

STEADICAM[®] Letter

NEWS FOR OPERATORS AND OWNERS

Volume 3, number 2 April 1991

skyman[™]

Skyman is a new vehicle for aerial Steadicam shots, invented and developed by Garrett Brown and Jerry Holway. (patent pending)

Skyman[™] was designed to extend the capabilities of the Steadicam system by providing a fast, reliable, lo-tech "flying carpet" for shots over inaccessible spaces such as rivers, canyons, busy intersections,



valleys, alleys, or arenas. Skyman carries both hardmount Steadicam and operator at speeds up to 30 mph with, as they say, complete comfort and safety. It consists of an ultra-light aerial cablecar

with foot-operated braking and 360 degree rotation.

The Skyman project began in December as we prepared for a demo of "Cablecam" (our remote camera gadget which rolls down a wire), for Steven Spielberg's "Hook." Jerry

Skyman, continued on page 2



COMPACT on Steadicam. Magazine is prototype fabricated from Arri IIC mag. Made out of Kevlar, the final design will be lighter, sleeker, and closer to camera body.

The Moviecam Compact

**This is a preliminary report. At the beginning of March, I will be picking up a camera and will write a more extensive piece for the Steadicam Letter once I have had the opportunity to live with the Compact for a while. – Ted Churchill*

The Moviecam Compact, Steadicam configuration: Technical specs:

- Body: Aluminum casting, integrated heater, regular and Super 35 formats, 12-32 FPS crystal at one frame increments, 180 degree shutter, variable to 45 degrees.
- Magazines, Steadicam-type: Ultra-light Kevlar 400' vertical displacement at optical center of camera, forward/reverse.
- Weight: 21 lb, 10 oz without film or lens. Final version will be less, perhaps significantly.
- Width: 6.3 inches
- Length: 11.3 inches

Compact, continued on page 6





The original wooden version. It worked, but looked dumb

Skyman, continued from page 1

Holway had shown Cablecam's capability for straight-ahead "swooping" shots, but at the same time identified a need for shots that might require remote pan and tilt.

Skyman™ is not to be confused with Skycam™ which is currently being reborn in the USA and which will be smaller and slicker than before, but is not expected to be ready in time for Spielberg's movie. Jerry and I considered merely upgrading Cablecam with a remote pan/tilt head, but ultimately concluded that we might as well just fly the operator! We had been impressed with the potential of Jimmy Muro's ride down the wire in Jamaica for "Mowby" (see Letter, Vol 1, #3), so we decided to start with a clean slate and make a brand-new gadget – a special cablecar to provide the best possible platform for airborne Steadicam shooting.

The Shots

You may be wondering why we'd bother – after all, how many requests have you had to fly on a wire? None? But think about it. How many times have you had to stop at the brink rather than continue on over that impassable ground, up into the air, over obstacles, walls, trees, etc.? Wouldn't you enjoy being able to ride

the smoothest vehicle in the world, effortlessly shooting over terrain that would otherwise have given you heartburn? Consider some of the Skyman shots that we've been discussing with potential clients:

- Flying diagonally down and across a valley in Gettysburg as a cavalry charge rumbles just beneath us on the opposite diagonal.
- Floating down over the audience, across the barrier and out over the ice rink to overtake the figure-skaters for a feature in Canada.
- Intersecting in mid-air with the stunt double for an aging Peter Pan as we zoom over a sound-stage.
- Drifting slowly over ground littered with fallen columns amid the ruins of the Roman Forum.
- Doing the "crane shot" we know and love, but continuing farther, higher, faster over the prison yard at San Quentin.

Wow! As I think back on my feature shooting career, there are dozens of shots which would have been better and even easier with Skyman. How about the "plates" through the trees for Jedi, not to mention all those shots which were never even contemplated, but which would have been terrific, like *above* the rope bridge on Indiana Jones and the Temple of Doom.

The Design

The initial prototype was constructed (virtually overnight) from



Preparing for "let-go"



The Don Juan is a real pleasure

2x4's, and the next day, January 2, we hung a 200 foot wire between some trees overlooking a valley. The rig was suspended on a pair of leftover Skycam pulleys and was simply pulled back to the start of the run with ropes by our houseguests-cum-grips. Upon release, it rolled nearly all the way to the other end of the wire and most of the way back.

Michael (Wolfen) Wadleigh helped out by directing some impromptu stunt action designed to take advantage of the complete forward/backward move, and we "rolled" camera, as it were, and ran inside at intervals to get warm while playing back the results.

The shots were impressive – ultra-smooth Cablecam-type shots, but with smooth pans and tilts. Although the "uneven parallelogram" design did in fact minimize swaying during sudden stops, it was a cramped, uncomfortable and generally dumb-looking contraption, and it did not allow continuous pans of much more than 200° before you either looked at or bumped into yourself.

A return trip to the drawing board that evening produced the final design (as seen in the subsequent photos), and we conducted another test flight three days later. Holway departed the next day to show Spielberg the video demo.



Detail of the traveler and shocks ...

Skyman consists of an overhead trolley with pulleys, and suspended from it is a center column designed to swivel fore-and-aft during acceleration or deceleration. This motion is damped by dual adjustable shock-absorbers between the trolley and the column so that the latter quickly returns to vertical but doesn't swing endlessly like a pendulum.

An outer tube rotates freely around the column and carries a motorcycle seat for the operator and a bracket opposite for the Steadicam arm. Down below is a steering wheel welded to the bottom of the center column which supports the operator's feet and permits easy rotation of the rig in any direction.

In addition, there is an inboard brake pedal, which rotates along with the operator so it can always be found with the operator's right foot. The force from this pedal is led up to the trolley by a rod, via slip-rings, to a conventional bicycle brake assembly with extra-large pads. The pads clamp down on the wire so the operator can make precise stops at will.

