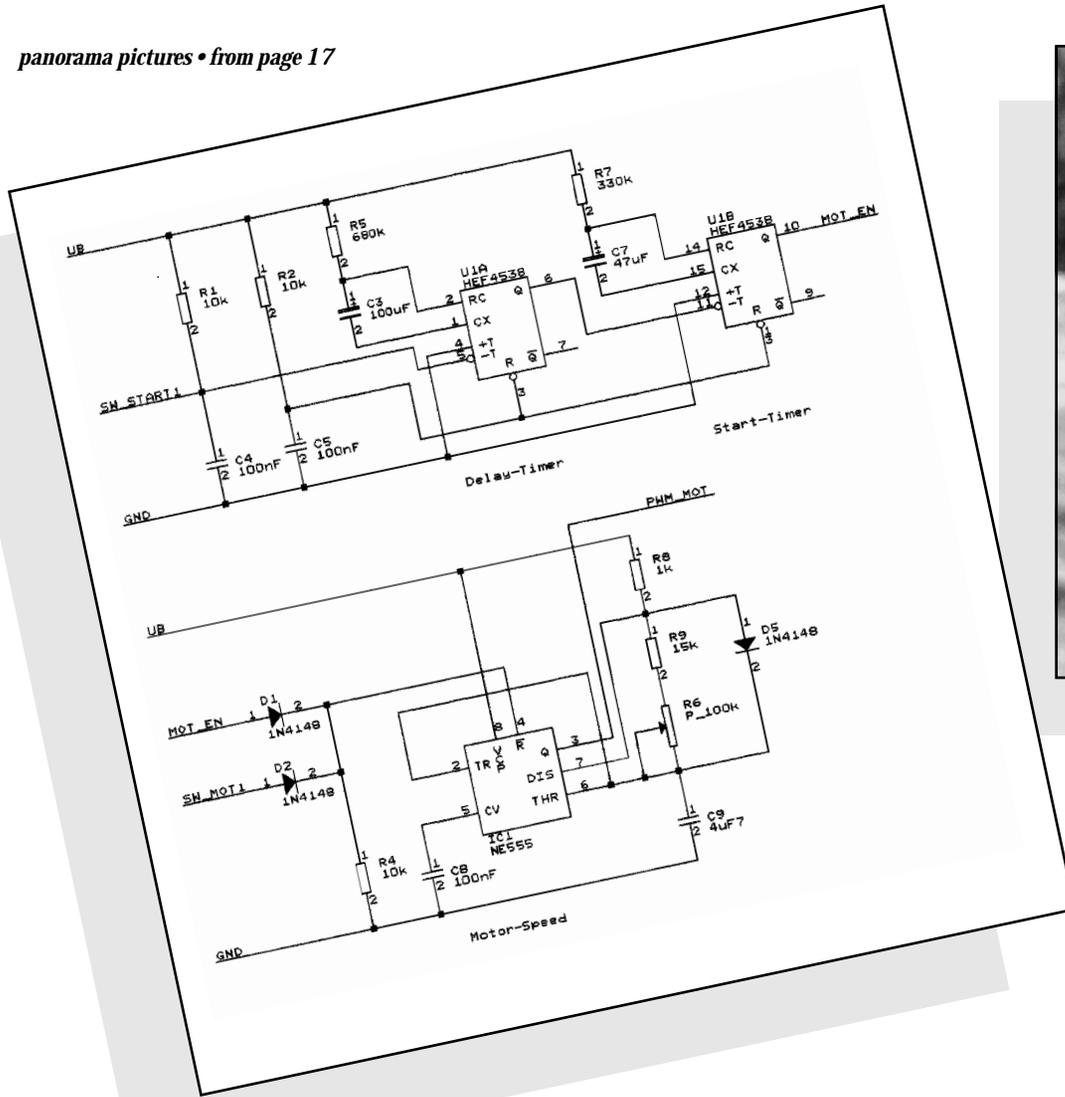
ly, however, the speed of turning was too fast. The camera needs more time to take each photo. I had to develop a second electronic circuit to reduce the

speed of the motor. Because of the reduced speed the time for leaving the stop position had to be longer.

