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## BUYER'S GUIDE

## IT'S A MATTER OF STYLE

*We Begin by Simplifying Frame Geometry, Then Test  
13 Representative New Bikes*

BY HANK BARLOW AND JOHN KUKODA

Across the board, manufacturers have reduced chainstay and wheelbase length, and steepened head and seat angles to the point where it's hard for a rider to tell the bikes apart. Steep head angles so dominate contemporary mountain bike design that only a few companies (e.g., Ritchey and Klein) still build models as shallow as 69 degrees.

Most '89 mountain bikes have a 70- to 71-degree head angle, less than 2 inches of fork rake, 73-degree seat angle, sub-17-inch chainstays, and sub-42-inch wheelbase. The reason: competition. Racers have been riding short, steep bikes for years, and these designs have finally trickled down to the consumer. The drawback is that not every rider needs gonzo performance; mountain bikes are also superb for touring.

For MOUNTAIN BIKE's tests, technical editor John Kukoda and I tune into the sometimes subtle indicators of "feel" and "performance" that set a bike apart from its competitors. Then we attempt to understand *why* the bike does what it does—a process that unavoidably leads us into the following technical realm of angles and dimensions, an intimidating landscape for the unprepared.

### *It's All in Your Head (Tube)*

A head tube angle of 71 or 72 degrees provides very fast steering response and exceptional control in slow, technical passages, parti-

cularly on steep climbs. At speed, however, it demands greater rider awareness and skill. A steep front end appreciates finesse and also tends to ride roughly compared to a shallower design.

Conversely, a head angle of 68 or 69 degrees gives a bike excellent stability at speed and allows it to glide over bumps. It also renders a bike less susceptible to the destabilizing effects of crashing into rocks or plowing through soft sand or snow. High-speed descending is its forte. At slow speeds, however, the shallow head angle makes the steering less precise and the front wheel tends to flop to one side. Such bikes are at their worst on steep climbs, which cause the front wheel to wallow and become hard to steer.

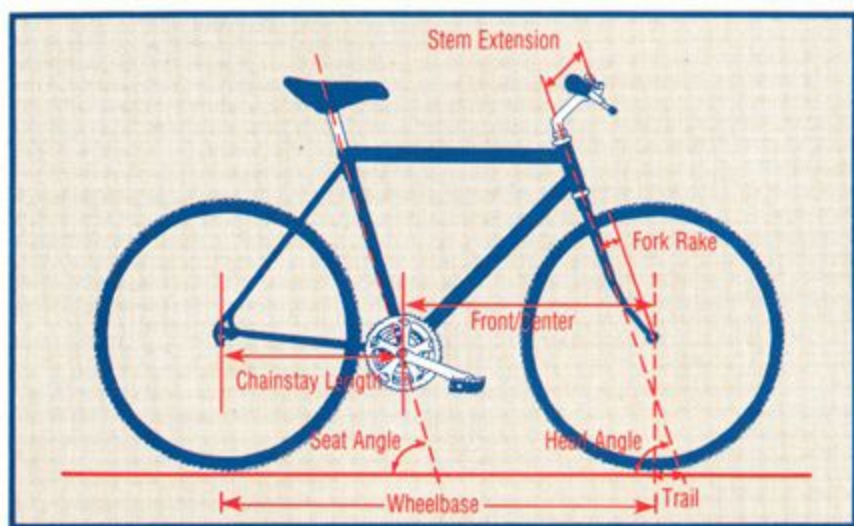
But head angle is only half the picture; it must complement fork rake to balance the forces that keep the bike upright and pointed straight ahead. Changes in either dimension affect the bike's trail—the distance between the

center of the tire's contact patch and the imaginary point where a straight line through the head tube would meet the ground. The more trail, the more the bike "wants" to continue in a straight line at speed. Trail increases as the head angle slackens and as fork rake decreases. Thus, a bike with a 71-degree head angle and 2 inches of fork rake will have less high-speed stability than the same bike with 1.5 inches of rake.

Steep head angles are super quick compared to shallow angles, but a 71-degree head angle with a long stem extension can seem slower and harder to turn than a 69-degree head angle with a very short stem extension. The farther the handlebar from the stem's pivot point, the longer the distance the hands must travel to turn the handlebar.

A long stem extension can eliminate the squirrelness caused by a steep head angle, providing great stability even at high speed. In contrast, a short stem extension coupled with a slack, 69-degree head angle can permit surprisingly quick handling.

Another school of thought prefers to match a steep head angle with a short stem extension because the leverage of a long stem isn't needed with a quick-handling front end. The short stem also shifts the rider's weight rearward for more control on fast, rough descents. This setup, however, requires a bike with a



fairly long top tube for proper fit. Proponents of this theory would match a shallow head angle with a long stem in order to provide more control over the bike's difficult steering.

### Seat Angle

A steep seat tube angle of 73 or 74 degrees facilitates the transition from sitting to standing. It also aggressively positions the rider over the cranks, which increases the ability to pedal at a brisk cadence. And it improves riding on technical passages.

A shallow angle of 70 or 71 degrees places the rider farther back relative to the bottom bracket. This provides a powerful pedaling position with lots of rear-wheel traction. The drawback is that standing to pedal can feel like rising from a deep arm chair.

