

# Glossary of Cycling Terms

## Tires and Rims

This is some of the vocabulary that I use in my hands-on Flat-Tire Clinics sponsored each year in the early season by the RBC.

A lot of what I know about the nomenclature of cycling, I learned from Sheldon Brown (1944-2008) and Jobst Brandt, and there is a lot of technical information at this Internet site:

<http://sheldonbrown.com/brandt/index.html>

In preparing the parent article on flat tires, which appeared in the Club newsletter, and in preparing this Glossary, I was helped by Andy Stewart who nevertheless gets none of the blame for my bloopers.

- 26-inch** -- the popular name for MTB tires. Actually, the name does not describe any specific tire size. See "ISO."
- 29er** -- a 700C tire that is wide, with a knobby tread, for mountain bikes set up for that tire size.
- 700C** -- the popular name for road tires. When you go in to a bike store and ask for a new tire, the bike-store guy or gal will likely ask "road or mountain?" If you say "road," he or she will reach for the 700C tires. At one time in the history of cycling, there were 700A, 700B and 700C tires. "C" does not stand for "clincher," q.v., in spite of what the younger bike-store sales staff often seems to think. Historically, all of the 700 tires had the same outside diameter, 700 mm, though the width and the bead seat diameter were different. A parallel example, 650A tires are often used on three-speed city bikes; 650B tires are often used on French tandems, touring bikes and randonneuring bikes; and 650C tires are often used on triathlon and time-trial bikes. These choices are heavy on fashion and clannishness and light on logic.
- air** -- See "CO2."
- bar** -- a unit of pressure almost equal to barometric pressure at sea level and equivalent to about 14.5 pounds per square inch (psi). Thus, a tire inflated to 10 bar, very high pressure for a bike tire, would have about 145 pounds per square inch of air pressure inside. Typically, bike tires are inflated to between 3 and 8 bar, depending on the width of the tire. See "optimum pressure."
- bead** -- the wires or fiber elements that go around the tire in the area where the tire contacts the rim. Modern rims and tires have a hook bead: The tire and rim go together and can't be interchanged with tubular tires and rims or with clincher tires and rims. Almost all tires in use today have either metal wire beads or fiber beads made of Kevlar™ or similar material. No matter the composition of the bead, they are all called "wired-on" tires. Kevlar-beaded tires are capable of being folded, like a tubular, and easily carried along as a spare. Steel-beaded tires can be rolled up into a small package, but they cannot be folded without damaging the steel bead.

**bead seat diameter, BSD** -- for hook-bead rims and tires (the modern standard), the diameter of the rim and the tire at the circle where the rim and the tire make positive contact. If the two “hooks” are not concentric, within a margin of tolerance, the tire will blow off the rim when inflated to maximum pressure. Conversely, when the tire is properly seated and is inflated to correct pressure, the hook on the tire engages the hook on the rim for positive contact. This is a system that Steve Jobs, if he had thought about bike tires, would have called “insanely great.”

**belt** -- a protective layer, often intended to reduce punctures, that lies between the tread and the casing of a tire. The penalty: Most belts increase weight and rolling resistance. Kevlar and its derivatives are popular materials for belts. Kevlar is used in belts and in beads, so some attention must be mustered to tell for sure which you are buying.

**brake caliper** -- the part of a mechanical braking system with arms that pivot to apply the brake pads with pressure to the rim or disk to convert kinetic energy to heat. Cantilever brakes are mounted on two pivots, and caliper brakes are mounted on one. Typically the caliper or other brake mechanism must be opened to remove the wheel from the frame.

**brake, disk** -- a type of caliper brake adapted from motorcycles that has a metal disk attached to the hub. Disk brakes have a number of advantages, one being that there is no wear on the rim when braking. Since I have never used disk brakes, you are on your own to find out how to remove the wheel for flat repair. Said brakes are more often found on mountain bikes and bikes used in mud-and-snow environments where wet and gritty rims cause problems with conventional rim brakes. Confusing: A rim brake is a type of disk brake with the rim functioning as the disk.