On June 21, 1996 the system had its maiden flight. I used the Ricoh FF10, be-

continued on next page

panorama pictures • from page 17

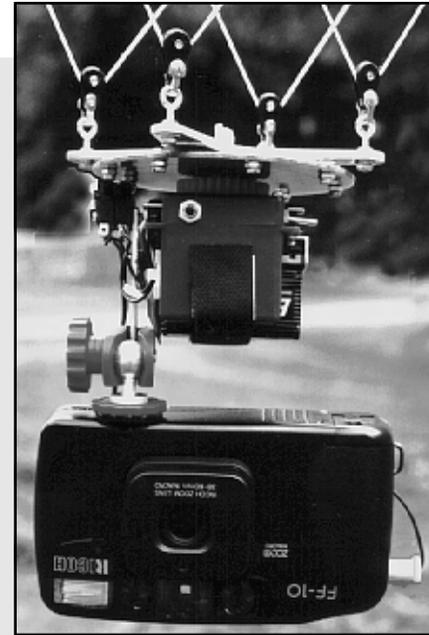


cause it fits better to the camera mount and you can change the focal length (38mm to 60mm). I used 60mm.

The weather conditions were not the best. It was a cloudy early evening and sometimes the slow wind let the camera station sink. The kite was a Sutton Flow-Form (from Jim Rowland's book). Nonethe-

less, some pictures were very good. With the focal length 60mm only some photos fit to a panorama picture. The camera did not always need the same time to take a photo.

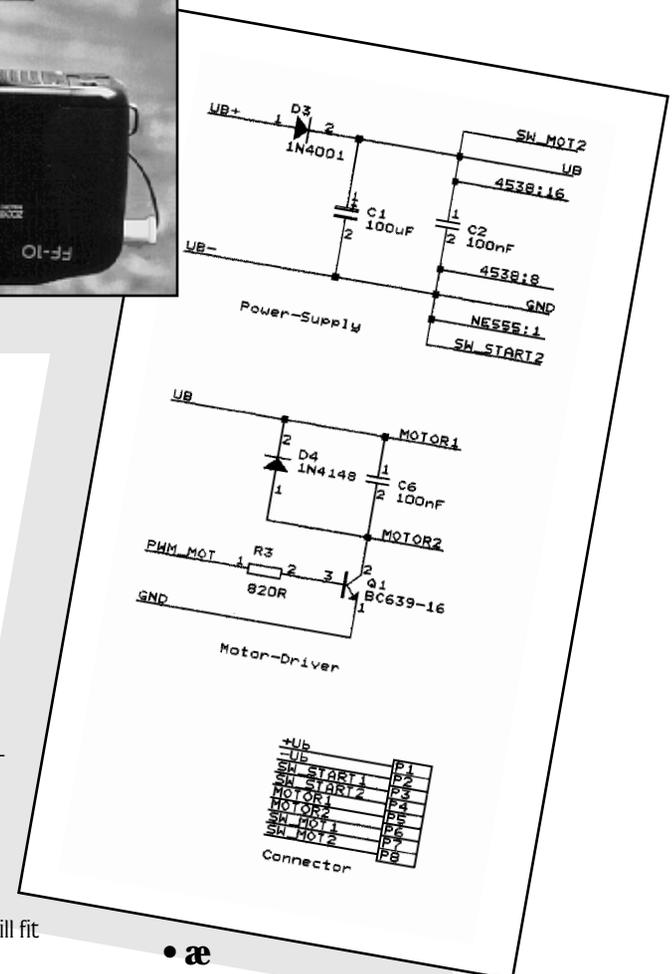
The function of the camera rig is good. I want to work out the problems with the electronic unit. In a future version there will



Pan-Rig Control Specifications

POWER SUPPLY
 Voltage: 4v..12v
 (Use with servo-motor, max 10v)
 Current: 10mA..60mA

MOTOR SPEED
 T on: 3.3ms
 T off: 49ms..374ms
 Duty Cycle: 0.6m..0.008



be no reduction of the supply voltage. I want to increase the torque of the motor and slow down the speed. And the electronic unit, including power switch and start button, will fit in a servo housing.

+Ub	P1
-Ub	P2
SW_START1	P3
SW_START2	P4
MOTOR1	P5
MOTOR2	P6
SW_MOT1	P7
SW_MOT2	P8

Connector

fossil forests • from page 4

boards with a black "X" drawn from corner to corner, numbered sequentially and held down with fiberglass tent pegs. [see pic, p. 4] We randomly placed the cards on the ground where we wanted aerial photos done and took GPS locations on their centres. In the future, we can digitize the stereo images, reference the numbered cards with their GPS location, and output contour maps.

