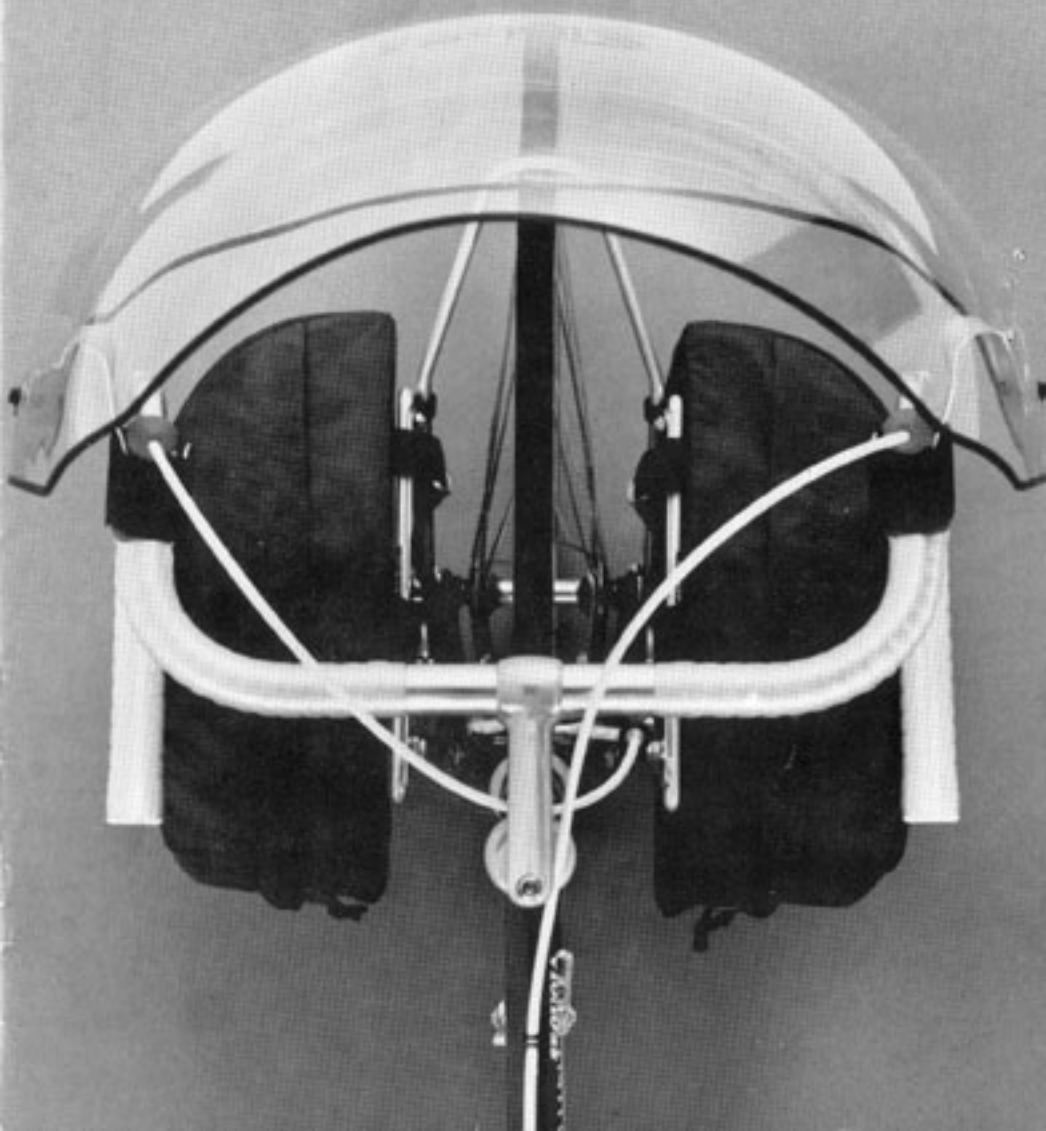


ZIPPER
ROAD FAIRINGS

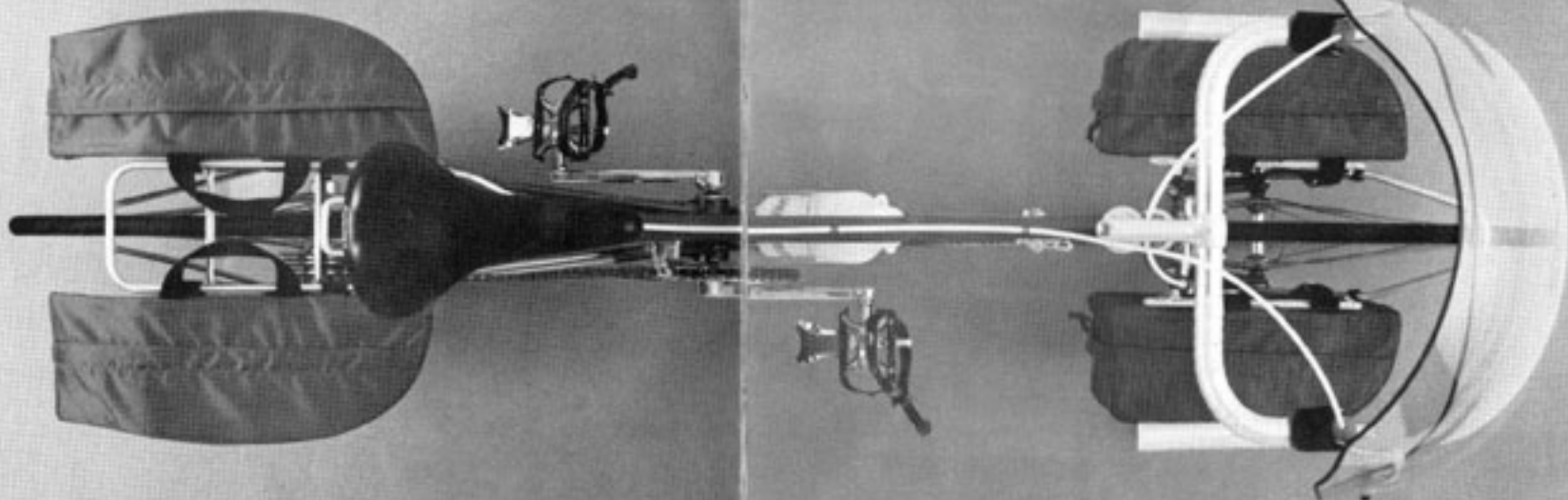
Tailwind



STREAMLINING

Streamlining is the only remaining method for substantially improving the performance of a modern bicycle with high pressure tires and an efficient drive train. Consider that aerodynamic drag consumes fully half of a rider's power at only 10 mph and an overwhelming 80 percent at 20 mph. You will realize what a poor shape a rider on a bicycle

dynamic drag to less than a tenth of that of a standard bicycle, a man has been able to pedal to over 58 mph. These highly specialized speed machines are not yet ready for the open road and for mixing with traffic. However, their offsprings, the recumbent bicycles, are now appearing and will offer advantages to more and more cyclists as they are refined and as we learn to accept them.



is for traveling through the air. Clearly those who take their cycling seriously, whether for recreation or for transportation, should consider the benefits of drag reduction through streamlining.

SPEED RECORDS

Phenominal speeds have been attained in recent years at the annual International Human Powered Speed Championships. By reducing aero-

FOR THE ROAD

Fully streamlined standard bicycles have been built with 70 percent less drag than an unstreamlined bicycle and have achieved speeds just short of 50 mph. These fairings have no place on the road, however. Shaped like vertical wings, they produce high side force in even moderate crosswinds. A fully streamlined bicycle is unrideable in winds of only 5 mph. The challenge is,

therefore, to develop forms of streamlining that are practical under the sometimes severe conditions on the road and yet are effective enough to provide a worthwhile and noticeable boost in performance.