**brake, drum** -- infrequently seen brake, except on tandems, with some of the same advantages discussed under “disk brake.” Simple, beach-cruiser bikes often have drum brakes incorporated into the rear hub.

**brake lever** -- the part of a mechanical braking system that, when moved by the rider’s hand, activates the cable or hydraulics that in turn cause the caliper to contact the rim or disk.

**carbon black** -- a material added to tread to decrease wear and increase wet-condition traction. Almost without exception, tires without black tread are inferior. But...they look cool!

**casing** -- the cotton or nylon cords that form the structure of the tire. When the tread is worn down to dangerous levels, the cords of the casing can be seen in the most-worn sections. When the cords are visible through the tread, or when the casing is sufficiently damaged by a puncture, the tire must be booted with a tire boot (q.v.) or replaced.

**cassette** -- a cog set designed to be mounted on a free-hub and held in place with a lock ring.

**cog** -- a single tooth on a cog wheel. See “Sprocket wheel.”

**cog set** -- multiple cog wheels grouped together for mounting on a hub, usually with a ratcheting device such as a freewheel or free-hub.

**cog wheel** -- See “Sprocket wheel.”

**chuck** -- pump head. The pump head attaches the pump to the valve stem. This might press on, or thread on, and it might have a locking feature.

**Chuck Smythe** -- my high-school coach.

- clincher** -- a type of tire that preceded historically the modern standard, hook-bead, wired-on tire. This type of tire and rim combination is no longer manufactured, as far as I know. The term is commonly and incorrectly used to refer to any modern tire that is not a tubular, i.e., any wired-on tire-and-rim combination. In spite of what the teen-age mechanic at the bicycle store told you, the "C" in the tire designations "700C" and "650C" does not mean "clincher." If you want to be correct in your nomenclature, say "wired-on tire" instead of "clincher." (There is also a 650B, which is exactly like the 650C, except for the size. The letters in conjunction with the numbers indicate the size, not the type.)
- CO2** -- carbon dioxide, used in inflators to pressurize tires. Air molecules are larger than CO2 molecules, and they leak out of inner tubes slower.
- combination pump** -- these have some of the characteristics of a floor pump (hose, gauge), but they are small enough to fit under a water-bottle cage on a special clip mount or in a large saddle bag. Stylishly inelegant -- not appealing to classicists -- but eminently practical, especially for cyclists without a lot of hand and arm strength, because the pump is designed to be held against the road and pressed down upon with body weight.
- cord** -- the silk, nylon or cotton threads that en masse make up the casing of a tire.
- cross section** -- the width of the tire when mounted on a rim and inflated, typically 22-32 mm for road bikes and 47-57 mm for mountain bikes. Narrow-cross-section tires require higher pressure for the same load.
- derailer (derailleur)** -- mechanism, usually working on a parallelogram, that moves the chain side to side to change gears. Sometimes called a "jumper," derailleurs were neither invented by nor named by the French, and proper Americans spell the term "derailer."
- derailer hanger or "hanger"** -- tab near the rear hub into which is treaded the rear derailer. Care should be taken when laying the bicycle down for service not to bend the hanger. They are hard to bend, but it does happen. Some hangers, such as on some modern mountain bikes, are designed to break off rather than bend; the gonzo mountain biker stops and installs his spare hanger if the original breaks. In the context of this article, hanger means derailer hanger, although it has other meanings elsewhere in cycling.
- dropouts** -- the notches in the front and rear forks of a frame into which the hub axles fit held in place by nuts or skewers.
- fat bike** -- a special-purpose bike fitted with tires up to four inches wide, made for riding in deep sand or extremely rough trails. The Surly Pugsley is an example. The wide tires can be run at very low pressures, as low as 5 psi. Tire pressure and cross section are inter-related values.
- floor pump** -- a large pump with a hose and usually with a pressure gauge that makes inflating a tire a quick and easy task. A true floor pump is too big to carry on a bike.
- folding tire** -- these are light-weight tires that have fiber beads, often made of Kevlar™ or similar material. They can be folded compactly and that characteristic makes them popular for spare. Steel-bead tires cannot be folded, but they can be rolled up for easier carrying, and if you remove a steel-bead tire and replace it with your folder, you will want to know how to roll up the old tire to carry along. A really serious tire failure, one that damages the casing to the extent that a tire boot is not enough, requires the cyclist to replace the whole tire, so cyclists far from home or SAG support will want to carry a spare tire, folding or not.

