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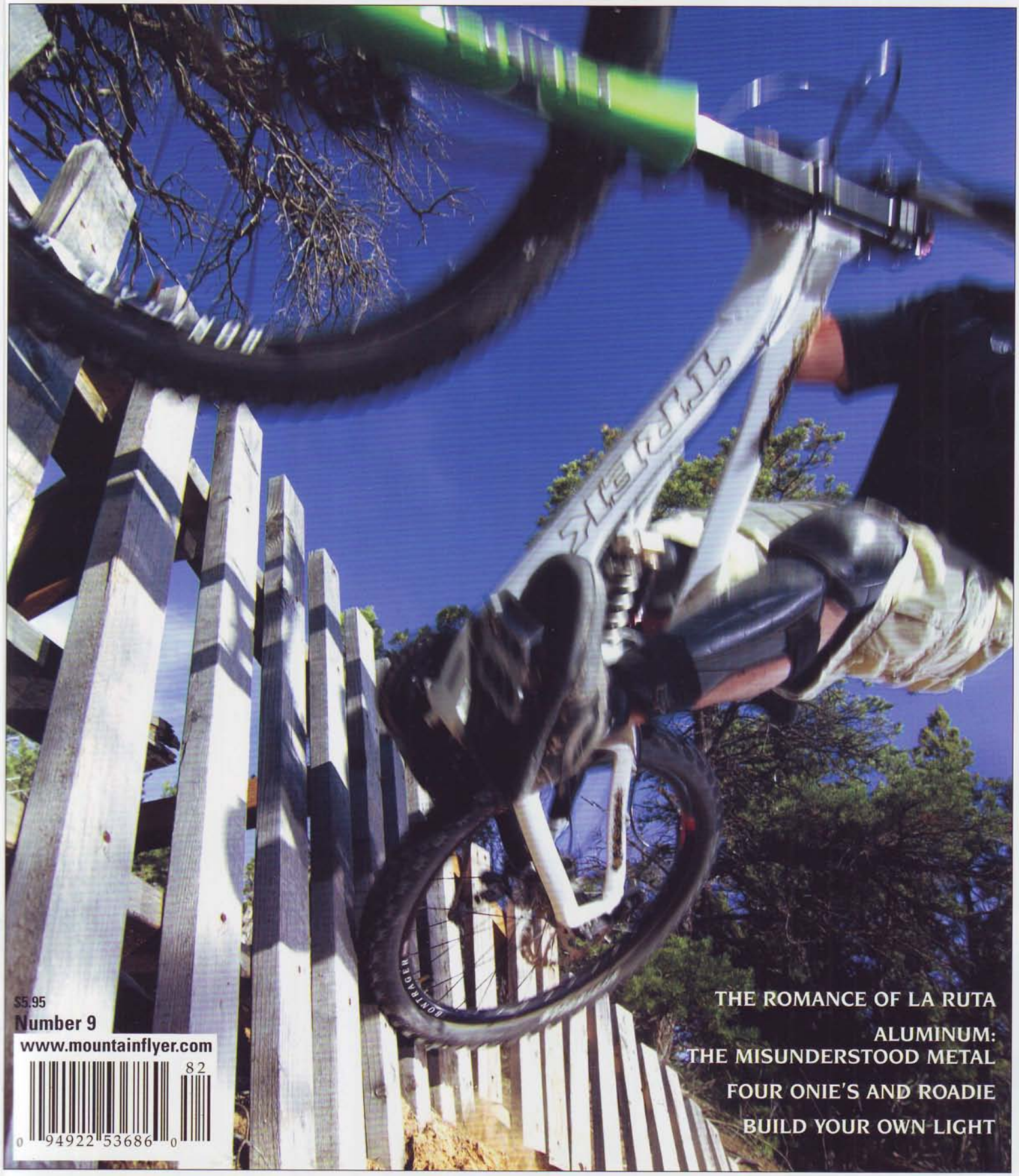

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Eddie Clark

Precision Engineered Aluminum

Designer/builder Mike Ahrens originally showed his Alcohauler Singlespeed as a concept bike at the 2007 North American Handmade Bicycle Show. At first I thought the name was an engineer's tribute to the evil empire of Alcoa Aluminum. Thankfully, the Alcohauler is not named after the world's largest aluminum cartel but instead gets its name from something much more sublime: the Wisecracker bottle opener headset spacer it comes with—an appropriate element on a singlespeed.

Mike Ahrens is an engineer at heart and in practice (see *Understanding Aluminum* on p. 65 of this issue). His designs are functional and engineered to very tight tolerances. Ahrens works with steel in certain applications but this race-bred Alcohauler characterizes his innovative work with aluminum. While aluminum has lost popularity in hardtail applications because of its inherent stiffness, it has some very attractive attributes when speed is what you really want. It's light and responsive so it can be a great choice for a race bike or a singlespeed, both of which during a pedal stroke will go through considerable torsional stress, or a capacity for flex under a load twisting on an axis.

To address aluminums properties, Ahrens applies his engineering knowledge by "tuning" the 7005 series frame. The engineered upper and lower yokes, wishbone-shaped joints that mate the seat tube to rectangular seat and chainstays, provide excellent power transfer during pedaling. In cross-section, the yokes have the shape of a "C-channel," providing a strong vertical back wall and saving material and weight without sacrificing strength. The tapered shape of the yokes can be compared to a tuning fork. The shape gives a small amount of torsional compliance to the frame's rear triangle. This compliance aids in cornering and overall traction for a flickable ride quality that feels alive underneath the rider.

The truly unique design concept of the Alochauler frame is based on its adaptability. By designing it with ample tire clearance, made possible with the machined yokes, and room for expansion via slider dropouts, Ahrens envisioned a bike that could functionally adapt to multiple wheel sizes, 26-inch or 650B, splitting the difference and basically designing the bike around a theoretical 27-inch outside diameter tire.