IT'S YOUR BODY

The rider's body is by far the major source of drag, not the bicycle, being responsible for at least 75 percent (more for tourists and commuters) of the

ADVANTAGES

Streamlined cycling is just a little faster and easier under almost all conditions. The advantage is not limited to high speeds as many believe. However, there are certain conditions under which streamlining is especially beneficial. One is headwinds. A streamlined rider has the greatest advantage riding into a headwind and can quickly outdis-

total drag. When touring, large panniers can also contribute more drag than the bike itself. Therefore, slick "aero" components and oval tubing should be judged primarily on their functional qualities because their contribution to the total drag will be minimal. Clearly, effective, practical streamlining should be applied to the largest sources of drag, the rider's body and his/her bulky touring payload.

tance his/her unstreamlined companions. Riding undulating terrain is also particularly enjoyable since more of the speed gained on each downhill is conserved to carry you up to the next hill with less shifting required. No matter what the terrain or winds, streamlining adds up to more cycling enjoyment.

PERFORMANCE

The **ZZIPPER**[®] fairing reduces drag by over 20 percent by improving the flow over the rider's upper body. This results in a speed increase of 7 percent on level ground with no wind, or one gear on a ten speed. The relative advantage into a headwind is a lot greater.

ULTRALIGHT

The **ZZIPPER**[®] is unlike any motorcycle fairing. It is ultralight and slightly "floppy" to absorb road shock. At 350 grams the weight of the fairing is hardly noticeable (a full water bottle weighs 490 grams).

EASY MOUNTING

The **ZZIPPER**[®] T uses a unique mounting system that uses no nuts or bolts. Adjustable aluminum mounting clips attach to the fairing shell and hook over the brake lever bodies where they are secured with velcro straps. The brakes can still be operated from all the usual hand positions. (Rubber brake hoods are required. Not compatible with extension levers.)

WET AND WILD

Weather protection is a secondary benefit of streamlining, but to the hard-core all-weather cyclist it is far more than a secondary consideration. We've received letters from riders telling us how well

the **ZZIPPER**[®] deflects insects, rain, snow, cold wind and the occasional stray pedestrian. Under such circumstances drag may be totally secondary, but the **ZZIPPER**[®] is still hard to do without.

CRASHPROOF

Polycarbonate is the toughest, most crack resistant plastic yet developed. We have exploited its unique properties through a proprietary forming process that results in a shell that is ultralight yet can survive the harsh environment of road cycling. We are so confident of the durability of the **ZZIPPER**[®] fairing that we will replace at no charge any fairing that cracks, even due to a crash, in the first year that you own your **ZZIPPER**[®].

"My overall performance was markedly improved. I beat a rider I haven't been able to touch for the last two years.....the screen makes it just a little easier all the time."

Roger Durham,
Durham Bicycles

"With the headwinds encountered in the last 70 miles at Davis this year, I shudder to think what it would have been like had I not been tucked cozily behind the fairing."