**frame pump or frame-fit pump** -- a large pump that is sized to fit inside one of the spaces of a frame and to be held there by internal spring compression. It's a good idea to also use one or two velcro straps, as these pumps have been known to fall off on rough roads and could cause a crash in that situation. (Ask me how I know this.) Catalog Number 114 from Excel Sports Boulder page 70 shows nine items listed as frame pumps. Seven of them are mini pumps (q.v.), and the other two are pressure gauges. Thus we see evidence of yet another useful cycling term being corrupted beyond recognition.

**glueless patch** -- a thin patch that adheres to a tube without needing glue. These look like small pieces of tough cellophane tape. They will sometimes provide a quick, temporary patch for a very small puncture.

**fork ends** -- the last bits of the forks where the dropouts are located

**frame** -- the large structure of the bicycle to which the wheels and other components are attached. These were historically steel and are now also made of carbon fiber, aluminum and titanium. (Rival Cycles is currently working on a new miracle metal known variously as Arborium and Unobtanium, which is actually lighter than air. Without the weight of the rider, the bicycle actually levitates. So far, all the test samples have failed catastrophically pitching the rider into the brambles.)

**freewheel** -- a cog set mounted on a ratcheting mechanism; strictly, the mechanism itself, which threads onto a hub designed for this. Freewheels, while not exactly obsolete, are rare since the introduction of the free-hub-and-cassette system several decades ago.

**free-hub** -- the ratcheting mechanism in a modern hub, designed to accept cassette-type cog sets.

**hook-bead rim** -- a modern type of rim that has a hooked feature near its outer diameter that is intended to mate with the bead of a hook-bead tire. Historically, these largely supplanted the earlier clincher rims and tires and most tubular rims and tires as well.

**hub** -- the combination of shell, axle and bearings that anchor the spokes at the center of the wheel.

**hydroplaning** -- a tire lifts off the road on a film of water at high speed, thus losing contact with the road surface. This never occurs in bicycling, because the canoe-shaped contact patch plows through water on the road. Tread pattern is needed on car tires, because the speeds are higher and the contact patch of a car tire is square. They hydroplane anyway.) Steel-deck bridges, metal plates, paint stripes, and railway tracks, when wet, are like ice, and they should be avoided by the cyclist. Tread pattern does not help here.

**ice bike** -- a subset of MTB practice that has the cyclist riding in snow and on frozen lakes. These cyclists often use special, very wide rims fitted with very wide tires at very low inflation pressures such as 5 psi. See: <http://www.icebike.com/>

**inflation device** -- a tool that will put air into a pneumatic tire/tube combination. This could be a floor pump, a power compressor, a CO2 inflator, a frame pump, a mini pump or some such. Obviously the floor pump and the power compressor are not going to be along on a bike ride, so most club cyclists prefer the frame pump, because it enables the cyclist to quickly get to the desired pressure, does not weigh much, and unlike the CO2 inflator, it can be used for multiple flats. If the cause of the initial flat cannot be found, multiple flats can easily exhaust the cyclist's supply of CO2 cartridges.