The Procedure

In use, a cable of appropriate specs (see "Safety," below) is attached between secure supports to provide the designed path for the shot. One may need to adjust the exact tension of the wire so that the traveling Skyman will have the needed clearance above (or through) obstacles along the way. The easiest way to determine this is to hang the Skyman, sandbagged to the final weight, and pull it along the route with whatever light secondary lines will be used to

execute the shot. A conventional 3-ton chain-hoist can be employed at one end of the cable to fine-tune the tension.

Afterward, following final checks and the roving of safety chains to back up the attachments at both ends, the operator and rig are lifted to the most convenient location for boarding by whatever means are required, such as industrial lift or guyed ladder. This operation clearly demands care in order to safely get up onto the seat and strapped in without dropping the rig.

Once aboard, the operator keeps the spar roughly vertical by varying the distance the camera is held away from the center column. (The camera/sled weight is counterbalanced by the weight of the operator at a closer distance to the center column.) This sounds like work, but in fact is quite routine.

The feet rest easily on the steering surface with the right foot always near the brake pedal. A gentle push on the wheel makes the seat and rig rotate around to any attitude, even while rolling along the wire. A sudden stop, either due to the grips holding the secondary lines or application of the onboard brakes, merely causes the column to lean forward and then swing back vertical. Unlike the normal vehicle shots we have experienced (which tend to dive upon braking), this vehicle makes it easy. The rig doesn't try to get away from you, but only appears to dip a



... and of the seat and hardmount



Low mode made easy

few inches.

Neither Jerry nor I have yet been aboard Skyman hundreds of feet in the air, but we can report that at least within twenty feet of the ground, it is a very unexciting ride and feels quite secure. There are no side accelerations and no bumps. Stops and starts are undramatic because you are straddling both the column and the spar which holds the seat, so there is no direction in which you are unbraced. In addition, you are belted in and your feet are firmly supported.

The Steadicam offers no violent forces and is easier to operate with Skyman than with any other kind of vehicle (including your feet!). I imagine that wind will be a problem at times, particularly when moving at high speeds, but otherwise it's a piece of cake.

For one thing, by simply rotating the entire column, you can tilt the camera down and still pan 360° without hitting the battery on the arm. It's a comfortable enough situation on board, barring heat or cold, that I could contemplate working there for hours at a time.

Batteries, mags, and lunch could be raised as needed with a small basket and coil of line stowed beneath the seat. It's a great ride. It can move along at high speed and yet remain as serene a Steadicam platform as can be found. As with many other such devices, the real challenge is the design of wonderful shots appropriate to this new technology.

Skyman, continued on page 4



Inventors Brown and Holway with fabricator Ed Quay

Skyman, continued from page 3

Safety

The Skyman itself is massively overbuilt and could withstand the weight of ten operators with equipment. In fact, it is never subjected to any notable stress in the context of use. It is the selection and deployment of the cable and attachments which must be quite rigorous. We have made an extensive study of these requirements, including engineering consultation, and have come to the conclusion that Skyman can be used with complete safety, but its use does not fall within the realm of conventional grip-department practice.

The flatter a cable is stretched between two points, the greater the tension caused by an object hung in the middle (see diagram). Even a feather could theoretically exert infinite force on a cable stretched absolutely flat. In practice, however, note that an object resulting in a five degree slope of the cable below horizontal will cause a tensile force equal to nearly six times its own weight.

The complete Skyman weighs about 44 pounds, plus Steadicam and operator totals perhaps 300 pounds. This results in an 1,800 pound tension on the wire, a force routinely dealt with by riggers and steeplejacks, but not by grips.

According to current engineering standards, cable with a breaking strain of at least double the static operating tension should be safe. We recommend a factor of at least three-times for ultimate peace of mind. Stainless 7x19 cable is appropriate because it can withstand the small bending radius needed for pulleys, clamps, and thimbles.

Our tests were conducted using 1/4" cable with a breaking strain of 6,400 pounds. It weighs 12 pounds per hundred feet and the total weight of the cable must be mentally added to the "load." The slope angle must be measured at the rig rather than at either end.

Generally it is not necessary to tension cables as flat as the above-mentioned five degrees. Most shots can be obtained with ten degree or twenty degree slopes, which only exert, respectively 3x and 1.5x the load. Theoretically, at these tensions, much lighter cable could be used, but I doubt that I would ever operate with less than the 7x19 1/4" stainless in case the wire unexpectedly had to be cranked tighter. Keep in mind that sudden stops, wind, etc., add a small component of dynamic loading to the calculated static tension.

Reassuringly, the chances of a properly specified and deployed cable breaking are statistically non-existent. In the first place, a cable which is even close to tensile failure will begin

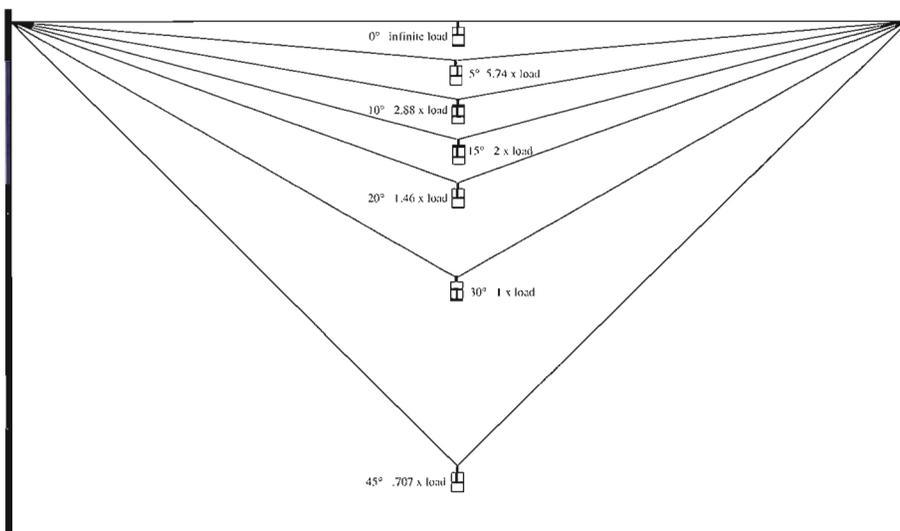
showing broken outer strands, and a significant number of these would break before the cable was even seriously weakened.

