sources

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

Stanton Hobby Shop, Inc.
4718 N. Milwaukee
Chicago, IL 60630
Phone (312) 283-6446
Fax (312) 283-6842
De-thermal timers; R/C equipment. AKA member merchant.

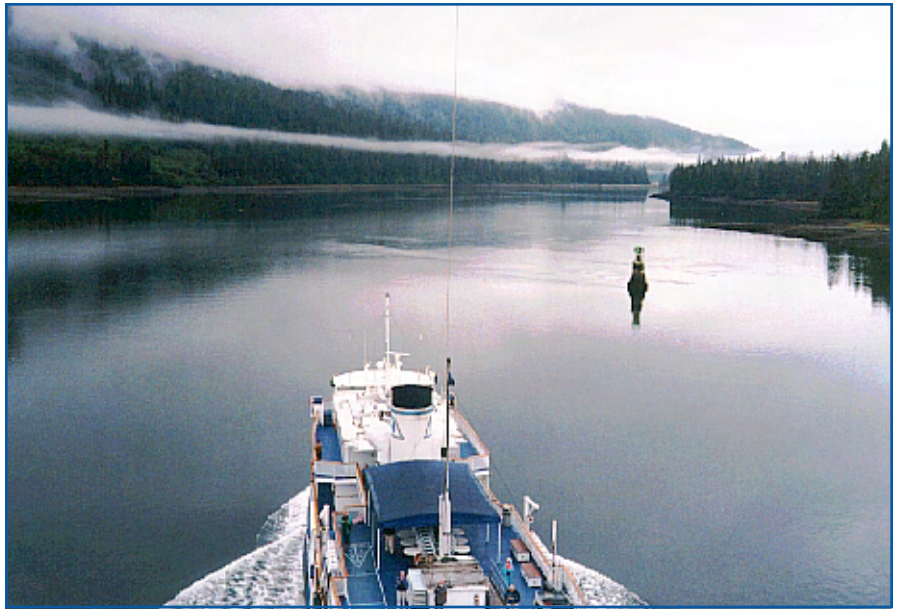
Herbach & Rademan
PO Box 122
Bristol, PA 19007-0122
Phone (800) 848-8001
(215) 788-5583
Motors, switches, materials; general line of surplus. Catalog.

Radio Control Model Yachts
675 SW 238th Avenue
Hillsboro, OR 97123-7627
Phone (503) 649-7707 (eves)
German-made Pe-ka-be miniature ball-bearing blocks. Brochure.

Small Parts Inc.
13980 NW 58th Court
Miami Lakes, FL 33014-0650
Phone (305) 557-8222
Fax (800) 423-9009
Gears, belts, nylon fasteners, and all manner of little stuff. Catalog.

Woodworker's Supply, Inc.
5604 Alameda Place NE
Albuquerque, NM 87113
Phone (800) 645-9292
(505) 821-0500
Music box movements. Catalog.

Wrangell Narrows, Alaska, by Brooks Leffler. Nikon One-Touch, FujiColor 400, FlowForm 16.



the aerial eye

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Ice Sailing Regatta Madison, Wisconsin by Craig Wilson

CAMERA CRADLES II

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.

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keep 'em coming!

With this issue, we have a paid readership of 125+ in 16 countries! A half dozen are also first-time contributors of pictures, diagrams, and/or articles. Thanks to them for responding to our call! We're all volunteers, and the success of the publication depends on each of you to participate. So keep those letters and pictures coming! We'll try to publish each contributor.

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 Macintosh PICT, TIFF, or EPS formats are best, but pen drawings, preferably on white paper, or just quick sketches on the back of the proverbial napkin will work too.

Photos may be sent as negatives, prints or slides. We can also read Kodak PhotoCD, or Macintosh disks in almost any Mac graphic format. We'll keep the prints unless you direct otherwise, but return all negatives, disks, CDs, and slides—eventually.

american kitefliers association aerial photography committee

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our feature this issue:

camera cradles revisited

by STEVE EISENHAUER

Millions of people own kites, millions own cameras, but few put their camera on the kiteline to get aerial photographs. The missing link is the camera cradle.

Most kites and cameras are mass-produced; most cradles are hand-built "one-of-a-kind" creations. Each year, cradle construction evolves. A small group of individual cradle builders test new versions: new construction materials, suspension systems, stabilizing devices and radio control equipment.

Although there is no formal communication system among builders, the aerial eye tries to keep you up to date on cradle advances. This issue, the first of our second year of publication, focuses on these advances.

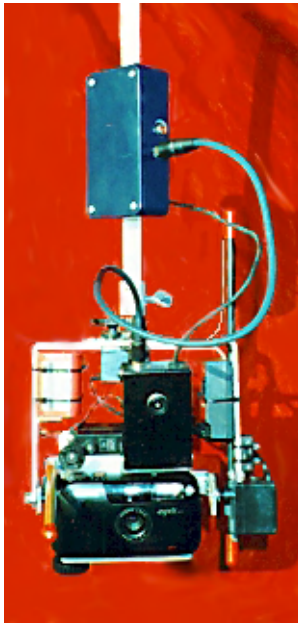
The current controversy among cradle builders is which suspension system is best: the "Picavet" string-and-pulley sytem* or the pendulum. With the recent addition of Wolfgang Bieck to our KAP Committee, the balance has tipped in favor of the Picavet: three members use it (Wolfgang, Brooks and Anne), while two members use the pendulum (Craig and Steve). This split seems to mirror worldwide KAP preferences; apparently neither system is best.

Both systems have their strengths and weaknesses. The Picavet is lighter; the pendulum doesn't have strings that can get tangled. The Picavet seems to isolate vibration better; the pendulum is easier to attach to a kite line. But even these differences are arguable; the final determiner is personal preference.

Some KAPers occasionally use micro-video cameras on their cradles that transmit a image to a ground-based monitor. [left] But this added convenience and complication does not seem to be a trend. Craig Wilson and Wolfgang Bieck only occasionally use their micro-video systems; Randy Bollinger has sold his. Masami Nakajima reports that some JKPA members have this system but that they rarely use it.

Using a micro-video camera appears similar

• *continued on next page*



Randy Bollinger's rig with micro-video aiming, no longer in use. See page 12.

* *see "Picavet — past & present," in the last issue of* **the aerial eye**.

cradles revisited • continued from page 3

to using an electronic fish-finder for trout flyfishing. Electronic fish-finders work well for commercial fishermen, but are inappropriate for a catching a single rainbow trout.

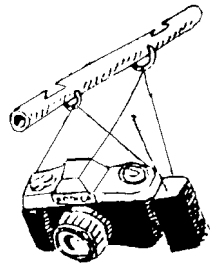
My own cradle has changed in a year. I no longer use a double drogue mounted above the pivot point; that idea was only marginally successful. Nor do I use a 3 channel R/C system, with pan, tilt, and shutter servos. My system now has only pan and shutter servos; tilt is adjusted before each flight.

My 2-channel R/C unit is cheaper, has replaceable batteries (so I can carry spares), and is simpler to use. I don't often miss the tilt servo; nearly all my photos include a pre-set sliver of the horizon. However, I plan to fabricate a connection to enable the shutter servo to make one tilt adjustment per flight; by pushing the shutter lever in the opposite direction a clip releases a spring that pulls the camera to a second tilt adjustment.