- inflator** -- a small device filled with CO2 that can inflate a tire in about one second. CO2, because of its smaller molecule, leaks out of inner tubes faster than air. These are usually one-use cartridges, good for inflating one tire one time.
- inner tube (tube)** -- the bladder that holds the air, made of natural or synthetic rubber.
- ISO** -- the international standards group that sets the terms for tire sizes in addition to just about everything else in the Modern World like the sensitivity of photo film and the specification for nuts and bolts. In the ISO system of tire labeling, the width in millimeters precedes the bead seat diameter. Neither number tells you what the diameter of the tire is! The most common ISO designations are, in decreasing order of tire diameter, notwithstanding popularity: 32-630 (old English 27x1/4 inch); 23-622 (modern, high-performance, road-racing wired on tires); 50-559 (MTB).
- internally-geared hub** -- hubs that use internal planetary gears instead of derailleurs for shifting. They require a different protocol, not covered by these instructions, for removing and reinstalling the wheel in the frame. Sturmey-Archer three-speed hubs are the classic, though 15-speed hubs are now available.
- jockey pulley** -- the derailleur pulley that is closest to the cog wheels. The chain often jumps off this when the wheel is being reinstalled after a flat fix, and it should be checked before putting stress on the chain (riding the bike).
- Kevlar™** -- a strong, proprietary fiber used in the beads and belts of some bicycle tires and in bulletproof vests. Kevlar has become a generic term for all such fibers.
- knobby** -- an off-road-specific tire tread pattern with bumps and voids on the surface intended to grip in sand, mud and snow. Knobby tires only provide increased traction compared to slicks on surfaces that are softer than the tire. On pavement, knobbies can walk or squirm to an extent that they are not reliable in high speed maneuvers such as fast, downhill turns. They provide no additional traction on slick surfaces such as glare ice and metal plates.
- lawyer lips** -- pejorative term for an array of types of wheel-retention devices added to the dropouts of the front fork to counter the tendency of novices to use the skewers of hollow-axle hubs incorrectly. These effectively also counter the intent of the hollow-axle system. Since lawyer lips require the skewer to be readjusted each time it is used, it could be argued that, for the majority of cyclists, they make the mechanism LESS safe, tension on the skewer being critical to its proper function. The advent of lawyer lips also caused a proliferation of skewers of inferior design. Not all skewers are created equal. The Short Story: If your skewers have nylon bearing parts, you should throw them away.
- mini pump** -- similar to a frame pump but small enough to fit on a clip under the water bottle cage or in a medium-sized saddle bag or even in a jersey pocket. The penalty for using a mini pump is that you will need to pump a lot longer to get your tire up to rideable pressure. If you fall onto your back with a mini pump in your jersey pocket, that might not be a good thing to have happen.
- MTB -- mountain bike.** Mountain bike tires are typically 50-559 in size with knobby tread patterns for riding on surfaces that are softer than the tire such as sand, mud and snow. In an emergency, one might be able to interchange “road” and “mountain” tubes, if they are narrow enough, but not tires.

**nutted axle or solid axle** -- a hub axle that is not hollow with a skewer but solid and that requires a wrench to tighten and release. These usually appear on heavier, less-expensive bikes. An exemption is the traditional use of nutted axles on track and fixed-gear bikes. Cyclists who use nutted axles need a wrench or a follow car or lots of luck.

**patch kit** -- a small kit -- Rema Tip Top is the classic -- that includes sandpaper, patches and glue. Cyclists should practice patching tubes, not because of concern about their bank accounts and not because of concern about the environment, although those are good reasons, but because the cyclist might need to do this on the road, when and if the cyclist runs out of spare tubes. It happens! Useful additions to your patch kit are a disposable razor for shaving off raised ridges on the tube, a pen to mark the hole and two spring-type clothespins to hold the tube in a flat position for patching.

**pinch flat (snake-bite)** -- a puncture caused by hitting an obstacle such as a rock or railroad tracks or the edge of a pothole when the tire is under-inflated vis-a-vis the load and the tire width. The tube is pinched between the rim and the obstacle causing two, fang-like punctures. Pinch flats are invited by the cyclist riding heavy over obstacles rather than anticipating them.