Weather conditions in the Arctic are unpredictable and can change ten times a day. Our location was about 10 miles from one tip of the Måller Ice Cap, which lies along the Princess Margaret Range and itself affects the weather.

For three days we had clouds and rain while sun shone on the glacier. The ground winds blew towards the glacier at 20 km/h and the clouds headed in the opposite direc-

tion at 20 or 30 km/h at 500 ft. KAP was done on three different occasions at two locations.

One morning we had great winds, packed up everything, and did our daily one-km walk uphill only to find no more wind. Other days we would have 70 km/h winds, fog, snow, clouds at 10 ft, visibility at 10 ft, rain and sand storms. On my first flight, a Twin Otter aircraft came whizzing by at 200 ft altitude while I was flying a 20 ft delta with 500-lb line attached to a duffel bag full of rocks. At other times a Canadian Forces helicopter took a curious look at our project.

The results are good! People are amazed at the projected stereo pairs, looking at three-dimensional views of eroding hillsides, solifluction displacement, frost polygon formation, excavated stump holes and foot prints. I have a vision of building a second stereo rig in a modular fashion: light weight

material, with three small plates, insert fittings fastened at a 60 degree angle on the top side, and camera mounted on the underside of two of them. Insert smaller diameter fiberglass tubing and you have an equilateral-triangle camera frame. If you add more tubes, you have a bigger triangle and greater camera separation.

I would like to thank Michael Harrington and Paul Heinrichs, furniture conservators at the Canadian Conservation Institute (CCI) for their help in constructing the stereo KAP rig, and my team members, Tom Strang and Malcolm Bilz, for their support and assistance on this year's field trip.

Carl Bigras works as Scientific Documentation Technologist for the Canadian Conservation Institute in Ottawa, Ontario, Canada.

• æ

correction

In my article in æ 3.1, page 11, regarding the RAM simple R/C switch: the contact point is not a normally open relay for use with a secondary voltage. The input voltage is the same as the output. Therefore a secondary micro relay will be needed.

— Randy Bollinger

in the summer issue:

CRADLES & KITES

It's time for another look at your latest camera cradles and the lifters that work for you.

**AD & COPY DEADLINE
May 1, 1997**

expose yourself

This is a call for your best KAP pictures.

1. Our traveling KAP exhibit is going on the road again, to St. Louis, Missouri, in April, and Montréal, Canada, in June.

The exhibit got its start as the 1995 Eddy Centennial Competition sponsored by the World Kite Museum in Long Beach, Washington. Since then, it has been displayed at the Tulsa AKA Convention, the Smithsonian Air & Space Museum in Washington DC, the 1996 Berck-sur-mer Festival in France, and FLiBB-96 in Bad Bevensen, Germany.

We welcome additions to the collection, trying to keep it fresh by injecting a bit of new blood each time we show it.

If you'd like to add your work to the display, or augment or replace photos that you've already submitted, send up to three unmounted prints measuring at least 8" (20cm) but not more than 12" (30cm) in the longest dimension to Brooks Leffler at the address on page 2. Time is very short until the next exhibit, so don't delay!

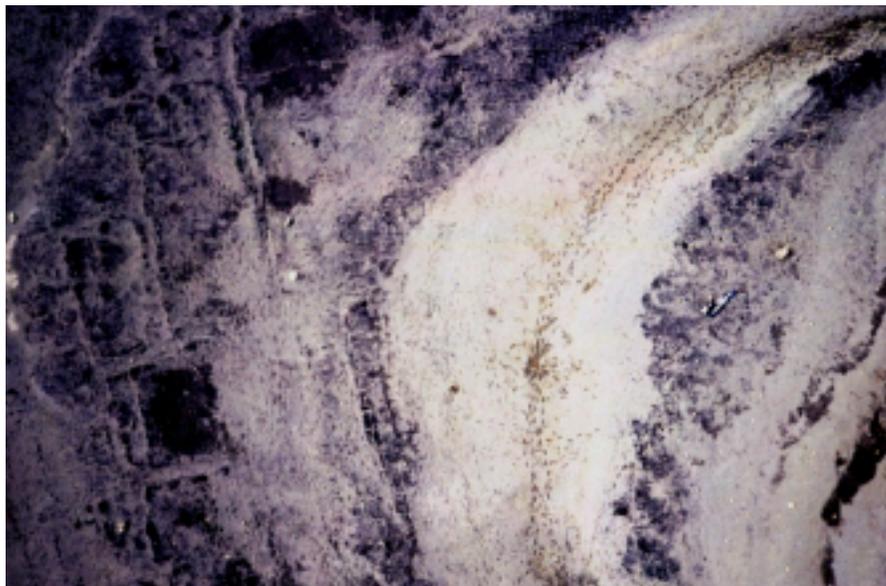
Any information you may have about the pictures would also be appreciated (subject, technical info, anecdotes, etc.). Unless you direct us to the contrary, we will consider submission of your pictures as permission for us to publish them in the aerial eye as well.