### Wheelbase

A bike's maneuverability is also influenced by its wheelbase. A short-wheelbase bike reacts faster to rider input than a longer one and is also easier to thread through technical passages (or fit into a hatchback). A long-wheelbase bike

usually rides softer and is much more stable at speed, but it's also less agile. Most '89 production bikes have a 41- to 42-inch wheelbase, although there are a few radical climbers even shorter. The old 44-inch cruisers seem to have died.

### Chainstays

Short chainstays improve rear wheel traction but at the cost of tire clearance, a more acute chain angle, and a harsher ride. Longer stays ride softer and usually can accommodate fat tires. The de facto standard is about 17 inches. Many bikes now sport 16.5-inch chainstays; some are even shorter.

### Front/Center

Although it's seldom published by manufacturers, a bike's front/center dimension (center of the front hub to center of the bottom bracket) is another good indicator of performance. A short front/center helps keep the front wheel grounded when climbing ultra-steep slopes. It also makes the bike more sensitive to steering input, hence it's generally preferred for technical riding. A long front/center transfers more weight to the

rear wheel for traction. Such a bike also feels more secure on steep descents and more stable at speed on rough terrain.

### Positioning

Now that your head is filled with spinning numbers, empty it, because ultimately a bike's handling is most affected by the rider's weight distribution. The ideal bike is one that puts the rider in a balanced, neutral position that permits a forward or rearward weight shift as conditions dictate.

And weight distribution is the direct result of frame fit. This is why buying a bike is like buying a suit: If you want to look and feel right, all parts have to fit and be compatible with your personal style.

When shopping for a bike, remember that within the constraints of today's highly evolved frame designs, there's no right or wrong geometry. Sure, subtle differences exist, but in the end there are darned few bikes on the market that don't do everything pretty well. Each appeals to a different rider, and what's right for one isn't necessarily right for another. It's just a matter of style.

## FISHER AL-1

Gary Fisher's aluminum AL-1 is a welcome addition to the ranks of high-performance mountain bikes. Until now, aluminum bikes with short, steep geometry cost more than a grand—if you could find one. The AL-1, priced at about \$850, finally makes this material more affordable. Even better, the Fisher aluminum, weighing 27.25 pounds, dramatically cuts the price of lightness without sacrificing strength.

Geometry is based on a 70.5-degree head angle, 1.75 inches of rake, 74-degree seat angle, 16.5-inch chainstays, and 41.8-inch wheelbase. The steep seat tube enables a smooth, natural transition from sitting to standing—an advantage for cleaning technical passages. While all these stats are in the ballpark, subtle deviations in rider positioning still make for surprising differences between similar bikes.

Years of experience have paid off for Fisher: Our 18-inch test frame's stock handlebar position was right on. The bend was 5 degrees instead of our preferred 11, but its width was a perfect 21.5 inches. The Fisher stem's long insertion provides a greater height range than most and makes proper positioning easy.

Sometimes riders describe their bikes as "disappearing from under them," so perfect is the fit and handling. But the Fisher didn't disappear. Instead, it practically screamed at us to ride harder, at-



tack the steepest climbs, and bulldoze through the gnarliest conditions.

On one particular downhill through a series of round, banked hairpins, the bike flew through like a roller coaster on rails. We leaned into the turn and the AL-1 instantly carved beautiful, effortless lines before exiting onto the short straights where we'd stand and accelerate to the next turn.

This was our first exposure to Fisher's Evolution oversized headset, head tube, steerer column, and fork blades. The concept seems sound, but we couldn't detect riding improvement.

The AL-1's standard rubber is 1.9-inch

FatTrax. Other nice touches include a large-diameter aluminum seatpost with a steel reinforcing collar; a pressed-in bottom bracket bearing cartridge; slotted brake cable stops; the stem's accessible housing stop; and standard toe clips and straps.

As usual, lower gearing would have been nice; a 26T chainring and 28T large cog don't do justice to the AL-1's climbing ability. The rear stopper—a U-brake under the stays—was equally unimpressive. We'd have preferred a roller cam, but it's a moot point because production models will have two cantilevers. —H.B. ▶

## ABM AMERICAN

American Bicycle Manufacturing's new "American" could pass for a generic mountain bike, except for one thing: Generics don't often surpass name brands. But this \$995 lean, mean, traveling machine is the exception.

In a bike shop, the uninitiated eye might pass over the American's satiny aluminum finish for the spackles and crackles of gaudier bikes. But in practical terms its plainness is a plus: The finish can be maintained with steel wool.

Beneath the finish, this frame of heat-treated, 6061 T6 aluminum incorporates the same precise, unfilled weld beads that mark all the products of this St. Cloud, Minnesota, manufacturer. If you know bikes, you'll also appreciate the performance potential of its Shimano Deore II componentry with 7-speed Hyperglide indexing, and its Specialized Ground Control tires on GX-26 rims.

Even the stem and seatpost, little more than hangers for the handlebar and saddle on some bikes, are special on the American. Like the frame, they're built by ABM of aluminum, hence are about the lightest available. Consider that the stem alone retails for \$90, and you'll start to understand this bike's ex-



ceptional value.

