

# It's Like Riding a Bike

My first Bicycle, a \$7.00 second-hand blue Schwinn, was much too big for me, on the theory that I would grow into it. The problem was I didn't really know how to ride a bike. After some coaxing from my peers, I found myself on the neighbor's steep driveway aimed down hill across our dead end street, and let loose, promptly crashing into a tree. I'm not sure how long after that, I left my bruised bike in the driveway and my mother backed over it with her car, a crushing experience that ended its life. Shortly after that, my sister and I got matching his and hers gold-painted, high-handled, sissy-barred, banana seat Stingrays for our birthdays - it was on!

With the very first moments of finding balance and momentum, bicycle riding became a feeling like no other. A right of passage that signaled independence. I have fond memories of that power and freedom, the exuberance of winding up speed with muscle and breath, and my first solo meanderings into distant places.

This sensation of riding a bike, and the fact that they offer an inexpensive and practical mode of transportation has made bicycles popular since they were invented in the early 19th century. The new standard of 1890's "safety" bicycles, equipped with chain-drive and pneumatic tires took the world by storm. **Velocipedomania**, a cultural phenomenon that influenced the development of better roads and helped liberate women from sport-prohibitive clothing.

My first stingray was stolen and replaced with a ridiculous 2nd hand model with a glossy upholstered sparkly purple seat, high sissy-bar, and centrally mounted 5-speed stick shift - and stolen again! A Christmas gift of a Nishiki 10-speed road bike (and cable lock!) made me feel at last, I had a real bike. After a few years of rough riding, I completely tore it down, for major maintenance, and got familiar with all the components, repainted the frame, and used it for several more years.

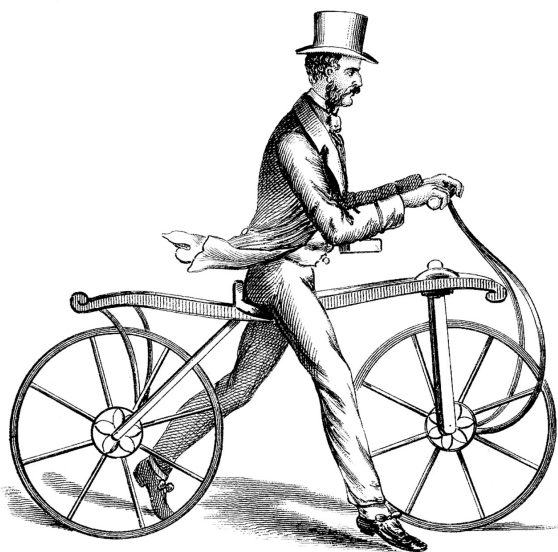
My first major purchase (\$300!) as a young adult, was a light-weight **SR Gran Course** 12-speed road bike, a sturdy, light-weight, mid-range bike manufactured to serve the bike boom of the 80's. Which followed the boom of late 1960's, when increasing consciousness of the value of exercise and later the advantage of energy-efficient transportation led to the bike boom of the 1970's.

With my leather-palmed, open-backed, fingerless gloves I used it for low-slung, high-speed, back-road commutes, and basic transportation, - I wasn't a licensed car driver until I was 30 - my goal was always to go as fast as possible, banking turns and dodging obstacles. Later I added a custom **Klunker**, a converted cruiser frame with added 10-speed gears and British-made drum brakes - built as a primitive Mountain Bike. I bought it from a kid who spent his weekends on the trails of Golden Gate Park, trails I had become familiar with as a kid. My father, a San Francisco native, would rent bikes, and my sister and I followed him through the park, not knowing where we were, or what we would find next. The young enthusiast used the proceeds of his Klunker sale to upgrade to a "real" Mountain Bike from Marin county, just then becoming the epicenter of the next wave of the bike boom.

Half my life has now been spent in an area of extreme hills, gravel roads, and rugged trails that is very unfriendly to casual bike riding. The priorities of building a homestead life from scratch left my bikes languishing for decades. Bike riding as transportation was impractical, and as meditation, recreation or exercise, deemed a non-essential luxury. As I entered my 6th decade in this rugged terrain, I became increasingly nostalgic for the sensation of bike riding. I pulled out the old Klunker. The sidewalls of the knobby tires were cracking, but were just serviceable enough. After cleaning and lubing everything I zoomed down the hill - Weeee! That old thrill came back, but uphill, the solid truck of the steel cruiser frame took too much huffing and puffing, and walking.