2. Kay Buesing of the World Kite Museum has alerted us to another opportunity: from March 1 to April 30, the Sierra Club is accepting submissions for publication in their books, calendar, and cards. For guidelines and info, send requests by postcard only to:

Sierra Club Books
100 Bush Street
San Francisco, CA 94104

• æ

Kite's eye view of a fossil forest. Left image of a stereo pair.



video • from page 20

scope of live aerals. In that spirit, I scorned the diminutive Sony Watchmans and their various handheld clones.

Instead, I cast about and found a bulky, 70's-vintage DC TV made for use in recreational vehicles, borrowed a 12-volt motorcycle battery, and fashioned a sunhood from a cardboard box that I spray-painted flat black.

When everything checked out in the garage, I took the apparatus to a neighborhood park for a ground test with the video transmitter. The whole ungainly appliance—downconverter, antenna, TV and battery—linked by a tangle of cables and wheeled out on my dolly, probably weighed twenty or twenty-five pounds.

Standing a few yards away to avoid blitzing channel 3 and squinting into the mysterious black box shading the TV, I spent 30 minutes just acquiring a dependable image on-screen, and I had to turn off the transmitter and walk over to the TV repeatedly to be sure of what I had.

After an hour in the hot sun I became convinced that aerial video served up al fresco on a 15-inch standard TV was an idea whose time had not come: marginally possible, only semi-portable, and mostly impractical. Trailing cables, I trundled the dolly back home and went back to the drawing board.

A year or so later, the availability of ATV downconverters outputting interference-proof composite video—rather than channel 3—relieved me of the necessity to keep transmitter aloof from TV. Now, I could use a monitor instead and mount it screen-up in a tray right next to my R/C transmitter, sling the whole thing from my neck with a padded camera strap, and enjoy monitor and R/C controls at about waist level. This more intimate arrangement allowed a much smaller screen but still an up-close and very portable view.

Rationalizing that it would find good use after the next earthquake, I splurged on an AC/DC Radio

Shack monitor/TV with six-inch screen. In the controlled conditions of my living room, plugged into a wall outlet, it seemed a workable system. However, the weight of a tube-type monitor laden with ten D-cell NiCads ultimately proved to be a swinging, strangling millstone around my neck once I tried to put it into actual use tramping about in the field.

I suffered through a few clumsy test flights but the issue abruptly became moot when, while struggling to replace all those batteries one day, I dropped the monitor, screen-first, to the pavement. So much for earthquake preparedness.

Thus was the "largest screen, highest resolution" concept finally supplanted by "smaller is better."

Perusing a video catalog, I happened upon the line of Citizen LCD external cam-

order monitors and, after a decent fiscal interval mourning the loss of my Radio Shack unit, invested in one. The larger model features a nearly 4" screen and a standard composite video input, and it runs off six AA batteries. It weighs less than 9 ounces and is only 1.25" thick. Now mounted virtually on top of my R/C transmitter [Ace Nautical Commander, designed for use with R/C sailboats], and unfazed by bad vibes from same, its trim dimensions and feather-weight make for a far more practical and comfortable item of neckwear.