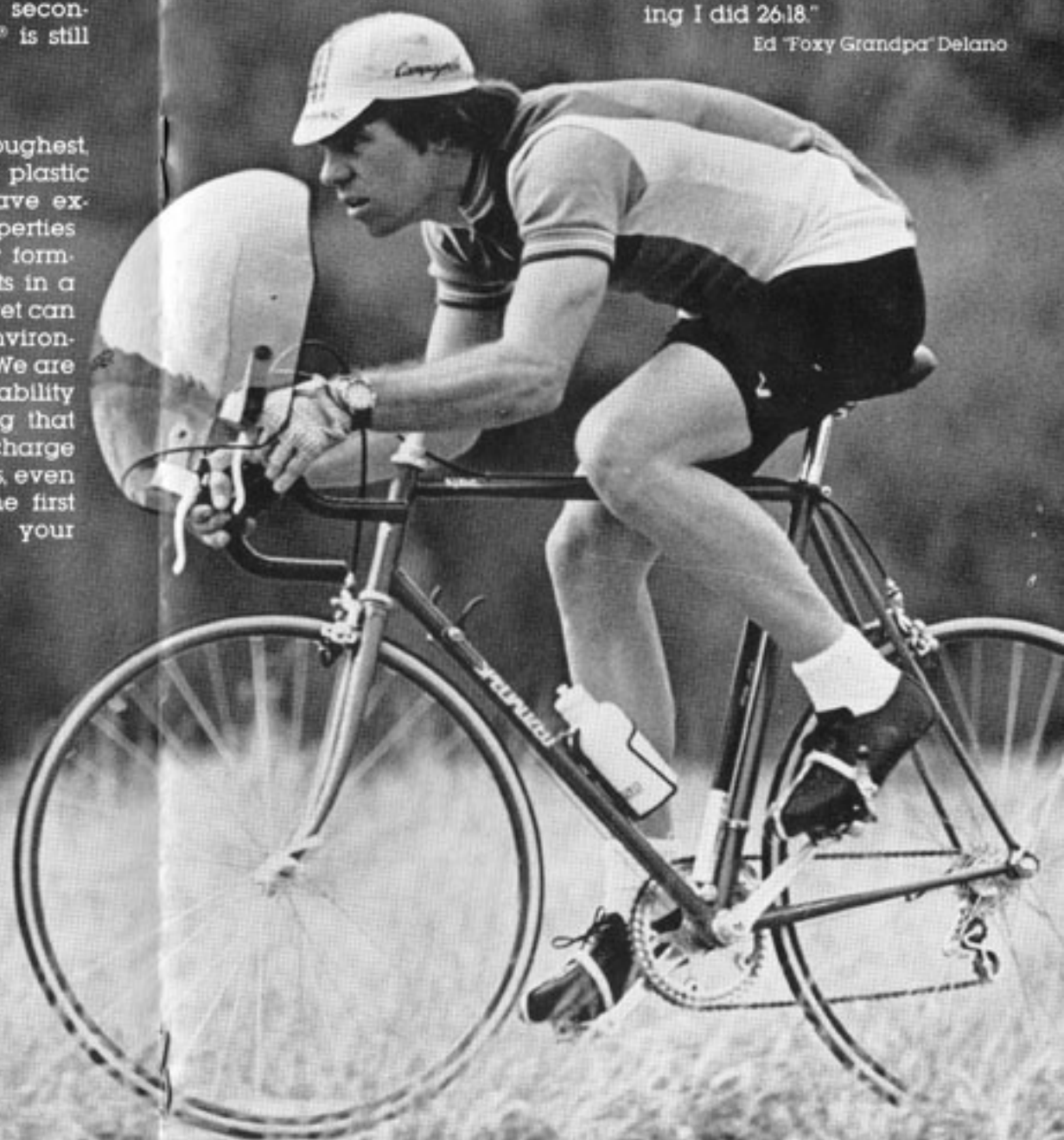
George Foreman,
Oakland, California

"It is the most sensible and valuable investment I ever made in cycling."

Andrew Scatte, England

"Was impressed by its practicality and good quality.....I have only broken 27 minutes twice (before).....with the fairing I did 26:18."

Ed "Foxy Grandpa" Delano



HERESY

In creating the TAILWIND™ system we seem to have broken all the rules. We didn't make them as large as possible, just as large as you'll really need if you plan sensibly. They don't fit all carriers, only Blackburn's. We refuse to make a handlebar bag (that's a bad place to carry weight). Finally, there's not a pocket to be seen on their smooth exterior. After reading about the TAILWIND™ system, we hope you'll agree that it's time for a clean break with tradition.

NEGATIVE DRAG

The traditional square cut pannier can add substantially to the drag of your bike. TAILWINDS™, with their truncated airfoil shape, actually reduce drag by as much as 7 percent. This is largely due to the front pannier's acting as a fairing for your legs and some parts of the bike. TAILWINDS™, hold their shape empty or full, retaining consistent aerodynamics and good looks.