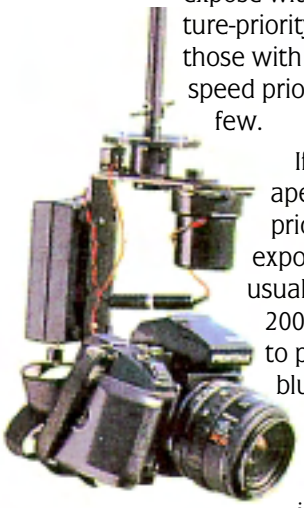
The ultimate cradle is lightweight, keeps the camera horizon-level in all wind conditions, allows adjustments in all directions including from horizontal to vertical formats, is simple to use, never gets tangled with the kiteline, can be aimed by radio control by using the kiteline direction as a reference, is inexpensive and can be quickly connected and disconnected. In my opinion, a cradle that does all these things does not now exist. But if you have one of these creations, just tell me how much it'll cost me. • æ

murooka's "camera stations"

by KATSUTAKA MUROOKA, 2-42-7 Shirasagi, Nakano, Tokyo, JAPAN



In Japan, both lens reflex and compact cameras are used with 35mm film. Most cameras have auto-winders. Exposure and focusing functions tend to be automatic, although auto-focusing is rarely required for KAP. Many cameras automatically expose with aperture-priority, while those with shutter-speed priority are few.



If we use aperture-priority auto exposure, we usually use ISO 200-400 films to prevent blur. However there is much room for improvement; we are studying a desirable length of suspension rods and possibility to use automatic gyro.

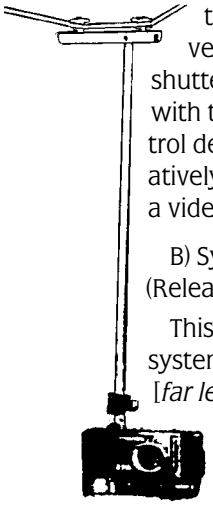
On these pages are illustrated some camera stations we have used in Japan:

A) Radio-Controlled Camera with Electromagnetic Shutter Release Terminal.

Konica FT-1 and Canon EOS Kiss [*Rebel in USA*] can be used for this system. The Canon, currently one of the easiest-to-use cameras, may be most suitable. It is the lightest among single-lens reflex cameras, and has various types of lens available (I usually use 24mm and 21mm).

One simple system [*top left*] employs aluminum rod, suspension line, and camera with radio-control terminals (Konica FT-1, etc.) The shutter can be released from 200m away. The angle is fixed.

A more complex system [*not shown*] uses servomotors for horizontal and vertical rotation. The shutter button is pressed with the help of a radio control device. The system is relatively heavy, but usable for a video camera.



B) System with Slow motor (Release at Regular Intervals)

This is called LarkEye™, the system developed in Japan [*far left*]. The slow motor rotates the camera to provide a panoramic sequence of photos.

A built-in delay timer permits the motor to start two minutes later than the switched is turned on.

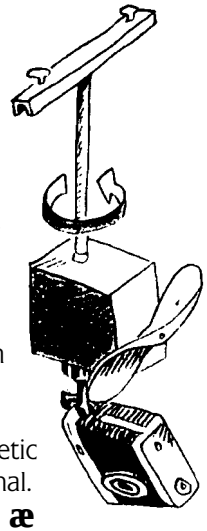
We have also used a system powered by solar battery [*left*]. This system also enables panoramic photography. We call it "handmade satellite."

C) Suspension Rod with Upside-Down Camera (with interval timer) [*below left*]

This is the easiest way, but you need the camera equipped with interval timer. The vertical angle is fixed.

For this system I use several cameras:

Ricoh XRX
Ricoh FF9D
Canon AutoBoy



D) Wind-Powered System [*right*]

The camera rotates 360 degrees at 1 rotation per minute with the help of wind force. This is an energy-saving system with no need for battery. You need the camera that has electromagnetic shutter release terminal. • æ

one week in the evolution of KAP

text and diagrams by LARRY COTTON, 3513 Canterbury Road, New Bern, NC 28562

Valerie Govig of KiteLines Magazine *handed me a much-longer version of this article last month, hoping we could use it. Though none of the players in the story had tried KAP, they came up with many innovative ideas and a minimum of reinvention. We thought you would enjoy their week of discovery. Thanks, Val! –bgl*

When my family planned a week-long reunion at the beach this past summer, my brother Phil and I panicked. The thought of sitting around, chatting with relatives ran counter to our decidedly type-A personalities. So we concocted a project to occupy our minds and hands for a few days: aerial photography from a kite!

SUNDAY

We arrive at the cottage. Phil has brought his home-built delta-Conyne. It sports a five-foot wingspan and a nice, solid 3/8" dowel right up front for mounting the camera. He's also brought an assortment of miscellaneous materials.

When we make our grocery run, we pick up the first of many Kodak FunSaver 35 cameras.

MONDAY

The project has attracted a contingent of would-be aerial photographers who are eager to begin work. Two main competing philosophies emerge:

1. Advance film, launch kite, fire shutter (somehow), bring in kite.

2. Launch kite, advance film and fire shutter repeatedly (somehow), bring in kite.

A major breakthrough comes when one of our gear-head cousins discovers that by holding the shutter-release button down while advancing the film, the shutter itself would fire repeatedly. Just to be safe, however, I take it upon myself to stick with Philosophy 1: to try to grab one good aerial shot.

TUESDAY

While part of the team tries to figure out how to advance the film aloft, another splinter group helps me work on the one-shot philosophy. We devise a hair-trigger spring-loaded lever, much like a mouse trap's, which can be tripped by removing a spacer between the lever and the shutter-release button. By attaching a long secondary string to the spacer, we plan to give a little tug from the ground.

We fashion a 3"-square camera mounting platform from a piece of plastic laminate, and hot-glue it to the kite's keel. We mount the camera to the platform, using lots of electrical tape.

We're ready for our first test flight! We launch the kite and carefully play out the hair-trigger string. But when the kite reaches an altitude far below what you'd call "aerial," the force of the wind itself on the secondary string pulls the spacer out of the gap, firing the shutter.

Somebody suggests putting a piece of ice in the hair trigger and let the sun do its thing. But how fast would the ice melt? What will water do to the camera? We try it anyway, and garner a few exposures.

We decide to save all exposed film until the project is complete, then rush it to a one-hour lab.

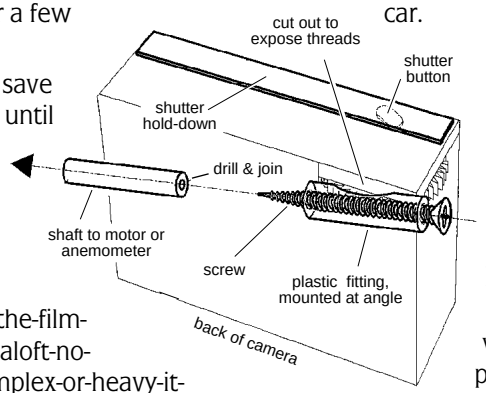
WEDNESDAY

The advance-the-film-while-the-kite's-aloft-no-matter-how-complex-or-heavy-it-gets team considers many options. We deem three to have the best chance of success: holding the shutter button down while turning the film-advance wheel by (A) a small DC motor; (B) anemometer vanes; or (C) a clock-like escapement.

We discover that a two-inch #10 self-tapping screw's threads mesh well enough with the film-advance wheel to form a crude worm-drive. The screw turns smoothly in a molded plastic "T", normally used to connect flexible tubing. With a small grinder we remove the perpendicular leg of the T and open a gap on the side to expose enough screw threads. This assembly is then hot-glued to the camera body at a slight angle to provide a good mesh with the film-advance wheel.

Methods A and B can use this worm-drive. Considerable speed-reduction is gained, while reducing the torque necessary to advance the film. [See fig. 1.]

My brother heads a team laboring on concept A—an elaborate motor-driven contraption powered by parts cannibalized from a $4.00 toy car.



1.

Meanwhile, my team is fabricating a prototype based on concept B, which will use anemometer vanes made from four small paper cups.

My son seizes on variant C, using a pendulum which would swing randomly as the kite dances in the skies. The pendulum, made of brass welding rod, pivots on the front side of the camera. At the bottom he attaches a small weight; at the top is a springy pawl to engage the ratchet-like teeth on the film-advance wheel. [See fig. 2, next page.]