Other pluses include the excellent tapered sunhood that comes with it—imperative for outdoor use—and a very responsive brightness control for pumping up the picture as necessary. No, you don't get the image you enjoy on wide picture-tubes at home from an LCD in the great outdoors (you don't get the couch, either). But, given the demands and constraints of our rather non-standard application, the Citizen delivers a bright, focused picture that at least approximates the keen aerial eye we're all striving for. It involves some trade-off from my tube dreams of a few years ago, but in giving up those inches of screen I also forego the assorted headaches of trying to make an agile, mobile set-up out of a standard TV or monitor that was never really intended to be all *that* portable.

Lately, I notice further advances in lightweight, flat-screen monitors. Supercircuits offers a 4" TFT active matrix with resolution specs that exceed the LCD's and a brightness that supposedly outshines the daylight that washes out most screens. At a current price of \$400, I'm anxiously awaiting someone else to buy one and review it for the rest of us. Meanwhile, other notions occur to one seeking the portable Big Picture: a pair of Virtual Reality goggles with video input?

SFAP symposium

The First North American Symposium on Small Format Aerial Photography is scheduled to take place October 14-17, 1997, at the University of Minnesota's Cloquet Forestry Center, under the auspices of the American Society for Photogrammetry and Remote Sensing.

Registration will begin Monday evening, October 13. A one-day bus tour is scheduled for October 14, visiting photo-using agencies and firms in northern Minnesota. The Symposium will be in session from 8 a.m. October 15 through noon Friday, October 17. Registration fee is currently expected to be \$250 for ASPRS members, \$300 for nonmembers, and \$350 for exhibitors, and \$50 for the tour. Fees are still subject to change at this point.

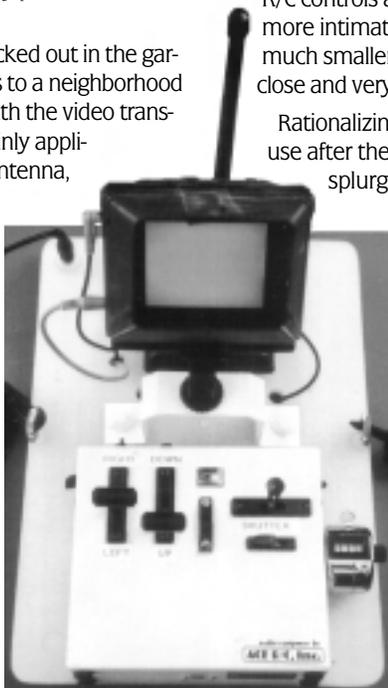
The Society has issued a Call for Papers and Posters for the symposium. Abstracts (250 words or less) in ASCII format should be sent via email to

bill.befort@dnr.state.mn.us

or faxed to Dr. Befort at (218) 387-4517. The originally-published deadline of 28 February for abstracts has been extended, but it would be advisable not to delay.

The Forestry Center is a field teaching and research station located 20 miles from Duluth, Minnesota. The Symposium will provide courtesy vans to and from the Duluth airport. Ample hotel accommodation is available in the Cloquet-Fond du Lac area. Cloquet-Carlton County Airport, immediately adjacent to the Forestry Center, is available for "flying exhibits" related to small-format photography, [although obviously some clearances will be necessary for kites].

We have offered our traveling exhibit of KAP, but no firm plans have been made.



KAP walls • from page 9

fixed at oblique angles that include the horizon, which gives me more depth, a sense of weather, background references and cloud formations.

Straight-down photographs remind me of satellite and high-elevation airplane photographs. Unless they include distinct shadow patterns, they seem more two dimensional than three. Although there are notable exceptions, most of them are puzzling (abstract) to me rather than inspiring.

I tend to divide KAP photography into realistic and abstract components. I expect an argument from just about everyone about what is real versus what is abstract. That's okay. Maybe someday I'll mature into seeing both components as integral parts of the same whole. Maybe this artistic understanding is simply another wall I'll someday get over. If so, I hope there's a mountain on the other side, and not a swamp.

• æ

cathay • from page 11

"That was interesting," said Gawronski. "We found some mistakes in the measurements that we could correct plus add some 'landmarks' that we couldn't see on the ground."

"Thanks to the high level of detail in the kite aerial pictures," Floore said, "we were able to refine the cartography and add lots of interesting information."

"...It is good to [remember] that the expedition is one thing," he added, "the other is accounting for it. Sponsors want to know what was done with their money. Our presentation of the expedition's results was outstanding especially thanks to the unique aerial view made possible by KAP."