"The flatter a cable is stretched between two points, the greater the tension caused by an object hung in the middle. Even a feather would theoretically exert infinite force on a cable stretched absolutely flat."

Two other areas are potentially hazardous. The first is the termination, support, and attachment of the cable at its ends. My worldwide experience during the Skycam project and subsequently with Cablecam has particularly alerted me to scrutinize this area of operation for unsafe practices. Some grips are not conservative enough for my taste. Some are expert at rigging practice and some just fake it. Thimbles, clamps, and crimps must be properly applied. Structures and objects chosen for support or attachment must be certified to be strong enough.



Threading through the trees at thirty mph



Test conditions: load at center of wire and attachment points of wire at equal heights. Also note that the weight of the wire is part of load.

Wire tension chart for Skyman, Cablecam, or wet laundry

For example, it is unsafe to simply attach the cable high up on a tree, even if it's a big tree! If 1,800 pounds of lateral force won't pull it over, it will at least flex it enough to make your run extremely springy and hard to calibrate. If it's necessary to use a tree for support, it is a far better idea to run the wire over a strong fork in the tree and down at an angle to another tree for attachment quite close to the ground. The first tree should be likewise guyed back so there is no net lateral force on it, and incidentally, the fork should be reinforced against splitting.

Get the picture? Be overly cautious. Is that fire escape attached strongly enough to the building to withstand Skyman? That depends! We are talking about roughly ten times the force imposed by Cablecam. The building itself is strong enough, but you may need to continue the wire beyond the fire escape to an attachment point which is at least in sheer and not therefore pulling away from the structure. Chafing on the cable must be strenuously avoided as well as over-sharp bends, etc. If safe rigging practices are employed, Skyman can be safe.

Skyman operation can have, of course, hazards like any other sort of vehicle shooting. One must avoid accidents caused by dropping tools or rolling into things, including transitory obstacles like stunt vehicles or extras. Power lines above and below the path are a particular hazard, since

the catenary behavior of the support wire as Skyman rolls along is not easily predictable.

For the present, the rig is available only with Jerry Holway as operator. After we get some experience with the machine, other SOA operators wishing to book and operate Skyman will be able to come to Philadelphia to attend a special workshop. The workshop will cover the rigging, scouting, and surveying elements that go into the safety aspects of Skyman as well as the design of shots that really work. Poorly conceived cable runs require time-consuming adjustments and may even cause insurmountable production problems.

These caveats aside, Skyman is a magic carpet! We are excited about the possibilities and look forward to getting some solid experience on the first few bookings.

The current specifications and rental rates are as follows:
Weight: 44 lbs w/out Steadicam and operator

Cable: 1/4" 7x19 stainless steel
Max. run: 2,000 feet
Max. height/drop: depends on the operator
Max. speed: 30 mph
Shipping: Three 50 lb cases (w/out cable)
Rental: \$600/day, 3 day week
Skyman patent pending

Garrett Brown

Letter to editor

Jerry,

I just received the November 1990 newsletter, and I would like to comment on a few points you raised in your article on the EFP.

As you can imagine, I have already begun modifications of my EFP. I have beefed up the straps with posi-loc Fastex buckles and heavy-duty nylon belts. I have also just finished adding some illumination for the bubble level on the monitor. I used an LED placed in a hole cut in the rubber mount behind the glass level. I added a switch and wired the LED into the monitor power source (via a 1000 ohm resistor) and now I can see the bubble even in low light conditions.

Secondly, I, too, am not a J-7 fan. I recently completed a two-hour live shoot of the Phoenix symphony, and since we did not have a chance to rehearse, we were quite unaware of what was to happen or when. Thus there was much hectic adjusting of focus and zoom. As I had to let go of the sled in order to focus, the shoot became a real ordeal. I did manage to get some good shots, but a zoom and focus system is really needed. (*Ed note: see Classifieds!*) Also, I have the new color monitor and I'm pleased with its operation. However, outdoor shooting has been tough because of the screen. Your comment to remove the sunshade and let the light hit the screen has helped a lot.

Last, but certainly not least, is the concern over the market and the effect the EFP will have on it. I am a novice operator who bought an EFP because it was not possible to buy a IIIA. I will buy a IIIA as soon as possible, but until then I still need to work and gain experience. I am not here to undermine the market, but rather expand it by making more producers/directors aware of what we, as operators, can do for them. As Ted Churchill so aptly put it, "it's the operator, not the equipment, which gets the shot." So if any of the operators take offense at us poor folk who cannot yet afford luxury, please ask them to look me up. I am not hard to find.

George Paddock

Compact, continued from page 1

- Sound level: Under 20 db
- Mounts: BNCR and PL available from Moviecam
- Registration: Compensating link movement; 2 pull down, 2 registration pins
- Video assist: Steadicam configuration: B&W CCD with gain control, flickerless, 100% of light, sits snugly on top, low-profile
- Configurations: Steadicam, hand-held, and studio
- Accessories, handheld and studio: Viewfinder block, extension eyepiece, B&W and Color Video assists, 500' & 1000' magazines, Moviespeed control and a host of handles and many other accessories for both studio and hand-held operation.