These lightweight parts also help offset the relatively heavy Deore II components, holding the weight of our 19-inch test bike to 27.5 pounds. Someone crazed by lightness could purchase the frameset from ABM and build up a reliable sub-24-pound American with a judicious selection of parts. By picking from the handful of U.S. component makers, you could even wind up with an *American American!*

This bike's appearance won't raise your heart rate, but its ride will. It's an all-around mountain bike, adept at severely steep slickrock climbs, precise

singletracking, screaming descents, and relaxed all-day tours. We won't dwell on the 71-degree head angle or 17-inch chainstays. The bottom line is that the American is well-balanced and does what the rider asks. Its neutrality lets you concentrate on riding enjoyment, not on compensating for twitchiness, sluggishness, or instability at speed.

The American's ride feels smoother than typical chrome-moly steel mountain bikes by virtue of aluminum's superior vibration-damping ability. Plus, the frame is efficiently rigid for precise control at any speed, with no bottom-bracket flex.—J.K.

## BRIDGESTONE COMP MB-2

Part of the fun of a new bike is tinkering with it to dial in optimum performance. Bridgestone's \$750-\$800 Comp MB-2 spoils this fun, however, by coming out of the box with virtually every upgrade that an advanced off-roadie would want.

The MB-2 is basically a mass-produced version of product manager Grant Peterson's customized Comp MB-1, except that the MB-2 is built from Ishiwata chrome-moly tubing instead of Tange Prestige. Both bikes share a race-ready frame geometry that includes a radical 72-degree head angle with 4 cm (1.6 inches) of rake, a tight 41-inch wheelbase with 16.7-inch chainstays (for our 19.3-inch frame size), and a comfortably long 22.6-inch top tube. The fork is Tange's licensed version of an Eric Koski Dura-Trac, providing a superior combination of shock absorption and precise front-end control.

Bridgestone tapped Ritchey USA for its chrome-moly Force stem and handlebar. The long stem's shallow 10-degree rise combines with the generous top tube to put the rider in a powerful, balanced position that worked equally well for scaling steep slickrock out of the saddle or maintaining control when descending a steep jeep road in the snow.



Ritchey also supplied his 435-gram Vantage hard-anodized rims (32-hole, of course) and dirt-hungry Force 1.9 tires. The rims are laced with WheelSmith stainless steel spokes to SunTour's XC-9000 hubset, including its new 7-speed cassette freehub.

Like many mountain bikers who developed their pedaling prowess as road riders, Peterson prefers round chainrings, so that's what the SunTour XC-9000 crankset has, with useful 24/34/46T gearing. A 24T granny ring is probably the most common drivetrain change made by riders in mountainous country or high altitude, but you won't see one

spec'd on a Biopace, Cycloid, or OvalTech-equipped mountain bike—their rings do not come that small.

Peterson chose 13-26T cogs for the cassette hub—again, a departure from the usual 13-30T or 13-28T clusters SunTour supplies. While this combination provides about the same 24-inch low gear as the common 26x28T, we wish Grant would

have one-upped the rest of the gang by using a 28T or even 30T large cog for a low gear that's really useful on steep slickrock or in thin air.

Other custom touches on the MB-2 include the Dia-Compe Advantage 5 mini-levers that control a pair of low-profile 984 cantilevers, and lightweight (320-grams-per-pair) Sakae CTP-400 pedals with excellent ground clearance and a cut-down, track-racing style. As befits a race-ready bike, these pedals come complete with nylon toe straps, rugged Fisher double-steel toe clips, and strap end buttons. Bridgestone leaves it to the customer to supply toe flips.—J.K. ▶

## DIAMOND BACK APEX

The '89 Diamond Backs are refined versions of the company's popular '88 models. The Apex, at about \$590, ought to be a hot seller with its 70-degree head angle, 1.75-inch fork rake, 73-degree seat angle, 16.8-inch chainstays, and 41.75-inch wheelbase. The head angle gives buyers who want slightly less demanding handling an attractive choice, because so many of this year's bikes sport 71- or even 72-degree front ends.

An obvious change from last year is the straight-blade fork with all offset at the crown. Straight blades can be more rigid than the conventional type for more precise handling control. But they can also cause a rougher ride. It all depends on the blades' diameter, taper (if any), and wall thickness. The Apex's fork was fine in all departments, including comfort.

While the frame of our 19-inch test bike was well-proportioned for a rider shorter than 6 feet, we found the stem extension and rise too short. This resulted in excessive weight over the front wheel. Even with the bike's short stays, we lost rear-wheel traction on



hills where this shouldn't have occurred.

The Apex's componentry is Shimano Deore-II, featuring 7-speed Hyperglide. Gearing selection was proper, with 26/36/46T chainrings and a 13-30T freewheel. The low gear is fine for all but ultra-steep hills. For these, merely switch to a 24T granny ring.

Otherwise, this bike was nicely set up

with a 10-degree handlebar bend, fat Farmer John's Cousin tires, and a beautifully finished smoke paint job. The Apex is a bike on which aggressive riders can hammer and come home grinning. Its 30.5-pound weight makes it lighter than much of its competition.—H.B.

