WHO NEEDS DERAILERS?

Up and down the shop floor, do bikes have more gears than we require?

by Sheldon Brown

Conventional wisdom states that for cycle touring you "need" a derailer gear system with 3 chainrings in front, and a low gear gain ratio of about 2.0* (27 inches/2.2 meters). Some people will tell you that even this is insufficient. I would submit that this is so only if you believe that pushing your bike up steep hills is an admission of defeat, and a tragic failure. The fact is that hundreds of thousands of bicycle tourists have happily toured millions of miles on bikes that had no gears at all, or bikes with only a few gears. Indeed, triple chainring setups only became available on mass-produced bikes in the last quarter of the 20th century, when bicycle touring was already a century old!

GREG SIPLE - COURTESY OF HOSTELING INTERNATIONAL

The 3-speed was the standard bike for thousands of American Youth Hostel tour riders from the 1930s through the 1970s.

Now, the modern touring bike with 27 gears is a wonderful device, but it is not necessary nor is it for everyone. The fact is that a much wider range of bikes are suitable for touring.

There are basically three essential characteristics needed for a bike to be used for touring:

1. It must have a comfortable riding position; 2. It must be sturdy; and 3. It must have the capacity to carry the needed baggage.

A wide variety of bikes meet these characteristics. If you look at touring magazines from the middle of the last century, you'll see photos of happy cycle tourists on balloon-tire bikes similar to modern "beach cruisers," or English 3-speeds, with big wire baskets on the handlebars piled with sleeping bags and frypans.

On the other hand, many popular high-end racing-type bikes fail on all 3 of these points!

The presumption is that speed is not necessarily a priority. I'm not saying everybody should dump their derailer bikes. I'm just saying that the lack of such a bike shouldn't necessesarily deter a would-be touring cyclist. In addition, for the experienced touring cyclist looking for a change of pace, a simpler bike might just be more fun!

Singlespeeds

The simplest type of bike is the singlespeed. Most will have a freewheel, permitting the rider to coast. Some will have a fixed gear, making coasting impossible. There seeems to be a growing movement toward singlespeed bikes, largely as a reaction to the perceived overcomplication of many of today's high-tech wonders. I think this is a good thing.

While singlespeeds lack the hill-climbing ability of multi-speed bikes, they can be a lot of fun, and suitable for touring in flattish areas, such as much of the Midwest, and northern Europe.

A major benefit of singlespeeds is their greater reliability and durability, compared to derailer-equipped bikes. The most common serious mechanical problem that afflicts touring cyclists is rear-wheel spoke failure. Singlespeed rear wheels are much stronger than derailer-type rear wheels, partly due to the wider spacing of the spoke flanges and partly due to more even tensioned spokes. Derailer rear wheels have the right side spokes super tight, and the left spokes nearly slack. This is to create the "dish" that makes room for the multiple-sprocket cluster. The result is that a 32-spoke derailer type wheel has basically only 18 spokes doing all the work, and those spokes are at an unfavorable angle due to the right flange of the hub being so close to the centerline of the rim.

Singlespeed rear wheels don't have either of these problems. All of the spokes are at full tension, and the wider spacing makes singlespeed rear wheels almost as trouble-free as front wheels.

I don't mean to suggest that multispeed bikes with super-low gears are not a good thing for many, if not most touring cyclists, but if you're in good athletic condition, interested in an extra challenge, and have the urge to try something different, singlespeeds can provide an intriguing alternative.

Internal Gear Hubs

Fifty years ago the most common "touring" bike was an English 3-speed with the gears built into the hub of the rear wheel. This type of gearing has much to recommend it. It is unaffected by weather, mud and sand, being totally enclosed and can be shifted even when you're stopped. Such gear hubs are much more reliable than derailer systems, both in terms of the gear functionality and, as with singlespeeds, in terms of wheel strength.

Shimano and SRAM/Sachs both make excellent 7-speed internal gear hubs with a good range of gears. The Shimano Nexus has a range similar to a 12-30 tooth rear derailer system, while the SRAM Spectro has a range equivalent to 12-36 cluster. The German-made Rohloff Speedhub is a magnificent (though pricey) 14 speed unit that has as much gear range as anybody could possibly need, equivalent to an 11-60 cassette! These range values just show the overall range. By choosing different chainring or hub sprocket sizes, you can move the gear ranges up or down pretty much at will.

My online gear calculator can help you compare the gear options with your present bike: http://sheldonbrown.com/gears.

Internal gear systems are a bit of a gamble for touring use, in the same way as sealed cartrigdge bearings are: They are generally much more reliable than derailer systems, but, if you do have a problem with them, it can be difficult to get them repaired in the field or in a small-town bike shop.

Internal gears are slightly less efficient mechanically than a good derailer system. For a touring cyclist, though, the difference shouldn't matter unless you're trying to keep pace with a rider who is perfectly matched in strength and conditioning to yourself.

For more info on internal gear hubs:
Rohloff - www.rohloffusa.com/frame.htm
Shimano - bike.shimano.com/comfort/Nexus/index.asp
SRAM - www.sram.com/product/pavement/t3/igh_freewheel.asp

*Gain ratio is a new system for designating gearing. It is explained in detail at http://sheldonbrown.com/gain.html AC

Sheldon Brown addresses many bicycle issues at www.sheldonbrown.com/harris