"Gabriel's ability to design a superb camera is seconded only by his willingness to listen, something that Steadicam operators have found sorely lacking in the past. The other day he sent me photos of both the old and new magazine components. Since I was there last he has managed to take a good two pounds off the camera!!"

In this technological age where change happens with alarming speed, one hesitates to invest in anything even remotely associated with electronics for fear something far better will surface the instant one opens the instruction manual and today's state-of-the-art purchase becomes magically transformed into tomorrow's doorstop.

Fortunately, the world of film production equipment hardly suffers from that malignancy of our age. However, another takes its place: equipment takes forever to design and go into production, and, as often than not, it will be ill-conceived, poorly-fabricated or both and, in most cases, inadequately fulfills our requirements. To add insult to injury, manufacturers



COMPACT movement permits very fast threading. Knobs are pushed in to quickly adjust loop

fail to survey those who use the products and then are surprised and indignant when those users either criticize or patently reject them.

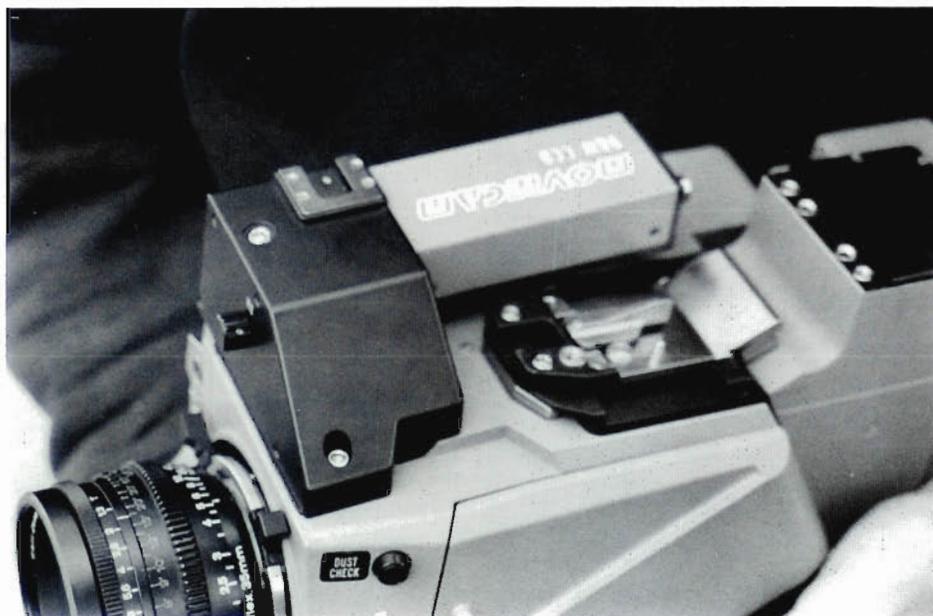
For the Steadicam operator, the realm of 35mm sound cameras is a case in point. German cameras have either proved hardly quiet enough or weigh almost beyond the capacity for humans to lift or a combination of the two – the conventional Panaflex and Moviecam Super America falling into the latter category. The Panaglide, both light and quiet, alas, is on (and I'm told over) the cusp of obsolescence, and finally, the Lightweight Panaflex – light, quiet, and often impossible to get ahold of. The 35mm Aaton, a point of light at the end of a tunnel, turns out to be further away than even the most imaginative dreamers among us (myself included) could have ever anticipated. In all, it appears that camera manufacturers have not considered Steadicam high on their list of priorities, particularly surprising when one considers its previous revolutionary and currently ubiquitous contributions to the art of cinematography.

So it was with this history (dare I say attitude?) and no little interest that I heard rumors filtering down from last fall's Photokina show that Gabriel Bauer had surprised and delighted everyone (except perhaps other camera manufacturers) with the Moviecam Compact, a new modular

camera that sounded every bit to be the perfect solution for Steadicam, and for most other cinemagraphic applications as well. Thus in November, during my annual pilgrimage to Europe to teach Steadicam to our neighbors across the pond, I conspired, between classes in England and Germany, to make a visit to Vienna, armed with checkbook, to scope it out.

Vienna is beautiful, undoubtedly the cleanest city I have yet to visit. A feeling of order reigns. At an open zoo on its outskirts, one can watch the wild boars at whatever they're doing. Across the street in a small building, on the top floor, Compacts are being quietly and meticulously assembled. I talked at length with Gabriel and closely examined the Compact. What follows are my impressions. I will primarily concentrate on the Compact's applications for Steadicam although it has many impressive features conventional operators will find most appealing.

I confess beforehand that I am in love with the camera both in its conception and execution. Gabriel seems to have thought of virtually everything. One must keep in mind that had he set about to make a camera solely for the Steadicam, it might well have been different, but not very much. Indeed, it is so well thought out, there was very little input I could offer. For one as opinionated



CCD sits atop Compact body. 100% of light goes to video camera which is flickerless, very fast and very sharp edge-to-edge. Gain control knob can be seen in front; magazine latch under camera

and critical as I, that says quite a bit right there.

OVERVIEW

For the Steadicam operator, there are eight basic issues to address in a new camera, particularly if one is about to plunk down big bucks for it – cost, weight, footprint, sound level, precision of registration, video assist, power supply, and, ultimately, availability both to the camera and service. Briefly, we'll take each.

COST

If you haven't bought anything substantial outside the USA lately, you may be shocked to discover just how little your dollar is worth. For the Arri III I bought seven years ago, the cost now is more than triple that price. So when one considers buying equipment from abroad, one must take this into account. The Compact, set up for Steadicam mode with body, three magazines and video assist, will cost you about \$170,000. That's a lot of cold, long nights living out of the back of a truck even before the 644 contract is settled. Yet it only looks steep until you compare it to the alternative, the BL III or IV – about the same price except the nights are not only cold and long but damn hard as well. So, although the present may appear economically bleak, the future looks far rosier.