## MIYATA SKY RUNNER

Miyata's top mountain bike, the Deore XT-II-equipped \$1,150 Sky Runner, has a bonded aluminum frame that's guaranteed for life and looks rugged enough to become a family heirloom.

Miyata's testing found the tubing has a strength-to-weight ratio that's about 40% higher than chrome-moly steel, and joint/lug strength that's 4% greater. According to Miyata, an Alumitech test frame withstood more than 1 million cycles on a vibration test apparatus, or 12 times the industry standard. We liked the Sky Runner's brawny aluminum tubes and substantial investment-cast lugs, which prompted one mountain biker to exclaim that it looks like "a Candondale with a thyroid condition."

This comment addresses the frame's flared, one-piece head-tube lug and bulky seat cluster, parts that must be oversized to join the similarly large-diameter tubes. The down-tube diameter is a massive 1 5/8 inches, while the top tube is 1 1/2 and the seat tube 1 1/4. The cast aluminum bottom bracket shell, which is severely cut away to clear the chainrings, joins 1-inch-thick, slightly ovalized chainstays. These bow inward to clear the crankarms, then spread again to fit the rear axle. The seatstays are bonded and bolted to the massive, flared



seat lug and forged aluminum vertical dropouts.

Finishing the frame in Passion Purple paint merely exaggerates the effect. Next to these bright, burly pipes, the chrome-moly fork looked almost delicate, although it's a plenty-strong unicrown design with 1 1/8-inch oval blades.

The Sky Runner joins a growing number of mountain bikes with a steep 72-degree head angle (on our 18 1/2-inch frame). This aids the bike's agility and

slow-speed control, which are also enhanced by its compact 41 1/8-inch wheelbase. Short 16.7-inch chainstays complete the design of this climbing machine, which came appropriately equipped with dirt- and snow-hungry Mitsubishi tractor-tread tires on Wolber AT-20 36-hole rims.

With its 21.8-inch top tube, the Sky Runner was a little short for the hunker-down-and-hammer riding style we employ back East (although the minimal

rear sweep of the narrow Nitto alloy handlebar increased the reach a bit), but on the technically demanding slickrock it was just right—long enough to keep weight on the front for climbing control and short enough for us to get way behind the saddle for scary-steep descents. For this, we also appreciated the Selle

Italia Turbo road racing saddle, which is narrow enough to let us shift back without lowering the seat—something not always possible with the wide, heavily padded "ATB-type" saddles.

Two wishes for the Sky Runner: a gear lower than the 28x28T of our test bike (a 26T small chainring was spec'd) and a

better position for the rear cantilevers or, more accurately, the seatstays. They join the seat cluster a few centimeters ahead of the usual location, lowering the stays so the heels of our mountain biking shoes occasionally hit the brake arms. This wasn't a major problem, but it was annoying.—J.K.

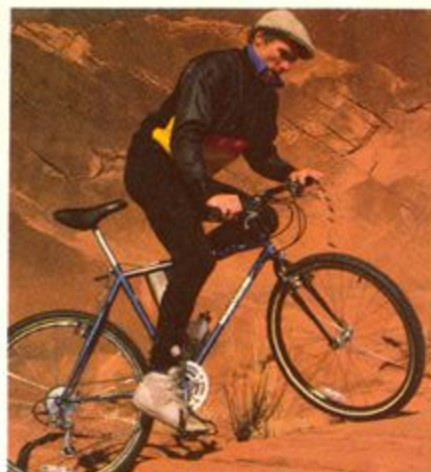
## MONGOOSE IBOC PRO

Mongoose might have gained fame for 15 years worth of fine BMX bikes, but the current Mongoose line is definitely not just for the prepubescent set.

Formerly known as BMX Products—a name that didn't inspire much adult customer excitement—Mongoose's parent company was recently rechristened Service Cycle. Sponsorship of the world's top mountain bike racer, John Tomac, along with development of bikes worthy of this relationship, has helped change the way mountain bikers view this California company.

Playing off its relationship with Tomac is Mongoose's International Bicycle of Champions (IBOC) four-bike lineup. Influenced by Tomac's preference for an aggressive, quick-handling race mount, the IBOC line features upright angles, short chainstays and wheelbases, wishbone-style seatstays with integral cable hangers for the rear cantilever brakes, and Shimano 7-speed Hyperglide index shifting.

The \$600 IBOC Pro, with a Tange seamless chrome-moly frame and Deore II componentry, is an all-around mountain bike equally suitable for racing or backcountry exploring. Unlike the steep



72-degree head angles and ultra-short 40.5-inch wheelbase of the top two Deore XT-II-equipped IBOC models—the titanium Signature and Tange Prestige Team—the Pro uses a more moderate and versatile design. Our 18-inch frame had a 70-degree head angle with a straight-blade fork raked to 1 $\frac{3}{4}$  inches. (To compensate for the stabilizing effect of a longer wheelbase in the larger 20- and 22-inch sizes, the head angle is increased to 71 degrees with the same fork rake.) Our bike used a moderate 21.5-inch top tube with a long 13.5-mm hid-

den-cable chrome-moly stem. This combination, paired with the bike's 16.9-inch chainstays, provided perfect fore-aft balance that aided climbing traction without compromising the front-end weight distribution required for precise slow-speed control.