THURSDAY

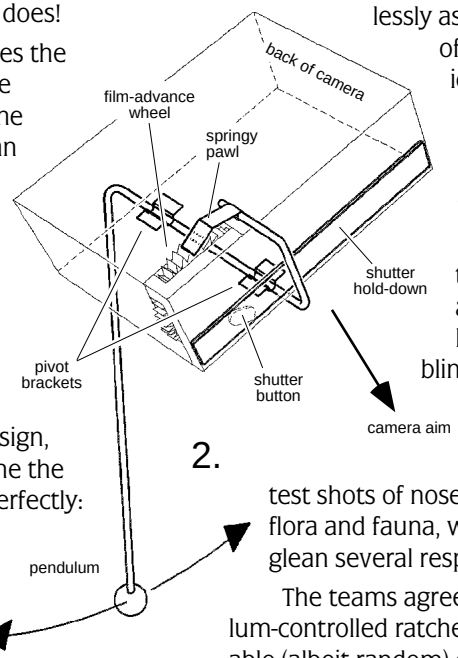
The anemometer-vane model is ready. We launch. The vanes rotate. We leave it up about a half-hour, not knowing exactly how fast the shutter is tripping.

After reeling it in, our most anxious moment is just before eyeballing the "PICTURES REMAINING" window on the camera. When it says "0" you know

• *continued on page 8*

you've succeeded. It does!

My son soon finishes the pendulum model. We launch it and allow the kite to fly for about an hour. On recovery, the "PICTURES REMAINING" counter hasn't moved! The ratchet pawl had flipped up and was just swinging in mid-air.



After a quick re-design, we try again. This time the mechanism works perfectly: the counter happily reads zero.

FRIDAY

By mid-afternoon my brother is satisfied with his model. Luckily, the wind has picked up enough to lift the burden of kite, motor, gear train, and 2 AA-size batteries.

Phil's design features two springy brass contacts which, when allowed to touch each other, start the motor. We place a sliver of ice between the contacts and launch the kite. Before it gets out of earshot, we hear the motor kick in. Whoa, that ice sure melts fast out here in this 90-degree heat!

Compounding our problems, the wind won't lift the kite very high. So we watch helplessly as the camera fires off, in relatively rapid succession, all 27 pictures of us staring up at the kite in consternation.

We rush our film to the processor, and a short time later, with trembling hands, we shuffle through the pictures. Amid lots of fuzzy test shots of noses, navels, sand, flora and fauna, we're thrilled to glean several respectable shots.

The teams agree that the pendulum-controlled ratchet is the most reliable (albeit random) of all the techniques we tried. It's easy to fabricate, cheap, and allows the kite to attain considerable altitude while firing off the shutter. We are so thrilled with the results that we immediately begin laying plans for the next generation—a radio control version. • æ

hang time

by CRAIG WILSON

In 1989 I purchased a Ricoh Shotmaster camera. This is the camera that was setting the kite aerial photo world on fire in the late 1980's because it was a lightweight point-and-shoot camera with a shutter speed of 1/400 and a clever interval timer that would trip the shutter every 60 seconds until you shut the camera off or it ran out of film.

It was a big improvement for me to have a camera that would push its own shutter and advance to the next frame, saving me the effort of bringing the camera back down after each exposure.

I was using the camera connected to an aiming bracket which was attached to the kite line. I would preset the aiming on the ground by adjusting the wing nuts on the bracket assembly. I would lift the rig and walk the kite around, shooting up the film, monitoring my wrist watch to get an approximate idea of when the shutter was being tripped on the camera.

To improve this I thought that a rig that would slowly rotate as the camera took pictures would be the hot ticket.

I designed and built a rig using an old 6-minute darkroom timer that I found in a really cool used camera store. The timer, like a kitchen timer used for baking, simply needed to be wound up and then it would make one complete 360-degree rotation in six minutes.

I built a rig around that general principle, using the timer pretty much intact as the motor to rotate the rig. The camera would take one photo every 60 seconds as the timer and rig would slowly pirouette, powered by the timer. I would start the camera, wind up the rig, pay out kite line, and end up with a six-shot panorama covering 360 degrees.

After six minutes of hanging around the timer would "ding" and if I was paying attention and the rig wasn't up beyond a couple hundred feet I could actually hear it and know that it was time to pull down the camera.

This may sound like a "half-baked" idea but it works rather well, is light weight, cost me about $4, and the picture quality jumped so astoundingly compared to what I had been doing that I knew in 1989 that I was on the right track. • æ

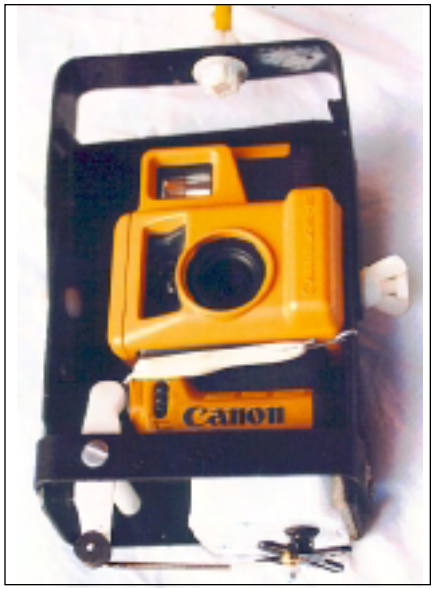
and he shall have music…

by HENRY JEBE, Post Office Box 240221, Douglas, AK 99824-0221

Last spring I was in Seattle for about two months during the overhaul of the ship I work on. I was in a woodworkers' store running up my Master Charge bill and spotted some Swiss-made music box movements — the mechanics that make a box musical.

I got to thinking, "I wonder if these would have enough power (while unwinding) to push a camera's shutter release?" If so, I reasoned that it would probably be possible to use one to take more than one photo on each lofting and still keep my rig reasonably light, uncomplicated and cheap.

I went ahead and bought one (the tune: "It's a Small World"), which cost me about $15.00.



I sat awhile back in my room aboard ship and thought about what to do with it. The simplest way to try it out was to install it on an extra bracket on an existing cradle. I drilled a small hole into one side of the winder key to accept a piece of wire, then ran the wire to a lever which tripped the shutter release four times per winding. It worked like a charm! [below]

The musical movement takes about 45 seconds for each revolution of the winding stem when running and runs for about 41/2 revolutions. For disposable cameras or any camera that requires manual winding of the film for each exposure you could probably use the winding stem as a winch to pull a lever down onto the shutter release. [For other ideas, see p. 5] This would provide plenty of time to get everything into the air for the shot.

There is enough power in the mechanisms to do a bit of extra work. I made a rig that tilts up and down and shoots four photos as it completes this cycle [opposite page]. I made a rotational rig using plastic gears from Small Parts Inc. to which I have attached my video camera. I can also use my Ricoh Shotmaster and a microswitch to trip the shutter as the camera rotates, taking 8 shots per winding.

I did find a drawback in the Swiss movements, in that the gears are very small. In sandy locations it is necessary to be careful not to let sand get into the gears; it would stop them from functioning until cleaned. Electrical cleaner and/or an artist's brush worked well for this.

Musical rig #1, with waterproof camera

SMOOTHER MOVER

I believe I have found a better movement, though, in a Japanese unit made by Sankyo. They are better for several reasons. They are much cheaper at $6.95 each, even less when bought in quantity. They also come screwed into their own little plastic box with a cover snapped on. There is a hole for the winding stem into which I installed a grommet thus making it difficult for sand to get in. I suspect the plastic box is intended to be used only for protection while shipping, but for our purposes, you can leave the movement in the box as it keeps out contaminants.

The musical ability is disabled easily by removing a part; all you really need is the basic spring-wound motor assembly if music is not your forte. The movement may run just a bit longer too without the resistance of the reeds on the cylinder.