WEIGHT

Weighing in at 19 lbs, the Compact is lighter than the Lightweight Panaflex, not much more than an Arri III. Although it is by no means a featherweight, its sleek design, with much of that weight condensed and centered atop the Steadicam's center post, and the thinner-than-normal body, makes it feel remarkably lighter.

Could it be lighter still? Upon asking Gabriel this question, he was quick to point out that lessening the weight of the camera without compromising the sound level is simply not technologically possible at this point. We see this with the ultra-light 35mm Aaton which emits substantially more noise and is apt to continue to do so. Also remember that the Compact is not made exclusively for Steadicam and thus must accommodate other configurations such as normal studio mode with thousand foot mags as well as hand-held.

FOOTPRINT

Perhaps the most exciting feature of the Compact is its thin profile. Measuring only slightly more than six inches across, it is substantially more "compact" than most other cameras. Not only does this provide far greater opportunity to view the monitor with both eyes, rather than one, but also allows the operator to hold the camera

and sled closer to the body (particularly in low-mode), thereby greatly reducing fatigue.

The compact is as short, if not shorter (I have not seen the final magazine design) than other competitive cameras, the Compact also excels in this area. I mentioned to Gabriel that the Steadicam magazine might be moved slightly closer to the body, a suggestion he took seriously and now says has been done (even closer than I had requested).

VIDEO ASSIST

In the Steadicam configuration, Gabriel has used a 100%-of-the-light optical system for the CCD. A gain control knob resides in front. The monitor picture is extremely sharp edge-to-edge and flicker free. We metered a scene at ASA 1000, reading 5.6. I stopped the lens down to T16 and could still see an adequate picture. Not too shabby. The video assist camera and optics mount atop with two screws in about ten seconds. It also lies very close to the camera body, thus allowing a low-mode plate to sit tightly against the top of the body. Another big plus.

POWER SUPPLY

Unlike Arri cameras and like those of Panavision, the Compact runs on 24 volts. For the time being, this requires that one either run the camera with an external source (meaning a cable to the rig) or hump around a compatible supply or a converter. As I resist adding extra weight, the converter is probably the answer, at least temporarily. Ultimately, a main 24 volt supply on the Steadicam with a stepdown to 12 volts for video, servos, etc. is the answer for those of us who primarily shoot 35 sound. A far more efficient system, CP might do well to reconsider this.

AVAILABILITY

The other option to buying a new camera is, naturally, to wait for the camera to get into rental houses. Although this will undoubtedly occur with the Compact, the question is "When?" Because Moviecam is not a huge company, and the cameras are meticulously fabricated and tested, this might be six months to a year before the Compact is readily available in the USA. Ultimately, rentals will be the way to fly for most operators, and it will make life

Compact, continued on page 8

Compact, continued from page 7

substantially easier for us all. If one wishes to buy a Compact a year from now, I suspect the dollar will be worth even less. So as a future purchaser, be advised.

Perhaps the most over-riding cause for rampant paranoia for anyone with a new, unproven camera is the availability of maintenance and service should problems arise. I went through it when I bought the first 16mm Aaton in the country years ago, so I suppose I'm more equipped for this than most, but I would be foolish if this were not a concern. As to the Compact, there are rental houses in the USA which own the Super America, but none as yet has had any experience with the new Compact. Nevertheless, I was willing to temporarily overlook this for a number of reasons. First, the Compact, utilizing the previously proven Super America movement, drive train, and much of the electronics, has an excellent chance of being highly reliable. Second, I am convinced that the camera will be extremely popular and this, in itself, will insure that such a service mechanism will be put in place in the very near future. Finally, at Gabriel's suggestion, I'm getting a spare main electronics board where it probably is most likely, although not probable, a problem would occur. We shall, of course, see. But confidence is high.

WRAPUP

As you might have suspected, I freely admit to being in love with this machine. The Compact could well turn out to be the best 35mm sound camera ever produced; certainly it will be for Steadicam. From my brief acquaintance with the camera in Vienna and Munich, it appears that Gabriel has overlooked very little. Indeed, when at the shop, there were very few suggestions I could offer: move the magazine as close as possible to the camera body (one-half inch), make as many of the small steel components out of lighter materials and put an icon on the video assist gain control, so one knows which way to turn it—all of which he subsequently has done. His ability to design a superb camera is seconded only by his willingness to listen, something that Steadicam operators have found sorely lacking in the past. The other day he sent me



Churchill with Moviecam Compact at Steadicam class outside Munich, Germany last fall. The camera feels wonderful on the Steadicam because most of the weight is concentrated directly over the center post

photos of both old and new magazine components. Since I was there last he has managed to take a good two pounds off the camera!!

My suggestion to anyone who entertains the thought of a camera to get them through the next decade is "buy one." And do it soon. One of the primary reasons I jumped at the Compact is my fear, judging from the lackluster performance of the dollar over the last seven years, that it will dramatically increase in price within the next year or two. The other option is that operators attempt to persuade the rental houses with whom they deal to seriously consider having them for rental, if only to Steadicam operators. In place with service mechanisms, the camera would probably be rented every day of the year. I'm off to Vienna and Munich shortly and will keep you informed of this adventure as it unfolds.

Ted Churchill



GREAT MOMENTS IN STEADICAM.