I don't know how much of the Pro's sweet handling to attribute to its well-balanced frame and how much to its straight-blade fork, but this bike was one of the most predictable and controllable in fresh, powdery snow, even with its non-aggressive, somewhat narrow 26x1.9-inch Cheng Shin tires.

The use of Araya's new, 1.2-inch CMP-20 competition rims laced with 32 stainless-steel spokes reflects the trend toward lighter wheels. Once the anodizing wore down on the braking surface (a process you might want to accelerate with a piece of emery cloth), the Deore cantilevers worked adequately.

A smattering of Taiwanese parts that include a Delta seatpost and HTI comp-style pedals is expected at the Pro's competitive price point. While they might not withstand the rigors of high-level competition, they're adequate for general use. However, toe flips would be a godsend for the pedals, which were tough to turn over.—J.K.

## GT KARAKORAM

Like all GT bikes, including its new mountain tandem, the \$510-\$540 Karakoram is instantly recognizable because of its unique seatstays. Rather than attach them to the seat cluster, GT elects to angle them past the seat tube and fix them to the top tube. According to the company, the design creates a stiffer and stronger rear triangle by shortening the effective length of the stays. It also makes GT products stand out in a world of look-alikes. Unfortunately, the frame design rules out a shoulder strap.

The Karakoram's geometry is moderately tight: 70-degree head angle, 1.75-inch rake, 16.5-inch chainstays, 41 $\frac{3}{8}$ -inch wheelbase, and 74-degree seat angle. Our 18-inch test bike really jammed. Rear wheel traction was excellent, as was the bike's handling in technical sections.

Componentry is Shimano Exage

Mountain LX with a 7-speed, 13-30T Hyperglide freewheel and 28/38/48T chainrings, but lower gearing would have been appreciated. The bike's front Mountain LX cantilevers are paired with a seatstay-mounted U-brake, because cantilevers mounted on the low-angle seatstays would be hit by the rider's heels. The U-brake required an interesting cable guide

because the brake's straddle cable goes around the seat tube. Rather than just loop this cable around the tube, the nylon guide crosses it, which shortens its effective length for more efficient braking. It seems complicated but the brake worked great, outperforming most of the rear cantilevers we've used this year.

Toe clips and straps are standard, as



are mounts for two water bottle cages. Cable stops are large and slotted for easy maintenance. Tires are Ritchey Force 2.0s mounted on Araya RX-7 rims with Mountain LX quick release hubs.

The Karakoram was a sweet riding machine except for its 32.25-pound weight, though most bikes in this price range weigh 30 to 31 pounds.—H.B. ▶

## MOUNTAIN GOAT WHISKEYTOWN RACER

Thanks to steady advancement in production mountain bike handling, performance and features, darned few mountain bikers need the refinements of a handbuilt, \$2,100 Whiskeytown Racer from Mountain Goat Cycles. Fortunately for William "Jeff" Lindsay, though, who's been building Goats since 1981, there are even fewer of us who wouldn't lust for one after seeing and riding it.

Every inch of this bike is eye candy to a bike aficionado. Each one is individually built to order in stock sizes, so any two-color combination of DuPont Imron paint is available, as is a virtually unlimited variety of extra-cost custom finishes. Or, if you're willing to gamble, you can specify the "Builder's Choice" custom finish at the stock paint price.

The frame and fork are constructed of Tange Prestige tubing and TIG-welded with a smooth, tiny bead that's lighter, equally strong, yet less labor-intensive than fillet brazing. (If you must have fillets, check out the \$2,259, elliptical-tubed Mountain Goat Deluxe.)

The rear triangle attaches with a Uni-stay wishbone that's lighter and more rigid (for mounting cantilevers) than conventional stays. Our all-Deore-XT-II-equipped bike had an XT-II U-brake, but you can specify any brake type or position at no extra charge.

The Whiskeytown isn't just a pretty bike, it's also a strong one, with special strength features such as external bottle mounts that don't pierce the tubing.

To avoid the repeated heating needed to braze three cable stops under the highly stressed down tube, the Whiskeytown has an unusual "tristop" three-in-one cable stop that requires heating the tube only once and provides a larger attachment surface.

The custom design seat lug is invest-



ment-cast to resist the stress of opening and closing the quick release. The lug features a rear-facing tab for mounting a Hite-Rite saddle height adjuster, and forward-facing ears for a more accessible quick-release lever. The head tube, another high-stress area, is strengthened top and bottom with external reinforcing rings cut to mimic fancy sculpted lugs. The head tube and the seat lug are also adorned with badges of Lindsay's goat-head logo.

The Whiskeytown Racer has superb balance that transcends any discussion of frame geometry. We've ridden numerous bikes with 71/73-degree head/seat angles, 17-inch chainstays and a 41.5-inch wheelbase, but few with the Whiskeytown's precise, slow-speed maneuverability and confident high-speed control. Most noteworthy was the way this upright, short-wheelbase bike felt steady and secure at speed. If we had ridden it only on fast fire roads, we'd have assumed it shared the laid-back front end of older Ritchey's or Fishers. But on steep, technical climbs and boulder-strewn singletrack, the handling was so

precise it's doubtful we could have negotiated the rough stuff any easier with hiking boots.