But, I was inspired to actively pursue the possibility of a bike that could make it possible. During this pandemic period, bike demand and production shutdowns made for a global shortage of bikes. But I found an online, direct-to-consumer distributor (discounted by a 2 month pre-order) offering a Taiwan-made, (where the majority of decent bikes are manufactured) aluminum-frame, hardtail, 21-speed mountain bike with mechanical disc-brakes at a reasonable cost.

After assembly, I took a few spins. Much better; hills were at least possible, but still more work than fun.



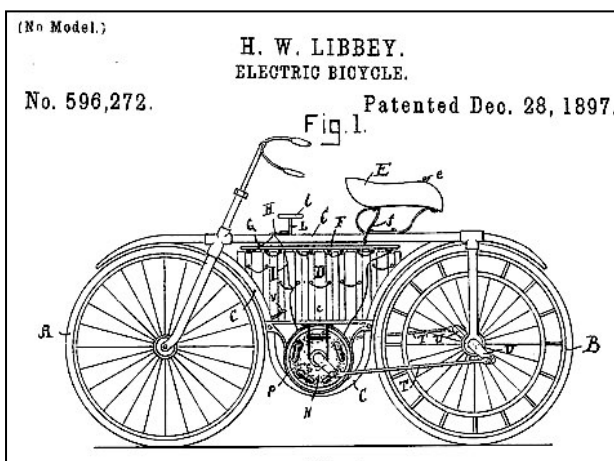
The "Dandy Horse"

The idea of a powered bike had been simmering in the back of my mind for a long time. When I got my first job, my primary goal was to save enough money to buy a moped, those now archaic noisy put-put peddled machines. That never happened, but I continued to fantasize about enhanced range and speed.

I have been following the development of electric bikes for a while. E-bikes were on the drawing board from the very beginning with early patents in the 1890's. The first successful commercial models happened in the late 1990's. With advances in battery technology, e-bike sales worldwide has been meteoric, leading to a wide range in quality, efficiency, and cost. Competition has led to both low-quality, low-performance models to reduce cost, and very expensive high-tech, high-performance machines.

Through obsessive research I discovered my best option on the quality-to-cost scale, was to create my own e-bike, using my new mountain bike as a foundation for the build. Deciding it was now or never, I took the plunge last summer, specifying the particulars of a widely available mid-mount motor conversion kit made by **Bafang**, a manufacturer with a big fan base in China, where there are estimates of over 300 million e-bikes on the road.

**Between 2020 and 2023, nearly 130 million electric bicycles are expected to be sold worldwide. In 2023, e-bike sales are estimated to reach 40 million units worldwide, with \$20 billion in revenue.**



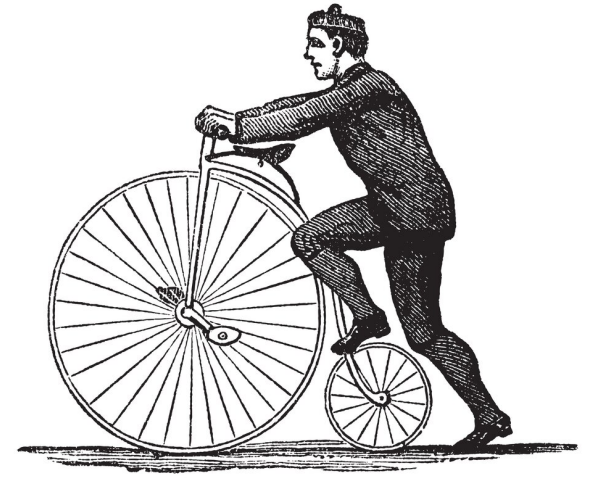
Once I had all the parts and tools together it took only a few hours to convert the bike into a pedal-assist, 7-speed e-bike equipped with a 750-watt motor powered by a 48-volt 17.5 amp-hour lithium battery, which unlike some proprietary, frame-integrated models can be changed out with batteries of other makes, sizes and capacities. I charge the battery with the solar system that powers all my loads, using the 52-volt charger it came with plugged into my small AC inverter, which seems a little convoluted. There is no doubt a more direct way to do it, but with the particulars of Lithium battery management systems, (and the potential dangers,) it's safer to use the prescribed charger.