I believe that the musical movements may be a good way for newcomers to KAP to try their wings without too much financial outlay. For more experienced KAPers it could encourage you to take more risky photos, if you don't have to worry so much about losing your entire rig.

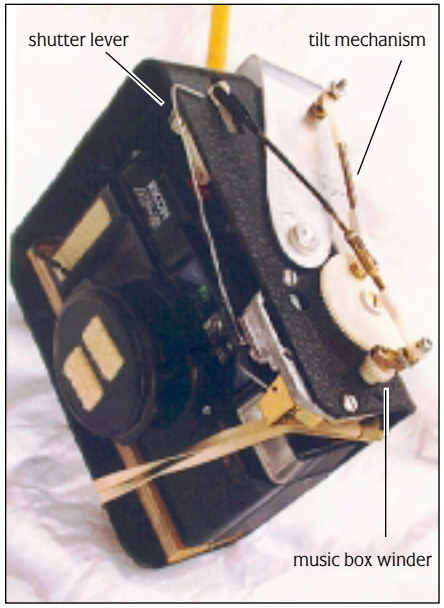
Musical movements can probably be bought in most good woodworking or clockmaking stores, or by mail.

Dethermalizing timers may be used in conjunction with the musical movements depending on how much time you need to get your rig airborne. The Japanese movements are less than one third the cost of a dethermalizing timer, though they are somewhat heavier.

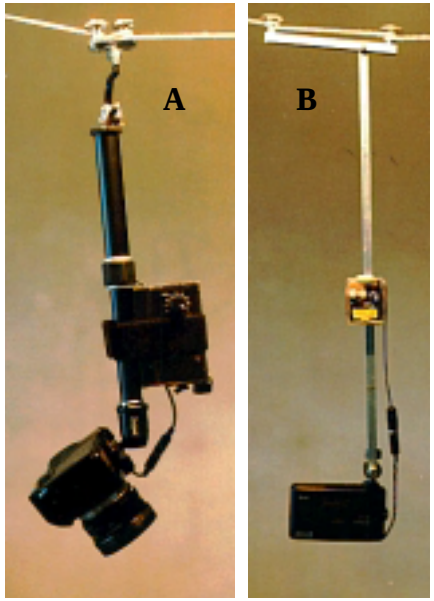
PREFORMED CRADLE PARTS

I should also mention my switching to plastic fishing-tackle boxes as a source of material for fabrication of my cradles. Cut into sections, this plastic makes quite a light and strong cradle and is preshaped to a good fit for a camera. You have only to locate one close to the dimensions of your camera. Tackle boxes are a bit sturdier than Tupperware®, but are still very light.

[see Sources, p. 28, to find many of the items discussed in this article.] • æ



rigs from ’round the globe



Masami Nakajima photos

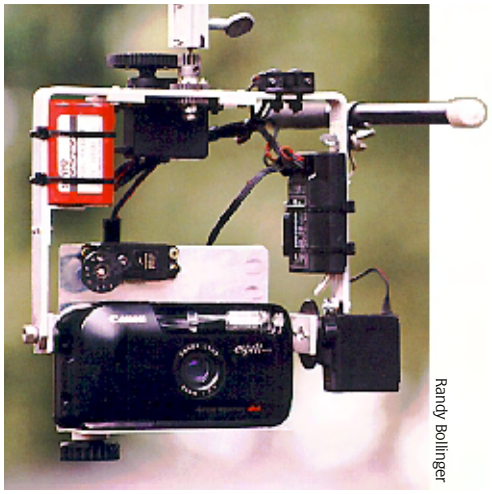
JAPAN

Masami Nakajima reports that he primarily uses two interval-timer cradle systems, both with pendulum suspensions. One has a Minolta SLR camera [*photo A, above*] and one a Nikon Mini camera [*photo B*]. He uses the SLR system about 95 percent of the time. He also occasionally uses a radio-controlled system that rotates 90 degrees vertically and 360 degrees horizontally (not shown), and a Lark-Eye™ system that rotates 360 degrees per minute while taking 16 photographs per rotation, similar to the one shown in Murooka’s article on page 4.

MISSOURI, USA

Randy Bollinger’s Esprit Rig: gone full circle and back to basics. [below]

Camera:	Canon Esprit/Prima Mini
Frame:	3/4” x 1/8” soft aluminum & .072 aircraft aluminum
Servos:	Airtronics: standard servos for pan & tilt, micro servo for shutter
Batteries:	Sanyo rechargeable 800 mAh; 110 mAh optional
Gears:	Teflon & cast, 4:1.5 ratio.
Suspension::	Picavet/pendulum combo, the best of both. Compression lock mounted to 1/8" steel pin.
Weight:	2 lb 1.5 oz ready-to go, with camera, film, and 800 mAh batteries
Past Options:	Micro-video; Laser pointer; both sold. 4th servo for format; removed to reduce weight for 800 mAh batteries.



Randy Bollinger

GERMANY

Otto Böhnke’s RC-RC Rig (reported by Wolfgang Bieck)

RC-RC means Radio-Controlled Reflex-Camera rig. It was built for a Canon T-70 with 28mm Tamron lens, and uses a 200mm Picavet suspension. Total weight is 1690g.

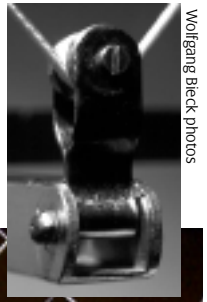
Otto decided to reduce the functions to a horizontal rotation of 270 degrees with a constant down-angle, usually 15 degrees. This angle may be changed manually prior to flight.

All sensitive electronic components are protected against water by a U-channel aluminum plate, for example the electronic shutter-relay, the on/off switch, or the shutter connector.

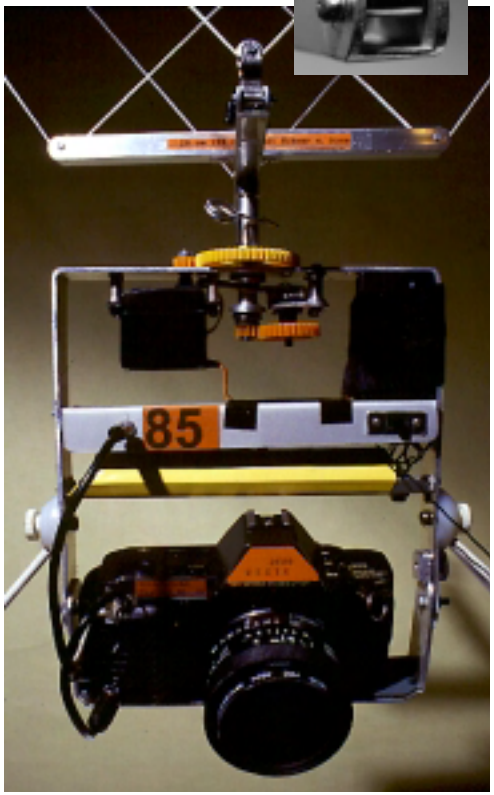
The real interesting invention of Otto Böhnke is a model-servo transformation from the standard 90 degrees to 270 degrees for horizontal rotation, using an external potentiometer. This transformation makes control of the camera’s view-direction very easy.

The neutral position of the transmitter’s control lever is equivalent to the wind direction. Turning the control lever to the left will turn the camera 135 degrees to the left, and likewise to the right. With a field of view of the Tamron 28mm lens of 75 degrees, therefore, the camera can see a total of 345 degrees and you’ll have the guarantee to get aerial photos without a disturbing kite-line!