Lindsay calls the frame design RAD ("Ride All Day") geometry, and we did. In fact, we rode it for a solid week. We tackled the narrow, treacherous single-track off Moab's Poison Spider Mesa and Porcupine Rim; cleaned as much of the Slickrock Trail as our legs and the bike's lowest (28x28T) gear would allow; and pulled an impromptu paceline down the Potash Road into a stiff headwind.

The only changes we'd make would be to install round chainrings (including a 24T inside) and 175-mm crankarms instead of 180s. Shorter cranks would have helped on the slickrock, although the added *oomph* of 180s was a blessing on Porcupine Rim's steep, steady climbs and in headwinds.

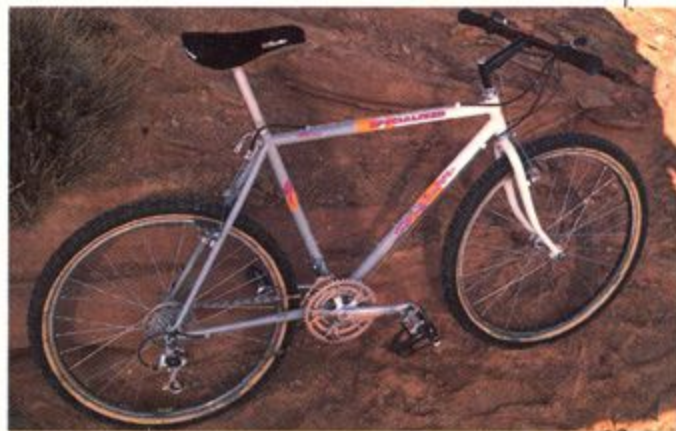
Those ordering a Mountain Goat should be aware that frame sizes are measured to the top of the extended seat lug. We usually ride a 19-inch mountain bike, yet the 20-inch Whiskeytown, which measured 18.75 inches to the top of the top tube, fit fine.—J.K.

## SPECIALIZED TEAM STUMPJUMPER

Specialized's flagship race bike improves every year. From its first appearance in shocking pink, this bike has been a winner—its hallmarks being aggressive handling and rider positioning. The '89 version continues this tradition, though its appearance is less distinguished. The gray/white/flame-yellow color scheme with magenta detailing is appealing, and the quality of the finish is excellent, but it doesn't shout "Team Stumpjumper."

Our test bike's 19.5-inch frame fit us nicely, except for the 5-degree bend of the handlebar. Such a straight bar is trendy, but we prefer Specialized's aftermarket bar with an 11-degree bend. Both, however, are too wide (24 inches) and must be trimmed for most riders.

Geometry is "full race," with a 71-degree head angle and 1.75



inches of fork rake. The seat-tube angle is 73 degrees, chainstay length is 16<sup>5</sup>/<sub>8</sub> inches, and wheelbase is 41<sup>5</sup>/<sub>8</sub> inches. Stem extension and rise felt right.

This is a bike to jam on. It climbs beautifully, has lightning quick response, and, with the moderately long stem, is stable at speed. Add a competitive weight (27 pounds) and \$1,100 price tag, and you've got a winner.

The frame and componentry are top-drawer: The tubing is Tange Prestige, and the equipment is Shimano Deore XT-II except for a Specialized alloy headset. Wheels are also Specialized,

with narrow GX-23, 32-hole rims laced with Wheelsmith 14-gauge stainless steel spokes and shod with Ground Control S tires.

The Team's so-called race gearing—28/38/48T chainrings and 12-28T, 7-speed cluster—is excessively macho. Installing a 24T granny ring would be an improvement, though ultra-steep hills flatten even more with a 30- or 32-tooth cog.

The Deore XT-II cantilevers front and rear are controlled with long, four-finger levers rather than Shimano's hot new two-finger minis. Specialized specs the larger levers to reduce hand fatigue by

allowing more fingers to share the task of braking on sustained descents.

Notable pluses are a long, 300-mm seatpost, vertical dropouts, slotted cable stops, and toe clips with straps.

On the minus side, instead of a brazed-on rear brake cable stop, the Team has an add-on stop that flexes under load. The front brake cable stop is routed inside the stem, where it's hard to check if the housing is seated correctly. Also, the seat tube's water bottle mounts are placed too high, interfering with the Specialized shoulder strap we consider a necessity in the backcountry.—H.B.

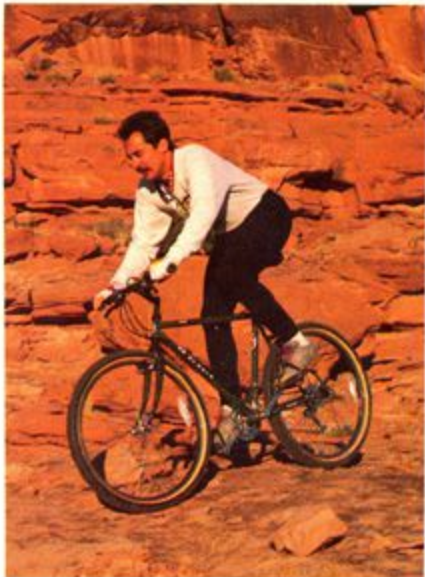
## CB SPORTS MOAB

If CB Sports lacks the name recognition of more established brands, it's not for lack of a top-notch product. The flagship of the company's six-bike line, the \$1,120 Moab, is an aggressive, full-on performance bike with looks and features worthy of its four-figure price.

