



VIEW MASTER

When off-the-shelf cameras wouldn't do justice to the landscape, **Clifford Ross** built his own.

In a past life, Clifford Ross was an acclaimed New York-based painter whose work “cycled from realism to abstraction and back,” as he puts it. Then in mid-career—about 1995—Ross discovered photography. “After a point I wanted my work to be anchored in reality,” he explains. “And in photography, with one click of the shutter

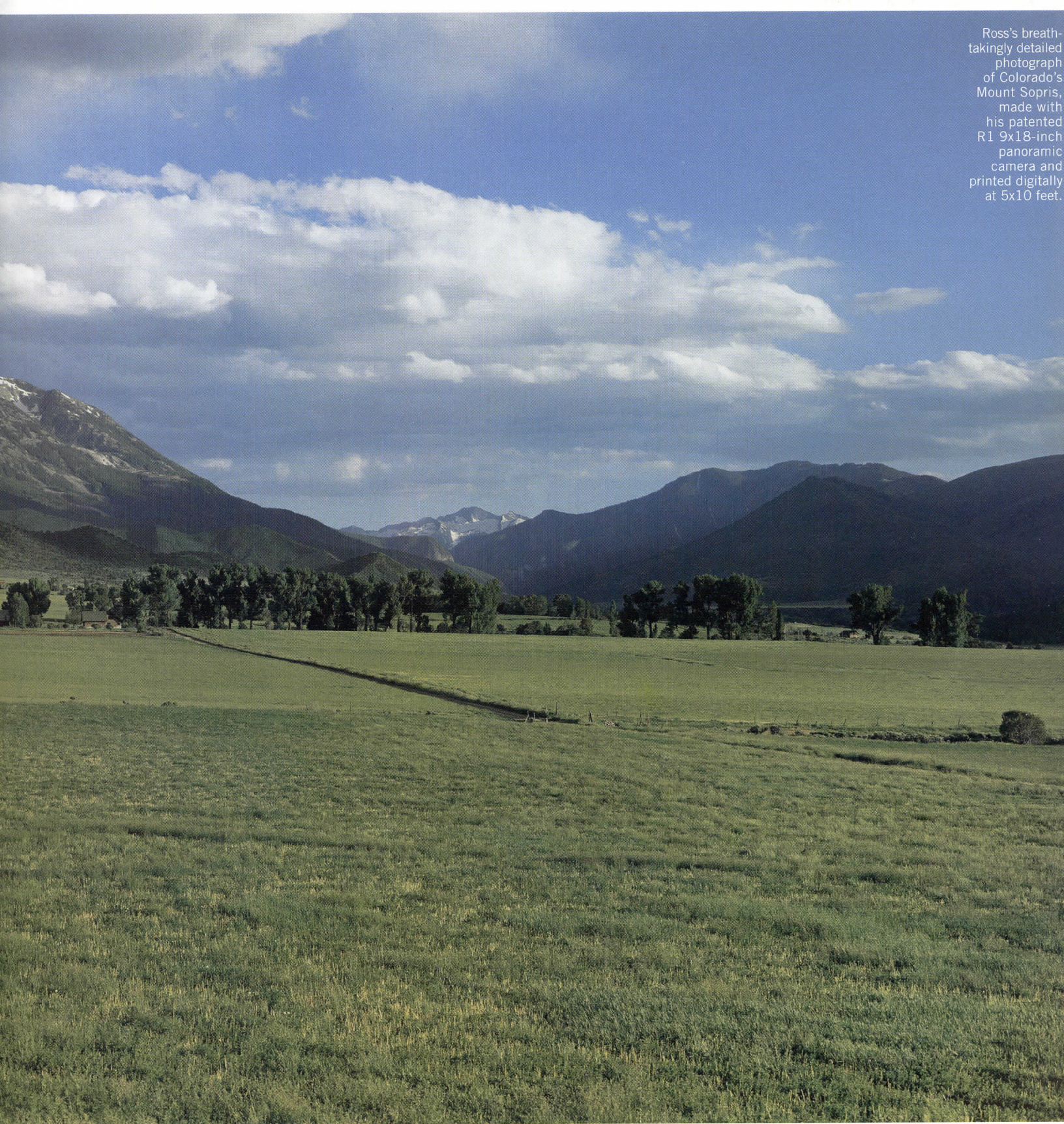
you have captured some piece of the real world.”

But for Ross, photography soon went far beyond the click of the shutter. “For me, the decisive moment turned out to be when you drop your print into the stop bath,” he says. Ross’s spacious darkroom—complete with a vacuum-powered wall that sucks 12-foot swaths of paper flat for horizontal enlarge-

ments—testifies to his commitment to the print. “Ninety-five percent of my creative power goes into post- or pre-photographic activity,” he explains. “I say *pre* because I spent a year building a camera and a methodology to take a picture.”