**pressure** -- the amount of air inside a tire and tube pushing back against the pressure of the atmosphere. If the pressure inside the tire were the same as the atmospheric pressure, the tire would be flat.

**pressure, optimum** -- the minimum tire pressure at which you can be reasonably sure that you won't experience pinch flats on the road surface you are riding with the combined load of bike, rider and gear. Pressures above optimum are counterproductive. As the pressure approaches infinity, the tire begins to resemble a steel hoop. Pneumatic tires are intended to smooth the ride and increase traction. A steel hoop does neither.

**pressure, maximum** -- tires are often labeled with a minimum and maximum pressure. Or they may be labeled with something like, "Inflate to 100 psi." These numbers are established for the convenience of the manufacturer, with liability uppermost in mind, and have little to do with the pressure that you should actually inflate the tires to. For an illuminating essay on this subject, and a helpful chart, see:  
[www.bikequarterly.com/images/TireDrop.pdf](http://www.bikequarterly.com/images/TireDrop.pdf)

**pressure gauge** -- a device which indicates the pressure inside a tire and tube. Some floor pumps and the occasional take-along pump, such as the Topeak Morph series pumps, have built-in pressure gauges. Pressure gauges are also available as a stand-alone tool. Pressure gauges are helpful to establish precise pressures, and they are also helpful to educate your thumb, so that you can make quick approximations of the tire pressure without a gauge. On the road, you will be confident that your thumb tells you that you are up to riding pressure, or not.

**Presta** -- the modern standard bicycling valve for inner tubes.

**Presto™** -- company that makes pressure cookers.

**pesto** -- make this with basil and garlic; serve with pasta.

**puncture** -- a British-sounding word for "flat tyre" which use of the term nevertheless does not take into account that a punctured tube is only one reason that a tyre may be flat.

- psi** -- pounds per square inch; a measure of how much pressure is inside a tire. Fat tires like the ones typically used on mountain bikes might be inflated to pressures around 25-50 psi. Skinny tires like the ones typically used on road bikes might be inflated to pressures around 60-120 psi. Except for the bragging rights, there is no reason for extremely high pressures. There is a right pressure for the circumstances, and the circumstances include the load, the tire and the riding surface. The right pressure is usually lower than most people think. Experiment to find the best solution for you. The pressure rating on the sidewall of the tire is only a rough guide. See “maximum pressure.”
- quick-release skewer** -- in hubs, a type of skewer that, when properly adjusted and closed, holds the lock nuts of the hub firmly against the dropouts of the frame. A type of skewer that does not require tools to open. In the modern way, the adjective “quick-release” has replaced the noun “skewer,” in the same spirit that my neighbor informed me, around the middle of April, “I’m applying my crab grass.”
- rear sprockets** -- derailleur-gear bicycles have multiple sprocket wheels arrayed on the back hub, and such arrays are called cog sets or cassettes. If the ratcheting mechanism is inside the cog set and not inside the hub, they are called freewheel cog sets.
- rim** -- the usually aluminum alloy channel that the tire fits into. The rim is held in position at a constant radius from the hub by the tension of multiple spokes. (I have encountered adult cyclists and motorists who do not know the difference between a wheel, a rim and a tire. Sorry.)
- rim brake** -- the type of brake most often used on racing and touring bikes. Brake calipers apply pressure to the rim to convert kinetic energy to heat which is dissipated into the atmosphere.
- rim tape** -- usually white cotton tape with adhesive backing that protects the tube from sharp features of the rim bed such as the edges of spoke holes. For many decades, Velox Fond de Jante™ has been the standard brand. The rim tape must be in good condition and wide enough to cover the spoke holes. Punctures and worn sections on the side of the tube that faces the hub are often caused by worn or improperly applied rim tape. Sometimes the person assembling the wheel uses a non-adhesive rim strip instead of tape, primarily to save time, but rim strips are not as effective as tape. Velox tape is white so that you can clearly see, before inflating the tube, if the tube is caught between the rim and the tire.
- rolling resistance** -- the energy lost because of the tendency of a tire to be pushed back by the surface of the road. By flexing over bumps, even tiny ones, the tire is absorbing energy. On a flat road at the speeds most day tourists travel (~15 mph), rolling resistance is the largest resistance to forward motion. Tires with lower rolling resistance will have smooth tread and, up to a limit of diminishing return, they will have higher volume, lower pressure, thinner casings and thinner tread. In professional racing, because of the higher speeds (25-40 mph in flat terrain) air resistance trumps rolling resistance, which is why your Tour de France hero uses narrow tires and then inflates them to a high pressure to avoid pinch flats. Wider tires of the same construction are also heavier, which require fractionally more energy for climbing and acceleration. Professional cyclists are also impervious to discomfort.
- sew-up** -- synonym for tubular tire, q.v.