The motor mounted in the bottom-bracket at the crank is more efficient and durable than less expensive hub motors for hill climbing, and adds the advantage of the geared drive train. And is in a better location for the added weight. Over all, the conversion adds +/-15 lbs, but with a low center of gravity, the added weight actually seems to add stability. There is a mini-display with speedometer, odometer, trip meter, and power assist selector, with 5-9 levels of programmable powerful motor assist. These motors have enough users that hot-rod hackers have learned to modify the factory settings of the motor controller software, and enough of them have messed up and burned out the controllers, (mostly in the pursuit of speed and power) that guidelines for success are available, and prudent adjustments can customize motor response and power consumption. The display meters indicate power use in watts and battery level by percentage or voltage. Also included is a thumb throttle that powers the motor without pedaling (which I use mostly for a boost on tricky terrain or hard hill starts), and brake levers that cut power when the brake is applied. A gear-sensor cuts power as shifts happen, acting as a sort of clutch to reduce stress on the chain, and a speed sensor. A headlight controlled by the display was included with the kit.

I had some fun customizing the bike with other "essentials" replacing the uncomfortable seat, flimsy pedals and slipping grips, adding a suspension seat post, a pump, tool bag with tools, bell, rack, fenders, and a more durable chain and derailleur. **OK, I'm obsessed.**

New to me, is the use of a helmet, which has already proven its utility. And later, as my confidence on trails increased, following an unexpected slide out, knee pads.

It is a wonderful new adventure to be able to casually bike my hill; even just quick jaunts in the woods on old logging roads is great fun. My dogs love it, too, the young one racing me, the old one eagerly taking up the rear. Flying downhill on a reliable modern bike is exhilarating, and coming up hill is like, well, riding a bike, but actually possible, without exhaustion, or pain! It's still great exercise that works up a sweat and gets me breathing, but makes it possible to take on hills and go further faster. The stock 44-tooth chainring is in the mid-range of speed and hill climbing torque. At 1,000 miles I switched out the chainring for a 42-tooth with narrow/wide teeth, gripping the chain to better prevent the occasional derailment that can happen with bumpy descents. Most of the power assist on my steep home turf is in 1st gear, which showed the most wear from extreme motor torque. I switched from an 11-52 tooth set to a 9-54 tooth set, and now can use 2nd and 3rd gear more



effectively on less steep inclines, spreading out the wear. A larger gear-ring can produce ridiculous speeds, while a smaller one sacrifices that in favor of even better hill climbing. It's easy to cruise above 25mph. On a smooth, newly paved down hill straight-away, pedaling achieved a thrilling 39+ mph.

A trip tracked by GPS of 6.44 miles over 28 minutes had a total ascent of 1,324': average speed 12.2 mph, maximum speed 29.9 mph. On my home terrain with casual joy-riding like that, battery range has been +/-20 miles. On a trip to much flatter land, with speeding, and a few hills - not trying to conserve power - I got 33 miles on a charge, which is decent. Range is affected by many variables with all electric vehicles. Reprogramming to lower power-assist levels, and conserving energy by using more muscle, will of course increase range and reduce range anxiety.

**Transportation is inexorably tied to energy consumption, and energy consumption may well be what breaks the planet.**

**Transportation options that use renewable energy is a requirement for the future.**

**Small electric vehicles, velocipedes and bicycles have to be part of future short range transportation.**

**- Joshua Golden  
& the -Hyphenator-**



## Tikkun



I wake to gray, and barefoot pad across wood floor, open the door to dank, throw seeds to the English sparrows, the doves, and the solitary Towhee.

As on every morning, thinking of my parents, still here, still there, moving in their sad, old house, I draw a card from the Oracle of Kabbalah.

Samech. Divine support and protection. Samech. Unbroken, a perfect circle.

Now, in this murderous spring, what will become of the birds and the other soft, small creatures?

For years, I've tried to heal that split, the one between me and them; between my white skin, and my red self.

And what of the birds, in this season of destruction? Of the small, soft creatures?

I want to wrap my father in the thick, wool quilts I've stitched over all these years. And, my mother, bring her tea. Too late, I think, too late. Too high the rent.

In the studio this morning, I will scrape away yesterday's paint. And if I can, repair the damage.

~ Shirley Ann Gaines