• æ

KAP on the web

Jim Aber

<http://www.emporia.edu/s/www/earthsci/kite/kankap.htm>

Charles (Cris) Benton

<http://www.ced.berkeley.edu/~cris/kap/index.html>

Detlef Beyer:

<http://www.hermes.de./KITE/KAP.html>

Alberto Bonati:

<http://users.iol.it/annagalletti/>

Mike Brown:

<http://members.aol.com/mjbrown>

Carl Crowell:

<http://www.willamette.edu/~crowell/kapmain.html>

Gary Madison:

<http://www.pacific.net/~hakuna/kiting.html>

John Maxworthy:

<http://pwp.usa.pipeline.com/~jmaxworthy/kap1.htm>

Masami Nakajima:

<http://www.cc.rim.or.jp/~nakajima>

Bob Peibly

<http://www.geocities.com/Yosemite/7685/>

Sport & Design Drachen:

<http://www.inx.de/kiter/sportdesign>

or

<http://www.kiter-onleine.de/sportdesign>

KAP RIGS & KITES

Sutton FlowForm Kites
Custom Camera Cradles from \$48.00

BROOKS LEFFLER

(408) 647-8363 • kyteman@aol.com

getting the picture: batteries

by PETER van ERKEL, Amsterdam, The Netherlands

One of the most important, but also most neglected part of an R/C system for KAP are the batteries. Batteries in the transmitter and receiver are, besides the film in the camera, the only components that can run out.

On the transmitter this is less of a problem, because there is some kind of indicator showing if the battery voltage goes low. But the receiver is remote, so this makes the receiver battery one of the most important parts in "getting the picture."

The safest way is to put new alkaline batteries in the receiver every time you use it—but this is most expensive way. That is why many people use rechargeable Nickel-Cadmium batteries.

The best advice I can give those who use NiCads is to buy a new set of cells and keep them as a set, and only use them for KAP. Do not mix NiCad cells from other sets!!

At FLiBB a point was made that NiCads can fail, or one of the cells has a much lower capacity than the others. This can cause not "getting the picture" due to one bad NiCad cell.

A suggestion was to use six instead of four NiCad cells, and use a "low drop series

regulator" or the BEC circuit if your receiver has it. This regulator (or the BEC circuit) reduces the 7.2 volts from the six NiCads to five volts needed by the receiver and servos. If one cell fails there are still six volts to operate from.

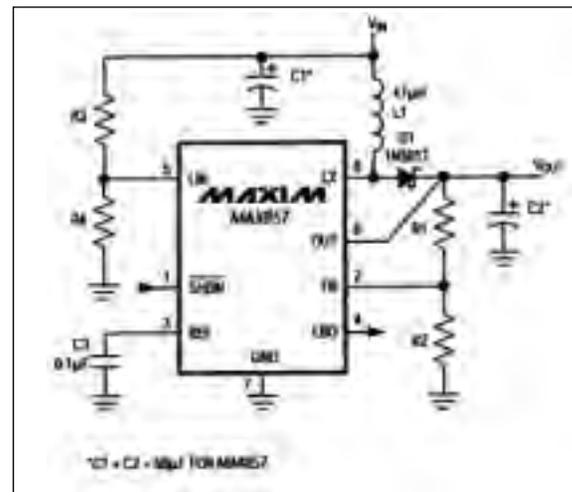
From a failure point this is OK, but from a KAP point, two cells and an extra regulator make the system heavy.

But there is a better solution: use three cells and a converter. At first this will look weird, because three cells means only 3.6 Volt. But now comes the trick: the converter

is a so called "Step Up" converter. It can convert a voltage as low as 0.8v up to 5v. So if from the three cells one fails the system still works. It will even work with two cells, but not if one of the two fails.

An example of a step

up converter is shown [see diagram] using a Maxim MAX 857 circuit. Pin 1, SHDN and Pin 5, LBI have to be connected with Vin; R3 and R4 omitted. For R1 = 82kΩ, and R2 = 27kΩ, the output voltage is five volts.



• æ

aerialletters

LATERAL THINKING

It was wonderful to receive the package of mags; I don't know whether you have had other's reactions to receiving the full set, but it was the treat of the month for me! I've read every word and am now re-reading carefully. Amazing how the different contributors have a definable style and set of emotions around KAP; I hope I can add to that heady mix. Refreshing to see the level of sharing and non-ownership of ideas, the lack of belief in the "best way".