- Schrader** -- a type of inner-tube valve used on some mountain and touring bikes that is also used on many motor vehicles. Thus, this type of valve enables the cyclist to use pressure hoses at service stations. Since Schrader valves are wider than Presta valves (q.v.), they are not normally compatible with the narrow rims used on road-racing bicycles. Touring Tip: Use wide rims drilled for Schrader valves and insert Presta valves into them with a spacer. When you are stranded in a small town in the Midwest, you will be able to use either type of tube. Make sure that your pump head fits both.
- sidewall** -- the section of the tire between the bead and the tread, it does not touch the rim, and unless the tire is flat, it does not touch the road. A substantial cut in the sidewall will require a tire boot or a replacement tire.
- Slime™** -- a viscous green liquid that is injected into tubes to fill minor air holes. A marketing inspiration whose time has come and mercifully gone.
- skewer** -- a nut-and-bolt clamping system that, when properly adjusted and tensioned, holds the locknuts of a hollow-axle hub tight against the dropouts of the frame. See “quick-release skewer.” Some skewers require an allen wrench or a special wench, are intended to deter theft and are not, strictly speaking, quick-release. For that type, if you don’t have the wrench, or a big set of vice-grips, you can’t get the wheel out of the frame. Even vice-grips probably won’t work, otherwise thieves would use them.
- smooth tread (slicks)** -- a type of tire that has no tread pattern and is therefore “bald.” All tires have tread. Some tires have grooves, knobs and other tread features intended to provide traction on surfaces that are softer than the tire. Smooth tread provides the best traction on hard surfaces, such as paved roads even in heavy rain. The term “slicks” is therefore misleading.
- spare** -- any tire, tube, cable, bearing, et cetera, that’s carried on the bike for putting into service when the original part fails. Flat repairs can be done very quickly, if the cyclist is carrying a spare tire, because the flattened tire does not need to be inspected to find the cause of the flat. See “rim tape.”
- spare tube** -- a tube the cyclist carries, usually in a small seat bag along with tools, but protected from being punctured inside the bag by sharp tools or by other spare parts such as shift cables that may be inside the bag, and that can be substituted for the punctured tube when a puncture or other tube failure occurs on the road, thus saving the cyclist the trouble of patching the punctured tube at the time. In the case of a valve failure of the type that has the valve stem separate from the tube, the tube cannot be repaired with a patch. See “patch kit.”
- spoke** -- a usually stainless-steel wire that, in tension and in concert with other spokes, holds the rim at a constant radius from the hub. Spokes can be damaged in the flat-tire repair sequence, if when removing or replacing the wheel, the chain is allowed to jam between the large rear sprocket wheel and the spokes.
- sprocket wheel** -- a ring or wheel with teeth which engage the chain. Most cyclists today, perhaps without regard to the origins of the terms, call the front sprocket wheels “chainrings” or “rings” and the rear sprocket wheels “cogs.” However, see “cog.”
- squirm** -- the tendency of a tire with pronounced tread pattern to deform into the voids while rolling. Tire squirm increases rolling resistance and can decrease traction in some scenarios. One symptom of tire squirm is the hum that you hear when riding a knobby tire on smooth pavement.