Before that, when he was using cameras like the Mamiya 7 and Wisner 4x5, Ross’s output ranged

Ross's breathtakingly detailed photograph of Colorado's Mount Sopris, made with his patented R1 9x18-inch panoramic camera and printed digitally at 5x10 feet.



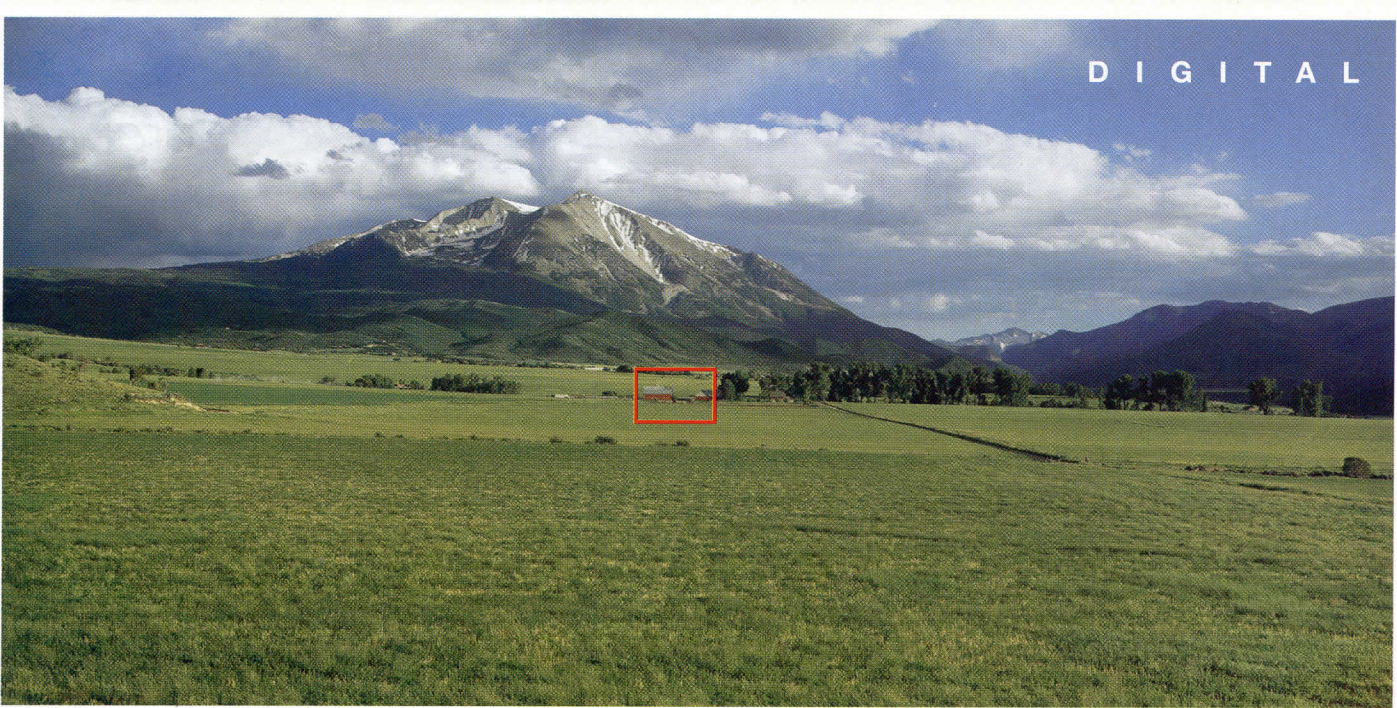
from striking black-and-white studies of big ocean waves produced by offshore hurricanes to rectangles of pure tone created by shooting straight into his enlarger's light source, work he calls "the most abstract photographs ever made." But his faith in the medium's ability to fulfill his artistic needs crumbled in 2001, on a vacation in Colorado. Having

forgotten to pack his usual black and white, he bought some color negative film to make snapshots of local sights. One of these was Mount Sopris, a twin-peaked, freestanding member of the Rockies. "It took my breath away," says Ross. "I jumped up on top of the car and shot a hand held three-frame panorama."

Back home in New York, Ross stitched the

frames together digitally—his first experience with Photoshop—and showed them to friends and colleagues. "I was still enchanted, but no one else thought the photograph was worth a damn," he says. "And I suddenly realized that I was seeing what I remembered, not what was in the print."