HANDLING

Good handling with a loaded bike is the result of a combination of several factors:

- **Carriers**... must be rigid side to side. TAILWINDS™ fit only Blackburn carriers, which are the best in this respect.
- **Pannier Rigidity**... Most panniers flop and flex, especially on the front. TAILWINDS™ use a special twinwall polycarbonate backboard that is over twice as stiff as aluminum, yet is lighter. TAILWINDS™ mount with three hooks, no springs or rubber bands. Locking pins in the top hooks keep the panniers on even mountain bikes.
- **Weight Placement**... Fore-aft distribution, height and width of the load are all important. For full loads, TAILWINDS™ volume distribution is 40% front, 60% rear facilitating a well distributed load. For smaller loads if you can fit it all in the front (especially with a low rider carrier), do it! You'll be surprised at how good it feels. TAILWINDS™ also keep the load close to the bike, another way to reduce flex, flop and heavy steering.

WHY CARRY AIR?

Clothing takes up more than half of the volume of the typical touring load. Yet, most of this volume is air, trapped in the fibers, weave and folds of the clothing. Carrying this extra volume of unnecessary air increases the volume of your load, making it bulkier, wider and therefore higher drag. The traditional zippered pocket or compartment is ineffective in reducing this volume because if you stuff it really full, you'll never get it closed.

HIGH DENSITY PACKING

The TAILWIND™ system uses fitted, color coded stuff sacks to help you organize your equipment and to fully utilize the available volume. Clothing can be compressed into rock-hard cylinders with a minimum of residual air. Sacks are also useful in organizing equipment and tools. The different colors of the sacks lets you know at a glance which sack you want and eliminates rummaging through your whole load. The sacks fit the panniers, utilizing their full volume.



WATER PROTECTION

All panniers leak. Even though the fabric is coated, seams leak and efforts to seal the seams never seem to be totally successful. TAILWIND™ stuff sack sets are supplied with press-to-seal bags that neatly hold two stuff sacks each. We believe this to be the most waterproof system available for those items that absolutely must not get wet.

HIGH VISIBILITY

All TAILWIND™ items feature stripes of Scotchlite® super reflective fabric, 200 times brighter than Early Warning® for improved night time conspicuity.

ACCESSORIES

The GIANT STUFFER adds another 1250 cubic inches for a large sleeping bag and other bulky items. Compression straps feature quick release buckles and have enough extra length to tie down tent poles and a sleeping pads.

FITTED STUFF SACKS come four to a set, one set per pannier pair. Waterproof press-to-lock bags are included. Extra sets are available.

SPECIFICATIONS

Front Panniers - 1270 cubic inches - 448 grams each. Rear Panniers - 1750 cubic inches - 526 grams each. Giant Stuffer - 1250 cubic inches - 210 grams.



"Gives a cyclist a heightened "vehicular presence," making traffic riding safer.....St. Louis winters are wet, windy and cold, and I've guessed I'm about 1/3 warmer behind your device."

David Swimmer, St. Louis, Mo.

"We tried the **ZZIPPER**® in many situations and find it quite helpful in attaining maximum efficiency. It helps tame headwinds and downhills have never been so wild."