We chose to test this bike because of its name—we couldn't resist riding a Moab in Moab. We envisioned a flattering paint scheme based on sandstone reds and tans, but what we got was a wild splatter of pink, yellow, and green over gloss black. While not unattractive, it said L.A. to us, not Moab.

The Tange Prestige frame sports contemporary 71/73-degree head and seat angles and a fork with only 1<sup>1</sup>/<sub>8</sub> inch of rake. This provides the generous trail needed for high-speed control without the slow-speed handling problems common with a shallower head geometry. In back, short 16.5-inch chainstays pull the wheel far enough under the rider for almost error-proof traction while climbing out of the saddle.

The fit is also exemplary. The 22.5-



inch top tube (on our 19-inch test bike) combined with a 11.5-cm, medium-rise chrome-moly stem to put the rider in a powerful yet well-balanced position for the best mix of climbing, descending, and cornering control. We rode primarily on snow-covered roads and trails and

were impressed with the traction and control of the Tioga Farmer John tires.

The Moab's Taiwanese frame is immaculately fillet-brazed rather than TIG-welded and features the nicest torch work we've seen from the R.o.C. Its full complement of braze-ons includes slotted cable stops for ease of maintenance and pump pegs behind the seat tube.

As befitting the company's top model, the Moab is equipped with the full Shimano Deore XT-II group, including two-finger brake levers, an XT chrome-moly seatpost with Avocet gel saddle, and cantilever brakes front and rear.

CB Sports's published specs call for a 28/38/48T Biopace crankset with 13-30T Hyperglide freewheel, but our bike came with preferable 26/36/46T rings and a 12-28T rear cluster. The 28-tooth large cog permits switching to a short-cage rear derailleur for reduced weight, better rock clearance, and less chain grab by virtue of its greater chain tension. The 28T rear is also low enough (once you discard the 26T Biopace for a 24T round granny), while the 46x12T (100-inch) high gear surpasses the 96 inches provided by 48x13T.—J.K.

## UNIVEGA ALPINA PRO

Like a fine red wine, the Alpina Pro has improved during its four-year existence. For '89, the Pro sports 16.5-inch chainstays, a 42-inch wheelbase, and 70.5-degree head/73.5-degree seat angles. Componentry is Shimano Deore-II with cantilever brakes.

At 30.5 pounds, the Pro is typical of bikes in its \$700 price range. However, because the three main tubes are Tange Prestige, the heftiness was a surprise.

The Pro also boasts this year's craze: a straight-blade unicrown fork raked at the crown. But despite the claimed advantages, performance is strongly influenced by tubing, and we were unable to verify the superiority of this design.

Detailing on the Pro is well done, with



large, slotted cable stops, a solid rear brake bridge, toe clips and straps, and bosses for two water bottle cages located low enough to permit use of a shoulder strap. Tires are Ritchey Force 2.0s mounted on Araya RM-20 rims. The drivetrain has that ubiquitous Shimano combination of 12-28T Hyperglide cassette freehub with 28/38/48T Biopace chainrings—gearing that's too high for most riders.

The Pro's handling is agile. The front end responds instantly to rider input. It's a snap to loft over obstacles because of the slightly long front/center dimension relative to the chainstays. Cruising down the street doing wheelies almost seems natural for this bike despite its authentic off-road credentials. The stem extension and rise on our 20-inch test model felt just right.

Hard out-of-saddle climbing on the

Pro was no problem. The rear end stuck and the front went where pointed. Technical sections were threaded neatly, and the bike was easily controlled on steep, gnarly downhills. As on most '89 bikes, however, the cantilever brakes left something to be desired.

The Alpina Pro is an excellent example of how much performance can be packed into a moderately priced bike. —H.B.

## YOKOTA YOSEMITE

Yokota is a familiar name in Japan, where it's one of the largest bike manufacturers. And Yokota-built bikes have been sold with other logos in the U.S. for several years. But now the company has jumped into the American market under its own name. After riding the Yosemite model, it's obvious that Yokota has a wealth of experience on which to draw.

The Yosemite's geometry is typical of '89 bikes with its 71-degree head angle, 73-degree seat, 16<sup>7</sup>/<sub>8</sub>-inch chainstays, and 42.25-inch wheelbase. The componentry is Shimano's Mountain LX group with Araya RM-20 black rims, stainless steel spokes, and Farmer John tires. The fork blades are oversized, dropouts are vertical, and the brakes are cantilevers front and rear. The saddle is an Avocet gel.

Yokota's solid design is evidenced by large, slotted cable stops and a strong rear brake bridge. Chainstay tire clearance is good. Braze-ons for two water bottle cages are placed with room to spare for a shoulder strap. And the 11-



degree-bend handlebar was a welcome sight given the industry's current move to straighter bars.