There's a lot I'd like to share with others, much of it around idea generation. I've found that lateral thinking nearly always gives an answer to a KAP problem. An example just recently was getting verticals centred on a specific subject, a stone circle. I didn't want to modify my rig back to micro-video/sender, but I did need accurately-centred low-level verticals. I thought around it, and put the microvideo in the centre of the circle looking up! When the rig appeared in the centre of view on my monitor... I knew I was in centre. I love that sort of answer. The [video] camera is so small it didn't show up on the print—I put grass clippings over it.

Simon Harbord
Alford, Aberdeenshire
Scotland

Visitors to Cris Benton's Web site have seen Simon's earlier but still clever rig. We're pleased to see that he's come out of KAP-retirement and has joined our happy band. We look forward to more of his innovative ideas in these pages. Welcome, Simon! —bgl

MEET ME IN ST. LOUIS

The Great St Louis Kite Festival will be held April 12, 1997 at Central field in Forest Park. Kite aerial photography will be represented by Randy Bollinger, who will also be photographing all the festivities.

The festival will be preceded by the AKA/WKM KAP traveling exhibit at the St. Louis Science Center adjacent to the park. The exhibit will be on display April 5 and 6.

This is the Fifth Annual Kite Festival with thousands of spectators to benefit from the exposure to KAP. Proceeds from this event go to the Forest Park Forever Program, which is dedicated to the renovation of the 1904 World's Fair structures in and around Forest Park.

Your attendance is welcome and encouraged. For additional information contact me at (314) 522-0844.

Randy Bollinger
Ferguson, Missouri

HI-TECH KITE ANCHOR

December 12, 1996

To: kytelman@aol.com

From: kitecam@juno.com
(Craig Wilson)

Subj: wilson would give right arm to be ambidextrous

Boy did i learn a lesson last monday. i am too old for sports. i let the young men in my neighborhood talk me into joining an indoor soccer league this fall and until monday it was fun. now i have a very broken right arm. So far i don't need surgery but the doc cannot explain why the 30 or so pieces of my radius went back where they should be or why they are staying there....

[Shortly after New Years, Craig wrote that he would need surgery after all, to put

a plate inside his arm to hold things together until the bone mended. When the doctor looked inside, however, he decided that the best treatment was an external bar and pins to hold the bone together. Craig was not a happy KAPer, but the health of body & mind improved, and eventually he returned to work part time.]

January 31

Hey, everyday I am feeling better and am getting positive feedback from my arm. Almost everyday I can do something that I couldn't the day before. So, feeling confident, I have registered for the Midwest Area Kitemakers' Retreat (MAKR)...March 7-9...I think it may be a bit optimistic but it gives me something to shoot for and helps make me think that this winter wasn't a total loss as far as kiting is concerned....

I have included a few pics of my exoskeleton. It may work as some kind of kite anchor freeing my hand to operate a joystick while the transmitter is strapped to my back, with video receiver taped to a helmet projecting an aerial camera's view into my eye, with computerized kite self-adjusting to varying winds, and my left hand radio-controlling some activity that I wish to photograph on the ground. Geez, maybe in a few years someone will develop a rig so that you don't even need to go outside.

February 4

Sunday it was a balmy 38 degrees with a gentle breeze. I couldn't stand it anymore so I walked up to the park with my 18 foot delta and put the thing up into the beautiful deep blue sky. God it felt good. A strong wind might have been a problem but a gentle wind was about the most therapeutic thing I have done. I'm going to keep it up.

... On Feb. 18 at 1:30 I get that thing unscrewed. It will be anchors away, my friend, anchors away.

February 16

Just got back from an aerial photo shoot with Casey. He was cross-country skiing, while I was taking pictures....or trying. I was very out of practice. First sent the camera up without turning it on and then later forgot to turn the rig on. ...

the wind was very light so the camera just went up for little pops into the air. But you know, that was what it felt like in my head, A deep blue cloudless endless place to pop into. It was so pleasurable, so therapeutic, such a return to where I am comfortable.... My camera and I were popping into that zone, into that emotional and spiritual place—like air bubbles finally being able to rise to the surface from some long submerged shipwreck. I'm back and I feel alive again.

• æ