Geoff Clarke, Lake Tahoe, California

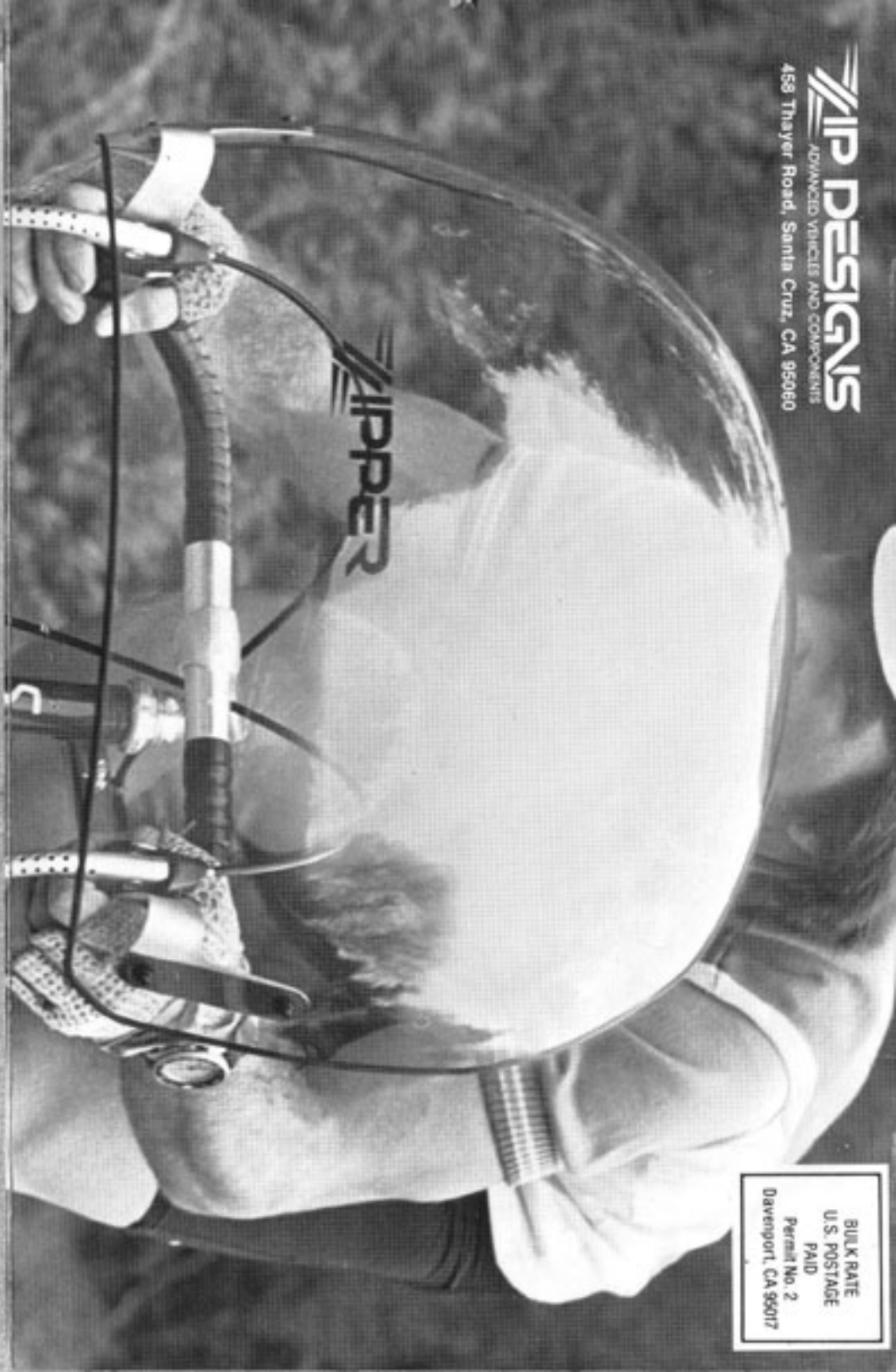


"I think your fairing's great. I would best describe it by saying it's like drafting behind a racer all the time.....it reduces the wind chill effect by 10 to 15°F. In hilly Wisconsin where the wind comes in.....irregular gusts, the fairing not only stabilizes and smooths out the ride but eliminates the wind pushing against my chest while retaining the exhilarating feel of the wind whistling through my hair."

Dan Thomas, Waukesha, WI

"I found it let enough air through that I wasn't uncomfortable, and it handled well. Was very easy to install and remove, and withstood bumpy roads. Felt it was helpful in improving speed."

Fred Delong, Technical Editor,
Bicycling



458 Thayer Road, Santa Cruz, CA 95060

ZIPPER
DESIGNS
ADVANCED VEHICLES AND COMPONENTS

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