Gripes were minimal. The gearing is—you guessed it—too high, with 28/38/48T chainrings and a 12-28T, 7-speed free-wheel. Also, the front brake cable stop is hidden inside the stem, which is a minor hassle. Most mechanics prefer visible

cable stops. Finally, the Yosemite weighs a hefty 31 pounds, but given a suggested retail price of \$444, it remains an impressive package.

The Yosemite rode as expected: clean, tight, and quick. The Shimano Exage Mountain LX derailleurs were particularly impressive, and if they hold up to the abuse inherent to

the sport, Yosemite owners should be happy. However, the Mountain LX cantilever brakes were surprisingly ineffective, although the same was true of all cantilevers spec'd on our test bikes, except for the Deore XT-IIs. Riders with big feet may find their heels hitting the Yosemite's rear brakes, a potential problem with many of the '89 bikes.—H.B.

## SCHWINN ALUMINUM PRO

It took a while to become reality, but at last Schwinn's entry into the aluminum mountain bike sweepstakes is here. Fans of aluminum bikes will be particularly impressed by a recent invisible development: The Pro's aerospace-grade aluminum tubing is double-butted for reduced weight. This alone will make people take notice of this gleaming blue newcomer.

The Pro's frame has the same steep geometry as Schwinn's KOM steel race bike: a 71-degree head, 17<sup>1</sup>/<sub>8</sub>-inch fork rake, and 74-degree seat. What sets this bike apart, though, is a long 43-inch wheelbase and stretched front/center (reminiscent of the old Paramount), combined with 17-inch chainstays. The result is a bike that climbs like a demon but doesn't intimidate on descents.

Basically, the Schwinn is a slightly toned-down version of today's race bikes—a "gentleman's" race bike, if you will—something you can jam on at a more relaxed pace. The extra length in



front gives the non-racer some breathing room, but when you put it to the max on a gnarly, super-technical section, you won't get the cleanest possible response.

There's just a hint of sluggishness in the front end, but considering how infrequently most riders push their limits, it makes sense to have a bike that cuts you



some slack. The Pro lets you blaze downhill without being scared to death on unexpected dropoffs by your closeness to the front wheel.

The Pro's frame is beautifully welded of oversized, double-butted, 5086 aluminum. The welds are large, obvious and strong-looking, with minimal finish work. The Pro is only available painted, but hopefully Schwinn will offer a maintenance-free unpainted version. The paint on ours scratched easily.

Clearance for its Project KOM tires is surprisingly ample, considering the large-diameter chainstay tubing. (We fitted the slick tires in the photo for slick-rock riding.) Multiple bends create the room, a solution objectionable to some because they say it reduces tubing strength and aesthetics. The tubing is impressively oversized, however, and seems able to withstand whatever a rider dishes out.

Frame detailing on our pre-production sample was unimpressive, with small and flimsy cable stops and a loosely riveted cable guide under the bottom bracket. Production models should be better.

The seatstays rise to a wishbone yoke designed to maximize rigidity without increasing weight. The design makes the Pro look heavy and strong, but it's actu-

ally light and strong, weighing just 28.5 pounds. With other components, a sub-27-pound bike would be possible.

We liked the performance of the Pro's mixed-bag componentry, including the SunTour drivetrain, SR crankset, and Dia-Compe brakes. The XC-9000 Ac-

cuShift rear functioned flawlessly, but considering this bike's \$1,100 price tag, we would've liked more than 18 speeds. Upgrading is easy enough as parts wear out, however, so in the long run the Schwinn Aluminum Pro appears to be an excellent buy.—H.B. ■

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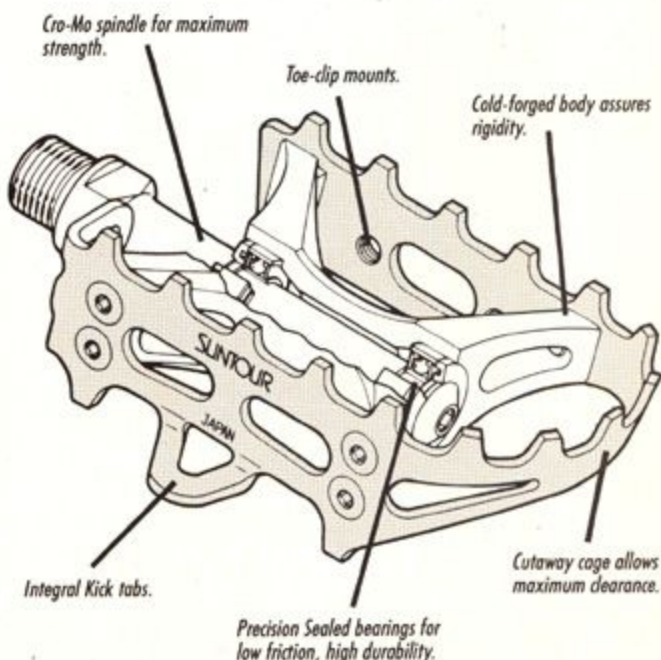
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