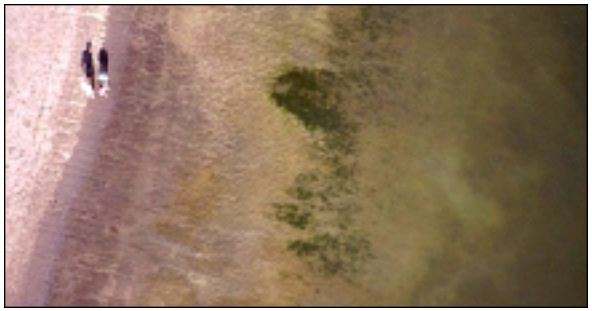
• æ

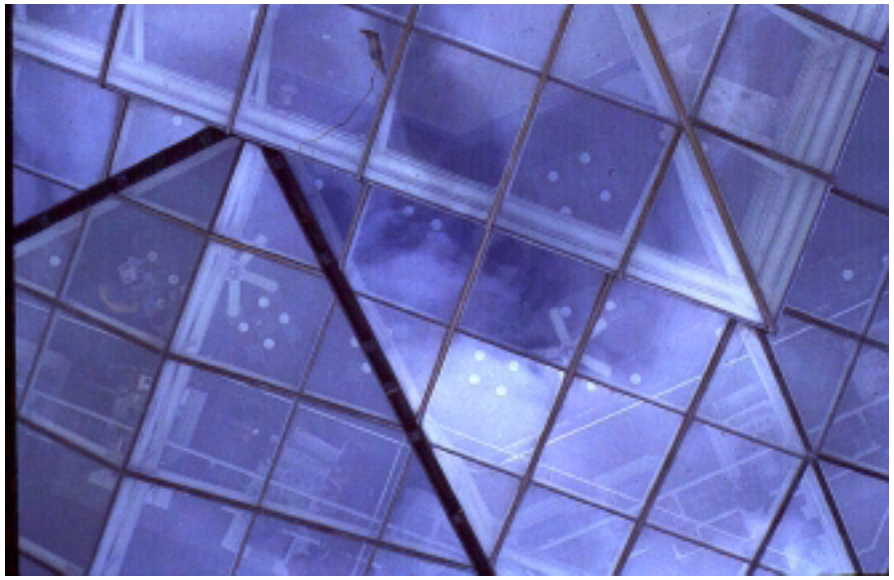


Wolfgang Bieck photos



aerial gallery





Above: Halawa Valley, Hawaii
by Carl Hanson
Olympus Infinity Jr,
11' delta-Conyne

Center L: Quadrangle,
Pacific School of Religion
Berkeley, California
by Cris Benton
Yashica T-4, Delta-Conyne

L: Cafeteria Roof,
Air & Space Museum
Washington, DC
by Craig Wilson
Ricoh KR10-M, 18' delta

R: Remains of Treadwell Mine
Juneau, Alaska
by Henry Jebe
Ricoh AF-5, 14' delta-Conyne

Far L: First Flight/Park, Lake Worth, Florida, by Dennis & Ruthie Lazar
Canon Infinity Jr, Sutton FlowForm 16

L: Pillar Point Beach, Half Moon Bay, California, by Roy Latham
Yashica T-4, Sutton FlowForm 16

wolfgang's HOVER-rig

by WOLFGANG BIECK

HOVER means "horizontal" and "vertical" in a double sense. My "HOVER-Rig" allows me to tilt the camera from horizontal to vertical optical axis, and also to rotate it from upright [portrait] to oblong [landscape] format.

This basic requirement of photography rules earth-grounded photography just as it does KAP. If there exists a philosophy for me to take photos it may be the following: "The motive [subject] dictates the altitude of the camera and the film-format."

So I built the HOVER-Rig.

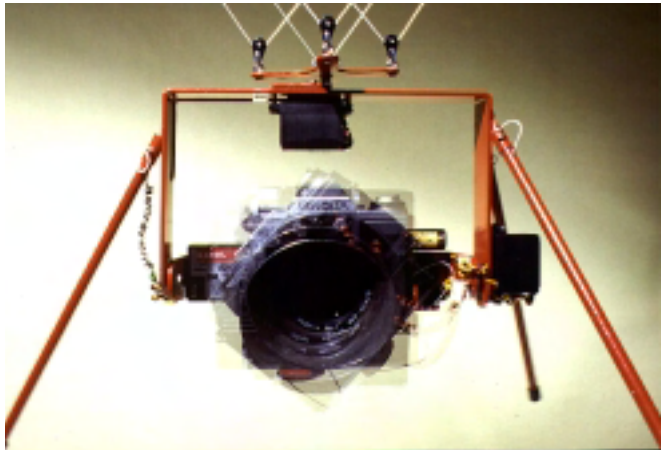
In a metal-scrap yard I found all the aluminum I needed and paid 70 cents per kilo. I selected a window channel of square profile to get a strong 90-degree camera holder. This camera-holder was attached by a 6mm steel axle to a 30mm plastic gear. I installed the axle with two 6 mm ball bearings, fixed in a special aluminum block, which is mounted on a U-channel aluminum frame.

This "inside-frame", in addition to a Minolta X-300 + external winder + f1.8/35mm lens (total weight 1210g), carries also the R/C receiver, an electronic relay in a plastic box, the battery case (4 cells of 1100 mAh each) and a strong model-servo fitted with a matching plastic gear to rotate the camera from horizontal to vertical format.

The electronic relay triggers the shutter of the camera.

To turn the inside-frame with camera together, it's very important to find the axis-points, where the whole system is very well-balanced! If this is guaranteed, there is no problem to tilt the heavy inside-frame with another model-servo, mounted on an "outside-frame".

The nearly last step was to find the balance-point of the whole system on the outside-frame. Here I mounted the third model servo, modified for endless horizontal rotation.



HOVER-rig in rotation from upright to oblong format

To protect all against ground-shocks, I prepared three little aluminum holders for glass-fibre legs.

The well-balanced HOVER-Rig allows me to use my self-developed miniature Picavet suspension, with an aluminum cross of 100mm x 100mm, cut from 2.5mm stock with a fretwork saw. Four tiny model sailboat blocks, ball-bearing-equipped and with a maximum permissible load of more than 60 kg each [see Sources, p. 28], were connected to the Picavet cross with small eye-bolts. I used Dyneema [Spectra] line of 60 kg breaking strength for the Picavet suspension.

All electric wires were attached to the frames with rapid adhesive. To make it easier to service or repair the model-servos, I inserted white connector plugs on the servos themselves or on the frame. The antenna was rolled into one of the glass-fibre legs. Short pieces of line attach the camera's fixing-screw and the lens-cap to the frame.

Whenever possible I used countersunk screws and screw taps. All aluminum pieces and the glass-fibre legs were grounded and coloured red.

The finished HOVER-Rig weighs 760g without camera [1970g or 4.3 lbs ready to go]. To build it took 4 or 5 weeks. I hope to use it for 5 or 10 years.