A seized gimbal at Optex Steadicam course last fall. Ted Churchill says "No problem, I've taken these apart plenty of times." CP had changed to non-captive bearing races. Instructors Martyn Porter, Chris Haarhoff and Andy Shuttleworth join Ted (holding the ever-valuable Steadicam letter) on the floor for an afternoon's game of bearing pickup

Classifieds

For sale: Steadicam Samurai – Fully biffed, tweaked and meticulously maintained Arri IIC with four different hardfronts that accept any lens mount, even Panavision. CP flatbase with DeRose variable speed motor with special setting for HMI balance. Russell low mode bracket, videotap with cinevid camera. 2 long throat magazines. West easy access plug remount with movable on/off switch. 2 hard cases, \$18,000. A deal!! Call Erich Sommers, (408) 426-8834.

Wanted: To know about following accessories: Springs 35-54 lb, cable follow focus, PAG fastcharger, viewfinder videotap. Please call collect: Marek at (415) 524-1586. Your effort will be appreciated by filmmakers in Poland.

For Sale - Almost: In the last issue of the *Letter*, in the review of the EFP, I mentioned that I had a zoom and focus control. What I should have mentioned is that the unit was designed and built by Robin Buerki, and more importantly, that he is interested in turning over the design to CP, Seitz, or whomever wants to do a production run. So if some operators out there are interested in Robin's device (and I love it...), then they should inquire with either Seitz or CP to spark *their* interest in production. – Ed.

For Sale: 1 Quick charger (Roadland) 110/220 volts for one battery at a time. US \$500. Also 1 CCD video assist unit for Arri IIC including Sony AVC D1 video camera CCD-NTSC plus Arri IIC door with custom made mount for it. Iris in door's optical system. US \$5,000. Contact Klemens Becker, Ansgarstr. 14, D-1000 Berlin 28, telephone: 030 4018007, or Onasch Filmgeräte, Eisenbahnstr. 15, D-1000 B.31, telephone: 030-8923203.

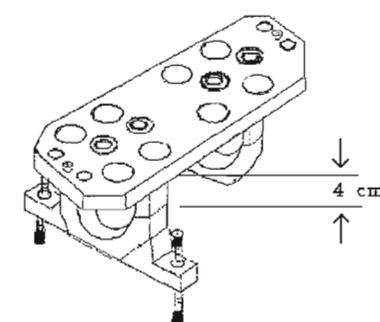
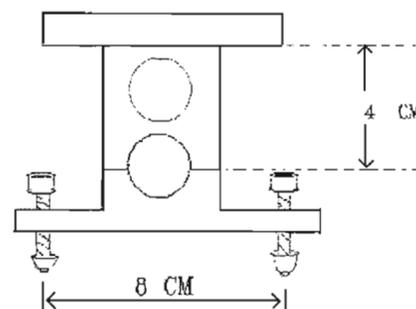
For Sale: Spare Model I & II backup parts. Fore/aft camera mounting platform, new gear, extras \$200. (list \$432) Model II monitor bracketry, extras \$60. (list \$141) Vehicle mount arm backups: Elbow

(hinge) \$200. (list \$420) and connecting pin spindle \$250 (list \$650). Also: Brand new Model III fore/aft rotating adjustable plate for electronics module w/ or to modified EFP sleds, includes lower post, clamps \$350. Betacam quick release dovetail plate w/ tripod plate, \$200. CEI video assist camera and Russell video tap, mint, modified, \$3,500. Steadicam vest, new pads modified, \$1,600. Leave message. (213) 372-1493.

For sale: 4 ARRI BL I's w/ six 18-75 mm Cookes, 3-400' mags, blimp housing, matte box, 2-220v batteries, cases, \$31,000. 3 Arri BL II's, w/ six 18-75mm Cookes, 3-400' mags, blimp housing, 2-220v batteries, matte box, cases, \$38,000. Arri BL III w/ five 16-85mm Zeiss, 2 1000' mags, 2-400' mags, follow focus, cases, 6x6 matte box, PAL video camera, extension eyepiece. ARRI BL III w/ 2-400' mags, Arri video tap, Philips NTSC video, 12" extension finder, cases, \$82,000. Arri 16 SR II w/ 10-100 Zeiss zoom, 10-150 Ang. zoom, 3-400' mags, eyepiece extension, 3 on board batteries, 5-75f/sec control, univ. follow focus, 2 stage matte box, Sachtler Pano 7 + 7, tripod legs, filters, cases, \$24,000. Arri 35mm 2C's: PL mount \$4,400, BNC mount \$5,200, Turret V/S \$4,200, Turret \$4,200. Aaton Spr 16 LT 54, SN1024 w/ 2-400' mags, extension eyepiece, Ang. 10-150 zoom, Angenieux 5.9mm lens, Battery charger, 2 new batteries, case. Call The Power Broker, (213) 470-7569 or fax (213) 470-1150.

**In the next issue:
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antennas,
the Seitz arm mod,
and much more!!!**

Better Mousetrap



January 2, 1991

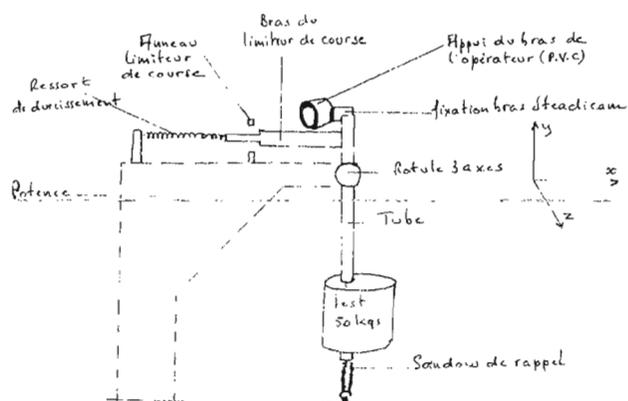
In November's *Letter*, the DeRose equipment was of interest. For some time now, my counterparts and I have been using a low-mode bracket for the Arri BL similar to the one in the ad. However, as the diagram shows, ours has "legs" on one end of the clamps which screw into the camera body. This stops any twisting or rotating of the bracket relative to the camera even under very heavy work loads. You also don't have to clamp down so hard on the handle.