For Ross, 35mm had failed miserably to do jus-



Ross first shot Mount Sopris in 35mm, and was totally dissatisfied with the image's sharpness (detail, below left). He ultimately reshot the same scene with his R1 camera (left), which gave him stunning sharpness—enough for an 18x36-foot print (detail, below). Bottom, Ross's first drawing for the R1 and his meticulous exposure records.



Detail from 35mm print



Detail from Ross's R1 print

tice to his experience of the original scene, with its wealth of detail. So he returned to Mount Sopris and shot it again in 4x5. The results still weren't sharp enough at the large print scale he envisioned. "Part of my obsessiveness in making prints derives from the satisfaction I get from looking at paintings up close," says Ross, who points out that a 19th-century Albert Bierstadt landscape of the American West is as sumptuous in its detail as it is overall. "And I realized that off-the-shelf cameras couldn't give me the level of sharpness I wanted."

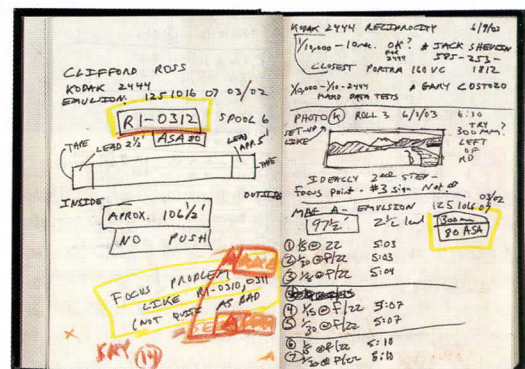
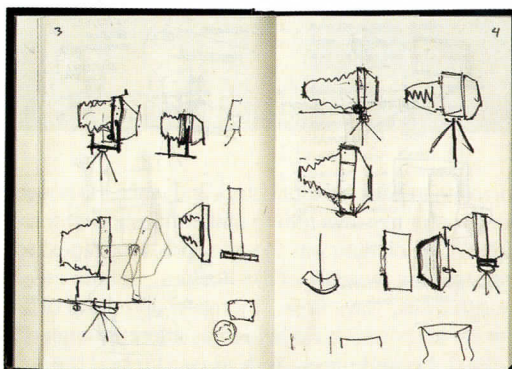
Undeterred, Ross set about building his own camera. Though photographers such as Stephen Johnson have used high-resolution digital scanning backs for landscape photography (See *American Photo*, May/June), Ross was convinced that only film was up to the task. It just had to be big. He bought a World War II-vintage Fairchild aerial camera, a special-purpose model designed for shooting 9x18-inch negatives for military reconnaissance, mapmaking, and scientific purposes, and laboriously rebuilt it to suit his landscape purposes. "It was a real paper clip-and-chewing gum affair," says Ross, who dubbed the massive camera the R1. "I scrounged parts from all over the country." Despite

its makeshift genesis, the camera is now patented.

Much of the rebuilding process had to do with making the massive Fairchild perform in ways for which it was not originally intended—including a horizontal operating position rather than its usual aimed-down orientation. Its film magazine and the respoiled 100-foot roll of aerial film it contains weigh almost 18 pounds, so heavy that it caused the camera's rear standard to sag and throw the film plane out of alignment. To prevent that, Ross installed extra-strength braces machined to his specs in ano-

dized aluminum. And because the film's base is thinner than its sheet-film equivalent, it's more prone to waviness that could cause unsharp areas—so the photographer cobbled together a vacuum back that sucks the film flat before each exposure. Ross also tested more than 35 lenses to find the sharpest optics possible, settling on 600mm, 480mm, 300mm, and 210mm focal lengths.

Despite Ross's initial efforts to maximize sharpness for mural-scale printing, the problems didn't stop there. After finding that (continued on page 100)



Ross at work in the field with his 9x18-inch R1 panoramic camera, and checking the camera's alignment in the studio (bottom).



© CLIFFORD ROSS (2)

(continued from page 90) his focus seemed to change ever so slightly each time he refocused a given scene, he replaced his plain ground glass with one that features a series of clear circles across it. The glass was etched from Ross's hand-rendered pattern by a Minneapolis company that creates patterned glass for pizza parlors. The custom-made ground glass allows Ross to focus on the aerial image—without any texture to “muzzy up” the detail—across the entire film plane. Ross also abandoned his 8X loupe and rebuilt a small microscope into a 25X loupe for the purpose. And while the R1's Sinar front standard is arguably the best machined in its class and more than precise enough for large-format purposes, it wasn't quite up to the R1's tolerances. Ross created a reflecting-mirror setup with which he realigns the front and rear standards before every shot—to 1/10,000th of an inch.