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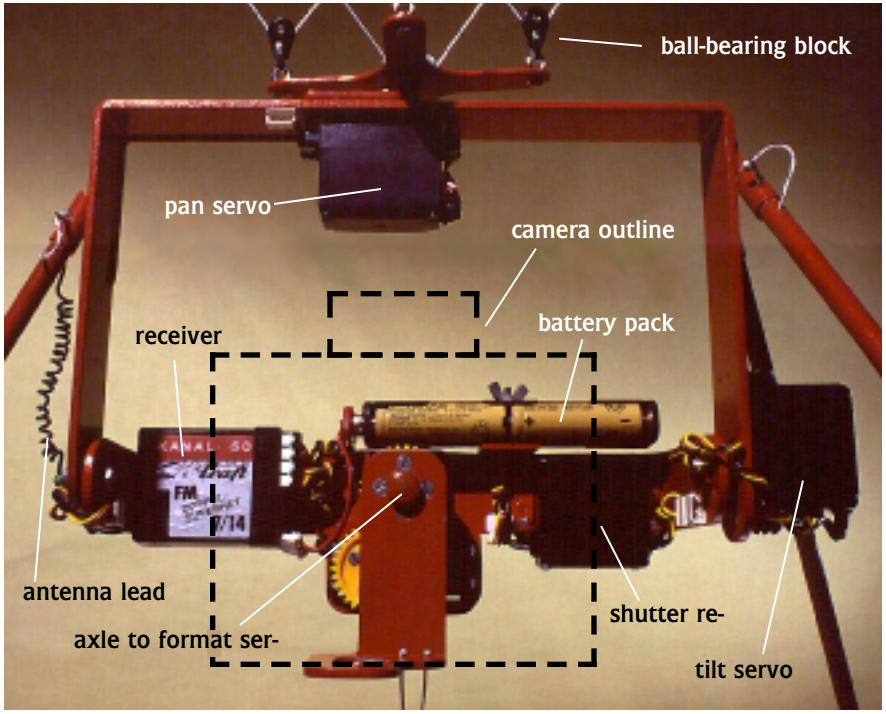
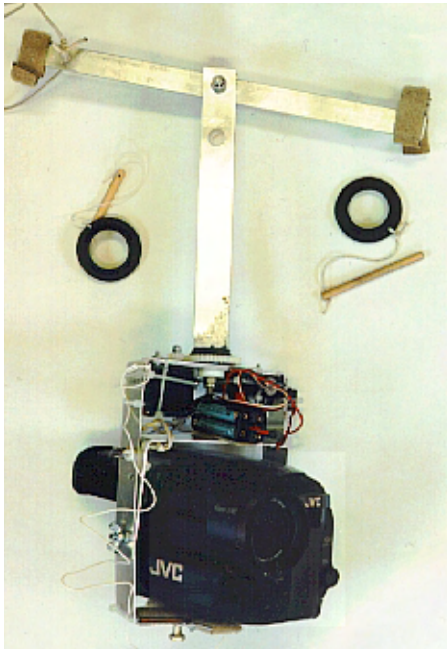


steve's camcorder rig

by STEVE EISENHAUER

My camcorder is an S-VHS-C model equipped with a digital stabilizer. The cradle weighs 16.7 oz (478 g) and the camcorder 36.7 oz (1042 g). A Futaba r/c system has been altered to allow pan rotation speeds from one revolution per minute to a variety of faster speeds. The system also allows reversing the pan direction and stopping the rotation at any point in the 360-degree circle. Tilt orientation is manually adjusted before each flight.

Since the camcorder is heavier than my 35mm camera and requires more power to smoothly rotate 360 degrees, the pan servo was altered similar to the method described in the KAPWA News a few years ago by Pat Coombs.



First remove the four screws that hold the servo together, remove the top of the housing, and cut out (or grind off) the two internal stops inside the top [see Fig 1, opposite]. Do the same with the matching stop on the gear that drives the output shaft. The servo thus becomes a variable-speed reversible motor.

Its power is increased and the speed reduced by installing a small gear (13 tooth) on the output shaft and a large gear (52 tooth) on the cradle's vertical shaft [Fig. 2]. The servo's increased power allows a tighter adjustment of the pivot nut on the bolt connected to the pendulum arm or the Picavet cross, and this provides a more stable connection.

Use of the correct model of Futaba r/c transmitter is important. I use a Futaba Attack 2-channel unit, designed for land use but equipped with air frequencies. This gives me a throttle control neutral switch [Fig. 3], which offsets the neutral position towards the bottom of the stroke. If I flick this offset switch down, I can stop rotation by adjusting the trim control, and still have enough main lever control to rotate in either direction. Then I can rotate the camera to any position in the 360-degree arc, and it locks in position when I release the lever.

You can also use the trim control to set an automatic rotation speed. I put paint marks on the trim control to let me know the auto-rotation settings, and to facilitate the return to neutral (locked) position. There is probably a way to adjust the neutral position of other transmitters, but you'll have to look into that yourself.

One problem with this system is that you must watch the camera to aim it. I prefer a system that allows using the kiteline direction as a reference; by adjusting the r/c controls I know which direction the camera is pointing (pre-set aiming). With the stops removed from the pan servo, you have no reference point to begin or end panning. Binoculars become necessary for high altitude aiming, and this can be cumbersome.

Another potential problem is the increased potential for the rotating cradle to spin off a shaft locknut, if you use one, if it is rotated consistently counter-clockwise. Make sure your locknut is in good condition, put locking fluid on the threads, or use a second locknut for safety under the primary nut.

This cradle system can be used for both still and video cameras, although it seems better suited for video cameras. The system allows you to duplicate the way people look at a landscape: people fix their gaze for a while then look in another direction that catches their attention, then they may turn around and look behind them. They don't spin slowly while looking.

Occasionally, slowly rotating the camera can produce an interesting video image. But if the camera is rotated for more than a minute or so the result can be disconcerting, and may even make you dizzy.

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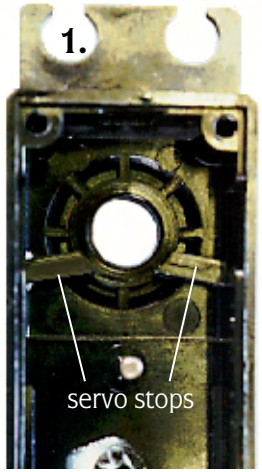