4mm between the top plate and the centre of the carrying handle will be adequate to clear the video taps (cover caps) on top of the BL's.

I have been using the BL IV and IVS now for some time in high and low-mode, and apart from the weight factor, there doesn't seem to be any trouble or harm caused to the equipment and/or operator. At this point I still prefer the Arri III, but unfortunately these are being taken out of service to be upgraded.

Ian Jones

The All-Terrain Steadicam



Principe du système Bringuier modifié



The "Gourgandine" on her way

Article by Bernard Wuthrich,
translated by Robin Buerki

During 1987 I had the chance to work on an important project for Thompson CSF. They were working on the development of a simulator for an Artillery Observation Vehicle (AOV) intended for training the French army. The AOV looks like a tank devoid of weapons but equipped with very sophisticated telemetry instruments. In the turret, the operator makes use of three windows for visual observation, each giving a 30° view of the surroundings.

For the student using the simulator, it is important to have scenery to view through these windows, for added realism. This scenery must pass by, mimicking the speed of the vehicle, and finally, at the time of the

observations, upon stopping, the observer must be able to "turn" the turret 360°. They decided the best way to recreate a realistic environment was to use video images which were then digitalized for the program.

The AOV must traverse all sorts of terrain. To film the simulation images, one must do likewise. Gerard, the technician responsible for the project, believed that Steadicam was the ideal solution.

Three cameras on a Steadicam

Three cameras, running in synchronization, were required to cover the three windows of the simulator. Three Betacam heads were mounted on a plate with a side-to-side adjustment, their optical axes oriented at 30° to one another, without overlap or play. Each camera's image was

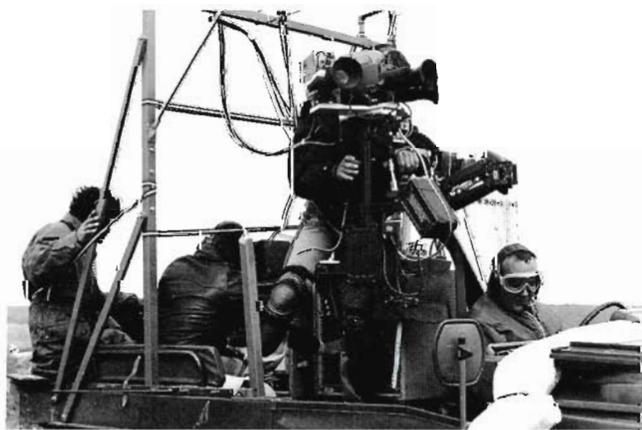
recorded by a beta deck, synchronization assured by a timebase corrector located at the mini-control center on the vehicle. Despite being lightened to the maximum, the cameras' weight was nearly at the load limit of the arm.

The vehicle we used was a P4. The passenger seat was removed and a wooden board was installed for the Steadicam artist. A

harness of straps kept the operator in place as he was jostled along the course. Behind him, a shock-mounted bay held the VCR's, TBC, and monitors. Gerard, the director, was able to view a sort of Cinemascope image: very flattering and very unmerciful (Bernard! The bubble!). Behind him was Christian, "le baliseur fou," whose job it was to call out the distance markers.

The mount for the Steadicam arm was the most interesting and the most impressive. The system was created the preceding year by Jean-Marc Bringuier, who did the first tests. It consisted of a solid steel right angle support at the end of which was a universal joint, free to move on all axes (see diagram). Running through the joint was a vertical tube, on top of which was welded the socket block for mounting the arm. The bottom of the tube was ballasted with a weight of 50 kg. This rig was designed to keep the mount for the arm as vertical as possible with the least effort by the operator. Finally, attached to the plate was an "armrest," made from a section of PVC tubing covered with foam.

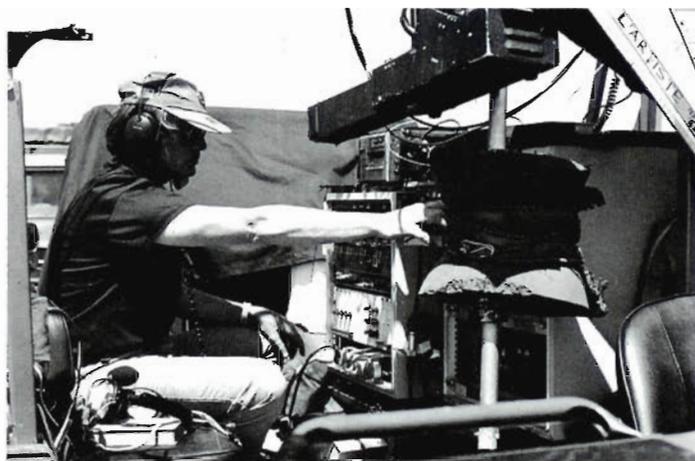
Fairly quickly I set to modifying the "system Bringuier," which posed several inconveniences. First, successive bumps in the road had a fast rhythm, so the ballast tended to pendularize, thus amplifying the movements. (The 50 kg weight also swung just a few centimeters from the head of the driver and my legs!) A simple hook and an adjustable bungee



Jean Marc operates as Gerard works with recorders. On the far left is "le baliseur fou" or the "crazy beaconing man"



The three cameras and part of the Bringuier-Wuthrich system. Notice the zooms of the Betas are locked to 30° with metal pieces. Also note: "Steadicam..."



Gerard with recorders. Note bottom of B-W system with motion limiting device and spring

cord attached to the bottom of the tube solved the problem.