Another problem had to do with the film itself. The Kodak Aerocolor III (2444) that Ross was using has super sharpness and very fine grain, but it also has the high contrast that makes aerial images easier to interpret. “This stuff will take a four-zone image and blow it to seven or eight,” says Ross. “It's an absolute nightmare for a landscape photographer.” The only way to reduce that contrast is to *pull* the negative—to shorten its development. Ross's photo lab, which also provides services to NASA, obliged—but at a price. Though common practice with black-and-white

sheet film, pulling causes color negative film's red-, green-, and blue-sensitive layers to develop unevenly and incompletely. And this causes unwanted and hard-to-fix shifts in color rendition. Ross's negatives are “like mud” before they get scanned on a Hell drum scanner and Photoshopped back to normal. “It took most of a year to build the camera,” says Ross, “and then six months of testing to solve enough problems to go out on a shoot.” But the photographer finally used the R1 to reshoot his view of Mount Sopris, from the same place he first spied it.

After all that, it took Ross a year of Photoshop to get that first image to a place where he felt he could print it for display at New York's Sonnabend Gallery. During that time he continued to shoot Mount Sopris from a variety of angles. (“Cezanne had his Mont St. Victoire,” says Ross. “It's been pointed out by critics that this too is a twin-peaked mountain.”) Those images are now being prepared for printing by three young Photoshop mavens who toil on one floor of Ross's Greenwich Village studio, a renovated stable. Each of the three “adopts” an image and works it over pixel by pixel for months.

The process often involves going in and making contrast- and color-control masks for tiny individual details. On a larger scale, Ross and his team must compensate for the light falloff caused by using lenses intended to cover only 8x10- or at best 11x14-inch film. Each image is subject to constant revision. The print of the original Mount Sopris view is from the image file's 13th version. The print itself is 5x10 feet, limited simply by the bed size of the LightJet laser printer to which it is being output. “We've extrapolated these images digitally to 18x36 feet with no loss of resolution,” says Ross.

No wonder, given that the printing files are 2.6 gigabytes—compressed losslessly from working files of seven. “The system I've developed captures so much detail that if you engage the picture, you're forced to spend time looking at all the details just the way you would in nature,” says Ross. He narrates the finished print in almost reverential tones. “This

bird is 150 feet away from the camera,” he says, pointing to a speck that is clearly identifiable as a red-winged blackbird. “Here you're looking at the tire treads on a tractor that's three-quarters of a mile away. Look there and you'll see detail in a window in a house that's two miles away. The lone tree on the top of that crest is four miles away. And the little gray tracings in the snow on the mountaintop are a footpath that's seven miles away.”

At the heart of Ross's enthusiasm is a rejection of the venerated photographic notion that there is a correct “viewing distance” for a given size print—and that to view the print any more closely subjects its detail to an unfair standard of sharpness. “I think large-scale prints by a Gursky or Struth are really designed for this viewing distance,” says Ross. “When you get really close to them, the detail just isn't there. My goal was to give detail that never stopped as you approached the picture.” —RUSSELL HART

DIGITAL PROFILE

Name Clifford Ross

Home New York, N.Y.

Bio A highly successful painter and sculptor who turned to photography around 1995, Ross has had several one-man shows of his black-and-white work at such galleries as New York's Sonnabend and Edwynn Houk, and his photographs can be found in the collections of the Whitney and Guggenheim museums. Aperture will publish his “Wave Music” series in a Blind Spot monograph next spring.

Gear His handmade, patented R1 panoramic camera, rebuilt around a World War II-era Fairchild Type K-38 aerial camera, makes 9x18-inch negatives on 100-foot rolls of Kodak Aerocolor III (2444) color negative film. The camera's 65-pound weight requires a super-sturdy tripod, the QuickSet Hercules. Four large-format lenses include a Fujinon C 600mm f/11.5, a Rodenstock 480mm f/8.4 Sironar N, a Sinar 300mm f/5.6 Sinaron WS, and a Schneider 210mm f/5.6 Super-Symmar XL. Cameras Ross has used for other work include the Mamiya 7, Wisner 4x5, and Linhof Technika 4x5.

Digital Savvy “One of my big arguments with photography is that there is a so-called correct viewing distance for a given-size print. I think that's just an excuse for the medium, and photographers as practicing artists, to not deal with important issues of sharpness. I find that a huge number of contemporary photographs that I otherwise admire just fall apart in their satisfaction when you approach them. Yet I always hear less-than-sharp prints defended with, ‘Don't worry if it doesn't look sharp, that's not the proper viewing distance.’ It's a nonsensical view of photography that it doesn't have to meet the same standards of performance as painting or sculpture. I think photography does have the capacity to perform that way.”

Tip “Digital photography is almost another medium, just as color photography is almost another medium from black and white. You have to make a choice. I personally haven't actually shot anything digitally that I've been satisfied with. I still like the resistance of film and grain.”