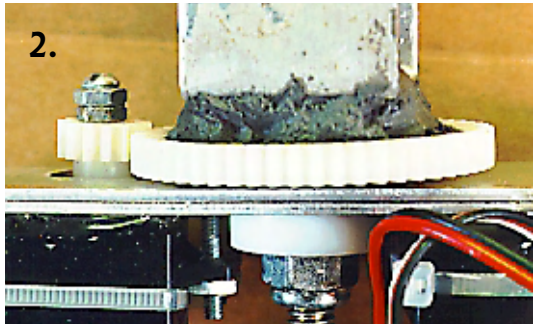

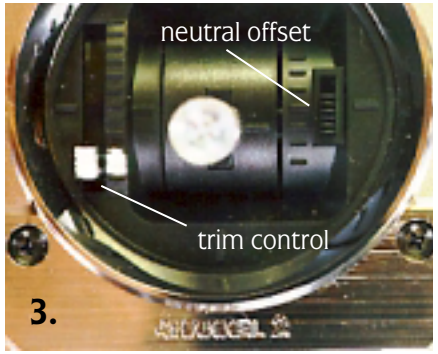

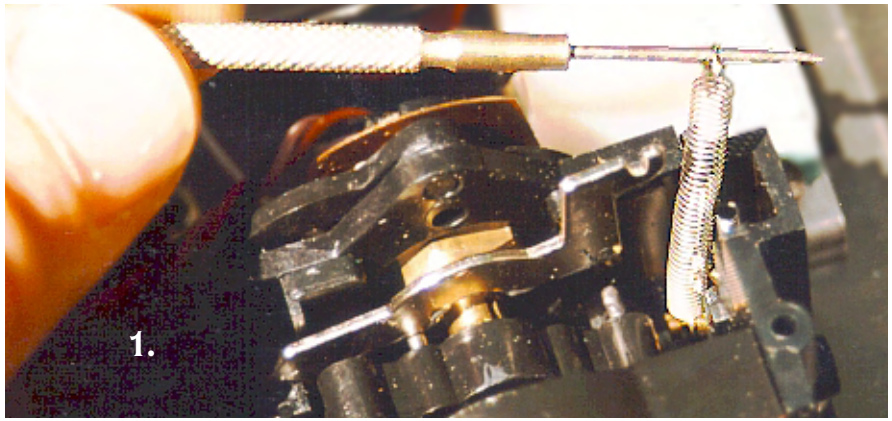

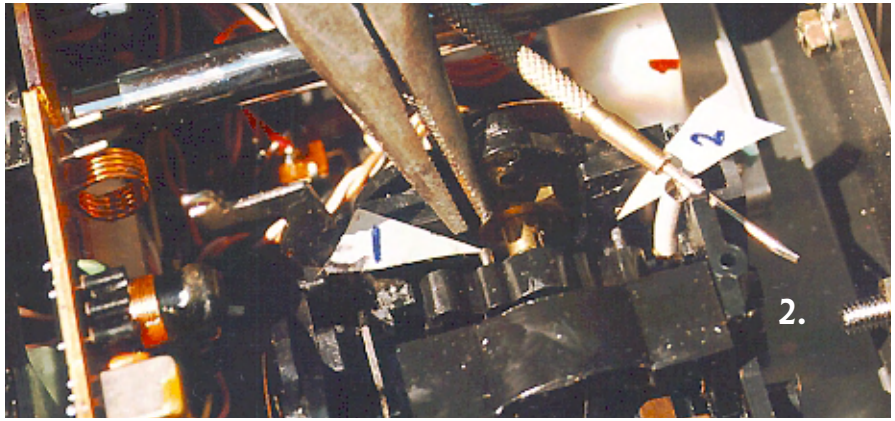

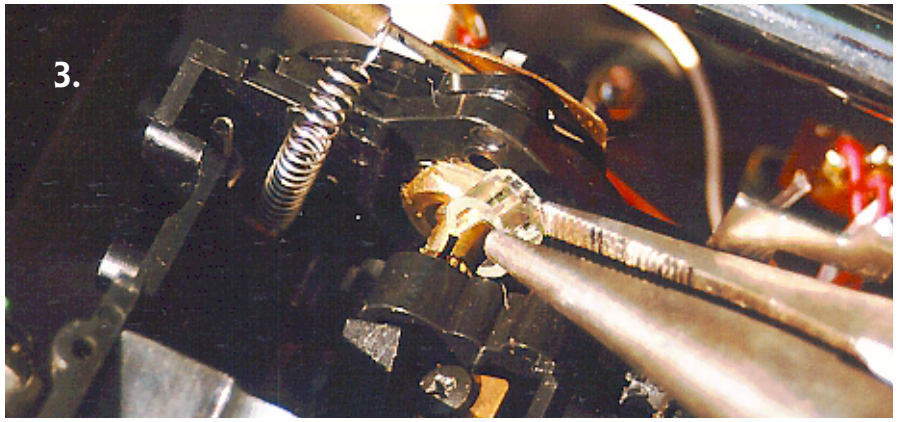

extending battery life

by RANDY BOLLINGER, 249 Gladys Avenue, Ferguson, MO 63135

The radio controls we use were not designed for AP use, but here's a way to make them work better for us.

Inside each radio control transmitter unit, there are two gimbal controls that are capable of moving in all directions. As they are moved, two potentiometers per gimbal are turned, sending voltage to the transmitter. The signal is picked up by the receiver. The receiver transfers the same voltage to the servos, and they move in unison with the gimbaled control arm.

Each gimbal has two cam arms resting on two cam pins each, under spring tension. The problem is that each time the control arm is moved and then released, it returns to center. This is fine for model airplanes to maintain a straight flight after a roll. But with a camera cradle, the load on the servos is greater, and moving twice with each shot is not necessary. You're only working your rig at half its full potential.

So what is needed is a gimbal control that will stay where we move it for panning and tilting. This will provide longer battery life and more photos per charge.

The following instructions are for an Airtronics control unit, and are meant as a basic guide only, in that all radio controls are not the same. If you are not certain about your make of radio for converting to a non-return gimbal, consult with your hobby dealer.

STEP 1

a. Turn power switch off and remove rear cover of control unit.

b. Remove batteries.

c. Using a small pick or screwdriver, carefully remove the cam arm retaining spring. (Fig. 1)

STEP 2

a. Lift cam arm up to hinge pin side.

b. Using small needlenose pliers, grasp cam pins 1 (Fig. 2). Rotate pin first to break free from press fit. While rotating pin pull outward and remove. Repeat with pin 2.

STEP 3

a. Cut a length of vinyl tubing large enough to cover the potentiometer shaft (Fig. 3) and slit one side.

b. Slide tubing in place.

STEP 4

a. Flip the cam arm back over so it rests on the tubing and reattach cam spring. The tubing will create a friction between the shaft and the cam arm, keeping the gimbal arm tight in its movement.

b. The amount of tension to the control arm can be adjusted by the cam spring adjustment screw.

STEP 5

a. Repeat steps 1 - 4 for second cam, same gimbal.

b. Reinstall batteries and rear cover.

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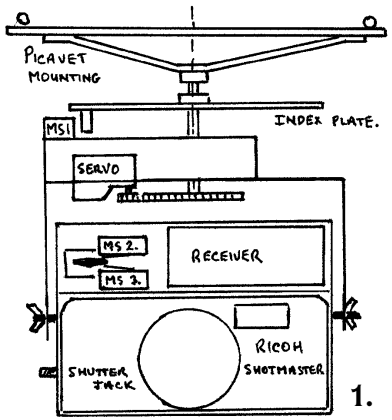
arthur's australian autorotator

by ARTHUR COOMBS, 4 Mortimer Street, Heidelberg 2084, Victoria, AUSTRALIA

I have recently carried out a modification to my camera rig which enables a set of photographs to be taken at 60-degree intervals as well as single photographs in any chosen direction.

Control is by a 2-channel radio-control unit. One channel operates a microswitch to activate the shutter of the FF9 Shotmaster Ricoh; the other channel is used to rotate the rig through 360 degrees+, using a modified servo motor and a gear ratio of 13:60. Diagram 1 shows general arrangement.



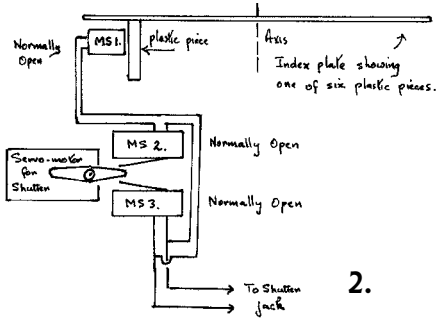
1.

The angle at which the camera is tilted is set by hand prior to launching.

The modification consisted of adding an index plate made of printed circuit board material on which 6 plastic pieces are mounted along the circumference of a circle at 60-degree intervals. The 38mm lens of the Shotmaster covers an angle of 62 degrees along the horizontal format of the 35mm negative.

As the rig rotates beneath this stationary plate a normally-open microswitch MS1 is closed each time it strikes one of the plastic pieces. In series with this switch is another microswitch MS2, again normally open.

The shutter control servo motor arm is placed between MS2 and my existing microswitch MS3, also normally open, which is used for single-shot photographs. (See diagram 2.)



2.

MODES OF OPERATION

A. Single Shot.

The position of the lever arm on the servo motor controlling the shutter is horizontal when the r/c trim is pushed completely down. Moving the r/c vertical control downward closes MS3 and a photograph is taken.

The rotational position is controlled by the horizontal r/c control with the horizontal trim in a neutral position. This single shot mode has been used for a number of years.

B. "Automatic" operation: the modification.

The r/c vertical trim is pushed completely upwards. This closes the microswitch MS2 which is in series with MS1. (MS3 stays open.)

The r/c horizontal trim is moved from the neutral position causing the rig to rotate. As each plastic piece contacts the microswitch MS1, the camera will take a photograph.

After the required number of photographs have been taken, the r/c vertical trim is pushed completely downwards.

This opens MS2 and consequently no more photographs ar taken even if rotation continues.

The rate of rotation depends on how far the horizontal trim is moved from neutral.

Recently I exposed my first film using this "automatic rotation" method.

It was a sunny day with a rather gusty wind and consequently the kite and camera moved around rather dramatically. Hence the photos do not join. The slow rotation speed resulted in sharper photographs [example below]. I look forward to a steady wind situation.