However, the three-axis u-joint still twisted in the direction of sharp movements. After breaking several sections of PVC, I decided another solution was needed. Gerard (the providential man) and I fastened a little tube at 90° to the main, vertical tube. The tube engaged in a sort of large washer that played the role of a motion or travel limiter. When the main tube deflected too much, the little tube would strike the washer and then be returned to its normal position. From the moment we used this limiter, I never again broke an armrest. The "system Bringuier-Wuthrich" was complete.

"How'd it go, Bernard?" Me: "Fine." Gerard: "Good- it's too long, let's try again." This went on for two months. Our experiences taught us to strap me down to the floor, otherwise my legs would be flying among the recording machines. Imagine an operator hanging onto his Steadicam and floating in space. The TBC couldn't handle the shock, either, so Gerard simply decide to use the camera's genlock. It worked perfectly.

The end of the story

I had a chance to do a similar job for an equestrian simulator. This time I made a much simpler platform: the arm support solidly mounted on a board. The results were quite satisfactory. The Steadicam arm is,

decidedly, the absolute weapon against shock. Having developed a taste for the "fixed" mounted Steadicam, I'm researching a universal mount, light and quickly installed, to use the Steadicam in helicopters.

Bernard Wuthrich

Articles Wanted!

Write in your native tongue and we will find a translator!

Pictures may be in black and white or color!!

La Gourgandine goes to war

Your guess is as good as mine why the vehicle was baptized "La Gourgandine." (Jean-Marc, if you know?) For the next two months we crisscrossed routes in the east of France with this unusual equipment.

Our shots had to hold fast to a timing restriction: the images were to be used in the simulators in the form of a video disc. After running through a pre-determined course (marked with colored flags for Christian) at slow speed, we would set off for our first take. Inevitably, at the end of the take, Gerard:

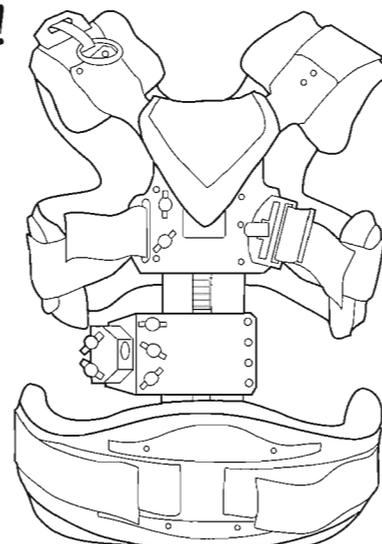
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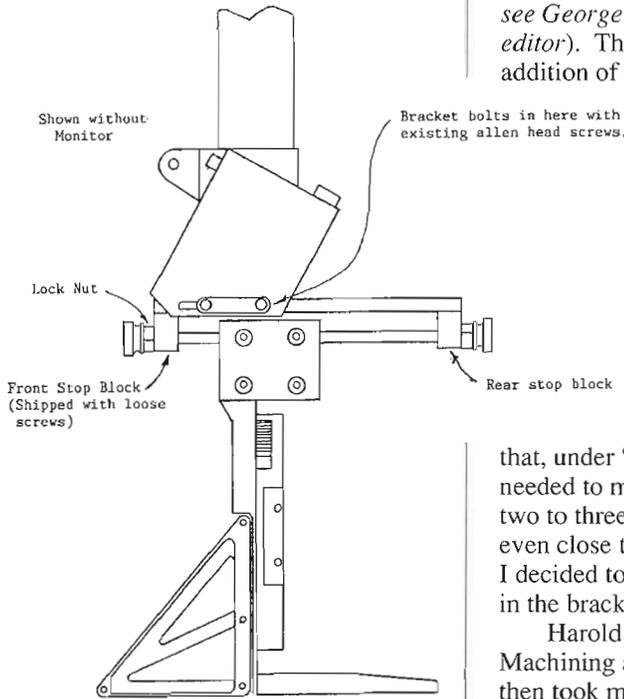
RITA KLEIN
212-249-0689 FAX 212-473-4061



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Essential EFP Modification

Device makes dynamic balance possible



Engineering drawing of George's bracket

Since buying my EFP in October 1990, I have had cause to make several modifications to it (*Ed note: see George Paddock's letter to editor*). The most significant was the addition of a fore/aft plate for adjust-

ment of the battery. The modification was necessary because the existing rig is so completely out of dynamic balance that any kind of pan move became an extremely difficult exercise. After some study of the basic laws of physics and much experimentation, I found

that, under "normal" conditions, I needed to move the battery back some two to three inches in order to get even close to good dynamic balance. I decided to have four inches of travel in the bracket I designed.

Harold Pomeroy of Proto Machining and Engineering, Ltd., then took my idea, and, after adding some ideas of his own, turned it into a working model. With the bracket on my rig, I've been able to dynamically balance the EFP to where it will spin almost perfectly flat.

STEADICAM Letter

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We have since sold about a dozen
of these brackets to EFP owners (*Ed
note: one to the Association*). Harold
will continue to build them on a
demand basis. They also can be
purchased from Cinema Products,
Derrick Whitehouse, or directly from
Harold at Proto Machine, (602) 897-
9420.

Whether using this bracket or
some other method, if the rig is in
dynamic balance, I believe EFP
owners will find that operating truly
becomes an art, not a war.

George Paddock

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- JAR DeRose-modified ultra low-profile low-mode bracket
- 3 Steadimags with upgrade mods.
- 1 Arri slantback magazine

All equipment has been well maintained, is in excellent working condition and will most likely be available in April.

Contact: TED CHURCHILL TEL: 212-691-0536 FAX 212-675-1262

* This does not mean I'm leaving the business. T-shirt sales are not that good. Yet.