Tangent

When we're talking wheel and tire size, things are about as clear as campaign politics, but I found a great article by the late cycling wise man Sheldon Brown (you can find the article at www.sheldonbrown.com/26/index.html).

What I learned is that 26 inches is not a real tire or rim size. This traditional size measurement is supposedly based on the outside diameter of the tire, but you must also consider that the measurement includes a width. To call it a 26-inch tire is misleading because a high volume 26 x 2.2-inch tire can have an outside diameter more like 26.4 inches. There is a more accurate International Organization for Standardization (ISO) measurement system (but few utilize it), which more accurately gives you a measurement of the outside rim diameter, referred to as "bead seat diameter." What is commonly known as a 26-inch mountain bike tire is an ISO 559 mm. A 650B mountain bike tire is an ISO 584 mm. A high-volume 559 mm tire may have a similar outside diameter to a lower volume 584 mm tire.

Even though both tires will have similar outside diameters in the vicinity of 27 inches, a high-volume tire, like a 26 x 2.4, will have more cush, rolling resistance and weight than a lower volume 650B x 2.1 tire. With a 650B tire, you will gain the attributes of a larger diameter tire with less weight, lower rolling resistance and less tendency for sidewall roll.

Back to the Bike

When it comes to frame design, what matters is the outside diameter of the tire because it affects frame clearance and geometry. This opens up an interesting possibility when building a frame. It's within reason to make a frame that will work with 559 or 584 mm wheels and tires anywhere on 26-inch wheels up to 26 x 2.5 and on 650B wheels up to 650B x 2.3 inches, giving the rider amazing versatility in one bike with two wheelsets.

With the theoretical 27-inch wheel diameter as a starting point, the Alcohauler's bottom bracket height would sit at 12.5-inches, which is a nice target dimension for trail hardtails with 100 mm suspension forks. A high air volume 26 x 2.2 tire brings the bottom bracket height down to 12.2 inches—the true sweet spot, according to Ahrens, for cross-country riding, giving just the right amount of crank arm-to-ground clearance for 175 mm cranks. With 650B tires, the bottom bracket height will increase to about 12.7 inches depending on true outside tire diameter.

Ahrens let me hold on to the Alcohauler for several months, which was good because it became an intricate bike to review. I rode it with standard 26-inch tires front and rear, 26-inch rear and 650B front (that's a 2650Ber) and with 650B front and rear, trying both the Pacenti 650B x 2.3 Neo-Moto and the Pacenti 650B x 2.0 Quasi-Moto tires. I rode it fully rigid with a

White Brothers carbon fork and also suspended. It became complex to analyze and was truly very interesting.

Switching wheel sizes was relatively painless and Ahrens' slider dropouts were easy to adjust when switching out rear wheels. When going from a 26-inch rear wheel to the 650B wheel, the only hitch was that to get clearance for the 650B x 2.3 Neo-Moto, it was necessary to lengthen the chain to retain proper tire clearance while maintaining a similar gear ratio. Since the rear wheel size affects the gear ratios, you'll typically want to increase the size of the rear cog when going to a larger wheel. The larger cog effectively shortens the chain and pulls the rear wheel forward so I ran out of room for the larger wheel and had to add two links to the chain.

The front end is simpler, especially with the rigid fork. Officially, White Brothers is the only company making a specific 650B suspension fork. Many other suspension forks will work with a 650B wheel (you just need to test them for clearance), but some manufacturers are issuing disclaimers stating their forks were not designed to work with 650B (liability crap).

With every change, I noticed nuances in the handling of the bike that were essentially predictable.

I'm partial to 26ers for most racing so I chose that configuration for the opening Rabbit Valley Mountain States Cup race in Fruita, Colo. With lightweight Kenda tires and a racy Magura Durin fork, the 26er Alcohauler was rippin' fast in the twisty singletrack and ultra-efficient on the climbs. It felt like an aggressive cross-country race bike should feel. The cross-country race was short, just over an hour, so every second counted. It was a sprint and I very much appreciated the responsiveness and quick handling the frame provided. I made several good passes on inside corners in the singletrack and out-climbed everyone close to me near the finish, something I could attribute to the efficiency of the bike, not my April fitness.

Running it as a 2650Ber (remember, that's a 26-inch rear and 650B front) means a slightly slacker head angle on the order of 0.3 to 0.5 degree difference depending on true wheel diameter. With this setup, the bike needed to be leaned hard into the corners but was killer fun in technical desert riding typical to Fruita and Grand Junction. It definitely rolled up and over the sandstone blocks with ease, was stable down ledgy descents and still climbed like a demon. For some reason I was really drawn to this configuration for the same reason I'm really intrigued by the 69er platform. It makes a lot of sense.

As a full 650B rig, the bike felt balanced, sort of 29erish but not so gangly. It certainly felt different than it did as a 26er. The momentum it carried was noticeable and it really smoothed out the little chatter bumps. But it didn't feel as quick as it did in 26er or 2650Ber mode. I raced the 650B-configured bike with a rigid fork at the Nathrop, Colo., Mountain States Cup race with good results. The course is mostly fast straight-aways with very little real climbing but sections are strewn with river cobbles. Even with the rigid fork I was able to keep good momentum through the cobbles, well until the fourth lap when I fell apart.

In the end, can I pick a favorite configuration? No. And I don't need to. That is what's attractive about this design. By switching around the wheel configurations, you can adjust the bike to shine on whatever riding style you want that day. The Alcohauler was a pleasure to ride and the frame is beautifully fabricated. I'd call it evolutionary. And the wisecracker bottle opener works flawlessly. *–B. Riepe*