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for better rig pix

Photos of camera cradles are hard for us to reproduce well, because (a) cameras are essentially black on black, and (b) rigs are visually busy subjects, often shot against a busy background.

When you photograph your rig, emulate the techniques used by Masami Nakajima (p. 12) and Wolfgang Bieck (pp. 13, 16, & 17). Place your rig at least three feet from a plain, smooth, non-glossy, mid-toned background, and use a light source which is not mounted on the camera.

on the horizon

Two upcoming events are expected to give special emphasis to KAP:

10émes Rencontres des Cerfs-Volants

March 30 - April 8,1996
Berck-sur-Mer, France
info: Gérard Clément, Paris
(+33) 1 44 68 01 86
fax (+33) 1 44 68 03 86

USAF Museum Kite Festival

August 31 - September 1, 1996
Dayton, Ohio
info: Steve Webber

aerialetters

OMNIRIG

Please find picture [below] which shows my latest rig featuring pan, tilt, landscape, portrait, shutter release and CCD camera on/off switch.

Suspension of rig is by Picavet constructed of angle aluminium drilled for lightness, folding at centre section for easy transport. Pulleys are taken from curtain track cording set and seem to be very successful.

The CCD camera is fixed and aligned directly beneath and centred with the compact camera lens which rests above. I have experimented extensively with the CCD transmitter aerial and found a simple aluminium wire loop to be the best. A video sender deals with the signal transmission built integrally within the CCD camera body.

The rig has a multiple function in that by shifting the C.G. with a balsa wood block the system can be used without the CCD, and visual references have been marked on the transmitter.

The third function of the rig allows removal of the camera's carrying platform for quickly attaching to an aluminium platform fixed to two carbon tube cross members of a double-Conyne kite, transmitting live TV pictures to a 12v 10" TV at ground base....

Thanks for a unique magazine. Happy Shooting.

Rob Green
Newbury, Berks., England

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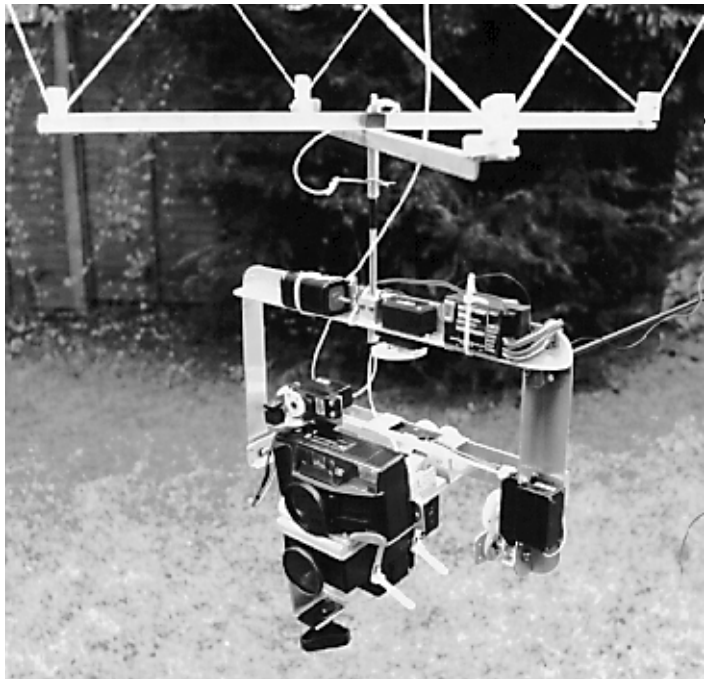

RODNEY'S WOODEN WONDER II

There's another "Wooden Wonder" in the skies over Northern California. My Rollei Prego has finally been cradled, bailed, Picavet'd and hung from the line with Leffler hangups™. The whole unit weighs just under 11 oz.

It's a great little camera but I agree with Anne Rock, you sure miss the lack of effective control—you can use up a lot of film with very marginal results.

For the suspension pulleys on this rig, I turned a vee in 3/8" aluminum and bent the strap from 1/4"-wide brass. The axle is brass with the ends peened over. They roll very freely, but I don't notice a great deal of difference than with plain old screw eyes.

Rodney Thomsen
Eureka, California

KAP ON THE WEB!
http://www.cal.berkeley.edu/~cris/kap/

in the spring issue:

KAP TARGETS

What subjects are your favorites for aerial photography?
What do you try to achieve?
Why do you shoot what you shoot?
What light & weather conditions do you seek?
For what purposes are your images used?

COPY DEADLINE
FEBRUARY 1, 1996

smithsonian magic

by STEVE EISENHAUER

Picture this: You're a Washington, DC, tourist standing at a crosswalk between the Smithsonian Air and Space Museum and the Capital. Next to you is a man with a spool of thick fishing line, with the line pointing into the air. You look up and a huge kite with a long tail appears about 500 feet up.

You ask the man what he is doing. He says he is taking aerial photographs, then hurries off as the crosswalk light turns green.

Brooks Leffler and Craig Wilson gave a kite aerial photography workshop at the Smithsonian Museum on October 23. The morning slide show of Craig's photographs and the discussion period were both fascinating and informative. And in the afternoon workshop each participant produced a Picavet-suspended cradle with a disposable camera ready for flight. But it was Craig's afternoon demonstration, and the success of the participants' first flights, that impressed me the most.

I've met Craig once before , but I had never seen the flight of his 18-foot delta kite with 100-foot tube tail. This handbuilt lifting machine has made me rethink my own style. Not only is it a beautiful sight in the sky, but the long tail and the kite's construction produce a predictable flight perfect for kite aerial photography.

I occasionally have problems with overflight of my delta-Conyne kites in light winds. I now realize, after seeing Craig's kite, that it is unnecessary. With light winds I simply need more tail: a drogue, longer and more numerous streamers, or a long tube.

Each participant of the Smithsonian's first Kite Aerial Photography Workshop probably came away with different favorite memories. For some it was Craig's slide show, for some it was Brooks' workshop that produced a working camera rig, and for others it was their first KAP flight and the resultant photographs.

For me, it was a fantastic kite drifting in the light wind, and a kiteflier maneuvering skilfully around the urban streets of Washington, DC; and the realization that this kiteflier really was taking aerial photographs from perspectives probably never seen before.

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Craig Wilson
at the National Air & Space Museum

PHIL SAVISBURY PHOTO

the first-ever all-picavet KAP meeting

by RALF BEUTNAGEL, Artussstrasse 9, 38112 Braunschweig, Germany

On the 23rd and 24th of September, Ralf Beutnagel and Harald Prinzler had invited the German KAPers for a meeting in Paderborn. From the 40 persons they know and have invited nearly 1/3 arrived and had a lot of fun.

On the first day we visited the local kite festival at the Ahornberg organized by the Paderborner Kitefliers Club. Because of the low wind speed at 0.5 Beaufort we couldn't get up our cradles on the kite lines. But we fixed a line between two tent-poles and hung the rigs on it.

None of us has seen more cradles side-by-side before: 12 cradles on a 10m line and some others in the back of the cars.

The most important thing is: there was not one pendulum at the meeting, but all kinds of Picavet-style cradles! Sorry, but the better is the enemy of the good.

The Picavet-style cradles themselves were as different as could be. Fitted with hooks, eyelets, rollers, or ball bearings, each cradle moved differently. Some fixed the line at "A", some at "B", and others did it in both places. But a real discussion about the "right" way to do it there was not. Each said that his cradle worked very well, better than the pendulum if used before.

On Sunday we had some wind but of course no sun. We looked at photos in the morning; then the kites were launched and some cradles were put on the lines. Multi-Flare, Sanjo Rokkaku, Sutton FlowForm, Parasled and Dopero were the kites used for lifting. Ralf Beutnagel used his aerial rope railway system to get up his rig.

In the late afternoon we finished the meeting and said goodbye until next year.

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