**tire boot** -- a small piece of tough twill fabric or of an old tire, Tyvek™ envelope, PowerBar™ wrapper or similar, thin, flexible, strong material that can be placed between the tube and the tire casing. Tire boots can sometimes save the day in the case of a tire with a medium-sized hole in the casing such that the tube would extrude through the hole without the boot. Rich cyclists use dollar bills for tire boots, which have all the right characteristics. Super-Rich™ cyclists use fifty-dollar bills, but they have the same booting characteristics as dollar bills. Experience will guide you in deciding whether or not a hole is large enough to require a boot but small enough to respond to this fix. If the gash is big enough, it can't be booted.

**tire levers, tire irons** -- small levers, usually sold in sets of three, made of high-density plastic, used to pry recalcitrant tires off rims. This chore is made worse by some rims being too large for the tires that you are trying to mount, or the tires too small, or both. That is, a tire and rim both marked 622 might not be especially well-suited to one another. Levers are still available in steel or steel-core, hence the term "irons." It's a good idea to have three tire levers, because one can be lost, or one can be easily broken and sometimes three are actually needed at once. All other factors equal, get the brightly-colored ones. If you tend to break tire levers, you may be using bad technique, or your tires may fit too tightly on your rims, or you may have cheap levers. Soma™ makes a plastic lever that has a steel core, and with effort, these too can be broken. Pure steel levers are usually thin, and they tend to puncture tubes and even bend aluminum rims, if not used with care. And being steel, they tend to inspire confidence when none is warranted.

**tpi** -- threads per inch, the number of threads across one inch of casing material. Supple, high-performance tires usually have a high thread count, and inexpensive, utility tires usually have a low thread count.

**traction** -- the ability of a rubber tire to stick to or avoid slipping against the surface of the road or trail being ridden on. See "smooth tread."

**tread** -- the part of the tire that makes contact with the road. Tires with smooth tread, "slicks," are designed to ride on paved surfaces. Tires with knobby tread, "knobbies," are designed to ride on surfaces such as mud and snow that are softer than the tire. Tires with other tread patterns -- neither truly slick nor truly knobby -- are designed to look distinct from other brands of tire, and their tread patterns have no practical purpose other than perhaps to increase weight and to increase the likelihood of a puncture.

**tread pattern** -- surface features of the tread such as sipes, ridges, grooves and knobs.

**tubular tire** -- aka "sew-up" is a type of tire that has the tube sewn into the tire and that is attached to the rim with glue. Track cyclists use hard glue to decrease rolling resistance, and road cyclists use a more plastic glue to facilitate quick tire changes when on the road. With the advent of high-performance wired-on tires about thirty years ago, tubulars are seldom used now except in special applications such as for professional racing and for timed record attempts. Generally, the least-expensive tubular is more expensive than the most-expensive wired-on tire, and they are difficult to repair. Tubulars cannot be used as spares on hooked-bead rims.

**valve cap** -- usually plastic cover of a Presta valve stem. The only function of the cap is to prevent the sharp end of the stem from puncturing the tube when the tube is rolled up.

**valve core** -- removable valve cores can be unscrewed, and this can be annoying if the pump head is of the thread-on type, because removing the pump head can also remove the valve core. Thoughtful application of some Loctite might appeal.

**valve nut** -- usually metal nut that threads down the outside of a Presta valve stem to hold the stem in place against the rim while the tire is inflated. Sometimes it's needed, and sometimes it just gets in the way.

**valve stem** -- the metal cylinder that is embedded in the tube and to which the pump head attaches, sometimes referred to simply as the valve, although the valve is a part internal to the stem. Stems normally come in lengths of 36 mm, 48 mm and 60 mm. Make sure that the valve stems on your tubes are long enough to extend out the rim at least an inch or so, so the pump head can attach. If you don't know for sure, 48 mm is a safe compromise.

Disraeli Gears,

Bob Cooper, Education Director